Music of the Night, p. 11

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Amateur Radio

CQ

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MAY 2014

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CQ World Wide Mega Issue!

- 2013 CW Results, p. 13
- 2013 SSB Results, p. 32
- V26B–Back from the Ashes, p. 26

Visiting China Radio International, p. 118

Remembering WZ8C, p. 127

On the Cover: Contesting from Zone 35. The D4C contest team on Cape Verde for the 2013 CQ WW SSB DX Contest. Results on page 32. CW results on page 13.

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New! Cushcraft R9 . . . *80-6 Meters*

80 Meters . . . No Radials . . . 1500W

Cushcraft's world famous R8 now has a big brother!

Big Brother R9 now includes 75/80 Meters for local ragchewing and worldwide low band DX *without radials*!

It's omni-directional low angle radiation gives you exciting and easy DX on all 9 bands: 75/80, 40, 30, 20, 17, 15, 12, 10 and 6 Meters with low SWR. QSY instantly -- no antenna tuner needed.

Use full *1500 Watts* SSB/CW when the going gets tough to break through pileups/poor band conditions.

The R9 is super easy to assemble, installs just about anywhere, and its low profile blends inconspicuously into the background in urban and country settings alike.

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

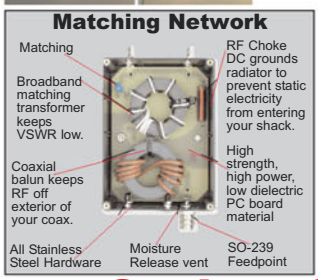
Rugged Construction: Thick fiberglass insulators, all-stainless steel hardware and 6063 aircraft-aluminum tubing is double or triple walled at key stress points to handle anything Mother Nature can dish out.

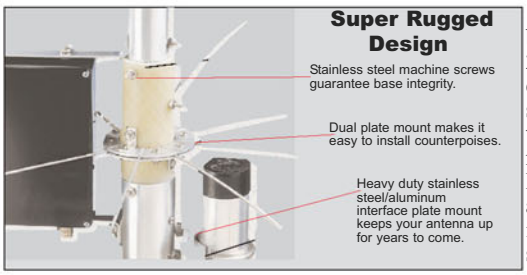
31.5 feet tall, 25 lbs. Mounting mast 1.25 to 2 inches. Wind surface area is 4 square feet.

R8, $539.95. Like R9 antenna but less 75/80 Meters.

R-8TB, $79.95. Tilt-base lets you tilt your antenna up/down easily by yourself to work on.

R-8GK, $59.95. Three-point guy kit for high winds.





MA-5B *5-Band* Beam

Small Footprint -- Big Signal

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.*

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 attention to detail means low SWR, wide bandwidth, optimum directivity, and high efficiency -- important performance characteristics you rely on to maintain regular schedules, rack up impressive contest scores, and grow your collection of rare QSLs!

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

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.

Cushcraft Famous *Ringo* Compact FM Verticals

W1BX's famous *Ringo* antenna has been around for a long time and remains unbeaten for solid reliability. The Ringo is broad-banded, lighting 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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May 31 Deadline for Young Ham of the Year Nominations

Nominations for the Newsline Young Ham of the Year award, which *CQ* co-sponsors, are due by May 31. Now in its 28th year, the YHOTY program recognizes the achievements of radio amateurs age 18 or younger living in the US, its possessions, or Canada. Qualifying candidates must have made a significant contribution to amateur radio or, through the use of amateur radio, to their communities or to the nation. Official nominating forms may be downloaded from <www.arnewsline.org/yhoty> or requested by mail (with a self-addressed, stamped envelope) from Amateur Radio Newsline, Inc., Young Ham of the Year Award, 28197 Robin Ave., Santa Clarita, CA 91350.

The Very Strange Case of W9NTP and the FBI

Don Miller, W9NTP, is well-known in amateur radio as a pioneer in slow-scan TV techniques and a leader in promoting the use of the mode. Back in 1972, he was recognized for his efforts as Dayton's Radio Amateur of the Year. Don also has traveled extensively, and in the course of his travels over the past eight decades has amassed a huge collection of artifacts from all over the world. These artifacts, which had been stored at Don's home in Waldron, Indiana, are now in the hands of the FBI, which seized the entire collection in early April, trying to determine if any of the materials had been obtained or imported illegally.

Several Indiana newspapers and TV stations showed photos of a massive FBI presence outside Miller's home, with tents set up around his property and a variety of vehicles. An FBI spokesman told CBS News.com that neither the total number of items in Miller's collection nor their monetary value had been determined, but said, "The cultural value of these artifacts is immeasurable."

The FBI is cataloging each item and trying to determine where and when each one was obtained, which is important because some may have been collected before various laws and treaties regarding cultural artifacts took effect. As of our deadline, Miller had not been charged with any offense, and he told CBS he was cooperating with the FBI but maintained that he "absolutely" had rightful ownership of everything in his collection.

RadioShack to Close 1100 Stores

Chances are there's a RadioShack store near you. However, there's now about a one in five chance that there won't be one there much longer. The struggling electronics chain announced plans in early March "to close up to 1,100 underperforming stores," as it released financial reports showing it suffered a $400 million net loss in 2013, with nearly half of that coming in the fourth quarter alone.

Hams have long relied on the chain as a source for components, and in the past, for ham gear, shortwave receivers, and scanners as well. In recent years, RadioShack has put a greater focus on mobile phones and accessories, a market that has softened recently, as new purchases have given way to replacements and upgrades. One recent bright spot for hams has been a new focus on kits and building, in response to the growth of the maker movement.

LeBlanc New FCC Enforcement Chief; ARRL Calls for Stepped-Up Action

FCC Chairman Tom Wheeler has named former Justice Department attorney Travis LeBlanc as acting Chief of the Commission's Enforcement Bureau. LeBlanc most recently had been a Deputy Attorney General in California, specializing in technology regulation, telecommunications, high-tech crime, and cyber-security, among other subjects.

Meanwhile, responding to the FCC's request for comments on improving how the Commission functions (GN Docket 14-25), the ARRL has called for more timely and visible enforcement of the FCC's rules, especially regarding the amateur service. According to the *ARRL Letter*, changes in FCC procedures over the past five years restricting the public release of information about enforcement actions has resulted in "a widespread, albeit inaccurate, public perception that there is no active enforcement in our service." That perception, said the League, has resulted in "unacceptable increases in rule violations" because people think they won't be held accountable.

QRM Costs Ham His License Plus $1,000

A few FCC enforcement actions *have* been announced recently, including a consent decree in which a Florida ham agreed to pay a $1,000 "voluntary donation" and gave up his license in return for terminating an enforcement action that could have cost him $25,000 in fines. The *ARRL Letter* reports that Terry Van Volkenburg, KC5RF, had been charged by the FCC with making unlicensed transmissions on a public safety frequency that interfered with the radio system at the local county jail.

In a separate action, Oklahoma ham Orloff Haines, KF5IXX, is facing a possible $12,000 fine for allegedly interfering with communications on CB channel 19. According to the *ARRL Letter*, Haines, an Extra Class licensee, admitted to transmitting a continuous carrier on channel 19, reportedly because area CBers were harassing his wife. Haines had the usual 30 days to pay the fine or make a written request to have it reduced or cancelled.

FEMA Chief to Headline ARRL Centennial Banquet

The ARRL has announced that Federal Emergency Management Agency (FEMA) Administrator Craig Fugate will be the keynote speaker at the ARRL Centennial Banquet this summer in Hartford, Connecticut. The banquet will be part of the League's Centennial Convention being held from July 17–19.

Fugate is a licensed amateur, KK4INZ, and has been FEMA Administrator since 2009. Previously he has praised the role played by amateur radio operators in responding to emergencies and disasters.

Dayton Simultaneously Honors, Snubs, ARRL

The Dayton Amateur Radio Association honored two long-time leaders of the ARRL with its annual Hamvention® awards this year, but pointedly snubbed the organization itself in its announcement.

Larry Price, W4RA, ARRL President from 1984 to 1992 and president of the International Amateur Radio Union (IARU) from 1999 to 2009, is the recipient of the 2014 Amateur of the Year Award. This year's Special Achievement Award goes to ARRL CEO Dave Sumner, K1ZZ. Neither man's affiliation with the League is cited in the DARA announcement.

Price is recognized for his "significant and direct impact on the development of amateur radio throughout the world" in his role as IARU President, and Sumner is cited for his work as a member of the "IARU observer team" as well as his ongoing "efforts in crafting broadband over power lines (BPL) regulations in conjunction with the FCC to reduce (harmful BPL) emissions." The fact that he has led the ARRL for the past three decades is completely ignored.

Also honored this year are FLDIGI developer David Freese, Jr., W1HKJ, with the Technical Achievement Award, and the Gwinnett Amateur Radio Society in suburban Atlanta with the Club of the Year Award. The awards are scheduled to be presented at the Dayton Hamvention® on May 16–18.

Prominent Hams Among Silent Keys

Three leaders in different parts of amateur radio have passed away recently. Former ARRL General Manager and *QST* Editor John Huntoon, W1RW, became a Silent Key on February 23 at age 97. Huntoon helped protect and expand international amateur radio allocations after World War II, and served as ARRL General Manager from 1961–1975.

Nancy Kott, WZ8C, who shepherded *WorldRadio* magazine through its transition from print to digital in 2009, and who was perhaps best-known as the leader of the FISTS CW Club in the United States, passed away at age 58 on March 2 after years of medical problems. (See the tribute to Nancy in this issue of *CQ Plus*, on page 127 of our digital edition.)

Also leaving us at far too young an age was AMSAT's Vice President of Engineering, Tony Monteiro, AA2TX, who passed away on March 26 at age 55 after battling cancer. His many contributions to amateur satellite technology included designing the software for the Software-Defined Transponder (SDX) that was used on ARISSAT-1 in 2011.

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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Self-supporting -- no guys required . . . Remarkable DX performance -- low angle radiation, omnidirectional . . . Handles 1500 Watts . . . Low SWR . . . Automatic band switching . . . Aircraft quality aluminum tubing . . . Stainless steel hardware . . . Recessed SO-239 connector . . . Two year limited Warranty . . .

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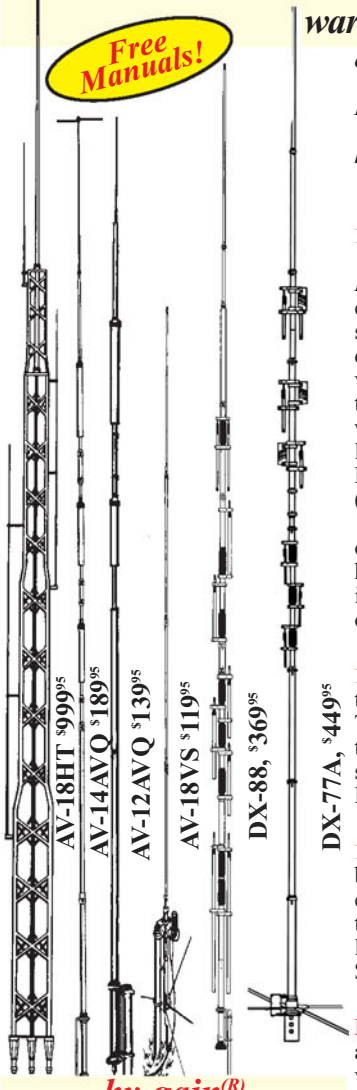

hy-gain(R) Classics

All hy-gain multi-band vertical antennas are entirely self supporting -- no guys required.

They offer remarkable DX performance with their extremely low angle of radiation and omnidirectional pattern.

All handle 1500 Watts PEP SSB, have low SWR, automatic bandswitching (except AV-18VS) and include a 12-inch heavy duty mast support bracket (except AV-18HT).

Heavy duty, slotted, tapered swaged, aircraft quality aluminum tubing with full circumference compression clamps are used for radiators. Includes all stainless steel hardware. Recessed SO-239 prevents moisture damage. Hy-gain verticals go up easily with just hand tools and their cost is surprisingly low. Two year limited warranty.

AV-18HT, $999.95. (10,12,15,20,40,80 M, 160, 17 Meters optional). 53 ft., 114 lbs.

Standing 53 feet tall, the famous *Hy-Gain HyTower* is the world's best performing vertical! The AV-18HT features automatic band selection achieved through a unique stub-decoupling system which effectively isolates various sections of the antenna so that an electrical 1/4 wavelength (or odd multiple of a 1/4 wavelength) exists on all bands. Approximately 250 kHz bandwidth at 2:1 VSWR on 80 Meters. The addition of a base loading coil (**LC-160Q, $109.95**), provides exceptional 160 Meter performance. **MK-17, $89.95**. Add-on 17 Meter kit. 24 foot tower is all rugged, hot-dip galvanized steel and all hardware is iridited for corrosion resistance. Special tilt-over hinged base for easy raising & lowering.

AV-14AVQ, $189.95. (10,15,20,40 Meters). 18 ft., 9 lbs. **The** Hy-Gain AV-14AVQ uses the same trap design as the famous Hy-Gain Thunderbird beams. Three separate air dielectric Hy-Q traps with oversize coils give superb stability and 1/4 wave resonance on all bands. Roof mount with Hy-Gain AV-14RMQ kit, $89.95.

AV-12AVQ, $139.95. (10, 15, 20 Meters). 13 ft., 9 lbs. **AV-12AVQ** also uses Thunderbird beam design air dielectric traps for extremely Hy-Q performance. This is the way to go for inexpensive tri-band performance in limited space. Roof mount with AV-14RMQ kit, $89.95.

AV-18VS, $119.95 (10,12,15,17,20,30,40,80 Meters). 18 ft., 4 lbs. **High** quality construction and low cost make the AV-18VS an exceptional value. Easily tuned to any band by adjusting feed point at the base loading coil. Roof mount with Hy-Gain AV-14RMQ kit, $89.95.

DX-88, $369.95. (10, 12, 15,17,20,30,40,80 Meters, 160 Meters optional). 25 ft., 18 lbs.

All bands are *easily* tuned with the DX-88's *exclusive* adjustable capacitors. 80 and 40 Meters can even be tuned from the ground without having to lower the antenna. Super heavy-duty construction. DX-88 OPTIONS: 160 Meter add-on kit, KIT-160-88, $199.95. Ground Radial System, GRK-88, $99.95. Roof Radial System, RRK-88, $99.95.

DX-77A, $449.95. (10, 12, 15, 17, 20, 30, 40 Meters). 29 ft., 25 lbs.

No ground radials required! Off-center-fed Windom has 55% greater bandwidth than competitive verticals. Heavy-duty tiltable base. Each band independently tunable.

Model #	Price	Bands	Max Power	Height	Weight	Wind Surv.	Rec. Mast
AV-18HT	$999.95	10,15,20,40,80	1500 W PEP	53 feet	114 pounds	75 MPH	------
AV-14AVQ	**$189.95**	**10,15,20,40**	**1500 W PEP**	**18 feet**	**9 pounds**	**80 MPH**	**1.5-1.625"**
AV-12AVQ	$139.95	10/15/20 M	1500 W PEP	13 feet	9 pounds	80 MPH	1.5-1.625"
AV-18VS	**$119.95**	**10 - 80 M**	**1500 W PEP**	**18 feet**	**4 pounds**	**80 MPH**	**1.5-1.625"**
DX-88	$369.95	10 - 80 M	1500 W PEP	25 feet	18 pounds	75 mph no guy	1.5-1.625"
DX-77A	**$449.95**	**10 - 40 M**	**1500 W PEP**	**29 feet**	**25 pounds**	**60 mph no guy**	**1.5-1.625"**

80-6 Meters

Hy-Gain's new AV-680 adds 75/80 Meters with no radials!

Includes 40, 30, 20, 17, 15, 12, 10 and 6 Meters operation with low 17 degree radiation angle and omni-directional world-wide coverage. No ground or radials needed. Handles full 1500 Watts key down continuous for two minutes.

Highly Efficient

The AV-680 uses quarter wave stubs on 6, 10, 12 and 17 meters and very efficient end loading coil and capacity hats on 15, 20, 30, 40 and 80 Meters -- no traps. End loading allows efficient operation with a low-profile. Resonators are placed in parallel not in series.

Each band individually tunable

Extra wide low VSWR bandwidth. End fed with broadband matching unit. Single coax cable feed. Automatic bandswitching.

Sleek and low-profile

Low 2.9 sq. ft. wind surface area. Small footprint for mounting easily on decks, roofs and patios. 26 feet, 18.5 lbs.

Built-to-last

High wind survival of 65 mph. Broadband matching unit made from all *Teflon*(R) insulated wire. Aircraft quality aluminum tubing, stainless steel hardware.

Hy-Gain verticals are the best built, best performing and best priced multiband verticals available today.

hy-gain(R) warranty

Two year limited warranty. All replacement parts in stock.

AV-640, $449.95. 8 bands: 40, 30, 20, 17, 15, 12, 10, 6 Meters. 25.5 ft., 17.5 lbs.

AV-620, $349.95. 6 bands: 20, 17, 15, 12, 10, 6 Meters. 22.5 ft., 10.5 lbs.

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VOLUME 70 NUMBER 5

CQ May 2014

CONTENTS

FEATURES

DEPARTMENTS

ON THE COVER: The multinational D4C team on Cape Verde for the 2013 CQ WW DX Contest SSB weekend (both SSB and CW results are in this issue). From left, back row: JK3GAD, IT9SPB, IZ4UEZ, HB9DUR, I4UFH, YL2GM, IZ4DPV, I4VEQ; front row: IK1HJS, CT1ESV, 9A1TT, E77DX, IZ1LBG, SG7A, IT9RGY (Photo courtesy Fabio Schettino, I4UFH)

CQ plus (digital edition only)

FEATURES

COLUMNS

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System Fusion delivers integrated operational functionality that enables you to communicate with other Amateur Radio operators using conventional FM mode while you enjoy advanced digital communication features, such as image, text data and GPS position data using C4FM digital. System Fusion is designed to enable seamless communication between conventional FM and C4FM Digital Communication using a single unified platform.

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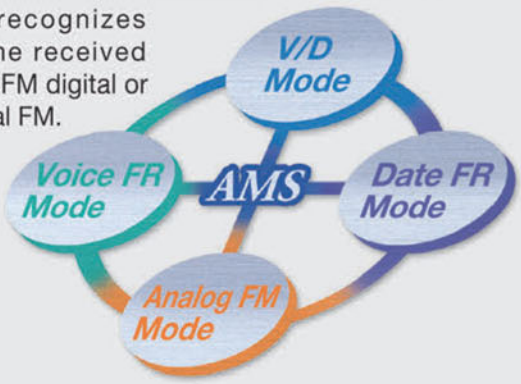
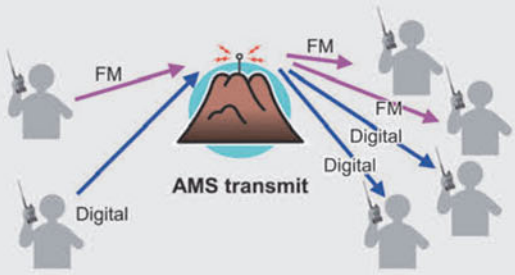
- Instantly recognizes whether the received signal is C4FM digital or conventional FM.



FM Friendly Digital

- System Fusion can be used in multiple ways, for digital communication, for conventional FM communication and even internet communication.



New Functions Enabled by C4FM Digital Communication

Digital Group Monitor (GM) Function

- Automatically checks whether members registered to a group are within the communication range.

Snapshot Function (Image Data Transmission)

- Image data can be sent easily to other C4FM FDMA digital transceivers.
- Image data can be displayed on the screen. (FTM-400DR ONLY)

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- Real-time navigation function enables Location checking at any time.
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System Fusion Lineup

C4FM Digital Communications
Clear and Crisp Voice Technology

144/430 MHz DUAL BAND
C4FM/FM DIGITAL REPEATER

DR-1

- Three digital modes and a Conventional FM mode
- Emergency Operation: Supports operation on an emergency battery

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C4FM Digital Communications
Clear and Crisp Voice Technology

C4FM FDMA 144/430 MHz DUAL BAND
5W DIGITAL/FM TRANSCEIVER

FT1DR

- Three digital modes and a Conventional FM mode
- Automatic Mode Select (AMS) Function
- Snapshot Picture Taking Capability
- Digital Group Monitor Function
- Smart Navigation Function

Equipped with advanced touch panel operation and full-color TFT large-scale display

C4FM Digital Communications
Clear and Crisp Voice Technology

C4FM FDMA 144/430 MHz DUAL BAND
50W DIGITAL/FM TRANSCEIVER

FTM-400DR

- Three digital modes and a Conventional FM mode
- Automatic Mode Select (AMS) Function
- 3.5-inch Full Color Touch Panel Operation
- Snapshot Picture Taking Capability
- Digital Group Monitor Function
- Smart Navigation Function

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zero bias – a CQ editorial

BY RICH MOSESON,* W2VU

It Doesn't Get Much Better Than That . . .

"Amateur radio doesn't get much better than that!" Chances are you've had at least one experience in ham radio that has prompted you to think something like that or say it to someone else. Perhaps it was your first DX contact, working a rare station on the "gray line," or getting a sought-after QSL card (remember QSL cards?) in the mail. Or maybe it was something more esoteric, such as making your first satellite contact or hearing your echoes off the moon for the first time. I had one of these moments recently, and it involved a contact from my station in New Jersey to faraway Ohio (quickly followed by another, even better one). Obviously, there's a story behind it, of frustration, friends, and unanticipated accomplishments.

Last month, in a semi-tongue-in-cheek editorial about ham radio and "mindfulness," I used a kit project on which I was working as an example of the focus and concentration that ham radio activities often require. "You need to make sure you have the right parts in the right order," I wrote, "place them in the right spots on the circuit board, count turns on a coil if you need to wind one, solder carefully, etc."

I need to pay more attention to my own advice … especially if I'm going to become a highly paid ham radio mindfulness instructor! I finished building the kit —a RockMite][QRP transceiver—wired up all the connectors and controls, plugged in the two crystals and three ICs, applied power, and … nothing. No sound in the headphones, not even a click as I turned the power on and off.

I looked up the troubleshooting guide in the manual and started checking voltages on the ICs, as instructed. Except for one pin on one chip—on which the supply voltage was present as it should have been—*the readings on every other pin were wrong.* I re-checked my solder joints, even snapping a photo on my phone and enlarging it to show greater detail, and couldn't find a problem.

So I called in the heavy artillery, my friend, colleague, and QRP "Elmer" Richard Fisher, KI6SN. Since he's in California, I sent him phone pictures. He pulled up the manual online, and we started going through the circuit on the phone, component by component. At one point, when he was looking at the schematic and I was looking at the board (photo A), he commented that the voltage from one of the resistors should match the voltage on the chip to which it was connected.

"That's strange," I said. "That chip is all the way on the other side of the board." Light-bulb moment: It was, but should it be? I went back to the manual and, lo and behold, despite my own advice to the contrary, I hadn't been mindful enough and had accidentally swapped two of the ICs when I was plugging them into the board. Luckily, they didn't get fried as a result (or as Richard said, I didn't let the smoke out!).

I swapped them into the correct sockets, flipped on the power and, miracle of miracles, there was sound in the headphones! All the voltages were now correct, everything seemed to work as it should, so I mounted the board and associated connectors, etc., in the case (photo B) and headed off for dinner.

Later on, I came back to the shack, hooked up power, antenna, etc., and did a little more testing. It was receiving very well. But was it also transmitting? I was about to hook up a power/SWR meter when I heard W8HOG calling CQ. What better way to find out if a rig is transmitting

(Continued on page 102)

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

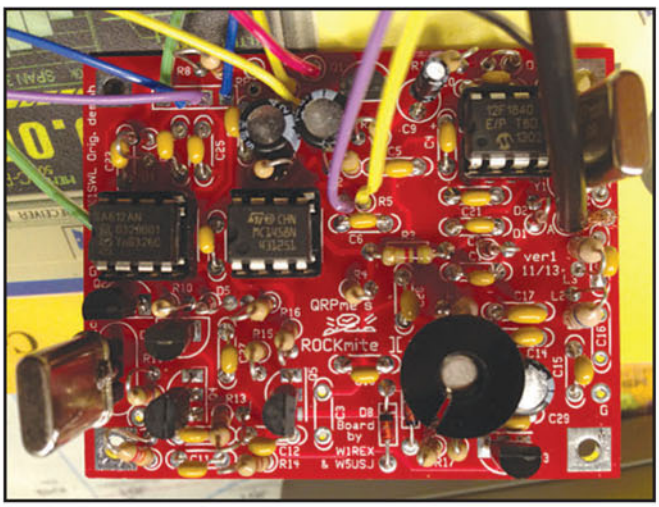

Photo A. Troubleshooting the RockMite][board while KI6SN reviewed the schematic revealed that I'd accidentally swapped two of the ICs.

About This Issue – Plus a Staff Change

We continue in this issue to work our way back onto a regular publication schedule for our print edition. As a result of combining the March and April issues, we were unable to publish the CQ World-Wide DX SSB Contest results as scheduled last month. This issue features *both* the SSB and the CW results from last year's CQ WW DX Contest. We expect to return to our regular contest reporting schedule for the rest of this year and beyond. Please remember that all contest line scores are now on the web, as they have been for the past year.

All subscriptions have been extended appropriately, to make sure everyone receives the full number of issues for which they've subscribed. We thank you for your patience and understanding.

Finally, we have a staff change to announce. Katie

Allen, WY7KRA, is our new Sales and Marketing Manager. Some of you may remember Katie from her days as ARRL Membership Manager, helping to revitalize the ARRL's staff radio club and station, and posting You Tube videos about various operating activities. Her enthusiasm for amateur radio is an asset to us all, and we are very grateful to have her as a member of the CQ family.

announcements

TEMPE ARIZONA — The Central Arizona DX Association will hold its Annual Summer BBQ on Thursday, May 1. Contact: CADXA, 2217 West Del Oro Circle, Mesa, AZ 85202-2615. Phone: (480) 721-1714.

DEERFIELD, NEW HAMPSHIRE — The New England Amateur Radio Festival Inc. will hold **NEARfest** from Friday, May 2 to Saturday, May 3. Vendor contact: John M. Goran, K1JJS, (207) 865-0554 or (207) 232-4892. Email: <john@goran-maine.us>. Website: <http://www.near-fest.com>.

CADILLAC, MICHIGAN — The Wexaukee Amateur Radio Club (WARC) will hold its **52nd Annual Cadillac Amateur Radio and Computer Swap** Saturday, May 3. Contact: WARC, P.O. Box 163, Cadillac, MI 49601. Website: <http://www.wexaukeearc.org/>. VE exams.

CEDERBURG, WISCONSIN — The Ozaukee Radio Club, Inc. will hold its **36th Annual Indoor Amateur Radio, Electronics & Computer Spring Swapfest** Saturday, May 3. Contact: Loren Jentz, N9ENR, 1213 Woodbridge Drive, Apt. 1, Grafton, WI 53024. Phone: (262) 377-7941. Website: <http://www.ozaukeeradioclub.org>.

CLARKSVILLE. TENNESSEE — The Clarksville Amateur Transmitting Society, Inc. will hold the **CATS Tail-Gate 2014** Saturday, May 3. Website: <http://www.kf4l.org>.

COCHISE COUNTY, ARIZONA — The Chocise Amateur Radio Association of Sierra Vista, Arizona will hold the **Cochise Hamfest** and **7th Region Phone/CW/Digital Communications Exercise** Saturday, May 3. Contact: Charles, K4AFN, (520) 458-1997. Email: <k4afn@arrl.net>. Website: <http://www.k7rdg.org>. Talk-in 146.76- (PL 162.2). VE exams.

HAGERSTOWN, MARYLAND — The Antietam Radio Association will hold the **Hagerstown Hamfest** Saturday, May 3. Contact: Herman Niedzielski, K2AVA, (301) 791-5841. Email: <k2ava@myactv.net>. Website: <http://w3cwc.org>. Talk-in 147.090+ or 146.94-. VE exams.

SUPERIOR, WISCONSIN — The Arrowhead Radio Amateur Club will hold its annual **Ham Fest!** Saturday, May 3. Contact: Robert Schultz, KCØNFB, 115 Eden Lane, Duluth, MN 55805-1533. Phone (218) 724-6957. Email: <arac_hamfest@charter.net>. Talk-in 146.940- (PL 103.5), 147.000- (PL 103.5), or 146.940- (PL 114.8). VE exams.

TEXARKANA, ARKANSAS — The Four States Amateur Radio Club will hold its **2014 Ham Fest** Saturday, May 3. Website: <http://www.4sarc.org>. Talk-in 146.620- (PL 100). VE exams.

SANDWICH, ILLINOIS — The Kishwaukee Amateur Radio Club will hold **The DeKalb Hamfest** Sunday, May 4. Contact: Bob Yurs, W9ICU, (815) 895-7584. Email: <w9icu@arrl.net>. Website: <http://www.karc-club.org>. Talk-in 146.730- (PL 100) or 146.52 simplex.

WRIGHTSTOWN, PENNSYLVANIA — The Warminster Amateur Radio Club will hold its **2014 Hamfest** Sunday, May 4. Contact: Rich Luce, AG3L, (215) 703-8264. Email: <hamfest14@k3dn.org>. Website: <http://www.k3dn.org>. Talk-in 147.09+ (PL 131.8) or 443.95+ (PL 131.8). VE exams

LOUISA, KENTUCKY — The Big Sandy Amateur Radio Club will hold the **Louisa Hamfest 2014** Saturday, May 10. Contact: Tom Lykins, K4LID, (606) 638-4735. Email: <k4lid@panix.xom>. Website: <http://www.bsarc.org>. Talk-in 147.390+.

EAST GREENBUSH, NEW YORK — The East Greenbush Amateur Radio Association (W2EGB) will hold its **11th Annual Hamfest** Saturday, May 10. Contact: Tom, KC2FCP, <kc2fcp@nycap.rr.com>. Website: <http://www.w2egb.org>. Talk-in 147.270+ (PL 94.8).

DAYTON, OHIO — The Dayton Amateur Radio Association will hold the **2014 Dayton Hamvention®** Friday, May 16; Saturday, May 17; and Sunday, May 18. Phone: (937) 276-6930. Email: <info@hamvention.com>. Website: <http://www.hamvention.com>. Talk-in 149.94–, 146.91–, 223.94–. or 442.1+. VE exams.

DAYTON, OHIO — The SouthWest Ohio DX Association (SWODXA) will hold its **29th Annual DX Dinner** Friday, May 16. Website: <http://www.swodxaevents.org>.

TOMS RIVER, NEW JERSEY — The Jersey Shore Amateur Radio Society will hold the **Hamfest by the Shore** Sunday, May 18. Contact: Darlene, (732) 237-9448. Email <jsars910@gmail.com>. Website: <http://www.jsars.org>. Talk-in 146.910– (PL 127.3). VE exams.

BAHAMA, NORTH CAROLINA — The Durham FM Association will hold its **40th Annual DurHamFest** Saturday, May 24. Contact: Paul Van Doren, KE4OXN, (919) 309-2457. Email: <elivand@aol.com>. Website: <http://dfma.org>. Talk-in 147.225+ or 145.450–. VE exams.

TOWNSHIP OF WASHINGTON, NEW JERSEY — The Bergen Amateur Radio Association will hold the **BARA Spring Hamfest** Saturday, May 24. Contact: Jim Joyce, K2ZO, (201) 664-6725. Email: <k2zo@arrl.net>. Website: <http://www.bara.org>. Talk-in 146.19+ (PL 141.3). VE exams.

LEXINGTON, NEBRASKA — The Heartland Amateur Radio Association (WØSOK) will hold its **Flea Market** Saturday, May 31. Contact: Hoppy Hopkins, W4YDN, (308) 858-4614. Email: <rhoppy@gpcom.net>. Talk-in 147.135+. VE exams.

Special Event Listings:
For additional and more comprehensive special event listings, visit: <http://www.CQPlusSpecialEvents.blogspot.com>.

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Many of us got started in this hobby by listening to the radio late at night. W4DNN says he still does … and explains how it has enhanced his ham radio experience.

The Music of the Night

BY DENNIS LAZAR,* W4DNN

Open up your mind, let your fantasies unwind
In this beauty that you know you cannot fight
The beauty of the music of the night

That verse in the song from *Phantom of the Opera* really says it all (after I replaced the word "darkness" with "beauty"). Listening to the music of CW singing across the vastness of the"ether" brings conversations from across the continent and around the world right to my pillow in the wee nighttime hours.

I began listening to nocturnal radio when I was a kid back in the late 1940s. I would adjust the cat's whisker on my homemade crystal set and marvel at the voices and music that it brought magically into my bedroom . . . all without electricity! Sometime around 1956, I had saved $50 from my paper route and the bedside radio became a National SW-54 which was capable of pulling in great shortwave listening.

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e-mail: <laserstral@aim.com>

In 1960, I got my first ham ticket, a Technician, and the Heathkit Sixer became my constant companion. However, at night I still preferred the low bands and shortwave. "Some day," I hoped, "I will master the code and be able to work the world."

Pillow Talk

Although I did manage to push through the 13 word-per-minute challenge and get my General Class ticket in 1966, I still was barely able to copy the code with paper and pencil and avoided CW whenever possible.

That all changed after I married Ruthie (now K4KLQ). She likes to be in dreamland early and likes me to be in bed next to her. At the time, I had a nice Yaesu FT-757GX as my main rig. When, for some still-unknown reason, the finals spontaneously fried, the transceiver became a receiver and found a place on my bedside table. I began to listen to nocturnal CW.

At first, it was 90% gibberish to me. I could get the letters and pick out a few words here and there. Not being able to write in bed in the dark, I just listened and understood what I could. It was relaxing and it lulled me to sleep.

Then, over a number of years, painlessly, I began to copy code in my head! I began to listen to faster conversations,

Listening to this bedside SW-54 receiver in the wee hours, as well as reading the 1957 Radio Amateur's Handbook, *inspired Dennis to become K8TSQ in 1960. The rest is history! (Photos courtesy of the author)*

At the October 2013 hamfest sponsored by the Peace River Radio Association in Punta Gorda, Florida, Dennis found his latest treasure (lower right). Its a vintage Ten-Tec Argonaut, unique in that it is a QRP transceiver with an on-board 100-watt amplifier. This was a super bargain, since the amp was fried but it is still a great 5-watt QRP rig.

finding that the more interesting the subject matter, the more I could copy. Soon, complete words and phrases would pop out of the ether and I found that many times, after hearing only a few characters, I knew what the word would be. At faster speeds, around 25 to 30 WPM, I began to hear words rather than characters. The brain is amazing!

CW and QRP: Made For Each Other

CW has become my number one mode of operation, meshing nicely with my love of QRP (low power). There is no other way, short of weak-signal digital modes, that one can copy a milliwatt signal close to the noise level with a strong station operating right nearby.

I love to participate in Summits On The Air (SOTA), where "activators" backpack to mountain peaks to operate QRP rigs while "chasers" listen from home stations and gain points for working the activators. It's a blast and it depends largely on one's ability to work CW.

I have tried QRP SSB and succeded in working a few stations with a Yaesu FT-817 running around 2.5 watts on battery power, but it's a rarity. On CW from a mountain summit, however, one can sometimes start a pile-up. With the ability to copy in my head, I don't have to write down anything ... only take notes. Usually, Ruthie does the logging for me.

In-bed Ops?

A few times, I have tried switching the old rig with the FT-817 and a tiny mini paddle key in an attempt at under-the-blankets hamming. It's a hoot to get "569" from a ham in Slovenia at 11:30 at night, but it sure keeps the blood pumping and the brain clicking. Not the best way to get to sleep.

Thus, I have returned to the old receive-only setup. The rig normally is hooked up to the big outdoor vertical antenna. However, during our famous lightning-filled Florida thunderstorms, it is safer to transfer the rig to an indoor receiving loop made from wire strung around a big picture frame over the bed. With a tiny long-wire tuner, this arrangement works surprisingly well.

The CW Lullaby

From a mode that I just could not seem to master and to be avoided at all costs, CW has become my true love (after Ruthie). I owe it all to nocturnal monitoring, mostly on 40 and 30 meters. It's the CW lullaby that has for years eased me to sleep while painlessly imprinting on my brain. Try it for yourself. It's fun. It's relaxing. It's the CW "music of the night."

Results of the 2013 CQ WW DX CW Contest

BY RANDY THOMPSON,* K5ZD

"What a wonderful time I spent in front of my radio this weekend." —PP1CZ

Think back to another November evening 90 years ago. Radio amateurs were experimenting with the supposedly "useless" wavelengths below 200 meters. Leon Deloy, French 8AB, announced his intention to transmit on 100 meters from 9:00 to 10:00 p.m. Eastern US Time, beginning on 25 November, 1923. ARRL Traffic Manager Fred Schnell at 1MO heard the transmission and requested permission to reply. The next night, the first ever two-way communication by radio amateurs between Europe and America was accomplished![1]

Testifying before the US Senate seven years later, Hiram Maxim (1AW) described the event to convey the excitement of each new achievement in amateur radio:[2]

It is difficult to explain the thrill that accompanies an experience such as this. It is sublime and carries with it a sort of uplift that makes us better and deeper-thinking men. The precision of it all, the picture of the Frenchman sitting in his little den in France, waiting for the precise second to come around, hand on key, the Americans sitting in their little shack in a little street in New England, silently listening and watching the time, the miles and miles of lonely black ocean over which the little electro-magnetic oscillations must travel, are utterly compelling to us amateurs.

How would those earliest DXers take in the CQ WW DX Contest CW of 2013? Could they imagine thousands of participants from around the world exchanging callsigns and signal reports in a frantic scavenger hunt for DX across six bands from 160 meters up to 10 meters?! While they may not have envisioned the future as it unfolded, they certainly shared the magic of wireless and the thrill of DX that still exists for us today.

The so-called double peak of solar Cycle 24 provided plenty of excitement for the more than 35,000 participants that were found in the logs of CQ WW CW 2013. A record number of 7,442 log entries were received—listing contacts with 203 different DXCC entities. The rarest contacts were with Sri Lanka (4S), Congo (9Q), Surinam (PZ), Kenya (5Z), and the Falkland Islands (VP8). Over 1.1-million contacts were reported with the United States, followed by European Russia (373K), Germany (348K), and Japan (282K).

All 40 CQ zones were active. The most zones worked on each band were 25 on 160 meters, 38 on 80 meters, 39 on 40 meters, and all 40 on 20, 15, and 10 meters. While a big country total is pleasing, zones have a special place in proving that you were able to reach all parts of the world during the 48 hours of the contest. Zone 37 seed to be the most difficult one for all bands except 15 meters.

It is the QRP entrants, those who choose to play the game with 5 watts or less, that really tell the story of just how good conditions were. With 10 and 15 meters open around the world, it doesn't take much more than patience to experience the thrill that 8AB and 1MO enjoyed so many years ago. From K6UFO operating at NN7SS, "How many countries can I work on just 15m while QRP?" Answer: "114." N4LA was happy: "I actually tried to see how many countries I could work with QRP power... I ended up with 111 worked in just over 17 hrs." Perennial QRP entrant N1TM reported, "Personal best for this one." Just for fun, the OL4A team decided to do a QRP multi-multi. They ended up with over 7-million points (with over 100 countries on each of 40–10 meters)!

There were plenty of comments about Saturday being better than Sunday. Many reported that the high bands closed a bit earlier on the second day. Making contacts was also complicated by stations having very bad echoes at times, especially for backscatter QSOs within Europe. The echo was almost as loud as the main signal, making it nearly impossible to copy except at very slow CW speeds!

Single Operator All Band – High Power

There was an incredibly close race for the top world score in the Single Operator All Band category. It was virtually a three-way tie among P4ØF in Aruba operated by Valery R5GA, TO7A in Martinique operated by Dmitry UT5UGR, and CR3E in Madeira operated by Jose CT1BOH. The top two scores are only 4,000 points apart; that's less than one multiplier!

It is extremely difficult for a North American station to compete for the world high score due to only earning two points for each contact with W/VE compared to three points earned by those in other continents. Dmitry's extraordinary score from TO7A was the result of running pileups on two bands at the same time throughout the

Sunrise at multi-single entry K8AZ. CW from lower left: W3YQ (foreground) working mults on 40, K8NZ running on 20, W8CAR tuning for mults on 160, and K8BL tuning for mults on 80.

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

2013 WW DX CW TROPHY WINNERS AND DONORS

SINGLE OPERATOR
ALL BAND
World
P4ØF (Opr.: Valery Petrov, R5GA)
Donor: Vibroplex

World Low Power
V26K (Opr.: Bud Trench, AA3B)
Donor: Slovenia Contest Club

World - QRP
Dan Street, K1TO/4
Donor: Gene Walsh, N2AA

World - Assisted
EF9O (Opr.: Juan Luis Pla Nebot, EA5BM)
Donor: Robert McGwier, N4HY

World - Assisted- Low Power
P4ØW (Opr.: John Crovelli, W2GD)
Donor: Lyubomir "Leo" Slavov, OR2F

World – Assisted - QRP
Nick Kornev, RA3AN
Donor: Steve "Sid" Caesar, NH7C

USA
Dave Patton, NN1N
Donor: Frankford Radio Club

USA - Low Power
Ed Sawyer, N1UR
Donor: North Coast Contesters

USA - QRP
David Leduc, N1IX*
Donor: W3ZZ Memorial (Andy Blank, N2NT)

USA - Assisted
Chas Fulp, Jr., K3WW
Donor: John Rodgers, WE3C

USA Assisted - Low Power
James P. Bowman, KS1J
Donor: LA9Z/LN9Z Leia Contest Club

USA - Zone 3
Bob Wolbert, K6XX
Donor: Central Arizona DX Association

USA - Zone 4
Dave McCarty, K5GN
Donor: The Society of Midwest Contesters

Europe
Ranko Boca, 4O3A
Donor: W3AU Memorial (Florida Contest Group)

Europe - Low Power
Jose Haro Lora, EA7OT
Donor: Tim Duffy, K3LR

Europe - QRP
Istvan Vajda, HG3M
Donor: I4FAF Memorial (Sergio Cartoceti, IK4AUY)

Europe - Assisted
Manfred Wolf, DJ5MW
Donor: I4IND Memorial (Claudio Veroli, I4VEQ)

Europe – Assisted – Low Power
Vinko Gregorcic, S53F
Donor: Alex Goncharov, R3ZZ

Africa
CR3E (Opr.: Jose Carlos Cardoso Nunes, CT1BOH)
Donor: K5KA Memorial (Ralph "Gator" Bowen, N5RZ)

Asia
Anatoly Polevik, RC9O
Donor: W5PG Memorial (DFW Contesting Group)

Carib./C.A.
TO7A (Opr.: Dimitry Stashuk, UT5UGR)
Donor: W5PG Memorial (DFW Contesting Group)

Carib./C.A. – Low Power
VP5CW (Opr.: Dave Horn, W5CW)*
Donor: Albert Crespo, NH7A

Oceania
9M6NA (Opr.: Saty Nakamura, JE1JKL)
Donor: CQ magazine

South America
HD2T (Opr.: Yuri Onipko)*
Donor: Dave Farnsworth, WJ2O

South America - Southern Cone (CE, CX, LU) – High Power
CE3CT (Opr.: Martin Monsalvo, LU5DX)
Donor: Dale Long, N3BNA

South America - Southern Cone (CE, CX, LU) – Low Power
LU8XW (Opr.: Oscar Vais, LU1XS)
Donor: LU Contest Group

ASEAN (XZ HS XW XU 3W 9M 9V V8 YB DU) – Low Power
Renato Schlittler, HS0ZLN
Donor: Bob Kupps, N6BK

Scandinavia (LA, OH, OZ, SM)
OH2BH (Opr.: Kim Ostman, OH6KZP)
Donor: W3FYS Memorial (Chas Weir, Jr., W6UM)

Baltic (ES, LY, YL)
Albertas Pipiras, LY5R
Donor: LY2OO Memorial (Lithuanian Radio Sports Federation)

Canada
VY2TT (Opr.: Kenneth S. Widelitz, K6LA)
Donor: John Sluymer, VE3EJ & Jim Roberts, VE7ZO

Russia
Alexandr Gimanov, UA5C*
Donor: Roman Thomas, RZ3AA

Japan
Masaki Masa Okano, JH4UYB
Donor: Phil Yasson, AB7RW

Japan - Low Power
Nobuhiro Iwasa, JH8SLS
Donor: Western Washington DX Club

SINGLE OPERATOR, SINGLE BAND

World - 28 MHz
ZD8X (Opr.: Jorma Saloranta, OH2KI)
Donor: Joel Chalmers, KG6DX

World - 21 MHz
CN2R (Opr.: Jim Sullivan, W7EJ)
Donor: Lew Sayre, W7EW

World - 14 MHz
9Y4W (Opr.: Jim Neiger, N6TJ)
Donor: W2JT Memorial (North Jersey DX Assn.)

World - 7 MHz
IG9W (Opr.: Emilio Borea, IZ1GAR)
Donor: Alex M. Kasevich, 8R1A

World - 3.5 MHz
NP4A (Opr.: Alfredo Velez Ramos)
Donor: Fred Capossela, K6SSS

World - 1.8 MHz
Silvo Knuplez, S51V
Donor: Kenneth Byers, Jr., K4TEA

USA - 28 MHz
Vincent Sgroi, K1RM
Donor: dxcoffee.com

USA - 21 MHz
Carl Kratzer, K3RV/4
Donor: Bob Naumann, W5OV

USA - 14 MHz
Jason Goldsberry N5NU
Donor: Northern Illinois DX Association

USA - 7 MHz
Steven Sussman, W3BGN
Donor: W6AM Memorial (Jan Perkins, N6AW)

USA - 3.5 MHz
Robye L. Lahlum, W1MK
Donor: Bill Feidt, NG3K

USA - 1.8 MHz
Thomas M Greenway, K4PI
Donor: Jeff Briggs, K1ZM

Europe - 28 MHz
GM3X (Opr.: Clive Penna, GM3POI)
Donor: Jay Pryor, K4OGG

Europe - 21 MHz
Sigurdur Jakobsson, TF3CW
Donor: Robert Naumann, W5OV

Europe - 14 MHz
CS2C (Opr.: Jiri Pesta, OK1RF)
Donor: G3FXB Memorial (Maud Slater)

Europe - 7 MHz
YT3A (Opr.: Vojislav Kapun, YU7AV)
Donor: Ivo Pezer, 9A3A

Europe - 3.5 MHz
OL7M (Opr.: Oldrich Linhart, OK1YM)
Donor: K3VW Memorial (Frankford Radio Club)

Europe - 1.8 MHz
Algirdas Uzdonas, LY7M*
Donor: Pat Barkey, N9RV & Terry Zivney, N4TZ

Asia – 21 MHz
Vakhtang Mumladze, 4L8A
Donor: Coconut Wireless Contest Club

Asia – 14 MHz
4X2M (Opr.: Arthur Avrunin, 4X4DZ)
Donor: W5FO Memorial (Ralph "Gator" Bowen, N5RZ)

Asia – 7 MHz
Serge Gursky, UNØL
Donor: Nodir Tursoon-Zadeh, EY8MM

Carib./C.A. (28 MHz)
Eric M. Guzman, NP3A
Donor: David Hodge, N6AN

Canada (7 MHz)
Chris Allingham, VE3FU
Donor: John Sluymer, VE3EJ

Japan - 21 MHz
Akito Nagi, JA5DQH
Donor: Bob Wilson, N6TV

Japan - 14 MHz
Syuichi Sato, JA7FTR
Donor: Chris Terkla, N1XS

China (28 MHz)
Guang Yang, BA8AG
Donor: LZ Contest Team

OVERLAY CATEGORIES
World – Classic
VY2ZM (Op.: Jeffrey T. Briggs, K1ZM)
Donor: Pete Smith, N4ZR

U.S.A. – Classic
Peter H Briggs, K3ZM/4
Donor: CWops

World – Rookie
Andrei Enoktaev, R4WDX
Donor: CWops
U.S.A. – Rookie
Michael Adams, N1EN
Donor: CWops

MULTI-OPERATOR, SINGLE TRANSMITTER
World
CN2AA (Oprs.: RN2FA, R3FA, RA3ATX, RA3CO, RK3AD, RL3FT, RV3MA, RW3FO, RX3APM, UA2FB, UA2FF, UA3ASZ)
Donor: Boring Amateur Radio Club

U.S.A.
W1WMU (Oprs.: W5WMU, N5WR, K5GO, N5DX)
Donor: Douglas Zwiebel, KR2Q

Africa
5C5T (Oprs.: EA5CP, EA5YU, EA9BLJ)*
Donor: Harry Booklan, RA3AUU

Asia
P33W (Oprs.: KU1CW RU4HP, RA2FA, UA2FZ, RV1AW, UA4FER, RW4WR, RA3AUU)
Donor: Steve Merchant, K6AW

Carib./C.A.
6Y7W (Oprs.: 6Y5WJ, UA8DX, UA9CDC, UN7LZ, UN9LW, RN4WA)
Donor: Kansas City DX Club

Europe
TM6M (Oprs.: F1AKK, F5MUX, F6ARC, F8DBF, F8FKJ)
Donor: Bob Cox, K3EST

Oceania - Pacific Rim
AH2R (Oprs.: NH2C, JR7OMD/WI3O, 7N2JZT/NH2KO, JE8KKX/AH2K, JO1RUR/KH0G)
Donor: Junichi Tanaka, JH4RHF

South America
LT1F (Oprs.: LU1AEE, LU1FAM, LU1FKR, LU1FJ, LU2FE, LU4FPZ, LU8ADX, LW6DG, OZ1AA)
Donor: Araucaria DX Group

Canada
VE7GL (Oprs.: VE7GL, VA7OO, VA7AO, VE7HJJ)
Donor: Eastern Canadian DX Assn.

Japan
JA1BPA (Oprs.: JA1BPA, JG1VGX, JM1LPN)
Donor: Madison Jones, W5MJ

ASEAN (XZ HS XW XU 3W 9M 9V V8 YB DU)
9M2SM (Oprs.: 9M2GET, 9M2ZAK, 9M2OUT, 9M2RDX, 9M8SYA, 9W2SBD, 9W2SBL)
Donor: Bob Kupps, N6BK

MULTI-OPERATOR, TWO-TRANSMITTER
World
CR3L (Oprs.: DF1LON, DJ2YA, DK7YY, DL1CW, DL5AXX, DL5LYM, DM2XO)
Donor: Array Solutions

U.S.A.
K1LZ (Oprs.: K1LZ, K1VR, AE2W, K3JO, LZ2HM, LZ3CQ, N8BO, YO9GZU)
Donor: Tom Horton, K5IID

Europe
LX7I (Oprs.: DL3BPC, PC5A, PA4N, OE2VEL, OE5OHO, DL5SE, DL2JRM, HB9CVQ, LX2A)
Donor: Aki Nagi, JA5DQH

MULTI-OPERATOR, MULTI-TRANSMITTER
World
D4C (Oprs.: OM7JG, YL3DW, LY2IJ, YL2KL, IK2JUB, OM3RM, OM2VL, IK2NCJ, YL1ZF, K1RX, OM3BH, HB9CAT, OM3GI)
Donor: K2GL Memorial (The K2GL Operators)

U.S.A.
K3LR (Oprs.: K3LR, K3UA, G4TSH, N2NC, W2RQ, N9RV, N3SD, KL9A, N6MJ, N6TV, N6AN, N3GJ, K9GY)
Donor: N6RJ Memorial (Bob Ferrero, W6RJ)

Europe
ES9C (Oprs.: ES1OX, ES1WST, ES2DW, ES2MC, ES2NA, ES2RR, ES2TI, ES4RD, ES5GP, ES5JR, ES5NC, ES5QA, ES5QX, ES5RY, ES5TV, ES7GM, LZ2CWW, OH1JT, OH1RX, OH2IW, OH7EA, OH7JR, RT2F, YL2GQT, YL2VW, YL3AD, YL3CW)
Donor: Finnish Amateur Radio League

Oceania
AH0BT (Oprs.: W1NDE/JE1NDE, K2QXI/JJ2QXI, KW2X/JG7PSJ)
Donor: JA9SSY Memorial (Tack Kumagai, JE1CKA & Masa Sakurada, JR2GMC

CONTEST EXPEDITIONS
World Single Operator
Cornelius Paul, DF4SA/HBØ
Donor: Friends of Phil Goetz, N6ZZ

World Multi-Operator
TC0A (Oprs.: LZ1CNN, LZ1DCW, LZ1NK, LZ2UW, LZ3FN, LZ3ND, LZ3YY, LZ5VK, TA2TX, TA3D, NENO)
Donor: Carl Cook, AI6V

SPECIAL - SINGLE OPERATOR AWARD
World SSB/CW Combined
8P5A (Opr.: Tom Georgens, W2SC)
29,325,286
Donor: Hrane Milosevic, YT1AD

SPECIAL – TRIATHLON AWARD
World SSB/CW/RTTY Combined
Yuri Onipko, VE3DZ
26,623,135
Donor: Rudy Bakalov, N2WQ

CLUB
World SSB/CW
Yankee Clipper Contest Club
549,113,402
Donor: W1WY Memorial (CQ magazine)

Non-USA SSB/CW
Bavarian Contest Club
446,438,376
Donor: N6AUV Memorial (Northern California Contest Club)

** Second Place*

Mark MØDXR enjoyed single band 15 meters using the callsign G9W.

contest. This produced QSO rates in the 200+ range for many hours. Unfortunately for him, it also generated a slightly higher error rate in copying callsigns and exchanges. The penalty for errors pushed the TO7A score down and handed Valery the victory by the narrowest of margins. HD2T operated by Yuri VE3DZ finished fourth just ahead of Tom W2SC at 8P5A.

Dave NN1N set a new USA record on his way to the top USA score and #8 in the World. The "Admiral" Scott Redd KØDQ/1 visited the station of K8PO in Maine and also broke the USA record. These two scores provide an interesting data point in the argument about rate vs multipliers. Scott ignored multipliers and spent the entire weekend running to make an incredible 5,600 QSOs before log checking (far and away the highest QSO total ever by a USA single op). Dave took the more traditional path to find 86 more multipliers in order to overcome a 500 QSO deficit. Third place went to Randy K5ZD/1 who was also above the magic 10-million point mark. Last year's winner, Alex LZ4AX at K3CR, improved on his best score, but it only earned fourth place in this very competitive year.

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8P5A (W2SC).....12,265,446
V47T (N2NT) 11,381,279

28 MHz
ZD8X (OH2KI) 2,423,123
CW5W (CX6VM).....2,264,770
FY5KE (F6FVY) 2,005,704

21 MHz
CN2R (W7EJ) 1,796,546
5H3EE.....1,759,140
Z81X (OHØXX/HP1WW).....
1,724,450

14 MHz
9Y4W (N6TJ).....1,673,010
EA8AH (OH6CS) 1,578,309
CS2C (OK1RF).....1,090,073

7 MHz
IG9W (IZ1GAR) 1,008,140
YT3A (YU7AV).....964,119
CE1/K7CA.....909,150

3.5 MHz
NP4A (WP3C).....645,970
OL7M (OK1YM).....484,053
W1MK 455,715

1.8 MHz
S51V 278,964
EF8S (OH2BYS).....268,863
4L5O.....227,254

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LOW POWER
ALL BAND

V26K (AA3B) 10,261,251
3V8BB (KF5EYY) 6,985,521
VP5CW (W5CW) 6,032,838
9J3A (S53A).....5,181,512
N1UR.....4,752,231
YN2CC (AJ9C).....4,533,288

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9XØXA (G3XAQ).....839,790
FJ/VA3RA (VE3IKV)....567,000

21 MHz
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FY5FY 1,455,279
D3AA 1,277,370

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UN6LN.....513,454
UK8OM.....263,624

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HK3O.....471,120
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DJ5MW 8,609,022
SN7Q (SP7GIQ).....8,605,840

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LW5HR.....1,154,300
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YT9A 995,100

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OK1FPS.....897,806
S52AW 862,200

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DM7C 475,553

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RD8D (RX9CAZ).....174,974
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S53F.....4,421,268
KS1J.....4,303,978
KP2B (WP3A).....4,205,968

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KE7X 418,935
E74A.....413,780

14 MHz
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RA9AP.....578,858
OL5W 448,572

7 MHz
YT2AAA.....466,990
HG5D (HA8QZ).....426,122
S52W 420,979

3.5 MHz
LZ2SC 151,452
OK1AY.....117,600
ER3AU.....114,387

1.8 MHz
E74O.....77,868
MWØEDX 70,231
IKØXBX 35,856

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ALL BAND

K1TO/4 2,758,313
RW9RN 1,377,075
N1IX.....1,118,597
HG3M.....1,035,588
LY5G 1,005,800
JH1OGC.....916,150

28 MHz
K3OO.....260,022
KR2Q.....232,440
GM3YEH.....116,085

21 MHz
V73NS.....134,100
JQ1NGT.....125,235
SP4JFR.....96,139

14 MHz
US5VX.....122,332
VU2UR 60,170
HA6VV.....59,976

7 MHz
CO8DM.....77,924
YV5EN.....64,894
G4DBW.....48,190

3.5 MHz
T43T (CO3IT).....121,040
SP4GL.....39,825
UT3EK 20,591

1.8 MHz
HA5NB.....17,576
RA2FB 7,439
UT5EO 5,445

SINGLE OPERATOR ASSISTED
QRP
ALL BAND

RA3AN.....1,251,720
RT4W 1,243,512
NØUR 1,027,040
DM2M (DK3WE).....925,903
OK7CM.....693,200
NF1R/6 624,723

28 MHz
JR3RWB.....121,914
F4BKV 119,988
SO6C (SP6CIK) 98,412

21 MHz
DL1EFW 179,077
HA3JB 132,924
VE6BMX 128,721

14 MHz
YU1LM 130,950
IK6FWJ.....66,918
EE3C (EA3KX) 48,124

7 MHz
YUØW.....127,002
DJ2RG.....71,064
UT4FJ 68,500

3.5 MHz
UT3L (UR5LO).....64,703
UX5UU 44,850
HG6C (HA6IAM) 39,975

1.8 MHz
HA8BE 22,824
HA7I (HA7JTR).....22,021
UT3N (UT3NK) 13,668

MULTI-OPERATOR
SINGLE TRANSMITTER

CN2AA.....33,276,270
P33W 28,158,800
P3N 27,515,496
TM6M.....16,420,000
9A1P 15,472,217
6Y7W 15,161,416

MULTI-OPERATOR
TWO-TRANSMITTER

CR3L 36,230,790
P4ØL 32,307,440
PJ4A 28,675,548
4LØA 26,504,016
TCØA 26,039,811
UP2L 25,735,413

MULTI-OPERATOR
MULTI-TRANSMITTER

D4C 68,145,325
HK1NA.....40,698,588
PJ2T.....39,795,573
K3LR 33,910,848
W3LPL 32,270,976
ES9C 30,790,130

ROOKIE
HIGH POWER

R4WDX.....1,472,450
JA1ZLO (JE6MDL).....235,572
KK4EIR.....139,442

ROOKIE
LOW POWER

N1EN 2,957,306
DM3ZM 428,420
W4TTM.....396,633

CLASSIC
HIGH POWER

VY2ZM (K1ZM) 4,478,376
K3ZM/4 3,587,808
CT3KN 3,529,625

CLASSIC
LOW POWER

SU9AF (RW3AH) 3,313,875
K1BX 1,767,558
K1HT 1,519,388

UNITED STATES
SINGLE OPERATOR
HIGH POWER
ALLL BAND

NN1N.....10,652,128
KØDQ/1 10,297,950
K5ZD/1 10,050,712
K3CR (LZ4AX).....9,925,004
K1ZZ.....8,782,400
KQ2M/1 8,419,257

28 MHz
K1RM 720,954
N2IC/5.....667,959
K8MFO 550,942

21 MHz
K3RV/4 980,880
WA3A 768,447
N1XS/5.....395,318

14 MHz
N5NU.....670,171
W8TA 590,564
N5CR/7.....530,208

7 MHz
W3BGN.....841,708
NR5M (K5GA) 737,009
W7WA 562,028

3.5 MHz
W1MK 455,715
K3JGJ.....67,973
AA5B 45,696

1.8 MHz
K4PI 45,724
N7GP (N5IA) 38,464
NØTT 23,499

SINGLE OPERATOR
LOW POWER
ALL BAND

N1UR.....4,752,231
W3EF.....4,365,975
N5AW.....3,704,276
N4TZ/9 3,527,216
NA8V 3,200,146
K2PO/7.....2,133,314

28 MHz
N8II 418,761
WB4TDH.....335,240
W3EP/1 319,009

21 MHz
KU2M 719,374
W2AW (N2GM) 356,555
W8IQ 234,580

14 MHz
K1EFI/3.....43,050
WB3CII 10,716
N9GBB.....6,656

7 MHz
K9UIY 151,740
NS3T 101,864
WO9S.....70,686

3.5 MHz
NS7K.....2,449

1.8 MHz
KM1R 6,517
WD8DSB/9 1,988
N2FJ 250

SINGLE OPERATOR ASSISTED
HIGH POWER
ALL BAND

K3WW 9,997,254
N3RS 8,518,809
NY3A.....7,810,750
AB3CX/2.....7,103,937
K9NW.....6,412,477
K1AR 6,319,210

28 MHz
WØMM/5.....681,660
NN4X.....598,970
N4ZR/8 549,564

21 MHz
WA6O.....603,801
W9ILY 491,415
N5ZC 395,411

14 MHz
KV2K (K2NG).....1,022,772
K1JB.....391,960
WR2G.....142,857

7 MHz
K3EST/6 647,675
K9OM 547,950
N6MA/7 359,100

3.5 MHz
K9RS/3.....248,880
N6SS/7.....207,834
K4JPD 126,420

1.8 MHz
W4SVO.....24,900
KU5B 19,912
N6VR/7.....17,836

SINGLE OPERATOR ASSISTED
LOW POWER
ALL BAND

KS1J.....4,303,978
W3KB 3,157,260
NM5M 3,005,667
N1EN 2,952,268
W6AAN/3.....2,682,570
W1NT 2,502,291

28 MHz
NA3M/4 196,840
K1ZO 186,048
WB2AA.....176,120

21 MHz
KE7X 418,935
WØDLE.....311,395
WE9R 257,920

14 MHz
W3IQ/8 194,434
NW4V.....135,904
NM5Y 114,300

7 MHz
N4IJ/5.....214,020
K9LA 59,682
KV4QS.....32,544

3.5 MHz
W2DX.....1,325
NJØF.....814
K2BB 6

1.8 MHz
W2MF.....11,340
W6AWW.....1,071
K5QY 756

SINGLE OPERATOR
QRP
ALL BAND

K1TO/4 2,758,313
N1IX.....1,118,597
N1TM 842,080
N7IR 805,763
NA4CW.....721,532
NDØC 583,376

28 MHz
K3OO.....260,022
KR2Q.....232,440
N4AU.....19,680

21 MHz
KØFLY 90,850
AA1CA.....62,222
KN1H.....23,214

14 MHz
N3JT/4.....13,924
W8NNC.....8,036
NUØT.....7,150

7 MHz
KØOD 45,308
N2JNZ 27,740
WA8REI.....11,440

3.5 MHz
KIØG/5.....7,250
K9JWV/7 2,756

1.8 MHz
W7DRA.....36
K2MIJ.....24

SINGLE OPERATOR ASSISTED
QRP
ALL BAND

NØUR 1,027,040
NF1R/6 624,723
K8ZT.....513,603
N4LA 261,360
NU4B.....176,755
NQ2W.....127,140

28 MHz
W4QO.....77,862
KU7Y 74,865
NA5NN (K2FF) 33,234

21 MHz
K5ND.....89,376
K3TW/4 79,492
NN7SS (K6UFO) 68,295

1.8 MHz
NW3R (NH7C) 240

MULTI-OPERATOR
SINGLE TRANSMITTER

W1WMU.....12,649,572
K8AZ 11,352,484
W1VE 10,189,638
K5TR 9,273,099
K2QMF 8,792,616
AA9A 8,541,295

MULTI-OPERATOR
TWO-TRANSMITTER

K1LZ.....24,945,250
KC1XX.....24,855,792
N1LN/4 15,187,644
K9CT 14,915,716
NØNI.....11,882,290
KB1H 11,296,902

MULTI-OPERATOR
MULTI-TRANSMITTER

K3LR 33,910,848
W3LPL 32,270,976
W2FU 26,873,277
WE3C 26,304,360
NR4M.....21,738,600
NQ4I.....20,450,116

ROOKIE
HIGH POWER

KK4EIR.....139,442
AB1OC.....17,372

ROOKIE
LOW POWER

N1EN 2,957,306
W4TTM.....396,633
WB4IT 211,968

CLASSIC
HIGH POWER

K3ZM/4 3,587,808
W2BC (W2RU) 3,466,466
N2MF.....3,365,280

CLASSIC
LOW POWER

K1BX 1,767,558
K1HT 1,519,388
W1GD.....1,224,689

EUROPE
SINGLE OPERATOR
HIGH POWER
ALL BAND

4O3A (4O4A).....9,184,560
UA5C 7,146,405
OH2BH (OH6KZP) ...6,868,246
OHØV (OH6LI).....6,777,680
OHØZ (OH6EI) 6,198,885
M6T (G4BUO).....5,803,868

28 MHz
GM3X (GM3POI) 864,747
II9P (IT9GSF) 622,398
LZ4TX.....537,264

21 MHz
TF3CW.....883,040
G9W (MØDXR).....867,340
GM5X (GM4YXI) 847,653

14 MHz
CS2C (OK1RF).....1,090,073
E73W.....1,035,408
LN3Z (LA6YEA) 910,741

7 MHz
YT3A (YU7AV).....964,119
S51F.....897,288
S57Z.....823,194

3.5 MHz
OL7M (OK1YM).....484,053
Z35T.....302,376
YT4A (YT1AA) 260,640

1.8 MHz
S51V 278,964
LY7M.....149,256
OK2W.....131,310

SINGLE OPERATOR
LOW POWER
ALL BAND

EA7OT 3,442,707
EA4KD 2,658,084
LY6A 2,634,530
RA1AL.....1,850,750
UA2FL.....1,589,160
LA3S (LA3BO) 1,564,765

28 MHz
OK1FDR.....393,432
HGØR (HAØNAR) 357,875
DL4AAE.....311,360

21 MHz
EW6AF.....224,502
UA3XAO 217,065
G4ERW.....201,788

14 MHz
DL9ZP 257,336
HA6OA.....256,376
ER1OO.....222,942
SP6ZC 194,600

7 MHz
TMØR (F6IRA).....443,608
UU6J (UU2CW) 313,576
9A9R 308,568

3.5 MHz
OZ4UN.....131,868
OM3ZWA.....112,612
DL6KWN.....85,744

1.8 MHz
UT6UD.....67,551
US7VF.....30,590
ER2RM.....25,664

SINGLE OPERATOR ASSISTED HIGH POWER ALL BAND
DJ5MW.....8,609,022
SN7Q (SP7GIQ).....8,605,840
UW3U (UT7UJ).....8,221,603
S53MM.....8,176,894
E73M.....7,523,992
IR2C (IK2PFL).....7,296,562

28 MHz
G3TXF.....912,540
OK7K (OK1GK).....759,425
OT1A (ON4CCP).....627,096

21 MHz
DL1IAO.....925,080
OL3Z (OK1HMP).....886,044
EA6FO (EA3ALZ).....870,506

14 MHz
YT9A.....995,100
9A5Y (9A5CM).....920,000
HA7GN.....844,610

7 MHz
OMØM (OM8AW)....1,149,531
OK1FPS.....897,806
S52AW.....862,200

3.5 MHz
OM2KI.....568,550
DR1D (PY2SEX).....553,664
DM7C.....475,553

1.8 MHz
F5UTN.....135,412
DJØMDR.....126,174
UR5AS.....107,272

SINGLE OPERATOR ASSISTED LOW POWER ALL BAND
S53F.....4,421,268
YT8A (YU1EA).....3,883,740
LY7Z.....3,650,742
LY3B.....3,563,937
DL4MCF.....3,479,490
UX4U.....3,378,575

28 MHz
IØUZF.....406,847
UX1AA.....318,872
OM5XX.....317,900

21 MHz
GW5R (GW3YDX)...1,000,128
E74A.....413,780
M6W (GØDEZ).....354,276

14 MHz
OL5W.....448,572
RM5D.....392,304
IK8TEO.....256,770

7 MHz
YT2AAA.....466,990
HG5D (HA8QZ).....426,122
S52W.....420,979

3.5 MHz
LZ2SC.....151,452
OK1AY.....117,600
ER3AU.....114,387

1.8 MHz
E74O.....77,868
MWØEDX.....70,231
IKØXBX.....35,856

SINGLE OPERATOR QRP ALL BAND
HG3M.....1,035,588
LY5G.....1,005,800
UA7G.....883,623
SP9NSV.....838,090
YL2CV.....776,917
LZØM (LZ2SX).....639,975

28 MHz
GM3YEH.....116,085
LZ2RS.....113,870
G4CWH.....65,604

21 MHz
SP4JFR.....96,139
F5VBT.....90,248
SP4GFG.....77,804

14 MHz
US5VX.....122,332
HA6VV.....59,976
EI4II.....58,410

7 MHz
G4DBW.....48,190
YO4BEW.....48,110
SP7BCA.....45,346

3.5 MHz
SP4GL.....39,825
UT3EK.....20,591
YO8RIX.....19,376

1.8 MHz
HA5NB.....17,576
RA2FB.....7,439
UT5EO.....5,445

SINGLE OPERATOR ASSISTED QRP ALL BAND
RA3AN.....1,251,720
RT4W.....1,243,512
DM2M (DK3WE).....925,903
OK7CM.....693,200
RZ3QS.....585,492
SMØTHU.....535,493

28 MHz
F4BKV.....119,988
SO6C (SP6CIK).....98,412
EC4TA.....88,842

21 MHz
DL1EFW.....179,077
HA3JB.....132,924
EA5ON.....79,506

14 MHz
YU1LM.....130,950
IK6FWJ.....66,918
EE3C (EA3KX).....48,124

7 MHz
YUØW.....127,002
DJ2RG.....71,064
UT4FJ.....68,500

3.5 MHz
UT3L (UR5LO).....64,703
UX5UU.....44,850
HG6C (HA6IAM).....39,975

1.8 MHz
HA8BE.....22,824
HA7I (HA7JTR).....22,021
UT3N (UT3NK).....13,668

MULTI-OPERATOR SINGLE TRANSMITTER
TM6M.....16,420,000
9A1P.....15,472,217
OM7M.....14,776,537
IR4M.....14,730,210
UZ2M.....14,548,992
E7DX.....14,147,450

MULTI-OPERATOR TWO-TRANSMITTER
LX7I.....19,956,790
S5ØG.....14,500,056
SK3W.....14,464,725
LY2W.....14,238,840
YU5R.....13,861,358
HG7T.....13,516,019

MULTI-OPERATOR MULTI-TRANSMITTER
ES9C.....30,790,130
9A1A.....28,737,234
DR1A.....25,407,020
ED6A.....22,839,840
LZ9W.....21,496,904
DFØHQ.....20,509,662

ROOKIE HIGH POWER
R4WDX.....1,472,450
SQ9KEJ.....117,055
YP6Z (YO6SZ).....61,830

ROOKIE LOW POWER
DM3ZM.....428,420
DL3RHN.....204,470
SQ3PMM.....135,610

CLASSIC HIGH POWER
TM6X (F5VHY).....2,755,156
EW2A.....2,701,350
RM2U (RU3UR).....2,522,690

CLASSIC LOW POWER
GI5I (GI4DOH).....1,203,728
R3VO.....1,014,854
ED4M (EA4ZK).....997,904

Operating crew at multi-multi station K3LR.

The European winner was 4O3A operated by Dragan 4O4A. Ranko explained the decision to make his station available: "Dragan is going on a peacekeeping mission in Afghanistan and will be there almost until the end of 2014. I believe he will miss the radio a lot, so I decided to give him the CW part this year, for his first-ever serious SOAB try." Alexandr UA5C finished in second place ahead of three Finns: Kim OH6KZP drove OH2BH ahead of Jukka OH6LI at OHØV and Tomi OH6EI at OHØZ. It shows how good conditions were to have northern Europe be so competitive.

Single Operator All Band – Low Power

The Low Power category was dominated by Bud AA3B operating from the rebuilt station of V26K. Bud had a very accurate log and ended up with an impressive 6,751 contacts, 141 zones, and 462 countries to set a new world record for the category! WRTC2014 competitor Ashraf KF5EYY operated 3V8BB to second place. Dave W5CW made his annual trip to VP5CW and finished a very respectable third.

It was a real dogfight for the rest of the spots in the Top Ten. Niko S53A went on an African safari using very simple antennas to take fourth place as 9J3A. Ed N1UR took fifth place and set a new all-time USA record. The second place USA score, and number 6 overall, was by Maury W3EF. Maury missed the first 2 hours and 45 minutes of the contest due to a series of airline flight cancellations and rebookings that would have left most people unable to operate, much less put in a full effort over the weekend! Marv N5AW cracked the world Top Ten and set a new record for the W5 call area.

There were some great races within Europe, as well. Jose EA7OT walked away from fellow countryman Pedro EA4KD for the top spot. Rimas LY6A finished a very close third. Northern Europe took the next three spots with RA1AL, UA2FL, and LA3S.

Single Operator Assisted

There were 1,079 entries in the All Band Assisted High Power category this year. The winner was a one-man expedition by Juan EA5BM operating as EF9O. Juan drove 500 km and then took an 8-hour ferry ride to Melilla before setting up all of his own antennas on the roof of a building in the two days before the contest. You can view pictures of his setup at <http://tinyurl.com/q22osjn>. Second place was another Juan, EA8RM, operating from the club station of EF8U. It was his first serious attempt at a single operator effort in CQ WW. Some equipment problems caused him to be off the air for most of the first 3 hours. That missing time may have cost him the win. Chas, K3WW, just missed breaking 10-million points as the top USA score. Manfred DJ5MW finished ahead of Krzysztof SN7Q by the narrowest of margins (3,200 points!) to claim the top European score. UW3U and S53MM had a close race for third.

The All Band Assisted Low Power category had 821 entries. The top score and new all-time world record was from P4ØW operated by John W2GD. Here is how John reports his efforts to set up for the contest: "2200 feet of feed lines and control cabling had been unrolled and connected, all Beverages repaired, and 700 feet of Yagi elements on the 4-el 40m and 3-el 80m wire beams aimed toward EU are deployed using 1500 feet of nylon string to support the element ends. K3 is set up, and TX and RX antenna switching systems hooked up and tested." Whew, makes you wonder how he has energy left to do the contest!

Second place was a battle from North Africa between Luis EA8AY at EF8X and Andy DL3YM at CN2YM. Luis dealt with wind that broke antennas and then a power outage that took him off the air the last few hours of the contest. Andy was presenting a paper at a symposium in Morocco and used the occasion to borrow the station of CN8VO to do the contest. The antenna farm consisted of a single double Zepp, but it was enough to get some pileups and have fun. The top USA score was by Jim KS1J.

Single Band

There were a number of very competitive finishes among the single band entries. One of the most exciting was on 10 meters where two stations broke the all-time record. Jorma OH2KI travelled with three other operators to do single band efforts from Ascension Island in the south Atlantic. Jorma used the call ZD8X on 10 meters and raised the record score by almost 10%. Second place went to Jorge CX6VM operating as CW5W. Laurent F6FVY enjoyed the new antennas from FY5KE, but it was only enough for third place.

It was a three-station race on 15 meters. Jim W7EJ did his usual masterful work from CN2R to finish first. Not far behind was Mike 5H3EE, one of the few active stations from zone 37. Olli OHØXX/HP1XX visited Southern Sudan to put Z81X into third place.

Continuing the theme of travelling Finns, the race on 20 meters was between Jim N6TJ operating from 9Y4W and Jyrki OH6CS visiting EA8AH. By finishing first Jim shows no sign of slowing down his 48-hour winning contest efforts in spite of being 74 years old!

2013 WW DX CW TOP SCORES IN MOST ACTIVE ZONES

Zone 3

K6XX....4,419,450
K6NA....3,486,366
*K2PO/7....2,133,314
VA7ST....1,739,496
KE2VB/7....1,565,277
K6NR....1,362,822

Zone 4

CJ3T (VE3AT)....9,073,944
VE3JM....7,874,447
K5GN....7,856,513
W9RE....6,834,420
VE3BZ....5,116,880
WXØB/5 (AD5Q)..5,074,980

Zone 5

NN1N....10,652,128
VY2TT (K6LA)....10,565,610
KØDQ/1....10,297,950
K5ZD/1....10,050,712
K3CR (LZ4AX)....9,925,004
K1ZZ....8,782,400

Zone 14

M6T (G4BUO)....5,803,868
GD6IA (GM3WOJ)....5,330,520
PA3AAV....3,799,338
*EA7OT....3,442,707
M3W (G4FAL)....2,866,996
OV3X....2,800,044

Zone 15

4O3A (4O4A)....9,184,560
OH2BH (OH6KZP)....6,868,246
OHØV (OH6LI)....6,777,680
OHØZ (OH6EI)....6,198,885
HA8JV....5,073,894
LY5R....4,988,594

Zone 16

UA5C....7,146,405
EU1A....4,812,060
RW4W....3,399,718
RG6G....3,109,860
EW2A....2,701,350
RM2U (RU3UR)...2,519,220

Zone 20

C4W (5B4WN)....6,615,489
*4Z4DX....4,026,840
*YO2LEA....808,704
*TA7I....766,335
LZØM (LZ2SX)....639,975
*YO2CJX....586,768

Zone 25

JH4UYB....5,007,624
JR4OZR....3,705,630
*JH8SLS....2,655,030
*JA1BJI....2,273,382
*JI1RXQ....1,990,040
JA7IC....1,541,609

*Low Power

CQ WW CW 2013 on Video

II1A: http://youtu.be/siZhqhbtpvA
LY2W: http://youtu.be/XAa4wZsFWBU
HSØZAR: http://youtu.be/AvtL8EksTqE
PA6NB: http://youtu.be/lO3rO5ME2LQ
TCØA: http://youtu.be/3VoWi05VCNs
WR9D tuning 10 meters: http://youtu.be/KICuw_uTsyU
WR9D: http://youtu.be/oLY4K3D3oYA
JA1YPA: http://youtu.be/qipwMNWVXyw
TF3EO: http://youtu.be/qT6nqekH7ww
PX1M: http://youtu.be/arCmBJU6NZ8
LU1DZ: http://youtu.be/9LoKZzDk-oA
UT3WM: http://youtu.be/U8aSwO9RAfQ
VE3LC: http://youtu.be/hSpe1fcqz5M
40 meters: http://youtu.be/wDHcTkOE0TQ
TO7A: http://youtu.be/2rDkZokun-8
D70LW:http://youtu.be/-ZZXDPbLbMg

2013 CQ WW DX CW BAND-BY-BAND BREAKDOWN—TOP ALL BAND SCORES

Number groups indicate: QSOs/Zones/Countries on each band

WORLD SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
P4ØF	66/10/25	464/20/73	1826/28/92	1242/30/98	1670/33/104	2180/29/93
TO7A	35/10/31	481/19/75	1554/33/114	1774/35/113	2107/34/114	1965/30/117
CR3E	274/14/49	682/18/68	1527/29/90	1101/35/100	1223/34/102	2155/35/107
HD2T	47/6/12	493/23/58	1269/32/84	1092/34/91	1853/33/100	2103/35/113
8P5A	323/16/53	626/20/77	1077/28/91	1511/30/97	1515/32/98	2242/28/99

USA TOP SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
NN1N	53/16/38	348/24/88	1510/35/110	770/37/108	869/33/103	1543/29/115
KØDQ/1	50/12/30	453/18/67	1675/29/104	1210/35/103	977/33/101	1175/25/93
K5ZD/1	48/12/29	496/21/79	1291/33/106	1142/33/112	957/34/117	1011/27/104
K3CR	66/14/40	323/22/85	1358/34/119	701/33/101	1140/34/108	1172/30/107
K1ZZ	42/11/31	344/18/83	1331/34/113	672/33/96	785/32/104	1148/30/119

WORLD SINGLE OPERATOR ASSISTED ALL BAND

EF9O	48/6/38	208/14/69	1664/37/129	1181/38/125	1114/39/128	1611/37/134
EF8U	32/8/31	251/19/79	1190/31/110	962/37/127	1460/38/130	1805/36/125
A65BP	77/9/29	579/24/89	1098/37/126	917/37/122	693/36/127	1330/35/137
*P4ØW	85/14/32	525/21/86	620/31/119	862/35/121	1246/35/124	1326/32/118
K3WW	76/17/51	325/22/91	1108/32/123	1049/35/116	878/35/123	1050/29/120

USA SINGLE OPERATOR ASSISTED ALL BAND

K3WW	76/17/51	325/22/91	1108/32/123	1049/35/116	878/35/123	1050/29/120
N3RS	61/17/50	283/22/102	743/36/134	832/38/138	761/37/145	663/33/145
NY3A	72/14/45	241/20/80	845/30/113	780/35/119	750/35/134	834/30/130
AB3CX/2	32/9/20	262/17/73	972/33/119	745/35/108	713/30/113	827/28/114
K9NW	48/16/33	222/26/94	525/36/125	453/37/126	755/37/141	707/33/135

WORLD MULTI-OPERATOR SINGLE TRANSMITTER

CN2AA	520/22/88	1827/34/125	1967/39/148	1710/39/149	2365/40/158	2691/39/161
P33W	316/19/78	1290/31/117	2539/39/148	2082/40/148	1888/40/157	1911/39/154
P3N	397/18/78	1400/34/119	2453/39/146	1940/40/147	1974/40/148	2029/38/149
TM6M	130/18/79	677/34/119	1894/38/147	1538/38/145	1180/40/151	1722/39/152
9A1P	270/23/91	990/36/128	1913/39/147	1373/39/147	1238/40/152	1341/38/151

USA MULTI-OPERATOR SINGLE TRANSMITTER

W1WMU	96/17/63	597/23/103	1520/36/134	986/39/140	947/37/141	862/33/140
K8AZ	52/15/49	207/28/108	1380/36/129	953/38/136	1008/37/146	940/33/137
W1VE	42/11/40	486/23/101	1107/37/130	923/38/129	774/35/135	1130/32/126
K5TR	63/19/49	247/27/98	1349/36/128	523/37/128	872/38/141	845/33/135
K2QMF	43/12/34	176/17/81	1004/33/125	1105/37/128	932/38/139	742/29/123

WORLD MULTI-OPERATOR TWO TRANSMITTER

CR3L	295/16/62	1195/30/109	2798/36/139	2338/39/148	3164/40/153	3104/38/145
P4ØL	352/14/53	1056/27/100	2595/36/126	2117/38/127	3587/38/145	2878/34/142
PJ4A	316/14/53	1404/26/105	1917/38/134	2120/38/139	3191/39/148	2037/34/140
4LØA	424/17/63	1512/31/109	2941/39/138	1645/39/132	2056/40/144	2029/36/136
TCØA	644/17/64	1761/26/100	2946/39/140	1836/38/136	1868/40/142	1439/35/126

USA MULTI-OPERATOR TWO TRANSMITTER

K1LZ	146/18/66	1204/29/116	2187/38/149	1715/40/140	2160/38/153	1817/33/145
KC1XX	72/18/60	1137/31/122	2301/39/152	1519/39/138	2298/39/156	1730/33/149
N1LN/4	69/16/42	582/26/102	1333/35/133	1380/39/134	1698/37/142	1188/33/139
K9CT	98/18/49	408/27/99	1327/36/135	1198/40/139	1654/39/148	1273/34/144
NØNI	80/18/43	474/27/95	1112/36/126	998/37/133	1522/37/135	1017/34/132

WORLD MULTI-OPERATOR MULTI-TRANSMITTER

D4C	1109/25/90	2544/38/128	3972/38/145	5239/40/159	4577/40/164	4618/38/170
HK1NA	712/21/63	1432/25/99	2971/37/134	3539/39/147	3027/40/154	3199/38/151
PJ2T	633/20/64	1371/29/107	3230/36/136	3466/39/140	3445/38/147	2694/34/139
K3LR	259/22/74	1259/33/120	2834/39/159	3000/40/163	2456/39/157	1934/36/160
W3LPL	393/23/83	1468/32/122	2582/37/151	2643/40/162	2586/38/155	1762/33/152

USA MULTI-OPERATOR MULTI-TRANSMITTER

K3LR	259/22/74	1259/33/120	2834/39/159	3000/40/163	2456/39/157	1934/36/160
W3LPL	393/23/83	1468/32/122	2582/37/151	2643/40/162	2586/38/155	1762/33/152
W2FU	389/18/66	1263/32/117	2105/37/144	2440/38/149	2378/39/153	1715/33/143
WE3C	290/21/78	857/31/115	2245/38/147	2303/39/151	2072/39/153	1700/33/151
NR4M	154/18/52	1045/31/117	2092/36/134	1906/38/140	1918/34/136	1645/32/132

EUROPE TOP SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
4O3A	336/17/61	687/21/76	1473/30/96	1151/30/103	1497/34/110	1258/32/100
UA5C	302/12/52	797/24/91	1412/34/111	1000/32/98	1019/36/109	702/34/102
OH2BH	161/11/45	773/25/84	1126/32/102	1063/35/103	826/35/105	875/36/108
OHØV	423/12/56	786/19/64	1598/32/108	1073/32/88	1166/33/100	844/31/90
OHØZ	259/14/52	732/16/72	985/34/92	931/35/98	958/37/109	908/32/102

EUROPE SINGLE OPERATOR ASSISTED ALL BAND

DJ5MW	143/16/64	600/28/109	1068/37/136	1082/39/144	740/40/139	605/36/138
SN7Q	110/15/51	684/30/95	1507/33/101	1094/37/106	826/38/121	905/35/114
UW3U	270/13/59	725/24/98	1133/37/132	811/37/131	891/40/138	855/37/141
S53MM	112/13/58	677/25/92	1569/39/133	764/36/120	656/39/135	705/36/113
E73M	59/12/55	289/19/80	1358/37/122	1117/35/122	820/37/130	735/37/126

EUROPE MULTI-OPERATOR SINGLE TRANSMITTER

TM6M	130/18/79	677/34/119	1894/38/147	1538/38/145	1180/40/151	1722/39/152
9A1P	270/23/91	990/36/128	1913/39/147	1373/39/147	1238/40/152	1341/38/151
OM7M	149/20/75	397/32/116	2240/38/145	1142/39/149	1468/40/151	1153/39/153
IR4M	142/20/80	577/31/114	1821/39/145	1552/39/145	1512/39/152	1017/37/149
UZ2M	310/24/85	937/36/126	2081/38/146	1360/39/147	1815/40/154	1066/38/151

EUROPE MULTI-OPERATOR TWO TRANSMITTER

LX7I	633/18/73	1923/34/114	2386/39/137	1871/37/138	2236/39/145	1596/37/148
S5G	380/17/68	1317/26/105	2011/39/141	1398/39/139	1597/40/145	971/38/135
SK3W	291/17/67	1307/33/119	1572/39/146	1323/38/148	1751/40/145	1249/37/150
LY2W	592/19/75	1378/31/111	2017/39/140	1405/40/144	1322/39/146	817/38/144
YU5R	390/17/67	1462/32/116	1959/39/144	996/39/146	1485/40/147	1122/39/147

EUROPE MULTI-OPERATOR MULTI-TRANSMITTER

ES9C	1257/25/94	2434/35/132	3398/39/155	3270/40/158	2735/40/162	2152/40/165
9A1A	1442/21/88	2170/33/125	3459/39/148	2931/39/150	2272/40/153	1927/38/152
DR1A	1078/21/87	2190/32/124	2679/39/148	2755/38/150	2021/40/154	1860/40/155
ED6A	1148/19/79	2113/33/113	3575/38/137	3048/38/142	2457/38/136	1938/34/126
LZ9W	945/19/72	1874/34/121	2935/39/148	2852/39/148	1687/38/143	1601/39/148

With the higher bands being so good, the low bands suffered a bit both due to propagation and less activity. The winning score on 40 meters was by Emilio IZ1GAR enjoying the three-point advantage of African Italy at IG9W. Close behind was Vojislav YU7AV operating YT3A. The champion on 80 meters was the mountaintop station of NP4A operated by Alfredo WP3C. Oldrich OK1YM was testing a new antenna on his way to second place from OL7M. Robye W1MK made his usual fantastic score to finish third overall. 160 meters was a three continent race among Silvo S51V, Mauri OH2BYS at EF8S, and Omari 4L5O.

In the action at PJ2T. DF9LJ is running on 20 and behind him RWØCN on 40.

Three stations broke the world record for low power on 15 meters: ZD8W by Oliver W6NV, Didier FY5FY (at FY5KE), and Mikhail D3AA. All were also welcome multipliers in many logs!

There were a number of new records set in the Assisted single band categories. The high power 10 meters record was broken by Alan PY2LSM at PR5B. Alan now holds both the Assisted 10 and 15 meter world records. Hamad 9K2RR just missed setting a new high power 20 meter record from 9K2HN. On 15 meters low power, Ron GW3YDX used the contest call GW5R to nearly double the existing record.

QRP

The record 506 entries in the various QRP categories offered more proof of just how good conditions were. The All Band category was dominated by Dan K1TO/4 breaking the USA record set by Rick K3OO back in 2000. Dan explained his strategy this way: "I typically tuned right past big pileups. The goal was to find stations with 'no' other callers. Even one other caller and I was generally out of luck." That constant searching paid off with a big win. Second place went to Andy RW9RN. The aforementioned K3OO did set a new USA record while winning 10 meters. Neil V73NS and Kenji JQ1NGT, both far from the contest population centers, vied for the top spot on 15 meters. It was a very close race for the top All Band Assisted class with Nick RA3AN just ahead of Mike RT4W.

Overlay Categories

This was the first year for Overlay categories in CQ WW. The overlay categories are a parallel competition that runs in addition to the traditional scores. There were 56 entries in the Rookie category which is for operators that have been licensed less than three years. Michael N1EN had the highest Rookie score, just a few weeks under the three-year eligibility limit. The top high power Rookie score was by Andrei R4WDX. Take a look at the Rookie scores to follow these up-and-coming contesters.

The Classic Overlay category is for single operator stations that use only one radio and no DX spotting assistance. The Classic

2013 CQ WW CW & SSB COMBINED CLUB SCORES

Club	Entries	Points
United States		
YANKEE CLIPPER CONTEST CLUB	280	549,113,402
FRANKFORD RADIO CLUB	187	423,886,201
POTOMAC VALLEY RADIO CLUB	231	380,639,346
MINNESOTA WIRELESS ASSN	130	140,159,320
NORTHERN CALIFORNIA CONTEST CLUB	103	133,112,174
NORTH COAST CONTESTERS	35	120,871,912
FLORIDA CONTEST GROUP	82	106,291,710
SOCIETY OF MIDWEST CONTESTERS	122	104,537,872
ARIZONA OUTLAWS CONTEST CLUB	81	83,361,030
SOUTHERN CALIFORNIA CONTEST CLUB	62	75,913,813
MAD RIVER RADIO CLUB	36	55,011,472
SOUTH EAST CONTEST CLUB	34	54,516,630
CENTRAL TEXAS DX AND CONTEST CLUB	23	45,152,772
WESTERN WASHINGTON DX CLUB	54	42,705,074
TENNESSEE CONTEST GROUP	44	39,944,548
CAROLINA DX ASSOCIATION	55	39,074,381
ALABAMA CONTEST GROUP	43	38,566,199
HUDSON VALLEY CONTESTERS AND DXERS	34	37,541,799
DFW CONTEST GROUP	51	34,437,410
IOWA DX AND CONTEST CLUB	5	29,445,068
WILLAMETTE VALLEY DX CLUB	38	28,826,850
GEORGIA CONTEST GROUP	16	22,274,173
GRAND MESA CONTESTERS OF COLORADO	26	20,590,567
CTRI CONTEST GROUP	13	20,236,099
LOUISIANA CONTEST CLUB	15	19,785,584
BOZINGA DX AND CONTEST CLUB	4	16,783,952
MOTHER LODE DX/CONTEST CLUB	29	15,148,605
NORTH TEXAS CONTEST CLUB	13	14,796,754
NIAGARA FRONTIER RADIOSPORT	10	7,337,598
UTAH DX ASSOCIATION	23	9,420,666
ROCHESTER (NY) DX ASSN	23	9,338,199
EAST LANSING DX CLUB	4	7,478,045
MADISON DX CLUB	13	7,162,427
SOUTHWEST OHIO DX ASSOCIATION	11	7,111,166
MISSISSIPPI VALLEY DX/CONTEST CLUB	19	5,651,753
KANSAS CITY CONTEST CLUB	15	5,120,873
DELARA CONTEST TEAM	7	4,887,076
SPOKANE DX ASSOCIATION	24	4,808,778
SALT CITY DX ASSOCIATION	4	4,186,974
HILLTOP TRANSMITTING ASSN	5	3,986,410
KANSAS CITY DX CLUB	8	3,899,938
BRISTOL (TN/VA) ARC	14	3,753,514
NORTHERN ROCKIES DX ASSOCIATION	6	3,722,790
SOUTHEASTERN DX CLUB	9	3,616,825
ALLEGHENY VALLEY RADIO ASSOCIATION	5	3,117,229
KENTUCKY CONTEST GROUP	8	2,873,953
TEXAS DX SOCIETY	9	2,722,204
599 DX ASSOCIATION	8	2,370,502
BERGEN ARA	12	2,167,016
PADUCAH AMATEUR RADIO ASSOCIATION	4	1,834,088
METRO DX CLUB	15	1,808,130
NORTH CAROLINA DX AND CONTEST CLUB	7	1,469,851
CENTRAL ARIZONA DX ASSOCIATION	8	1,387,640
SKYVIEW RADIO SOCIETY	13	1,376,983
SAN DIEGO DX CLUB	5	1,237,334
WEST PARK RADIOPS	11	1,097,698
PORTAGE COUNTY AMATEUR RADIO SERVICE	7	1,010,511
RADIO CLUB OF REDMOND	4	916,294
PUEBLO WEST AMATEUR RADIO CLUB	4	898,127
FORT WAYNE RADIO CLUB	6	780,356
REDWOOD EMPIRE DX ASSOCIATION	4	772,767
MILFORD OHIO AMATEUR RADIO CLUB	9	678,639
SOUTHERN CALIFORNIA DX CLUB	8	553,254
LOW COUNTRY CONTEST CLUB	4	503,583
LINCOLN AMATEUR RADIO CLUB	4	325,028
GREAT SOUTH BAY AMATEUR RADIO CLUB	5	260,094
SOUTH JERSEY RADIO ASSOCIATION	4	224,838
PASADENA RADIO CLUB	4	177,190
BRAZOS VALLEY AMATEUR RADIO CLUB	4	166,457
DX		
BAVARIAN CONTEST CLUB	335	446,438,376
RHEIN RUHR DX ASSOCIATION	203	235,374,952
CONTEST CLUB ONTARIO	102	206,288,182
CONTEST CLUB FINLAND	79	165,095,630
CROATIAN CONTEST CLUB	90	136,821,482
ARAUCARIA DX GROUP	63	120,421,709
SLOVENIA CONTEST CLUB	49	120,264,396
RUSSIAN CONTEST CLUB*	51	108,439,710
SP DX CLUB	98	98,196,332
URAL CONTEST GROUP	39	97,682,859
LU CONTEST GROUP	72	91,500,136
UKRAINIAN CONTEST CLUB	116	85,846,998
BLACK SEA CONTEST CLUB	113	81,004,645
KAUNAS UNIV, OF TECHNOLOGY RC	58	73,320,929
HA-DX-CLUB	20	72,491,132
ORCA DX AND CONTEST CLUB	47	67,212,941
ARAB CONTEST CLUB	6	53,140,844
LATVIAN CONTEST CLUB	38	51,224,579
CONTEST CLUB SERBIA	88	49,847,446
CLIPPERTON DX CLUB	19	42,966,660
LZ CONTEST TEAM	5	42,578,951
WORLD WIDE YOUNG CONTESTERS*	21	40,453,574
BELOKRANJEC CONTEST CLUB	19	34,431,809
VK CONTEST CLUB	32	32,459,610
LES NOUVELLES DX	9	32,373,600
BELARUS CONTEST CLUB	45	31,796,072
WEST SERBIA CONTEST CLUB	15	30,123,004
CHILTERN DX CLUB	46	28,190,457
VYTAUTAS MAGNUS UNIVERSITY RADIO CLUB	15	25,437,100
SOUTH URAL CONTEST CLUB	24	25,128,491
BOSNIA AND HERZEGOVINA CONTEST CLUB	23	25,078,205
NICOSIA CONTEST GROUP	5	24,564,162
MARITIME CONTEST CLUB	25	23,885,491
RADIO CLUB HENARES	11	21,758,750
THREE A'S CONTEST GROUP	9	21,059,946
CONTEST GROUP DU QUEBEC	15	20,952,768
CZECH CONTEST CLUB	7	20,268,607
ARCK*	24	17,764,786
599 CONTEST CLUB	16	16,670,888
LA CONTEST CLUB	19	16,228,981
SAUDI CONTEST GROUP	5	15,354,034
SKY CONTEST CLUB	7	15,088,030
RUSSIAN CW CLUB	83	14,225,286
CS PETROLUL PLOIESTI	8	14,045,578
YO DX CLUB	28	12,095,587
WEY VALLEY AMATEUR RADIO GROUP	4	12,070,556
TORRENT CONTEST CLUB	6	11,959,163
YB LAND DX CLUB	42	10,002,694
CE CONTEST GROUP	14	9,816,573
YOKOHAMA DX CLUB	5	9,700,027
SIAM DX GROUP	6	9,143,927
MEDITERRANEO DX CLUB	44	8,986,493
UNIVERSITY OF TOKYO CONTEST CLUB	8	8,958,983
DANISH DX GROUP	21	8,799,049
HAROS RADIO CLUB	4	8,787,364
ALRS ST PETERSBURG	20	8,731,397
CATALONIA CONTEST CLUB	4	8,331,853
GRIMSBY AMATEUR RADIO SOCIETY	9	8,104,479
RIO DX GROUP	47	7,770,816
RIIHIMAEN KOLMOSET	9	7,667,317
RADIO AMATEUR ASSN OF WESTERN GREECE	5	7,644,483
LIPETSK RADIO CLUB	4	7,419,049
GUARA DX GROUP	16	7,295,930
DONBASS CONTEST CLUB	34	6,935,160
IVANOVO DX CLUB	6	6,732,424
IRKUTSK RADIO CLUB	9	6,641,560
RADIO CLUB PARMA	5	6,489,709
CSTA BUCURESTI	11	6,336,649
Z37M CONTEST TEAM	7	6,265,599
VERENIGING VAN RADIO ZEND AMATEURS	5	5,925,717
VU CONTEST GROUP	19	5,817,837
NOVOKUZNETSK RADIO CLUB	16	5,624,329
SHAKHAN CONTEST CLUB	9	5,612,913
TALL TREES CONTEST GROUP	5	5,533,183
RU-QRP CLUB	28	5,473,466
UNIO DE RADIOAFECCIONATS DEL VALLES ORIENTAL	4	5,429,480
GIPANIS CONTEST GROUP	12	5,325,023
LITHUANIAN CONTEST GROUP	9	5,273,677
ARKTIKA	11	4,867,916
SASKATCHEWAN CONTEST CLUB	11	4,429,879
TOP OF EUROPE CONTESTERS	10	4,340,477
THRACIAN ROSE CLUB	21	4,237,061
ANTWERP CONTEST CLUB	4	4,230,466
FALKOPINGS RADIOCLUB	8	3,642,445
SOUTH GERMAN DX GROUP	11	3,355,597
RADIO CLUB VENEZOLANO CARACAS	10	3,079,328
R4F-DX-G	7	3,049,347
SOUTHERN OSAKA CONTEST CLUB	9	3,014,075
SK4DM VASTERBERGSLAGENS SANDAR AMATORER	5	2,986,826
SAMARA RADIO CLUB	8	2,902,026
OMSK RADIO CLUB	9	2,812,410
ALBERTA CLIPPERS	5	2,785,700
KOREA CONTEST CLUB	5	2,511,187
PERM RADIO CLUB	5	2,466,433
VRHNIKA CONTESTERS	8	2,290,808
PERUGIA CONTEST CLUB	11	2,244,584
LA-DX-GROUP	5	2,240,927
SARATOVSKAYA OBLAST RADIO CLUB	12	2,098,975
PODOLSK	7	2,087,573
UA2 CONTEST CLUB	9	2,055,929
BRISTOL CONTEST GROUP	4	1,965,070
CENTO DX TEAM	7	1,960,850
SK0QO SODERTORNS RADIOAMATORER	6	1,735,102
LOMA DEL TORO CONTEST CLUB	7	1,685,582
NEWBURY AND DISTRICT ARS	6	1,679,602
SERPUKHOV RADIO CLUB	7	1,672,844
DOMODEDOVO	5	1,652,403
RUSSIAN EXTREME	5	1,612,351
CDR GROUP	4	1,590,427
CW OPERATORS CLUB*	4	1,589,641
GMDX GROUP	11	1,584,370
CHILEAN PACIFIC DX GROUP	9	1,563,838
KEMEROVO RADIO CLUB	5	1,534,051
STAVROPOL REGION CONTEST CLUB	4	1,501,770
ADMIRA ARAD	7	1,495,910
CENTRAL SIBERIA DX CLUB	6	1,421,097
SP CONTEST CLUB	7	1,381,524
CHELTENHAM AMATEUR RADIO ASSOCIATION	7	1,374,771
AMSTERDAM DX CLUB	4	1,338,857
THE BARBEQUE ENTHUSIASTS ARC	7	1,198,189
CWJF GROUP	5	1,168,220
BRACKNELL AMATEUR RADIO CLUB	5	1,159,628
MICHURINSK CONTEST GROUP	5	1,147,219
BASHKORTOSTAN DX CLUB	9	1,111,437
VLADIMIR CONTEST GROUP	9	1,071,670
EDIT 14	6	1,054,414
TANGO FOX RADIO FOXES	4	1,043,831
NOVOSIBIRSK CONTEST CLUB	5	1,011,421
EUROPEAN PSK CLUB*	10	993,996
OBNINSK QRU CLUB	10	908,631
CSM CLUJ-NAPOCA	9	853,557
ORENBURG CONTEST CLUB	5	831,974
MOSCOW RADIO CLUB	10	808,288
KALININGRAD RADIO CLUB	4	805,602
FERRARA DX TEAM	4	633,564
BARIVM DX TEAM	13	549,550
RTTY CONTESTERS OF JAPAN	4	532,296
LKK LVIV SHORTWAVE CLUB	7	524,406
PRIMORSKIY RADIOCLUB	5	523,517
KRIVBASS	4	507,686
SK2AT FORENINGEN UMEA RADIOAMATORER	4	504,630
GRUPO DXXE	5	495,256
SK6AW HISINGENS RADIOKLUBB	9	487,086
TDR	6	473,789
RADIOCLUBUL QSO BANAT TIMISOARA	6	459,401
CLUB DE RADIO EXPERIMENTADORES DE OCCIDENTE	6	433,192
APIAI DX TEAM	4	412,615
VORONEZH RADIO CLUB	5	392,360
VOLYN CONTEST GROUP	9	371,234
SK6QA STENUNGSUND ARC	4	319,924
KKKK CONTEST CLUB KRASNODARSKOGO KRAYA	4	228,193
ARGE BRAUNAU	4	219,303
UKRAINIAN CW CLUB	4	218,234
RADIOAMATOR	5	197,523
CSM TIMISOARA	4	148,913
HOREC RADIO CLUB	4	128,032
UR-QRP-CLUB	7	124,830
ARI BARI	4	101,758
UNIAO SANTAMARIENSE DE RADIOAMADORES	4	80,451
DUBNA DX CLUB	4	37,945

** Club entry does not meet all rules.*

Overlay score is calculated using only the first 24 hours of operating time. The high power competition was a battle between two brothers. Jeff K1ZM operated VY2ZM to world high. Second place was his brother Peter K3ZM/4. Ricardo CT3KN was a very close third. The low power competition was won easily by Andrew RW3AH operating from Egypt as SU9AF. Second place was a chase between two New Englanders, Art K1BX and Dave K1HT.

Multi-Operator

The Multi-Single category had 185 entries this year. The team at CN2AA not only repeated their victory from the SSB contest, they raised the world record for the category by more than 20%! The previous record holder, P33W, also broke the record. Close behind was another Russian team at P3N. These two efforts helped explain how there were over 32,000 contacts reported with the small island of Cyprus. TM6M and 9A1P raced for the top European score. The chase for top USA score was between a W5 contingent visiting W1WMU in far eastern Maine vs the experienced multi-op team at K8AZ in northeast Ohio.

The Multi-Two category had a number of interesting continental competitions. The winning score was by a team of Rhein Ruhr DX Association members who travelled to CR3L. The next two places were between P4ØL in Aruba and PJ4A in Bonaire. P4ØL got the win and the new South America record. The fourth and fifth place finishers both exceeded the existing score record for Asia, with 4LØA taking the new record over TCØA and close finisher UP2L. The seventh and eighth place scores were between rivals K1LZ and KC1XX who both broke the existing USA record. After 9000 contacts, they finished less than 100K apart in score!

The D4C team was back for another attempt at the 1999 CN8WW world record in the Multi-Multi category. Team D4C made over 22,000 contacts with 1075 total multipliers to win easily, but it was not enough to break the record. They deserve a lot of credit for station building and operating to achieve such fantastic scores on both modes. Second place went to HK1NA just ahead of nearby competitor PJ2T. Fourth place overall went to K3LR over rival W3LPL. This is the ninth consecutive USA win for K3LR. The team at ES9C took advantage of the conditions to repeat their SSB achievement of top Europe score. They also set a new European record. 9A1A and DR1A could only take solace that such good conditions for Northern Europe don't happen very often.

A number of the multi-operator teams commented on using the live scoreboard at cqcontest.ru to enhance the game by tracking their competition. It's a new twist for competitors to be able to "see" their competition in real-time just like it was a race on a track.

Final Thoughts

Not sending callsigns frequently continues to be a subject of debate for many competitors. The increasing use of the DX Cluster keeps the pileups rolling so there is a misperception that the callsign is known. The station that is running wants to go as fast as possible and manage the pileup by not encouraging new callers. The stations listening need some expectation of how long they should have to wait to hear a callsign—even if only to confirm they are working the station they think they are. Do we need a rule change to balance the needs of both runners and listeners?

As you can see from the results, the level of competition is so high and so close that the final order of finish can only be determined by the log checking. The CQ WW Contest Committee is very serious about this and invests many hours to make sure everyone gets the points they are entitled to. The rules require single band entrants to submit *all* of their contacts made in the contest even on other bands. If they don't do this, stations they work will receive not-in-log penalties for those contacts not submitted. It is important to copy the zones for USA and Russian stations. Many entries lost a lot of points for not copying zones correctly.

Thanks to the members of the CQ WW Contest Committee who helped to process the logs, and to the volunteers who typed in the

52 paper logs received. We couldn't do the results without the help of Ken K1EA and all of his time and effort to constantly improve the log checking software. John K1AR handles the plaque program and Barry W5GN makes sure the 2064 certificates will get into the mail. Also thanks to the World Wide Radio Operators Foundation (wwrof.org) for their support of the IT infrastructure required to host the website, manage the log robot, and perform the log checking.

Another great CQ WW competition is now in the books. The anticipation and excitement of those early wireless pioneers is still alive at 0000Z each year when the CQ WW hits the bands. We look forward to seeing everyone again next year for the CQ WW DX CW Contest on November 29–30, 2014. Full rules, records, line scores, and other information is available on the web at <www.cqww.com>. The expanded results of the 2013 contest are also available on the CQ website at <www.cq-amateur-radio.com).

See you in the next contest!

73, Randy, K5ZD

CQ WW Station Scores Online

This year's CQ WW results complete *CQ* magazine's year-long transition to publishing individual station scores ("line scores") on CQ's website only. To access the line scores go to the CQ home page at <www.cq-amateur-radio.com> and click on the link under the current issue highlights.—*W2VU*

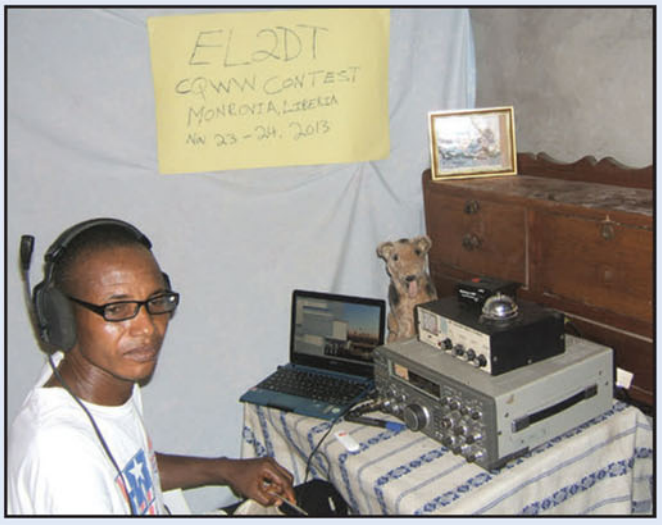
Notes

1. The Fourth Time's the Charm, <http://w2pa.net/HRH/the-fourth-times-the-charm/>
2. "President Maxim Testifies at Washington," *QST*, April 1930, p. 29.

A Contest Story—EL2DT

By Bud Semon, N7CW, and Dickson Tarnue, EL2DT

The home and antenna system at EL2DT.



Operating position of Dickson, EL2DT.

When the Voodoo Contest Group left Liberia after the CQ WW DX CW Contest in 2012, we had to get rid of almost 20 years of accumulated equipment that we had been transporting all around West Africa. Much of it went to the Liberian Radio Amateur Association, but we left a complete station—including radio, computer, tower, antennas, coax, etc.—with Dickson, EL2DT. We were also able to provide some financial support that allowed him to finish building a house and move out of the one room he shared with his wife, Kebeh, and their two children.

With much hard work and perseverance, he was able erect the tower and get a Yagi installed. Since all the electric power infrastructure in Liberia was destroyed in the war, he managed to find a small generator and get on the air, although fuel is very expensive; it's sold by the quart in glass jars.

He spent as much time as possible on the air and practicing with N1MM Logger. As the 2013 CQ WW DX CW Contest drew near, the Voodudes were able to provide a bit more financial support—enough to buy gasoline so the generator could be run for the contest.

Although Dickson was unable to operate the entire contest, he managed a respectable 20.5 hours on the air. The result was 1400 QSOs in 69 zones and 216 countries.

Here is a short write-up in Dickson's own words:

"My participation in this year's CQ WW Contest was a very exciting moment for me ever because this is the very first of its kind that a local Liberian has joined and operated a single station with a single operator in such a worldwide contest.

"When I decided to join this year's contest it appeared almost impossible to me, most especially where my station is located in a very remote part of Monrovia where there is no city power available. I had to operate from a generator and the station on low power, with nowhere to keep the generator secure for night operation, etc.

"It also turned out that the Voodoo Contest Group is expert in helping other hams to be encouraged and confident to take part in a contest like this. When I discussed my plan to some friend Voodoos, they told me that it was a good idea and they would be happy to also make a contact with Liberia in the contest.

"On the 20th of November, I started setting up and testing antennas on various bands. Before early morning of 20th November, I was ready for operation on 40m, 20m, 15m and 10m with generator power. Even though copying stations from the huge pileups was not quite easy for me, I was also experiencing heavy noise from the generator outside, not too far from my operating shack.

"Though I received no visitors during the contest, it was all climaxed by my wife Kebeh, who came in the shack almost after every one hour to ask, 'What have your friends said?' I continue to inform her that I was in a contest. After several hours, she was not satisfied with my answer and could no longer hold back. She insisted that she wanted to listen to the radio. When I gave her the ear piece, she said, 'I am hearing a lot of noise.' I told her that they were calling my call sign. She asked that I should also give her a call sign so my friends can call her. I promised to have a call sign for her before the next year's CQWW Contest. So, my biggest challenge now is to make sure my wife becomes a ham and takes part in the CQWW Contest for next year. I need all of your support.

"I want to take this time to extend my thanks and appreciation to all my friends who gave me the encouragement and support for me to participate in this contest."—*EL2DT*

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If you've operated the CQ World-Wide DX Contest, there's a good chance you've worked V26B in Antigua. What you might not know is that last year's operation came after a massive effort to rebuild following a fire that destroyed the station.

V26B: 21 Consecutive Years of CQ WW (and One Tragic Fire)

BY BRIAN McGINNESS,* N3OC

It was a little more than a year ago, and we were feeling pretty good about our 2012 CQ WW DX SSB Contest score from V26B. You see, 2012 was our 20th consecutive CQ WW SSB entry, and we had put on a reunion of most of the original Team Antigua members for the occasion. We are really quite proud of possibly being the longest consecutively running multi-op contest expedition station for CQ WW SSB.

Conditions were great, and for the most part, the station performed pretty well. We were quite pleased with our score, as a small, three-station multi-multi entry. We had a great time. However, then things turned around for us in an instant.

Shortly after submitting our log, we got a frantic call that something awful had happened. Our station on Antigua had caught fire in early November and was a total loss! The station owner, and our partner in this strange thing we do called contesting, had been pulled from the fire and luckily only suffered some smoke inhalation. He was in the hospital but was expected to recover fully.

Needless to say, we were floored by this news. First thing that came to my mind, oddly enough, was "Ice Station Zebra" and fire under the ice. Certainly the towers and antennas were okay, but the station and its contents were a total loss (photos A and B), and with only a couple of weeks to CQ WW CW, would we be off the air? Or worse yet, would we be off the air for good?

The first order of business was to make sure Roy, V21N, was OK, and that he had everything he needed for his recovery and comfort (photo C). Roy had become a US resident, and lives in South Florida, but has kept the property in Antigua going for us. The property has a main house, a smaller house that we use as our station, and a small building divided into two small apartments.

After determining that Roy was okay and could move into one of the apartments after he got out of the hospital, we had to decide what direction we were to take with the station. Since we had been doing this for a long, long time, and none of us is very young anymore, the first inclination was to just give up. It had been a great ride, and how could we recover from something like this?

Two Decades of Contesting Fun

V26B started in 1993—by N3BNA (V26A), WT3Q (V26B), KA2AEV (V26R), and AB2E (V26E)—as a small

Photo A. V26B shack after the fire. Exterior damage was extensive; interior near total. (Photos courtesy of the author)

*e-mail: <n3oc@wirelessinc.com>

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Photo B. The mess that Bud, AA3B, faced on his arrival a couple of weeks after the fire. He rerouted antenna and rotor cables to a nearby apartment that became the station for the 2012 CQ WW DX CW Contest.

Photo C. V26B station owner/host Roy, V21N, was injured in the fire but made a full recovery.

multi-op in Long Bay with a tribander and wires. Shortly afterwards, it grew to the larger station in Gunthorpes, with seven towers and stacks on every band. After some moderate damage from a hurricane in 1998 (the storm took the roof off the shack and wiped out the 20-meter and 40-meter antennas), it was promptly rebuilt to its present state. Now we had this to deal with!

After some soul-searching and discussions among Roy and the team members, we decided to at least move the station to one of the apartments and try to keep going while we decided what to do long-term. We had about two weeks to come up with a plan and the materials to extend all the cables—some of them burnt right off the tower—over to the apartment, not to mention new radios, amplifiers, power supplies, and the other accessories that makes up the station. This is the story of the amazing effort by many team members, with support from the contesting community all over the world, to keep the station on the air, and in less than a year completely rebuild it better than before.

AA3B Takes the Lead

Bud, AA3B, was the op who had the station reserved for CQ WW CW. After we determined that it might be doable to get on the air for this, we consulted with Bud and he was fully committed to making it happen. The burden fell on him to bring down the necessary materials and single-handedly identify and extend all the RF cables, rotor cables, and stack-match cables to keep us on the air (and not miss a single contest due to the fire, by the way).

Bud arrived and spent the majority of a week identifying all the cables, putting on connectors, and running extension cables over to the apartment. After a heroic effort on his part, he was as ready as he could be, and by the way, finished second in his category. Normally he is first, but the hardship operating conditions did take their toll.

Rebuilding Plans Take Shape

After CQ WW CW, we began to plan whether and how we could rebuild the main shack. The place stood in ruins and was quite hazardous even to be around with broken glass and crumbling walls everywhere. How we could get this done, and where we could get the money were the immediate questions we had to answer before we could consider going further.

The slab and some of the walls in the rear of the building could be saved. Everything else was totally destroyed by the fire. The first step was to clear the debris and assess what we would need to rebuild and how much it would cost. We determined that we would need cement, cinder blocks, windows, doors, tile, roofing materials, and all new electrical wiring and devices inside, not to mention radios, amplifiers, power supplies, and stack-match boxes.

Once the decision was made to try to make it happen, we began an effort to raise the money to get started. Several team members made sizable contributions, and we reached out to the contesting community in general for whatever support they could give. The result was positive and we received a number of donations from all over the world, both large and small. We are extremely grateful for those donations, and a plaque stands on the wall of the new station with the names and callsigns of our donors for everyone to see your

Photo D. The rebuilt shack on our arrival to start setting up for the 2013 CQ WW DX SSB Contest.

generosity. You can see a copy and picture of the plaque on our website <http://n3oc.dyndns.org/v26b>.

With most, but not all, of the funding secured, I went to south Florida this past summer to visit Roy and determine the specific materials we would need, and decide if we would buy them in Florida and ship them down, or buy them in Antigua. We spent several days putting the design to paper and running around to Home Depot, lumber yards, and window shops working all this out.

Once that was done, the supplies we bought in Florida were shipped to Antigua and Roy was off to V2-land to supervise the construction. I can't say enough about what Roy has done for us. He is no spring chicken either, and he went down there and within about six weeks had the shack just about completely done by using local labor and overseeing their work. It was now better than ever, as it was purpose-built as a contest station, with three brand-new operating positions and a new floor plan to accommodate things better.

Rebuilding the Station

In September, after most of the structural work was done, Bud and I went down to put the finishing touches on things and try to move the station back to the main shack from the apartment. On our arrival (photo D), we found things mostly done, but still facing a number of challenges, the largest being that the electric work was not completed. The wiring was mostly roughed in (with many errors) and no mains, panel box, or generator transfer switch had been installed.

Photo E. Marco, HB9OCR, operating the run station during the 2013 contest.

Therefore, we jumped in, with Bud reconnecting the RF and control cables while I started the electrical work. The electrical work was not trivial, as I had to connect the mains to the meter, install the panel box, and install the generator transfer switch. Several trips to the local building supply store brought the necessary wire, and within a few days we had power again in the shack.

We also had to install a new Array Solutions eight-pack antenna switch, and new stack-match boxes to replace those that were lost in the fire. We thank them as always for their support of the V26B station. The eight-pack switch worked great and suited our needs perfectly.

Within a few days we had things back to about where they were before the fire. Then we spent time on the normal antenna failures that we experience due to the tropical climate, and Bud and I made several tower climbs to replace things that had failed and repair bad antennas.

We were able to get all antenna cables moved into the new shack, and all bands up and running except 40 meters, which continued to plague us with problems. In spite of this, Bud and I considered our work trip in September to be a complete success.

CQ WW SSB 2013

This was the situation when the team arrived for the 2013 CQ WW DX SSB Contest. Ops for 2013 were N3OC, W2BZR, HB9OCR, and K3RA, all veterans of previous V26B operations. I wish we had had more ops, but we made do and continued to complete the remaining wiring of the other areas of the house and attend to important plumbing matters such as getting the toilet working again. W2BZR and HB9OCR would work on the electrical wiring, K3RA would work on the plumbing, and I would work on the 40-meter antennas. We had a plan.

By Thursday we had the electrical work completed, the plumbing mostly completed, and we had fixed our 40-meter stack (which had been giving us trouble for a couple of years). All that remained was the inside set up of the stations, which we finished in short order (photo E). Since we only had four ops, and we were all worn out from the work involved, we decided to enter the multi-single category this year.

Conditions during the contest were just amazing, and we had at least one 300+ hour on 10 meters. All the antennas performed well, and we had the best multi-single score we have ever had, although VE3EJ did beat us out for North America and we congratulate them for their effort. V26B is in North America, and we suffer from USA contacts only being two points, while our friends down to the south receive three points for every USA contact. This makes a huge difference in the final score.

During our night shift an additional operator stopped by the shack. We were again visited by V2/SP1DER, a large hairy tarantula spider who managed to get in the shack somehow and was down on the floor right next to the run station foot switch. It made for quite a commotion as we continued to work the pile-up while trying to remove the tarantula at the same time. Fortunately, W2BZR came to my rescue from the multiplier station and was able to remove the unwanted op.

An Amazing Accomplishment

We are pretty happy that we were able to take V26B from ashes to being better than before in less than one year. Actually, we think it is pretty amazing what was able to be accomplished in so short a time, and we are truly grateful for all the support and donations we received from the contesting community. We really didn't think it was possible just a few short months before.

The next time you work Antigua in the contest, you will know the effort and determination of Team Antigua to keep this multiplier active for as many contests as possible into the future.

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Results of the 2013 CQ WW DX SSB Contest

BY RANDY THOMPSON,* K5ZD

"There's no meters like 10 meters."

—Anonymous

Participants in the 66th edition of the CQ World-Wide DX SSB Contest couldn't say enough about how great the conditions were on 10 meters. From Ned AA7A, "I have not seen 10 meters so good since 2001." Larry WØPAN exclaimed, "Conditions were reminiscent of the '50s when I entered my first DX contest as a teenager." Lee KY7M noted, "Spectacular conditions on 10 meters with stations up above 29.0. It was the most fun I have had in a contest in a long time thanks to the smiling sunspots."

And when conditions on 10 meters are this good, it becomes almost impossible to stop operating. Red KØLUZ shared that experience: "I wasn't planning to spend so much time in front of the radio, but these were the best conditions in probably ten years." Low-power regular Marv N5AW enjoyed the activity. "WOW! May not see conditions this good again for a long time! I had a 173 hour rate on 10 Saturday morning and a 127 hour rate on Sunday." Geoff G4FKA was pleased as well: "What a great weekend for little pistols! Sunday on 28 was the best conditions I have heard on the band for over ten years. Great propagation east in the morning with China, Japan, Mongolia, South Korea, Malaysia, Laos, Thailand, and Guam all in the log." Tom ND2T wondered if he could make 10m DXCC in 6 hours? "Answer: Yes!"

What is the attraction of 10 meters? Over a full MHz available for SSB operation. That's more than all of the other bands combined!

With SSB contest activity from 28.2 up to beyond 29.1, the band is wide enough to accommodate lots of signals and give everyone a chance to call CQ or just escape the QRM. Jack W1WEF spoke for many: "Loved running on 10 with a relatively clear frequency. Hated all other bands with wall-to-wall splatter."

Of course, there are five other bands active in the contest. Peter W2IRT summarized activity: "You couldn't have asked for anything better—10 was a dream, 15 jammed from end to end, 20 wall-to-wall, not too much noise on the low bands. Personal record for score…"

Many times when 10 meters is this good, the low bands suffer, but that didn't seem to be the case this year. Many of the big multi-operator stations were able to achieve 5-Band DXCC and come close to the sixth. After the contest, Tim K3LR commented, "This contest will go down in history, as all of the bands were beyond outstanding for the entire weekend."

Great conditions deliver lots of activity and fun. There were a record 8,468 logs submitted—an increase of 278 over last year. Among the 222 DXCC entities worked during the weekend, the rarest were 3B9FR, C5/DH8FAT, S21S, and TY2SF with one contact each. The least rare country? The USA with 1,275,364 contacts reported!

One of the most unexpected and exciting calls that appeared was 7O2A on Socotra Island in Yemen operated by Dmitri RA9USU. It wasn't very long ago that Yemen was a rare catch. There was some confusion, as Yemen is normally in zone 21, but Dmitri was sending zone 37. A little research after the contest confirmed that Socotra Island is on the African continent and therefore zone 37 was the correct exchange. This cost more than a few entries the multiplier, since they put zone 21 in their log. Activating such a rare country under difficult conditions earned Dmitri the Single Operator DXpedition plaque.

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

Single Operator All Band High Power

In a repeat of last year's finish for the High Power category, it was Jim W7EJ operating from CN2R in first, followed by Tom W2SC operating from 8P5A. These guys are amazing in their consistency and accuracy. Tom operated the full 48 hours. Jim operated 47 hours. Hard to believe they could think coherently after that much time awake, but Jim only had a 3.1% score reduction after check-

Ten-year-old Shuusei JH1RVN was an entrant in the new Rookie Overlay category.

Hary 9M2GET and Own 9W2SBL operating 9M2SM in the Multi-Two category.

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2013 WW DX SSB TROPHY WINNERS AND DONORS

SINGLE OPERATOR, ALL BAND

World
CN2R (Op.: James Sullivan, W7EJ)
Donor: Southern California DX Club

World – Low Power
Ed Sawyer, N1UR
Donor: Slovenian Contest Club

World – QRP
Randy Shirbroun, ND0C
Donor: Jeff Steinman, N5TJ

World – Assisted
EF8U (Op.: Juan Hidalgo, EA8RM)
Donor: Glenn Johnson, W0GJ

World – Assisted Low Power
KP3Z (Op.: Felipe Hernandez, NP4Z)
Donor: Gail Sheehan, K2RED

U.S.A.
Steve London, N2IC/5
Donor: Potomac Valley Radio Club – KC8C Memorial

U.S.A. – Low Power*
Marvin Bloomquist, N5AW
Donor: North Coast Contesters

U.S.A. – QRP
Tom Magera, N1TM*
Donor: Pat Collins, N8VW

U.S.A. – Assisted
Bill Kollenbaum, K4XS
Donor: John Rodgers, WE3C

U.S.A. – Assisted Low Power
Vasily Voliy, W6AAN/3
Donor: LA9Z/LN9Z Leia Contest Club

U.S.A. Zone 3
Bob Wolbert, K6XX
Donor: Dave Pruett, K8CC & Greg Surma, K8GL

U.S.A. Zone 4
Kevin Stockton, N5DX*
Donor: Dave Pruett, K8CC & Greg Surma, K8GL

Europe
CR2X (Op.: Kim Ostman, OH6KZP)
Donor: Potomac Valley Radio Club – W4BVV Memorial

Europe – Low Power
Martin Bohadlo, OK1WCF
Donor: Tim Duffy, K3LR

Europe – QRP
Mike Bulatov, RT4W
Donor: Steve "Sid" Caesar, NH7C

Europe – Assisted
Imanol Antonanzas, EC2DX
Donor: Martin Huml, OL5Y

Europe – Assisted Low Power
Andrius Ignotas, LY7Z
Donor: Alex Goncharov, R3ZZ

Africa
ZD8O (Op.: Marko Myllymaki)*
Donor: Chris Terkla, N1XS

Asia
Anatoly Polevik, RC9O
Donor: Nodir Tursoon-Zadeh, EY8MM

Caribbean/Central America – High Power
8P5A (Op.: Tom Georgens, W2SC)
Donor: Albert Crespo, NH7A

Caribbean/Central America – Low Power
Keith Ennis, XE3/K5ENS
Donor: Alex M. Kasevich, 8R1A

Canada
CJ3T (Op.: Ron Vander Kraats, VE3AT)*
Donor: Contest Club Ontario – VE3WT Memorial

Russia
Oleg Prelovsky, UA5B
Donor: Roman Thomas, RZ3AA

Japan – High Power
Masaki Masa Okano, JH4UYB
Donor: Dan Handa, W7WA – W7RM Memorial

Japan – Low Power
Haruki Ohtsubo, JH9URT
Donor: Western Washington DX Club

Oceania
Dave Mueller, NH2T
Donor: Barbara Yasson, AC7UH

South America
P49Y (Op.: Andy Faber)
Donor: Yankee Clipper Contest Club

Southern Cone (CE CX LU) – Low Power
Jose Luis Murano, LU1FM
Donor: LU Contest Group

ASEAN (XZ HS XW XU 3W 9M 9V V8 YB DU) Low Power
XW0YJY (Op.: Champ Muangamphun, E21EIC)
Donor: Bob Kupps, N6BK

SINGLE OPERATOR, SINGLE BAND

World – 28 MHz
TO1A (Op.: Herve Biraud, F5HRY)
Donor: Joel Chalmers, KG6DX

World – 21 MHz
FY5KE (Op.: Marc Sentuc, F1HAR)
Donor: Robert Naumann, W5OV

World – 14 MHz
4L0A (Op.: Gia Gvaladze, 4L4WW)
Donor: North Jersey DX Assn. – K2HLB Memorial

World – 7 MHz
W4AAA (Op.: John Bayne, KK9A)
Donor: Fred Laun, K3ZO – K7ZZ Memorial

World – 3.7 MHz
EF8S (Op.: Mauri Leppala, OH2BYS)
Donor: Fred Capossela, K6SSS

World – 1.8 MHz
Ondrej Kolonicny, OK1CDJ
Donor: Martin Monsalvo, LU5DX &
Carlos Monsalvo, LU6EBY – LU8DQ Memorial

U.S.A. – 28 MHz
Jerry Rosalius, WB9Z
Donor: Donald Thomas, N6DT

U.S.A. – 21 MHz
Pat Barkey, N9RV/7
Donor: 11PM Dayton Pizza Gang

U.S.A. – 14 MHz
Daniel Handa, W7WA
Donor: Stanley Cohen, W8QDQ

U.S.A. – 7 MHz
Victor Walz, N2PP*
Donor: Yankee Clipper Contest Club – KC1F Memorial

U.S.A. – 3.7 MHz
Joe Gagliardi, AA1BU
Donor: John Rodgers, WE3C

U.S.A. – 1.8 MHz
Ronald McClain, W2VO
Donor: Glenn Johnson, W0GJ

Europe – 28 MHz
GW9T (Op.: Steve Redmond, MW0ZZK)
Donor: John Rodgers, WE3C

Europe – 21 MHz
Viesturs Jakovlevs, YL2SM
Donor: Tine Brajnik, S50A

Europe – 14 MHz
RT4F (Op.: Pavel Bogachev, RK4FD)
Donor: Charles Wooten, NF4A

Europe – 7 MHz
YT7A (Op.: Ivanko Mandic, YU7GM)
Donor: Central Texas DX and Contest Club –
NT5C Memorial

Europe – 3.7 MHz
OK5D (Op.: David Lunak, OK1DTP)
Donor: Ted Demopoulos, KT1V

Europe – 1.8 MHz
IO4C (Op.: Giammarco Berti, IZ4ZAW)*
Donor: Robert Kasca, S53R

Carib./C.A. (28 MHz)
ZF2AH (Op.: Joseph F. Hypnarowski, W6VNR)
Donor: Nate Moreschi, N4YDU

Oceania (21 MHz)
Fred Honnold, KH7Y
Donor: Bruce D. Lee, KD6WW

Asia (21 MHz)
Vakhtang Mumladze, 4L8A
Donor: Dallas/Fort. Worth Contest Group –
W5PG Memorial

OVERLAY CATEGORIES

World – Classic
VE2IM (Op.: Yuri Onipko, VE3DZ)
Donor: Pete Smith, N4ZR

U.S.A. – Classic
Randy Thompson, K5ZD/1
Donor: Tom Horton, K5IID

World – Rookie
Tomislav Krpan, 9A6TKS
Donor: Tim Duffy, K3LR – N8SM Memorial

U.S.A. – Rookie
Kevin Meyers, KE4CQ
Donor: Tim Duffy, K3LR, K3TUP Memorial

MULTI-OPERATOR, SINGLE TRANSMITTER

World
CN2AA (Ops: UA2FB, UA2FF, RN2FA, R3FA, RK7A, RL3FT, UA3ASZ, RK3AD, RA3ATX, RU3RQ, RV3MA, RX3APM)
Donor: So. Calif. DX Club – W6AM Memorial

U.S.A.
NN3W (Ops: NN3W, K4ZW, KE3X, N3HBX, NH7C)
Donor: Carolina DX Association

Africa
CR3A (Ops: CT1BOH, CT3BD, CT3DL, CT3DZ, CT3EE, CT3IA, CT3KU)*
Donor: Doc Sayre, W7EW

Asia
P33W (Ops: LY4AA, LZ3FN, UU4JMG, R5GA, UA4FER, R3DCX, RW4WR, RA3AUU)
Donor: Edward L. Campbell, NX7TT –
AA6BB and KA6V Memorial

Europe
EI7M (Ops: EI3JE, EI3KD, EI8IR, EI3JZ, G4CLA, M1DSE, EI3DP, EI5GM)
Donor: Bob Cox, K3EST

Oceania
AH2R (Ops: NH2C, JH3PRR/KH8B, JR7OMD/WI3O, 7N2JZT/NH2KO, JE8KKX/AH2K, JR3RVO/WX8M)
Donor: Junichi Tanaka, JH4RHF

South America
PJ4X (Ops: K1QX, K2NG, PJ4LS, W1MD)
Donor: Victor Burns, KI6IM – The Cuba Libra Contest Club

Caribbean/Central America
V26B (Ops: N3OC, W2BZR, HB9OCR, K3RA)
Donor: Bob Raymond, WA1Z

Japan
JA0QNJ (Ops: JA0QNJ, JJ0NOO)
Donor: Arizona Outlaws Contest Club

ASEAN (XZ HS XW XU 3W 9M 9V V8 YB DU)
9V1YC (Ops.: 9V1YC, 9V1BH)
Donor: Bob Kupps, N6BK

MULTI-OPERATOR, TWO-TRANSMITTERS

World
CN3A (Ops: IK2QEI, IK2SGC, IK2LFF, IK3STG, N6KT, CN8WK)
Donor: Array Solutions

U.S.A.
KC1XX (Ops: DL4NAC, DL6KAC, KC1XX, KM3T, N1KWF, W1FV, WA1Z)
Donor: Kimo Chun, KH7U & Mike Gibson, KH6ND –
Dan Robbins, KL7Y Memorial

Europe
TM6M (Ops: F1AKK, F4CWN, F4DXW, F8DBF, TU5KG, F1UVN, F8FKJ)
Donor: Aki Nagi, JA5DQH

MULTI-OPERATOR, MULTI-TRANSMITTER

World
D4C (Ops: I4UFH, IZ4DPV, IK1HJS, IZ1LBG, IT9RGY, IT9SPB, CT1ESV, SK7A, 9A1TT, E77DX, YL2GM, JK3GAD, I4VEQ, IZ4UEZ, HB9DUR)
Donor: Dave Leeson, W6NL & Barb Leeson, K6BL

U.S.A.
K3LR (Ops: K3LR, N2NC, N5UM, KB8VAO, K3LA, W2RQ, AD1C, ND8L, K1AR, N2NT, WM2H, K3UA, K1DG, N3GJ, LU7DW)
Donor: Jim Lawson – W2PV Memorial

Europe
ES9C (Ops: ES2RR, ES7GM, ES5TV, ES2MC, ES5RY, ES5JR, ES5RW, ES4BO, ES5HTA, ES2TI, ES2NA, ES5NC, ES5QA, ES2DW, ES5GP, ES2ADO, YL3DW, YL3CW, YL1ZF, YL2GQT, YL2BJ, YL2KL, YL3AJA, YL3AD, OH1NOA, ON3GPS)
Donor: Finnish Amateur Radio League

Oceania
AH0BT (Ops: W1FPU, W1NDE, KW2X, NA8O, K0BBC)
Donor: Tack Kumagai, JE1CKA –
JR2GMC and JA9SSY Memorial

CONTEST EXPEDITIONS

World Single Operator
7O2A (Op.: Dmitry Zhikharev, RA9USU)
Donor: National Capitol DX Association –
Stuart Meyer, W2GHK Memorial

World Multi-Op
IG9Y (Ops: HA1YA, JH5GHM, N3BNA, PC5A, PE1ITR, RC0F, RT4RO, S50X, S52RU, S54W, S57DX, S57UN, S59A, VE3LA, Edith)
Donor: Gail Sheehan, K2RED

**Awarded to second place finisher*

Overcoming Adversity—A New Oceania Record from NH2T

By Dave Mueller, N2NL

Last year's CQ WW DX SSB Contest made me fully aware of just how difficult it would be to break the Oceania SOAB record set back in 2000 by CT1BOH operating as KH7R. The fact that the record has stood for more than a dozen years even with the explosion in activity levels is proof of how difficult it would be to surpass. I made it a goal to take one more crack at the record in 2013. Little did I know how challenging 2013 would turn out being for me.

In February of 2013, I succeeded in obtaining a one-year extension on my tour to Guam as a member of the US Coast Guard. That assured I would actually still be residing in Oceania come October 2013. That is when the problems started; minor abdominal cramping began to increase in severity. I'd been to the doctor but the symptoms had been diagnosed as something minor; after all, I am only in my early 40s, live a healthy lifestyle, and have no family history of illness. Still, the symptoms worsened until I had my wife drive me to the emergency room in early May. I left the hospital a week later following emergency surgery to remove a section of my colon, outfitted with a temporary colostomy, and a diagnosis of stage 3 colon cancer. Fortunately, the surgery was completely successful, but I would need six months of adjuvant chemotherapy to minimize risk of recurrence

My first round of chemo started two days before the WPX CW contest. Piece of cake, I thought. I'll push right through it and operate the contest full time. I only made it through 500 QSOs until the nausea meds wore off. I spent the rest of the weekend in bed. Wow . . . this was worse than I expected!

About mid way through chemo treatments, I received another bomb shell. The Navy was closing the housing area in which I lived, and I would be forced to move into new quarters. Say goodbye to the low-band vertical I'd installed thousands of feet of radials under. Say goodbye to the six Beverage RX antennas I'd installed in the jungle adjacent to my home. As consolation for the trouble, the Navy did hook me up with a fantastic new location, smack dab in the middle of senior officer housing on a hilltop with a fantastic takeoff toward NA and EU. My Coast Guard Shipmates helped me move, but putting up new antennas was all my responsibility.

It took all summer, but on my "chemo good days" I got my Spiderbeam installed, put up a vertical for the low bands, and even got three new Beverage receive antennas installed. By early October I was ready for another crack at the record.

The challenges were not yet over. During the month of October, three tropical systems passed over or close to Guam, the first of which bent my mast over by 90 degrees in heavy tropical storm-force winds. A vertically polarized Spiderbeam just wasn't going to work, so I got that repaired, along with the Beverages which were trashed by fallen trees. I finally had everything back together by the Wednesday before the start of the contest.

The contest itself was a blur. Fortunately, the timing worked out well, as I was at the end of a chemo cycle when the side effects were minimal. Still, I had to operate VOX for the first time in a contest because one of the long-term side effects is hand-foot syndrome, and it hurt to stomp on a foot switch for any length of time. Conditions were the best I'd ever experienced in a CQ WW contest, however, and the record was the carrot that kept me in the chair. Late on the secnd day I had finally surpassed Jose's record score. Mission complete!

Fortunately, following my diagnosis of colon cancer, I've had subsequent testing that has shown me to be cancer free. I completed chemotherapy in mid November, and a month later had surgery to reverse my colostomy. I should be back to full duty by early January. I still have several years of follow-up checks to made sure I remain cancer free, but close monitoring will help me catch anything early when the prognosis would be significantly better. I will be transferring in the summer of 2014 to Hawaii, but am looking forward to my remaining months on Guam to be as active as possible.

Antenna damage after the tropical storm.

The effective operating position used by Dave N2NL to set a new Oceania record as NH2T.

2013 CQ WW DX SSB TOP SCORES

WORLD

SINGLE OPERATOR HIGH POWER ALL BAND

CN2R (W7EJ).....18,277,746
8P5A (W2SC).....17,059,840
CR2X (OH6KZP)...16,259,949
VE2IM (VE3DZ)....13,737,132
NH2T (N2NL).....12,215,161
P49Y (AE6Y).....12,140,070

28 MHz

TO1A (F5HRY).....3,050,775
CW5W (CX6VM)....2,458,016
EA8EW (OHØXX) ...2,242,853

21 MHz

FY5KE (F1HAR).....2,566,582
P43A.....2,258,009
4L8A.....1,559,075

14 MHz

4LØA (4L4WW) 1,817,725
RT4F (RK4FD).....1,452,948
LU1FAM.....1,194,102

7 MHz

W4AAA (KK9A).....635,769
4X2M (4X4DZ).....517,185
YT7A (YU7GM).....501,981

3.7 MHz

EF8S (OH2BYS).....434,620
NP4A.....276,873
VP2MXA (KK6ZM)....229,066

1.8 MHz

OK1CDJ.....105,608
IO4C (IZ4ZAW).....80,724
VE3PN.....41,548

SINGLE OPERATOR LOW POWER ALL BAND

N1UR.....4,911,440
XWØYJY (E21EIC) .4,521,594
VP9I (N1SV).....4,013,880
SU9AF.....3,393,400
N5AW.....3,202,994
OK1WCF.....3,111,394

28 MHz

HI3/NP3J (JA6WFM) .973,047
PY2UD.....971,700
CT9/R9DX.....707,487

21 MHz

UK9AA.....855,846
YY2CAR.....710,087
EA8AH (OH1RY).....621,762

14 MHz

HI3TEJ.....854,037
HC1JQ.....746,334
D3AA.....530,720

7 MHz

YW5T (YV5JBI).....350,160
RZ3Z.....58,344
ED3O (EA3GXJ).....58,140

3.7 MHz

UY2UQ.....64,740
F5BEG.....57,433
OK1FPS.....42,194

1.8 MHz

SQ9IAU.....22,220
SQ4JEN.....13,965
SM6FJY.....12,801

SINGLE OPERATOR ASSISTED HIGH POWER ALL BAND

EF8U (EA8RM).....12,743,163
UPØL (UN9LW) ...11,397,276
A65BP.....10,733,316
K4XS.....10,218,776
PX5E (PP5JR).....8,737,932
VE3RA.....8,099,535

28 MHz

OK7K (OK1BN).....1,629,144
LW6DG.....1,611,240
VE9AA.....1,420,365

21 MHz

ED9Z (EA9LZ).....2,120,814
9A9A.....1,475,352
KL7KY.....1,421,200

14 MHz

ED8W (EA8DO).....1,603,236
EA7LL.....1,422,175
9A6A.....1,354,914

7 MHz

IG9R (IK8HCG).....1,142,113
TM9R (F5FLN).....765,180
RW3DU.....404,352

3.7 MHz

SP3GEM.....297,053
S51DX.....226,829
KP4KE.....221,067

1.8 MHz

F5UTN.....96,936
9A5W.....86,994
9A2AJ.....77,490

SINGLE OPERATOR ASSISTED LOW POWER ALL BAND

KP3Z (NP4Z).....8,416,538
LY7Z.....4,202,490
W6AAN/3.....4,020,458
7Z1CQ.....3,866,415
KE1J.....3,511,052
HA3DX (HA4XH) 3,114,252

28 MHz

YY4DNN.....1,306,503
PY1NX.....1,091,125
EE8T (EA8MT).....1,087,750

21 MHz

PT7KJ (PY7RP).....794,236
E74A.....617,823
G8DX.....610,680

14 MHz

9Y4D.....1,697,584
RZ1ZZ.....652,729
S53DOS (S52OT).....484,068

7 MHz

MWØEDX.....208,152
USØHZ.....113,619
M4D (G4ATA).....90,825

3.7 MHz

E74O.....74,508
SQ9ORQ.....42,174
OK2RB.....27,608

1.8 MHz

E77EZ.....25,704
UT1AN.....14,396
IKØXBX.....10,304

SINGLE OPERATOR QRP ALL BAND

NDØC.....1,035,648
RT4W.....634,365
HG6C (HA6IAM).....593,246
JH1OGC.....534,456
JR4DAH.....501,370
N1TM.....477,405

28 MHz

JH7RTQ.....176,778
CO2OQ.....136,000
G4CWH.....99,922

21 MHz

JQ1NGT.....95,190
ON4MW.....67,524
YT1CS.....61,683

14 MHz

FY5FY.....602,250
HG3M.....77,700
N4JF.....75,696

7 MHz

OH4EA.....30,885
IZ3IBL/2.....24,786
OK1XYZ.....13,020

3.7 MHz

OL4W (OK1IF).....13,107
OH4JT.....1,581
EA1TI.....1,269

1.8 MHz

RA2FB.....756
OG4T (OH4MFA).....558

SINGLE OPERATOR ASSISTED QRP ALL BAND

DL8LR.....675,108
CT1BXT.....310,080
UX5UU.....274,108
IZ3NVR.....242,998
JK1TCV.....213,800
YU1LM.....172,353

28 MHz

JR3RWB.....225,078
HA1ZH.....153,439
XE2JS.....136,374

21 MHz

EA9CD.....136,653
SQ5NBE.....60,135
SP6DVP.....59,241

14 MHz

IZØFUW.....97,067
EA2EA.....75,638
OH3BU.....70,585

7 MHz

IZ1DGG.....10,350
PA9M.....4,794

3.7 MHz

BA4WI.....18

1.8 MHz

HA5NB.....6,795
9A4AA.....209
II7U.....154

MULTI-OPERATOR SINGLE TRANSMITTER

CN2AA.....28,626,968
CR3A.....27,007,552
P33W.....26,083,506
P3N.....23,977,818
CQ3L.....20,116,896
EI7M.....19,962,126

MULTI-OPERATOR TWO-TRANSMITTER

CN3A.....34,264,727
UP2L.....27,846,478
KC1XX.....23,851,137
TM6M.....23,072,088
K1LZ.....19,625,840
RU1A.....18,052,034

MULTI-OPERATOR MULTI-TRANSMITTER

D4C.....59,424,324
HK1NA.....41,974,119
ES9C.....39,013,828
K3LR.....37,402,560
PJ2T.....37,252,749
IG9Y.....33,716,321

ROOKIE HIGH POWER

9A6TKS.....2,566,924
KE4CQ.....1,425,960
EA5ICU.....1,273,813

ROOKIE LOW POWER

OH6ECM.....1,224,006
SQ6PLH.....1,150,050
EI3HDB.....785,547

CLASSIC HIGH POWER

VE2IM (VE3DZ).....6,543,008
ZD8O (N5ZO).....5,090,080
CQ9T (CT3KN).....5,024,024

CLASSIC LOW POWER

OE6Z (OE6MBG)....2,071,611
MD2C (MDØCCE)...1,510,200
K9JF/7.....1,291,632

UNITED STATES

SINGLE OPERATOR HIGH POWER ALL BAND

N2IC/5.....7,529,827
N5DX.....7,370,415
W9RE.....7,349,634
KQ2M/1.....7,142,458
K1ZR.....6,707,100
K3CR (LZ4AX).....5,625,900

28 MHz

WB9Z.....1,119,960
W5PR.....1,021,600
W3BGN.....995,785

21 MHz

N9RV/7.....1,292,100
KD2RD.....873,535
NW2K.....737,044

14 MHz

W7WA.....1,068,120
W8TA.....623,636
W6YX (N7MH).....400,967

7 MHz

W4AAA (KK9A).....635,769
N2PP.....187,308
W1XX.....134,334

3.7 MHz

AA1BU.....122,844
K1KNQ/4.....44,712
K9SH.....18,176

1.8 MHz

W2VO.....12,864
W8CO.....2,940
K1HAP.....2,233

SINGLE OPERATOR LOW POWER ALL BAND

N1UR.....4,911,440
N5AW.....3,202,994
NA8V.....2,852,685
N4TZ/9.....2,409,974
K2PO/7.....2,392,502
N5BO.....2,146,300

28 MHz

N8II.....637,488
K4WI.....463,275
KI6LZ.....225,078

21 MHz

W2AW (N2GM).....336,753
N4MO.....178,750
K6GHA.....175,497

14 MHz

K7KU (KØKR).....176,648
N7BK.....145,280
N4DL.....145,254

7 MHz

N3LL/4.....20,150
N3XOF/2.....18,166
WB7FJG.....4,884

3.7 MHz

W4QNW.....21,210

SINGLE OPERATOR ASSISTED HIGH POWER ALL BAND

K4XS.....10,218,776
K3WW.....7,727,566
K7RL.....6,576,900
W3UA/1.....6,539,299
AA3B.....6,019,104
N3RS.....4,906,125

28 MHz

K2SSS.....984,742
W6YI.....791,752
WE9V.....769,131

21 MHz

N7DD.....1,084,840
K3EST/6.....1,057,312
KVØQ.....950,868

14 MHz

NM2O.....358,344
K6AW.....158,746
W7VO.....76,212

7 MHz

N6SS/7.....250,393
W1MBB/4.....206,276
NR6O (K1GI).....27,573

3.7 MHz

K9FY/4.....34,425
K4KZZ.....28,126
N9LB.....8,624

1.8 MHz

K9LA.....1,725
N4DU.....936

SINGLE OPERATOR ASSISTED LOW POWER ALL BAND

W6AAN/3.....4,020,458
KE1J.....3,511,052
KS1J.....2,715,921
KG1E.....2,563,511
WE9R.....2,314,240
K1BX.....1,738,928

28 MHz

K1ZO.....311,856
NV9L.....311,664
W9ILY.....262,975

21 MHz

N9TGR.....314,171
K4MM.....96,384
KV8S.....89,160

14 MHz

AD4RE.....139,122
W4LC.....131,364
KK7AC.....87,210

7 MHz

W6AWW.....13,572
W9QL.....9,216
W4HLN/8.....216

1.8 MHz

KF7ADB.....12

SINGLE OPERATOR QRP ALL BAND

NDØC.....1,035,648
N1TM.....477,405
NA4CW.....472,410
KØOU.....249,975
NT4TS.....232,212
W6QU (W8QZA).....212,472

28 MHz

K2YGM.....74,121
NØUR.....47,385
WA6FGV.....39,078

21 MHz

KK6RF.....1,311
WFØT.....528

14 MHz

N4JF.....75,696
KA8SMA.....30,880
KD8DVY/4.....12,222

7 MHz

WA2NYY.....8

3.7 MHz

KIØG/5.....4

SINGLE OPERATOR ASSISTED QRP ALL BAND

NA1DX/3.....143,520
K2ZR.....103,032

21 MHz

NN7SS (K6UFO).....36,900
K3TW/4.....21,200

MULTI-OPERATOR SINGLE TRANSMITTER

NN3W.....11,980,003
K8AZ.....10,655,876
W1NA/Ø.....7,623,988
N1MM.....6,602,400
AA9A.....6,282,612
W7RN.....4,758,204

MULTI-OPERATOR TWO-TRANSMITTER

KC1XX.....23,851,137
K1LZ.....19,625,840
K9CT.....14,040,117
WK1Q.....13,407,304
NØNI.....11,602,800
KB1H.....10,375,252

MULTI-OPERATOR MULTI-TRANSMITTER

K3LR.....37,402,560
W3LPL.....26,603,808
WE3C.....25,100,379
NQ4I.....14,586,880
W4RM.....12,999,294
WØAIH/9.....10,335,690

ROOKIE HIGH POWER

KE4CQ.....1,425,960
AB1OC.....620,500
KK4IMJ/8.....594,375

ROOKIE LOW POWER

WW1MM (N1EN).....707,096
KK4HEG.....202,176
NY2GB.....132,960

CLASSIC HIGH POWER

K5ZD/1.....4,910,493
NN1N.....4,119,348
N4WW.....3,270,464

CLASSIC LOW POWER

K9JF/7.....1,291,632
N5BO.....1,135,167
KT4ZB.....973,037

EUROPE

SINGLE OPERATOR HIGH POWER ALL BAND

CR2X (OH6KZP)...16,259,949
OH8X (OH2UA).....9,506,679
UU7J (UUØJM).....7,410,582
HA8JV.....6,868,904
EU1A.....6,626,928
UA5B.....6,568,528

28 MHz

GW9T (MWØZZK)..1,380,988
GM3X (GM3POI)....1,254,669
OHØJFP (SMØTQX)1,007,160

21 MHz

YL2SM.....1,233,081
TF3CW.....1,231,608
EA4KR.....1,095,600

14 MHz

RT4F (RK4FD).....1,452,948
EA6SX.....1,058,713
YT8A (YU1EA).....931,426

7 MHz

YT7A (YU7GM).....501,981
YL3FT.....423,555
S52X.....415,480

3.7 MHz

OK5D (OK1DTP).....213,640
G3TXF.....139,686
YT4A.....86,772

1.8 MHz

OK1CDJ.....105,608
IO4C (IZ4ZAW).....80,724
E7ØR.....39,240

SINGLE OPERATOR LOW POWER ALL BAND

OK1WCF.....3,111,394
EA7OT.....2,158,978
OE6Z (OE6MBG)....2,071,611
MD2C (MDØCCE)...1,510,200
DL6DCD.....1,458,076
R7MM.....1,295,532

28 MHz

LY8O.....508,234
ON8DM.....433,580
9A3VM.....360,899

21 MHz

EE7Y (EA7ISH).....538,148
G3Y (G3YBY).....245,700
SQ2PHG.....231,424

14 MHz

EA2DNR.....273,966
EA2LMI.....223,626
YO8TNB.....214,368

7 MHz

RZ3Z.....58,344
ED3O (EA3GXJ).....58,140
IZ7FLP.....52,621

3.7 MHz

UY2UQ.....64,740
F5BEG.....57,433
OK1FPS.....42,194

1.8 MHz
SQ9IAU.....22,220
SQ4JEN.....13,965
SM6FJY.....12,801

SINGLE OPERATOR ASSISTED HIGH POWER ALL BAND
EC2DX.....8,075,516
DJ8OG.....6,606,680
IW2HAJ.....6,570,473
ON4IA.....6,252,168
UT7U.....6,245,136
OH8L (OH8LQ).....6,071,796

28 MHz
OK7K (OK1BN).....1,629,144
E7ØT.....1,378,960
OE8Q (OE8SKQ).....1,374,450

21 MHz
9A9A.....1,475,352
OH1F (OH1TM).....1,390,090
DQ8N (DL2ARD).....1,345,344

14 MHz
EA7LL.....1,422,175
9A6A.....1,354,914
9A5Y (9A7DX).....1,337,877

7 MHz
TM9R (F5FLN).....765,180
RW3DU.....404,352
RY3D.....387,288

3.7 MHz
SP3GEM.....297,053
S51DX.....226,829
YU7U.....182,817

1.8 MHz
F5UTN.....96,936
9A5W.....86,994
9A2AJ.....77,490

SINGLE OPERATOR ASSISTED LOW POWER ALL BAND
LY7Z.....4,202,490
HA3DX (HA4XH).....3,114,252
S5ØXX.....2,522,970
YT8T.....2,182,188
9A2EU.....1,913,856
EE1A (EA1HDD).....1,841,060

28 MHz
MØBJL.....600,972
IØUZF.....546,882
EA4AK.....504,431

21 MHz
E74A.....617,823
G8DX.....610,680
IK4TVP.....393,621

14 MHz
RZ1ZZ.....652,729
S53DOS (S52OT).....484,068
F4FLQ.....371,536

7 MHz
MWØEDX.....208,152
USØHZ.....113,619
M4D (G4ATA).....90,825

3.7 MHz
E74O.....74,508
SQ9ORQ.....42,174
OK2RB.....27,608

1.8 MHz
E77EZ.....25,704
UT1AN.....14,396
IKØXBX.....10,304

SINGLE OPERATOR QRP ALL BAND
RT4W.....634,365
HG6C (HA6IAM).....593,246
UX2MF.....455,000
EA3FF.....359,161
IZ1ANK.....315,256
RW3AI.....263,444

28 MHz
G4CWH.....99,922
R4FAD.....76,336
SP5DDJ.....63,791

21 MHz
ON4MW.....67,524
YT1CS.....61,683
I4PZP.....54,144

14 MHz
HG3M.....77,700
EI4II.....66,847
SP3DRM.....32,376

7 MHz
OH4EA.....30,885
IZ3IBL/2.....24,786
OK1XYZ.....13,020

3.7 MHz
OL4W (OK1IF).....13,107
OH4JT.....1,581
EA1TI.....1,269

1.8 MHz
RA2FB.....756
OG4T (OH4MFA).....558

SINGLE OPERATOR ASSISTED QRP ALL BAND
DL8LR.....675,108
CT1BXT.....310,080
UX5UU.....274,108
IZ3NVR.....242,998
YU1LM.....172,353
PE2K.....143,675

28 MHz
HA1ZH.....153,439
HA5BSW.....93,412
R4FA.....44,073

21 MHz
SQ5NBE.....60,135
SP6DVP.....59,241
EA1PS.....32,085

14 MHz
IZØFUW.....97,067
EA2EA.....75,638
OH3BU.....70,585

7 MHz
IZ1DGG.....10,350
PA9M.....4,794

1.8 MHz
HA5NB.....6,795
9A4AA.....209
II7U.....154

MULTI-OPERATOR SINGLE TRANSMITTER
EI7M.....19,962,126
OM8A.....16,345,962
SJ2W.....15,783,775
9A1P.....14,893,016
OM7M.....14,875,848
SN2B.....13,660,452

MULTI-OPERATOR TWO-TRANSMITTER
TM6M.....23,072,088
RU1A.....18,052,034
OL4A.....16,798,908
SK3W.....15,540,875
HG7T.....14,849,976
PI4DX.....14,423,709

MULTI-OPERATOR MULTI-TRANSMITTER
ES9C.....39,013,828
DR1A.....32,615,320
II9P.....24,423,180
OT5A.....20,162,142
LZ9W.....20,072,872
DFØHQ.....19,387,046

ROOKIE HIGH POWER
9A6TKS.....2,566,924
EA5ICU.....1,273,813
II4I (IZ4ZZB).....798,252

ROOKIE LOW POWER
OH6ECM.....1,224,006
SQ6PLH.....1,150,050
EI3HDB.....785,547

CLASSIC HIGH POWER
OHØZ (OH6EI).....4,764,384
OE3K (OE3DIA).....4,562,910
EA4KD.....3,058,814

CLASSIC LOW POWER
OE6Z (OE6MBG).....2,071,611
MD2C (MDØCCE).....1,510,200
DL2CC.....1,168,790

Siggi TF3CW used this simple antenna for his 21-MHz single-band effort.

ing and Tom went down only 2.9%. The median score reduction for all entries was 7.9%. The major difference between their scores is the extra point advantage of being in Africa vs North America.

Continuing the repeat from 2012, the third place score was from CR2X, this time operated by Kim OH6KZP. Yuri VE3DZ visited zone 2 for the 15th time and operated VE2IM into fourth. The most incredible effort of the top scorers has to be NH2T, operated by Dave N2NL, in fifth place. Using very modest antennas and battling cancer, Dave broke the 12-year-old Oceania scoring record (see sidebar story). Andy AE6Y represented another continent in the Top Ten from P49Y in Aruba. It didn't help when Andy did not hear his alarm and overslept for 4 hours on Sunday morning!

In one of the most surprising results of the weekend, the USA Single Operator All Band category was a shootout between stations *not* on the East Coast. Steve N2IC/5 in northwest New Mexico ended up on top. Second place, in just his second single operator effort ever, was Kevin N5DX operating from the K5GO station in Arkansas. Perennial contender, Mike W9RE in Indiana finished third. N2IC/5 is 884 miles (1422 km) west/south west of N5DX. To provide some perspective, W9RE is about 820 miles (1319 km) west of Boston, MA. The quiet conditions and polar paths available really helped the guys out west. The top East Coast entries were KQ2M/1 followed by K1ZR.

The top score in continental Europe was from far north at OH8X operated by Toni OH2UA. Toni will be one of the last operators to have enjoyed the monster 80- and 160-meter Yagis that were a symbol of the Radio Arcala station. The antennas were lost when the tower collapsed in early December. UU7J, operated by Andi UUØJM, finished next just ahead of Pal HA8JV. The rest of the European Top Ten was very close with a number of northern stations taking advantage of the excellent conditions to have personal best scores.

Single Operator All Band Low Power

Continuing the theme of improbable finishes, the world number one low-power score was by Ed N1UR. Ed is always a top competitor for low power from his spectacular

2013 WW DX SSB SINGLE-OP TOP SCORES IN MOST ACTIVE ZONES

Zone 3

K6XX	3,779,127
WC6H (NU6S)	3,629,087
K6NA	3,066,992
*K2PO/7	2,392,502
K5RR/7	2,172,457
W7ZR	2,026,832

Zone 4

CJ3T (VE3AT)	12,107,384
VE3JM	9,042,976
N2IC/5	7,529,827
N5DX	7,370,415
W9RE	7,349,634
VE3OI	5,032,668

Zone 5

KQ2M/1	7,142,458
K1ZR	6,707,100
K3CR (LZ4AX)	5,625,900
K5ZD/1	5,547,915
K3ZO	5,141,932
VE9HF	4,972,649

Zone 14

CR2X (OH6KZP)	16,259,949
DJ5MW	5,976,252
G6PZ (GIØRTN)	5,508,405
OZ7X (OZ5KF)	5,230,816
EE3A (EA3ATM)	5,205,411
DJ7WW	4,215,720

Zone 15

OH8X (OH2UA)	9,506,679
HA8JV	6,868,904
OHØX (OH2TA)	6,408,466
OE3K (OE3DIA)	5,044,444
OHØZ (OH6EI)	4,827,340
4O3A	4,821,375

Zone 16

UU7J (UUØJM)	7,410,582
EU1A	6,626,928
UA5B	6,568,528
RG6G	4,160,600
US5D (UT7DX)	3,411,282
EW2A	3,015,402

Zone 20

YPØC (YO3CZW)	4,466,052
H2T (5B4XF)	3,455,870
OD5ZZ	975,520
*SV1PMR	774,426
YO2LEA	621,348
*TA1ED	509,472

Zone 25

JH4UYB	5,991,726
JA7NVF	4,900,896
JA8WKE	4,440,870
JR4OZR	4,279,522
JE1LFX	3,027,232
JA6LCJ	2,958,425

AMERITRON *True Legal Limit™* Tuner

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

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$599.95

Suggested Retail

- ***Handles 1500 Watts carrier***
- ***Super High Current edge-wound silver plated Roller Inductor***
- ***500 pf tuning capacitors with 6:1 vernier reduction drives***
- ***3 core choke balun***
- ***6 position antenna switch***
- ***True peak reading meter***

AMERITRON's ATR-30 *True Legal Limit™* roller inductor antenna tuner is ham radio's toughest! It'll handle 1500 Watts *continuous carrier output* on *all* modes and *all* HF bands into most antennas -- even on 160 Meters where most antenna tuners fail.

It's perfect for Ameritron's most powerful amplifiers where the ATR-30 just loafs.

All band coverage lets you operate 1.8-30 MHz including all MARS and WARC bands.

Super High Current Roller Inductor

You'll see Ameritron's new *super high current* air core roller inductor. It's *edge wound* from a thick solid copper strip and silver plated. This produces a large surface area and a massive conductor. It can carry huge circulating RF currents and withstand tremendous heat that'll melt or burn ordinary roller inductors.

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Two 500 pf Tuning Capacitors

Two 500 pf -- *the highest of any antenna tuner* -- variable transmitting capacitors give you no-arc wide range impedance matching for true high power performance.

6:1 vernier reduction drives makes capacitor tuning smooth and easy.

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Super heavy duty three core choke balun lets you match virtually any balanced feedline antenna without core saturation.

A 6 position antenna switch lets you select your desired operating antenna.

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Ameritron's active electronic *true* peak reading meter accurately reads forward and reflected power and SWR *simultaneously* on a lighted Cross-Needle meter.

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Roomy extra-strong .080 inch thick aluminum cabinet gives highest efficiency and lowest loss. 13¼Wx5⅝Hx17½D inches.

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ATR-20, $459.95 Handles a full 1.2 kW SSB and 600 Watts CW. It's designed to safely handle the full SSB power of Ameritron's AL-811/811H/80B, ALS-500M/600 and other 1.2 kW SSB amplifiers.Has vernier reduction drives.

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AMERITRON's legal limit amplifiers use super heavy duty 32 lb Hypersil® power transformer capable of 2500 Watts!

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with 3CX1500/8877 ceramic tube

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3CX1500 tube

AL-1500

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Eimac® tube

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Ameritron's *most powerful* amplifier uses the *herculean* 3CX1500/8877 ceramic tube. 65 Watts drive gives you full output power -- and it's just loafing because the power supply is capable of 2500 Watts PEP. All HF bands, all modes. 77 lbs., 17Wx10Hx18½ in.

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with Eimac® 3CX1200Z7 toughest tube

AL-1200

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Suggested Retail

TrueLegalLimit™

Get ham radio's *toughest* tube with AL-1200. The *Eimac®* 3CX1200Z7 has a 50 Watt control grid dissipation and the lowest history of field replacement of any modern transmitting tube that we use. 130 Watts in gives you full power out. All HF bands, all modes. 76 pounds, 17Wx18½Dx10H in.

Ameritron's *classic* Amp

with classic ® 3-500G tubes

AL-82

$2995

Suggested Retail

TrueLegalLimit™

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

Desktop Kilowatt

with classic 3-500G tube

AL-80B, $1595. Gives you full kilowatt SSB PEP output (85 Watts in) from a whisper quiet compact desk-top linear. 14Wx8½ Hx 15½D inches. Plugs into 120 VAC outlet. *Genuine* 3-500G tube. Nearly 70% efficiency. Weighs 48 lbs.

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500 Watt Mobile Amp

ALS-500M, $949. 500 Watts PEP/400W CW output, 1.5-22 MHz, instant bandswitching, no tuning, no warm-up. SWR, load fault, thermal overload protected. Remote on/off control. DC amp meter. Extremely quiet fan. 13.8 VDC. 9W x3½Hx15D in., 7 lbs. **ALS-500RC, $49,** Remote Head.

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ALS-600, $1599. ***No tuning****, no fuss, no worries -- just turn on and operate.* 600 Watts PEP/500W CW, 1.5-22 MHz, instant bandswitching, SWR protected, extremely quiet, SWR/Wattmeter, ALC control. 120/220 VAC. Inrush protected. 9½Wx6Hx12D in. **ALS-600S, $1699,** ALS-600 with 10 lb., very low RF noise switching power supply.

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location in the Vermont mountains, but I doubt he ever expected to beat all of the other 2,103 entrants in the category! Second place came from an area of the world that is rarely represented in the single operator Top Ten. Champ E21EIC made a lot of people happy by giving out a rare multiplier from XWØYJY in Laos. Les N1SV visited VP9I in Bermuda to take third. Fourth place was the always rare zone 34 multiplier SU9AF operated by Andrew RW3AH. Marv N5AW finished second in the USA and fifth overall to go along with a new record score for W5. Martin OK1WCF earned the top European score. EA7OT and OE6Z were the other top European finishers.

Single Operator All Band Assisted

For the first time ever, the High Power Assisted category had more entries than the non-assisted category (974 to 960). This demonstrates the continuing popularity of using the DX Cluster to help find new countries among all of the contest activity across multiple bands. The world high scorer was EF8U operated by Juan EA8RM from the club station EA8URL. The next two finishers were from Asia—Vladimir UPØL and Alexander A65BP.

Fourth place went to Bill K4XS who overcame several obstacles on his way to such a fine score: "On Wednesday I started getting a cold and by Friday I had a sore throat ... not good for an SSB contest. Constant throat gargles with Listerine did the trick and helped a lot. This was my first venture into the iron man CQ WW All Band Assisted category ... at age 67!" Nice job, OM!

Sergio PP5JR moved away from his usual single band entry to try the All Band Assisted category as PX5E. It earned him fifth place and the fourth continent represented in the Top Ten. VE3RA and EC2DX had a virtual photo finish for sixth place.

The Low Power Assisted category was dominated by Felipe NP4Z using the club call KP3Z. The choice to go low power was dictated by the electric utility. "After all the station upgrades it was disappointing that there was no power or very low voltages for almost the whole weekend … The option was to run low power, since the automatic amps do not like low voltage. The second radio with external power supply kept shutting down at full power. A 12 volt battery with an external charger on the generator fixed the problem." Second place went to Andrius LY7Z, another northerly station that took advantage of the conditions. Vasily W6AAN/3 was the top USA scorer and third overall. Abdulhafiz 7Z1CQ had a very nice score to finish fourth.

Single Operator Single Band

The single band categories were dominated by a trio of French operators from the FY5KE Radio Amateur Club de Kourou in French Guiana. Herve F5HRY and Marc F1HAR took a full week of "holidays" to upgrade the FY5KE club station: "With the help of Didier FY5FY and a lot of preparation during the previous years, we eventually raised three new towers (24m/27m/30m) respectively dedicated to 15m, 20m, and 40m. The antenna work ended just one day before the contest (not a single piece of the inside stations assembled at that time), with three fully exhausted ops, bitten by mosquitos and burned by sun..."

Herve F5HRY finished in first place on 10 meters with the callsign TO1A. Jorge CX6VM used the callsign CW5W to finish second. He says, "My best ever QSOs in a SOAB contest, and still on only one band." Third place went to another travelling Finn, Olli OHØXX, operating as EA8EW. GW9T operated by Steve MWØZZK, was the top European scorer just a few points ahead of Clive GM3POI at GM3X. There was a close race in the USA also, as Jerry WB9Z in Indiana finished just ahead of Chuck W5PR in Texas.

Marc F1HAR enjoyed the new antenna at FY5KE to finish first on 15 meters. Jean-Pierre P43A made a last-minute decision to try 15 meters instead of 20 and was pleased with his choice. Gary VA7RR used the special callsign CJ7RR to post a very nice score from the

2013 CQ WW DX SSB BAND-BY-BAND BREAKDOWN—TOP ALL BAND SCORES

Number groups indicate: QSOs/Zones/Countries on each band

WORLD SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
CN2R	229/13/46	532/18/74	1093/26/94	1723/38/120	1213/35/126	3580/37/119
8P5A	95/ 9/20	418/18/58	1387/31/103	2391/38/120	2404/34/112	3431/32/105
CR2X	178/14/44	434/24/85	969/28/94	1961/36/113	2509/36/121	3060/36/116
VE2IM	85/ 7/ 6	542/16/71	1106/27/93	1578/36/113	2041/36/125	2440/35/116
NH2T	35/10/15	273/27/53	605/34/75	1039/33/ 97	2181/36/101	2722/39/103

USA TOP SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
N2IC/5	17/12/12	98/21/47	598/30/73	503/33/ 94	1434/37/120	1688/36/126
N5DX	35/13/19	93/21/57	618/29/81	686/35/110	918/32/106	1858/36/106
W9RE	41/12/22	180/18/58	460/31/84	1023/32/122	1096/35/118	1224/35/102
KQ2M/1	0/ 0/ 0	37/ 8/23	158/24/58	1192/39/124	1492/40/115	1818/33/ 98
K1ZR	7/ 5/ 3	351/17/68	397/20/71	867/31/100	960/32/ 95	1574/28/ 96

WORLD SINGLE OPERATOR ASSISTED ALL BAND

EF8U	12/ 4/12	173/16/57	597/26/ 89	1819/36/122	1587/35/120	2468/37/133
UPØL	89/ 9/27	468/13/61	1339/30/110	1291/37/131	919/34/123	1532/39/134
A65BP	65/ 9/33	271/14/62	892/32/107	1060/37/113	991/35/120	2031/37/133
K4XS	33/16/27	99/23/74	561/34/109	1184/39/135	675/38/134	1956/37/142
PX5E	5/ 4/ 4	59/14/37	254/27/ 79	982/34/ 93	966/39/124	2682/37/141

USA SINGLE OPERATOR ASSISTED ALL BAND

K4XS	33/16/27	99/23/74	561/34/109	1184/39/135	675/38/134	1956/37/142
K3WW	40/13/28	177/19/68	276/32/98	895/35/116	638/35/116	1829/35/127
K7RL	9/ 6/ 4	63/18/32	693/31/84	542/37/117	1237/36/129	1217/35/131
W3UA/1	22/10/19	111/17/67	446/31/92	562/33/114	718/36/112	1486/33/125
AA3B	30/ 8/20	215/15/67	243/28/91	739/33/120	599/34/118	1270/29/126

WORLD MULTI-OPERATOR SINGLE TRANSMITTER

CN2AA	167/16/63	426/22/81	1414/36/116	2277/39/143	3147/38/146	3515/40/164
CR3A	110/13/49	371/24/90	1018/33/113	2366/38/152	2398/39/151	3953/40/166
P33W	261/13/66	358/19/80	1500/35/121	2586/40/154	2395/39/144	3148/40/156
P3N	228/14/68	726/22/83	1479/34/117	1972/39/144	2126/39/142	3492/40/144
CQ3L	74/ 9/39	196/14/62	920/29/101	2310/38/141	1969/38/135	3421/37/136

USA MULTI-OPERATOR SINGLE TRANSMITTER

NN3W	40/17/38	218/24/81	776/33/109	875/39/141	1276/38/148	1811/37/152
K8AZ	25/13/23	157/22/74	539/33/110	1045/40/137	1161/39/136	1761/37/148
W1NA/Ø	30/11/28	139/22/81	680/32/108	747/37/131	806/39/130	1153/35/140
N1MM	7/ 6/ 6	118/14/57	214/27/87	932/39/132	765/36/130	1420/32/134
AA9A	9/ 6/ 7	119/16/55	388/30/92	491/35/113	761/37/129	1473/36/143

WORLD MULTI-OPERATOR TWO TRANSMITTER

CN3A	162/14/48	587/19/83	1650/34/116	3395/38/151	3905/39/151	3836/40/156
UP2L	278/12/59	1008/22/88	2193/38/126	2403/39/146	3115/39/142	2492/39/137
KC1XX	42/13/36	518/25/85	1407/35/123	1782/39/149	3150/40/155	2625/38/155
TM6M	211/12/52	748/20/82	1376/34/111	2627/40/149	3682/38/145	2725/40/153
K1LZ	74/15/50	568/27/92	1035/34/117	1761/38/151	2106/39/145	2224/39/157

USA MULTI-OPERATOR TWO TRANSMITTER

KC1XX	42/13/36	518/25/85	1407/35/123	1782/39/149	3150/40/155	2625/38/155
K1LZ	74/15/50	568/27/92	1035/34/117	1761/38/151	2106/39/145	2224/39/157
K9CT	57/15/21	194/20/68	768/34/107	999/39/137	2129/40/148	2264/38/152
WK1Q	53/14/38	383/24/79	570/32/102	936/39/138	1858/38/143	1993/36/141
NØNI	92/15/34	278/23/76	564/34/107	949/39/132	1685/39/134	1929/33/126

WORLD MULTI-OPERATOR MULTI-TRANSMITTER

D4C	649/23/85	985/30/111	2335/36/132	5540/40/172	5057/40/171	5114/40/172
HK1NA	575/17/60	787/26/ 80	2762/34/122	3749/38/150	3581/38/143	5132/39/144
ES9C	1218/21/85	1826/28/102	3266/39/137	4891/40/165	4905/40/161	3118/40/164
K3LR	489/19/69	999/28/100	2227/35/130	3346/40/169	3739/40/163	3380/39/167
PJ2T	172/12/28	831/28/ 85	2331/29/117	3887/37/141	4308/38/133	4650/38/131

USA MULTI-OPERATOR MULTI-TRANSMITTER

K3LR	489/19/69	999/28/100	2227/35/130	3346/40/169	3739/40/163	3380/39/167
W3LPL	344/18/64	755/27/96	1443/35/118	2167/40/155	2703/39/152	3106/39/161
WE3C	84/18/53	381/24/87	1313/35/123	2461/40/158	2963/39/158	2681/38/154
NQ4I	201/18/52	510/26/86	991/34/119	1788/39/144	1451/38/140	1793/38/146
W4RM	75/15/33	250/23/78	860/30/100	1133/38/134	2167/37/136	1674/33/134

Pacific Northwest. Pat N9RV/7 in Montana enjoyed the polar openings to take the top USA spot. Viesturs YL2SM was the high European scorer just a few points ahead of Siggi TF3CW.

Twenty meters is always a challenging band. There were openings around the clock, and at times it seemed like the entire contesting world was packed in shoulder to shoulder. The WW8OH soapbox comments referred to it as a "beautiful layered tapestry of signals, one on top of the other." The top score was by Gia 4L4WW operating with the call 4LØA. Pavel RK4FD operated from RT4F to finish second and have the top European score. Lucas LU1FAM tried something a little different and finished third from Argentina, a long way from the high population centers of Europe and North America. Dan W7WA is a regular on 20 meters and was able to take fourth.

Forty meters SSB is a mosh pit of signals between 7.125 and 7.200. With the loud multi-operator stations stacked top to bottom, it takes commitment and a good ears for a single operator to compete. In a rare event, the World top score went to a station in the USA—W4AAA operated by John KK9A: "Conditions were fantastic. At one point during the night 40m was open in all directions. I was running Europe an hour after their sunrise and at the same time I had stations in Japan, Australia, and South America calling me." Second place was Arthur 4X4DZ operating with the call 4X2M. Ivanko YU7GM operated as YT7A to earn third place and the top European score.

Seventy-five meters was an interesting battle between experienced veterans and enthusiastic newcomers. The winner was Mauri OH2BYS operating from EF8S with an impressive setup of two radios, two wire Yagis, and three Beverage antennas for receiving. "I had many difficulties to copy weak stations because of the statics due to the rain." Second place went to Pedro, NP4A, operating from his mountaintop location in Puerto Rico. Pedro reported, "The only antennas I have are a pair of 160 meter dipoles feed with 600 ohms open line … and five Beverage antennas that let me hear very well on that band." He logged the contest on paper and then had to type in the log over the following days. Patrick, KK6ZM, joined a family operation in Montserrat and talked his father and uncles into letting him try 75 meters. He made a very impressive score as VP2MXA. The top European score was by David OK1DTP operating OK5D.

Top band saw a spirited competition as well. Ondra OK1CDJ operated from the OL7M location to achieve the winning score. With IZ4DPV away at D4C, rookie operator Giammarco IZ4ZAW borrowed the station and used the call IO4C to put up a fine second-place effort. Peter VE3PN took top honors in North America. Ronald W2VO was the top USA. Honorable mention must go to Eddie LU2DKT, who perseveres on the band despite being far away and in the middle of Summer QRN.

Check out the close three-way battle for Single Operator Assisted Low Power on 10 meters. PY1NX, EE8T, and LWØF all were within just a few points of each other. 9Y4D had a dominating score on 20 meters for low power assisted.

QRP

To overcome their frustration of dealing with poor propagation, contesters in northern W9 and WØ have taken to calling their part of the world the "black hole" because signals do not seem to escape. Given this history, it is quite remarkable that the World high score for the Single Operator All Band QRP category came from NDØC in Minnesota! At nearly 1000 QSOs and 103 different countries worked, Randy showed both skill and perseverance: "This score is a personal best for me, surpassing 2011. This was all S&P... I tried running a few times on 10, but just couldn't get anything going. I had 4 hours on Saturday morning and early afternoon when I averaged over 60 QSOs per hour with S&P—pretty good for QRP!" And what is the NDØC superstation? A Yaesu FT-897D running 5 watts to a Cycle 24 TX38 tribander at 40 feet above ground, a Cushcraft D40 rotatable dipole, and an inverted Vee.

Another outstanding QRP score was achieved by Didier FY5FY operating from the FY5KE station. He used the new 5-element Yagi to almost double the existing world record for 20 meters. Yoshirou JH7RTQ had the next highest QRP single band score up on 10 meters.

Multi-Operator

The **Multi-Operator Single-Transmitter** category has become the battleground for sophisticated technical and operating strategies among the top teams. A new entry, CN2AA, staffed by operators from Russia and Kaliningrad (UA2) took the top score with a new World record. They used multiple interlocked stations on the run band to maximize contacts and multipliers. You can learn more about them at www.cn2aa.com. Very close behind in second place was the Madeira Contest Team of CR3A. This team achieved their fantastic result with only two radios—one for the run station and one for the multiplier station. On the island of Cyprus, it was a race between two Russian teams with P33W finishing ahead of P3N. EI7M had the best European score just a few points short of setting a new record.

Rich NØHJZ (left) and George KQ8Z had fun and enjoyed the pileups as C6ARW and C6AZZ.

EUROPE TOP SINGLE OPERATOR ALL BAND

Station	160	80	40	20	15	10
CR2X	178/14/44	434/24/85	969/28/94	1961/36/113	2509/36/121	3060/36/116
OH8X	146/11/47	346/19/71	621/29/83	2177/32/105	1841/37/109	1455/34/102
UU7J	258/12/53	574/16/64	999/29/96	1159/36/106	1126/32/ 92	1873/32/ 98
HA8JV	266/ 9/52	494/13/59	870/26/85	1061/32/ 97	819/34/ 98	1605/38/101
EU1A	14/ 4/14	412/13/54	761/29/89	694/24/ 82	1203/34/102	1614/40/131

EUROPE SINGLE OPERATOR ASSISTED ALL BAND

EC2DX	49/ 9/44	80/17/68	564/33/104	1155/33/106	1017/37/111	1789/40/125
DJ8OG	153/10/53	268/17/74	439/33/ 99	598/38/120	776/39/111	1437/40/126
IW2HAJ	83/ 7/42	257/12/61	526/29/ 93	876/38/114	719/35/112	1559/40/138
ON4IA	68/ 5/35	356/16/61	348/32/ 97	763/35/109	1501/38/113	775/37/113
UT7U	98/ 8/48	305/13/61	666/32/102	715/38/117	1045/36/127	1166/38/124

EUROPE MULTI-OPERATOR SINGLE TRANSMITTER

EI7M	125/12/57	579/19/86	1642/37/120	1184/37/140	2310/40/147	3494/40/159
OM8A	235/15/67	521/22/95	1326/38/130	1226/40/155	1793/40/147	2466/39/155
SJ2W	77/13/61	262/23/89	993/37/118	2881/38/148	1910/38/138	1555/40/150
9A1P	120/14/69	679/20/87	1128/35/119	1357/40/149	1593/40/139	2616/40/156
OM7M	270/14/71	221/19/81	1608/38/130	1299/40/149	1606/40/151	1970/40/163

EUROPE MULTI-OPERATOR TWO TRANSMITTER

TM6M	211/12/52	748/20/82	1376/34/111	2627/40/149	3682/38/145	2725/40/153
RU1A	149/ 8/52	957/25/101	1661/38/126	2494/40/146	2501/40/139	1881/39/135
OL4A	276/13/60	954/20/89	1578/31/114	1871/39/147	1814/39/140	2342/40/149
SK3W	243/10/53	901/22/93	774/37/110	2299/39/146	2373/38/141	1601/40/146
HG7T	216/10/48	956/21/83	1549/38/126	1533/39/134	1967/40/140	2088/40/148

EUROPE MULTI-OPERATOR MULTI-TRANSMITTER

ES9C	1218/21/85	1826/28/102	3266/39/137	4891/40/165	4905/40/161	3118/40/164
DR1A	897/16/74	1777/25/98	3134/39/135	3844/40/163	2987/40/154	3314/40/161
II9P	562/13/66	1176/25/93	2065/33/113	4105/39/148	2983/39/150	3238/40/156
OT5A	778/12/60	1798/16/82	2579/33/114	2914/38/149	2169/39/137	2041/39/139
LZ9W	384/10/56	1728/25/98	2606/37/128	3466/40/158	2377/37/133	1777/39/138

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CQ WW SSB 2013 on the Web

Here are a few of the videos that have been posted following the 2013 CQ WW DX SSB Contest. It always fun to see the people, places, and activities behind the callsigns we hear over the air.
XQ7UP: http://www.youtube.com/watch?v=SqN_60NSdbg
C6ARW pileup: http://www.youtube.com/watch?v=AVmneoOgzQE
F5TRO @TM1T: http://www.youtube.com/watch?v=x51VVQ5-VjU
PJ2T: http://www.youtube.com/watch?v=aDs-2jZ-FSw
D4C: http://www.youtube.com/watch?v=zgtBfYj0mjs
ED5T: http://www.youtube.com/watch?v=bW9SjlKGdWc
9K2HN: http://www.youtube.com/watch?v=MAGiimYAmao
J47X (op SV7BVM): http://www.youtube.com/watch?v=Smf4llhYYDs
YP10KQT: http://www.youtube.com/watch?v=FwrZvbNFPQQ
EI1A: http://www.youtube.com/watch?v=_GkXFV-e7EM
XR6T: http://www.youtube.com/watch?v=bCRg5LwxGBI
SP2MKT: http://www.youtube.com/watch?v=ylf2GZYWL-M
EF7K: http://www.youtube.com/watch?v=seGlSa-VQ0c
3V7A: http://www.youtube.com/watch?v=KM8GOUTXI50
ES5TV: http://www.youtube.com/watch?v=Z9fDlbIFhMs

The top USA score for Multi-Single was NN3W operating from the N3HBX station. This was a last-minute effort when Rich realized he couldn't do a single op. He pulled together a team of part-time operators who managed to achieve the victory. Not far behind was the experienced multi-single team of K8AZ in Ohio.

The **Multi-Operator Two-Transmitter** category had four continents represented in the top four scores. The Italian lead team of CN3A broke their African scoring record set in 2010 on the way to a substantial margin of victory. Second place went to the big station in Kazakhstan, UPØL. They had a fantastic signal on every band. Third place went to team KC1XX, who was engaged in a fierce rivalry with the ops at K1LZ. Both beat the USA record, but it is KC1XX that gets bragging rights for the coming year. The French team at TM6M took the top European score over RU1A.

It was truly a battle of the titans for the **Multi-Operator Multi-Transmitter** category. The D4C team on Cape Verde put in a tremendous amount of work preparing for the contest with one goal in mind – breaking the CN8WW record from 2000. They made multiple trips to the island, dealt with heavy rain and wind storms, created a promotional video on YouTube (search D4C), and did all they could to be ready. Unfortunately for them, the same propagation that made contacts between the USA and Europe so easy, took away some of the big QSO hours they were depending on for the record. The result is still a fantastic score—fourth highest of all time—but not what the team was hoping for.

Second place went to the always improving Jumanji Contest Station HK1NA with a strong effort and strong signals on all bands. The surprise result of the competition was the third-place score by ES9C operating from ES5TV in Estonia. The team took full advantage of the polar paths into the USA and Japan to put up incredible QSO totals on the high bands. Perhaps the 70-meter-high tower with a 4-high H-frame of stacked 5-element Yagis on 15 meters also helped! From Tonno ES5TV: "We never even dreamed about such score. This one goes down in history. Weekend of a lifetime for sure." The second-place DR1A team in southern Germany could only listen in frustration as the openings did not happen for them. K3LR set a new USA record in winning the USA for the ninth consecutive year!

Overlay Categories

There were two new overlay categories added to the CQ WW DX Contest this year. An Overlay category is like a separate contest within a contest. Each entrant has their traditional category score and then a separate score for the Overlay category. The Overlay scores are listed separately in the score results for the CQ WW in either high-power or low-power classifications <www.cqww.com> and the expanded results at <www.cq-amateur-radio.com>.

The Rookie Overlay category is reserved for single operators who have been licensed for less than three years at the time of the contest. They not only get to compete directly with their peers, but we get to see who the up-and-coming operators of the future may be. The top high-power Rookie entrants were Tom 9A6TKS and Kevin KE4CQ. The top low-power Rookie scores came from Jan OH6ECM and Halina SQ6PLH. We were very pleased to have 256 entries in the first year of the new Rookie category.

The Classic Overlay category was created to remind us of a simpler time in radio contesting, back when an operator would use one radio and his own skills to find DX and build his score. This category does not permit use of the DX Cluster or other assistance. As an added challenge, the Classic Overlay score is based on the first 24 hours of operating time. This gives operators who are unable to dedicate the full weekend a place to compete with each other. The winner of the high-power Classic category was Yuri VE3DZ operating from VE2IM. He operated 45 hours for his traditional category score, but counted only the first 24 hours for the Overlay. Marko ZD8O did the same to finish second. Randy K5ZD/1 operated 27 hours and counted the first 24 to take the top USA score. On the low-power side, Mike

CQ WW Station Scores Online

This year's CQ WW results complete *CQ* magazine's year-long transition to publishing individual station scores ("line scores") on CQ's website only. To access the line scores go to the CQ home page at <www.cq-amateur-radio.com> and click on the link under the current issue highlights.—*W2VU*

OE6MBG operated exactly 24 hours from OE6Z to achieve the top score. MD2C did the same to finish second. The top USA score, and third overall, was Jim K9JF/7. We received 795 logs in the Classic category and a number of very positive comments. We look forward to seeing what winning strategies will emerge in the coming years.

Final Thoughts

The main complaint after the contest was the number of stations that would not sign their callsign after each QSO. Sometimes even after many QSOs! To the runners, this is a tool for managing the pileup and saving time. For the listeners, it is frustrating not knowing how long it will be and whether they should wait or keep tuning. Do we need to create a new rule to balance out the interests of both sides?

One area where complaints were lower this year was with signal quality. A new rule was added for 2013 stating that poor signal quality was unsportsmanlike and possible grounds for disqualification. We believe the new rule had the desired impact and we were pleased that no one was bad enough to need more than a warning. That said, it is important for the big-gun stations to realize that poor signals cause the smaller stations to give up in frustration. That doesn't make the contest better for anyone. Please take some time before the contest and have a local listen to your audio and signal width.

There is a team of people behind the CQ WW Contest. You can see the full list on the cqww.com website. There is a working group that helps you submit your logs and cleans up any formatting or other errors that prevent the logs from being checked correctly. We had help from volunteers to type in the 77 paper logs so they could be included in the checking. Another group works on investigating those logs where we suspect there may be a rules violation. Special thanks to Ken K1EA for all of his time and effort to constantly improve the log-checking software. John K1AR handles the plaque program, and Barry W5GN makes sure the 2,102 certificates will get into the mail.

We continued our use of Software Defined Radios (SDR) to record the full contest bands to disk. This allows us to go back and "replay" the contest when we have a question about what we see in the log. Steve N8BJQ led the SDR team, which included WZ7I, KH6LC, N4ZR, K8ND, OH6BG, OH6LI, S55OO, S50XX, HA1AG, and ES5PC.

Compliance with the new 5-day log deadline increased to 92% of all entries. Having the logs early enabled us to immediately begin the checking process and get the results out earlier than ever before! We still accept late logs, but they are not eligible to win any awards or appear in the top-score boxes. Late logs are shown in italics in the line scores.

We look forward to seeing everyone again for the CQ WW DX SSB Contest on October 25–26, 2014. Full rules, records, line scores, and other information is available on the web at <www.cqww.com>.

73, Randy, K5ZD

When a fox is a radio transmitter, it's time for fun and adventure. Here's how to join in during CQ's World-Wide Foxhunting Weekend.

Give Foxhunting a Try in 2014

BY JOE MOELL,* KØOV

When someone says "foxhunting," what comes to mind? Most people envision dozens of mounted horsemen following hounds through an English forest in search of a wily, bushy-tailed canine. But to many hams, the fox is a signal to be tracked down with radio direction finding (RDF).

Ham radio foxhunting can mean a ride in a vehicle filled with RDF gear to find one or more transmitters that your fellow hams place in unlikely spots to challenge you. Instead of the streets and highways, the hunt site could be a park, with everyone on foot. Better yet is a combination of the two, with a vehicular hunt followed by an on-foot "sniff" at the end to find an off-road fox.

An ideal time for your ham club to try this radiosport is CQ's World-Wide Foxhunting Weekend. This year it's May 10–11. The vast majority of transmitter hunts take place on the 2-meter band with the participants using their handi-talkies and homemade beam antennas.[1] It's simple, inexpensive, and an excellent way to learn soldering and home-construction skills.

Most clubs start out with simple mobile foxhunts on a local repeater. They may also call them T-hunts or bunny hunts. Someone goes to an easy-to-find location, such as the parking lot of a local eatery, and makes occasional "come and find me" transmissions on the repeater input. If they're licensed, the hunters can talk back and have a QSO while they hunt. Encourage ride-alongs, so more people can participate.

To make sure that everyone has success, the hider should give hints and clues after a while. When all have arrived, it's time to go inside for dessert and discussion of what equipment and techniques worked, what didn't, and when to have the next hunt. A good time for these practice foxhunts is just after your club's net on the repeater, when listenership is high. Why not start having mini-hunts like this right away so the group will be ready for something more ambitious during Foxhunting Weekend?

With a Yagi made from PVC pipe and an old measuring tape, plus an attenuator, on-foot foxhunting on 2 meters is easy and fun. Tom King, KA6SOX, and his son Justin are looking for hidden transmitters at Lake Los Carneros near Santa Barbara, California. (Photo by Joe Moell, KØOV)

Harder hunts last longer, so hold them on simplex to avoid tying up the repeater. Consider having everyone start at the same point, such as a local hilltop. That avoids giving some hunters the lucky break of being closer to the fox when the hunt starts. It also makes it possible to include odometer readings as a scoring criterion. Instead of the first-to-find team getting the prize, give it to the one with least start-to-finish mileage. Mileage-factor hunts discourage reckless driving, encourage careful plotting of bearings, and they even out the competition. Sometimes the last team to find the fox wins, which keeps the level of excitement high.

Some prefer to go it alone, but I think that mobile T-hunting is most fun when it is a social activity with several people in the car. The driver concentrates on that task while a passenger gets RDF bearings. That person, or perhaps another passenger, plots the bearings on a map or computer and tries to figure out where the hider is.

USA versus the World

All-on-foot hunts can be great entertainment, too. What better way to get Scouts and other young people inter-

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Web: <www.homingin.com>

ested in ham radio fun? Scatter a few low-power transmitters in a woodsy park. Encourage everyone to track them down with measuring-tape beams or just with their handi-talkies and scanners. Have everyone bring some food and turn it into a mini-hamfest.

After a couple of romps like this, try on-foot hunting with international rules. In Championship foxhunts, competitors carry a card or an "e-stick"[2] to register at each of the five fox transmitters. Their goal is to find them all and get to the finish line within a set time period, usually about two hours. It goes by several names including foxtailing, radio-orienteering, and ARDF. A championship course can encompass more than 1000 acres.

With practice and perseverance, you could win ARDF medals and other honors, no matter what your age. National championships take place annually in about two dozen countries around the world. USA's will be near Boston on the first weekend of June. Don't be afraid to take on these championship courses just because you haven't done much ARDF. It's normal for a high percentage of attendees each year to be newcomers. They are always welcomed and encouraged.

Our national championships are

Radio Foxhunting with International Rules

Around the USA and the world there are wide differences in the guidelines and rules for transmitter hunts in vehicles. Each group develops the kind of mobile contests that suit the skill and temperament of the local T-hunters, as well as the geography and climate of the region.

Roll-your-own rules won't work when radio-orienteers gather from all parts of the country and the globe to test their skills on foot in the forest. As interest in ARDF spread through Europe three decades ago, a committee of the International Amateur Radio Union (IARU) was formed to standardize the rules. That made it possible to hold the First World ARDF Championships in 1980. As the sport has grown in popularity, the rules have kept up. Their purpose is to ensure that winners have the ideal combination of direction-finding skill, orienteering ability, and physical stamina.

After its start on 80 meters with just three age/gender categories, championship ARDF now has six age categories for men and five for women. Now 60-year-olds don't have to compete against 20- or 40-year-olds. Having more categories also means that more gold, silver, and bronze medals are available to be won.

At national and world championships, there are separate hunts during separate days on 80-meter CW and 2-meter AM. Each takes place in a large forested area. Five transmitters are on the air with distinct identification. Fox #1 is on for 60 seconds, then it goes off and #2 comes on for a minute. The cycle continues until #5 has finished, at which point #1 begins again.

Competitors receive a detailed color orienteering map of the forest just before they set out on the course. They must navigate from the starting corridor to each of the required fox transmitters (five, four, or three, depending on category) and then to the finish line, using the map and their own RDF gear. Scoring is done first by number of transmitters found and then by elapsed time. There is a time limit, usually about three hours. If you stay out in the forest longer, you are disqualified.

During championship foxhunts, each person competes as an individual. No teaming or human assistance is permitted on the courses. GPS help for navigation isn't allowed either. Competitors may not make transmissions except in emergencies.

The ARDF World Championships take place every even-numbered year in a country that is selected by the ARDF Working Group of IARU. Each participating country may send three competitors in each of the age/gender categories. USA has sent a team to every World Championships since 1998.

Age and gender don't matter; everyone can have fun when there are hidden transmitters to be found. The Ski Country Amateur Radio Club in Glenwood Springs, Colorado has been a regular participant in CQ's Foxhunting Weekend. (Photo courtesy Bob Cutter, KIØG)

open to anyone who can run or walk through the forest for 5 to 10 kilometers while carrying RDF gear. A ham license is not a requirement. Expect to meet beginners and experts from all over the world, because foreign competitors usually attend. More information and registration forms are available at the event website.[3]

If you do well at the USA Championships, you may be invited to join ARDF Team USA as it travels to Burabay, Kazakhstan for the 17th World Championships. You will be competing against more than 200 radio-orienteers from over 30 nations. At the last World Championships, which took place in Serbia during 2012, Team USA members ranged in age from 27 to 71. They brought home 13 medals, more than ever before.

Get Ready for the Big Weekend

As Foxhunting Weekend Moderator, I have the pleasure of getting reports and photos from hams who have discovered a new way to enjoy their hobby. What's more, the skills they learn are very important when it's time to find sources of interference, either accidental or intentional. Some of them are now helping Civil Air Patrol and other search/rescue agencies, using RDF to track downed aircraft and persons in distress.

For many clubs, Foxhunting Weekend kicks off a season of regular transmitter hunts. For others, it's a once-a-year event, like Field Day. *CQ* doesn't impose any rules or offer any prizesfor Foxhunting Weekend. That's up to you and your fellow hometown hams. You don't even have to schedule it on May 10–11. Any weekend in the spring will be fine!

Your hunt can be for mobiles or all on foot. Use the international rules or make up your own. If your club has always had one kind of hunt on Foxhunting Weekend, why not try something different this year?

Some hams prefer formal transmitter hunts with carefully

Some clubs have a "foxbox" that is used for every foxhunt, whoever hides it. This 50-milliwatt transmitter awaits members of the Royal Harbor Amateur Radio Club in Tavares, Florida during Foxhunting Weekend. (Photo courtesy Ted Luebbers, K1AYZ)

Food and foxhunting go well together. This special cake was served to participants at the Foxhunting Weekend activities of the Fullerton Radio Club last year. (Photo by KØOV)

crafted boundaries, specifications for signal parameters, time limits, and so forth. Others are completely content just to have one or more signals to hunt—no need for any regulations, they say. Talk it up on the local repeater and see what your friends have in mind.

USA's national championships of ARDF will be near Boston in early June 2014. Jerry Boyd, WB8WFK, of Albuquerque was a medal winner when the championships were near Boston in 2009. (Photo by KØOV)

Planning hunts and building gear can be almost as much fun as the actual transmitter tracking. There are plenty of resources to help you including a book,[4] an instructional video,[5] and lots of websites with photos and videos. *CQ* magazine and *CQ VHF* have featured transmitter hunting on a regular basis over the years, so dig into that stack of back issues.

Start your search at my website,[6] which has the announcement of this year's Foxhunting Weekend, an article on mobile T-hunting that you can put in your club's newsletter, and ideas for RDF equipment that will make a foxhunter out of anyone with a 2-meter handi-talkie.

Every member of your club is a potential participant in Foxhunting Weekend. Better yet, include the whole community, especially young people. Invite a Scout troop to experience on-foot transmitter tracking or to ride along with the mobile hunters. Look for opportunities to incorporate foxhunting into Scout activities such as Camporees, Scout-O-Ramas, and Jamboree-On-The-Air.

Whatever your club's RDF contesting style, be sure to keep safety in mind. Don't put transmitters where someone might get hurt getting to them. Make sure that all transmitting and receiving antennas are eye-safe. Always be mindful of your own physical limitations and never take chances behind the wheel or in the forest.

Afterwards, write up the results and send them to me. The list of information in a complete CQ Foxhunting Weekend report is posted with the announcement at my website. We need details of date, location, hiders, and winners. Readers also want to know what was unique about your hunt and what lessons (positive and negative) you learned from it.

Take lots of photos for your club newsletter and please send some to me for a follow-up article. Resolution of 640×480 is the bare minimum. A camera of four to ten megapixels will give images that will make the editors much happier and will be more likely to be used. No cell-phone photos, please.

I am eager to read your reports of 2014 Foxhunting Weekend activities and the new ideas that you come up with. Happy Hunting!

(Joe Moell, KØOV, is ARRL's ARDF Coordinator and Moderator of the annual CQ World-Wide Foxhunting Weekend. He also writes the "Homing In" columns on radio direction finding topics in the CQ-Plus digital supplement. His "Homing In" website <www.homingin.com> is full of information and ideas about RDF equipment and techniques.—ed.)

Notes

1. http://www.homingin.com/equipment.html
2. http://www.homingin.com/epunch.html
3 http://www.bostonardf.org
4 http://www.homingin.com/THRDFSinfo.html
5. http://www.homingin.com/video.html
6. http://www.homingin.com

math's notes

BY IRWIN MATH,* WA2NDM

A Visit to a Local Treasure Chest

As regular readers of this column are aware, we are an avid home-brewer and experimenter. As a result, we are always looking for sources of various components at reasonable costs that we can use in our many projects. Well, during a visit to a local home-improvement center we uncovered a number of such items that I am sure will appeal to those of you with similar interests.

The Electrical Aisle

Our first stop was the electrical isle. Here we found a couple of so-called "shallow wall" boxes. These "blue boxes" are intended for house switches and electrical outlets in walls that do not have enough depth to accommodate a full-size electrical box. They are very strong, blue in color, and totally insulating. They are also very easy to drill and saw when needed. In addition, there are two threaded holes normally used to hold a switch or outlet that is ideal for a cover plate (also available) or a blank front panel. Finally, a set of flanges are also present as an alternate mounting method. At a cost of less than $2 each, these certainly beat the so-called "project boxes" or similar plastic housings available from regular electronic-supply houses. I have used many of these in the past and have always been very pleased.

In the same aisle was the electrical wire section. The person in charge was very willing to give us a 12-inch "sample" of 14-gauge, 12-gauge, and even 10-gauge Romex-type cable which when stripped would be ideal for bus-bar fabrication and general grounding applications. Hookup wire in gauges of all sizes from 18 and larger were also available for purchase by the foot, as was common three-conductor AC line cord and matching plugs. You can even find copper-coated ground rods, as well. If you are not familiar with what the standard electrician has to work with, you should take a look at all of the various fittings and other items in this aisle. You will be pleasantly surprised!

The Plumbing Aisle

Our next stop was the plumbing aisle. Here we found 1/4-inch diameter flexible copper tubing normally used for refrigerator ice-maker water feeds. This material would be ideal for high-power RF amplifier tank coils. It is very easy to bend and solder and would be great for that home-brew kilowatt linear. Also available are both long and short lengths of standard 1/2-inch ridged copper tubing, good for VHF and UHF antenna projects, matching networks, etc., along with all kinds of matching fittings. Don't forget the white plastic PVC pipe. It is available in many sizes and is good for antenna insulators, coil forms, mounts, and the like, along with its own set of fittings.

The Hardware Section

Moving on to the hardware section, we noticed a wide range of solid aluminum rods. Lengths of the 1/4-inch diameter variety can easily be threaded at each end with an inexpensive 1/4-20 die and then coupled together with 1/4-20 couplings (also available) to make portable antennas of all lengths. Being aluminum, the rods can easily be cut to the proper length with a hacksaw and quickly assembled and disassembled for field work. They can also be used for all types of experimental antenna construction projects. Also present are numerous types of clamps, including the common U clamp, which is employed to mount an antenna mast to a support pole.

The selection of hardware is also quite extensive and even includes machine screws of many sizes (metric as well) in brass and stainless steel. In addition, this aisle has all kinds of angle brackets, flat metal strips, and even sheet aluminum, both solid and perforated, which is great for chassis, speaker grilles, and the like. Even the roofing section (next aisle in our case) has both soft-aluminum and copper-flashing material in small rolls that are ideal for all sorts of grounding and shielding applications.

"Telecommunications" Section

The particular home-improvement center in our neighborhood has a so-called "telecommunications" section where various F connectors, F connector jumpers (using RG-6/U coax), and similar fittings are available. These together with commonly available BNC to F connector adapters (from a regular electronics distributor) are a low-cost source for RF interconnections of all kinds in the shack. Although RG-6/U is commonly used for cable TV applications (at hundreds of MHz), it also will handle decent amounts of RF and is very inexpensive. Connecting it to F connectors is easy, but since the shield connection to these is usually only by means of a compression nut or crimp-sleeve cables, it might not be the best for high-power applications. Also present were plenty of multi-conductor CAT5 and CAT6 cables as well as telephone cable and related connectors.

This information may be common sense to the true "scrounger," but keep in mind that many useful components and materials can be found in places that are not conventional electronic parts distributors and a good hardware store deserves a careful look.

73, Irwin, WA2NDM

*c/o CQ magazine

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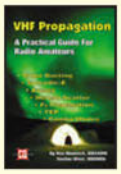

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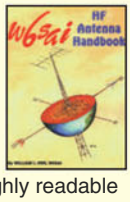

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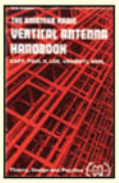

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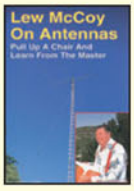

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Gordo's Now Teaching the Teachers

BY PETE TROTTER, KB9SMG

Gordon West, WB6NOA, retire? Not likely.

This whirlwind of ham knowledge recently decided to focus his energy on passing along his highly-successful ham instruction techniques to those wishing to improve their teaching skills. So he started offering seminars at hamfests around the country designed to meet the needs of active ham radio instructors, club Elmers, and retired school teachers wanting to offer ham licensing classes.

"I may be learning as much from the instructors in my seminars as they're learning from me," Gordo explains. "As I teach these seminars, I'm keeping track of recurring questions and comments about teaching ham radio classes." Here are some of the high points:

Instructors all agree that Technician Class is the most important ham class of all, even though it is for the entry level license. "Instructors know that once a new ham gets on the air, and becomes active on the bands, he or she is more likely to truly join the ranks of ham radio," says Gordo. The result – they are more likely to upgrade to General and ultimately Extra Class.

So, what are the keys to teaching successful Technician Class ham radio classes?

"Instructors need to adopt a format designed to minimize drop-outs and maximize learning about the real world of ham radio," he says. "Teaching just the questions so students memorize the answers to pass the exam is not the correct approach." He is a strong believer in live, in-class show-and-tell to demonstrate the many aspects of real world ham radio. This includes live radio contacts during class, and demos that show the concepts involved in the electronics questions.

"For example, you can show a diagram of a diode," he says, "and tell the students it is a one-way valve for electrical current. But if you take a small gel battery, a couple of large (good and bad) diodes, and a light bulb, the students will be able to visualize how current will flow in only one direction." Another in-class demo: "For repeaters, instructors can amaze their students with a live transmission through a gateway and go "third party" with an IRLP operator a few thousand miles away."

Many ham clubs offer classes that last eight to 12 weeks. "This approach is popular," Gordo notes, "but the drop-out rate can be high. And without live demos to bring the material to life, many students simply won't be able to absorb all the Q&As jammed into their brains."

West explains that the most successful and most often requested class format in his teaching experience is the-weekend class. "The key to success in this format," he explains, "is to make sure the students pre-study all of the material you are going to cover."

Dave Bell, W6AQ, demonstrates Ohm's Law with Gordo's "smoking pickle" CW demo. In-class live demos are a key to ham instruction success.

He has some important tips for mounting a 2-day weekend class. First, the club or instructor has to publicize the dates of the class well in advance to get students to register early. The students all need to study from the same materials. "And students MUST complete fill-inthe-blank homework during their home-study time prior to the classroom sessions," he emphasizes. "That way, when they come to class, they are prepared to go over all of the material, and they have focused questions on the areas they don't quite understand."

Gordo suggests an effective e-mail correspondence with the students as they sign up for class. No phone numbers – just the instructor's e-mail. When they sign up, send them an e-mail telling them what study materials to buy and where to get them. A couple of weeks later, send the students an e-mail making sure they have their books. Then send a follow-up e-mail with a PDF of the homework for the students to complete as they prestudy their books.

"All students need to be on the same page, with identical pre-class and in-class study materials," he explains. "If all the students come prepared, you'll have a successful class with a very-high pass rate. And, most important of all, you will graduate students who are prepared to get on the air successfully as active hams."

Gordo provides free support materials to help fellow ham instructors adopt his successful classroom techniques. This includes Instructor Guides that provide lesson plans matched to his study manuals, hundreds of suggestions for classroom demonstrations, Power Point presentations keyed to his books, and downloadable PDFs of pre-study homework.

To learn more, visit www.HamInstructor.com. Or, if you're going to Hamvention in Dayton this year, attend his one-hour seminar at noon on Saturday.

BY RICHARD FISHER,* KI6SN

Historic Storms in Slovenia Bring Radio Amateurs Front and Center

Radio amateurs in Slovenia played a vital role in emergency communications after the country was clobbered in early 2014 by heavy snow, sleet, and an historic ice storm.

According to widely published reports, many members of the Eastern European nation's 90 amateur radio clubs, with membership totaling more than 7000, stepped in after the severe weather took down power lines and toppled support towers, cutting the electrical supply to a reported 25 percent of households, according to the European Union. Relentless bad weather made repairs difficult to Slovenia's power grid, prompting officials to ask the EU to help by providing mobile generators.

A news report broadcast by RTV Slovenia featured Stojan Kuret, S51WI, assisting in EmComm efforts. He was located in Postojna, southwesten Slovenia. *(**WATCH AND LISTEN:** To S51WI on the air during the crisis in Slovenia at <http://bit.ly/1eaZZNa>, photo A.—KI6SN.)*

"What is happening . . . is something unseen in this region," Miha Habic, S51FB, in Ljubljana, told the ARRL. Even the oldest residents couldn't recall a natural disaster of such magnitude. "Habic, the IARU liaison to ZRS, Slovenia's IARU Amateur Radio society, said only the northeastern part of Slovenia has been spared. Serbia and Croatia also have been affected." *(**IN DEPTH:** Get a view of the severity of the region's damage in a BBC video titled "Slovenia hit by severe blizzards" at <http://bit.ly/1gMMwjS>, photo B.—KI6SN.)*

"The risks associated with winter weather continue across Europe," said Kristalina Georgieva, the European Union Commissioner for International Cooperation, Humanitarian Aid and Crisis Response. "The European Commission's experts in crisis response will remain vigilant, keeping their national counterparts informed on any developments and ready to coordinate further assistance if needed."

There was no broad call for radio amateurs' assistance, but hams at the local level assisted in EmComm and others were prepared to step in if needed. Both cell-phone service and public-service communications were severely damaged following the storms (photo C).

"The European Union Civil Protection Mechanism has asked for assistance from nearby European states with Germany, the Czech Republic, and Austria providing generators and assistance. Because of uncertainty whether the Austrian teams responding to Slovenia (would) be able to communicate back to their home bases, the Austrian Fire Departments asked Austrian Emergency Communicators to provide a link between Austria and Slovenia using Pactor/Winlink," according to published reports.

Gregor Vehzely, OE1VGC, Emergency Communications Coordinator for Austria, requested that amateurs across Europe give a wide berth to three stations handling EmComm traffic on 80 meters:

S51SLO, 3.644 MHz
OE3XEC, 3.608 and 3.617 MHz
OE6XPD, 3.601 MHz

Operators from Germany and the Czech Republic took part as well. The response was truly regional as countries scrambled to help, according to a report from IARU Region 1.

S51FB told the ARRL that half of the forest cover in Slovenia had been destroyed. "In three days more wood is gone to the ground than was cut during the complete year," he said, adding that "rail traffic headed toward the seaport of Koper (had) been halted completely, and responders (had) been unable to reach houses in some parts of the country due to fallen trees. Military armored vehicles were called in to supply food to some villages."

Habic said repeaters were out in some communities and that there were unconfirmed reports that the impact to S57DX in Vrhnika was devastating.

*1940 Wetherly Way, Riverside, CA 92506
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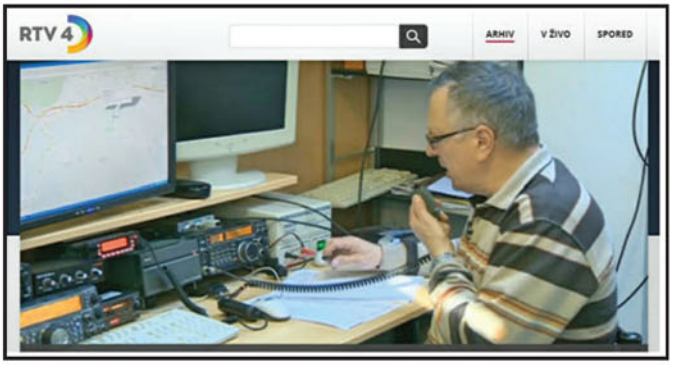

Photo A. Spet uporabna znanja in tehnika. "Again, useful knowledge and technique," the reporter noted in an RTV Solvenia news story about radio amateurs' emergency communications support following historic severe weather in the country. Here, Stojan Kuret, S51WI, is shown in operation from Postojna in southwesten Slovenia, <http://bit.ly/1eaZZNa>. (Internet screen grab)

Photo B. The magnitude of the weather damage to Slovenia and surrounding nations is captured in this BBC video, <http://bit.ly/1gMMwjS>. (Internet screen grab)

"S50K in Logatec, and Radioclub Moravce's S50G, as well as S58M in Moravce, suffered severe damage," as well, he said.

"Emergency communication in Slovenia shows us that amateur radio, Winlink, and HAMNET are a means to bridge communication gaps surprisingly well," writes Gert Kmet, OE3ZK, of Klosterneuburg, Austria. Some Slovenian hams were using Winlink "via their 2.4 GHz HAMNET, which interconnects to the Austrian HAMNET.

"The Telnet configuration for HAMNET in RMS Express is well-documented in

Photo C. There are about 90 amateur radio clubs with memberships totaling 7000 in Slovenia. Only the northeastern area of the country was spared from devastating snow, sleet, and ice storms that ravaged the region earlier this year. (Courtesy of Wikimedia Commons)

CQ plus ... ***Don't miss out on the rest of this issue!***

Check out the May issue of *CQ Plus.* Featured articles include:

- An SWLer's Tour of China Radio International
- FM Broadcast Band DXing at 35,000 Feet
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- Building the "Mystery" Resonant Speaker

CQ Plus is an extension of the digital edition of *CQ,* focusing on hobbyist communications of all kinds. For subscription information, visit: <http://www.cqcomm.com/>. Join our email list there, as well!

our Wiki but seems to be a mystery to some users. It might be a point to consider IP networks such as HAMNET in future versions of RMSE and supply specific help texts," he recommended.

Looking ahead, Habic predicted that in contests coming up, "the amateur community will notice when it hears 'no big competitors from Slovenia,'" he told the ARRL, while expressing "relief that there had been no loss of life connected to the extreme weather situation in Slovenia."

Hurricane Conferences in Florida

The 2014 National Hurricane Conference was held in Orlando, Florida, April 14–17 (photo D) after this column was prepared.

The program's focus was to on improving hurricane preparedness, response, recovery, and mitigation "in order to save lives and property in the United States and the tropical islands of the Caribbean and Pacific" according to the ARRL ARES Letter. "In addition, the conference serves as a national forum for federal, state and local officials to exchange ideas and recommend new policies to improve Emergency Management. For past conferences, there has been a robust amateur radio and ARES presence in the form of packed workshops and discussion forums."

Updates and complete information are at <http://hurricanemeeting.com>.

In addition, the Florida Governor's Hurricane Conference is slated for May 11–16at the Rosen Centre Hotel and Orange County Convention Center in Orlando. For details and updates, visit <http://flghc.org>.

Photo D. For the latest information on the 2014 National Hurricane Conference held April 17, visit its website at <http://www.hurricanemeeting.com>. (Internet screen grab)

NOVA: "Killer Typhoon" Haiyan Is a "Must See"

The PBS series NOVA's "Killer Typhoon," about deadly storm Haiyan, "a savage monster nearly 300 miles across" that ravaged the Philippines in November 2013, should be required viewing for everyone in emergency communications. It's a "must see." If you haven't watched it, please make time to view it online at <http://bit.ly/1glHWqv> (photo E).

It is a textbook example of how disaster preparedness, or lack of it, can draw the line between death and survival. As we edge closer to the 2014 Atlantic hurricane season, "Killer Typhoon" is a grim reality check for every ham, especially those in EmComm.

NOVA footage from the storm, which made landfall on November 8, 2013, chronicles the devastation from "what could be the most powerful typhoon in history to make landfall."

It's a catalyst for getting our act together before June, the start of the 2014 hurricane season. The program is less than an hour long, and is well worth the investment in your time and attention.

For This Month ...

Remember, we're always on the lookout for the stories of your EmComm activities, whether it's from the scene of an emergency, training for one, or your public-relations efforts in supporting community activities. Please keep me on your mailing list via <KI6SN@cq-amateur-radio.com>. Every report helps us all to hone our EmComm skills. Let's hear from you or your organization soon!

73, Richard Fisher, KI6SN

Photo E. "Killer Typhoon," a documentary by the PBS science series NOVA, is a must see for radio amateurs wherever — especially those in emergency communications. Watch the full program online at <http://bit.ly/1glHWqv>. (Internet screen grab)

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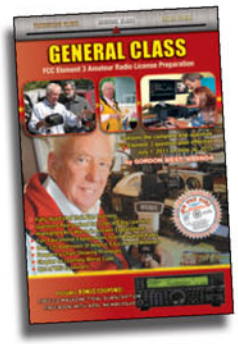

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Gordon,

To preface the following comments, I am a certified professional law enforcement instructor who has taught countless classes in my areas of expertise. So, while I'm not new to instructing, I am new to teaching ham radio.

I recently registered as an instructor through The W5YI Group's Ham Instructor program. I'd never seen your material in person before now, but have heard about it over the years. Upon researching it, I like it! Sure makes more sense than the junk I used for self-study on my General, and the lack of anything at all used by my Tech instructor. (He put on a class without any books, handouts, or homework!)

A fellow instructor in a neighboring county pointed me in your direction when he said his class retention jumped to about 90% and his pass rate is about 99% since he started using your material. That's outstanding! Most of the ham classes in my area suffer more than a 50% attrition rate and less than an 80% pass rate – mostly because of that "no material needed" method of teaching.

John, KF5FGF

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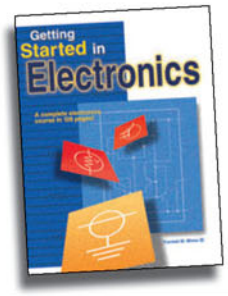

By Forrest M. Mims, III

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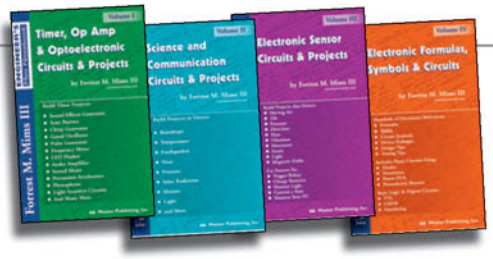

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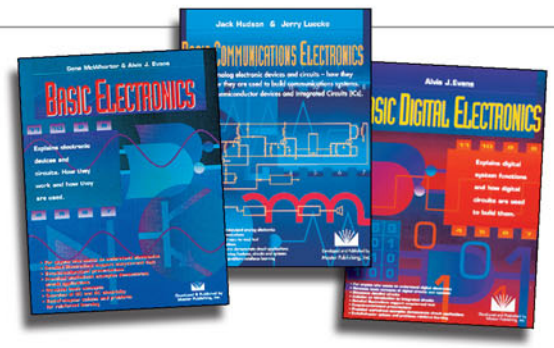

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Getting the Most out of the Least

BY CAM HARTFORD,* N6GA

After almost fifty years of QRPing, I sometimes find myself thinking that there's nothing new under the sun, that the 5-watt contact to just about anywhere is pretty commonplace, been-there-done-that, the thrill is gone, etc., etc. Then something reaches out of the ether and gobsmacks me into a state of wonder at what amazing things can be done with just the right combination of a little power, a few sunspots, and a willing antenna (photo A).

Case in point, the ARRL 10 Meter Contest last December. Ten meters is such a great band when it's open, but the latest sunspot cycle peak has been a big disappointment. Who knew what conditions were going to be like? Come Saturday of the contest weekend I turned on the radio and the band was overrun with signals, wall-to-wall DX. Nirvana! The day was sunny and warm, so I decided to set up in the back yard with the KX3 and a 3-foot mag loop I'd been working on for the last year. Long story short, the log filled up with numerous contacts in Europe, South America, and Asia. There were two big surprises—ZM90DX in New Zealand, and, after switching to SSB to try out my dusty microphone, D4C in Cape Verde. Yes, I had to look that one up; it's off the western coast of Africa. I remain quite boggled. QRP can be an astonishing pursuit!

Photo A. Just another day in radio paradise! A compact transceiver, a compact loop, and a bunch of sunspots.

Ken's Hideaway

We start this month with a couple of photos of the QRP getaway digs of Ken Loucks, WA8REI. Calling CQ on 14.060 MHz will often bring up Ken. When

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Photo B. The QRP hideaway shack in the woods of Ken Loucks, WA8REI. (WA8REI photo)

he isn't at his home QTH in central Michigan he's run off to his hideaway in the woods (photo B). Not visible in the picture are the antennas—a Hustler 4BTV and an 80-meter dipole 35 feet up in the trees. Ken claims to have worked a lot of DX with these antennas at 5 watts. Inside, the well-equipped portable shack includes an FT-817 and, for those rare occasions when QRP doesn't quite make the grade, an FT-897 (photo C). Now that's a getaway in which I could get to be quite comfortable!

Putting the QRP Signal in Perspective

What's in a watt? More importantly for QRPers, how many watts does it take to make a dB? This sounds like a silly question, but to Bob Rossier, K4OCE, it made good sense to investigate the relationship. Bob earned the first QRP CQ Worked All Zones Award (the WAZ Award is for making contacts in all 40 CQ zones) back in 1970 and started all over again to do it at the 1-watt level. He currently has 39 zones, needing only Zone 22 to complete the task. Along the way he's collected 213 countries at the 1-watt level.

In the August 2001issue of *CQ*, Dave Ingram, K4TWJ (SK), then QRP editor of *CQ*, published the accompanying chart which had been compiled by K4OCE (fig. 1). It bears repeating here because I'm sure there are lots of newly minted QRPers who would benefit from it. The question that this chart answers is "How low can I go and still be copied by the other station?" K4OCE assumed that a minimum copyable signal is an S2. This includes assumptions about the noise level at the other end and capabilities of the other person's receiver, etc. etc. However, the information is still useful. The example given is that if you are running 600 watts and receive an S6 signal report, you can drop your power to 2.4 watts and still be copyable by the other station. Another example: If you are running your K3 driving your KPA500 to a full 500 watts and the other op gives you a signal report of S9, you can turn off the amp, turn off the K3, grab your KX3 and crank it down to 32 milliwatts, and the other op can still copy!

Going to the present-day K4OCE, I asked him if he had any advice for someone wanting to set a lofty goal such as WAZ at 1 watt. His answer: "If you don't know what is possible, you may not try. If you know it has been done, then you know you can do it, too. The CQ WAZ Award is a great award to work towards. I got mine way back in 1970 running only 5 watts. You probably don't realize it, but if you receive a report of 5-9 + 10dB with 1000 watts, you can drop to 1 watt and still be about an S-5 signal level. One watt is about half the power of a standard flashlight. Isn't it amazing that you can communicate around the world with such low power? Having the right mindset is also important. You can do this!

"So, how do you get your WAZ? First, be sure your equipment, coax, and antenna are in good working condition. You don't have to have a beam and low-loss coax, but it is certainly advisable. K4TWJ was a fine QRP DXer. With his little FT-817 and Hy-Gain AV-640 vertical he worked JT1CO, XT2DX, D44TD, A52R, and several others in a DX contest. I advise you to start in one of the DX contests. It lets you repeatedly call the same station on the same frequency, and as soon as you get a clear shot, he (or she) will come back to you. I started my fun with 1 watt in the 2010 ARRL DX contest and worked about 50 different countries *(now called entities—ed.)*. I'm presently at 213 with 1 watt.

"Keep notes. If you hear a station and don't work him, put him in your log not-

Photo C. Radio room inside WA8REI's shack. (WA8REI photo)

HOW LOW CAN YOU GO CHART

Your Transmitter Power (watts)	S-Unit Report Received								
	S9 + 20	S9 + 10	S9	S8	S7	S6	S5	S4	S3
1000	0.63	6.3	63	251	1	4	16	63	251
900	0.56	5.6	56	226	0.9	3.6	14.3	57	226
800	0.5	5	50	201	0.8	3.2	12.7	50	201
700	0.44	4.4	44	176	0.7	2.8	11	44	176
600	0.38	3.8	38	151	0.6	2.4	9.5	38	151
500	0.32	3.2	32	126	0.5	2	7.9	32	126
400	0.25	2.5	25	100	0.4	1.6	6.3	25	100
300	0.19	1.9	19	75	0.3	1.2	4.8	19	75
200	0.13	1.3	13	50	0.2	0.8	3.2	13	50
100	0.06	0.6	6	25	0.1	0.4	1.6	6	25
	(MILLIWATTS)				WATTS				
dB above S2	62	52	42	36	30	24	18	12	6

Example: I am running 600 Watts, & receive a signal report of S-6. I can lower my power to 2.4 Watts and still be copied (power of a standard flashlight).

Double your power = 3 dB = 1/2 S-Unit Ten times your power = 10 dB or 1 2/3 S-Units

1000 milliwatt = 1 watt or 1 milliwatt = .001 watt By K4OCE/QRP as published in CQ Magazine

Fig. 1. Reprinted from August 2001 CQ. *See text for further instructions.*

ing the time range and the frequency. Look for him to show up again over the next few days. Use the internet to check "Announced DX operations" and use "DX Monitor," "DX Toolbox," or any of the many tools available these days on the internet.

"Work the gray line. We use the *E*-layer and *F*-layer to bounce our signals. Solar radiation is what produces these layers. Closest to the Earth is the *D*-layer, which absorbs our signals both going up and coming back down. During twilight and sunrise, the *D*-layer suddenly causes no absorption, since the solar radiation is no longer hitting this layer, but the other higher layers are still receiving radiation for about an hour. I worked a dozen different Asian countries on 10 and 15 meters between 2350 and 0040Z and I worked all but one of the hard-to-get CQ Zones. I now only need Zone 22 for WAZ with 1 watt. Where are those VUs? Although I prefer CW, about half the countries I have worked were on sideband.

"Finally, I wanted to mention that I recently worked VU7AG and FT5ZM with 5 watts, and the thrill of working these two new and rare countries with low power was just as exciting for me as my very first QRP contact over 50 years ago."

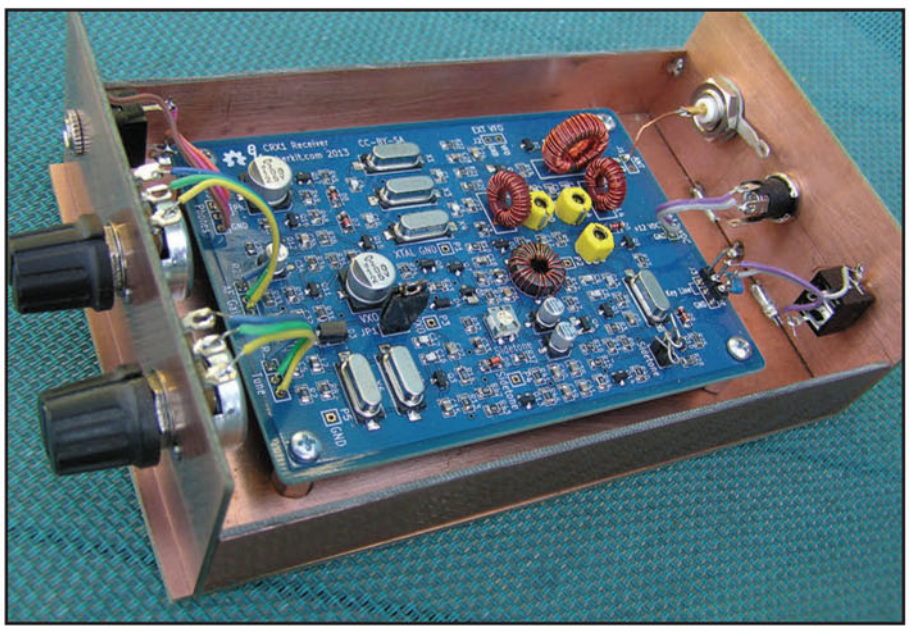

Photo D. Etherkit's CRX1 receiver built and mounted in a homebrew box.

The CR1 Receiver from Etherkit

Several months back I built the OpenBeacon transmitter from Etherkit. That rig allows you to transmit several different modes, beacon style, including QRSS and Hellschreiber. A recent check of the Etherkit web page revealed a new receiver kit, the CRX1 (photo D). There aren't too many stand-alone receiver kits on the market today. Most kit offerings are transceivers. Notable recent receiv-

er offerings are the SS1 by Jim Kortge, K8IQY, sold by the 4 State QRP Group as a companion receiver to the NS-40 transmitter, and the Magic Box T/R system. Hendricks QRP kits also offers a Simple Receiver kit, which is a monoband superhet.

Intrigued by the CRX1, I downloaded the assembly manual and checked it out. The first thing I noticed was that the receiver is a superhet and is fabricated with surface-mount components. I've built several SMD rigs, and in fact, I prefer that method to the more traditional through-hole versions now. The circuit is a pretty standard superhet but has some interesting features not generally found in a kit receiver. The first is that frequency control is provided by a VXO, and a rather narrow-range one at that. Frequency coverage is approximately 7.030 to 7.034 MHz. However, right next to the VXO is a jumper for disabling the VXO and a port for plugging in an external VFO. Therefore, I can see the receiver is intended either for those who don't stray far from the 7030-kHz QRP watering hole or want to experiment with other frequency-control sources, such as an outboard DDS.

Moving along through the schematic, we find a key line input which controls both a muting circuit and an on-board side-tone monitor. This is a surprise, because most receivers don't come with a side tone, it usually being associated with a transmitter, and not just any side tone, but a Twin-T oscillator which produces a nearly pure side tone. This one is very easy on the ears.

Quoting from the Theory of Operation section, "The CRX1 is a traditional single-conversion superheterodyne receiver with an IF frequency of 4.032 MHz and a VXO at 11.059 MHz. Circuitry is also included to allow the receiver to be integrated with a QRP transmitter. These are the mute, keying, side-tone oscillator, and T/R switch." OK, things are starting to make sense.

I have a 40-meter transmitter I built a few years ago which I've dubbed the "Workhorse TX." The Workhorse gets pressed into action when a new receiver needs a trial companion. It has a built-in keyer and T/R circuitry so as to make the job of mating to a trial receiver easier. Mating it to the completed CRX1 was a snap. All I needed was a power cable, an antenna cable, and a T/R line to complete the hookup.

The CRX1 is such an intriguing collection of features that I just had to know more about its origins. I contacted Jason Mildrum, NT7S, proprietor of Etherkit and the CRX1's designer. Jason has been working on an Open-source transceiver, the CC-1, for a couple of years now, having gone through a beta-test trials, and is slowing zeroing in on its final design. His goal is to make a compact, versatile transceiver capable of doing SOTA (Summits On The Air) operations while being easy on power consumption.

The CRX1 is essentially the receiver portion of that transceiver, including the T/R and sidetone circuits, which actually make it a very versatile stand-alone receiver. Frequency control in the CC1 will be synthesized, but the simplicity of the CRX1 precludes something as complex as a DDS, hence the stable but simple VXO. NT7S included the port for an external VFO source, knowing that some of us just couldn't leave well-enough alone (see photo E). The blue board CRX1 is in the middle of the picture, the Workhorse transmitter is to the right, and a digital VFO is hanging off the receiver to the left. This unit is an Si570-based frequency generator and controller kit sold by K5BCQ (http://www.qsl.net/k5bcq/Kits/Kits.html). It plugged directly into the CRX1 board, and the voltage level is almost identical

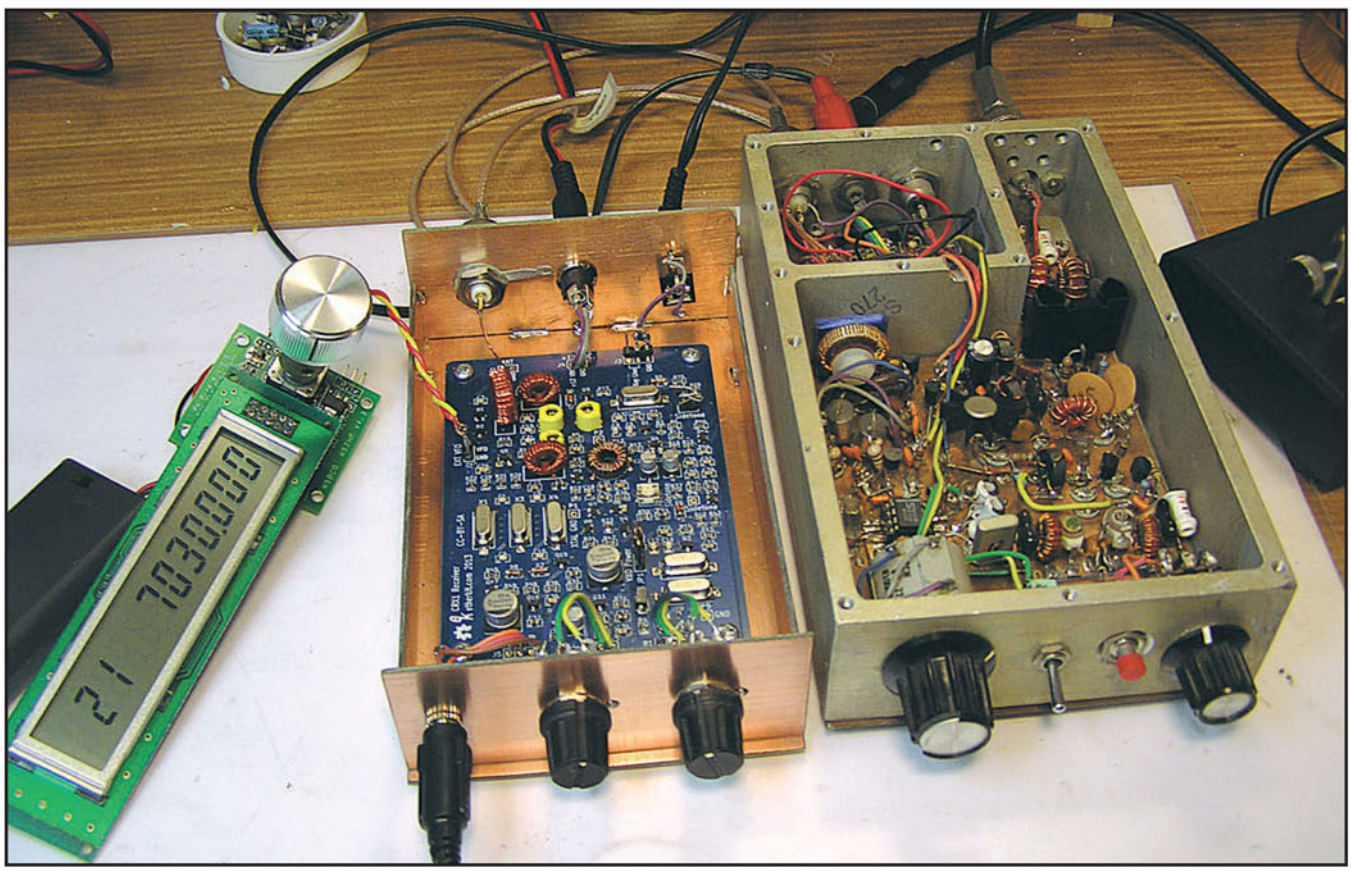

Photo E. Here's the CRX1 wired up to my Workhorse transmitter. The outboard VFO (left) is a Si570 device made by K5BCQ. See text for details.

to the on-board VXO, so it really is a plug 'n play solution.

Eventually these pieces will be mated to become a more permanent, perhaps multi-band, receiver.

Operating with the CRX1 is very smooth and the 400-Hz IF passband is narrow enough for CW operating but not too narrow for general tuning and listening. T/R transitions are smooth, and as I mentioned before, the Twin-Tee sidetone oscillator is easy on the ears. This receiver has no AGC, so the operator has to have a quick hand on the gain control when tuning across the band.

In all, the CRX1 is a pleasurable kit to build and operate, and it makes us look forward to Jason's next product, the CC-1 transceiver, with great expectations!

Campaign for the Respect of QRP Frequencies

I recently traded a few e-mails with Roberto, IZØRQF, a QRPer in Italy. Roberto and some friends put together an organization called "Campaign for the Respect of the QRP Frequencies."

Roberto wrote: "Thanks for your interest, the purpose of our small 'club' is really simple: we spread the culture of the QRP through the respect of the frequencies allocated by the IARU. Many OM do not know the existence of them and they do not know that by listening to these frequencies can connect many hams who had homebuilt radio and antenna and transmitting perhaps with less than 1 watt!"

Roberto apologized for his poor English, admitting he was forced to use Google translator. No matter, his message and the purpose of his organization are certainly clear. The website is <www.qrprespect.jimdo.com>.

Besides the website, the group keeps a Facebook group devoted to sharing spots, schedules, and news about QRP activity. It now runs an annual operating event called "QRP Respect Days"; the next one will be August 16 and 17, 2014. Details can found on the website along with club logos, which are available for downloading (fig. 2). They encourage QRPers to use the logo on QSL cards and any web pages or blogs they might have.

Fig. 2. The Campaign for the Respect of QRP Frequencies logo.

Bye for Now, and Hello, I Hope!

Signing off for this month, but hoping to see many of you at the Dayton Hamvention® in May! It's been way too long for me, so hotel room and plane reservations are in hand! My last trip to Dayton and FDIM (Field Day In May) was four years ago, so I'm feeling way overdue. If any of you out there in QRP land haven't yet made the trip, all I can say is that you need to do it at least once in your ham radio career. And, having done it once, you'll realize that the advertising slogan of years ago—"Bet you can't eat just one!"—applies equally to the Dayton experience. Hope to see you there! 72/73, Cam, N6GA

BY JOE EISENBERG,* KØNEB

"Count on It!"

When Small Wonder Labs' founder Dave Benson, K1SWL, decided to stop making kits in November of 2013, the kit-building community wondered if his great designs would live on. At least so far, I know of two of his kits that have been given new life in the hands of two capable new suppliers.

The Rock-Mite][

The well-loved Rock-Mite series of kits has been taken over by Rex Harper, W1REX, of QRPMe. For those who are not familiar with this kit, it is one of the most popular QRP designs ever kitted, and is a complete fixed-frequency 1/2-watt output CW transceiver with a built-in programmable keyer. You can now order the Rock-Mite at <http://www.qrpme.com>. Rex has made a couple of minor changes to the kit, which he is marketing as the Rock-Mite][. One of the changes is the use of a conventional 8-pin DIP mixer IC instead of the 8-pin SMT version used in the original Rock-Mite. However, future supply problems with the 8-pin DIP chips may force a return to the SMT version. Rex has also incorporated the HamGadgets special version of the PicoKeyer chip into the new Rock-Mites. Before this change, the only way to get this valuable addition to the Rock-Mite was to order the chip separately from HamGadgets. Dale Botkin, NØXAS, still also offers the PicoKeyer chip upgrade for the original Rock-Mites for $6.95 at <http://www.hamgadgets.com>. The new Rock-Mite][is $40 and includes a set of external jacks and plugs. Look for a build report on the new Rock-Mite in the future.

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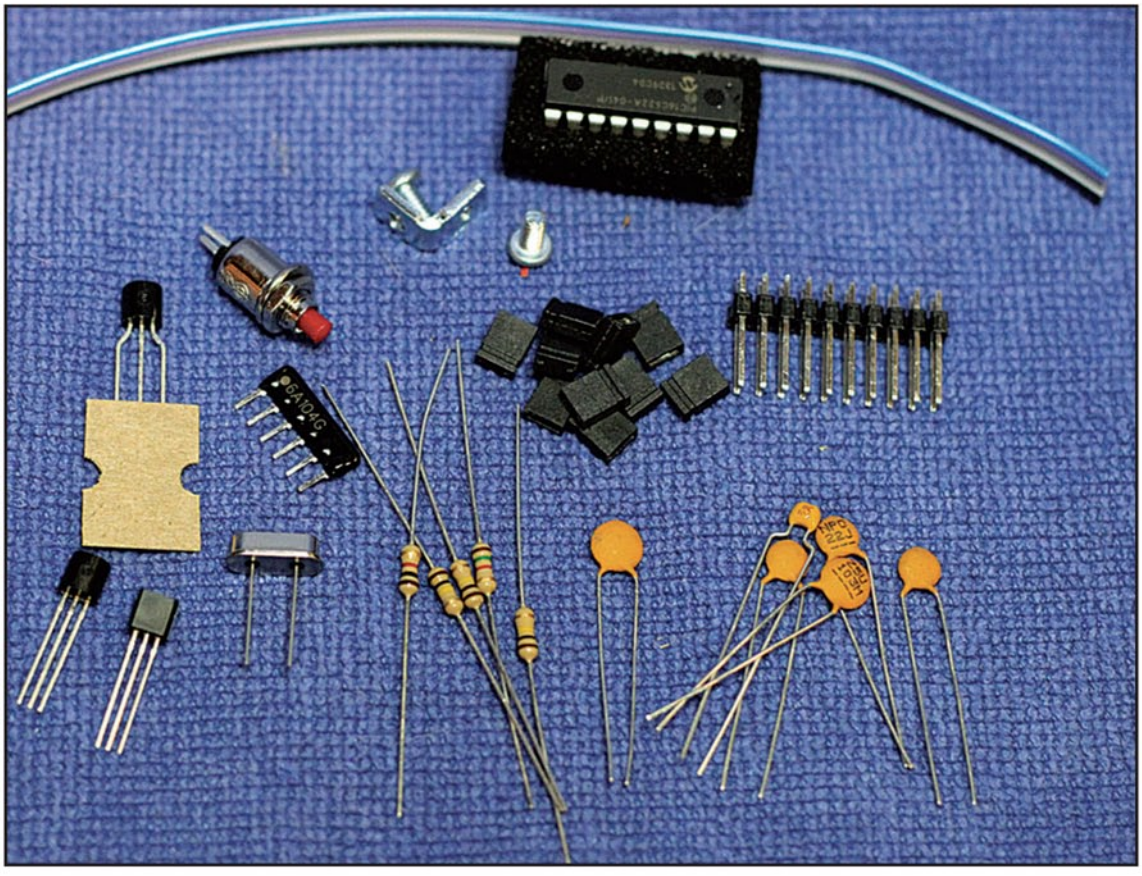
e-mail: <k0neb@cq-amateur-radio.com>

Freq-Mite

The other Small Wonder Labs kit that has found new life is the Freq-Mite. The Four State QRP Group has taken over the production of this wonderful kit and has committed to keeping it available. This kit is a frequency counter designed to be built into many QRP rigs and provides a Morse code output when the button is pressed. For all of those kit radios that do not have any sort of accurate dial, this is ideal. A press of a button gives you a Morse code reading of your frequency, accurate

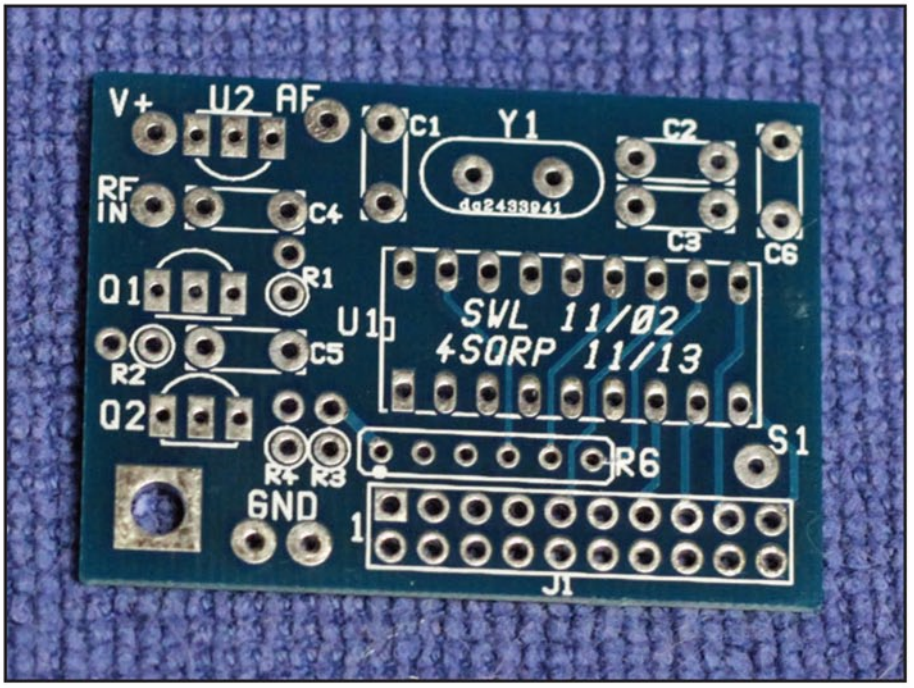


Freq-Mite kit before assembly. A low parts count makes this an ideal group kit build!

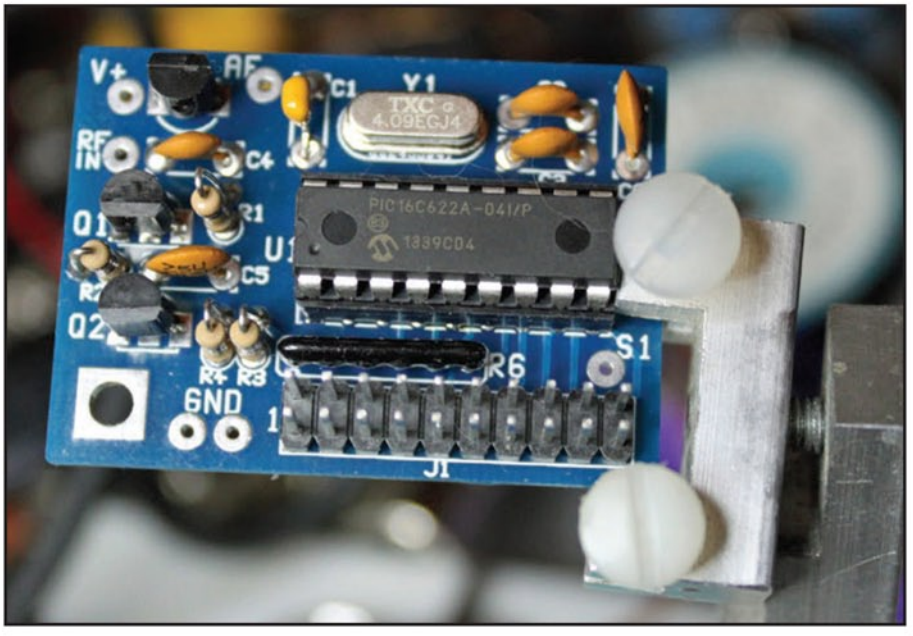
to about 1.5 kHz. Because the VFOs in kit radios vary as to their offset from the IF, the Freq-Mite has a binary programmable offset that is set by the provided jumpers to take this into account.

Not only is the offset programmable, but so is the number of digits sounded. Since in a receiver or transceiver we usually know which band we are on, the digits before the decimal point can be set to not be sounded, leaving just the last three digits to be given. The magic of this kit is that it can also be used outside of a radio to check the output frequency of a QRP transmitter. The Freq-Mite can be set up so it gives a 4- or 5-digit response to give the full actual frequency in Morse code. Some radios use a VFO offset that is inverted. In these radios, the actual operating frequency goes up as the VFO goes down. The Freq-Mite can be programmed to take this into account.

As mentioned, there are actually two

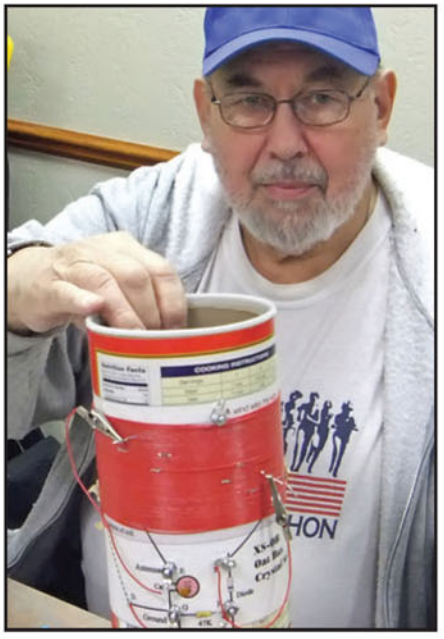


The Freq-Mite board ready to begin assembly. This board fits in most receiver or transceiver kit cases.



The finished Freq-Mite ready to be installed.

Left to right: Darrel Swenson, KØAWB, and Dar Piatt, W9HZC, lead the HBQRP Group in building the Oat Box Radio.



Bruce Steyer, KBØKA, with his complete Oat Box Radio ready to be tested.

ways to use the Freq-Mite kit. One way is to build it into the cabinet of an existing QRP receiver or transceiver and program it for the IF offset used in that rig. The other way to use it is to put it into its own enclosure which can be as small as an Altoids® tin, and use it to count a transmitter's output frequency. The power supply requirements are quite easy to take care of, as it will operate on anything from 7–15VDC. The audio output can be connected to the input of the audio output stage of your receiver; it can be connected to a piezo speaker, or sent directly to a set of headphones or a speaker. The instructions mention a low-cost Radio Shack #273-073 piezo element if desired for either standalone or internal use.

The Freq-Mite is another great kit that is ideal for a group kit-building experience. With a very small number of parts, the assembly itself can take under an hour, and then the individual programming can be assisted by the group leaders for each individual application. It will be helpful if each builder in the group knows how he/she intends to use the kit so that the proper programming can take place. Programming the Freq-Mite can be left until later when the individual builder's project that requires it is ready.

The circuit is based on a single PIC chip, which is preprogrammed with the firmware needed to turn it into a frequency counter. That 18-pin IC is the main component in the kit. With only a handful of other components, the kit goes together rather quickly. The usual cautions apply, especially when dealing with the static-sensitive IC, making sure that there are no bridges between adjacent pins and making sure all connections look good. If making the Freq-Mite as a standalone counter, having a 9V battery snap and a 9V battery handy, as well as a piezo element, will make things go quickly. The Freq-Mite can measure frequencies up to just above 32 MHz, so it covers all bands up to 10 meters. Mounting it is simple, as it has only one screw position for mounting. Since the PC board is quite small, only one standoff and screw, or the supplied angle bracket and screws, are needed to either mount it in its own case or into an existing radio, with only one hole to drill. Another hole will be needed for the tiny button as well as any speaker or piezo device, if needed.

The Freq-Mite is alive and well and available from the Four State QRP Group for just $22 mailed in the USA at <http://www.4sqrp.com>.

Oat Box Radio

A short time ago, the HBQRP group in Nebraska got together and assembled the Oat Box Radio crystal-set kit as a group kit-building experience. I had a great time as did the others in assembling this classic crystal radio. Phil Anderson, WØXI, is the designer of the kit, and it requires the larger-size, round oat box to assemble it. Assembly time is about an hour and a half, and once connected to an outside antenna, you can hear your local AM broadcast stations on it. I connected mine to my 160-meter sloper and my ground system to test it out. The Oat Box Radio worked well, and I could easily hear our three local 1KW AM broadcast stations. Like the Freq-Mite, assembling the Oat Box Radio is an ideal group kit-building experience. If doing this kit as a group, be sure to have a long-wire antenna that is completely outdoors, as well as a good ground available for testing. Also have some tape and some quick-setting glue, such as a glue stick or spray glue, to put the diagram onto the oat box. You can get the Oat Box Radio kit (except the oat box!) from Midnight Science at <http://www.midnightscience.com>. The HBQRP group is online at <http://www.hbqrp.org>.

Upcoming Travels

I hope to see as many of my readers as possible during the 2014 hamfest season, and will be at Ozarkcon in Branson in April; the Dayton Hamvention® in May, Friedrichshafen, Germany in June; the ARRL Centennial in Hartford in July, and Huntsville in August. I'll also be at several smaller hamfests in the area around the heartland as well. Look for me wearing the "Cat In The Hat" at Dayton and Friedrichshafen!

73, Joe, KØNEB

They Don't Make 'em Like They Used To

BY JEFF REINHARDT,* AA6JR

"They don't make 'em like they used to." You'll often hear that phrase applied to a formerly functional piece of equipment, mechanical or electronic, that has passed into the next life, wherever that may be. I know there's a rather warm location I would recommend for some of the defective items I have owned. However, I then back off of that curse, fully realizing that if I wind up in the same afterlife destination (a distinct possibility if the criteria for admission to paradise are really as strict as some say), then I'll end up owning the same stuff all over again, which in turn would be a fitting form of eternal punishment for a geek like me—condemned to eternity in a room full of equipment that doesn't work. That's right up there with the guy in a kitchen full of cookies, with no milk.

What is apparent to this self-trained "do it-yourselfer" is that routine repairs on most items are pretty much a thing of the past. Heck, even taking some things apart is no longer possible. Now I'll describe my abilities in repairing things at "journeyman" level, which to most experts means I know just enough to either get myself in trouble or render the item in need of repair totally useless, which in some instances is an okay outcome, given that was my starting point anyway.

Looking into today's microcircuit boards is amusing to me; doing anything meaningful, such as replacing a surface-mount capacitor or diode, appears to this maladroit to have the same degree of difficulty as gene-splicing for an improved breed of gnats. Come to think of it, the job on the gene pool may have a better chance of success. Besides that, even if it doesn't work I hear gnats are not very good at covering their medical expenses anyway. On the other hand, I paid for the radio and seeing a repaired unit leap back into useful service makes me believe I may actually have some useful skills, beyond taking out the trash.

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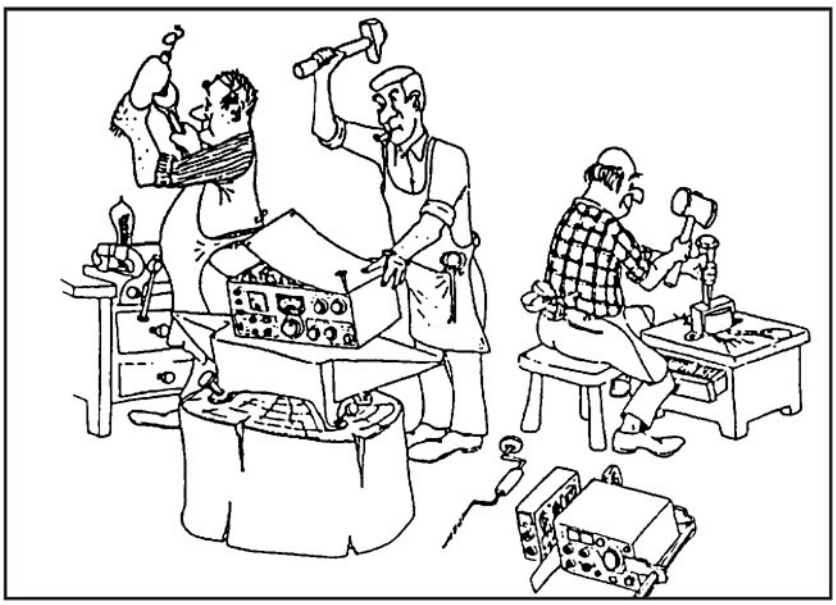
The Thrilling Days of Yesteryear

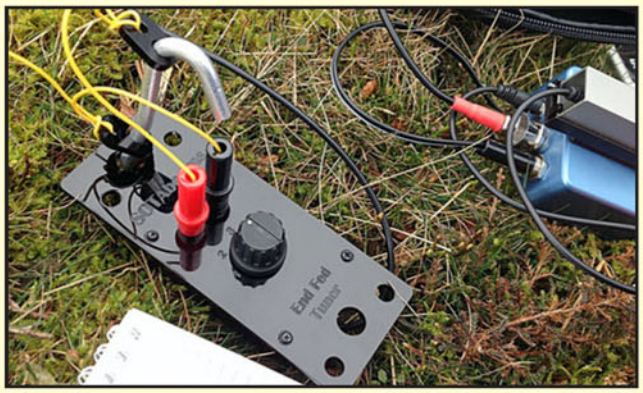
Old-timers will recognize that phrase from the old TV adventures of "The Lone Ranger." Lone Ranger 2.0 was the analog, Saturday morning, black-and-white TV version. Good guy white hat, bad guy black hat, and in the end it all worked out as the Lone Ranger and Tonto rode off into the sunset. Lone Ranger 1.0 was the radio version. Lone Ranger 4.0 (the most recent movie; we'll skip the really forgettable movie version in between) is digital Lone Ranger. I'm not exactly sure what was going on and Tonto upstaged the supposed hero. Plus, the reviews pretty much reflected the same condition of my broken radio: "It couldn't be fixed." The point of this is ham radio equipment manufacturers of today have proven they can pack an amazing amount of technology into a very small package; just don't think about doing anything inside the box after it's built.

In the not-too-far-back days of radio yesteryear, you could fix stuff. In the old-old days, you could fix pretty much the whole darned thing. That, of course, was the era of hand-wired chassis, glowing vacuum tubes, big tuning capacitors, and the like. Once you freed the 400-pound chassis from its protective 100-pound case, a little trouble-shooting with basic test equipment generally could result in a positive outcome. Test a few tubes, replace a resistor, and *voila!* The boy-genius is back on the airwaves! (With any luck, having suffered no shocks from those pesky still-charged capacitors.)

Fast forward to the opening round of solid-state gear and you still had a fighting chance. A burned trace on a printed circuit board or a bad solder joint could be corrected and all would be right with the world . . . well, at least that part of it. Some radios



Artist's conception of Jeff and friends repairing gear "in the not-too-far-back days of radio yesteryear."



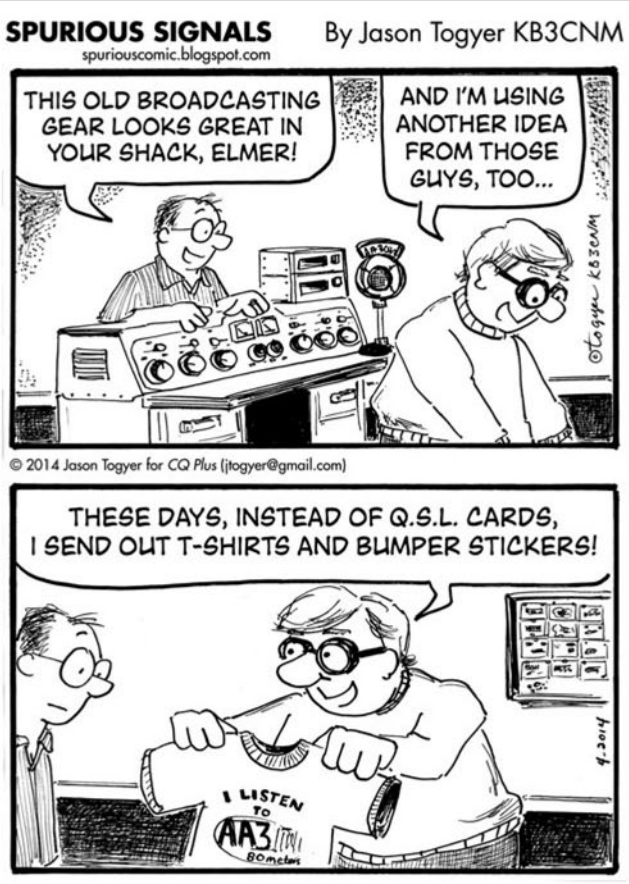
SOTAbeams Expands Its Antenna Tuner Lineup

SOTAbeams has added the Peak Tuner, another QRP antenna tuner, to its lineup of trail-friendly antennas. The Peak Tuner has been designed to match end-fed, half-wave antennas for the 20- and 10-meter bands.

The tuner is adjustable with a single tuning knob and while the tuner does not include an SWR bridge, it can be adjusted "by ear" or by using the SWR indicator included with many QRP radios.

List price for the Peak Tuner is $41.59. For more information, contact: SOTAbeams, 2nd Floor, Paradise Mill, Old Park Lane, Macclesfield, SK11 6TL UK. Phone: +44 (0) 7976-688359. Website: <http://www.sotabeams.co.uk>.

Note: *"What's New" is not a product review and does not constitute a product endorsement by CQ. Information is primarily provided by manufacturers/vendors and has not necessarily been independently verified.*



even had replaceable modules, although they were more common in commercial mobile transceivers, or in those TVs that used to advertise easy repairs because they had "the works in a drawer."

Then, too, there was always Heathkit, the company that let you build it, use it, repair it, and toward the end, charged you more for the device in kit form than what it cost to buy a ready-made unit. However, with Heathkits, it wasn't so much the destination as it was the journey, and if your solder joints were only semi-bad, hitting the case that contained the unit would occasionally make it work as the designers intended.

I think the last radio with which I felt I could do anything meaningful was the Kenwood TM-742 mobile radio series; there were other numerical designations, but essentially it was a tri-band mobile transceiver where you could select one or two modules that added bands of your choosing. Therefore, you could have VHF, UHF, 6 meters, 222 MHz, or other choices. You could also install a CTCSS decode board (optional) that is now a throw-in feature in most of today's radios. A sweet design, for the most part. If it had an alphanumeric display and computer programming capabilities it would have been darned-near perfect. Slip in a board for a new band, fire it up, and you were good to go (after spending days manually programming in 100 memory channels on each of three bands). I own two of them and I hope they last forever, but the prospects are not good. Last year, one of them lost its receive audio capability and I had to send it in for service. They were able to repair it, but I also received those dreaded words "it's no longer supported," which usually means the parts supply has dried up, or my gear is so old that the guys who knew anything about it all have retired. I was also told the particular capacitor that expired was in a place even the adept, highly trained technicians dread going. One other major fault: You need to have the skills of a neurosurgeon to change a burned-out panel lamp.

Kenwood, Yaesu, Icom, Alinco . . . How About a Break?

Dearest manufacturers mentioned above, I love your stuff. I own something from each of you. I love the idea of increased reliability and lower costs, but could you please design a few things into your new models that restore my sense of technological self-worth? Somewhere in the world is an engineer, one who may be gifted in many ways. Could you please find that person and commission him or her to design and build a radio control panel with replaceable light bulbs? Or maybe LEDs that will never need replacement in the next millennium or two? Yes, I know that many of the bulbs currently in use can be replaced (go back to the section referring to the operation on the gnat), but I really don't want to wait for that qualified Ph.D. engineer/technician to return from the International Space Station where there are somewhat unreliable cooling modules that need occasional replacement by him. That kind of talent is costly. It may make more sense to launch the radio up to him and pay for the return shipping. Are you aware that the cost of having expired bulbs replaced on certain radios makes a case for just replacing the radio?

Thus, for now, a few of my otherwise-functional radios have dark displays and others are getting ready to pack it in. I just tell myself I've set the display illumination to "off." However, one of my radios is just teasing me; half its display is lit, the other half is not. Worse, it's a dual-band transceiver. I swear the other side comes on when I leave the room. If the radio blew up in some catastrophic way, that would be an excuse to give it a proper trip to the landfill. However, who would chuck a radio whose only fault is a display that has sworn an oath to the Prince of Darkness? Maybe I can piggyback the

radio up to the ISS taped to a fresh shipment of space radiators? I wonder if the same company that makes the radiators also made my light bulbs.

There's an App for That!

The growing number of applications (or apps) for smartphones is somewhere beyond astounding. Chances are some of your ham radio needs in the field can be answered by one of the clever and thoughtful programs available in the marketplace. From the basics such as logging software, up through repeater locators and into more esoteric uses, your smartphone or tablet can be like having a ham radio reference library in your pocket. Also, that's before all the "other stuff" that's available. I won't mention specific names of programs, as I do not have the time (or expertise) to test them all, but if you are at all curious, some targeted searching might turn up a gem or two that you'll find useful. You think there's an app that might replace light bulbs?

Remember Packet?

Hams who've been around for while may remember the robust packet radio network that sprang up and flourished in the 1990s, before e-mail nudged it out of place. It is still used for APRS®, which is a great blend of technologies (GPS, ham transceiver, TNC, and maybe a weather station), but it was a lot of fun to send and receive packet messages, find them stored in your TNC or local bulletin-board server, or chat live with another ham. I'm happy to report there's been a small resurgence in my corner of SoCal, linking hospitals and Emergency Operations Centers in our disaster-prone area. Every now and then we swap messages and see some traffic.

Limited to 1200 bps using "off the shelf" equipment, the transfer of longer messages seems agonizingly slow when compared to today's e-mail and text-message transfers. However, keep your messages short, like today's phone text messages, and the throughput is pretty quick. Yes, some radios and TNCs could achieve 9600 bps, but cross-platform compatibility and reliability were sketchy, at least in my experience. If you have a TNC collecting dust somewhere, then you probably know another ham with one as well. After some recent messing around with packet, it brought back memories of how much fun it was in those pre-internet days.

It's That Time of Year

Time to start assembling the shopping list for some spring specials and new products that often surface in mid-May, by some strange coincidence at the same time the annual gathering at the Dayton Hamvention® takes place. It's a great time to pore through the printed or online catalogs and check the manufacturers' websites for hints of new products about to make their debut. After the tough winter that affected so much of the nation, a breath of spring air can reinvigorate interest in some new gear, along with accessories such as antennas, coax, power supplies, and the stuff you'll want to have for Field Day in June.

It's also fun to get together with a few fellow hams to catch up on radio projects, activities, and the latest gear the retailers have to offer. A pilgrimage to Dayton is more than a rite of spring; it's a "must do" for every ham, even if you go only once. However, chances are if you go once, you'll go back again. As they say, there's nothing quite like it.

While the radios, the brown boxes, the seminars, product demonstrations, vendors (don't forget the CQ booth!), and the flea market all are fun, remember this: You are the one who takes it all in for the purpose of putting a little "Magic In The Sky."

73, Jeff, AA6JR

antennas

BY KENT BRITAIN,* WA5VJB

Care and Feeding of SWRs

This month we start out with a question from a reader regarding SWRs (photo A). Studies have shown that SWRs have eight legs, not six, and are thus related to arachnids.

The confusion comes from the fact that they do not necessarily put all eight legs on the ground at the same time. What you need to do is get those radio waves going up and down the antenna very fast, and it burns their little feet like walking on hot asphalt. Therefore, they lift up one, then two, then more feet. Finally they are standing on one foot with the other seven legs up in the air as shown in fig. 1. Now your SWR reading is 1 and you get out best because the other seven legs radiate the radio waves. However, this is springtime, and sometimes you get an SWR reading higher than 8. After all, this is their mating season. *(Oh, for the good old days when the antenna column ran in the April issue!—ed.)*

Changing Power = Changing SWR?

Now that we have that out of the way, our reader's question was about how his SWR changes as he changes power level. That is, why the SWR would be different at 10 watts than at 100 watts.

First, there are very few conditions under which the antenna itself changes SWR with power. For you lads running push-pull 4CX10,000s, a corona can form on the tips of the elements. These balls of plasma conduct electricity, making the antenna elements appear longer. The antenna now has a lower resonant frequency and SWR goes up. The oldest information on this problem I've been able to find was at the shortwave broadcast station HCJB in Quito, Ecuador. Back in the 1940s, running very high RF voltages and in the thin air of the Andes at well over 10,000 feet the antennas would form coronas. The corona would eat away at the tips of the elements and the antennas had to be replaced reg-

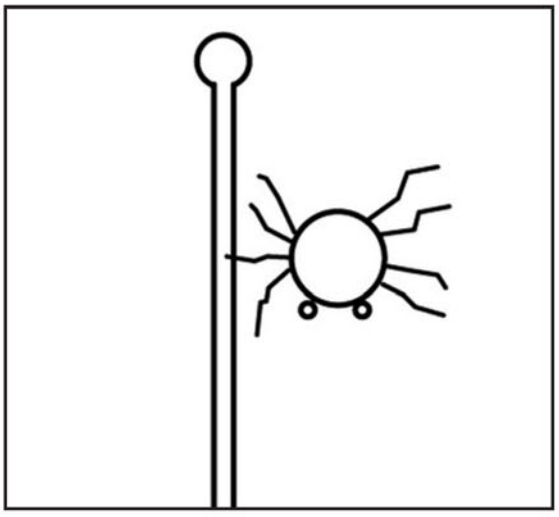


Fig. 1. The SWR

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e-mail: <wa5vjb@cq-amateur-radio.com>

Photo A. How to look for those SWRs

Photo B. Harmonic generators.

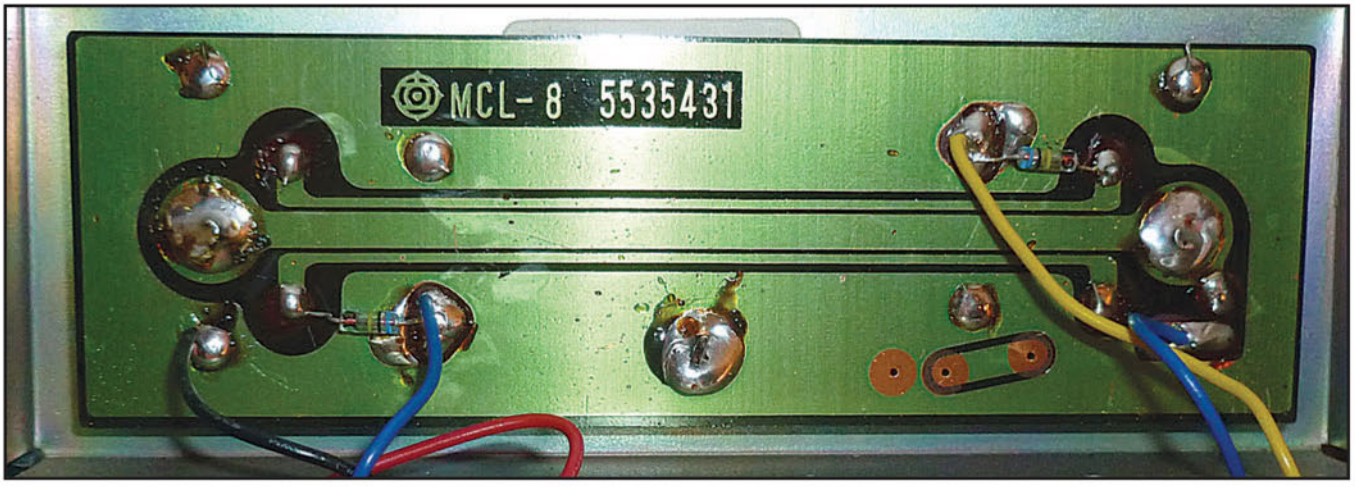

Photo C. Sampling lines of a low-cost SWR meter.

ularly. This is where the "quad" antenna was developed, not because it worked better than a Yagi, but because as a loop, it didn't have any tips where corona could form.

Also, when running my EME station, I have seen the SWR drop as the RF dried off the Yagis on damp mornings, but once the SWR dropped, it stayed low. However, it is very rare for the antenna itself to change impedance/SWR with power changes.

Now for the more common sources of SWR errors:

Most low-cost SWR meters are very frequency-sensitive. On 75 meters, you many need to turn the "Set" control almost all the way over. However, on 10 meters you barely have to turn the "Cal" knob off the stop. Now give it a try on 2 meters and you may find your SWR meter very hard to use because the meter pegs so easily.

Let's say you are using one of these fine Harmonic Generators shown in photo B. Now going from 5 watts to 100 watts, you might have a watt or two on the harmonic frequencies. Most antennas will still work somewhat on their 3rd harmonics, but have a very high SWR on their 2nd and 4th harmonics. Also remember that the SWR meter is more sensitive on the harmonic frequencies than it is on the fundamental frequency. With most antennas, you are going to see a higher SWR reading from those harmonics. The higher SWR you might see is from the rig generating a dirty signal at the higher power level, not from changes in the antenna.

Do you have a high-pass TVI filter in your station? Putting the SWR meter between the rig and the filter tells you what the transmitter is seeing, and that is important to the transmitter, but putting the SWR meter between the filter and the antenna tells you want the antenna is really doing.

Now we get into the mechanics of the meter itself. In photo C, we have the typical forward and reverse sample lines of a low-cost SWR meter. Have a look at fig. 2. There are two diodes to sample the forward and reverse RF current. How carefully matched are those two diodes? The answer is that they rarely are matched at all. Also, how accurately did they etch the traces on the PC board that pick off the sample signal? Again, rarely are they made to a few percent accuracy.

Here is a quick test: Measure the SWR of your antenna, and this test actually works best if the SWR is about 2 or 3 to 1. Now reverse the lines to the SWR meter—antenna to the transmitter connector and the transmitter to the antenna connector. This makes reflected forward and forward reflect-

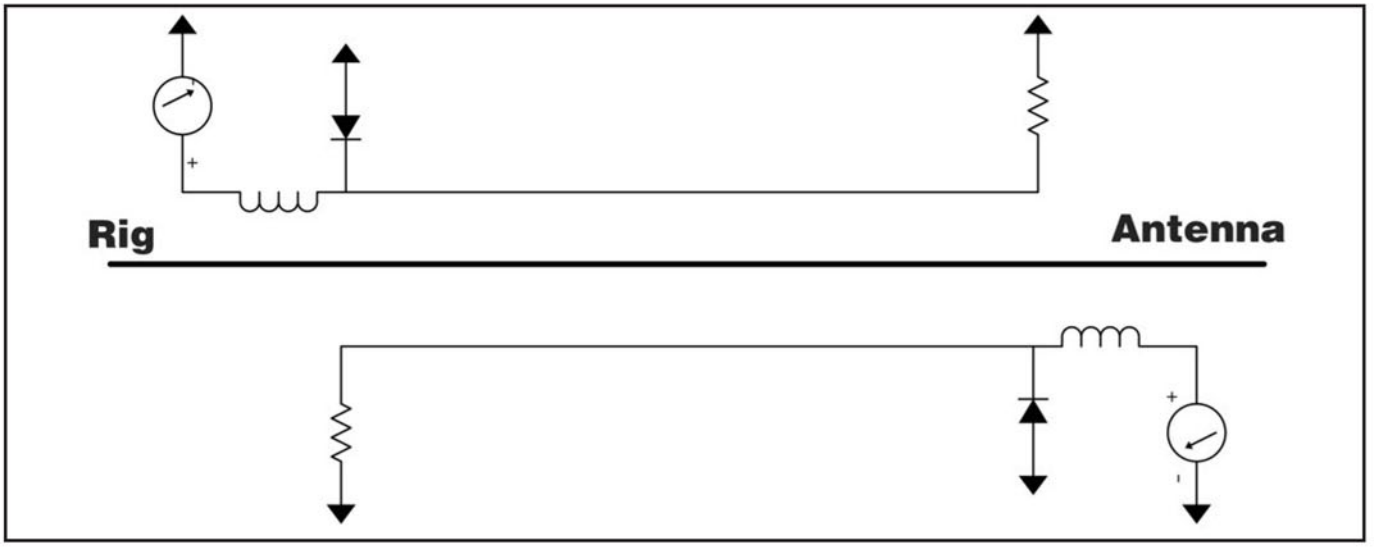

Fig. 2. Layout of the typical SWR meter

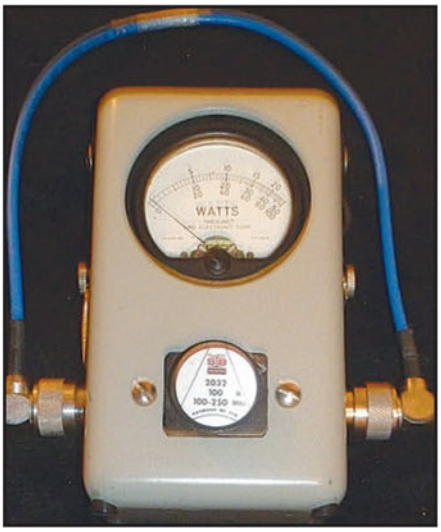

Photo D. The Bird Wattmeter

ed. Calibrate full scale to the reflected, then measure SWR while looking at forward and measure the SWR again. If it's the same, you have a pretty good SWR meter, but often you will get a different reading.

In photo D is the Bird Wattmeter which can be used to measure RF power going in either direction in the coax/transmission line. In photo E you can see the innards of a Bird slug. Yes, it's kind of beat up (I didn't want to take apart one of my good "slugs"), The pick-up loop should be much straighter. Bird has solved the matching of fwd/rev diodes by using the same diode for both forward and reverse sampling.

Certainly, your SWR is something you can look at and worry about, but rarely are the SWR readings made with good equipment. Unless you are using a quality resistive bridge such as the ones in photo F, or back-calculating SWR from watts on your Bird Wattmeter, don't split hairs . . 1.2, 1.3, 1.5 to 1? These are just numbers, and as long as the SWR protect circuit isn't tripping on your rig, there is no need to worry about a few tenths (*one leg?*) of SWR.

We welcome your antenna questions and column topic suggestions. Just drop a letter to my QRZ.com address or an e-mail to <wa5vjb@cq-amateur-radio.com>. For other antenna projects and circuit board antennas, you are welcome to visit <www.wa5vjb.com>.

73, Kent WA5VJB

Photo E. Insides of a damaged Bird "slug"

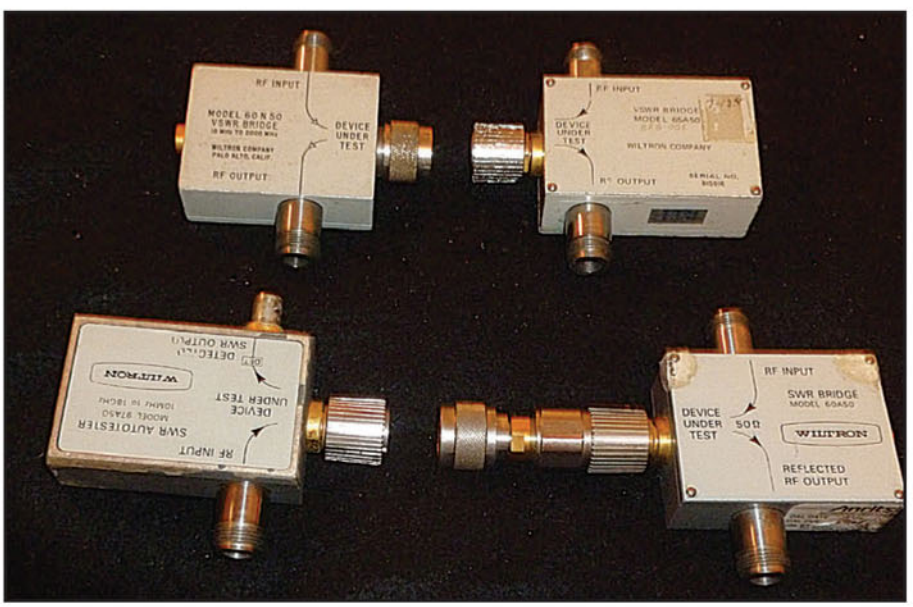

Photo F. Resistive bridges for measuring SWR

DVRPTR V1: D-STAR on a Budget

BY DON ROTOLO,* N2IRZ

Back in October 2012 I wrote about D-STAR and the lack of a translation of the Open D-STAR standard. Well, through a truly international chain of events, one can now buy a small and inexpensive circuit board to implement D-STAR on the air. It's flexible, too, in that you can create a D-STAR radio, hotspot, or even a full duplex repeater.

Hams in Japan, it turns out, are not even slightly hindered by having the D-STAR standard only available in Japanese. Some enterprising Germans then built the first DVRPTR board and got it working. When the Germans decided to move on to far more expensive iterations of the board, the original designer left the group, and met up with a New Zealander, living in Canada. He started building the "Version 1" boards for sale in North America, adopting control software written by an Englishman. It doesn't get more international than that!

DVRPTR

Before I get too far ahead of myself, let's start with the DVRPTR and what it does. Basically, we have a small circuit board (with an optional vocoder daughterboard) that connects to a 9600-Baud-capable radio and lets you work D-STAR over the air, or remove the Vocoder, add a computer—Windows® or Linux—for control, and get a D-STAR Hotspot, which is essentially an Internet Access port. Add a second radio (and perhaps some cavity filters) and you have a full-duplex repeater, which can stand alone or also link to other repeaters and hotspots via the Internet, much like ICOM's implementation of D-STAR.

Having a computer running a repeater (or hotspot) isn't new, but for many repeaters, located at a somewhat hostile and remote site, it just isn't practical. No worries, as the control software has also been ported to the Raspberry Pi and BeagleBoard Black platforms. Both the Raspberry Pi and the BeagleBoard Black are small and inexpensive (about $40–50) microprocessor boards, aimed at the experimenter market (somewhat like an Arduino).

What this means is, assuming you already have a radio capable of 9600-Baud data (which, with minor mods, includes most FM radios), you can build a D-STAR hotspot for about $160 including postage.

Beginnings

The DVRPTR project got started when Jan Alte, DO1FJN, designed the first DVRPTR board back

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e-mail: <n2irz@cq-amateur-radio.com>

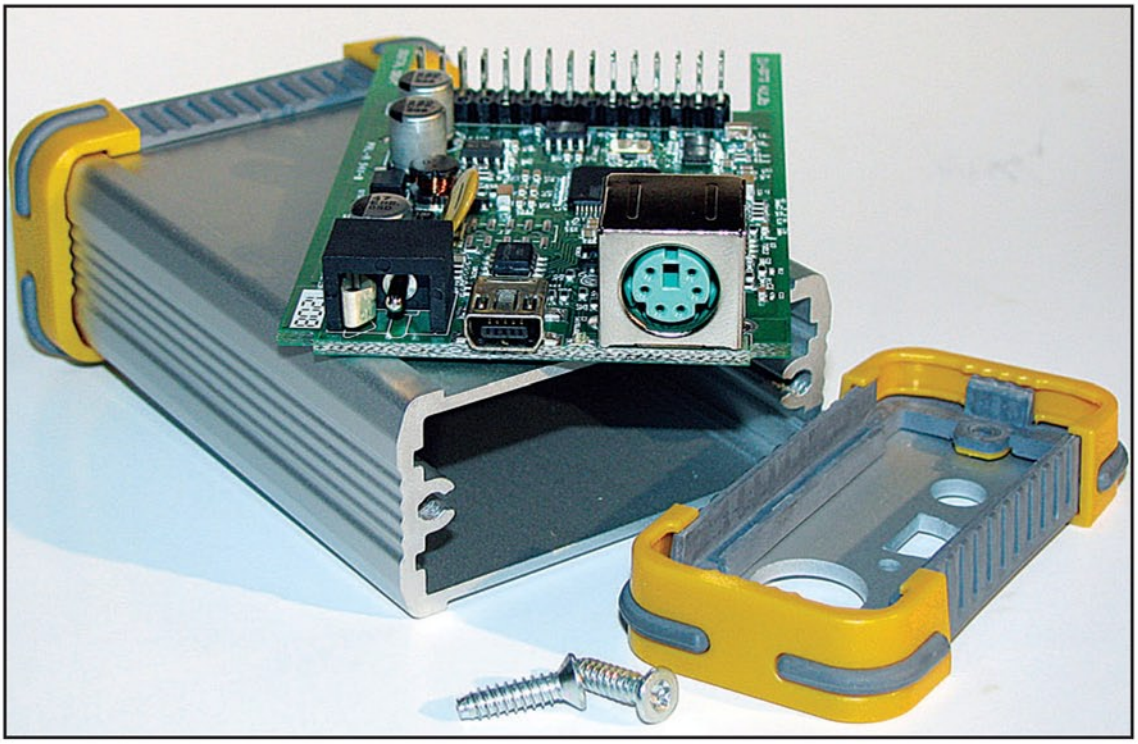


Photo A. The DVRPTR V1 board, sitting atop the optional case. The connectors are DC power, USB, and a Mini-DIN for the radio connection. Note the multi-pin header at the rear, used for optional daughterboards. The DVRPTR V1 board costs about $120 if you also get the optional case, and can turn any 9600-Baud-capable radio into a D-STAR hotspot and more. (See the text for details.)

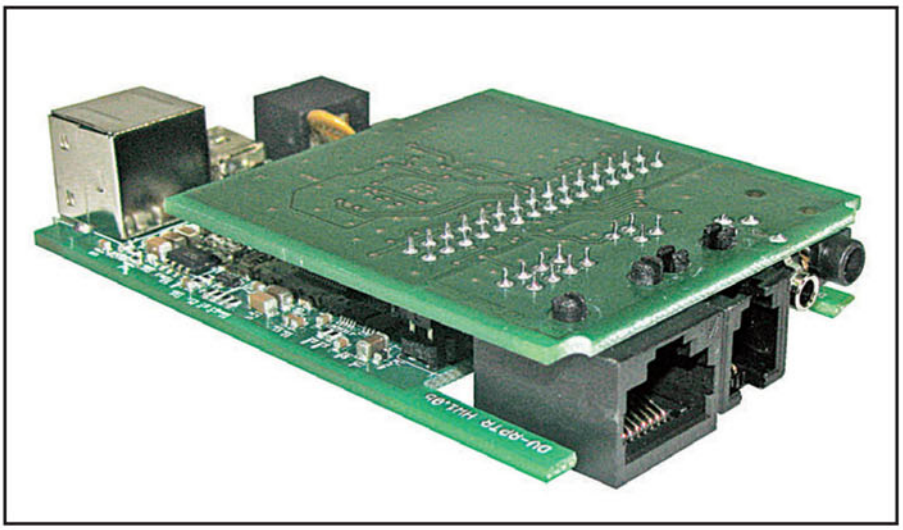


Photo B. The AMBE Vocoder daughterboard installed atop the DVRPTR V1 board. This daughterboard is necessary only if you want to build a D-STAR user radio. Note the standard microphone jack. Even with the Vocoder installed, the whole package still fits into the case, although a cut-out rear plate is needed.

in 2011. Through a chain of events, Bruce Given, VE2GZI, in Canada started building and selling these boards for the North American market in early 2013. Around that time, Jonathan Naylor, G4KLX, updated his older DV software to control the hotspot or repeater, which greatly improved upon what was originally available.

The DVRPTR is supported, as are many projects of this nature, by an online user group on Yahoo. Visit the Yahoo DVRPTR User Group at <http://groups.yahoo.com/group/DVRPTR_V1/>. Not only is there a community of experienced users ready to help, but the designers and others deeply involved in the project frequent the site as well, so even if you need a little hand-holding, you'll get the information you need.

Of course, being hams, we all tend to avoid reading the manual to the greatest extent possible. That's okay, but please be courteous and make sure the answer to your question is not in the manual before asking for help. The DVRPTR User Manual is brief—not much to know. The control software, on the other hand, needs somewhat more. The online resources have a lot of information, so use them as a first resort.

The Yahoo group has the latest software User Manual, along with the software, ready for downloading. Being open-source, this means schematics, firmware, software, and so on are freely available, just in case you feel the need to build your own. Even better, though, if you want to contribute your expertise to further development efforts, I am sure it would be greatly appreciated by the entire community.

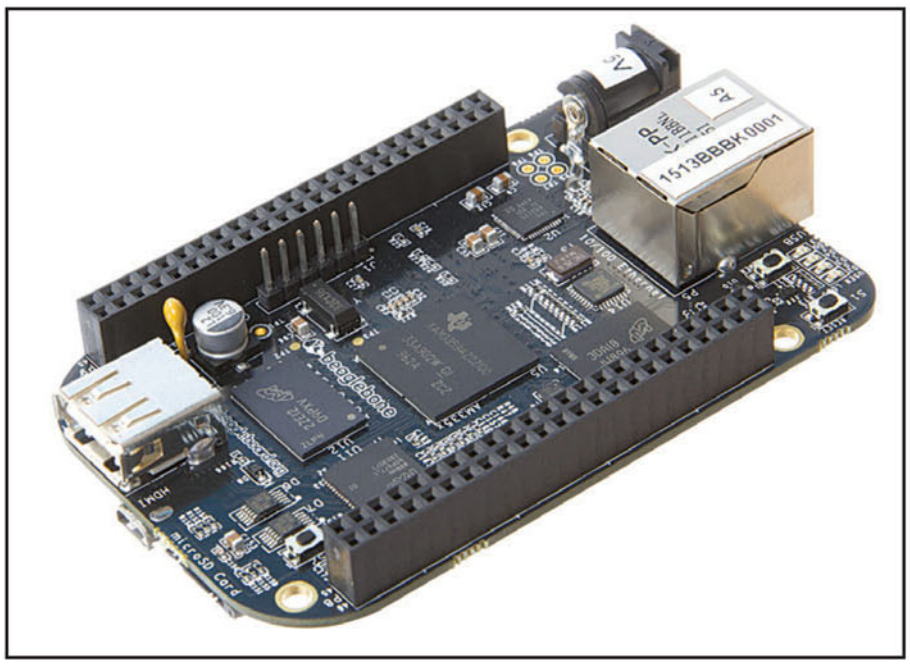


Photo C. A BeagleBoard Black microcontroller.This is one of a family of BeagleBoards each of which, much like Arduino, has differing capabilities to best suit the project at hand. The DVRPTR V1 can be controlled by one of these, or a Raspberry Pi board, instead of having to dedicate a full Windows® or Linux computer to it. Visit <http://beagleboard.org/> for more details. (Image courtesy of BeagleBoard)

Getting the Pieces

Let's start with the board itself: You can buy one for $100 from dvrptr.net <http://www.dvrptr.net> using PayPal. (If you don't have a PayPal account, don't worry: PayPal takes credit cards, too). Add $20 for a very nice case.

The DVRPTR website also has a copy of the older German control center software User Manual for download, which is nice if you just want to get a feeling for what the whole process involves. However, once you've decided to take it to the next step, you'd be better off going to the Yahoo group for all the documentation, since they (at least theoretically) keep everything more up-to-date. Also be sure to visit the "D-STAR 101" site <http://www.dstar101.com/DVRPTR.htm> for lots of good information for the beginner.

D-STAR Radio

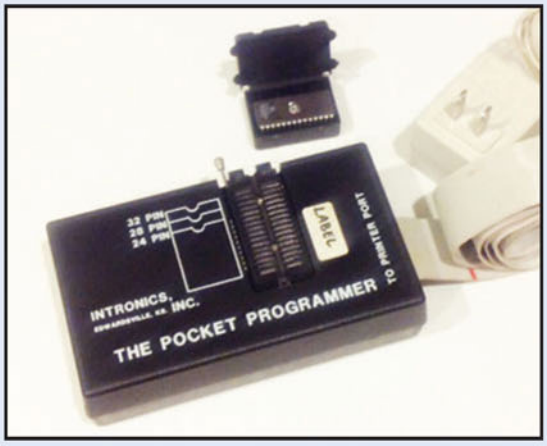
Full disclosure: I did not obtain a DVRPTR V1 board and try any of this. I only have one D-STAR-capable radio, and it isn't on the same band as any of my other radios, so implementation and testing would have been difficult for me. The goal here is to make you aware of the general process, based on what I could glean from the documentation and some experienced users. As a "how-to" guide, I think you'll find this article vague and incomplete.

The basic DRVPTR board forms the core of a D-STAR radio, but you need an AMBE Vocoder daughterboard to "speak D-STAR" on the air. The Vocoder, also available from dvrptr.net,

EPROM Programming

Recently I received an e-mail request for information about programming an EPROM for a TheNET X1J node. I referred the sender to a friend for assistance, but that prompted me to look in the cellar for my old Intronics Pocket ProgrammerII EPROM programmer. I found it, but could not find the floppy disk containing the DOS-based control software necessary to make it work. Through the magic of a Google search, I found Karl Schmidt. As it turns out, Intronics is now Transtronics, and Karl graciously directed me to its website, where a modern Windows® compatible version of the control software was free for the download. Even after more than 25 years, they are still supporting me as a customer: How great is that?

If you need a great programmer for EPROMs (and more), visit <http://transtronics.com>. I recommend its Pocket Programmer III, with a USB interface.



costs $100. Remember that AMBE Vocoders are not in the public domain, so a small part of that cost is the licensing fee.

You also need a radio capable of data communications at 9600 Baud. These days, there are many choices to fill this role, unlike the early days of packet, when choices were very limited even assuming you "had that kind of money." As an example, I could have used my IC-706MKII for this.

Just attach the AMBE Vocoder daughterboard to the DVRPTR board, connect your 9k6 radio via the Mini-DIN plug, then connect a microphone and speaker to the Vocoder board. Apply power (nominal 12 VDC, but specified as "7.5 to 13.8 Volts") and you're ready ... almost.

D-STAR radios need to be configured, with things such as your own callsign and the local repeater or hotspot's callsign, for example. Therefore, load the control software onto your computer, connect the DVRPTR board via USB, and configure it. Once the configuration is saved on the DVRPTR V1 board, the computer can be disconnected, and *viola!* You have a D-STAR compatible radio.

Software

Let's change directions for a moment and discuss the software. Many users suggest that the Open Digital Voice software from Jonathan Naylor, G4KLX, <http://groups.yahoo.com/ group/pcrepeatercontroller/> is the way to go, but the FREE STAR software from Ramesh Dhami VA3UV, <http://www.va3uv.com/> is also considered quite good, but does not support Microsoft Windows®. There is also the original German DV-RPTR Control Center software <http://www.dstar101. com/DVRPTRccSoftware.htm> that some use, but I am told it isn't as new as that from Jonathan and Ramesh,

nor is it open source, and some consider it a bit buggy. There are others (such as the Open-source Control Center from Geoffrey Merck, F4FXL) but I haven't researched the issue, so I honestly don't know what to think. My best advice is to try one and, if it's not meeting your needs, try another.

D-STAR Hotspot

If you already have a D-STAR radio, you instead can build a D-STAR Hotspot (also called a Simplex Gateway). Essentially, this is a Radio-to-Internet connection, much like a Wi-Fi hotspot or access point. Although you can make your hotspot "open," meaning anyone who knows the frequency can use it, you'd probably keep the FCC away longer if you limit access. The control software allows you to easily limit access to your callsign only, or, as with D-STAR, there is a way for you to allow access to pre-authenticated users by using a third-party "trust" server system.

Unlike the D-STAR Radio implementation, a hotspot doesn't need an AMBE Vocoder (since it functions as a GMSK modem itself), but it does need a full-time computer for control. The computer can be a Windows® or Linux PC (and doesn't have to be all that powerful), or Raspberry Pi or BeagleBoard Black microcontroller (for which there are pre-built software images available). Naturally, you'll need an Internet connection as well.

Connect a computer to the DVRPTR board and configure your hotspot. There are several decisions and choices to be made—the instructions and online manuals make this clearer—and these determine just how the hotspot will operate. If you want to use one of the BeagleBoard Black or Raspberry Pi controllers, you also configure that and then connect it to the DVRPTR board.

Again, you'll want to limit access to previously approved users. One might think that only hams have D-STAR radios, but realistically anyone can buy a radio. Remember, it's your callsign!

D-STAR Repeater

The hotspot is all well and good, but if you don't have the cash on hand to buy a repeater controller and one or more RF modules from ICOM, the DVRPTR V1 board offers a low-cost and high-performance solution.

As before, you need the controller software, configured, and the control computer (PC or microcontroller). Then you need the same equipment as with any analog repeater: A repeater-grade transmitter and receiver (both able to handle 9600-Baud data cleanly), cavity filters (so you can use the same antenna in duplex mode), as well as the miscellaneous bits such as power supplies, remote-control capabilities, and so on.

Repeaters are generally subject to frequency coordination, so you can't just pop up on a frequency pair and expect nobody to complain. Also, in case of complaints, FCC rules state that the non-coordinated repeater has to fix all interference problems. I can't speak about the whole United States, but here in the New York City area, there simply are no uncoordinated repeater frequency pairs available below 1.2 GHz; they are all spoken for, and the waiting list is years long. However, if you already run a coordinated voice repeater, converting it over to D-STAR might be a lot less costly than you thought.

The Future

For a brief moment around the end of 2013, DVRPTR boards went out of stock, but by now dvrptr.net should have plenty available, along with AMBE Vocoder boards.

In development is a new AMBE Vocoder board, AMBE 3000, developed to support the AMBS2+ Vocoder, which is used for DMR (Digital Mobile Radio). With DMR equipment coming onto the surplus market, along with cheap DMR radios coming out of China (look up names such as Hiyunton,

Beifang and Kirisun), in the next few years we should be seeing decent DMR radios for under $300. In fact, Connect Systems Inc. <http://www.connectsystems.com> has its Model CS600 UHF DMR radio, which I found on Amazon for $285. This is a full-feature, 4-watt DMR HT, roughly comparable to the ICOM ID-31A, which has a street price just under $300.

Also in development is a daughterboard featuring a Carambola-2 board <http://8devices.com/carambola-2>, creating what essentially will be a hotspot-in-a-box. This daughterboard will have a 400-MHz processor Carambola-2 Wi-Fi-enabled Linux module, eliminating the need for an external computer or microcontroller. All you'll need to set up a D-STAR hotspot is a DVRPTR V1 board and a radio. Even if your Internet connection is a Wi-Fi hotspot, you're still good to go.

Both of these products—AMBE 3000 and Carambola-2 boards—are just at the start of development. If you are at all interested in being part of the development effort, just contact Bruce Given through the dvrptr.net website. Hams have always paid it forward, and here's a chance to make a real difference, not to mention getting a whole new skill set.

Why, you may ask, should I be interested in a new skill set? Well, even though I'm gainfully employed at the same company since the 1980s, I never take my employment for granted. Sure, it's likely I'm going to retire from there, but you never know. The economy continues to improve from those dark days of 2008 and 2009, but one is never truly indispensable. Make sure your skill set remains fresh and useful for next year, because if you ever find yourself looking for a job, it will come in handy. Also, if you are in the unfortunate position of looking for a job, adding to your resume projects like these can't hurt.

Yaesu DV

Yaesu recently announced its plans to develop a line of DV radios and repeaters, based on the technology I wrote about in December 2012. For June, I am hoping to get some more details on this equipment from Yaesu, and if I do, you'll read about it here. If that falls through, I'm sure I'll find something to write about. Just in case, though, write to me and let me know what it is you would like to read, and I'll see what I can do. Until then . . .

73, Don, N2IRZ

BY TOM SMERK,* AA6TS

Growth in Radio Clubs, Band Access, World Wide

The past month offered more international ham radio news than I have seen since I began writing this column just over a year ago. The challenge this month was not "what to print," but instead "what not to print!" I hope you enjoy some of these great stories I found for the column this month. Let's begin with an upbeat story . . .

Amateur Radio Clubs Abundant in Hong Kong

According to the Office of the Communications Authority, there are 48 amateur radio societies in Hong Kong, all with callsigns starting with VR2. One is the Hong Kong Amateur Radio Transmitting Society (HARTS), which was established more than eighty years ago by a group of British Army officers.

In 2000, some members split from HARTS and formed the Hong Kong Amateur Radio Communications Association (HKARCA), led by President Ken Hau. The association, which has more than 100 members, ages from 40 to 70, is more socially inclined.

Another breakaway group from HARTS is the Hong Kong Amateur Radio Association (HKARA), which was also formed in 2000 and is led by Ho Wing-Leung. The association helps out at charity events, particularly those in support of UNICEF, the United Nations Children's Fund.

For more information, visit these websites:

Hong Kong Amateur Radio Communications Association (HKARCA): <http://tinyurl.com/HongKong-HKARCA>

Hong Kong Amateur Radio Association (HKARA): <http://tinyurl.com/HongKong-HKARA>

Hong Kong Amateur Radio Transmitting Society (HARTS): <http://tinyurl.com/HongKong-HARTS-ZH>

[South China Morning Post]

On the other end of the range, I discovered the following . . .

Hams in Japan Are Not Renewing Licenses

According to statistics courtesy of Southgate News that were obtained from the website of Joe Speroni, AHØA (<www.ah0a.org>), amateur radio licenses in Japan have decreased 65% since 1996. The numbers backing up this statement show 1,350,127 station licenses in 1996, while in 2009, the latest year for Speroni's statistics, the number was down to 489,256.

The year 2001 seems to have seen the largest decline, with 135,395 hams leaving the hobby that year. The statistics are available at <http://tinyurl.com/Japan-ham-statistics>.

[Southgate Amateur Radio News]

On the subject of Emergency Communications, here's a story from New South Wales that had a happy ending, thanks to amateur radio and APRS:

APRS Used to Provide Assistance in a Traffic Accident with Injuries

Jenny, VK4FJMP, was on her way home, traveling from Singleton, New South Wales to Killarney along with her dog "Hunter," when her car left the road and rolled over, trapping her inside with a dislocated shoulder. Because her phone was damaged in the accident, she could only call the last number dialed, which happened to be another ham, Bob, VK4DA, who was also headed to Killarney but was about three hours behind.

Since both mobile rigs were equipped with APRS, Bob fired up his iPad and was able to pinpoint the exact GPS coordinates of Jenny's location, which he relayed to authorities.

Jenny was treated at Tenterfield Hospital and picked up there by Bob on his way through, and the dog was transported from the scene by a thoughtful passer-by.

While emergency services may still have been able to find her if she had given her estimated location to Bob over the phone, the APRS tracker in her car, which provided Bob with the exact coordinates, reduced the delay in response and possible further complications.

Except for the car, which was a total loss, a happy ending for all concerned was possible thanks to amateur radio and APRS!

[WIA (Wireless Institute of Australia) News]

And another rescue story from South Africa:

South African Ham Helps with Boat Rescue

On Sunday, December 22, 2013 at 12:48 local time, harbor authorities at Struisbaai, South Africa, off the Indian Ocean coast, reported that they had picked up a distress signal from the commercial fishing vessel *Maverick*. The authorities were unable to determine the location of the *Maverick*. Information obtained from other boats led them to believe that the *Maverick* had run out of fuel and had been drifting for about five hours.

Several 29-MHz transmissions were picked up from the *Maverick* but were too weak to be understood. When no further communication with the vessel was established, amateur radio operator Trevor Brinch, ZS1TR, of South Africa's HAMNET, was contacted to use his equipment and experience with receiving weak signals to pinpoint the location of the vessel. HAMNET, a voluntary group of South African amateurs, is the disaster

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communication division of the South African Radio League (SARL).

Brinch obtained the position of the stranded vessel, which he learned had drifted into shipping lanes. After it was located by a South African rescue ship, it was discovered that the *Maverick* had experienced engine failure and subsequently did run out of fuel. The rescue vessel towed the *Maverick* safely back to Struisbaai Harbor.

Those involved in the rescue reported that if it wasn't for ham radio, and more specifically ZS1TR, the rescue could have extended well into the night with search planes having to be launched. Great work, Trevor, and thanks to HAMNET for a job well done!

[South African Radio League]

Here are a few interesting events that happened recently . . .

South Africa Youth Week

February 10–15 were the dates set for "Youth in Amateur Radio Week" sponsored by the South African Radio League (SARL). The purpose of the event was to encourage young people under the age of 20 to explore how amateur radio has shaped the development of radio science and how today amateur radio can be a gateway into an engineering, electronics, or science career.

The activities included a debate during which amateurs under 20 years of age discussed "What does amateur radio offer young people?" Also, an essay competition (800 to 1200 words) with the title "Amateur Radio—Your gateway to a career in engineering and science" offered a prize of a Raspberry Pi from RS components complete with screen, keyboard, and mouse

[SARL]

In addition to South Africa, Poland is also promoting amateur radio to the youth of that country:

Ham Radio Kids Day in Poland

Since June 16, 2012, Amateur Radio Kids Day has been held in Poland twice each year, once in the spring and once in the winter months. An initiative of the SP3POW Amateur Radio Club and supported by the SP3KWA and SP3ZIR Amateur Radio Clubs, the Polish event is based on the Amateur Radio Kids Day initiated by the ARRL in the United States.

This year's Kids Day in Poland was scheduled for January 5, 2014, and once again allowed many unlicensed youngsters to make their first amateur radio contacts, which will no doubt encourage many of them, either now or perhaps later in life, to pursue their own ham radio licenses. Another benefit is that experienced hams who were losing interest in the hobby are now able to mentor aspiring young hams as they learn the basic operation of HF and VHF amateur radio.

Photos of last year's event (and possibly the January 2014 photos by the time you read this) can be viewed at the Polish language website for SP3POW Ostrowski Amateur Radio Club at: <http://sp3pow.pl/articles.php?article_id=96>.

[IARU Region 1 website]

Another celebration on the calendar for this month is:

Australian Hams Plan Public Relations Event for April 2014

In my job writing for *CQ*, I hear about a lot of ham radio expos, hamfests, and other events, but when I heard about the PR4AmateurRadio Expo being planned for the weekend of April 11–13 in Australia, I was pleased to see a new motivation behind the planning: The aim of this event is to publicize

Photo A. Pete Sipple, MØPSK, controlling the Chelmsford Amateur Radio Skills Night net in the UK. (Courtesy MØPSX)

modern and diverse amateur radio that is easily accessible to people from all walks of life.

According to the Wireless Institute of Australia (WIA), the general public is often very surprised that amateur radio survives in this digital age. The WIA considers promotion of the hobby to be very worthwhile and wants amateur radio to be better understood and recognized so that the public may better understand it, appreciate it, and join in.

To measure success of the Expo, information will be gathered by the WIA from the participants. Those furnishing a report, photographs, or log before May 16 will receive a certificate of appreciation.

[Wireless Institute of Australia]

Also happening in Australia . . .

Queensland Australia Celebrates 100 Years of Licensed Amateur Radio

Although tests were conducted as early as 1910, before licenses were issued, the first official amateur radio license in the state of Queensland, Australia was issued on February 7, 1914 to Marcus J.G. Brims, a resident of the far north town of Mareeba. He was issued the call letters XQA and was permitted 76 watts output, limited to the 160-meter band.

An award program has been established, which began February 7 and will end August 6, 2014, to commemorate the 100-year anniversary of amateur radio in Queensland. Those who contact three Tablelands (a local government area in Far North Queensland, Australia established in 2008) members on any HF amateur band will be eligible for a commemorative certificate. More information is available at <http://www.treclub.org.au>.

Oh, by the way, Mr. Brims' operating privileges did not last very long. A few months after receiving his license, his permit was revoked due to the outbreak of WW I and his equipment was surrendered to the Post Master General's department for storage for the duration of the conflict.

[VK4SDD]

Here's what is happening in the United Kingdom:

Essex Ham Montage of 2013

Essex Ham (UK) has released a video montage containing images of events, places, and amateurs in Essex for the year 2013. The eight-minute video covers events, rallies, conventions, and other activities, and features at least six local clubs and organizations. The video highlights the creation of free Foundation training material, an interview with a TV personality, release of the EssexPSK datamode application, and other activities intended to help promote amateur radio. This video can be found at: <http://www.essexham.co.uk/news/review-of-2013.html>.

The video does an excellent job of not

Photo B. Ham radio activity is growing in England's Essex County. In addition to the Chelmsford Amateur Radio Skills Night net and Essex Ham video profiled in this month's "CQ World Wide," another group of Essex hams has formed TAARC, the Thurrock Acorns Amateur Radio Club <www.taarc.co.uk>. This photo, courtesy of Essex Ham, was taken at the group's inaugural meeting in January.

only telling us what Essex hams have been up to and makes you want to get more involved with ham radio once you see the excitement, camaraderie, and enthusiasm contained in this presentation. (Essex Ham has also released a number of "Getting Started Guides.")

After seeing this, I'll bet you will want to convince your club to begin videotaping everything so that you can have something like this to present at the end of 2014! Well done, Essex!

[The Essex Ham website]

And here's some more news from Essex Ham:

Trend Toward Live Internet Streaming

After noticing the success of the recent Chelmsford Amateur Radio Skills Night, which allowed regular net participants to meet up socially, one of the net's regulars used the workshop's suggestion form to ask about the possibility of having the net streamed live.

A live video and audio stream was set up for the weekly on-air meeting at 8 pm on January 27, and for the first time in the net's two-year history, listeners could not only listen to the net, operating as GB3DA, but also view a live video feed showing the net controller at work and chat in real-time via the net's online chat room.

Net control operator Pete, MØPSX (photo A), had this to say:

"Having a live webcam running was an interesting experience. It gave me the opportunity to interact even more with the net's regulars, showing them what goes on behind the scenes, showing the live running order, and holding up occasional props. It was also nice to be able to provide some real feedback, such as a thumbs-up or a wave on request."

With the initial attempt successfully completed, the club will determine if there is enough interest to continuing offering the live interactive feed.

More information on the Chelmsford Amateur Radio Skills Workshop mentioned in this article is at <http:// www.essex-ham.co.uk/news/amateur-radio-skills-video-report.html>.

[Essex Ham website]

The last two months we were learning about many new additions and changes on the 6-meter band. Here's an update:

6-Meter Restrictions Eliminated in New Zealand and Australia

The conversion of the 50-MHz band from analog television to amateur radio continues! In New Zealand, operations on Channel 1 (44 to 50 MHz) ceased at the end of November 2013, and according to the New Zealand Association of Radio Transmitters (NZART), "all New Zealand amateurs now have access to the 6-meter band (50–53 MHz) without requiring a permit" at the full legal power limit, and no official notice was expected from regulator Radio Spectrum Management."

In nearby Australia, analog broadcasting ended December 10 when that country's channel 0, also in the 44- to 50-MHz range, ceased operations, eliminating the potential of interference from 6-meter amateur operation. Although license conditions in Australia's eastern states restricting operation on the lower half of 6 meters remain in place, the Wireless Institute of Australia (WIA) has suggested that these "may be ignored for the time being."

The WIA is also hoping to allocate 50 to 52 MHz to amateur radio on a primary basis.

[ARRL News]

More happening down on the 60-meter band—read on . . .

Canada, Spain, Cuba, and the Czech Republic Now on the 60-Meter Band

Canadian hams now have new frequencies to use as a result of a recent decision of that country's agency for technological advancement, *Industry Canada.* The center-channel frequencies harmonize with those available to US radio amateurs on 60 meters: 5332 kHz, 5348 kHz, 5358.5 kHz, 5373 kHz, and 5405 kHz.

In addition to the opportunity of having new frequencies to explore, cross-border communications with the United States are now facilitated.

The restrictions are the same as in the United States: USB, data, RTTY, and CW modes, with a maximum bandwidth of 2.8 kHz and a maximum power output of 100 W ERP. As in many other cases, interference to fixed and mobile operations in Canada or in other countries is prohibited.

Elsewhere, **Spain's** telecommunications regulatory agency has authorized the use of several 60-meter frequencies through June 30, 2014. The authorized center frequencies are 5268, 5295, 5313, 5382, 5430, and 5439 kHz, with a power of 100 W PEP and a maximum bandwidth of 3 kHz, which is different from the US and Canada. USB is the recommended mode.

In the **Czech Republic**, The Czech Telecommunications Office has moved into "Phase 2" of its plans to get Czech hams onto the 5-MHz band. Beginning on January 1st, a small number of 5-MHz individual permits (up to ten radio amateurs) were to be issued for operation through the end of 2014.

While originally limited to only one channel on 5260 kHz, under Phase 2, Czech amateurs issued one of these special permits will be allowed use of six channels that are common to many other nations but different from others—5288.5, 5330.5, 5366.5, 5371.5, 5398.5 and 5403.5 kHz. Transmissions are limited to CW or Upper Sideband with a power level not to exceed 100 watts ERP and on a strictly secondary user basis (International Telecommunications Union rules for protection of the primary users must be observed at all times).

Those who are issued 5-MHz permits are required to send a report to the Czech telecommunications regulator no later than October 31 so that an analysis of the operation on the different channels and modes can be made.

In **Cuba**, new rules were approved January 20, but access to the new allocation will require case-by-case approval from the Ministry of Communications before hams in Cuba will be able to enjoy a 12-kHz segment of the 60-meter band, as opposed to a channelized plan as the US and other countries have done.

Cuban operators may use SSB, CW, and PSK31. Once an official emergency is declared in Cuba, band usage will be restricted to emergency traffic only. Hams there may run 50 W (10 W for Novice licensees), although 100 W would be permitted in an emergency if needed to provide a reliable link. However, contacts are limited to only stations within Cuba, so don't look for any CO stations in your 60-meter log anytime soon.

[ARRL Letter]

2014 International YL Meeting to be held in Iceland in May

The next International YL meeting will be held in Reykjavik May 9-14, 2014. This meeting is held every other year in a different country around the world. The first meeting was in 1991 in Stockholm, Sweden; the most recent in Adelaide, Australia. At every meeting, YLs of another country take over the organization for the next meeting.

This 2014 meeting offers a good opportunity for YLs to get to know Iceland. The schedule allows many opportunities for sightseeing and recreational activities. Participants are expected from all over the world. For more information, visit the Young Ladies Radio League homepage <http://www.ylrl.org> or the Facebook address IYL-2014.

The fee for the IYL 2014 conference is 75,000 Iceland Krona (approximately $617 USD) per person, which covers all program activities; light lunch on Friday, Saturday, and Monday; sightseeing tours on Friday and Monday; and a gala dinner on Sunday.

[Thanks to Jonas Bjarnason, TF3JB, for alerting us to this wonderful event, and to the YLRL website for event information]

Portuguese Radio Hams Get 1850–2000 kHz Access

Portuguese telecommunications regulator ANACOM has granted that nation's ham radio community the temporary use of the 1850- to 2000-kilohertz band. According to the announcement posted on Portugal's Rede dos Emissores Portugueses (REP) website, this will allow Portuguese hams to participate in more radiosport competitions during 2014.

[REP]

And since we began with a positive story, let's also end with one:

Borneo Relies on Amateur Radio

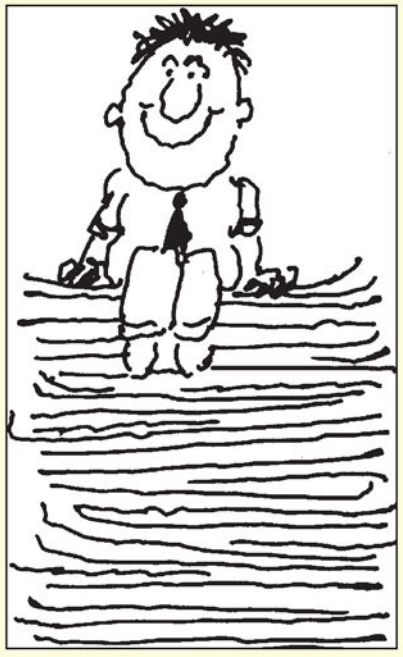
An article in the *Borneo Post Online* on February 3 contained some enlightening information about how many residents of that country, particularly Sarawak and Sabah, are developing an interest in amateur radio—not only for emergency communications, but in some areas that still are not covered by the cellular or satellite communication systems, such as Terengganu, Kelantan and Pahang—to be used for two-way conversations between friends, neighbors, and families.

Deputy Home Minister Datuk Wan Junaidi Tuanku Jafaar told reporters: "That is why I have asked SARES (Sarawak Amateur Radio Emergency Services) to send me an official letter so that I can invite them to the ministry to demonstrate the services they can offer."

VHF radio is popular in areas with no telephone coverage.

[Borneo Post Online]

Until next month, 73, and remember to send me more of those good photos from your events! E-mail to <aa6ts@cq-amateur-radio.com>. 73, Tom, AA6TS



What You've Told Us…

CQ readers are an active and curious bunch. Nearly everyone who responded to our January survey (93%) plans to be at least as active on the radio in 2014 as they were in 2013 (49% more active, 44% about the same). Only 3% said less active and 4% said they couldn't make a prediction.

The vast majority of you are planning to expand your ham radio horizons this year, with 43% planning to try a new mode, 31%, a new activity and 23% a new band. In addition, 30% plan to learn a new skill, while 16% want to learn about a new radio, 10% have "other" plans for this year, and only 19% answered no to the question overall.

Getting more specific, 44% of you are planning to learn more about digital (keyboard) modes; 34% about ham radio software, 30% each Morse code and QRP, 29% antenna design, 23% DXing, 22% each contesting and homebrewing, 21% HF operating, and 20% portable, or trail-friendly, operating. The 10–19% group includes propagation, digital voice, ham radio networking, kit-building, operating awards, remote control and VHF/UHF operating; followed by satellites, AM voice, mobile operating, public service and emergency communications, FM & repeaters, DX-peditions and near-space ballooning. Only 6% said they had no plans to learn more about any aspects of amateur radio this year.

This month's free subscription winner is Trent Fleming (who only gave us an e-mail address, so we don't know where he's from).

Reader Survey
May 2014

We'd like to know more about you … and especially what's important to you in ham radio and how we at *CQ* can help serve you better. If you're a regular reader of these surveys, you'll notice that **there is no longer a pull-out card** to fill in and return. Instead, you may:

*** Respond to the survery online** at <www.surveymonkey.com/s/CQMay14> [From the digital edition, just click on the link].

- OR -

*** Cut out or photocopy** this page

*** Circle the numbers** that correspond to your answers

*** Mail your completed survey to:** Reader Survey, CQ magazine, 25 Newbridge Rd., Hicksville, NY 11801.

We will continue to select one respondent to each survey to receive a free one-year subscription (or extension) to *CQ*.

Many radio hobbyists combine their radio activities with other pursuits. We'd like to learn more about your "crossover" interests (if any).

1. How frequently do you combine your radio hobby with other pursuits and activities? (See listing in question 3 for examples if you're not sure what we mean)

Regularly 1
Occasionally 2
Rarely 3
Never 4

2. Which aspect(s) of your radio hobby do you tend to combine with other activities? (Select all that apply)

HF amateur radio 5
V/UHF amateur radio 6
Personal 2-way radio (e.g., FRS, CB) 7
Shortwave listening (including broadcast band DXing) 8
Scanning 9
Other (specify) 10
None 11

3. Which of these activities have you combined with your radio activities? (Select all that apply)

Bicycling 12
Boating/sailing 13
Camping 14
Commuting 15
Education-related activities 16
Family activities 17
Flying 18
Geocaching / orienteering 19
High-altitude ballooning 20
Hiking 21
Hunting / fishing 22
Job-related driving 23
Motorcycling 24
Off-roading /snowmobiling 25
Pleasure driving 26
Radio Control (R/C) 27
Sporting events 28
Survival training 29
Other (specify) 30
None 31

Thank you for your responses. We'll be back with more questions in upcoming issues.

Survey Response for Issue:

Name _____ **Call Sign** _____

Address _____

City _____ **St/Prov** _____ **Zip/PC** _____

Country _____

E-mail _____

learning curve

BY RON OCHU,* KOØZ

A Primer on Where and When to Listen on VHF/UHF

By the time this issue of *CQ* reaches you, hopefully Old Man Winter has loosened his frigid grasp, Old Sol is climbing higher in the sky, and various bulb flowering plants are beginning to push their way up through the ground. Springtime is here! Spring is also the season when enhanced VHF/UHF propagation conditions become more frequent, extending all the way to late fall. VHFers have known this for quite some time, and although the study of propagation is a science, there still is an "art" to forecasting when a band will be open.

Disclaimer

I'd like you to know that I am not a propagation expert. There are hams more qualified than me when it comes to the art and science of propagation, such as our very own propagation columnists here in *CQ* and *CQ Plus,* but it is my hope that this column will at least point you in the right direction to learning more about one of the most exciting aspects of our dynamic and exciting hobby and to experiment for yourself.

Important Tips

As with any ham radio endeavor, having the right equipment goes a long, long way toward obtaining the desired goal of putting QSOs in your log book. Having good propagation is desirable, but also having a directional antenna in a high location, a rotor, and low-loss coax will help greatly. Using an amplifier with a built-in preamp is another great feature to include in the shack. On the other hand, if subdivision rules and regulations prevent you from putting up antennas, then going mobile to a high location is another fine option. The question now arises as to how best to find the DX.

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Where to Listen?

Where to listen depends on which VHF/UHF band and mode you plan to use. If you are using FM (Frequency Modulation), then the national simplex frequencies are a great starting point. Remember to QSY (change frequency) to another simplex frequency once the contact has been established. For example, on 2 meters, monitor 146.52 and once you've made contact then move to 146.55 (or another simplex frequency) to finish the QSO. This method of operating makes the band available to everyone, and it is good amateur operating procedure. Here are the FM national simplex frequencies for our most popular VHF/UHF bands:

6 meters: 52.525 MHz
2 meters: 146.52
1 1/4 meters: 223.50
70 centimeters: 446.00

For more information on simplex frequencies, I highly suggest the ARRL band plan found on the web at: <http://www.arrl.org/band-plan>.

All-Mode, Anyone?

As good as FM is for making contacts, when it comes to serious, long-haul VHF/UHF DX contacts, a good all-mode (CW, SSB) transceiver (photo A) is hard to beat. CW (Morse code) and SSB (single sideband) transmissions put more power into the transmitted modulation envelope and they both have a narrower bandwidth than

Photo A. A Yaesu FT-857 is an example of an all-mode rig covering HF, VHF, and UHF.

FM. Narrower bandwidth (the amount of spectrum that the transmitted signal occupies) translates into a better signal-to-noise ratio, which means more miles per watt!

Suggested calling frequencies for upper sideband:

6 meters: 50.125 MHz
2 meters: 144.200
1 1/4 meters: 222.100
70 centimeters: 432.100

Again, move off the calling frequency to conduct your QSO, especially if there is a band opening.

When to Listen?

A newcomer to VHF/UHF may ask, "When is the best time to listen?" A seemingly smart-aleck reply is "anytime is a good time." Although the reply may appear to be somewhat flippant, the fact is that anytime actually *is* a good time to listen! The various VHF/UHF bands can be open at any time, but there are certain times that are better than others. Earlier in this article I wrote that the spring, summer, and fall months are generally better times for enhanced VHF/UHF propagation. Let's take a closer look as to why.

VHF/UHF Propagation

All ham operators should be familiar with the ionosphere and know that the ionosphere reflects HF (high frequency) signals back to Earth. This phenomenon is called "skip" or "skywave," and it allows us to communicate worldwide using signals below 30 MHz. For the most part, VHF/UHF signals penetrate the Earth's ionosphere and continue on out to space and are not reflected back to Earth like HF signals. It is worth noting that although 6 meters is technically a VHF band, it sometimes acts like an HF band, and when the MUF (maximum usable frequency) is high enough, 6-meter signals can experience *F2* propagation, which is one of the reasons it is called the "Magic Band." However, this happens only at the peak of a solar cycle, and while we appear to be at the peak of Cycle 24 now, this has been a very weak cycle and *F2* openings have been extremely rare. Thus, what else can account for long-distance propagation on VHF and UHF?

Sporadic-*E*

Sporadic-*E* skip (*Es*) is a major propagation factor affecting 6 meters and, to a lesser extent, 2 meters and 1 1/4 meters (222 MHz). Sporadic-*E* is most preva-

lent from mid-May to mid-August, with another minor peak in the winter, and while it can occur at any time of the day, late morning and late afternoon usually are the best times to listen.

Es propagation is the result of clouds of ionized particles that drift about 65 miles above the Earth's surface. Typically these clouds are 50–100 kilometers in diameter and 2–4 kilometers in thickness. These clouds refract back to Earth radio signals that would normally continue on out to space, making it possible to make 6-meter contacts with stations 500 or more miles away! These clouds drift along, generally from west to east in North America, so what may appear at first to be a dead band may quickly come alive!

No one is quite sure what causes *Es* clouds to form. Some scientists speculate that wind shear is a contributing factor. *CQ* Propagation Editor Tomas Hood, NW7US, adds that "there is strong evidence that along with wind shear, meteor dust in the atmosphere during the times when the Earth moves through the 'clouds' or trails of dust left by passing comets contributes to the dense ionization that occurs in sporadic-*E*."

Regardless of the cause, these clouds can provide band openings for hours on end or for just a few minutes, and it is almost impossible to predict the exact timing of their occurrence. That's why the propagation mode is called *sporadic*-*E*. However, there are a few tricks of the trade!

A number of hams own and operate beacon stations on 6 meters. A beacon is a transmitter that transmits its callsign and its grid square location in Morse code. If you can hear a beacon, then you know that there is propagation between you and the beacon. A good resource for 6-meter beacon locations and frequencies is K9MU's website at <http://www.k9mu.com/map/>. You should avoid transmitting on these frequencies.

Another web source for checking out *Es* is the DXMAPS 2.6 - QSO/SWL real-time maps website. This site provides up to date information on the various types of propagation affecting the VHF-UHF bands. Its URL is <http:// tinyurl.com/d38ntd6>. The VHF Propagation Map is another good source of information at <http://aprs.mountainlake.k12.mn.us/>

Perhaps the best and most reliable resource of all is to simply leave your rig tuned to 50.125 or 144.200 USB and just listen. When the band opens up, you will hear it!

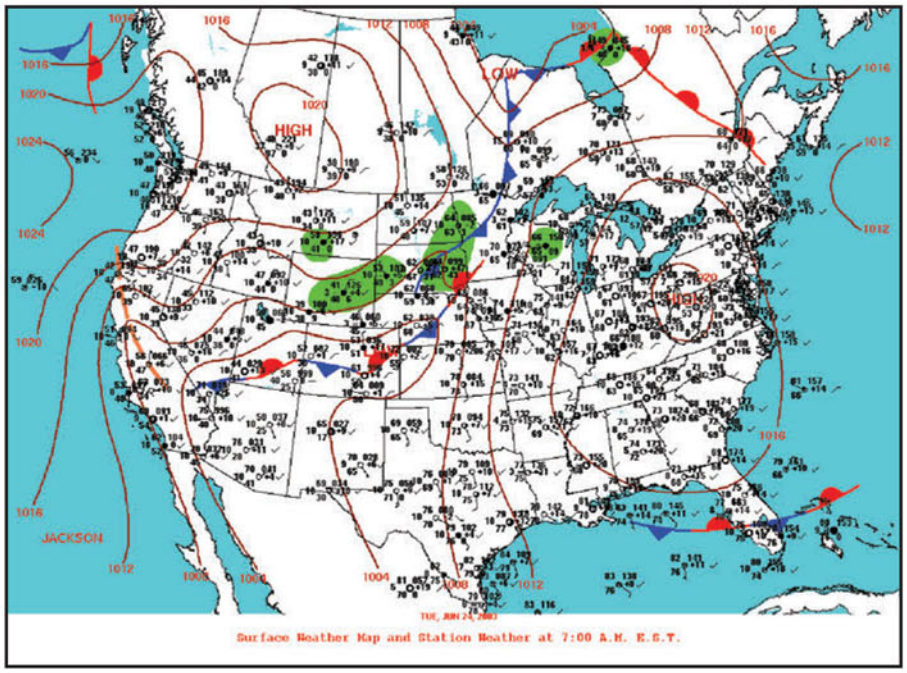


Photo B. NOAA surface weather map for June 24, 2003, when I made my 726-mile contact with Mark, K2AXX. (Weather maps courtesy NOAA, via WikiMedia Commons)

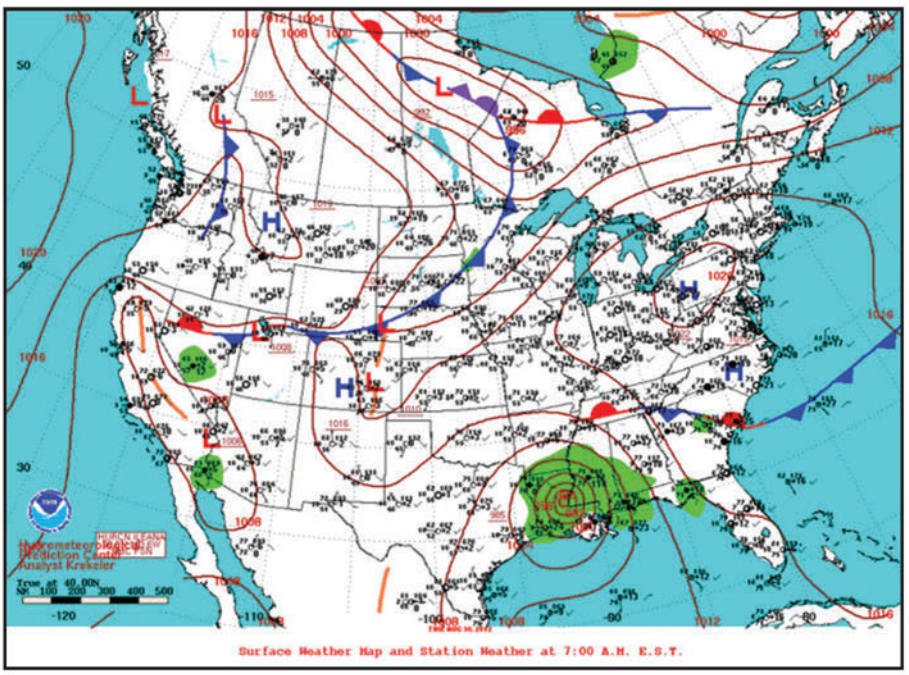


Photo C. NOAA August 30, 2012 surface weather map when I made a 226-mile, 10-GHz QSO!

Enhanced Propagation

Enhanced propagation is a term I like to use to explain extended propagation on the 2-meter, 1 1/4-meter, and 70-cm bands during the warmer (springtime through fall) months. In general, these bands will be open a little farther than normal from local sunrise through 9:00 A.M., and again from just past sunset to around midnight. Often, this is due to local temperature inversion. As the ground heats up in the morning, convective currents meet cooler air aloft and a boundary forms that refracts VHF-UHF radio waves back toward Earth. As the day progresses, this inversion begins to burn off and the extended pathway evaporates. The process can happen in reverse in the evening.

The question of whether or not VHF

and UHF waves will be refracted depends largely on the air's moisture content, which translates into a refractive index. In other words, the higher the dew point and the cooler the air is aloft, the better the inversion becomes for supporting VHF-UHF propagation, which can extend your communication range by 100 miles or more.

Tropospheric Ducting

Tropospheric ducting is by far one of my favorite VHF/UHF propagation modes. I think I like this propagation mode because it is dynamic, a bit easier to predict than sporadic-*E*, and involves basic meteorology. When I watch the weather forecast on TV or when I look at the weather section in the newspaper, I pay special attention to weather maps indicating approaching cold fronts and high-pressure systems in my neck of the woods. A high-pressure system usually means fair weather and no storms. Winds are still-to-calm and during the warmer months, the heat builds during the day, but it is capped aloft by the high pressure. If there is a good deal of humidity, then there is enhanced propagation on the VHF-UHF bands. However, when a cold front approaches from the west, the inversion can create a duct that now allows the VHF-UHF signals to propagate hundreds of miles along the approaching frontal boundary. Let's take a closer look at an actual NOAA (National Oceanographic and Atmospheric Administration) United States surface weather map from June 24, 2003 (photo B).

Notice the large high-pressure system, indicated on the map by a capital "H," centered over eastern Ohio and western Pennsylvania. Also notice the stationary front draped over Nebraska and into Minnesota. There was a good deal of humidity in the air, and that evening around 0526 Zulu (UTC), I heard Mark, K2AXX, calling CQ on 144.200 MHz. I quickly went back to him and we had solid 5/9 signal reports. At the time, I was living near St. Louis, Missouri (EM48qs) and Mark was in Geneseo, New York (FN12cs), which is a distance of over 726 miles! Since conditions were so good, we moved up to 70 cm, and on 432.100 MHz, we made another solid 5/9 contact. My next available band was 23 cm and on 1296.100, Mark and I made yet another solid 5/9 QSO! In fact, propagation was so good that I could hear Mark for a solid two hours on USB (upper sideband)! Both of us were using tower-mounted directional antennas.

Let's Move It Up a Notch: Microwaves, Anyone?

Let's look at another, more recent example in photo C. Notice that, for the most part, this NOAA surface weather map looks similar to the preceding one. There are three high-pressure systems, two over the east coast and one out west. There is also an approaching cold front moving roughly west-to-east.

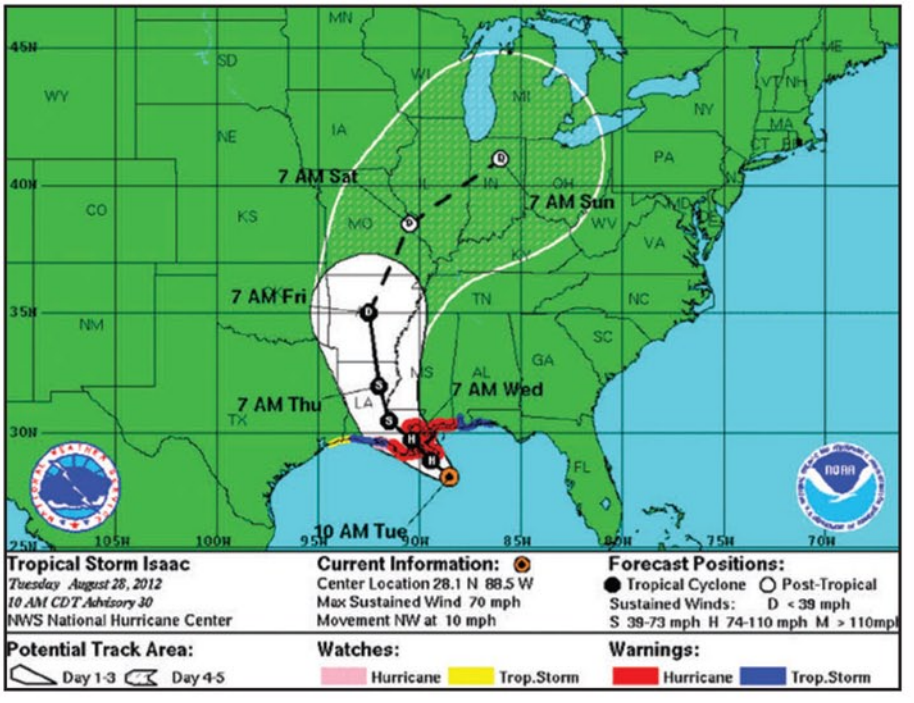


Photo D. NOAA Tropical Storm Isaac path.

Photo E. KOØZ's 3-centimeter rig located in EM59cl.

However, notice the presence of Tropical Storm Isaac over Louisiana, pumping Gulf of Mexico moisture into the atmosphere and greatly bringing up dew points. Now combine this map with the one projecting the path of Tropical Storm Isaac (photo D).

I had all the right ingredients for enhanced propagation—namely a big dome of high pressure, little to no wind, increasing dew points, and an approaching cold weather front. Instead of working the VHF-UHF bands, I thought I'd try to see how these combinations would work for the 3-centimeter band. Yep, that's right, 10 GHz (photo E)! On 1331Z on the morning of August 30, 2012, I made a contact from EM59cl near Virden, Illinois, with Garth, WØGR, in EM38ax near Odessa, Missouri, using only 2 watts fed to an off-center-fed dish over a distance of more than 226 miles! I wasn't on a high hilltop. To be honest, I was set up in a farmer's soybean field with a clear, unobstructed view toward the western horizon! *(Always get permission before operating on private property.—ed.)*

Let's Do It Again!

Looking at the surface weather map for August 31, 2012 (photo F), Tropical Storm Isaac was now over Arkansas and Missouri, and I was hoping that the increasing dew-point levels in Illinois would support enhanced microwave propagation toward the north. At 1405Z on the morning of August 31, I was able to work Ron, W9ZIH, in EN51nv near Malta, Illinois from EM59cl near the same soybean field, a distance of almost 174 miles, on 10 GHz!

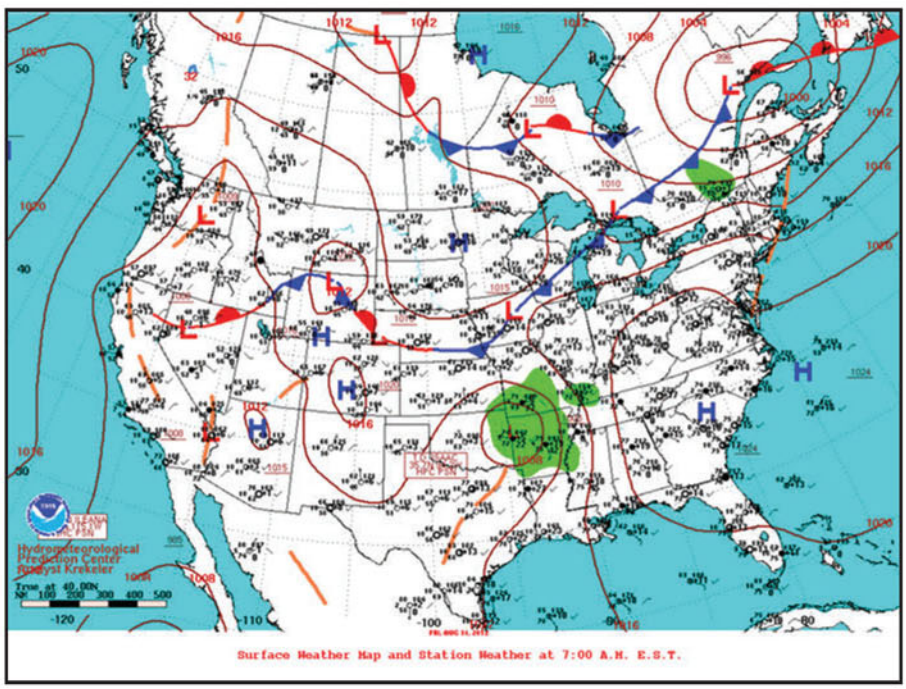


Photo F. NOAA August 31, 2012 surface weather map when I made a two-way QSO with W9ZIH.

If Only…

I was elated with my microwave contacts on the morning of August 30 and 31, and my only regret is that I didn't try to make any contacts on the other bands. I need to put some directional antennas on my car (rover style) so I can work multiple bands whenever I am out in the field. At the time, I did not have my tower or antennas erected because I was in the market for a new QTH. I bet propagation would have been excellent, but if the bands are open and if there isn't anyone listening—or calling CQ—it's darn difficult to make a contact.

Watch the WX Maps

Now that you have a better idea of some of the VHF-UHF propagation mechanisms, keep a watchful eye on the weather charts and forecasts and keep your radio tuned to your favorite band. Also, while you're listening and waiting, here's another good website resource for predicting VHF-UHF openings: <http://www.dxinfocentre.com/tropo.html>. It is called the Hepburn page and it is very useful. This page offers a six-day forecast for your region of interest and it is color coded to quickly ascertain the likelihood of propagation conditions over your neck of the woods.

Hope to CU on the Bands!

At my new residence in central Illinois, I am getting ready to set my VHF-UHF skyhooks (antennas) on my tower and to run hardline back to the shack. I am looking forward to doing some VHF-SHF weak signal work from my new QTH! I'll be watching Hepburn and the weather charts, and I'll bet that you will be as well! I plan to be on most mornings and evenings as well as during contests.

By the way, VHF/UHF contests are usually a good time to get on the air, as there are more operators listening to make contacts even when propagation conditions are not very good. Go ahead and get on in a contest. It doesn't matter if you're not trying to be competitive. The ops competing will welcome you, because you'll be giving them new points. Why not give it a try? Here's hoping to make a contact with you from EM59ck and to putting your callsign into my log book!

73 es GL, Ron, KOØZ

BY CQ EDITOR RICH MOSESON,* W2VU

A Voice for VHF – and a New VHF Plus Editor

This month's column is written by CQ *Editor Rich Moseson, W2VU, as we transition to a new VHF Plus editor to succeed Joe Lynch, N6CL (see below).*

As I was starting to put together this column, I came across an e-mail from Chase Turner, W4TI, submitting an "Op-Ed" piece for possible publication in *CQ VHF* on the question of recognizing single-mode achievements in the ARRL's VHF awards and contests. Since *CQ VHF* is no longer being published as a standalone magazine, an "Op-Ed" there is no longer an option; but fortunately for Chase, the editors of *Dubus* in Germany agreed to run the piece in their January issue.

While we won't take a position here on what the ARRL should do with its awards and contests, one line in Chase's article did jump out at me. He was discussing long-standing disagreements among different sub-groups of VHFers (the subject of my very first *CQ VHF* editorial, back in 1996[1]) and noted that "it has been difficult to settle these issues among the various disparate groups at the national level simply because there is not enough volume to overcome other groups and their concerns. This last bit is easy enough to demonstrate, as the ARRL board recently disbanded the VUAC (VHF/UHF Advisory Committee). Who will speak for us now?"

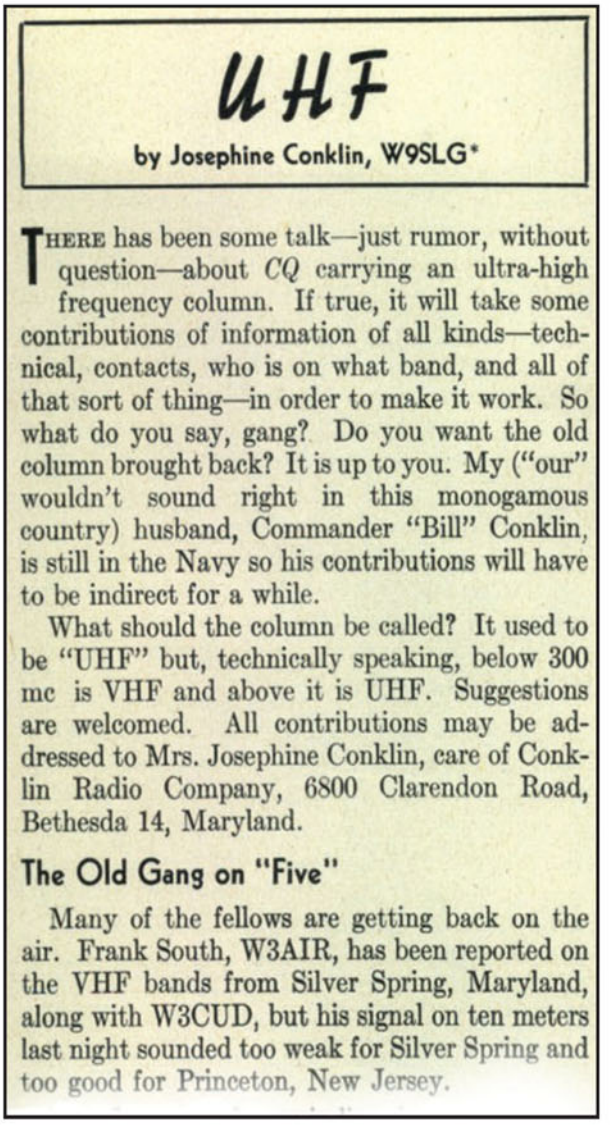
Who indeed? The ARRL has never found the VHF/UHF community to be very high on its priority list. It has always been HF-centric and likely always will be, which is no doubt part of the problem it is having with attracting new Technicians to membership. Nearly half the U.S. amateur population has operating privileges primarily on VHF/UHF, but these amateurs are highly underrepresented among ARRL members, and with good reason: the ARRL has very little to offer them.

Who will speak for VHFers now? **Us.** And there's nothing new about that. *CQ* is often perceived as a DXer's and contester's magazine, which it certainly is and always has been. But it is also a VHFer's magazine … and always has been. In fact, it was 68 years ago last month that the "UHF" column premiered in *CQ*, edited by Josephine Conklin, W9SLG (Photo A). Except for a brief hiatus in 1954-55, some form of this column has appeared here ever since. The only longer-running column in *CQ* is "DX," and only by one month!

Our dedication to VHFers doesn't stop there. For nearly 20 years, we've published *CQ VHF,* the only national magazine dedicated to the world of "Ham Radio Above 50 MHz." Economic realities have forced us to incorporate *CQ VHF* into *CQ Plus,* the new monthly supplement to our digital edition. But that will not change our seven-decade dedication to promoting VHF and UHF activity, and to being a voice for VHFers. Several columns from *CQ VHF* continue in *CQ Plus*, and we will continue (as always) to be on the lookout for excellent VHF/UHF operating and technical articles.

From Jo to Joe to … Tony

Our first VHF columnist, 68 years ago, was Jo Conklin. Over the intervening decades, we've had



UHF

by Josephine Conklin, W9SLG*

THERE has been some talk—just rumor, without question—about *CQ* carrying an ultra-high frequency column. If true, it will take some contributions of information of all kinds—technical, contacts, who is on what band, and all of that sort of thing—in order to make it work. So what do you say, gang? Do you want the old column brought back? It is up to you. My ("our" wouldn't sound right in this monogamous country) husband, Commander "Bill" Conklin, is still in the Navy so his contributions will have to be indirect for a while.

What should the column be called? It used to be "UHF" but, technically speaking, below 300 mc is VHF and above it is UHF. Suggestions are welcomed. All contributions may be addressed to Mrs. Josephine Conklin, care of Conklin Radio Company, 6800 Clarendon Road, Bethesda 14, Maryland.

The Old Gang on "Five"

Many of the fellows are getting back on the air. Frank South, W3AIR, has been reported on the VHF bands from Silver Spring, Maryland, along with W3CUD, but his signal on ten meters last night sounded too weak for Silver Spring and too good for Princeton, New Jersey.

Photo A. CQ's VHF/UHF column, under various names, dates back to April 1946 and is the second-oldest column in the magazine. Our commitment to VHF and UHF remains strong after nearly seven decades.

e-mail: <w2vu@cq-amateur-radio.com>

Who will speak for VHFers now? Us. And there's nothing new about that.

a variety of people occupying that desk, including VHF pioneers Sam Harris, W1FZJ, and Al Katz, K2UYH. For the past 22 years, Joe Lynch, N6CL, has conducted this column. In our March/April issue, Joe announced he was stepping down in order to devote more time to his new "day job" as Director of Religious Education at the U.S. Military Academy at West Point, New York. We wish him all the best.

We are pleased to announce that starting next month, Tony Emanuele, WA8RJF, will be taking the reins of this column. Tony has been a ham for nearly 50 years, has spent the last 30 primarily on VHF and above, and is very active with the Central States VHF Society and Microwave Update. He says he was initially attracted to the VHF+ bands by the challenge of making QSOs and building your own gear, and that that has not changed over the years. Tony says he is active on all bands through 10 GHz and has made contacts at one point or another on all bands up to 47 GHz, using voice, CW and digital modes.

"The hobby is undergoing a change," notes Tony. "As much as we enjoy the activities and methods that we employ today and in the past, we must be mindful of what will attract new people to amateur radio and specifically to VHF and above."

Welcome aboard, Tony. We look forward to working closely with you in the years to come.

A Role for You as Well

While Tony will be sharing his extensive knowledge and experience with you, this column will continue to depend on *your* contributions to ensure its continued success. As Jo Conklin wrote in her first column, "it will take some contributions of information of all kinds—technical, contacts, who is on what band, and all of that sort of thing—in order to make it work. So what do you say, gang?"

Of course, the role of a magazine has changed in the past 70 years and continues to evolve. Waiting three months to hear about contacts made during band openings is *so* 20th century. But for the ham who may just be starting to get interested in, say, VHF DXing, a magazine may still be the best way to find out what's going on.

One of the goals of any activity-based column is to expose new people to the excitement of that activity and help draw in new participants. Another is to educate current participants about new developments in the field. Those have been, and will continue to be, major goals of this column, along with making sure that we continue to be "a voice for VHF."

The Final Frontier

There's quite a bit of VHF news this month, nearly all of which is space-related…

• **"HamTV" on the Air From ISS:** The "HamTV" digital amateur television (DATV) transmitter aboard the International Space Station was installed on March 6, and initial transmissions on March 8 (Photo B) were successfully received on the ground and streamed over the Internet by the British Amateur Television Club (BATC). According to the AMSAT News Service, the project has been ten years in the making and its main mission is to allow space station crew members to include live video as well as audio in their contacts with school groups through the Amateur Radio on the International Space Station (ARISS) program.

This is not the first time amateur television pictures have been transmitted from orbit. Back in 1985, Tony England, W0ORE, the second astronaut to operate ham radio from space, transmitted slow-scan TV pictures on his 2-meter downlink from the shuttle Challenger.

Here are some links for additional information and photos, courtesy of the AMSAT News Service:

Webstream of the TV transmissions <http://batc.tv/ch_live.php?ch=4>

HamTV overview by Gaston Bertels ON4WF <http://tinyurl.com/HamTVoverview>

ISS HamTV Yahoo Group <http://groups.yahoo.com/group/HamTV>

ARISS-EU HamTV Bulletins <http://www.ariss-eu.org/>

HamTV on Facebook <https://www.facebook.com/Hamtvproject>

• **A Dozen New Ham Satellites in Orbit:** Five cubesats operating in the ham bands were deloyed from the International Space Station in late February, and another seven were aboard a rocket launched from Japan on February 27. The five cubesats launched from the ISS included Lithuania's first-ever satellites—LituanicaSAT-1 <https://www.facebook.com/Lituanicasat1> and Litsat-1 <https://www.facebook.com/palydovas>—as well as a second crowd-funded satellite built around an Arduino processor board, ArduSat-2 <http://kck.st/1kHqWAF>.

The seven Japanese satellites include STARS-II, a mother-daughter satellite pair, which will be connected by a Kevlar® tether. Part of the experiment will be to use the tether to gather electrons from space plasma and deliver them to the daughter ship, thus producing an electric current without the need for solar panels. Both companion satellites are equipped with cameras, and will transmit photos back to earth via amateur radio frequencies. The daughter ship's photos are supposed to include shots of the

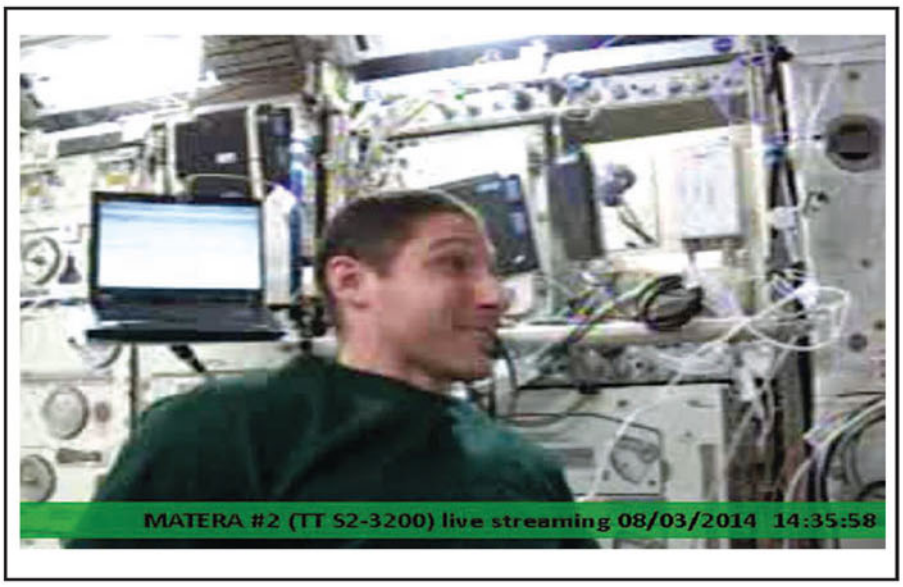


Photo B. One of the early digital ATV images downlinked from the International Space Station as commissioning of the new "HamTV" system got under way in March. (NASA photo)

mother satellite as the two orbit the Earth together. More info is available at <http://bit.ly/1oFhQC0>.

• **New Ham Station for Arecibo Observatory:** Visitors to the Arecibo Observatory in Puerto Rico should soon be able to see and hear the Arecibo Observatory Amateur Radio Club's station, KP4AO, on the air. According to the *ARRL Letter,* a new station is being built in the exhibition hall of the observatory's visitor center, centered on a new FTdx-1200 transceiver donated by Yaesu. The station is due to be on the air by this summer.

• **Cracker-Size Satellites?** A scheduled mid-March resupply mission to the International Space Station reportedly was to include the "KickSat" cubesat, for eventual deployment. The ARRL reports that the Kickstarter-funded satellite was then supposed to release 200 tiny "sprite" satellites—each the size of a cracker!—that would become the smallest-ever satellites in Earth orbit. According to the AMSAT News Service, each Sprite has a microcontroller, radio, and solar cells and is capable of carrying single-chip sensors, such as thermometers, magnetometers, gyroscopes, and accelerometers. For more information, see <http://zacinaction.github.io/kicksat/>.

• **Hams Receive Spacecraft Signals from Deep Space:** In January, several hams in Europe successfully received X-band (10 GHz) signals from the European Space Agency's Rosetta spacecraft, approximately 500 million miles from Earth. The *ARRL Letter* reported that James Miller, G3RUH, was able to tune in the signal using a 20-meter (65-foot) dish at the Bochum Amateur Radio Observatory in Germany. In addition, Bertrand Pinel, F5PL, tracked the satellite using a homebuilt 3.5 meter (11 1/2 foot) dish and receiver; and Viljo Allik, ES5PC, reported that members of the Estonian Student Satellite Program were able to receive the signals on a 3-meter (10-foot) dish. Rosetta was launched in 2004 with a goal of orbiting and then landing on a comet.

And Sad News Back on Earth…

• **West Virginia Tower Collapse Kills Three, Cripples Repeater Network:** Two radio towers in north central West Virginia collapsed on February 1 while undergoing maintenance work, killing three people, injuring two others and taking three amateur radio repeaters off the air. The ARRL Letter reports that the workers were repairing structural supports on a 300-foot tower when the structure apparently gave way, taking down a second, shorter, tower as it fell. Two of the workers on the tower were killed, along with an emergency responder on the ground, who was hit by falling debris. Two other workers were hurt.

The collapse also destroyed the antennas for three amateur radio repeaters owned by the Stonewall Jackson Amateur Radio Association. The repeaters were part of the "HamTalk" linked repeater system, and were a major part of the North Central West Virginia emergency communications network, helping the Harrison County Office of Emergency Management, FEMA and the American Red Cross. The towers also held several commercial antennas. No word yet on when they will be rebuilt.

Spring Sprints Dates

Microwave Sprint Saturday May 3rd, 6 AM – 1 PM local.

50 MHz Sprint Saturday May 10th from 2300Z until 0300Z Sunday May 10th.

All amateurs are encouraged to participate, even if only in a small way. The Sprints are casual with intent to promote activity on a given band. With simple rules, the Sprints encourage participation by rovers, microwave ops and the casual operator new to VHF/UHF. The rules can be found at: <http://sites.google.com/site/springvhfupsprints/2014-information>. Thanks to Kent O'Dell, KA2KQM, and Mike Metroka, WB8BZK, for sponsoring the 2014 Spring Sprints.

Discussion Topic

Here's a possible discussion topic for future columns: AMSAT groups around the world have been working closely with university satellite builders on the nitty-gritty of designing and building radios for spacecraft use. Most of the resulting satellites use amateur radio frequencies to downlink their experimental data. While some include transponders that allow hams to use them for two-way communications (either full-time or after the primary experiments are concluded), others do not. Do you feel this is an appropriate use of amateur frequencies? Or should satellites that do not provide for amateur radio use operate on non-amateur frequencies? To echo Jo Conklin's request from 1946—15 years before the launch of OSCAR-1— "… what do you say, gang?"73, Rich, W2VU

Note

1. "Line of Sight," *CQ VHF,* January/February 1996, p. 7.

BY TED MELINOSKY,* K1BV

Awards from Norway, Sweden, and Indonesia

This a very interesting time for awards hunters, since all of the so-called "annual" awards were introduced early in the year. These awards generally commemorate major events in a country's history, and you get all year to complete the requirements. They usually provide interesting new prefixes and enhanced activity by the hams of the particular country who can now generate pile-ups just by being on the bands. Here are two such awards, and you have all the rest of the year 2014 to meet the requirements.

Norway's "NORGE 1814" Award

The Norge 1814 (Norway 1814) Award commemorates the 200th anniversary of the signing of the Norwegian Constitution at Eidsvoll. The Norwegian Constitution of May, 17, 1814 holds a special place in Norwegian history. Not only was it the foundation for democratic development, it was also instrumental in providing Norway with status as an independent country. This award is issued by the Norwegian Radio Relay League.

1. Award Requirements: Any licensed amateur radio operator or shortwave listener (SWL) worldwide can apply for this award.

a. Applicants from Norway, Sweden, Denmark, Finland, Åland, Iceland, and the Faroe Islands contact or hear (SWL) at least 112 different Norwegian amateur radio stations (LA-LN), of which at least 56 must use the special prefix LI or LJ.

b. Applicants from other European countries contact or hear (SWL) at least 56 different Norwegian amateur radio stations (LA–LN), of which at least 28 use the special prefix LI or LJ.

c. Applicants from outside Europe (DX) contact or hear (SWL) at least 28 different Norwegian amateur radio stations (LA–LN), of which at least 14 use the special prefix LI or LJ.

2. All contacts and listening reports must be made in the period January 1, 2014 at 0000 UTC through December 31, 2014 at 2400 UTC.

3. Special event station LM1814: A contact with the special event station LM1814 counts as 10 LI/LJ stations. Only one contact with LM1814 may be included in the application.

4. Modes and frequencies: All bands and modes OK. However, cross band, repeater, or satellite contacts will not be accepted.

5. Endorsements available:

a. Number of different Norwegian stations: 200, 500, and 1000.

b. Single Band

c. Single Mode (CW, phone, and digimode).

d. All QRP (maximum 5W transmitter power).

6. All contacts must be made on the actual band, mode, or with QRP to get the endorsement. Each applicant may apply for several awards with different endorsements, but each contact or report (SWL) can only be used for one award and endorsement. For each award and endorsement the full award fee should be paid.

7. Applications must be postmarked no later than February 1, 2015. QSL cards are not required. The application must include a log extract with date, time, callsign, band, mode, reports sent and received. The award fee is NOK 50, USD 10, or 8 IRCs (recent and valid) and directed to: HF Awards Manager. See address below. The fee may be paid either via PayPal or as attachment to the applica-

*12 Wells Woods Rd., Columbia, CT 06237
e-mail: <k1bv@cq-amateur-radio.com>

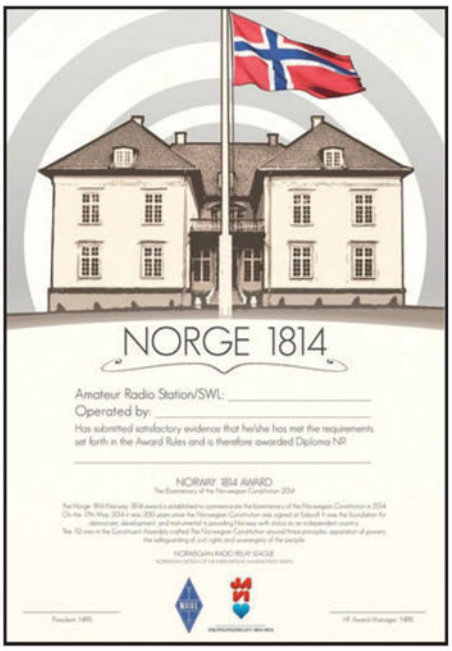
USA-CA Special Honor Roll

Adolf Kerschbaum, OE5KE
USA-CA All Counties #1242
January 17, 2014

USA-CA Honor Roll

500		3000	
F4GTB	3630	OE5KE	1266
DL4FAP	3631		

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.



The Norge 1814 Award commemorates the bicentennial of the Norwegian Constitution of 1814. It is issued by the Norwegian Radio Relay League.

tion. If you want to use the PayPal system, mention this on your application and the NRRL Awards Manager will send the payment information via e-mail once your application is approved. Applications should be directed to e-mail address <norway1814@nrrl.no> or HF Awards Manager, Norwegian Radio Relay League, Postboks 20 Haugenstua, N-0915 Oslo, Norway.

Internet:<http://qrz.com/db/LM1814>

Sweden's Umeå 2014 Award

The Umeå 2014 Award is a series of special event callsigns celebrating the selection of the town of Umeå in Sweden as a European Capital of Culture for the year 2014.

FURA, Umeå Amateur Radio Society (SK2AT), and its members will activate a total of nine calls during this year 2014! Work these special callsigns to earn points for the award. *(There was no detail provided about costs or applications, only that the awards can be downloaded in 2015, so it is assumed that this is one of the popular free awards, where you receive an electronic file of the award image you print yourself.—ed.)*

The nine calls valid for the award are: SB2014ECC, SC2014ECC, SD2014ECC, SE2014ECC, SF2014ECC, SG2014ECC, SH2014ECC, SI2014ECC, SJ2014ECC.

Point Values: One (1) point is given for each band, mode, call combination with the three levels of Bronze (5 points), Silver (15 points) and Gold (30 points).

Special-event logs are uploaded to a log-search computer. There you can see if you are in the log and see what level of the award you have reached.

You can find more information about Umeå 2014 at <http://www. umea2014.se/en>.

Internet: <http://www.fura.se/index.php/om-fura/diplom-awards-main-menu-109/umea2014-award>.

Awards from Indonesia

The ORARI (Organisasi Amatir Radio Indonesia) offers a colorful series of awards for contacting Indonesian stations in different categories.

General Requirements: Awards are issued to licensed amateurs and SWLs (for two-way phone, CW, RTTY, mixed, or single mode or band contacts. Contacts on or after July 9, 1968 count. GCR list accepted. The award fee is $US8 or 16 valid IRCs per award. Contacts must be with land-based stations. Send GCR list and fees to Gjellani Joostman Sutama (Jel) YB1GJS, Griya Depok Asri C-8, No.7, Depok 16411 Jawa Barat, Indonesia.

A word of caution: Sending funds to some parts of the world may be a problem. I would suggest, if possible, that you contact the custodian to verify that you are about to apply for the award. Ask about the use of registered mail and that the address you will be using is still valid. While the group offers six different awards in total, the following three awards are the most likely to be completed. Full details on all six awards are found on the group's website.

E-mail: <yb1gjs@yahoo.com>

Internet: <www.qsl.net/yb0emj/awards.html>

Jakarta Award. Contact stations in Jakarta, the Ø call area and the capital of the Republic of Indonesia.

1. DX stations need 20 Jakarta stations, including at least one Jakarta Club station.

2. Indonesian stations need 50 Jakarta stations, including at least five Jakarta club stations.

List of club stations: YBØZAA–YB0ZAF, YBØZBB, YBØZBC, YBØCZA, YBØZCB, YBØZCD, YBØZCE, YBØZDA, YBØZDB, YBØZDC, YBØZDD, YBØZDE, YBØZDG, YBØZEA, YBØZEB, YBØZEC, YBØZEE, YBØZZ.

Worked All Indonesia Award. Work stations in each of the 10 Indonesian callsign areas.

1. DX stations (outside CQ Zone 28) work two stations from each area, a total of 20 QSOs.

2. DX stations in Zone 28 need three stations from each, a total of 30 QSOs.

3. Indonesian stations need five stations from each, a total of 50 QSOs.

Worked the Equator Award. Work stations from countries on the ARRL DXCC list that are located along the equator. Current valid countries are: C2, HC, HK, KH1 & KB6, PP–PY, PYØ (St. Peter), S9 (Sao Tome), T30, T31, T32, TN, TR, YB5, YB7, YB8, 5X, 5Z, 6O, 8Q, and 9Q.

Class I: Confirmed contact/SWL from 15 countries.

Class II: Confirmed contact/SWL from 12 countries.

Class III: Confirmed contact/SWL from 8 countries.

Note: for all classes, contact with or SWL from YB5, YB7, and YB8 are required.

We are always interested in learning of new awards for this column. Please contact me with any details at the e-mail address on the first page of this column; a URL on the internet would be fine.

73, Ted, K1BV

The ORARI (Organisasi Amatir Radio Indonesia) offers the Jakarta Award for contacts with stations in Jakarta, the Ø call area and the capital of the Republic of Indonesia.

To earn the Worked All Indonesia Award, work stations in each of the 10 Indonesian callsign areas.

Work stations from countries on the ARRL DXCC list that are located along the equator to earn the Worked the Equator Award.

The Umeå Amateur Radio Society (SK2AT) is celebrating its city's selection as European Capital of Culture for 2014, Its members will activate a total of nine special calls during the year.

BY WAYNE MILLS,* N7NG

Working FT5ZM

A major DXpedition to Amsterdam Island[1] took place in late January and early February 2014. The callsign was FT5ZM[2]. Some of you may have noticed. This operation was greatly anticipated, since the most recent previous DXpedition to Amsterdam Island took place in November 1999. The callsign for that expedition was FT5ZJ. Amsterdam Island was definitely a rare one.

I had worked FB8ZZ on Amsterdam back in 1966. That was a 20-meter CW QSO. The operator would come on every day around 1130Z and work five or six guys. He would then "QRX" to do some work, but he wouldn't come back until the next day. However, he did come back, day after day after day. Working him—eventually—was easy. Some years later, I worked FT5ZB on 40 meters; it was in 1988. My only credit for the DXCC Challenge was the 40-meter QSO, since FB8ZZ was an old mixed credit that I never resubmitted for the band.

The demand for this one was great and perhaps greater. Therefore, I knew what to expect and was ready to tackle the expected pileups. I had the opportunity to add considerably to my Challenge total. Unfortunately, I had to take eight days off from DXing to babysit in Montana for our kids while they went to Las Vegas. Who ever said DXing was easy?

There were 14 operators. The operation was planned by Ralph Fedor, KØIR.The transportation to Amsterdam was provided by the ubiquitous *Braveheart* out of Palmerston North, New Zealand. The voyage took nine days, arriving on January 24. The gear was soon ashore, but it took longer than expected for the team to set up the

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e-mail: <n7ng@cq-amateur-radio.com>

Perhaps the success of the recent Amsterdam Island DXpedition can be attributed to good antennas. Here are some of the antennas. (Photos by EY8MM)

Here are more of the antennas. The 160-meter antenna (not shown) consisted of a top-loaded 27-meter tower.

The WPX Program

CW

3507 N5QQ	3515 W9OO
3508 WØBM	3516 R2ADI
3509 K7LV	3517 N9RE
3510 W3QT	3518 IZ5FSA
3511 N8EW	3519 N1XS
3512 K1PU	3520 W4MHA
3513 KN1CBR	3521 WØDJC
3514 NF7D	3522 R7FK

SSB

3395 K8KHZ	3458 KG4URP
3444 JA4KDG	3459 W9FZ
3445 K7LV	3460 KD9HL
3446 K3UHU	3461 KC2GZY
3447 DD5MA	3462 K1VOI
3448 YO3HOT	3463 JAØEVI
3449 W6HYI	3464 N4BFR
3450 W5FPT	3467 WØDJC
3451 N8YQX	3468 K6RJ
3452 W9OO	3469 N5VPC
3455 N8FXH	3471 AB8DD
3456 NYØP	3472 IT9CVO
3457 AG4CG	3473 4Z1RZ

Mixed

2605 YV5LI	2717 N9RU
2678 AG6V	2718 WM3PEN
2683 WA9LEY	2719 HB9CXK
2693 KA2FHN	2720 N9RE
2695 N5QQ	2721 NYØP
2696 K1PU	2722 N1XS
2698 OE3HWC	2723 W9FZ
2699 N9KR	2724 NBØO
2700 ER5LL	2725 DL8VKO
2701 YO3HOT	2726 KC2GZY
2702 WA8MCD	2727 WD8CW
2703 AF4RK	2728 IZ1XBB
2704 ZL3LF	2729 JAØEVI
2705 OK8DD	2730 N4BFR
2706 N5UKZ	2731 K6KZM
2707 WA5ICA	2732 WØDJC
2708 WZ2L	2733 K6RJ
2709 NF7D	2734 N3JNX
2710 W5FPT	2735 DK8IZ
2711 R3PAA	2736 N5VPC
2712 N8YQX	2737 KØKL
2713 R2ADI	2738 R7FK
2714 W9OO	2740 IT9CVO
2716 N8FXH	2741 4Z1RZ

Digital

249 YV5LI	295 PE1PRP
285 KØMD	296 R2ADI
286 K1PU	297 W2/JR1AQN
287 K7LV	298 G3VGZ
288 ER5LL	299 AD2L
289 WØBM	300 AF6GA
290 N4GBK	301 WØDJC
291 N1ZHE	303 SM2GSR
292 NF7D	
293 N9RU	
294 AA4U	

CW: 350 KN1CBR, R7FK. 400 AG6V, WF2S, K4JKB, WØBM, JE1HRC, N9RE, W9FZ. 450 WB9G, IZ5FSA, N1XS, K4SX. 550 KØOK, GØBPK. 650 K7LV. 700 AB1OC. 750 K1PU. 800 JJ1BDX. 850 AE5B. 900 WØDJC. 950 N5QQ. 1050 W9OO, JE2UFF. 1100 KØMD. 1350 EA2AAZ, W3LL. 1650 K6UXO. 2000 S54A. 2500 W6AFA. 3000 I3FIY, WA5VGI, IØNNY. 3900 W8IQ. 4150 KF2O. 6450 K2VV. 6600 WA2HZR.

SSB: 350 W6HYI, NYØP, KC2GZY, K6RJ, N5VPC, IT9CVO. 400 AG1T, N8FXH, W9FZ, N4BFR, JAØEVI. 450 WØBM, YO3HOT, WM3PEN. 500 LA8OKA. 550 WF2S, PY5VC, W4TTO, GØBPK, NA1DX. 600 WA3PZO, K4JKB. JG5UWK. 650 N4FNB, K7LY. 700 K5BUD, N4FNB. 800 W9HBH. 900 K7LV, WØDJC. 1000 W9OO. 1050 JJ2LPV, KØMD, K4SX. 1250 S54A. 1600 AB1OC, K5CX. 1700 EA2AAZ. 2100 AE5B. 2500 W6AFA. 2900 W3LL. 4350 KF2O. 5550 K2VV.

Mixed: 450 R3PAA, N8QYX, W9FZ, KC2GZY, DL8VKO. 500 N5UKZ, W5FPT, WDØDMO, N9RU, WM3PEN, W8FDV, N9RE, N1XS, IT9CVO, 4Z1RZ. 550 YO3HOT, AF4RK, NF7D, KK4FYV, DD8BA. 600 AC7JM, N9KR, PY5VC, HB9CXK, WB9G, R2ADI, KØOK, W4MHA, JG5UWK. 650 K4EZD, N4FNB. 700 AG1T, JE1HRC, WB4VMH, NA1DX, DK8IZ, N4FNB. 750 YV5LI, WØBM, K7LY. 800 W9HBH. 850 LA8OKA. 950 K1PU. 1000 K4JKB, K5BUD, WA9LEY, N5QQ, N7ZO, KØKL. 1200 ER5LL, KX7L, K4SX. 1300 WØDJC. 1400 WX7E. 1450 K7LV. 1500 OK8DD. 1600 KØMD. 1650 W9OO, K6UXO. 1700 WF2S. 1750 JJ2LPV. 1800 JE2UFF. 2000 K7UA, AB1OC. 2100 DH5MM. 2150 EA2AAZ. 2350 AE5B. 2500 S54A. 3250 W3LL. 3800 KC9ARR. 4400 WB2YQH. 4600 WA5VGI. 4850 ON4CAS. 5400 KF2O. 6650 K9QVB. 7400 K2VV.

Digital: 350 JE1HRC, WB4VMH, WØDJC. 400 K4JKB, AC7JM, KK4FYV. 450 K1PU, YV5LI, K7LV, K5BUD, WDØDMO, W8FDV. 500 G3VGZ, DD8BA. 550 LA8OKA. 600 WA5VGI, N4GBK, HB9CXK, AA4U, N7ZO. 900 AB1OC. 1050 JE2UFF. 1100 EA2AAZ, ER5LL. 1200 WF2S, S54A. 1500 KF2O. 2050 W3LL.

160 Meters: WØBM, EA2AAZ, WA8MCD, W9OO, N9RU, IZ5FSA, W9FZ, G3VGZ, W4MHA, WØDJC, NA1DX, K5CX, S54A

80 Meters: K7LV, K1PU, EA2AAZ, OK8DD, K3VAT, K4JKB,W9OO, WØDJC, S54A, R7FK

40 Meters: K7LV, K1PU, W3QT, EA2AAZ, OK8DD, W9OO, WM3PEN, ER5LL, JE2UFF, WØDJC, S54A

30 Meters: EA2AAZ, AB1OC, JE2UFF, WØDJC, S54A

20 Meters: K7LV, K1PU, YV5LI, K5BUD, WØBM, W9HBH, OK8DD, LA8OKA, NF7D, W9OO, WM3PEN, W8FDV, AA4U, ER5LL, WØDJC, S54A

17 Meters: EA2AAZ, AB1OC, WØDJC

15 Meters: WØBM, JA4KCG, K7LV, K1PU, AC7JM, AG1T, OK8DD, K3VAT, W9OO, N1XS, JE2UFF, WØDJC, S54A

12 Meters: EA2AAZ, AB1OC, WØDJC

10 Meters: K7LV, K1PU, W3QT, AC7JM, K3UHU, K5BUD, WØBM, PY5VC, OK8DD, K3VAT, W9OO, WØDJC, S54A, RN9N, N4FNB

6 Meters:

Africa: K7LV, OK8DD, KØMD, WØDJC, S54A

Asia: K7LV, EA2AAZ, K5BUD, W9HBH, OK8DD, LA8OKA, W9OO, WØDJC, S54A

Europe: K7LV, K1PU, AE4WG,YO3HOT, WA8MCD, OK8DD, ZL3LF, W5FPT, R2ADI, N8FXH, W9OO, KK4FYV, HB9CXK, N9RE, WB9G, IZ5FSA, AA4U, NYØP, K7LY, JE1HRC, N1XS, G3VGZ, IZ1XBB, W4MHA, WØDJC, S54A, 4Z1RZ

Oceania: K7LV, EA2AAZ, K5BUD, W9HBH, OK8DD, W9OO, KX7L, WØDJC, S54A

North America: WØBM, AG6V. K7LV, K1PU, K5BUD, AG1T, N1ZHE, N5UKZ, WA5ICA, OK8DD, NF7A, WZ2L, N8YQX, W9OO, N9RU, WM3PEN, WB9G, AA4U, AG4CG, N1XS, W2/JR1AQN, KG4URP, G3VGZ, N4BFR, WØDJC, K6RJ, N5VPC, NA1DX, S54A, RN9N

South America: K7LV, EA2AAZ, OK8DD, W9OO, KX7L, WØDJC, S54A, RN9N

Award of Excellence: K7LV

Award of Excellence with 160 Bar: EA2AAZ, KØMD, RL2A, WØDJC, S54A, RN9N

160M Bar:

30M Bar: EA2AAZ, RL2A, AB1OC, WØDJC, S54A

17M Bar: EA2AAZ, RL2A, AB1OC, WØDJC

12M Bar: EA2AAZ, RL2A, AB1OCV, WØDJC

6M Bar:

Digital Bar: EA2AAZ, K7LV, KØMD, WØDJC, S54A

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, IØJX, WA1JMP, KØJN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, N3XX, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, NN1N, HB9AUT, KC6X, N6IBF, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, KØDEQ, DKØPM, SV1EOS, UAØFAI, N4GG, UA4RZ, 7K3QPL, EW1CQ., UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, WA5VGI, 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, VE1YX, DK8MCT, HB9DDO, DL4CW, W9RPM, IZ3ENH, DM2DXA, EY8MM, K4HB, K6ND, TF3Y, K4CN, W1RM, W3LL, 4Z1UF, W3UA, N8VV, HA8QC, LU5OM, US3IZ, RV9CX, K6UM, RWØLT, 4L1MA, UR1MI, IV3ARJ, K6SIK, R3IS, R9MJ, DG7RO, AB1OC, 9H1SP.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR2QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, N3XX, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, NN1N, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, DJ1YH, KUØA, VR2UW, UAØFZ, DJ3JSW, OE6CLD, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, CT4NH, EA7TV, LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ, DKØPM, SV1EOS, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, WA5VGI, 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, K6ND, W1RM, W3LL, 4Z1UF, W3UA, RV9CX, K6UM, UR1MI, IV3ARJ, R3IS, R9MJ, DG7RO, KØDEQ, K6SKI, AB1OC, 9H1SP.

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.

stations and get on the air. The first QSO was made at 0913Z on the 26th of January on 10M SSB. My first QSO was at 1644Z that day, on 30 meters. They began dismantling the stations on February 12.

My part of the US is disadvantaged to some degree to the Indian Ocean area, since much of it is in the vicinity of the antipode[3]. One of the interesting as-

5 Band WAZ

As of March 1, 2014 1860 stations have attained at least the 150-zone level, and 921 stations have attained the 200-zone level.

New recipeints of 5 Band WAZ with all 200 zones confirmed:

AG9S K7SP

The top contenders for 5 Band WAZ (zones needed on 80 or other if indicated):

K1LI, 199 (24)	RWØLT, 199 (2 on 40)
K3JGJ, 199 (24)	JA1CMD, 199 (2)
N4NX, 199 (26)	I5REA, 199 (31)
KØQC, 199 (26)	RZ3EC, 199 (1 on 40)
W4DC, 199 (24)	W1FJ, 199 (24)
N4WW, 199 (26)	K2EP, 198 (23,24)
W4LI, 199 (26)	WC5N, 198 (22,2
K7UR, 199 (34)	ZL2AL, 198 (36,37)
IK8BQE, 199 (31)	W6OUL, 198 (37,40)
JA2IVK, 199 (34 on 40)	EA5RM, 198 (1,19)
IK1AOD, 199 (1)	N8LJ, 198 (17,24)
VO1FB, 199 (19)	EA5BCX, 198 (27,39)
KZ4V, 199 (26)	G3KDB, 198 (1,12)
W6DN, 199 (17)	JA1DM, 198 (2,40)
W3NO, 199 (26)	9A5I, 198 (1,16)
RU3FM, 199 (1)	G3KMQ, 198 (1, 27)
N3UN, 199 (18)	N2QT, 198 (23,24)
W1FZ, 199 (26)	OK1DWC, 198 (6, 31)
SM7BI, 199 (31)	W4UM, 198 (18,23)
EA7GF, 199 (1)	US7MM, 198 (2,6)
JA5IU, 199 (2)	K2TK, 198 (23, 24)
RU3DX, 199 (6)	K3JGJ, 198 (24,26)
N4XR, 199 (27)	F5NBU, 198 (19,31)
HA5AGS, 199 (1)	W9XY, 198 (22,26)
JH7CFX, 199 (2)	KZ2I, 198 (24,26)
RA6AX, 199 (6 on 10)	W9RN, 198 (26,19 on 40)
RX4HZ, 199 (13)	W5CWQ, 198 (17,18)
S58Q, 199 (31)	UA4LY, 198 (6 and 2 on 10)
K8PT, 199 (26)	JA7XBG, 198 (2 on 80 & 10)
N8AA, 199 (23)	JA3GN, 198 (2 on 80 & 40)
IZ1ANU, 199 (1)	N4GG, 198 (18,24)
IN3ZNR, 199 (1)	K4JLD, 198 (18,24)
JK1BSM, 199 (2)	NS6C, 198 (17,22)

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

K1LI (199 zones)	EB3CW (170 zones)
PT7WA (170 zones)	K2AU (182 zones)

5 Band WAZ updates:

OZ4VW (158 zones)	IØYQV (180 zones)
K1NU (192 zones)	WC5N (198 zones)
F4GTB (195 zones)	WØDJC (194 zones)
N4DW (200 zones)	K2EP (198 zones)
NA5C (20 zones)	W9RN (200 zones)
K3JGJ (199 zones)	K6ZZ (200 zones)
K1LI (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>.

pects of this situation is that we never knew exactly where to point our antennas. What is our long path? What is our short path? The actual path may depend on our local terrain. I have always found that from the west, the best path on most bands is about 315 degrees, over Japan, in the morning. However, a friend a short 40 miles to the north doesn't have much luck with that path, and must use another because of mountains between him and Japan. Thus, just deciding where to point my antenna was the first consideration.

On the Air

As noted above, my first QSO was on 30 meters. That QSO was particularly easy with respect to pointing my antenna. I use a rotatable dipole on that band, so I only need to do one half of the rotating to test for the best path. At the time of my first FT5ZM QSO, the path was likely over the pole—one or the other. The pileup was horrendous, with considerable on-frequency QRM, but without too much pain a first QSO was in the log. We in the US are disadvantaged on 30 because of our power limit of 200 watts. Many people don't realize that few, if any, other countries have such a limit. (How many of us follow that regulation?) Following that contact, additional QSOs were made on 20, 40, 15, and 17 meters. The 20-meter QSO was SSB, which I needed also.

The Low Bands

A particularly shining effort was made by the Amsterdam team on 160 meters. FT5ZM worked all kinds of stations, small and large. Stations in average locations running relatively low power to less-than-stellar antenna had excellent results. FT5ZM's transmit and receive antennas made up the difference. On January 27, I heard FT5ZM on 1826.5, fully S9 on my S-meter. I was having trouble with my amplifier and had to call the operator with only the exciter at 200 watts. I got a "?" and then the operator came back with my call, and he said, "Hi Wayne." It was Nodir, EY8MM, at the key. I had expected a real struggle even with the amplifier, but it was a piece of cake. My station on 160 meters is probably above average, as is my low-band location, and it was really too easy. I suspect that was the very first time I have ever seen a true gray-line path, one where the signal follows the terminator (the gray-line) all the way to the destination. (It's something about a region where the absorption in the D-Layer diminishes but the F-Layer is still ionized enough to cause reflection.) The FT5ZM guys did an excellent job on their low-band antennas. They had big signals on 40 through 160, and they heard equally well.

Since those first few QSOs, many of us here in the Rockies were able to make similar QSOs, while our friends to the east in Colorado had difficulty because of the band closing due to sunrise before sunset at Amsterdam. On the other hand, 10 and 12 meters were relatively easy for those folks, while we didn't hear much out of FT5ZM on the highest bands. Again, it's the sunrise and sunset thing near the antipode.

When we left for Montana, I needed QSOs on 10, 12, and 80 meters. In the end, 80 meters was easy. There was a lot of activity and good signals from FT5ZM most mornings. Because I was out of town, I was forced to wait until well after many of the big guns had made their 80-meter QSOs. While I

The WAZ Program

20 Meters SSB

1223 .....4X6KA 1224.....KG4HUF

30 Meters CW

124 .....W6ENZ

40 Meters CW

298 .....KJ6P

80 Meters CW

98 .....AG9S

160 Meters

438 .....AG9S (36 zones)
439 .....K1LI (31 zones)
440 ...UA6LAH (40 zones)
441 .....IK5BAF (40 zones)
442 .....YL2GD (40 zones)
443 .....K7SP (30 zones)

160 Meter Updates

190 .....K3JGJ (33 zones)
230 ....WA5VGI (35 zones)

All Band WAZ

Mixed

9087 .....NF1O 9093 .....K5BUD
9088 .....ZS6WN 9094 .....NJ0F
9089 .....K5JMB 9095.....JA3NOJ
9090 .....WA0JZK 9096 .....JE1COB
9091 .....K7LV 9097 .....SP7ATA
9092 .....PT7BZ 9098 .....K4MME

SSB

5282 .....IW2FLB 5285 .....VE5EL
5283.....4X6KJ 5286 .....IZ2IPF
5284 .....K7LV

CW

744 .....GU4RUK 746 .....PY1NP
745.....JI1HNC 747 .....WX2S

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>.

The CQ DX Field Award Program

Mixed

137 .....WA5VGI 138 .....N8YQX

Endorsements CW

W4UM 198

Endorsements SSB

JN3SAC .....182 & 3.5/7 MHz
W4UM 186

Endorsements Mixed

K9YC.....192 OK1ADM 228
W4UM 204 W6OAT 230
VE3ZZ.....217

The basic award fee for subscribers to *CQ* is $6. For nonsubscribers, 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, Keith Gilbertson, KØKG, 21688 Sandy Beach Lane, Rochert, MN 56578-9604 USA. Please make all checks payable to the award manager.

CQ DX Awards Program

CW

1152 .....NP3CW 1153 .....VP2MM

SSB

2620 .....KP4EU 2623 .....W7LEA
2621 .....N5KAE 2624.....IZ7XNB
2622 .....NP3CW 2625 .....IZ1WIX

SSB Endorsement

NØAZZ, 3.5/7 MHz and 275 level

The basic award fee for subscribers to *CQ* is $6. For nonsubscribers, 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, KØKG, 21688 Sandy Beach Lane, Rochert, MN 56578-9604 USA. We recognize 341 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.

wasn't too interested in 10 and 12 meters, I didn't want to miss a QSO on 80. It would have been no problem making a QSO from home, but I wasn't home. Fortunately, Bob, W7LR, was not far away. Bob consented to allow me to make a QSO from his excellent low-band station. I drove the 25 miles over Bozeman pass—lots of ice and snow—at 5:30 AM one day and arrived just in time to give FT5ZM a call at sunrise. Two calls and FT5ZM was in the log.

Bob uses a bug, and although he had a hand key available, I was at a bit of a disadvantage. I used a hand key in the Straight Key Night a year or so ago, but I hadn't used a bug in almost 50 years. I kept getting that one looooong dash. I figured out quickly that the bug wasn't going to work for me. Instead, we loaded my call into Bob's memory keyer and I was off and running. Fortunately, it took only two calls and I was done. After a couple of really weird attempts with the bug and an "???" the operator, Bob, K4UEE, finally figured out who it was and I was done. Since I already had all bands that I needed except for 10 and 12 meters, I decided that I would wait until I returned home to do the rest. In the end, we got home two days later than we had planned because of road closures and stormy weather, but I did get in the log on those last two bands on the last day.

Chaos?

Propagation for us disadvantaged Rocky Mountain DXers was pretty good, but it was possible to get in the log on most bands. The whole event wasn't without its downside, though. Some of the pileups have been an embarrassment to DXing. I think we all expect the congestion on the bands to be exacerbated during a major DXpedition. The chaos and disruption to others seems to rise as an exponential function of the number of callers during these events. Unfortunately, this one was no exception.

As expected, the FT5ZM environment created considerable chaos and disruption. Amsterdam Island was ranked number 5 in the most recent *The DX Magazine* Most Wanted List. As the number of participants increases, the amount of deliberate and unintentional QRM seemed to increase at least in proportion to the increased activity. Of course, this all spelled difficulty for those attempting to make good QSOs,

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

6777 9A2AA	4363 YU7BCD	3305 JH8BOE	2499 VE6BF	1722 VE6BMX	1282 N5KAE	1010 VE3RZ	710 WS5J	636 ZS2DL
6615 K2VV	4344 VE3XN	3265 OZ1ACB	2476 K5UR	1667 SQ7B	1276 XQ7UP	1002 IK8YFU	707 W1/E74OF	634 UA3LMR/QRP
6111 W1CU	4290 I2PJA	3252 W9IL	2338 I2EAY	1655 SV1DPI	1272 KA5EYH	978 V51YJ	706 OE8TLK	629 WB4SON
5570 9A2NA	4276 N6JV	3146 W3LL	2192 N2SS	1594 NE6I	1269 K5WAF	976 KM6HB	694 KG4HUF	620 PI4DHV
5241 EA2IA	4129 S58MU	3151 N6QQ	2116 AE5B	1593 S55SL	1253 K3CWF	964 K8ZEE	684 FG4NO	616 DL5JH
4969 N4NO	4059 N8BJQ	3042 N6FX	2133 KØKG	1524 K6UXO	1233 HK3W	924 IW9HII	682 AI8P	615 KØBAM
4860 VE1YX	4022 N9AF	3007 W2WC	2060 DG7RO	1499 K4HB	1217 AB1QB	908 K4JC	682 N8HM	604 WH7DX
4751 KF2O	3966 IK2ILH	2956 IK2DZN	2040 W2FKF	1462 DL4CW	1201 IT9ABN	899 K4JKB	670 WW3QB	600 IK1RKN
4722 YU1AB	3919 WB2YQH	2946 YO9HP	2016 N2WK	1446 DF3JO	1148 W9RPM	825 KD4W	662 JA7OXR	600 KB9OWD
4589 S53EO	3809 SM6DHU	2905 AB1J	1961 W7CB	1400 NKØS	1116 YU7FW	815 KL7FAP	662 KJ4BIX	600 K9OHI
4444 I5RFD	3780 K1BV	2670 WD9DZV	1918 NXØI	1394 K4CN	1114 K1DX	808 W6PN	662 SP8HKT	600 VA3VF
4438 ON4CAS	3757 KC9ARR	2658 N1RR	1907 AB1OC	1383 IWØHOU	1107 PY2MC	751 YB2TJV	653 KK3Q	
4415 I2MQP	3429 W2OO	2575 W6OUL	1906 HA8QC	1368 LU5OM	1075 N6OU	726 K5IC	650 N3YZ	
4415 WA5VGI	3429 K9UQN	2532 N3XX	1862 VE9FX	1331 YB1AR	1071 K6HRT	725 WK3N	649 RA9OO	
4389 W9OP	3412 9A4W	2515 AG4W	1818 AK7O	1329 DK8MCT	1066 9A3ST	723 KØDAN	647 PAØQRB	
4389 KØDEQ	3335 JN3SAC	2512 N3RC	1818 KX1A	1322 AA4FU	1066 JA1CKE	712 ISØEBO	644 KWØH	

SSB

5297 IØZV	3187 I8KCI	2595 EA1JG	2156 YO9HP	1913 K9UQN	1463 I2EAY	1098 K4CN	978 EA7HY	717 N3JON
5043 K2VV	3208 KØDEQ	2573 W2OO	2141 N6FX	1879 K3IXD	1410 S55SL	1089 IZ8FFA	965 VE6BF	714 YB2TJV
4838 OZ5EV	3108 I4CSP	2568 SM6DHU	2098 K5UR	1873 N3RC	1408 N3XX	1089 IT9ABN	931 YB1AR	694 KG4HUF
4756 VE1YX	3061 YU7BCD	2497 S58MU	2094 I8LEL	1861 JN3SAC	1401 K5CX	1083 KX1A	919 KA5EYH	690 W6PN
4542 F6DZU	2917 WA5VGI	2494 KI7AO	2093 W2WC	1825 KQ8D	1386 IK4HPU	1045 NE6I	893 W9RPM	664 K3CWF
4429 9A2NA	2903 IN3QCI	2493 N6QQ	2077 AG4W	1800 W6OUL	1386 NXØI	1042 IZØBNR	883 WA5UA	640 UA9YF
4208 I2PJA	2873 KF7RU	2451 EA3GHZ	2076 K2XF	1641 AE9DX	1358 WD9DZV	1031 IK8OZP	875 K7SAM	637 K5WAF
4104 I2MQP	2857 4X6DK	2409 DL8AAV	2040 W2FKF	1623 VE9FX	1258 N1KC	1031 K4CN	833 DK8MCT	606 KJ4BIX
3901 EA2IA	2796 W3LL	2376 W9IL	1986 N1RR	1611 W2ME	1189 NKØS	1022 NW3H	802 N6OU	600 WA2BEV
3890 KF2O	2711 LU8ESU	2326 CX6BZ	1955 EA3NP	1550 IK2RPE	1187 IZ1JLG	1017 N5KAE	758 IV3GOW	
3607 N4NO	2652 I3ZSX	2315 SV3AQR	1940 PT7ZT	1519 AB1OC	1155 DG7RO	1012 KU4BP	735 K6HRT	
3335 CT1AHU	2650 IK2DZN	2209 IK2QPR	1935 SV1EOS	1480 AB5C	1146 SQ7B	1007 VE6BMX	724 W3TZ	
3323 OE2EGL	2601 N8BJQ	2201 NQ3A	1927 AE5B	1464 VE7SMP	1145 EA3EQT	1004 K4HB	717 KØDAN	

CW

5916 K9QVB	3809 WA5VGI	3059 K9UQN	2478 W9IL	2034 N1RR	1480 WO3Z	1186 NXØI	794 LA5MDA	615 JH6JMM
5878 K2VV	3750 VE7CNE	2894 IK3GER	2424 W2WC	2029 W6OUL	1447 EA2CIN	1165 VE6BMX	783 YB1AR	608 W9RPM
5862 WA2HZR	3740 W8IQ	2880 JN3SAC	2414 N6FX	2010 K5UR	1443 WA2VQV	1125 IØWOK	753 F5PBL	600 IK2SGV
4634 YU7LS	3695 KF2O	2823 IØNNY	2373 VE6BF	2008 YO9HP	1389 IT9ELD	1098 LU5OM	749 AE5B	
4502 N4NO	3676 S58MU	2811 OZ5UR	2311 W9HR	1983 EA7AAW	1247 DG7RO	1078 AG4W	743 JA5NSR	
4252 N6JV	3664 KØDEQ	2773 KA7T	2267 I2MQP	1957 WD9DZV	1227 NE6I	1056 W3LL	732 SQ7B	
4057 LZ1XL	3504 YU7BCD	2723 EA7AZA	2212 AC5K	1848 I2EAY	1223 KX1A	1049 K5WAF	720 K4CN	
3964 9A2NA	3417 I7PXV	2632 W2ME	2139 N3XX	1549 AF5CC	1220 AA4FU	891 DK8MCT	695 S55SL	
3952 EA2IA	3272 N8BJQ	2560 W2OO	2081 N6QQ	1505 R3IS	1210 DL4CW	821 HB9DAX	665 K6HRT	
3918 VE7DP	3214 SM6DHU	2502 JA9CWJ	2069 N3RC	1504 K6UXO	1205 VE1YX	813 VE9FX	629 IV3GOW	

DIGITAL

2011 W3LL	1351 AG4W	1160 W2OO	1009 GUØSUP	866 SQ7B	774 K3CWF	672 K9AAN		
1796 N8BJQ	1333 YO9HP	1130 N3RC	929 N3RC	810 HK3W	753 K9UQN	670 IV3GOW		
1709 N6QQ	1330 KF2O	1112 AB1QB	924 KØDEQ	783 YB1AR	737 W9IL	668 KA5EYH		
1636 WD9DZV	1328 IK2DZN	1047 RW4WZ	893 AB1OC	778 JN3SAC	690 EA2IA	655 KH6SAT		

which in turn increased the frustration levels and the whole mess spiraled out of control. Even worse, the chaos usually spread to the point where it interfered with others—non-DXers, who could and often did retaliate.

For the most part, the FT5ZM operators did their part to help control these situations. They identified themselves reasonably well, and even moved their own frequencies incrementally when deliberate QRMers interrupted their flow of contacts.

At the same time, the operators did not always follow best practices. On occasion, they did not identify frequently enough, and they did not always indicate where they were listening. In some cases, they were not consistent and called DXers who had obviously called out of turn, QRMing an attempted QSO.

In several cases, they also let their pileups spread beyond what is generally considered acceptable. This, in turn, caused non-DXing amateurs grief. As a result, they often retaliated with deliberate QRM on the DXpedition frequency. By most accounts, the deliberate QRM associated with the FT5ZM operation was as bad, or worse, than ever heard by most observers. Most of this deliberate QRM appears to have originated in Europe.

One might argue that such a large group of hams deserves to occupy a proportionately large portion of spectrum. That's true, but no one can justify transmitting on some arbitrary frequency without listening first. Listening first is not usually on the to-do list of DXers in a pileup. The FT5ZM operators should have done a little better job of controlling the size and placement of their pileups, including, if necessary, limiting the size pileup by one of the generally (but grudgingly) accepted means.

CQ DX Field Award Honor Roll

The CQ DX Field Award Honor Roll recognizes those DXers who have submitted proof of confirmation with 175 or more grid fields. Honor Roll lisiting is automatic upon approval of an application for 175 or more grid fields. To remain on the CQ DX Field Award Honor Roll, annual updates are required. Updates must be accompanied by an SASE if confirmation is desired. The fee for endorsement stickers is $1.00 each plus SASE. Please make all checks payable to the Award Manager, Keith Gilbertson. Mail all updates to Keith Gilbertson, KØKG, 21688 Sandy Beach Lane, Rochert, MN 56578-9604.

Mixed

K2TQC....278
W1CU....244
HAØDU....240
VE7IG....240
HA1RW....239
VE3XN....234
HA5AGS....228
K8SIX....228
9A5CY....227
N8PR....224
W6OAT....220
HA1AG....218
KØDEQ....216
VE3ZZ....214
VE3ZZ....207
JN3SAC....207
NI6T....207
HA5WA....206
F6HMJ....206
KF8UN....205
OK1AOV....205
K8OOK....204
RW4NH....203
W4UM....203
WA5VGI....203
N4MM....202
IV3GOW....201
N5KE....200
N4NX....192
HA9PP....190
BA4DW....188
HB9DDZ....188
K8YTO....186
K2AU....183
K2SHZ....182
KJ6P....180
K1NU....180
HA1ZH....178
W5ODD....177
NØFW....176
HB9BOS....175
K9YC....175
ON4CAS....119

SSB

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

CW

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

Digital

W1CU....184

CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries. With few exceptions, the ARRL DXCC Countries List is used as the country standard. The CQ DX Award currently recognizes 341 countries. Honor Roll listing is automatic when an application is received and approved for 275 or more active countries. Deleted countries do not count and all totals are adjusted as deletions occur. To remain on the CQ DX Honor Roll, annual updates are required. All updates must be accompanied by an SASE if confirmation of total is required. The fee for endorsement stickers is $1.00 each plus SASE. (Stickers for the 340 level are available.) Please make checks payable to the Award Manager, Keith Gilbertson. Mail all updates to Keith Gilbertson, KØKG, 21688 Sandy Beach Lane, Rochert, MN 56578-9604 USA.

CW

OH2BN....341
DL3DXX....340
EA2IA....340
F3TH....340
K2FL....340
K2TQC....340
K3UA....340
K4CN....340
K4IQJ....340
K4MQG....340
K5RT....340
K9BWQ....340
K9IW....340
K9MM....340
N4AH....340
N4JF....340
N4MM....340
N5FG....340
N7FU....340
N7RO....340
NØFW....340
OK1MP....340
W3GH....340
W4OEL....340
W5BOS....340
W7CNL....340
W8XD....340
WB4UBD....340
WK3N....340
WSSJLC....340
K3JGJ....339
K4JLD....339
K7LAY....339
K9IW....339
N4CH....339
N4NX....339
N5ZM....339
W7OM....339
YU1AB....339
K8LJG....338
KA7T....338
G3KMQ....337
K8SIX....337
W7IIT....337
W6OUL....336
K1FK....334
K9OW....334
PY2YP....334
HB9DDZ....333
K2OWE....333
K5UO....333
K7VV....333
N6AW....333
W4MPY....333
F6HMJ....332
K6LEB....331
N7WO....331
W1DF....331
WG5G/QRPp....330
JA7XBG....329
K6YK....329
IKØADY....328
W9IL....327
K6CU....326
KE3A....326
EA5BY....325
KA3S....325
OZ5UR....325
N7W0....324
KØKG....324
K8ME....323
WD9DZV....323
ON4CAS....322
KSSKG....320
W6YQ....319
CT1YH....317
N2LM....317
EA3ALV....316
RA1AOB....314
WA4DOU....313
YO9HP....313
HB9DAX/QRP/p....311
AB4IQ....310
KT2C....306
K7ZM....304
HA5LQ....301
K8IHQ....301
K4IE....295
N3RC....295
HA1ZH....292
WA2VQV....285
K7CU....282
PP7LL....282
N2VW....280
K4EQ....280
4Z5SG....276
YO6HSU....275

SSB

AB4IQ....341
DJ9ZB....341
DL3DXX....341
DU9RG....341
EA2IA....341
EA4DO....341
I8KCI....341
IK1GPG....341
IN3DEI....341
K2TQC....341
K3JGJ....341
K4CN....341
K4IQJ....341
K4JLD....341
K4MQG....341
K4MZU....341
K5OVC....341
K5RT....341
K5TVC....341
K6YRA....341
K8SIX....341
K9BWQ....341
K9MM....341
KE5K....341
KZ2P....341
N4CH....341
N4JF....341
N4MM....341
N5FG....341
N5ZM....341
N7BK....341
N7RO....341
NØFW....341
OK1MP....341
OZ3SK....341
OZ5EV....341
VE1YX....341
VE2GHZ....341
VE2PJ....341
W3GH....341
W4ABW....341
W4UNP....340
W6DPD....340
W7OM....340
YU1AB....340
4Z4DX....339
F6HMJ....339
K1UO....339
K8LJG....339
N7WR....339
W2CC....339
W2FKF....339
W3AZD....339
W7FP....339
W9IL....338
K8LJG....334
N6AW....334
N4NX....340
VE3MR....340
VE3MRS....340
VE3XN....340
W4UNP....340
W6DPD....340
W7OM....340
YU1AB....340
4Z4DX....339
F6HMJ....339
K1UO....339
K8LJG....339
N7WR....339
W2CC....339
W2FKF....339
W3AZD....339
W7FP....339
W9IL....338
K3LC....337
EA3BMT....336
IKØAZG....336
OE2EGL....336
VK2HV....336
W4WX....336
AA4S....335
EA5BY....335
K9OW....335
PY2YP....335
VK4LC....335
W8AXI....335
WS9V....335
XE1J....335
CT3BM....334
HB9DDZ....334
IK8CNT....334
K8LJG....334
N6AW....334
OE3WWB....334
JA7XBG....333
KE3A....333
N2VW....333
N5YY....333
K5UO....332
K8ME....332
SV3AQR....332
W6OUL....332
WA4WTG....331
WØYDB....331
ZL1BOQ....331
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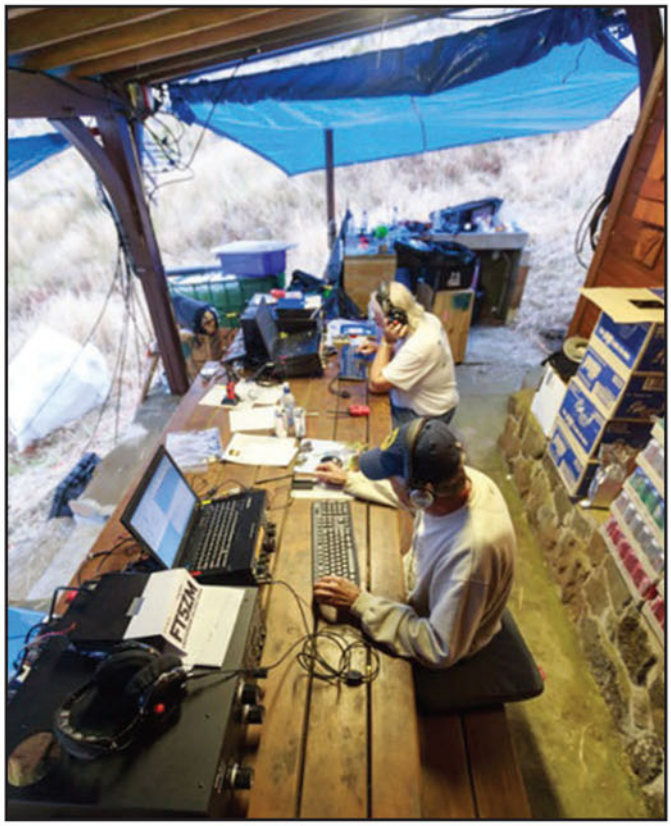

Steve, VE7CT (foreground), and Arnie, N6HC, operate in summer-like weather.

In the end, we shouldn't expect any group to be perfect. We owe them some slack, just as we owe some of the wrong-frequency callers more slack than they have been afforded. Overall, it was an excellent effort. They passed 160K QSOs with a day left. At that point, they had worked well over 35K uniques (different callsigns). The unique rate was close to 22%. This is a low rate, indicating that on the average, DXers made nearly five QSOs each, yet about 42% of DXers made only one QSO! The others sure made a lot of QSOs!

How Easy Was It?

Attempting to contact FT5ZM from the antipode is never an easy task. After five days, I had nine band-mode QSOs in the log—one on each seven bands that I needed, and a couple of additional phone QSOs. Conditions for this expedition were very good. The expedition appears to have targeted North America. As they called for "NA ONLY," the Europeans, who have far more, and better, propagation were heard to question why they are "always" calling for NA! Even a casual look at the numbers will show that for all of the expedition's targeting of North America, only a little less than 25% of the total QSOs were with North America, while fully half (49.9%) were with Europe. While Europe might have a slightly higher number of DXers than North America, the difference is small. If we consider DXpedition financial support …well, let's not even go there.

Speaking of Funding…

Funding for the Amsterdam trip is still lagging behind. According to its website, nearly $100,000 US is needed reach the budget level. This means *another* roughly $7000 per operator—

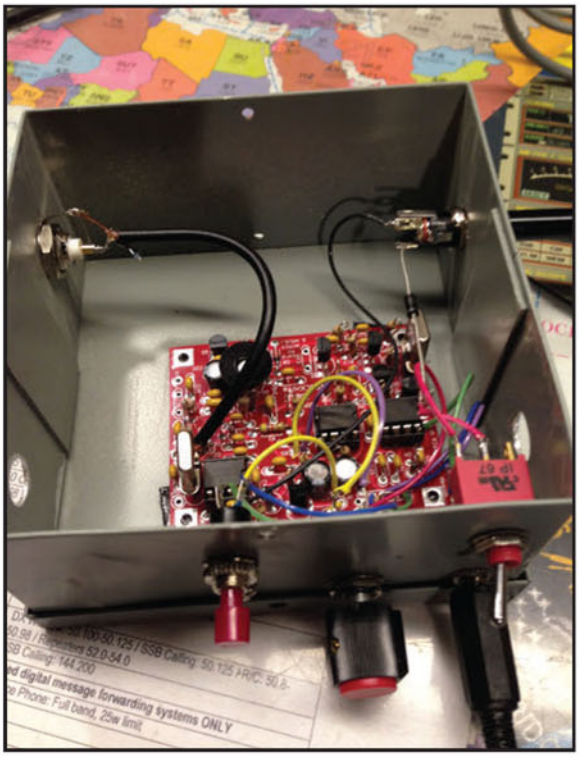

Photo B. Proper ICs in the proper sockets, everything worked, and it was time to mount the board and various controls and connectors in the case… and put it on the air.

than to answer a CQ? It took me a few calls, but soon enough, I heard my call coming back through my headphones. It worked!

After Jerry and I had a nice QSO, I looked him up on QRZ.com, where I noticed that his QTH in Ohio is 522.5 miles from my station in New Jersey. With the RockMite's 1/2-watt output, that comes out to 1045 miles-per-watt. So not only did I make a contact the first time I put the little rig on the air, but it was a contact that qualified me for the QRP Amateur Radio Club International's "1000 Mile Per Watt" award (http://www.qrparci.org/awards)! When I texted KI6SN with the news, he responded, "Amateur radio doesn't get much better than that!"

Actually, it turned out that it could, and it did. Two nights later, I called CQ on the RockMite and got a reply and a 559 from OK1MBZ in the Czech Republic! A half-watt crossing an ocean! (And more than 4,000 miles, per QRZ.com's distance calculator, for upwards of 8,000 miles per watt!) As Richard added, "The thrills just keep on comin'."

And that, my friends, is really what ham radio is all about—the unexpected contacts, the project that doesn't work and then does, the feeling of accomplishment when it all comes together, and the friends you make, both on and off the air, whether your passion is QRP, DX, public service, contesting, or one of the many other parts of this wonderful hobby we call amateur radio.

Our challenge, as individuals and as a community, is to "bottle" and share that excitement and enthusiasm with our non-ham friends, especially those who might become interested in sharing our passion. A week before I finished the kit, I took it with me to an informal makers "meetup" at a nearby restaurant. I was the only one there without a computer, but that wasn't a problem. The folks were fascinated, one of them posting on the group's Google Groups page, "We're here … Radios, robots, and blinking lights."

Here's step one in meeting that challenge: Get your hamming out of your basement and out where other people can see it. Take advantage of spring weather by operating outdoors, take a project to a makers' group, share your excitement, and see what new "amateur radio doesn't get much better" moments may be in store for you!

73, W2VU

More operators at FT5ZM on their way to well over 160,000 QSOs.

beyond what they have already spent—to make up the difference. Of course, some funds will arrive with direct QSL requests, but probably less than in the past. I don't like the practice of coercing funds out of LoTW confirmation uploads, but that is becoming more common, as LoTW's use increases.

Expeditions such as FT5ZM to Amsterdam Island are expensive. Do we want or need expeditions of their scale? Are less expensive (fewer band-modes) alternatives acceptable? Are the big ones worth supporting? If you think they are, now is the time to contribute. It's up to you.

In Other News

Here is another opportunity to support an operation to a very rare place. Information can be seen at <www.tromelin2014.com>. Once again, we are being asked to support an expensive proposition. The budget is nearly $100,000 US. The Northern California DX Foundation has contributed $25,000, but much fund-raising remains. Do we want these DXpeditions to continue? If so, let them know.

Next time, I'll be writing from northern California for a little "old home" perspective.

73 de Wayne, N7NG

Notes

1. Amsterdam Island is located in the southern Indian Ocean, more than 3000 kilometers (1865 miles) from the nearest continent, and is part of the French Southern and Antarctic Lands. For more information, visit <https://worldwildlife.org/ecoregions/at0802>.

2. <http://www.amsterdamdx.org/>

3. The antipode is the point on Earth that is exactly halfway around the world from your location.

BY GEORGE TRANOS,* N2GA

W1AW/2 Special Event Stations . . . plus How They Related to Contesting Skills

In September 2012, I had the great honor of participating in the Azores Nine Island Hunt, an on-the-air operating event activating all nine islands of the Azores Island group simultaneously for one 24-hour period. It was a thrilling adventure and one that allowed nine two-person teams the chance to become the sought-after DX station for a day. While not a DXpedition in the traditional sense, the event gave the participants the opportunity of being at the other end of the pileup. Recently, the ARRL has provided a similar opportunity for hams in the United States to activate its renowned W1AW callsign from their home stations during a one-week operating period. The W1AW call would be active from two states simultaneously and would rotate from state to state until each state had two one-week stints during the course of 2014.

New York State had its first opportunity in January. The following are based upon the experiences of the participants during that week:

KM2O

"This was a blast," said David Galletly, KM2O, of Glenmont, a suburb of Albany, New York. "It was one of the most enjoyable activities I've had and would do it again in a heartbeat. It was not a contest so the pressure was less. The pileups were immense and fun to work. I think the W1AW call was worth an extra 3 dB."

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e-mail: <n2ga@cq-amateur-radio.com>

Galletly has been a ham for 15 years and he considers himself a contester. He spent 12 hours operating on 15, 17, and 20 meters sideband and made 1048 QSOs. "This had the feel of a contest with less of the heartburn. DXing is usually a search-and-pounce operation. A special event is usually done under Field Day type conditions with setup, operation, and tear-down phases and usually a lot of compromises. This was a DXpedition done in your own shack. You are the DX and it does not get much better than that. And the QSLs are being done for you, no muss, no fuss."

N2KI

"I enjoyed being on the other side of the pileup for a change," said Anthony Cioffi, N2KI, of Washingtonville, New York. Cioffi identifies himself also as a contester and has been a ham for 18 years. He made 561 QSOs in 9 hours operating on 10 through 160 meters. "It certainly gives the operator a different perspective and a new appreciation of when one is working a DX pileup."

W2CS

"I've never before been a 'DX station' in terms of popularity," said Gary Ferdinand, W2CS, of North Chatham, New York. "So in that sense it was a new experience for me. On the other hand, all my contesting experience applied completely. Minimal chit chat, snappy operating, repeatable operating (throw no curves to the pileup), change as little as possible for each Q."

Calendar of Events

All year	**CQ DX Marathon**	**http://bit.ly/vEKMWD**
May 1	AGCW QRP/QRP Party	http://bit.ly/1gnVDX0
May 3–4	7th Area QSO Party	http://ws7n.net/7QP/new/Page.asp?content=rules
May 3–4	10-10 Spring CW Contest	http://bit.ly/yTsaDk
May 3–4	ARI DX Contest	http://bit.ly/5tzdKp
May 3–4	Indiana QSO Party	http://www.hdxcc.org/inqp/rules.html
May 3–4	New England QSO Party	http://www.neqp.org/rules.html
May 10	FISTS Spring Sprint	http://www.fists.org/operating.html
May 10–11	CQ WW Foxhunting Weekend	http://bit.ly/zBuff9
May10–11	CQ-M Int'l DX Contest	http://cq-m.andys.ru/rules_eng.php
May 10–11	Volta WW RTTY Contest	http://www.contestvolta.com/volta45th.pdf
May 17–18	EU PSK DX Contest	http://bit.ly/1dkchT6
May 17–18	His Majesty King of Spain CW Contest	http://bit.ly/1ej3fvN
May 24–25	Baltic Contest	http://www.lrsf.lt/bcontest/english/rules_html.htm
May 24–25	**CQ WW WPX CW Contest**	**http://www.cqwpx.com/rules.htm**
May 26-27 (UTC)	MI QRP Memorial Day Sprint	http://bit.ly/Y7iJHB
June 7–8	Maritime QSO Party	http://bit.ly/XuxrtY
Jun. 7–8	Alabama QSO Party	http://bit.ly/AhHgus
Jun. 7–8	SEANET Contest	http://bit.ly/1agy3MH
Jun. 7-8	10-10 PSK Contest	http://www.ten-ten.org/oseason/oseason.html
July 19-20	**CQ WW VHF Contest**	**http://bit.ly/yM7W0M**

G. David Jones, W2GDJ, at his station in Troy, New York. Jones made over 1900 QSO's in 16 hours using the W1AW/2 callsign."(Photo courtesy of W2GDJ)

Ferdinand made 1036 contacts on 10 through 160 meters CW in approximately 12 hours. He's been a ham for 54 years. He used split operation and said that using "narrow bandwidth, the K3 features to the hilt, and endless cups of coffee" helped him maintain a high rate of contacts. W2CS suggested, "Listen, listen, listen. Figure out what I'm doing. Don't call incessantly. One call is sufficient. More than that makes no difference to me or you."

Ferdinand also gave some advice for others. He said, "Generally, I was impressed by the pileups' size, depth, and most of all politeness. For decades I have been a NCS for the NTS Eastern Area Net. I think that experience helped me control the pileup. They were told what to expect by example. I was predictable. When I asked for 'DL7,' I kept at it until I got the DL7 and never gave in to another caller. The pileup quickly figured that wouldn't work with me. Consequently, my pileups were well-behaved."

W2GDJ

G. David Jones, W2GDJ, of Troy, New York, is a member of the Hudson Valley Contesters and DXers and has been a ham for 48 years. Jones operated both SSB and CW on 15 through 80 meters making 1900 QSOs over 16 hours.

In comparing this experience with contest operating, Jones said, "It was pretty much the same type of operating techniques needed. [You] have to be able to effectively handle pileups when running. Without that your ability to produce higher QSO rates is diminished. However, I did find several occasions when the bands were slow (mornings on 80 and 40 meters) and it was nice to chat with people for a few minutes. This gave me an opportunity to explain the W1AW/2 operation in more detail. That seemed to add more camaraderie with those who don't do this at all. Maybe they will expand their interest in other areas of our hobby."

W2GDJ worked split on CW and SSB and followed the shift of the previous operator, staying on his run frequency until rates dropped off and then he changed bands. His advice to you to contact him was to, "Give your complete callsign rather than dropping your suffix. Zero beat when operating simplex."

N2EHG

"This event gave me much more personal satisfaction than I expected it would," said Myles Landstein, N2EHG, of Lagrangeville, New York. He operated on 80, 40, and 20 meters HF; 2 meters, 220 MHz, 440 MHz, 902 MHz, and 1.2 GHz, and spent 15 hours operating this event with 835 contacts. A ham since 1986, Myles does not consider himself a contester.

"It was great to hear the warm thanks and cheers from QRP and mobile stations, as well as stations calling that said, 'I always wanted to work or needed W1AW/2'."

Myles Landstein, N2EHG, at his station in Lagrangeville, New York. Myles was one of the only hams who operated W1AW/2 on VHF and UHF all the way up to 1.2 GHz! He spent 15 hours and made 835 contacts on all bands. (Photo courtesy of N2EHG)

Landstein further said that "operating the centennial event was more fun than I could have imagined. I have already made the decision to take part in future contests." His specific advice to help make a contact is to "Be patient. If someone doesn't hear your first call, try again in a few moments or a few minutes. Patience works; don't give up!"

K2CYE

"The W1AW/2 event was very enjoyable and keeps proving that Amateur Radio is still as energetic and active as it ever was," said Michael Moran, K2CYE, of Warwick, New York. Moran worked 17 through 80 meters in 6 hours on CW, RTTY, and phone, making 600 QSOs. He's been a ham for 17 years and does quite a bit of contesting.

"I enjoy fast-paced DXing and QSO rates. I operate in as many contests as I can from my personal shack as well as multi-op stations. Hams came out of the woodwork to get into the special event logs and make a new QSO. I enjoyed the event and would have liked to have had more time. However, work seems to get in the way of the hobby sometimes, but for the hours I was able to give, I had a great time!"

His advice to make a contact is to "first listen and become familiar with the fast-paced exchanges and how the particular contest flows. Many hams want to converse, not give phonetics and operate at a casual rate while contesting. Not that W1AW/2 was a contest, but I did have several stations act as though they were the only one in the huge pileup. This is fine during a non-pileup, but when rates are high and many are calling, it just creates more issues."

AA2VG

The opportunity to be on "the other side of the pileup" was both exciting and frightening," said Peter S. DeLuca, AA2VG, of Huntington, New York. DeLuca worked 6 hours, CW only, on all bands except 160 and 20 meters, and 2 hours on 75 meters SSB. DeLuca considers himself a novice contester, has been a ham for 20 years, and made 264 contacts in his 8 hours on the air. He used his Elecraft KX3 running 12 watts to an Alpha 91b amplifier to get about 250 watts out. On SSB, he used a Kenwood TS-850S and his antenna was a Carolina Windom.

His advice for someone trying to contact him was, "I would suggest that if I got your call correct please don't repeat it. If I did not get it correct then just send it again. Don't send a 599 [signal report] until you hear your call correctly sent back and then send '599 TU' only, not the call again."

WC2L

"I can honestly say this was my first special event station," said William Liporace, WC2L, of Niskayuna, New York (near Schenectady). He said, "It got me wanting to operate more. It has also fueled me to get back into CW operating." Liporace operated PSK, RTTY, and a little SSB in his 12 hours on the air and made 400 contacts. A ham for 25 years, Liporace considers himself a "somewhat" contester and said he has not operated much in the last 10 years.

"I have been on the other end of a DXpedition and operated some contests from big stations. Most of what I did was digital modes at off-peak times. I was also active on Sunday afternoon. I was very surprised on how slow things were."

His specific advice to someone who was trying to contact him was to "Give full calls and follow the cadence and exchange style of the operator. Long QSOs and exchanges limit the number of people who can contact you."

Summing up his experience, WC2L said, "This was my first time really operating the digital modes in a contest-style environment. I have worked a few on the digital modes, but other than that it was new to me. I found that many just hit the canned messages and didn't pay attention to the exchanges, etc.

"I know I should have spent some time learning from other operations and operators. Being a newbie, I made a few mistakes. I didn't make half as many Qs that I thought I would make. I was typically 4 AM to 7 AM. I had a lot of fun working people. It was really fun having guys chase you on the different bands."

W2HCB

"Compared to other contests and special events, this was unique as we all got to use W1AW/2," said John Melfi, W2HCB, of Babylon Village, New York. Melfi has been a ham for 14 years. He operated PSK on 20 meters and made 48 contacts in 2 hours.

"Having operated special event stations from the Fire Island lighthouse, Field Day, the North American QSO Party, the New York State QSO Party, and a few others, they all are about the same. I don't contest as much as others, but I had fun and would do it again. I think contesting holds a very special place in the accomplished contester's heart, as it should. The one thing I noticed is that contesting has made me a better listener. You can cause a delay in the operator's flow if you don't listen to what the other station is asking for."

His advice for some contacting him would be to "listen to the exchange and do it right the first time. If I am working split, don't call me on my transmit frequency, because I am not listening there—I'm listening up."

K2IZ

"I now know what it's like to be on the other side of the pileup," said John

John Melfi, W2HCB, of Babylon Village, New York. Melfi operated PSK on 20 meters during the W1AW/2 operation." (Photo courtesy of W2HCB)

Smale, K2IZ, of Copiague, New York. Smale operated BPSK on 80, 40, 20, and 10 meters for 6 hours scattered through the week and made over 100 Qs. He has been licensed since 1971 and considers himself a contester.

Smale said that "all the little tricks we thought we knew over the years sometimes actually worked quite well. Most of us will never get the experience of operating from a place such as Amsterdam Island, but what we did was enough for a lot of us to make improvements because we now know how the operator at the other end feels."

K2TV

"It was different in respect to being a needed/wanted station," said Bob Myers, K2TV, also of Copiague, and a direct neighbor of K2IZ. Myers operated CW, RTTY, and PSK31 on 10 through 40 meters for about 8 hours and made 359 QSOs. A ham for 54 years, Myers said, "It was a good chance to 'run' instead of 'hunt and pounce'. It solidified the methods used to call in pileups that I learned over the years of DXing and contesting. In some respects it compares to a mini DXpedition on SSB and CW and a contest on RTTY, but more like the ARRL Field Day when operating PSK."

Bob Myers, K2TV, of Copiague, New York. Bob said, "It was different being a wanted station." Myers made 359 QSOs in 8 hours on CW, RTTY, and PSK31. (Photo courtesy of K2TV)

Myers said that to maintain a high rate of making contacts, "Each mode was completely different in my approach. CW was treated more like a contest or DX operation and I would QSX up one to two to both 'spread them out' and keep my transmit frequency clear of QRM. RTTY was different in that depending on the situation and the number of calling stations listening up 1 could be used, and if there were only a few stations calling, simplex operation worked well. Using FSK instead of a sound card mode is a must on RTTY. PSK was totally different, as it is rarely if ever used as a contest mode and most operators are rag chewers. The biggest problem with the PSK people was to keep the contacts short, as they sometimes had the tendency to hit their macros with long-winded responses. Simplex was used almost all the time with PSK."

As others have noted, K2TV suggests, "Patience and listen to instructions. Observe the station's mode of operation: Where is he listening? Does he sweep from low to high or high to low? Or randomly pick someone from the pileup? Does he pick up stations that 'tail end'? Pause slightly before sending your call, as everyone starts calling at the same time. Spread out! Listen, listen, listen!"

N2YBB

"I had a lot of fun with this event," said Mike Lisenco, N2YBB, of Brooklyn, New York. Lisenco operated PSK for 2 hours and SSB for 12 hours over the week. He worked 10 through 40 meters and made 40 contacts on PSK and over 1200 on SSB. A ham for 20 years, N2YBB considers himself an avid contester.

"I can only compare it to the time I worked 4U1UN. Since I doubt that I'll ever have the opportunity to work as part of a 'real' DXpedition, this was the next best thing. I'd do it again in a 'New York minute'." Lisenco said.

"Like contesting, the objective of this event is to work as many stations as possible in the allotted time period. Unlike contesting, you need to take your time, work everyone you can, and feel free to chat briefly.

"This event was more like working a DXpedition. The pileups were amazing at times. Listening and not being intimidated by the din of hundreds calling at the same time is the key to operating this event successfully. I can't emphasize enough that you must show patience. The most frustrating thing I had to deal with were the people who tuned up on my frequency. There is no cause for that! Thankfully, I didn't have an issue with 'frequency cops.' I would also periodically thank everyone for exhibiting patience. Also, I would periodically ask for mobile stations or QRP stations. I worked a surprising number of both."

N2MUN

"It was fun being on the other side of the pile up," said Philip Lewis, N2MUN, of Lindenhurst, New York. He operated SSB on 15 and 40 meters for 10 hours and made 900 contacts. A ham for 23 years, Lewis said, "Do not send the other station's call; just send your own!"

KA2D

"What a blast to sign W1AW/2," said Tom Carrubba, KA2D, of West Babylon, New York. Carrubba operated PSK31 and RTTY for 16 hours and made 490 contacts. KA2D has been a ham for 37 years.

"It was my pleasure to host George, N2GA [author of this column], for his two CW shifts. He gave my station a good

workout." Carrubba suggested, "Keep your exchange short, and ID frequently. I only ran split the first night, but it was really not necessary." His advice for someone wanting to contact him was to "Wait until the QSO in progress is completed. Listen to what the operator is doing."

As KA2D mentioned, I was fortunate enough to operate at his station for my two shifts. It was a lot of fun and a great honor to operate using the W1AW/2 callsign. I ran CW on 17 meters for 391 QSOs in four hours on my first shift and CW on 10 meters for 416 QSOs in my second 4-hour shift. In total, I completed 807 QSOs in 8 hours for an average of 101 per hour. In my years of operating, this compared only with my shifts at J3A in Grenada, CU3URA as part of the Azores 9 Island Hunt, and when operating 4U1UN at New York's United Nations. The pileups were fierce—over 1K wide on CW with perhaps one hundred stations calling at once! It was an unending number of callers and at times it was difficult to pull out single calls. Only by running split and constantly moving my listening frequency to spread out the stations did I have any chance of getting full callsigns.

Summary

In the ARRL's centennial year, using the call W1AW/2 was a great experience for contesters and non-contesters alike in New York State. I'd like to thank AA2VG, K2CYE, K2IZ, K2TV, KA2D, KM2O, N2EHG, N2KI, N2MUN, N2YBB, W2CS, W2GDJ, W2HCB, and WC2L for their contributions to this article. Les Kalmus, W2LK, coordinated the schedule for this operation and is also to be commended for his organization and leadership. In all, the W1AW/2 operation netted 21,898 QSOs in 130 different countries!

73, George, N2GA

Contesting column author George Tranos, N2GA, operating W1AW/2 from the station of Tom Carrubba, KA2D, in West Babylon, New York. Tranos compared operating this event with his contest DXpedition to Grenada operating J3A, operating CU3URA as part of the Azores Nine Island Hunt, and operating 4U1UN from the United Nations Headquarters in New York City. (Photo courtesy of N2GA)

Higher Frequency Hope for May

BY TOMAS HOOD,* NW7US

propagation

A Quick Look at Current Cycle 24 Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, February 2014: 103
Twelve-month smoothed, August 2013: 69

10.7 cm Flux
Observed Monthly, February 2014: 170
Twelve-month smoothed, August 2013: 128

***Ap* Index**
Observed Monthly, February 2014: 12
Twelve-month smoothed, August 2013: 8

One Year Ago: A Quick Look at Solar Cycle Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, February 2013: 38
Twelve-month smoothed, August 2012: 58

10.7 cm Flux
Observed Monthly, February 2013: 104
Twelve-month smoothed, August 2012: 119

***Ap* Index**
Observed Monthly, February 2013: 5
Twelve-month smoothed, August 2012: 8

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for May 2014

	Expected Signal Quality			
Propagation Index.....	(4)	(3)	(2)	(1)
Above Normal: 1-2,4-6,8-13, 17-19, 22-24, 26-29, 31	A	A	B	C
High Normal: 3, 7, 14-15, 21, 25	A	B	C	C-D
Low Normal: 16	B	C-B	C-D	D-E
Below Normal: 20	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 excellent (A) on May 1st and 2nd, good (B) on May 3rd. Conditions will then be excellent (A) again on May 4th through the 6th, etc.

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.

It is not news that the overall activity on our Sun is moderate. Sunspot activity is just high enough to support occasional DX propagation on the highest HF bands, up through 10 meters. The ionosphere is not energized enough to support global propagation of signals on a consistent basis, but this adds to the fun of the hunt. Don't give up hope for exciting DX this month. There is a very high probability that activity can occur during May on these higher frequencies.

As we announced in the March/April edition, the annual summer sporadic-*E* (*Es*) season begins around May 1 (sometimes during the last week of April). The activity is sparse during the first two weeks of May and then it picks up to about 60 percent of the days by the end of May. This is great news for 10-meter enthusiasts. Now is the time to send out your signals in the hope of catching some propagation.

During the first days of May, oxygen ions that are in the *E*-region of the ionosphere are being excited more and more by the increasing closeness of the Sun. This causes them to recombine with metallic ions that are also present in the *E*-region. During this sporadic-*E* season, which starts in May and lasts through the summer, thin layers of these energized ions form, making it possible to refract higher HF and low VHF radio waves.

What is Sporadic-*E* Propagation?

Sporadic-*E* propagation is an exciting radio propagation mode. This "exotic" mode can affect frequencies from the upper portion of the HF spectrum through the VHF frequencies. This mode occurs most frequently during late spring and early summer. A sporadic-*E* propagation mode opening typically does not last very long, but the strength of signals propagated by these openings can be quite strong.

As we explored in previous issues, Earth's atmosphere is a mixture of gases held to the surface of the Earth by gravity. These gases vary in density and composition as the altitude increases above the surface. As the atmosphere extends outward from Earth, it becomes thinner and blends with particles of interplanetary space.

Because the composition of the atmosphere changes with height, the ion production rate also changes and this leads to the formation of several distinct ionization regions, known as the *D*-, *E*-, and *F*-regions. The breakdown between regions is based on which wavelengths of solar radiation are absorbed in that region most frequently.

In between the *D*- and *F*-regions lies the *E*-region of the ionosphere that extends from about 56 miles to about 65 miles. The region's height varies, and, along with electron (ionization) density, depends on solar zenith angle and solar activity. During daylight hours, electron density (a measure of the ionization level) increases, while at night, when the supply of x-rays from the sun is cut off, ionization levels drop.

*PO Box 27654, Omaha, NE 68127
e-mail: <nw7us@nw7us.us>

Occasionally, very thin regions of extremely dense ionization can form within the *E*-region. These thin but dense regions apparently can be caused by several mechanisms and have a wide variety of characteristics. At times, they are capable of reflecting radio waves of frequencies much higher than those reflected by the regular *E*-or *F*-layers. Also at times, these clouds make it possible to communicate over relatively long distances on frequencies as high as 222 MHz. These clouds usually cover a rather small geographical region, approximately 50 to 100 miles in diameter. They occur more or less at random and are relatively short lived, usually disappearing within a few hours. Sporadic-*E* is classically defined as transient, localized patches of relatively high electron density in the *E*-region of the ionosphere which significantly affect radio-wave propagation. Sporadic-*E* can occur during daytime or nighttime, and it varies markedly with latitude.

The shape of the clouds is likely ragged and not true circles or ellipses. Clouds have been shown to have concave undersides in many instances, with tilts up to ten degrees. The vertical thickness of these clouds is usually quite small—no more than a few kilometers thick. The thickness of these *Es* clouds has been measured by rocket flights through the *E*-region.

Very strong winds exist at the *E*-region altitude. After the formation of an ionized cloud, these wind currents move the cloud. Over North America, these winds tend to move large *Es* cloud groups to the west or northwest. Of course, *Es* clouds may move in any direction on occasion, especially north and south (and less likely to the east). The velocity of these clouds has been measured to be in the neighborhood of about 110 miles per hour, and higher velocities are thought to occur.

Reflection from *Es* clouds takes place with very little signal loss, resulting in exceptionally strong signal levels during most openings. Quite often it is possible to maintain communications considerably off the great-circle path between two stations by means of back- and side-scatter from a sporadic-*E* cloud.

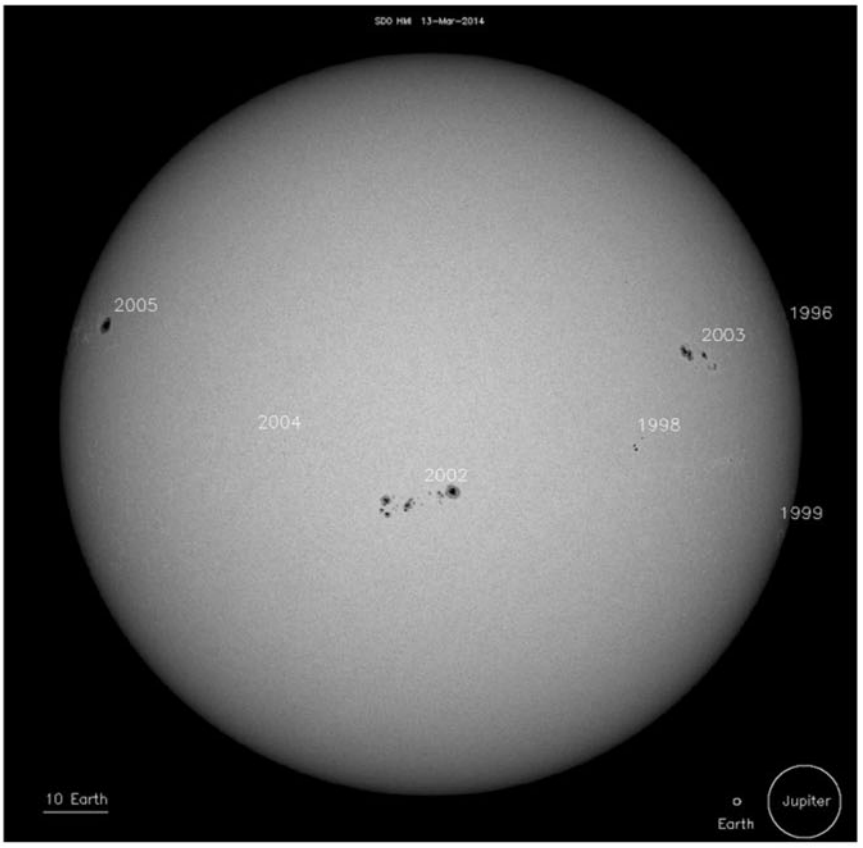


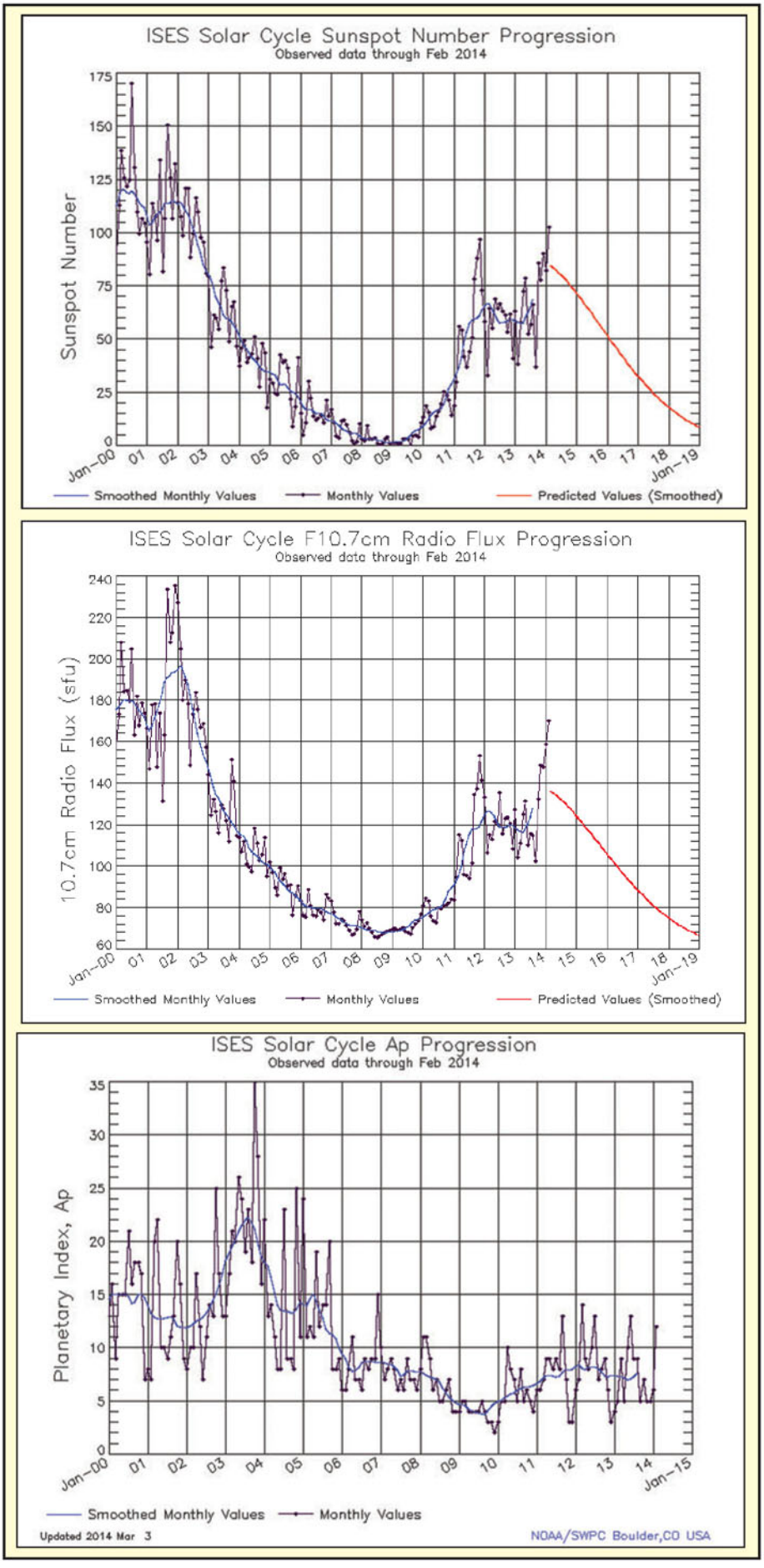
Fig. 1. The Sun as seen by the Solar Dynamics Observatory's Helioseismic and Magnetic Imager (SDO HMI) on 13 March 2014, revealing a fair number of sunspot regions (numbered per the NOAA Active Region assigned numbering). During February and March, solar activity increased significantly, indicating a second peak in sunspot Cycle 24. Such activity came with a series of x-ray flares and associated CMEs (coronal mass ejections) and resulting geomagnetic activity. However, overall, this activity has increased the upper-shortwave propagation over many paths globally. (Credit: SDO/HMI)

Using simple geometry we can approximate the single-hop propagation via a sporadic-*E* cloud: The theoretical maximum distance for a transmitted signal propagated after only one encounter with a cloud in the *Es* region is 2100 km. For the HF bands (below 30 MHz), this appears to be very accurate. However, many transmissions exceeding 2350 km have been observed on the VHF bands. This may be due to a combination of other propagation modes (tropospheric and ground-wave enhancements, and so forth) which adds distance to the theoretical maximum on both sides of the typical propagation model.

If two *Es* clouds exist within the signal path, the theoretical distance propagated by *Es* can almost be doubled, as long as the clouds are in line with both the transmitter and receiver. This "double hop" propagation is fairly common during widespread occurrences of *Es*, especially below 70 MHz. Three or more clouds potentially could line up, providing low-loss propagation over even farther distances. Of course, the likelihood that each of the clouds is of sufficient density and ionization and that they are geometrically lined up is pretty slim, especially if your interest is in higher frequencies.

Sporadic-*E* propagation tends to occur in two peaks during the daylight hours centered on either side of noon. *Es* occurrence during the year seems to follow a similar trend, with the main peak in the late summer and a second but weaker peak occurring in the winter. During the winter peak, *Es* is most common just after sunset. The summer daytime peak is in the morning between 7 AM and 12 PM, local time. A secondary peak occurs between 8 and 10 PM. However, observations over many decades show a slightly stronger likelihood of *Es* in the morning than in the afternoon or evening. Despite the apparent greater likelihood of *Es* in the morning hours, however, this diurnal characteristic is much less noticeable in the day-to-day casual observations of DXers. In addition, check for *Es* after dark! I remember many summertime *Es* openings around midnight between Washington state and California on 10 meters. Many still remember an opening that occurred after midnight on June 19, 1992 that resulted in propagation of 144-MHz and higher signals.

A pattern of the occurrence of *Es* by some observers suggest that *Es* is cor-



related with the presence of an excess of meteor dust in the *E*-region, where it is pushed into dense patches on the outside of jet-stream wind eddies. This possibility is loosely supported by the repeated presence of *Es* above certain locations, such as is seen from the UK over Nantes in France, and to a lesser extent over Denmark.

Several studies over the past 30 years have confirmed the presence in *Es* clouds of dense patches of meteoric comet dust. This idea is further supported by looking at the seasonal nature of *Es* and how it coincides directly with those times of year when the Earth passes through the dense tracks of comet dust.

Sporadic-E Propagation and You

Is it possible that *Es* can support DX of signals in the higher VHF frequency band—say 175 to 226 MHz? Doubling the frequency reduces the probability to one tenth. This means if you are receiving via *Es* a signal of 50 MHz, then a 100 MHz signal will be propagated one tenth of the time period of the 50-MHz signal. A 200-MHz signal will be propagated one hundredth of the time.

The MUF (maximum usable frequency) of a single cloud can be lower than the frequency propagated by a two-cloud path. In practice, it is difficult to know of a possible propagation path for the highest frequency because of the geometric restrictions imposed, and unless the DXer and the transmitter are in precise relative positions, the DX station will not be heard.

Since *Es* reception above 138 MHz

Fig. 2. The plots of current sunspot Cycle 24 as of March 2014 reveal a significant rise and possibly higher second solar cycle peak. It is typical of recent sunspot cycles to have two peaks, and often the second peak is higher than the first. This sharp rise in solar activity bodes well for the second half of 2014, when we might see much higher monthly activity levels than during the first half of Cycle 24. While this cycle is much weaker than a number of past solar cycles, this recent uptick in activity has breathed new life into the high-frequncy amateur radio allocations. Keep in mind that magnetically the Sun has shown clear signs of reversing polarity (where the north and south solar poles are reversed), a sure signal that we're approaching the down-turn marking the decline phase of the cycle. (Credit: SWPC/NOAA)

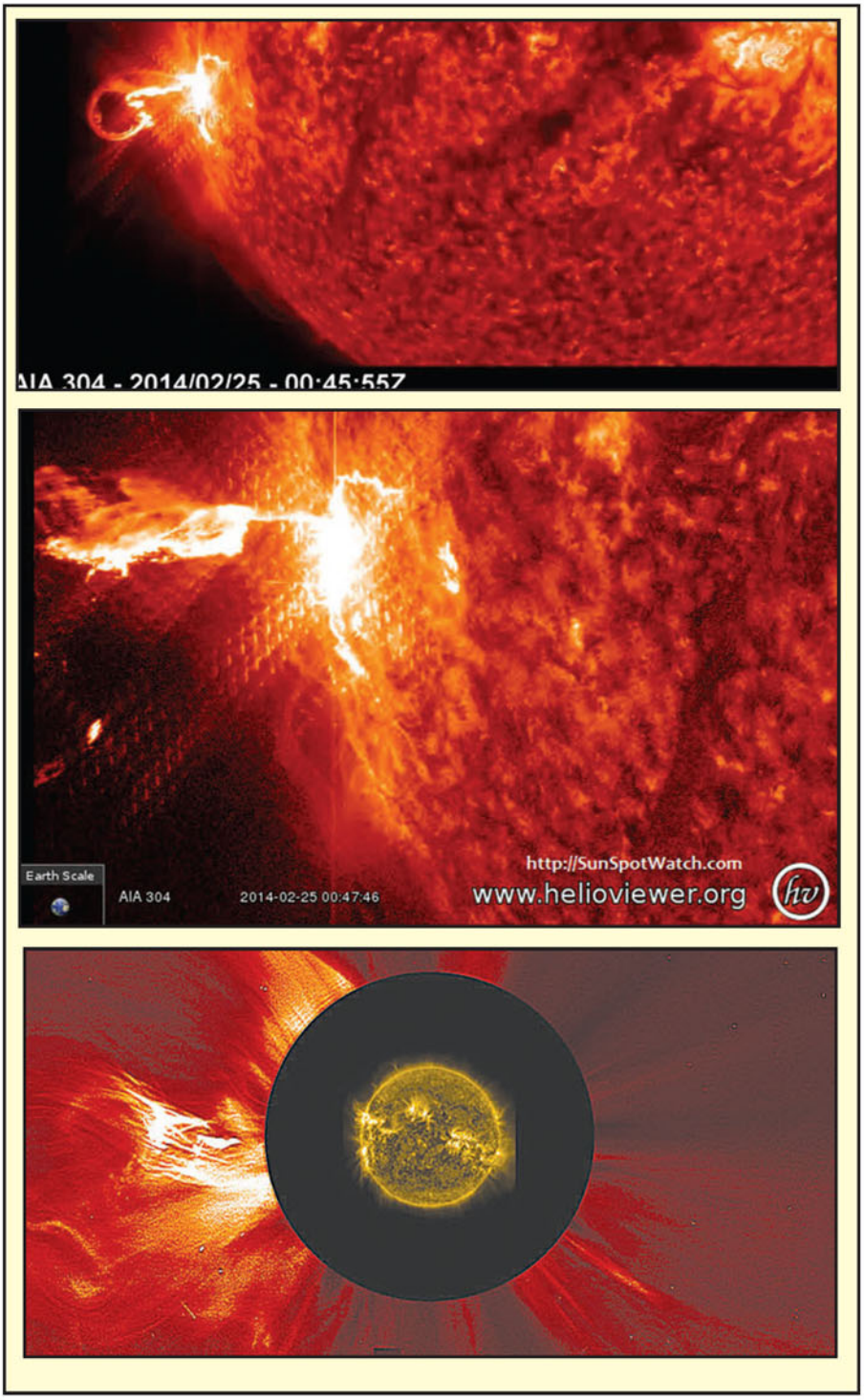


Fig. 3. During the last part of February, significant space weather occurred, as the Sun came alive in a clear second peak in sunspot Cycle 24. These three images are captures of the massive magnitude X4.9 x-ray flare that blew coronal mass out into space on February 25, 2014. Top image is a slice of the Sun showing the location of this large flare event, as seen by SDO in extreme ultraviolet at 304 ångströms. Middle is a "close-up" at 00:47 UTC, and in the lower left is a super-imposed model of Earth, showing the scale and size of this massive eruption. The bottom image zooms way out from the Sun, and shows the CME that was blown out into space as a result of the flare. Since the flare was off to the side of the Sun, it was not directly aimed at Earth, so the CME did not cause any geomagnetic disturbance. The flare did cause some radio blackout conditions on shortwave. This is typical of solar flares. Such activity is common during more active phases of a solar cycle. (Credit: SDO/HMI)

often involves high-path losses, it is important that you use the highest gain and lowest noise receiving equipment possible. A directional Yagi antenna, with at least 8 dB of gain, mounted 15–20 feet above ground level, with low-loss matched coax cable, low-noise receiver, and a low-noise MOSFET preamplifier are ideal for receiving weak signals.

What are the minimum, maximum, and typical ranges of distances propagated via *Es* for various VHF modes? What distance can one realistically expect for single- and multi-hop sporadic-*E* modes?

With over a half-century of *Es* DX logs and observations, we now have a very large database of information that gives us a very good idea regarding what distances are possible on the VHF band. This data is mainly obtained from VHF ham radio and TV DX enthusiasts.

One factor as to the maximum distance propagated by sporadic-*E* is the height of the *Es* cloud. According to ionosonde (devices used to measure reflectivity of the ionosphere) data, *Es* usually occurs at around 56 miles of altitude. At this altitude the maximum possible single-hop distance is about 1500 miles. The highest frequency reflected back to the surface of the earth, the *Es* MUF, varies from 20 MHz to at least 220 MHz.

The main factors that set the minimum and maximum distance limits for *Es* DX reception are geometry of the Earth, *Es* cloud electron density, the number of *Es* clouds, and *Es* ionization height.

One method to identify your single-hop *Es* target area would be to obtain a great-circle map and draw two sets of boundary lines with a compass. For 50 MHz, draw one line at approximately 500 miles and one at 1,500 miles. This would be your prime target area for single-hop *Es*. The same method can be applied to double-hop *Es*, with one boundary line drawn at 1,750 miles and another at about 2,800 miles. A great-circle distance calculator is also useful for submitting longitude and latitude coordinates (go to <http://www.gpsvisualizer.com/calculators> and look for the "draw map" button in the great-circle section).

On the Bands

It is spring, and as we move closer to summer, DX signals on the higher bands become weaker and openings more sparse. Long-distance *F*-region propagation via 10 meters through 15 meters will continue to suffer due to the

lower MUF caused by an only moderately active Sun. Optimum frequencies for DX propagation are lower during most of the daylight hours, but higher during the late afternoon, early evening, and nighttime hours than were observed during the winter months. However, during May, sporadic-*E* propagation may be possible on the highest HF bands and even on 6 meters. Seasonal static is increasing during May, yet perhaps not enough to overly degrade the lowest HF bands.

The following is an overall picture of high-frequency amateur band openings expected during May 2014. For day-to-day propagation conditions expected during the month, see the "Last-Minute Forecast," which appears on the first page of this column.

10, 12 Meters: Except for an occasional daytime opening to some southern or tropical areas, not many east-west DX openings are forecast for these bands during May. The afternoon hours are the best time to check for DX openings. Frequent short-skip openings between distances of approximately 750 and 1400 miles, however, should be possible.

15 Meters: A seasonal decrease in DX openings is normal for May. Some fairly good openings still are possible toward the south during the late afternoon and evening. Numerous short-skip openings, between about 600 and 2300 miles, should be possible almost daily.

17, 20 Meters: These should be the best bands overall for general-purpose and DX communication during May. Opening shortly after sunrise, good DX conditions are expected to one area or another through the evening hours. These bands also may remain open to southern and tropical areas through much of the nighttime hours. DX conditions should peak around the gray-line terminators (morning and evening), with openings possible to almost all areas of the world. Very-frequent short-skip openings also are forecast for distances between about 350 and 2300 miles. Quite often, especially during the late afternoon, optimum conditions may exist for both short and long skip, and stations a few hundred miles away will be heard at the same time as DX stations from several thousand miles away, causing considerable interference (QRM).

30 Meters: This band (currently, this author's most favorite) will play a major role in DX propagation, with somewhat better nighttime propagation than 40, and solid daytime propagation into many areas of the world. Exotic DX can be found here on CW and other digital modes. Check this band often during the course of the day.

40 Meters: Fewer DX openings are expected because of the shorter hours of darkness and the higher level of static. Fairly good openings should still be possible, however, to several areas of the world from shortly before sunset, through the hours of darkness, until shortly after sunrise. Good daytime short-skip openings can be expected over distances of between approximately 150 and 750 miles, with nighttime openings extending up to the one-hop limit of 2300 miles.

60, 80 Meters: Fewer hours of darkness and higher static levels are also expected to reduce DX openings on this band, but a few fairly good ones should still be possible. Check during the hours of darkness. Excellent short-skip openings are forecast for the daylight hours over distances ranging between 50 and 250 miles. During the hours of darkness, the short-skip range should increase up to approximately 2300 miles.

160 Meters: Propagation conditions on this band have passed their seasonal peak and should decline until the early fall. Openings up to a distance of 1000 miles or so should be possible this month during the hours of darkness. An occasional opening well beyond this range may also be possible when static levels are exceptionally low.

VHF Conditions

May should see an increase in sporadic-*E*, with some continued TE (trans-equatorial) propagation. Solar activity is not expected to be high enough to support *F*-region DX on 6 meters.

Look for short-skip openings, likely to occur over distances of approximately 1000 to 1400 miles. Although sporadic-*E* openings can take place at just about any time, the best time to check is between 10 AM and 2 PM and again between 6 and 10 PM local daylight time.

During periods of intense and widespread sporadic-*E* ionization, two-hop openings considerably beyond 1400 miles should be possible on 6 meters. Short-skip openings between about 1200 and 1400 miles may also be possible on 2 meters.

A seasonal decline in trans-equatorial propagation is expected during May. An occasional opening may still be possible on 6 meters toward South America from the southern tier states and the Caribbean area. The best time to check for 6-meter TE openings is between 9 and 11 PM local daylight time. These TE openings will be north-south paths that cross the geomagnetic equator at an approximate right angle.

Auroral activity is generally lower than March and April due to the change in the orientation and position of the Earth and magnetosphere in relation to the solar wind. This year, very little aurora can be expected during May. Watch for *Kp* values above 6, which occur on days of "Below Normal" and "Disturbed" HF conditions. Refer to the Last-Minute Forecast for those days in May that are expected to be in these categories. Point your antenna north when this condition exists. You will find that CW is the modulation and mode of choice, as the signals you will hear on aurora will be raspy and distorted.

Current Solar Cycle Progress

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for February 2014 is 102.8. That is quite a jump higher than the previous month's 82.0, and certainly indicates a stronger second peak in this cycle. The 12-month running smoothed sunspot number centered on August 2013 is 69.0. The forecast for May 2014 calls for a smoothed sunspot count of 83, give or take seven points.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 170.3 for February 2014, higher than January's 158.6. The 12-month smoothed 10.7-cm flux centered on August 2013 is 127.9. The newly released predicted smoothed 10.7-cm solar flux for May 2014 is 140, give or take seven points.

The observed monthly mean planetary *A*-index (*Ap*) for February 2014 is 12. The 12-month smoothed *Ap*-index centered on August 2013 is 7.1. Expect the overall geomagnetic activity to vary greatly between quiet and minor storm levels during May.

Until Next Time . . .

I thank those of you who have taken time to write to me. I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. I also welcome corrections and clarifications. You may e-mail me, write me a letter, or catch me on the HF amateur bands. I also invite you to participate in my online propagation discussion forum at <http://hfradio. org/forums/>. Don't forget to check out the NW7US Propagation Center at <http://SunSpotWatch.com>. If you are on Facebook, check out <http://www.facebook.com/spacewx.hfradio> and <http://www.facebook.com/NW7US >. I look forward to hearing from you. Happy DXing!

73, Tomas, NW7US

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washington beat

COMPILED BY RICHARD FISHER, KCQ6PC

FEMA Creates 'Wireless Emergency Alerts' FAQ Page

The Federal Emergency Management Agency has developed a new Frequently Asked Questions webpage dealing with alerts sent directly to wireless and mobile devices. The page answers queries such as:

- *What are Wireless Emergency Alerts and why they are important to the recipient?*
- *What types of alerts will be received; what such messages look like and more.*

According to editors at *Amateur Radio Newsline (ARN)*, "the page appears to be a truly valuable asset to anyone involved in rescue radio or first response operations. Visit: <http://1.usa.gov/PXfNiA>. – *Source: FEMA*

2014 Super Bowl Half-Time Show Draws Complaints to FCC

A Web report about the Red Hot Chili Peppers/Bruno Mars 2014 Super Bowl half-time show says the FCC received numerous complaints about shirtless performers and explicit song lyrics.

According to a report posted on MUSICFEEDS.com <http://bit.ly/1hKkxj2>, some viewers objected to the Chili Peppers' Anthony Kiedis and Flea: "I found it indecent that I had to see (their) nipples ... Both men and women should have to wear shirts. There are children watching for goodness sake!" one wrote.

*(**WATCH and LISTEN:** To the 2014 Super Bowl half-time Show at <http://bit.ly/1gOMgkC>. Viewer discretion advised. – KI6SN.)*

In addition, there were complaints about Bruno Mars' lyric, "Your sex takes me to paradise," from his hit "Locked Out Of Heaven," and the Chili Peppers' "What I got, you gotta get ..." – *Source: MUSICFEEDS.com*

Pittsburgh CBer Ordered to Pay $18,000

The FCC has affirmed an $18,000 Forfeiture Order previously issued against Nathaniel Johnson, alleging the Pittsburgh, Pennsylvania man repeatedly failed to allow the FCC to inspect his CB station and failed to comply with an order to operate only during certain hours.

In May 2013, the Enforcement Bureau's Philadelphia Office issued Johnson a Notice of Apparent Liability for Forfeiture via Certified Mail in the amount of $18,000. Johnson, however, failed to respond, the FCC said, affirming the forfeiture order.

*(**IN DEPTH:** Read the full FCC Forfeiture Order at <http://fcc.us/1jgh3WD>. – KI6SN.)*

The FCC gave Johnson 30 days from the March 12, 2014 release of the order to pay the fine in full, arrange for time payments, or file an appeal. Failure to comply could result in the case being turned over to the Department of Justice. – *Source: ARN, FCC*

Public Comment on 10-10.5 Ghz Petition Solicited by FCC

The FCC has invited public comment on a Petition for Rule Making (RM-11715) that would make a significant portion of the 10.0- to 10.5-GHz band available for wireless broadband services.

According to the ARRL, the petition by Mimosa Networks Inc. proposes a band plan for 10.0 to 10.5 GHz that the company says would protect frequencies most often used by radio amateurs.

The petition hinges on FCC adoption of rule changes that would put the 10-GHz band under Subpart Z of the Commission's Part 90 rules, which sets out regulations governing wireless licensing, technical standards, and operational standards in the 3650- to 3700-MHz band.

The proposed band plan would specify 10.350 to 10.370 GHz as an "Amateur Calling Band," and 10.450 to 10.500 GHz for Amateur-Satellite operations in the midst of 21 wireless broadband channels and a small guard band. Read the full ARRL story at: <http://bit.ly/1hN1LaM>. – *Source: ARN*

CQ plus

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Richard Weil, KWØU, was a first-prize winner of CRI's 'Kaleidoscope China' contest, giving him an inside look at the shortwave broadcast giant.

An SWLer's Visit to China Radio International

BY RICHARD WEIL, KWØU

The message got right to the point:

"We are happy to extend our congratulations to you as one of the first prize winners in CRI's Kaleidoscope China Contest. The top prize is a free 10-day tour of Beijing and Xi'an ... We are emailing you to ask whether you would be interested in this trip ... If we do not receive your reply within two days stating your interest in the trip, we will assume you are uninterested and choose to withdraw your trip candidacy."

Once I got over my shock and confirmed that it was legitimate, it didn't take long to say a big *YES!*

I started listening to shortwave stations in 1965 when my dad bought a little National Panasonic RF-1400. After inheriting the rig, I used it for decades before moving on to my current Kenwood 570G transceiver.

Even with a $3 attic dipole I have done a lot of hamming with that radio, and its predecessor, a Yaesu FT-101, working more than 270 DXCC entities, as well as confirming all U.S. counties. But it was SWLing that got me interested in amateur radio, and I still like doing it.

As seasoned listeners know, over the years what's on the air has changed. Not only have utility stations largely vanished, but the amount of Morse is *way down,* Cold War era-slanted news has gone away, and big guns like HCJB and Radio Netherlands are declining or closed. But some voices have grown, especially China Radio International. For years I'd listened to it and its predecessor, Radio Beijing, enjoying a look at a country that had always seemed both interesting and mysterious. Now they were getting back to me with more than just a QSL.

CRI's Roots to XNCR

China Radio International traces its origins back to December 3, 1941. Then, as the Yan'an New China Radio Station, XNCR, it used a Moscow-imported transmitter to make its first international broadcast — a message to the Japanese.

Growing in coverage and content through World War II and the Civil War that followed Japan's surrender, its first English language broadcast was in 1947. In 1950, following the Communist victory, it became Radio Peking, then Radio Beijing in 1983, and a decade later CRI. It remains China's official shortwave outlet to the world.

I'm a Winner!

It wasn't hard to enter the station's semiannual *Kaleidoscope China* con-

There is nothing understated in the facilities of China Radio International — housed in a 17-story building with a 7-story atrium in a Beijing suburb. (Photography courtesy of KWØU)

Uniformed guards check visitors at the gate of the facilities of the international broadcaster. Richard Weil's guide Kevin "didn't have an individual pass for me so we had to wait," he writes. "Notice how they can roll the gate back when a car comes in."

test. All I had to do was answer questions about Xi'an, the northern Chinese city famous for its terra cotta statues, and write a short essay on why I'd like to go there. Frankly, I thought I'd get a calendar. But instead, once I attested to having a passport and being healthy enough to walk a lot, they sent a letter approving a visa. With that, a long application form and $215, an agent in Chicago got me one from the consulate. It was my only major expense for the entire trip.

Welcome to China

A week later I was on a 13-hour flight. After dusk, the Northern Lights appeared over Baffin Island, and then Greenland's Arctic Ocean coast could be seen below. Over Siberia the midday sun popped up, but it was night again before we landed in Beijing's huge modern airport.

There I met "Kevin" Jat, my translator/guide, who took me to a new hotel. The next day the seven shortwave listeners who had won the contest — men and women from Argentina, Java, Sumatra, Poland, India, Afghanistan, and Minnesota — got together and toured the Forbidden City.

With 20 million people, Beijing is huge, busy, and full of new cars that no one quite knows how to drive. And they're building a sixth ring road to handle them — *New York on steroids!*

Yet, there are quiet areas such as the wonderful Temple of Heaven, where

Kaleidoscope China contest winner Richard Weil, KWØU, poses for a picture during this SWLers' tour of China Radio International — winners of CRI's Kaleidoscope China contest. He made the trip to Beijing all the way from St. Paul, Minnesota.

The lobby of China Radio International leaves no doubt visitors are in a place whose mission is to reach out to the world.

Wei Lin, China's first English broadcast announcer, is shown at work in a photograph taken September 11, 1947.
*(**IN DEPTH:** For more CRI history, visit <http://bit.ly/1eJzqTB >. – KWØU.) (Courtesy of CRI)*

Winter Schedule for CRI

North America East Coast

UTC	kHz
00-02	6020, 9570
01-02	9580
03-04	9690, 9790
13-14	9570
14-16	13740

North America West Coast

UTC	kHz
09-10	9580
11-12	9690, 9790
21-22	9570
22-24	13740

Table 1.

locals come to sing and dance in a vast park around the beautiful ancient buildings.

And need I add that we climbed the Great Wall?

Then it was on to Xi'an. For six hours we crossed farmlands and rising hills on a smooth train doing 300 kph (186 mph). Xi'an is another Chinese city that is exploding in size. Best known for the 2,200-year-old clay army discovered nearby, it has a lot more than that.

With "only" 10 million people, it was the ancient capital of China as well as the start of the Silk Route, the network of roads that for thousands of years linked Europe and Asia. With such wealth and power, there was an ancient building boom and much of it remains.

Xi'an has beautifully preserved Ming Dynasty walls, built 700 years ago and wide enough to bicycle. Inside them is

Some U.S. Stations Carrying China Radio International

KADD-FM	Logandale, NV	93.5 MHz
KCFJ	Alturas, CA	570 kHz
KGBC	Galveston, TX	1540 kHz
KHCM	Honolulu, HI	880 kHz
KXPD	Tigard, OR	1040 kHz
WILD	Boston, MA	1090 kHz
WNWR	Philadelphia, PA	1540 kHz
WUST	Washington, DC	1120 kHz

Table 2.

This is what CRI's English Service building looked like from 1949-54.

Trip winners were invited to an interview room where their comments were recorded for broadcast on China Radio International.

the Old City, with two tall wooden towers for the ancient bells and drums, a huge street market, a lovely old Buddhist pagoda that Kevin and I climbed, and a boisterous nightlife that spills over into the busy streets.

China Shortwave: Connecting the Dots

To radio listeners Xi'an may be best known for nearby Radio BPM, China's National Time Service station. It transmits on 2.5, 5, 10, and 15 MHz. Since these are the same frequencies as WWV and WWVH that makes it difficult to hear it in North America.

But a timing quirk may let listeners pick up a "click" in the minutes before the hour and half hour. In any case, since China keeps to one time zone, a local joke is that the nation follows "Xi'an time."

We returned to Beijing for the finale: Individual interviews that were broadcast on CRI, then an awards ceremony, and finally a banquet — though it seemed as though they'd given us one every day! But first there was a tour of the station.

Our Tour of the Station

Located in a Beijing suburb, China Radio International operates from a modern 17-story building. Once past the police guards you enter a 7-story atrium, flanked by two huge modern vases.

The bottom two floors are filled with listener mementos from around the world as well as exhibits of CRI's past. Of historic interest is the wire recording and loudspeaker equipment used when Mao announced the formation of the People's Republic in 1949.

In this structure 2,000 people work to get China's views out to the world, reaching listeners in 61 languages — the most

A large glass window gives visitors a good view of the CRI broadcast booth.

A busy staff in the English Language Newsroom spends many hours gathering and preparing information for CRI broadcast.

of any broadcaster. English is the largest section, with 300 people working on the fifth floor. Several are native speakers, and I met a young lady who grew up just a short drive from my house.

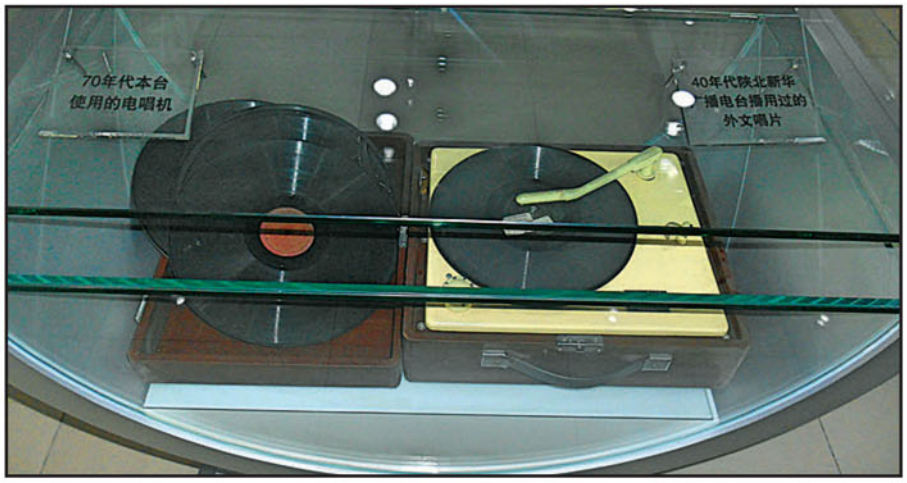
A visit to the newsroom showed CNN on a screen in the background, and the staff reading many English-language magazines online, or using their iPods to pick up the BBC. This wasn't surprising, since in the cities we visited I found the people to be very well plugged-in to the world, and it looked like everyone on the street had a smartphone.

The newsroom seemed typical of a big station: very busy, friendly, and productive. *Speak Chinese, Think English!* said a wall sign, which exactly caught the spirit of the place.

CRI's Tremendous Reach

Today, CRI has a huge presence on the air. Including rebroadcasts through all types of media, the daily schedule may reach 2,700 hours. For shortwave transmission, China Radio manages 50 shortwave transmitters. Many are spread

This speaker, left, and amplifier and wire recorder, right, are on display at CRI and were used in 1949 by Chairman Mao to declare the foundation of the People's Republic of China. "Kevin couldn't figure out why I was so interested in that history," KWØU said. "I even found some original Mao buttons he thought I was crazy to buy. 'A bad time,' he said. Yes, the Chairman appears on the currency and in Tiannaman Square, but the impression I had was that they' d largely moved on."



A remnant of the 1970s, this record player and vinyl discs were put on display in a glass case.

A CRI conference room was nicely appointed for the awards ceremony held for Kaleidoscope China contest winners.

across China, but external transmission sites include Havana for the Americas, Bamako in Mali handling Africa, while Cerrik in Albania and Issoudun, France, take care of Europe.

In the U.S., China Radio International is easy to receive, **Table 1**. Around the world CRI has bought time on 160 domestic radio stations. Some in the U.S. are listed in **Table 2**.

Broadcast content emphasizes China's view of itself and its place in the world. Or, as expressed on a plaque in the main lobby, CRI's tenet is to report *from the Chinese perspective with a world vision and a human touch.*

This means that the listener has a wide range of topics to choose from. Both cultural and economic matters are frequently discussed in depth. And, as shortwave listeners know, it is worth hearing world news from a different nation's perspective.

World-Renowned QSLs

Despite its huge audience, CRI routinely issues QSLs and the service is known for its varied and interesting cards.

Among the series they have sent are:

- Endangered and rare animals of China
- Pictures of ethnic minorities in their native costumes

The Bell Tower in Xi'an strikes a colorful pose in the China night.

- Famous national sites such as the Great Wall and the Olympic Stadium

At least 3 million reports are received each year. I asked Kevin how they could meet the large listener demand for cards. He explained that time was allotted for teams to work on them.

It's very easy to get a QSL from China Radio. Just email your address and reception details to <crieng@cri.com.cn>.

CRI's Outreach Beyond Shortwave

With a website at <http://english.cri.cn>, the Internet has become a major face of CRI. A free quarterly magazine about China, *The Messenger*, is also produced and available on this site or by mail.

In addition, China Radio is also a local presence in Beijing on EZFM, 91.5, which can be heard at <http://bit.ly/1ncVJoD>.

Worldwide China Radio uses television, newspaper, and mobile phone outlets, and the service includes 18 global Internet radio services as well. It estimates that it can reach 98 percent of

Big Goose Pagoda is popular with photographers visiting Xi'an.

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Optional internal slot cards expand the AR8200MkIII's capabilities. Choose from Memory Expansion (up to 4,000 memories), CTCSS Squelch and Search, and Tone Eliminator.

The AR8200MkIII offers "all mode" reception that includes "super narrow" FM plus wide and narrow FM in addition to USB, LSB, CW and standard AM and FM modes. It also features true carrier reinsertion in USB and LSB modes and includes a 3KHz SSB filter. The data port can be used for computer control, memory configuration and transfer, cloning or tape recording output.

A special government version, AR8200MkIII IR features infra-red illumination (IR) of the display and operating keys. The IR illumination function is selectable, allowing operation by users wearing night vision apparatus without removing goggles and waiting for the eyes to re-adjust. Ideal for military, law enforcement and surveillance operators.

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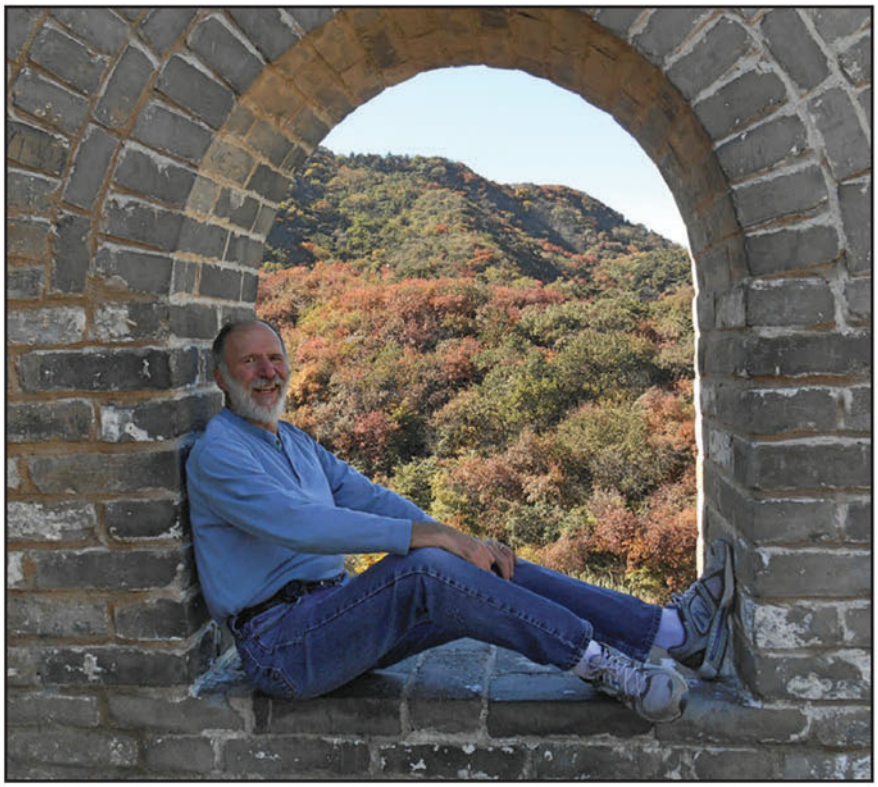


SWLer and radio amateur Richard Weil, KWØU, describes this image as just "hanging out at the Great Wall."

the world's population in their native languages.

As a plaque on the wall of its headquarters says, CRI is undergoing a great transformation from a traditional media organization to a modern one, from a single-platform media organization to a multiplatform one, from an overseas radio service to an international media group. It is promoting the establishment of a modern, comprehensive, and innovative international media group.

Building a Bridge on the Shortwaves

Growing up, an old phrase I often heard was *The Bamboo Curtain,* a wall behind which was that mysterious place, Red China. Today the wall has been replaced with a bridge, because on shortwave — as in so many other activities around the world — the Middle Kingdom has become a loud voice.

One may not agree with all its domestic or foreign policies, but it's no longer the hidden country of times past. It wants people to hear its point of view, and for anyone who would like to listen, CRI is readily available online and on the air. *And it still holds contests ...*

what's new

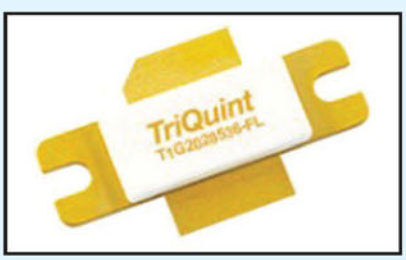
RFMW Ltd. New Power Amplifier

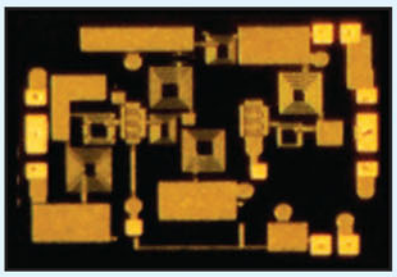
RFMW Ltd. has not been resting on it laurels and has introduced a bevy of components that may be useful in your next homebrew project. Leading the list is the TGA2313, a 100-watt, GaN power amplifier operating in the 3.1- to 3.6-GHz range. The large signal gain is 22dB and the 30-volt bias draws quiescent current of 135 to 550 mA as bias flexibility supports a variety of system requirements. The TGA2813 is available as 5.4- x 6.7- x 0.1-mm DIE with blocking caps in both RF ports matched to 50 ohms.

Another recent addition to RFMW's portfolio is the Telemakus TEP4000-5 digital phase shifter. The phase shifter has a minimum phase range of 360 degrees with 12-bit, 0.25-degree resolution and operates over the 2- to 4-GHz bands. Maximum RF input for linear operation is +6dBm but the device can handle up to +20dBm. Typical insertion loss through the TEP4000-5 is only 5dB. When coupled with the TEA4000-7 USB-controlled RF attenuator, a gain and phase control system can be created. The device weighs in less than an ounce and the graphical user interface is resident on-board Flash memory making them plug-n-play for Windows-based PCs.

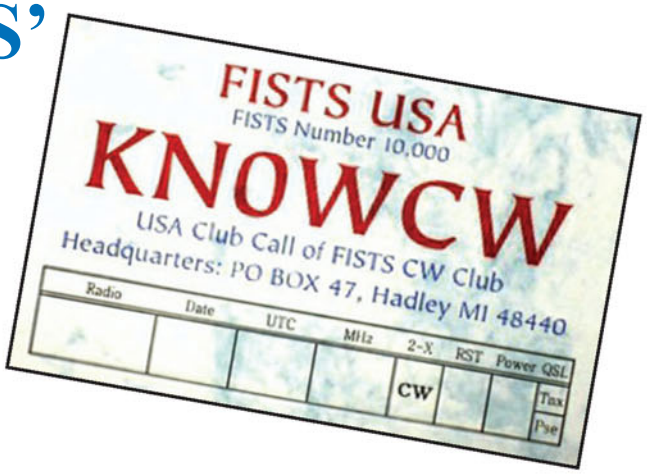
RFMW is announcing the design and support for TriQuint's T1G2028536, a 285-watt, GaN transistor available in a low-thermal resistance, solder-mount package as the TIG2028536-FS or flange-mount package as the T1G2028536-FL. Both the FS and FL house the transistor in a ceramic NI-780 enclosure. Operating from DC to 2 GHz, the FS and FL provide 18dB of linear gain at 1.2 GHz and operate from a 36-volt source drawing 57 mA. The FL and FS are input prematched for L-band operation. For more information contact: RFMW, 188 Martinvale Lane, San Jose, CA 95119. Phone: (800) 367-7369. Email: <info@rfmw.com>. Website: <http://www.rfmw.com>.

Note: *"What's New" is not a product review and does not constitute a product endorsement by CQ. Information is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of "What's New" is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*





Remembrance: FISTS' Nancy Kott, WZ8C (SK) — The 'First Lady' of CW



BY RANDY NOON, KCØCCR*

Don't it always seem to go, that you don't know what you got till it's gone? With resignation in her voice, in 1970 Joni Mitchell sang those words in *Big Yellow Taxi*. Sadly they came to my mind when I heard about the passing of Nancy Kott, WZ8C, on March 2.

Nancy Anne Kott was the powerful rocket engine in Metamora, Michigan that guided the International Morse Code Preservation Society, better known as FISTS. Nancy was its heart and soul. She gave Morse and FISTS her all — even writing, editing, laying out, and publishing its banner publication, *The Keynote.*

If Samuel Morse was the first gentleman of Morse code, for our generation Nancy was its First Lady.

Along with her family, CW was her life, **Photo A**. "There is something magical about being able to put two wires together and start going *dit-dit-dit dit-dit,"* Kott told *The New York Times* in 2006, after the FCC had proposed dropping the Morse requirement for amateur HF privileges. "We are just going to have to get on the air and do what we do and hope for the best." ***(IN DEPTH:** Read WZ8C's full comments in the New York Times story at <http://nyti.ms/1eVEZvt>. – KI6SN.)*

Nancy administered FISTS and lovingly looked after its 16,000-plus members scattered around the world. She was FISTS chief spokesperson and cheerleader, and she regularly organized and manned the FISTS booth at the Dayton Hamvention®, promoting ham radio and Morse Code to everyone who stopped to visit, **Photo B**.

If you worked Nancy on the air, you know that her FISTS number is 379. If you passed by her booth at Dayton, you likely have a t-shirt somewhere that says, *When you've worked a FISTS, you've worked a friend.* She not only wore the motto, she *lived* it.

Nancy dearly loved her family. She loved her friends and ham cohorts, she loved ham radio, and she loved Morse Code. With few exceptions, she operated CW exclusively. Nancy was not just a CW operator — she was an *accomplished telegrapher.* She would slow down to any speed to work those just learning CW, but she could also pull out the stops and scorch you with CW that sounded like twin Vickers machine guns on a Sopwith Camel.

"Way back in 1988, when I was a Novice, I had a nice QSO with my *first* DX contact — Geo, G3ZQS, in England," Nancy once wrote "As you might imagine, I was thrilled to have my first DX QSO.

"Geo was very patient and had no problem slowing down to my nervous beginner's speed. We chatted for at least a half-hour and made a sked for the same time in a few days. We kept up this sked for several weeks, and FISTS came up in the conversation.

"FISTS had 11 members in the USA, and Geo needed someone to collect the *subs* and re-mail them to him in one lump since the UK banks charged a hefty fee for non-UK bank drafts. I accepted the position, and that was the beginning of the U.S. chapter of FISTS. He also sent the UK *Keynote* to me in

*Morse Code columnist, CQ Plus

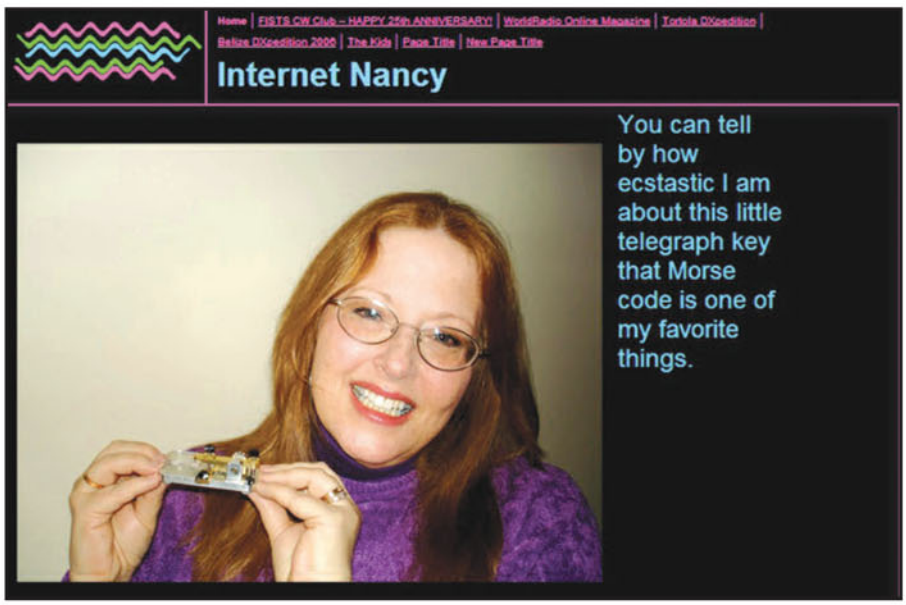


Photo A. *The late Nancy Kott, WZ8C (SK), captured her passion for Morse code in the pithy caption she wrote for this beaming photograph appearing on her Internet Nancy website. (Internet screen grab <http://bit.ly/1iGP2sR>)*

Photo B. *When WZ8C became the FISTS representative for the Western Hemisphere, there were only 11 members of the organization in the United States — a number that would soon grow into the thousands. (Internet screen grab <http://www.FISTS.org>)*

bulk and I would label them and mail them to the U.S. members, saving postage vs. mailing them directly from the UK.

"People would send in notes with their renewals, and unable to keep up with answering each letter personally, I put them together in a little North American Memo and included it with *The Keynote.*

"Over the years, the membership grew and we had enough members — 200! — to use bulk mail ... FISTS is run entirely by volunteers and has no paid staff. We have assigned over 16,000 member numbers all over the world, and have expanded into four chapters, the Western Hemisphere, Europe, Down Under, and East Asia.

"There have been imitations and copycat clubs, but there is *only one* FISTS CW Club!"

She was a member of the ARRL's A-1 Operator Club, and an honorary member of the Texas DX Society. First licensed as KB8FAY in 1988, Nancy made Extra Class just a year later.

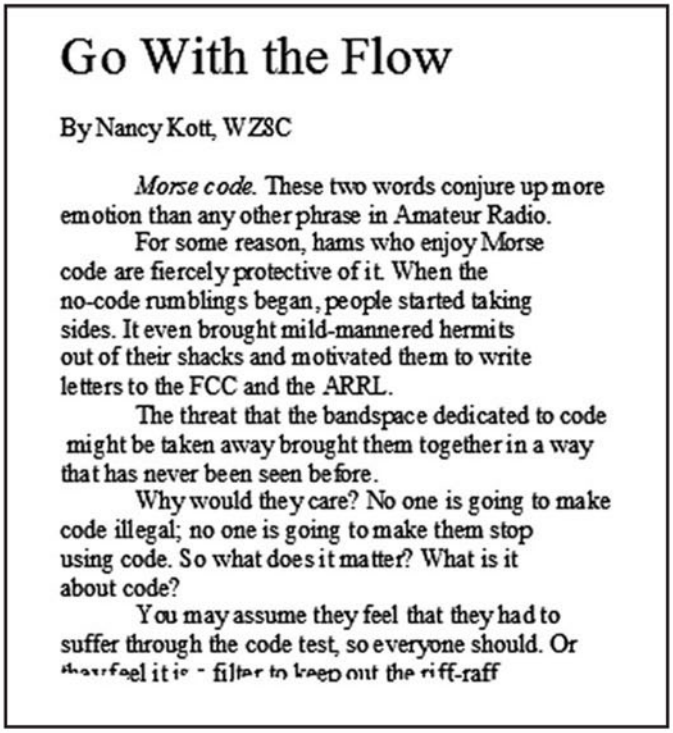
In 2006, Nancy was a member of the historic Texas DX Society's "Glass Arm" DXpedition to Belize operating as V31AN. In amateur radio it was historic because it was the first straight key DXpedition, **Photo C**. Link to <http://www.tdxs.net/FISTS.html>.

Photo C. *Nancy was on a CW team that made history in 2006 during the Texas DX Society's "Glass Arm" DXpedition journeyed to Belize — operating as V31AN during the first straight key DXpedition. (Internet screen grab <http://www.tdxs.net/FISTS.html>)*

A year later in 2007, Nancy was also member of the TDXS DXpedition to the British Virgin Islands, where she operated as VP2/WZ8C. While at Smuggler's Cove on Tortola Island, she took time out to participate in the FISTS Sprint Contest and the IARU Contest that occurred during the DXpedition.

Between inhaling and exhaling, Nancy also took time to be the editor of *WorldRadio* for a decade, beginning in 2002, and prior to that, she had written the *Positively CW* column for the magazine. Like I said, she was a powerful rocket engine.

Her power of organization showed during the transition of *WorldRadio* as a print-only magazine to *WorldRadio Online,*



Go With the Flow

By Nancy Kott, WZ8C

Morse code. These two words conjure up more emotion than any other phrase in Amateur Radio.

For some reason, hams who enjoy Morse code are fiercely protective of it. When the no-code rumblings began, people started taking sides. It even brought mild-mannered hermits out of their shacks and motivated them to write letters to the FCC and the ARRL.

The threat that the bandspace dedicated to code might be taken away brought them together in a way that has never been seen before.

Why would they care? No one is going to make code illegal; no one is going to make them stop using code. So what does it matter? What is it about code?

You may assume they feel that they had to suffer through the code test, so everyone should. Or they feel it is a filter to keep out the riff-raff

Photo D. *With her classic piece "Go With the Flow," KCØCCR writes "you would honor Nancy's passing by reading in her own words how 'the music of Morse' became her passion." Link to: <http://bit.ly/1gCHh1S>. (Internet screen grab)*

amateur radio's first online-only mainstream publication.

"The patience Nancy practiced on the air in working with new CW operators I'm sure helped her in guiding me to the editor's desk at *WRO,"* said Richard Fisher, KI6SN, who succeeded Nancy at *WorldRadio Online.* "Nancy was a good friend, and valued mentor."

"In the story of *WorldRadio,* she will be known as a first rate journalist and as the captain who so masterfully steered us through a transition from print to online," Fisher wrote in April 2011.

In her final *Editor's Log* for *WorldRadio Online,* Nancy recalled:

"In the earlier years, when writing the CW column, I wrote it as if I were sharing my thoughts with friends. Considering people you have never met to be friends is something that is unique to hams. Sure, now there are chat rooms, but do you really know if the person you are chatting with is who they say they are? With ham radio, if they know Morse code or can talk about antennas, you can be pretty sure they're the real thing.

"As the years went on, although we didn't always agree, it was always interesting and inspiring to read your letters and comments on the Internet. I wouldn't trade those days as CW columnist for anything. My readers were *very special* to me, and I still keep in touch with many of them.

"After I became the editor, it was even more fun because I was able to talk about more topics than Morse code, and stir up some controversy! There were times when some of the posts on the Internet and emails would be so hot that I discovered first-hand why they are called *flames.* I don't think anyone changed anyone's mind, but it opened up dialogs and gave readers a place to vent and know that someone was listening."

Nancy, who died at 58, is survived by her husband Tim Lange, her parents Kenneth and Irene Kott, Diane Kott, many dear family members, and the 16,000 FISTS members she so treasured.

In 2006, when the FCC was contemplating removing the Morse Code test requirement from amateur radio testing, Nancy wrote a piece entitled, *Go with the Flow* for the Australian FISTS publication. It explains her discovery of the *Zen* of Morse Code.

You would honor Nancy's passing by reading in her own words how "the music of Morse" became her passion, <http://bit.ly/1gCHh1S>, **Photo D**.

Relaxed Airline Rules Open the Spectrum to the Casual Passenger

The Blue Yonder is Wild, Indeed, When DXing the FM Broadcast Band

BY JOE EISENBERG, KØNEB

One of the parts of the radio hobby I have enjoyed for a long time is listening to DX in the 88-108 MHz FM broadcast band and using it to correlate to openings in the 2-meter amateur radio band.

While traveling by air, I often wondered what could be heard in the FM band while flying. The thought of what could be heard at 35,000 feet fascinated me and in the late '70s a ham pilot on a commercial airline allowed me to do just that on a flying trip. In later years, pilots were not allowed to waive the electronic device rules, and so listening while flying became a distant memory.

The reason for the prohibition on radios being used on aircraft beginning in the 1960s was rooted in the technology of the day. Portable transistor radios were beginning to be a lot more common and affordable. Portables with FM capability were beginning to show up on airliners with startling results.

Changing Technologies

Back then, transistors were not as efficient as they are today, and so the amount of power needed to allow them to oscillate at the frequencies needed was a lot more than today's receivers. In fact, many portable transistor AM/FM radios of that era utilized two 9-volt batteries either in series or parallel to operate, and often were the larger boxed-type battery.

With the inefficiencies of the circuits of the day, the local oscillator at 10.7 MHz above the desired frequency laid a strong signal smack in the middle of the navigational beacon portion of the aircraft band. Simply adding 10.7 MHz to let's say 105.9 MHz would place the offending oscillator signal at 116.6 MHz.

In the early 1970s, IC-based FM tuners began to show up with incredibly lower power requirements and vastly reduced radiation of the local oscillator. By the Walkman era of the late 1970s and early 1980s, the local oscillator's signal became almost inaudible, except to a receiver immediately adjacent to the FM radio.

In order to achieve the very-long battery life needed for the use of only two "AA" type penlight batteries, circuits needed to be designed to not waste any energy. That is why there was a vast reduction in the local oscillator RF output. But, at the same time, the FAA removed the pilot's discretion as to what devices could be operated during flight.

The Shape of Things to Come

Now, fast forward to the new millennium where smartphones, laptops, and tablets, as well as a large variety of personal media players, have become ubiquitous among air travelers. Most airports now have AC and USB power outlets so passengers can recharge these devices while waiting for their flight.

The long recitation of electronic device rules and prohibitions became a staple of pre-flight safety announcements by flight attendants for decades — and a frustration to air travelers wanting a diversion from the tedium of a long flight.

With so many gadgets in the hands of air travelers, it was inevitable that many ended up being turned on while airborne by simply being stuffed into both checked and carry-on bags and left on accidentally. With no incidents of prob-

The CCrane CCrane SW Pocket receiver, <http://bit.ly/1bRZQnE>, covering shortwave, AM, and FM broadcast bands, is "the best performer so far in the air," says Joe Eisenberg, KØNEB.

United Airlines ERJ-145 pilots are all smiles — the way you want them to be — as they prepare to take off from Lincoln, Nebraska on the first leg of KØNEB's annual journey to the Dayton Hamvention®.

lems that could be directly proven to be linked to these temporarily forgotten soldiers of our digital lives, the FAA and the airlines decided to revisit the rules pertaining to using electronic devices aboard aircraft.

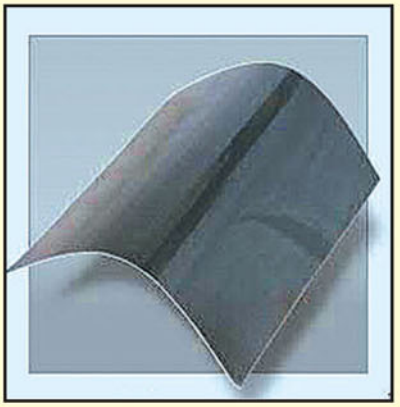
Interference Testing Changes Everything

Led by Delta and JetBlue airlines, who performed extensive RF compatibility testing along with the cooperation of the aircraft manufacturers such as Boeing and Airbus, the FAA looked again at the question of what should be allowed and when it should be allowed, with surprising results.

Most every kind of consumer electronics device was tested, including tablets, laptops, cell phones, media players, and Wi-Fi/Bluetooth® devices. As part of the testing process, cockpits, as well as many other locations within the aircraft, were exposed to as much as 5 watts of Wi-Fi signals, operating FM radios, as well as samples of the other common devices passengers

FM DXing in "the friendly skies" is very much a function of an aircraft's altitude. You'll notice a big difference between, say, 1,000-feet altitude and 35,000.

what's new



Fair-Rite Adds Flexible Ferrites to Product Line

Fair-Rite Products Corp. has added flexible ferrites to its product line. These RoHS-compliant flexible sheets are offered in four thicknesses and six material grades. Functioning primarily as an EMI suppressor, the flexible ferrite blocks noise at lower frequencies and absorbs it at higher frequencies.

Some applications for the flexible ferrites include using them as a shielding for antennas and RF circuits from reflection and eddy currents inducted by metal surfaces. Additionally, radiated noise on PCBs and ICs from internally or externally generated sources can be suppressed.

The flex ferrite is manufactured by placing a NiZn ferrite placed between a 0.01-mm layer of PET film and 0.02-mm adhesive tape. Each sheet can be cut to size to conform to a multitude of applications. For more information contact: Fair-Rite Products Corp., One Commercial Row, Wallkill, NY 12589. Phone (888) FAIR-RITE. Website: <http://www.fair-rite.com>.

Note: *"What's New" is not a product review and does not constitute a product endorsement by CQ. Information is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of "What's New" is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*

This Southwest 737-700 is fueled-up and ready to depart Omaha for Denver.

carry such as tablets and video players. The result was that the myths were busted when it comes to the use of modern electronic devices on airplanes. The rules for passengers were about to join the second decade of the 21st century.

Here is a quote from Delta Airlines' website <http://bit.ly/1edC93C> concerning personal electronic devices.

Which Devices Can I Use During all Phases of Flight?

You may use the following devices from gate to gate on Delta and Delta Connection flights within the U.S.:

- AM/FM or satellite radios
- digital and video cameras
- calculators
- Delta-installed equipment such as in-flight entertainment systems
- DVD players*
- e-readers
- electric shavers
- electronic/digital watches
- global positioning system (GPS) receivers
- handheld computer games
- headphones
- laptop computers*
- medical devices**
- noise reduction headphones
- portable media players*
- pagers
- smartphones and any device with cellular network service must be turned off or in airplane mode
- tablets and wireless keyboards or mouse

The only things still prohibited include things that transmit, such as radio-controlled toys and amateur radio HTs — *sorry, hams.*

Do Your Homework

The rules may vary slightly by airline, so be sure to check. The asterisks in this list pertain to a restriction on the weight of a device that is allowed to remain in use during takeoff and landing. Things like portable DVD players and laptops are too large and heavy to remain loose during takeoff and landing, but are OK to use at other times. In addition, if a low-visibility landing is foreseen, the crew can ask that all devices be turned off and stowed during the approach and landing.

Flight attendants can now concentrate on their other duties rather than being the "bad cop" when it comes to what passengers are doing to while away their time in the air or on the ground.

Lincoln to Denver: Factoring in the Variables

So, what can you hear while "upstairs"? A number of things come into play when listening to FM while airborne:

- Altitude of the aircraft
- Number of stations which share that channel that are visible from your altitude along with your position relative to the transmitter
- Power and antenna configuration of the FM broadcast transmitter

One might assume that since you have a direct line-of-sight to the station desired; you would easily hear it from the air. That is often not the case.

Here's an example: listening to KTGL 92.9 FM, a 100-kilowatt ERP station from Lincoln, Nebraska <http://bit.ly/1f35VYI> on a flight from Omaha to Denver revealed a lot of interesting characteristics. That station, as received in a car at Omaha's Eppley Airfield, is quite weak, strengthening quickly as you drive west in Omaha on your way to Lincoln. In a Boeing 737, it is inaudible until you're airborne and up about 1,000 feet or more after takeoff.

Since most aircraft are basically shielded aluminum tubes, the only opening to the outside world of RF is the windows, and the windows are not nearly a quarter-wave in size at FM broadcast frequencies.

Receivers and Reception

Most FM receivers passengers carry are built in to their media player, such as an iPod Nano, other MP3 players, and

Be sure to check the website of the airline on which you're traveling to see its rules on electronic devices. Guidelines may vary somewhat from carrier to carrier. Here is the link to Delta's regulations: <http://bit.ly/1edC93C>.

even some smartphones. These tiny media players utilize the headphone cable as the FM antenna. It became immediately apparent that even slight movements of this wire antenna can result in dramatic shifts in what is audible at any given time.

At first, the stations heard during takeoff are identical to your normal ground-based listening. Once above 1,000 feet, distant signals begin to be clearly heard. Above 5,000 feet the interference to your chosen station can become intolerable. You see, now you are high enough to hear stations that share the same frequency that normally would not cause co-channel interference.

Once a jet reaches a cruising altitude of let's say 35,000 feet, your radio horizon now allows several stations to be heard on each frequency. My experience tuning the FM band while airborne revealed many strong, clear stereo signals that rapidly faded out or being covered up. The signals were replaced by others on the same channel often in intervals of less than a minute or two with alternating between stations quite common. Most of the time there were no empty channels in the entire band. However, the farther west the aircraft traveled, there became less and less co-channel interference and some open channels. This is because once I got toward western Nebraska on the way to Denver, the reduced density of the population resulted in a much lower density of FM broadcast signals. Stations could be heard for longer periods of time, and with greater clarity.

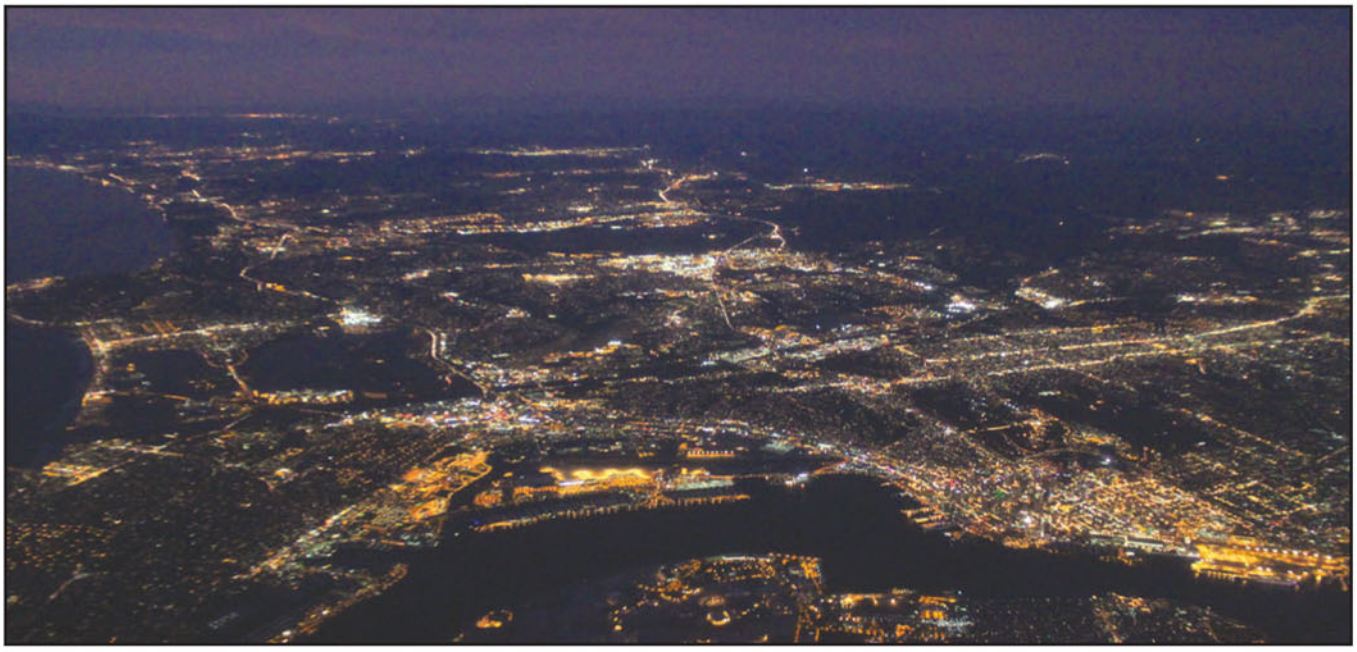
When listening to the Lincoln station, for example, as the aircraft approached the city the signal actually got weaker. This is because the broadcast antennas are designed to radiate strongest toward the horizon, and not upward. In fact, some FM stations aim for a point just below the distant horizon by using beam tilt. Aiming at, or just below, the horizon allows the FM station to maximize its performance for mobile listeners who are reaching the edge of their coverage area.

In fact, this broadcast antenna design serves also to prevent the strong FM signals from overloading aircraft navigation receivers, which operate just above the FM band. After passing the city, the signal progressively got stronger again, making for enjoyable listening for 15 to 20 minutes until other signals on the same channel made it difficult to hear.

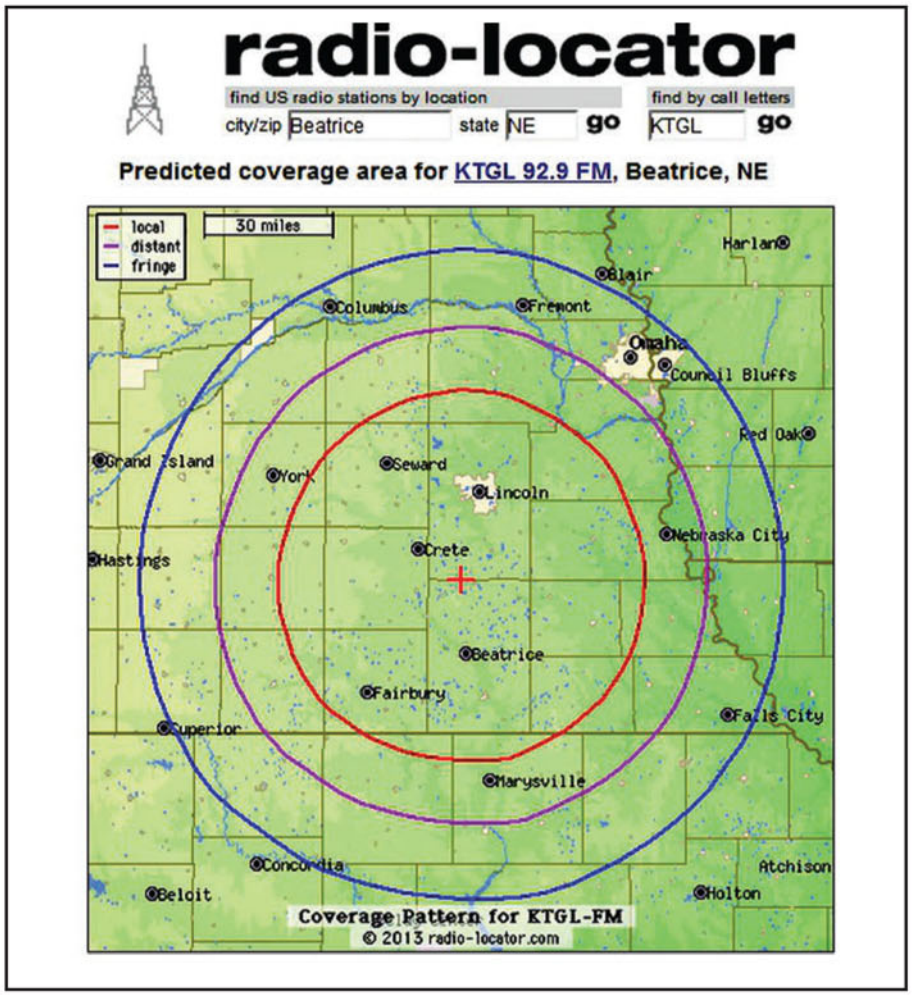
During this period, I heard other stations, but adjusting the position of headset wire even a tiny amount let me pick and choose which to listen to.

Denver to San Diego: More Revelations

Between Denver and San Diego the flight was interesting as well. The area between those two cities is largely open



The night lights of San Diego fill the window after departure KØBEB's way back to Denver.



KTGL-FM's radiation pattern "sounds" much different from airline altitude than what the station has mapped out here for listening on terra firma.

This Delta CRJ 200 is ready for boarding — and becoming KØNEB's temporary FM broadcast-band listening post.

desert spaces and mountains with very little population density. Since the flight was at night, the lights of Las Vegas were visible for almost an hour in the distance. The FM signals from Las Vegas were also audible for nearly an hour.

Just after Las Vegas, the sounds of Los Angeles became quite clear as were San Diego stations and many from Mexico. Due to the large amount of interference behind the signals I received, the RDS station ID information rarely was displayed, nor were any HD radio signals heard until just before landing. This is because the RDS data and HD digital audio subcarriers exist on the farther edges of the main carrier and as data, are more susceptible to interference.

Where you are seated makes a big difference, as well, when listening to FM from the air. A window seat that is away from the wing is the best location.

As for AM listening, it was almost impossible, due to the noise generated by the aircraft systems as well as the fact that at that frequency, you are for all practical purposes shielded inside the aircraft. Only high-powered stations were audible, and then mostly just before and after takeoff and landing.

I heard noises in the FM band as well, also coming from things such as the aircraft's ventilation, lighting, and other systems. In addition, when the crew transmitted in the aircraft band, you could tell it was causing a desensitization of the receiver.

My 'Listening Post'

I used a Sony Walkman Android device as well as an Insignia pocket HD radio, both of which used the headset cord as an antenna. Both receivers had a tough time even decoding the stereo signal.

A pocket-sized CCrane model CC SW AM/FM/SW receiver superbly received clear stereo signals even on crowded channels, but uses a small whip antenna which caused me to have to show the flight attendants the new rules as printed on their website.

As always, check with your airline to be sure what is permitted and what is not, and keep in mind that if your airline permits FM radios, the crew on your flight may not have been thoroughly briefed yet as to the details of the new policies.

Using an FM radio that utilizes the headset cord as the antenna keeps the questions away. *Have fun listening from the wild blue yonder! – 73, de KØNEB*

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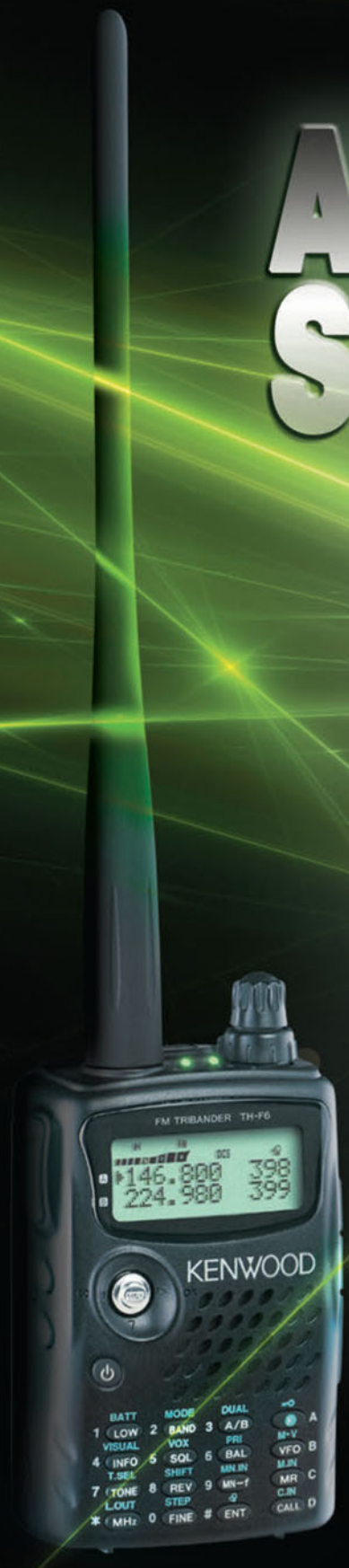
- Automatic simplex checker
- Wireless remote control function
- Battery indicator • Internal VOX • MCP software

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



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BY GERRY L. DEXTER*, WPC9GLD

On the Shortwaves, Taking the Good with the Bad

Take one step backward. Then take one-point-five steps forward. I guess that equals a plus.

In this month's shortwave news, the backward move is the loss of yet another shortwave outlet: **Galei Zahal,** Israel's armed forces radio (6885 and 15850 kHz). The blame, of course, is placed on the ever-pervasive "financial/budgetary considerations."

Moving forward, as we like to say these days, one full step concerns a former old standby — **ELWA** from Liberia, which the *World Radio TV Handbook* (WRTH) shows as inactive on 4760 and 6070. Well, it suddenly came back to life on its old 60-meter band frequency. That is excellent news. And, like Galei Zahal, it is an addition we can actually hear.

Oh, and the half step? That would be the addition of a second frequency for the **Solomon Islands Broadcasting Corporation/Radio Happy Isles,** which added its old spot of 9545 to its long-used 5020. Apparently 9545 opens at about 0900 and runs to past 1300 — the complete schedule is not yet known, however the hours listed should be the most favorable for reception in North America.

Other shortwave-lets:

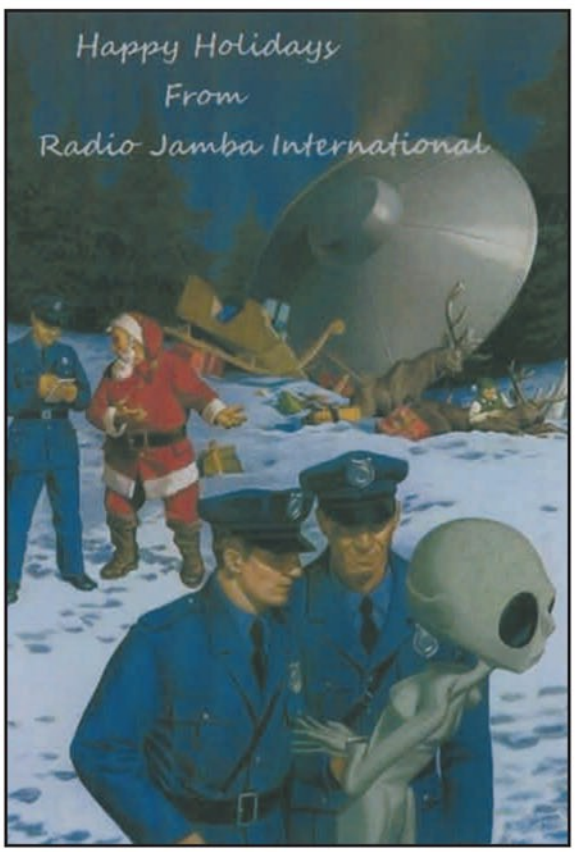
- **Radio Republic Abkhazia** has resumed (or re-resumed) shortwave transmissions and is scheduled to air in Russian from 0355 to 0500 on 9535.
- There may be two new transmitter sites under construction in Algeria (Ourgla and Bechar). I don't

<gdex@wi.rr.com>

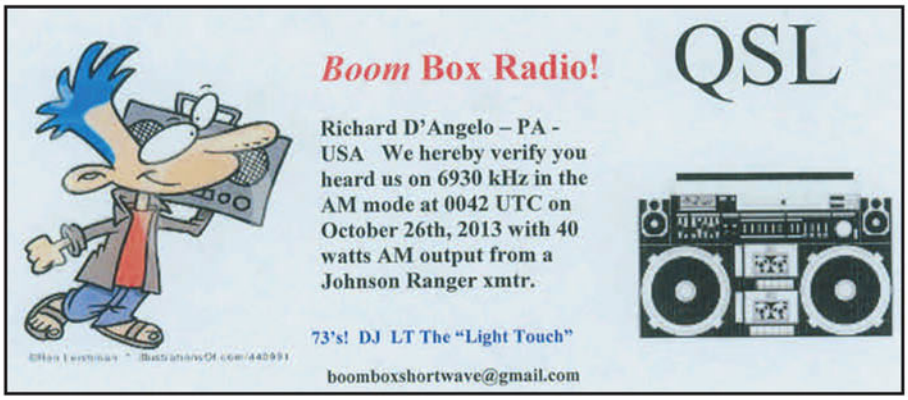
Welcome all the new readers from *CQ Amateur Radio, CQ VHF, and World Radio!* If you listen to shortwave broadcasts you are more than welcome to send in your log reports. See the note below for suggestions and contact information. I'd certainly like to hear from you.

We believe the Listening Post — month after month — offers more logs than any other monthly SW publication! (Nearly 400 shortwave broadcast station logs were processed this month!) Why not join the fun and add your name to the list of GIG reporters? Send your logs to Gerry Dexter, *The Listening Post*, 213 Forest Street, Lake Geneva, WI 53147 or email them to <gdex@wi.rr.com>. See the column text for formatting suggestions.

Radio Itatiaia, Belo Horizonte, Brazil, QSL'd for Bob Brossell.



Santa crashed his sleigh on the moon as pictured on this QSL from pirate Radio Jamba International, sent to Rich D'Angelo.



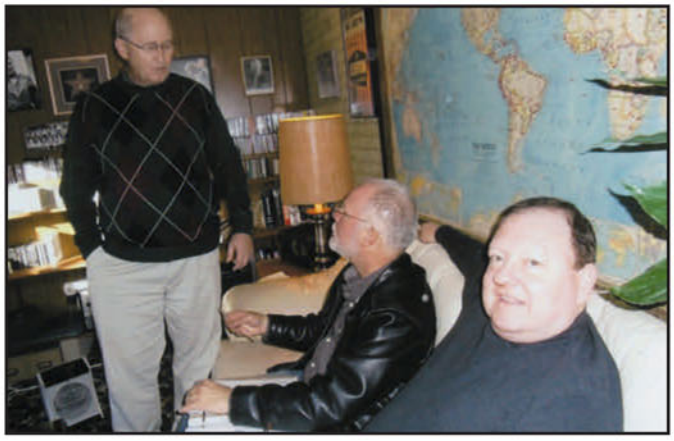
Pirate Boom Box Radio confirmed for Rich D'Angelo (who did not have his receiver riding on his shoulder).

Worldwide Missions Radio verified for D'Angelo who heard them via the IRRS, carried, in turn, over Radio Romania International.

John Miller (GA) got this nice sticker from Radio New Zealand International.

MONTHLY PRIZE

This month's prize winner is **Ralph Perry**, Wheaton, IL who prowls the bands in the wee small hours. "Ralphus" should appreciate the Yaesu coffee mug to help get him through the next 60-meter opening to the Andes. The mug, courtesy of Universal Radio, is just one of the hundreds of radio-related goodies featured in their nothing-short-of-spectacular hobby radio catalog, which you can receive free from Universal's website <www.universal-radio.com> or by calling (800) 866-4267 or, if you are extra energetic, by dropping your request to 6830 Americana Parkway, Reynoldsburg, OH 43068.



The holidays brought company to The Listening Post. From left: Ralph Perry (IL), Mike Nikolich (IL), and Bob Brossell, (WI).

Ralph Perry passes along a funny line during a December visit.

Mark Taylor (NASWA's Flasheet Editor) pays a visit to me at The Listening Post.

This Voice of Korea QSL confirms a reception on 15180.

know when these two will be activated, but the current schedule for **Radio Algerienne** shows activity on some of the same frequencies now being used for the Issoudun (France) site.

- In Brazil, **Radio Cancao Nova** is active again from Cachoeira Paulista on 4825.
- A new opposition broadcaster aimed at **Eritrea** is **Voice of the Forum of Eritreans** using 15245 and broadcasting on Tuesdays, Thursdays, and Saturdays from 1700-1800.
- **Radio Nacional,** Bata, Equatorial Guinea, has gotten itself back together and is using its old spot on 5005, opening at 0500 in Spanish and running straight through to 2300.
- Although there is still some confusion surrounding things, it seems **The Voice of Russia** will continue in English, at least throughout the year. The current time/frequency schedule can be found at: <http://bit.ly/1ee91cr>.

Now, It's Your Turn ...

Remember, your shortwave broadcast station logs are always welcome. But *please* be sure to double or triple space between the items, list each logging according to its home country, and include your last name and state abbreviation after each.

Also needed are spare QSLs or good copies you don't need returned, station schedules, brochures, pennants, station photos, and anything else you think would be of interest. And how about sending a photo of you at your listening post? *C'mon on. It's your turn to grace these pages.*

And for this Month ...

That's a wrap! An Everest of thanks to the following good guys who did the right thing this time: Robert Fraser, Belfast, ME; Harold Sellers, Vernon, BC; Charles Maxant, Hinton, WV; William Hassig, Mt. Pleasant, IL; Rich D'Angelo, Wyomissing and the French Creek Expedition, PA, PA; Mark Taylor, Madison, WI; Rick Barton, El Mirage, AZ; Steve Handler, Buffalo Grove, IL; Ralph Perry, Wheaton, IL; Chuck Rippel, Chesapeake, VA; Richard Parker, Pennsburg, PA; Richard Michael, Hartville, OH; Bob Brossell, Pewaukee, WI; and Fotios Padazopulos, Athens, Greece.

Thanks to each of you and, until next month — good listening and — keep on keepin' on. – *WPC9GLD.*

SWL Listings:
For the latest SWL loggings, visit: <http://www.CQPlusListeningPost.blogspot.com>.

Spring Finds at the CQ Store

FREE shipping on orders of $100 or more!

The Short Vertical Antenna and Ground Radial

by Sevick, W2FMI

This small but solid guide walks you through the design and installation of inexpensive, yet effective short HF vertical antennas. With antenna restrictions becoming a problem, it could keep you on the air!

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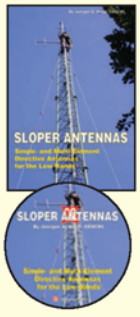

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world band tuning tips

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

This listing is designed to help you hear more shortwave broadcasting stations. The list covers a variety of stations, including international broadcasters beaming programs to North America, others to different parts of the world, as well as local and regional shortwave stations. Many of the transmissions listed here are not in English. Your ability to receive these stations will depend on time of day, time of year, your geographic location, highly variable propagation conditions, and the receiving equipment used.

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

UTC	Freq.	Station/Country	Notes
0000	9740	BBC, Singapore Relay	
0000	7350	China Radio International	
0000	7475	Greek Radio	GG
0000	3365	Radio Cultural, Brazil	PP
0000	9500	Radio Sultanate of Oman	AA
0000	15275	Radio Thailand	
0000	7465	Radio Tirana, Albania	Albanian
0000	5050u	WWRB, Tennessee	
0100	7375	The Mighty KBC, via Germany	
0100	4815	Radio Difusora Londrina, Brazil	PP
0100	5040	Radio Havana Cuba	SS
0100	5952	Radio Pio XII, Bolivia	SS
0100	5025	Radio Rebelde, Cuba	SS
0100	11905	Sri Lanka Broadcasting Corp.	Hindi
0100	9780	VOA, Sri Lanka Relay	
0100	5110u	WBCQ, Maine	
0100	7506	WRNO, Louisiana	
0100	5085	WTWW, Tennessee	
0100	3195	WWRB, Tennessee	
0200	9420	Greek Radio	GG
0200	11870	Islamic Republic of Iran Broadcasting	Uzbek
0200	9975	KVOH, California	
0200	9645	Radio Bandeirantes, Brazil	PP
0200	11780	Radio Nacional Amazonia, Brazil	PP
0200	6180	Radio Nacional Brasilia	PP
0200	9490	Radio Republica (to Cuba)	SS
0200	5910	Radio Romania Interntional	
0200	9730	Radio Taiwan Intl, via France	SS
0200	3200	TWR, Swaziland	Vern
0200	11625	Vatican Radio	
0300	11610	AWR, via Germany	Oromo
0300	9690	China Radio International, via Spain	
0300	4885	Radio Clube do Para, Brazil	PP
0300	6110	Radio Fana, Ethiopia	Ahmaric
0300	4765	Radio Progresso, Cuba	SS
0300	7460	Radio Pyam e Doost, USA, via Moldova	Farsi
0300	6055	Radio Rwanda	FF
0300	4976	UBC Radio, Uganda	
0300	5950	V of Tigray Revolution, Ethiopia	Tigrinya
0300	9660	Vatican Radio	
0300	9515	Voice of Turkey	
0400	5910	Al Caravan Radio, Colombia	SS
0400	3345	Channel Africa, South Africa	
0400	9470	Deutsche Welle, Rwanda Relay	
0400	6050	HCJB, Ecuador	SS
0400	7315	Radio Dabanga, via Vatican	AA
0400	9575	Radio Medi Un, Morocco	AA
0400	7205	Radio Omdurman, Sudan	AA
0400	3320	Radio Sonder Grense, South Africa	Afrikaans
0400	4055	Radio Verdad, Guatemala	SS
0400	4775	TWR, Swaziland	German
0400	7240	Voice of Turkey	
0400	4840	WWCR, Tennessee	
0500	6005	BBC, Ascension Relay	
0500	7295	Radio Algerienne, Algeria	AA
0500	6155	Radio Austria International	GG
0500	7275	Radio Tunis, Tunisia	AA
0600	9700	Radio New Zealand International	
0600	7300	TWR, Austria	
0600	3975	Vatican Radio	Latin
0900	9580	Radio Australia	
1000	6010	La Voz de Concencia, Colombia	SS
1000	3330	Ondas del Huallagua, Peru	SS
1000	9625	Radio Japan	
1000	5039	Radio Libertad, Peru	SS
1000	4810	Radio Logos, Peru	SS
1100	9430	Far East Broadcasting, Phillipines	
1100	4835	Northern Terirtory SW Svc., Australia	
1100	3925	Radio Nikkei, Japan	JJ
1100	4750	Radio Republic Indonesia	II
1100	17510	Radio Romania International	
1100	5875	Radio Thailand	Khmer
1100	9390	Radio Thailand	
1100	5020	Solomon Islands Broadcasting Corp.	
1200	4920	All India Radio	Tamil
1200	5010	All India Radio	Malay
1200	15040	All India Radio	Burmese
1200	15105	Bangladesh Betar	Bengali

UTC	Freq.	Station/Country	Notes
1200	9920	Far East Broadcasting, Philippines	unid
1200	15450	Islamic Republic of Iran Broadcasting	AA
1200	2850	Korean Central Broadcast, N. Korea	KK
1200	5150	MND Radio, Myanmar	Burmese
1200	7200	Myanmar Radio, Myanmar	Burmese
1200	2325	Northern Territory SW Svc., Australia	
1200	15710	Radio Cairo, Egypt	
1200	3905	Radio New Ireland, Papua New Guinea	Tok Pisin
1200	3325	Radio Republic Indonesia	II
1200	17530	Radio Romania International	
1200	6180	Radio Taiwan International	Mandarin
1200	9910	TWR, Guam	CC
1200	6045	VOA Relay, Thailand	Mandarin
1200	11750	VOA, Phillipines Relay	
1200	6115	Voice of Russia	Mandarin
1200	5885	Voice of Russia, via Tajikistan	
1200	4940	Voice of the Strait, China	CC
1200	11665	Wai FM, Malaysia	
1300	5765u	Armed Forces Radio, Guam	
1300	15310	BBC, Oman Relay	
1300	9900	BBC, Singapore Relay	
1300	7365	China National Radio	Mandarin
1300	9400	Far East Broadcasting, Philippines	
1300	15575	KBS World Radio, South Korea	
1300	7590	N. Korean Reform Radio, via Uzbekstn	
1300	9300	Radio Free Chosun, (to North Korea)	KK
1300	7405	Radio Marti, USA	SS
1300	5950	Radio New Zealand International	
1300	6055	Radio Nikkei, Japan	JJ
1300	6240	Sound of Hope, Taiwan	Mandarin
1300	9930	T8WH, Palau	
1300	9975	TWR, Guam	Mandarin
1300	7235	VOA, Philippines Relay	KK
1300	9435	Voice of Korea, North Korea	
1400	15285	Athmeeya Yatra Radio, via Germany	Vern
1400	21540	Radio Exterior Espana, Spain	SS
1400	6170	Radio New Zealand International	
1400	9595	Radio Nikkei, Japan	JJ
1400	15530	Radio Veitas Asia, Philippines	Urdu
1400	12130	Radio Free Asia, Sri Lanka Relay	VV
1400	12065	Radio Australia	
1400	7490	WWCR, Tennessee	
1400	13845	WWCR, Tennessee	
1400	15420	BBC	Somali
1500	15265	AWR, via Germany	
1500	13695	BSKSA, Saudi Arabia	AA
1500	15245	China Radio International	
1500	17775	KVOH, California	
1500	13810	Overcomer Ministry, via France	
1500	11730	Radio Belarus	RR
1500	15385	Radio Exterior Espana, Spain	SS
1500	15340	Radio Havana Cuba	SS
1500	21540	Radio Kuwait	AA
1500	15320	Radio Veritas Asia, via Vatican	Tagalog
1500	15550	WJHR, Florida	
1600	9595	All India Radio	RR
1600	11890	AWR, via Austria	Urdu
1600	9505	BBC, Oman Relay	
1600	15205	BSKSA, Saudi Arabia	AA
1600	17560	BSKSA, Saudi Arabia	AA
1600	11715	KJES, New Mexico	
1600	9915	Radio Free Asia, N. Marianas Relay	Mandarin
1600	11815	Radio Japan	JJ
1600	15410	Radio Sultanate of Oman	AA
1600	9680	Radio Taiwan International	Mandarin
1600	17630	Radio Xoriyo, via France to Ethiopia	Somali
1600	15570	Vatican Radio	
1700	13710	BSKSA, Saudi Arabia	AA
1700	15235	Channel Africa, South Africa	
1700	15365	ESAT Radio, via Bulgaria to Ethiopia	Amharic
1700	11750	Radio Romania International	Romania
1700	15690	Radio Taiwan Intl, via France	
1800	15150	Far East Broadcasting via Ascension	FF
1800	15190	Radio Africa, Equatorial Guinea	
1800	11955	Radio Algerienne, via France	AA
1800	13715	VOA/Afia Dafur, Sri Lanka Relay	AA
1800	9840	WHRI, Indiana	
1900	13665	All India Radio	
1900	11750	AWR, via South Africa	
1900	15540	Radio Kuwait	
1900	15580	VOA, Botswana Relay	
1900	17790	WRMI/Radio Africa, Florida	
2000	15480	AWR, via Madagascar	AA
2000	9915	BBC, Ascension Relay	
2000	9800	Deutsche Welle, Rwanda Relay	
2000	5950	Radio France International	FF
2000	13765	Vatican Radio	
2000	9690	Voice of Nigeria	
2000	11735	ZBC Radio, Zanzibar	Swahili
2100	7550	All India Radio	
2100	9445	All India Radio	
2100	11670	All India Radio	
2100	5960	China Radio Internatonal, via Albania	
2100	9530	Far East Broadcasting, via Ascension	
2100	6060	Islamic Republic of Iran Broadcasting	
2100	6080	Radio Anhanguera, Brazil	PP
2100	11665	Radio Japan	JJ
2100	9620	VOA Relay, Philippines	Unid
2100	9815	VOA, Sao Tome Relay	FF
2100	5930	Voice of Vietnam, via Germany	VV
2100	6175	Voice of Vietnam, via UAE	GG
2200	6100	Intl Radio of Serbia, via Bosnia	
2200	9805	KBS World Radio, South Korea	II
2200	9855	Radio Australia, via UAE	
2200	5860	Radio Farda, Sri Lanka Relay	Farsi
2300	9890	BBC, Thailand Relay	
2300	4800	China National Radio	CC
2300	5990	China Radio International	
2300	6160	CKZN, Canada	
2300	9855	Radio Australia, via UAE	
2300	4875	Radio Difusora Roraima, Brazil	PP
2300	9620	Radio Exterior Espana, Spain	SS
2300	4781	Radio Oriental, Ecuador	SS
2300	9655	Radio Romania International	SS
2300	5010	Radio Taiwan International	Mandarin
2300	11765	Super Radio Deus e Amor, Brazil	PP
2300	11860	VOA, via N. Marianas Relay	

disaster dxing

BY MEHMET BURK*

Come 'Inside' the Experiences of Extreme Weather and Humanitarian Relief Operations Worldwide

I grew up fascinated by both shortwave listening and scanning, and these interests helped to cultivate a career-long interest in emerging disasters and humanitarian operations. I am a firm believer that radio is a medium that adds tremendous value to disaster analysis.

Radio, in all of its variations, offers a window to wide audiences that takes listeners inside the humanitarian experience. I've been a practitioner in the humanitarian and relief community for more than a decade, and am the author of the website, <http://www.ReliefAnalysis.com>, **Photo A**.

In the inaugural *Disaster DXing,* I highlight Australia and Oceania — regions with fascinating ongoing developments in extreme weather and humanitarian work that can be monitored throughout the radio spectrum.

My methodology focuses on analyzing international disaster and severe weather early warning alerts, then recording related audio clips through a variety of formats — my own equipment, streaming Internet sites, and cloud-based services, such as TuneIn Radio, Scanner Pro, Global Tuners, Weather Underground, and so on. Please contact me any time with any questions or suggestions — I'd be delighted to hear from you. Contact me at <nburk@reliefanalysis.mygbiz.com>.

* *email <nburk@reliefanalysis.mygbiz.com>*

Photo A. *Disaster DXing columnist Mehmet Burk oversees <http://www.ReliefAnalysis.com>, a website comprehensively tracking disasters and potential disasters from around the world. (Internet screen grab)*

Focus: Australia and Oceania

Australia and Oceania represent extraordinary targets to monitor from an extreme weather and disaster perspective. Australia not only has a large portfolio of hazards to monitor, but is data rich in content across many bands in the radio spectrum. Many parts of Oceania have a very high vulnerability to natural disaster, and radio is still the most important form of media throughout the region, <http://bit.ly/M9DP7o>.

Australia

Australia is highly susceptible to the impacts of climate change and severe weather — 2013 was documented as the continent's warmest on record. Droughts, heat waves, brushfires, severe floods, and cyclones are some annually-occurring hazards. In fact, climate change is a main driver for why Australia must double its firefighting force by 2030, **Photo B**.

Recently, severe brush fires have raged under record-setting temperatures in South Australia, as well as in Victoria and Queensland. On January 19, ABC News Australia's 0400 UTC news bulletin could be heard on 972 kHz in Adelaide providing a comprehensive overview of current brushfire outbreaks, as well as the overall lengthening of the brushfire season in general. ***(LISTEN:*** *<http://bit.ly/1bWspxN>. – MB.)*

On February 2, Adelaide recorded its hottest February day on record, with temperatures soaring to 112° F, and grassfire outbreaks triggering evacuations and destroying homes. Over the next several days, the South Australian Government Information Network, a UHF trunking system for the region, was extremely active with firefighters responding to numerically-sequenced brushfire incidents, operating within a structured command system, and conducting fire reconnaissance. ***(LISTEN:*** *<http://bit.ly/1IBYQoa>. – MB.)*

Warning messages from the South Australia County Fire Service are relayed to residents via local AM and FM commercial stations in 15-minute intervals, per a standing Memorandum of Agreement between Emergency Services agencies and

Photo B. *Authorities in Australia predict they will have to double their firefighting force by 2030. (Courtesy of Wikimedia Commons)*

broadcasters. During brushfire outbreaks, residents are urged to monitor the situation using a battery-powered radio.

In the event of a major land-falling cyclone, Australia's firefighting force also serves as the primary responder to conduct life safety and swift water and Search and Rescue Operations. As Australia's 2014 cyclone season got underway, the Bureau of Meteorology's HF marine warnings could be heard providing advisories from its transmitters in Wiluna and Chareville.

On December 29, the Wiluna transmitter station was logged on 12.362 MHz in USB at 2000 UTC describing the approach and strengthening of Cyclone Christine off the continent's northwest coast. Christine was only the third cyclone to gain Category 3 strength on the Australian scale so early in the storm season. *(**LISTEN:** <http://bit.ly/1dIfKQ9>. – MB.)*

On January 29, a monsoonal system that brought heavy rain to the southern islands of Vanuatu approached Australia from the Coral Sea. The Wiluna HF Marine station broadcast rough seas warnings from this system on 8.113 MHz in USB at 1900 UTC. *(**LISTEN:** <http://bit.ly/1biuFl0>. – MB.)*

Over the next few days, the monsoonal system traveled through Australian waters, and approached the Great Barrier Reef and Queensland Coast, before finally strengthening into Cyclone Dylan and making landfall south of Ayrs with strong winds and heavy rains — but not enough rain to roll back Queensland's severe drought, **Photo C**.

At 0245 UTC on January 31, the Coast Guard station at Cairns could be heard transmitting the latest Bureau of Meteorology cyclone forecasts and marine warnings in the VHF band. *(**LISTEN:** <http://bit.ly/1djGQ03>. – MB.)*

Oceania

Oceania, including Micronesia, Melanesia, and Polynesia, represents a fascinating area to monitor disasters and humanitarian operations. Tsunamis, earthquakes, floods, severe cyclones, and drought are among the ongoing hazards that the region's small island nations and states must face. Radio is an extremely important form of media throughout the region, through local medium-wave and FM outlets, and in the shortwave bands are via Radio New Zealand International, Radio Australia International, and China Radio International, **Photo D**.

When extremely powerful Cyclone Ian approached Tonga on January 9, Radio New Zealand International interviewed meteorologists from the Fiji Meteorological Services who predicted "catastrophic winds." *(**LISTEN:** <http://bit.ly/M9H7Hy>. – MB.)*

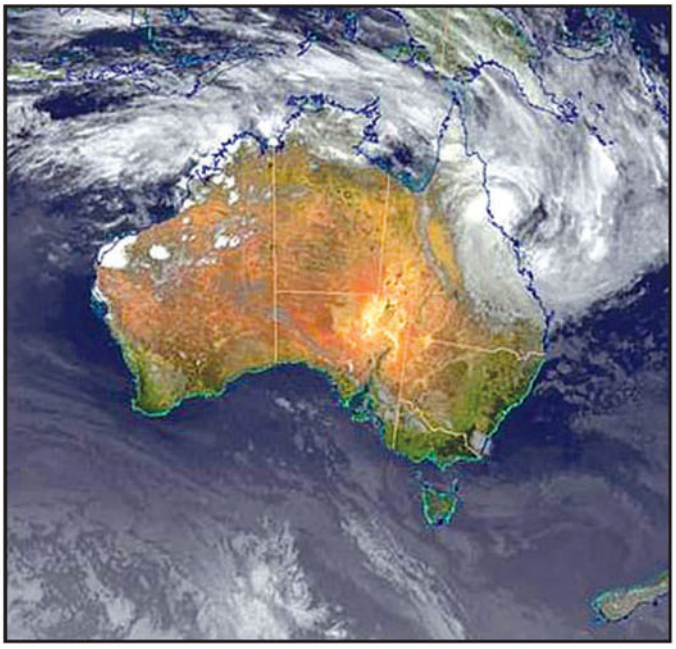


Photo C. *Cyclone Dylan made landfall south of Ayrs, Australia with strong winds and heavy rains. Unfortunately, the storm did not bring enough precipitation to ease Queensland's severe drought. (Courtesy of Australian Bureau of Meteorology)*

what's new

Cycle 24's New Saddle Clamps

Cycle 24 has introduced the Cycle 24 Galvanized Economy Saddle Clamp, a U-bolt clamp that is inexpensive and designed to stand up to the harsh outdoor environment.

Constructed of galvanized stainless steel, the clamps feature serrated flange nuts for locking power. Clamps with 3/8-inch diameter U-bolts have flat surfaces at the top of the bolt for improved grip on the tubing. Clamps for 3- to 3.5-inch tubing have saddles that are closed and spot-welded on the ends before galvanizing. This increases clamp strength longevity.

The clamps are available for 1.25-, 1.5-, 1.75-, 2-, 2.25-, 2.5-, 3-, and 3-5-inch diameter tubing. Clamps with 5/16-inch diameter U-bolts are suitable for plates up to 3/16-inch thick when using saddles, and 0.25-inch-thick plates if saddles are not used. Clamps with 3/8-inch diameter U-bolts will accommodate plates up to 9/16-inch thick.

DXEngineering is the exclusive distributor for the Cycle 24 Saddle Clamps. For more information, contact: Summit Racing, 1200 Southeast Avenue, Tallmadge, OH 44278. Phone: (800) 777-0703. Website: <http://www.dxengineering.com>.

Note: *"What's New" is not a product review and does not constitute a product endorsement by CQ. Information is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of "What's New" is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*

Ian bared down on Tonga as an extremely dangerous Category 4 storm, ultimately displacing half of Tonga's population during sheltering operations.

Radio New Zealand International's content can be heard on a number of platforms — broadcasting at 11725 kHz to Tonga, streaming over its website, or made available to local Tonga media outlets including Radio Tonga's medium-wave outlet on 1017 kHz. According to Radio Tonga's website, a local 24-hour news coverage format can occur in the event of a land-falling cyclone.

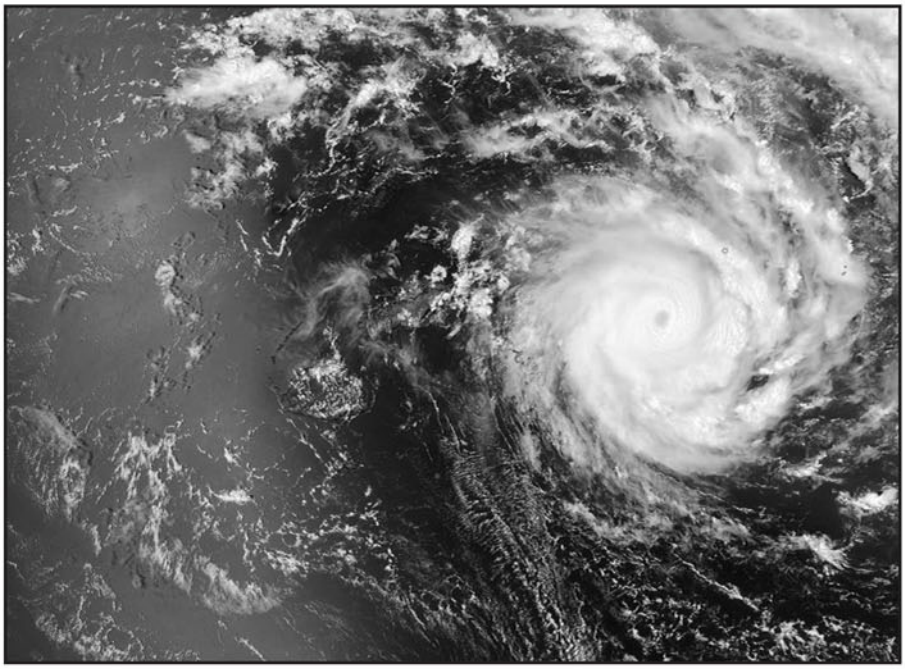


Photo D. *With Cyclone Ian's approach to Tonga on January 9, Radio New Zealand International interviewed meteorologists from the Fiji Meteorological Services who predicted "catastrophic winds."*
*(**LISTEN:** <http://bit.ly/M9H7Hy>. – MB.) (Courtesy of NASA)*

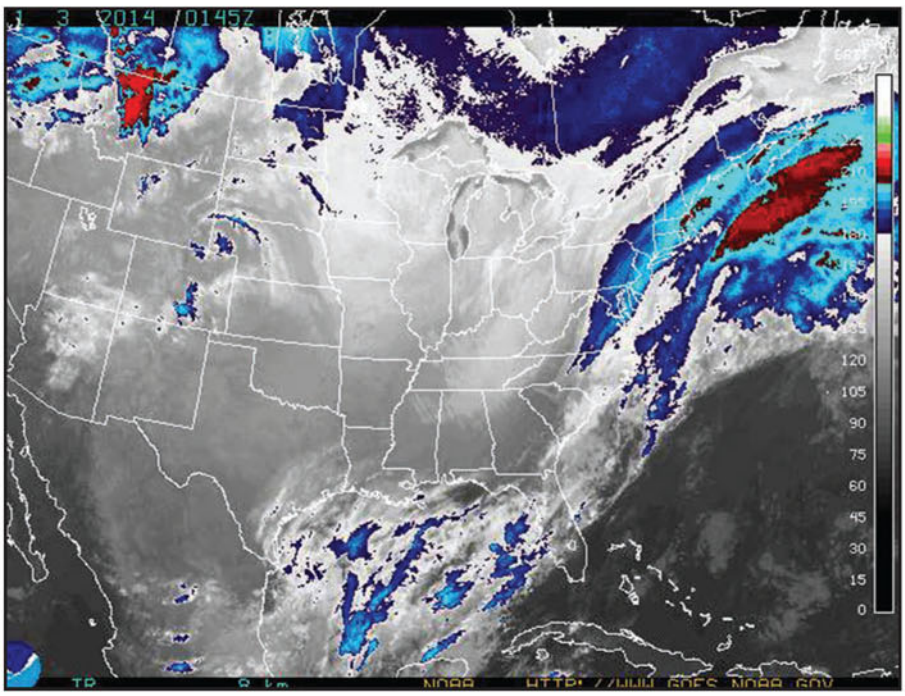


Photo E. *During Weather Channel-named winter storm Hercules in early January, NOAA Weather Station KHB35 out of Blue Hill Observatory near Boston, Massachusetts documented near-blizzard conditions. (**LISTEN:** <http://bit.ly/1gANiAs>. – MB.) (Courtesy of NOAA/National Weather Service)*

Photo F. *UN Radio described collaboration between UN Agencies, NGOs, and the private sector to help provide winter clothes to displaced Syrians in Za'atari refugee camp. (**LISTEN:** <http://bit.ly/1jOh33Y>. – MB) (Courtesy of the Office of UN High Commissioner for Refugees)*

During Ian's recovery phase, rebuilding from the storm was not the only complication for Tonga. Severe drought may be setting in near the cyclone impact zone. Drought can have crippling consequences for Pacific Island nations and states as seen most recently in the Republic of the Marshall Islands. *(**IN DEPTH:** Read Mehmet Burk's analysis at <http://bit.ly/1cmhQEk>. – KCQ6CQ.)*

In follow-up coverage by Radio New Zealand International, if a drought develops in the cyclone impact zone it could have major implications for food and water security in the months to come. *(**LISTEN:** <http://bit.ly/1fvSzVR>. – MB.)*

In the northernmost area of Polynesia, the Hawaiian Islands endured bouts of unsettled weather in February 2014. While not reaching a disaster level, this clip from station KBA99 on 162.400 MHz from Honolulu describes flash flood watches, high wind advisories for volcano summits, and high surf advisories. In the winter months, an occasional winter weather warning for the volcano summits on the Big Island and even Maui are possible. *(**LISTEN:** <http://bit.ly/1c1aCCB>. – MB.)*

I have one request of readers: I have found the English shortwave broadcasts of Radio Vanuatu out of Port Vila and the Solomon Islands Broadcasting Service out of Honiara to

Photo G. *In an interview with Mehmet Burk, SWLing.com's Tom Witherspoon, notes: "Shortwave radio, though often regarded as a legacy medium, continues to offer several key advantages over the Internet and mobile digital platforms. First and foremost among these advantages is what shortwave radio doesn't need: no apps, no subscriptions, no mobile phone, nor Internet connection are required to deliver information worldwide." (Internet screen grab <http://bit.ly/1nQr7tg>)*

be extremely elusive targets to monitor. If anyone has successfully DX'ed these stations and has a perspective on if they provide local disaster coverage, please contact me through my bio on this page.

From Around the World

United States. This winter, the term "polar vortex" became a media sensation after frigid arctic temperatures plunged into North America. On January 5, NOAA Weather Station WXJ88 in Menomonie, WI (162.400 MHz) forecast wind-chill values as low as -60° F during the peak of the polar vortex episode. *(**LISTEN:** <http://bit.ly/1bISt1J>. – MB.)*

Over the past two years, winter storms have received name classifications from Weather.com, and these names have often gone viral in the mainstream press. *(**LISTEN:** <http://bit.ly/1geEg9Y>. – MB)*

About the Columnist

Disaster DXing's Mehmet Burk, of ReliefAnalysis.com

Disaster DXing's Mehmet Burk has worked in refugee resettlement, applied disaster research, and disaster management since 2001. His experience ranges from working on displacement issues in the Middle East to tsunami early warning programming in the Asia-Pacific region. He has worked in disaster warning and relief ranging from tsunamis to hurricanes to tornadoes.

ReliefAnalysis.com, founded by Burk in 2012, <http://www.ReliefAnalysis.com> produces analysis on emerging international disasters, climate change, extreme weather, and relief operations. Through cross-post partnerships with outlets in the climate change and humanitarian communities, some of these pieces have been published on AccuWeather.com, and have been referenced on the *Huffington Post* and in *Foreign Policy* magazine.

Burk's interest in the international aspect of humanitarian work is a direct result of listening to shortwave broadcasting as young child in the 1980s on a Realistic DX-360 that still functions to this day. His interest in operational disaster management has origins in his subsequent interest in VHF/UHF scanning.

Starting this year, Burk is integrating audio clips streamed from the long-wave, shortwave, medium-wave, FM, and VHF/UHF bands into his humanitarian analysis and writing.

These audio clips allow readers to "go inside" the experience of extreme weather and humanitarian operations. Conversely, these clips are a testament to shortwave listeners, DXers, and scanner enthusiasts of the vital impact of the radio medium on humanitarian work worldwide, as well.

Burk is a strong proponent of how the shortwave bands can play a vital role in the future of international humanitarian work as shown in his recent article for <http://www.InterAction.org>. Link to it at: <http://bit.ly/1nQr7tg>.

Contact Mehmet Burk by visiting ReliefAnalysis.com and using the opt-in box to subscribe to regular updates, or you may send him an email at <nburk@reliefanalysis.mygbiz.com>.

During winter storm Hercules, **Photo E**, on January 2, NOAA Weather Station KHB35 out of Blue Hill Observatory near Boston, Massachusetts documented near-blizzard conditions. *(**LISTEN:** <http://bit.ly/1gANiAs>. – MB.)*

On January 29, winter storm "Leon" brought much of the U.S. South to a standstill — creating the worst traffic incident in Atlanta since the 1982 "Snow Jam," according to Dr. Jeff Masters from the Weather Underground. Thousands of motorists were stranded in icy conditions. In one clip of VHF/UHF radio traffic from Atlanta Police Zones 2 and 5, police responded to an incident of a water main breaking behind a commercial establishment that housed 250 stranded motorists.

Syria. Syria's incredible displacement patterns continued as the region endured cold winter conditions throughout the winter months, **Photo F**. A report from UN Radio described collaboration between UN Agencies, NGOs, and the private sector to help provide winter clothes to the displaced in Za'atari refugee camp. *(**LISTEN:** <http://bit.ly/1jOh33Y>. – MB)*

Philippines. Tropical Depression Lingling brought substantial rainfall to the Philippines in January 2013, including the areas devastated by Super Typhoon Haiyan in October 2013. According to UN Radio, more than 100,000 internally displaced persons uprooted by Haiyan remain in camps, a situation deemed "unacceptable" according to the United Nations Office for the Coordination of Humanitarian Affairs. *(**LISTEN:** <http://bit.ly/1j8BsxC>. – MB)*

China. The development of a new strain of bird flu virus, HN79, remains a major issue to watch over the coming months. UN Radio documented an alert by the World Health Organization to China's neighbors ahead of Lunar New Year celebrations as very large numbers of people and poultry were on the move. *(**LISTEN:** <http://bit.ly/1e4uW5T>. – MB)*

*(**NOTE:** While UN Radio no longer broadcasts in the shortwave spectrum, its outstanding repository of humanitarian news is available for free at its website for broadcasters and individuals alike, <http://bit.ly/1dCqm2s>. – MB)*

Elsewhere. Indonesia suffered severe flooding, as did Brazil and other nations in South America. In Africa, crises in the Central African Republic and South Sudan continued to escalate. I look forward to covering these events in an upcoming column.

Thoughts on the Humanitarian Future of Shortwave Radio

We wrap up *Disaster DXing* noting a piece I wrote for <http://www.InterAction.org>, which is a coalition of more than 300 NGOs from the developing world.

In the article, I interviewed Thomas Witherspoon of <http://www.SWLing.com>. My perspective is that the international humanitarian community can *and should* play a major role in shaping the future of shortwave radio. *(**IN DEPTH:** Read Mehmet Burk's full article at <http://bit.ly/1nQr7tg>, **Photo G**. – KCQ6CQ)*

In my work for <http://www.ReliefAnalysis.com>, I use a variety of resources ranging from the World Meteorological Organization, to UN ReliefWeb, to other international public domain early warning agencies.

Content streams from these agencies could provide an excellent shortwave "beacon" of internationally-sanctioned humanitarian information worldwide, and would be extremely useful to relief organizations and the populations they serve.

Witherspoon also makes a compelling argument of the relevance of shortwave radio. His perspective is found on *The SWLing Post* at <http://bit.ly/1gRE2Hv>.

BY CORY GB SICKLES, *WA3UVV

Time for Another Kind of 'Novice Roundup?'

With its announcement in the January 1952 edition of *QST,* the ARRL Novice Roundup began a wonderful 40-plus-year run as an annual contest geared toward newcomers to amateur radio, **Photo A**.

Novice licensees were encouraged to get on the air during a designated two-week period and work as many of their fellow Novices and old-timers as they could, in as many ARRL sections as they could. In 1952 there were just 72.

The operators would participate in the Roundup for up to 40 hours during its two weeks. *NR,* as it was known, was a very popular contest that, unfortunately, had run its course by 1995. Today it's called the *Rookie Roundup* and is a whole different thing.

Not surprising: The last Novice license was issued in 2000, ending quite an era in amateur radio. It had been the doorway into amateur radio fun in the United States since 1951.

Through a series of upgrades to operating privileges — mostly aimed at the Technician class license — the FCC streamlined ham radio to include only three classes, instead of 5+. ***(IN DEPTH:*** *See "Off the Air" in the August 2013 edition of WorldRadio Online: "Testing 1,2,3: Ham Cram vs. Deep End of the Pool." – WA3UVV.)*

* Email: <WA3UVV@gmail.com>

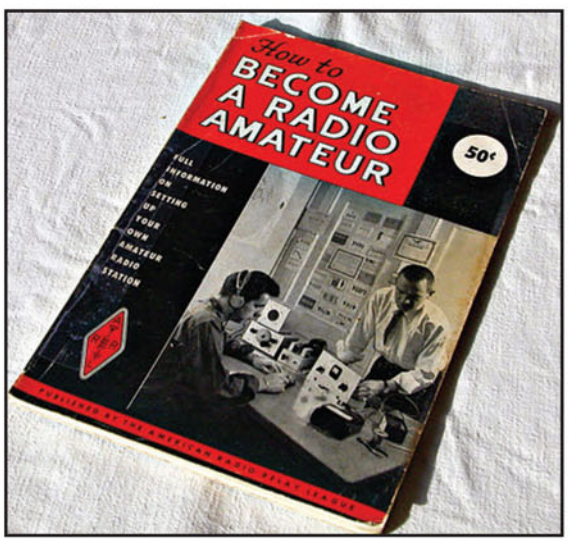


Photo A. *The black-and-white picture of the amateur station on the cover of the 1956 edition of the ARRL's "How to Become a Radio Amateur" captures the flavor of a bygone Novice era. Over the years, many newcomers built the simple two-tube regenerative receiver and 6DQ6A oscillator-transmitter featured in the popular book. (Courtesy of KI6SN)*

The Novice Ticket's Mission

For reference, the Novice license was originally designed as a minimalist means of getting on the air and getting some experience within a limited timeframe that required an upgrade or loss of license within a year. As it evolved, the Novice was limited to a few narrow windows of CW spectrum and crystal-controlled transmitters that were not to exceed 75-watts input. That's about 40-watts output, given the technology of the day. Many assembled their stations from kits, or homebrew transmitters, with used receivers.

In the beginning, the Novice ticket was only good for one year and was not renewable.

It may not sound like much potential for fun, but it was. More importantly, we learned things. Most Novices had a better understanding of electronics, respect for high-voltages, antenna design knowledge and a plethora of other information than most entering the hobby today.

One of the main factors drawing folks into amateur radio in years past was that they had experimented with electronics *before* they discovered hams. Today, it seems to be ham radio first, then some learning along the way.

A Wonderful Privilege

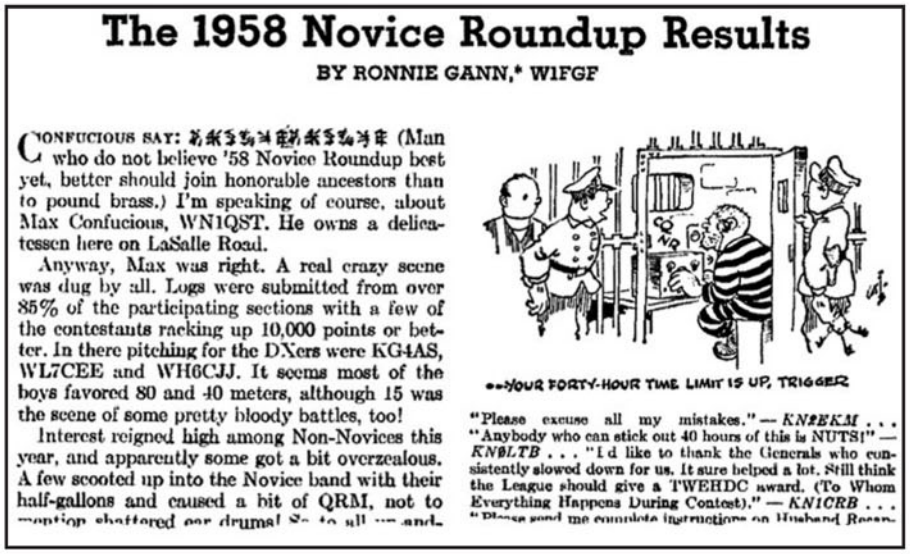
One thing that Novices — in fact, all U.S. hams — enjoyed as an advantage over those entering amateur radio in other countries, was that even our most basic license class allowed us to build our own equipment. In other nations, this was not necessarily so. In Canada, for example, the "Basic" or "Basic with Honours" qualification does not allow radio amateurs to build their own transmitter "from scratch." For that, they must have the "Advanced" qualification.

The "Foundation" license in the U.K. is similar in that putting your first transmitter on the air most likely will involve writing a *cheque* or reciting the numbers on a plastic card — not warming up a soldering iron.

There is a provision for certain "approved" kits, but not the "scrounging parts from an old TV set" approach. ***(MORE:*** *See "Internationally: Foundation for Change" accompanying this column. – WA3UVV.)*

Missing an Opportunity

The fact is most U.S. Technician licensees don't build their first station. They buy the equipment — most likely a handheld radio capable of 2-meter FM



The 1958 Novice Roundup Results

BY RONNIE GANN,* W1FGF

CONFUCIOUS SAY: [illegible] (Man who do not believe '58 Novice Roundup best yet, better should join honorable ancestors than to pound brass.) I'm speaking of course, about Max Confucious, WN1QST. He owns a delicatessen here on LaSalle Road.

Anyway, Max was right. A real crazy scene was dug by all. Logs were submitted from over 85% of the participating sections with a few of the contestants racking up 10,000 points or better. In there pitching for the DXers were KG4AS, WL7CEE and WH6CJJ. It seems most of the boys favored 80 and 40 meters, although 15 was the scene of some pretty bloody battles, too!

Interest reigned high among Non-Novices this year, and apparently some got a bit overzealous. A few scooted up into the Novice band with their half-gallons and caused a bit of QRM, not to mention shattered ear drums! So to all we send

—YOUR FORTY-HOUR TIME LIMIT IS UP, TRIGGER

"Please excuse all my mistakes." — *KN#EKM* . . . "Anybody who can stick out 40 hours of this is NUTS!" — *KN9LTB* . . . "I'd like to thank the Generals who consistently slowed down for us. It sure helped a lot. Still think the League should give a TWEHDC award. (To Whom Everything Happens During Contest)." — *KN1CRB* . . . "Please send me complete instructions on Husband Recog-

Photo B. *For 43 years, the ARRL-sponsored Novice Roundup was a popular contest geared toward newcomers to amateur radio. Each year Novices and old-timers alike would eagerly — and anxiously — await the results, which were printed in QST. (Reprinted with permission from August 1958 QST; copyright ARRL)*

operation. Techs have high-frequency privileges, with CW on 80, 40, 15, and 10 meters in the General sub-bands, plus SSB on 10 meters, as well. Interestingly — *so do Novices.*

While we haven't issued a Novice license in 14 years, there are still more than a few in existence. The last number I saw puts the count at just above 13,000. The number goes down each time it is updated — from Silent Keys, those who lost interest and didn't renew, or through a license upgrade. ***(ASIDE:*** *Want to get the average Volunteer Examiner to scratch his or her head? Ask what the temporary suffix should be for a Novice that upgrades to Technician. – WA3UVV.)*

The Novices of Today

Of course, there are those who are perfectly happy as Novices. As a renewable license with all of the HF CW opportunities as Technicians, plus slightly limited privileges on 222 and 1240 MHz, they may be perfectly content with things the way they are. But what percentage of them, are truly active?

My primary amateur radio club used to have more than a few Novices as members. Today, we don't. Some of the reasons just cited account for the changes, but what about current license holders who aren't actively participating on the air or socializing with others?

Through websites such as <http://www.QRZ.com> it's easy to list hams according to towns or postal codes. Take a look at the areas your club covers. See any Novices you don't know?

Reaching Out

Maybe a nicely-worded email, postcard, or letter inviting them to your next meeting or lunch would be welcomed. Think of this project as a new take on

what's new

Fairview Microwave's New Line of Attenuators and Cables

Fairview Microwave has released a new line of compact hot-switchable variable attenuators. The new line of variable switch attenuators comes in 3- and 6-GHz frequency models and several different connector configurations including SMA and N-type connectors with side or rear mount position.

Several of these attenuators are hot-switchable, meaning attenuation can be changed on the fly without powering down the system, allowing test data to be read continuously.

Other models come with varying attenuation adjustments including 0-to 12-dB attenuation in 1-dB steps and 0- to 40-dB attenuation in 10-dB steps, with other options available upon request.

Moving from the innards to the pipes Fairview also introduced a new line of armored coaxial test cables that are designed for punishing conditions in the field.

The new armored cables can be ordered with SMA or N-type connectors that are constructed with stainless steel. The SMA test cables are designed to operate to 20 GHz while the N-type operate up to 18 GHz. The test cables are constructed with triple-shielded coax with an expanded PTFE dielectric. Despite having a stainless steel jacket, the new armored cables are also manufactured with a flexible coaxial cable allowing it to bend and flex repeatedly without degrading the electrical signal.

The armored assemblies are available in several standard lengths from 24 to 60 inches. Other lengths, including metric, are also available. For more information, contact: Fairview Microwave, 1130 Junction Drive, Suite 100, Allen, Texas 74013. Phone: (800) 715-4396. Email: <sales@fairviewmicrowave.com>. Website: <http://www.fairviewmicrowave.com>.

P1dB Now Has Full Line of PIM Adapters

P1dB has announced that the company is releasing a full line of low-PIM adapters within its P1LP-ADP line. Available for 7/16 and Type-N within-series applications and 7/16 between-series (Type-N and SMA) applications, the new line of adapters complements P1dB's low-PIM cable assemblies.

These coaxial adapters feature precision-machined brass bodies and contacts. The bodies of the adapters are silver-plated phosphorus bronze and offer the same low PIM performance as silver without the tarnishing. Contacts are either silver-plated beryllium copper or silver-plated beryllium copper over phosphorus bronze.

For more information contact: P1DB, Inc., 188 Martinvale Lane, San Jose, CA 95119. Phone: (408) 414-1450. Email: <sales@p1db.com>. Website: <http://www.p1db.com>.

Note: *"What's New" is not a product review and does not constitute a product endorsement by CQ. Information is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of "What's New" is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*

WN7EHX, Patsy Wright, age 13.

WN7EHX, Patsy Wright, age 14, has just finished the 8th grade at Irving Junior High School in Salt Lake City, Utah. Patsy came up with her Novice license a year ago this month and since then it has been a real tug of war between homework and ham radio. In the February Novice Roundup Patsy worked 10 new States and made 2573 points gained by 31 sections plus the 15 wpm CPC. She uses an xtal on 3595 or 3578 with 50 watts in a rig her dad, W7POU, built. Pat plays the accordion and has been on TV with two professional accordion groups.

Photo C. *Thirteen-year-old Patsy Wright, WN7EHX, made the pages of CQ in July 1957 as a Novice Roundup participant. In February she "worked 10 new states and made 2,573 points" in the NR, "gained by 31 sections, plus the 15 words-per-minute Code Proficiency Certificate." (Courtesy of CQ)*

the Novice Roundup contest of 1952-1995. See how many Novices you can corral and encourage as new friends. They may upgrade or may not, but at least they'll have the opportunity to be more involved in amateur radio and your club.

Looping back just a bit to my "technology rant" from *WRO's Off the Air* in August 2013, many schools and youth organizations have SET (Science, Engineering, Technology) or STEM (Science, Technology, Engineering, Mathematics) as focus programs.

Take a look at the Boy Scouts or 4-H and you'll see examples of these, in one form or another. Now let's think about the entire curriculum covered in schools that amateur radio fits into: math, general science, geography, physics, history, sociology, and foreign languages — *get the idea?*

Amateur radio can be an asset to teaching all these subjects, plus social skills and more — especially for the home-schooling parent. Start with a page of math problems with Ohm's Law as the topic. Another might be an exercise for determining dipole and delta loop lengths at various frequencies.

Maybe develop a practice sheet of greetings, numbers, signal reports, letter pronunciations, and common phras-

Internationally: A Foundation for Change

By Cory GB Sickles, WA3UVV/WPC2CS

For those people in countries outside the U.S. with basic licenses that don't allow newcomers to build kits or even use equipment sold as a kit and built by someone else, may I offer a suggestion: *Change that.*

While there are laughable stories of Novices in the U.S. tuning up transmitters on harmonic, instead of fundamental frequencies, or building a transmitter with more clicks than a computer mouse, today they are far and few between. Besides, that's how most of us learn — *through our mistakes.*

Modern transmitter designs have filters that discourage unwanted emissions. You don't really hear about dirty, chirping signals anymore. Urging interested citizens in your nation to become hams and build at least some of their own gear encourages engineering, provocative thinking, keeps kids from getting bored and into the kinds of trouble that boredom encourages, and stimulates international goodwill. Rules that are based on limited thinking about antiquated technology should be eliminated.

Placing such limits on curious youth that like experimenting and experiencing the joy of turning a bunch of parts into a tool for reaching beyond national borders is detrimental to those individuals and society as a whole.

Not as an American trying to tell the rest of the world how it should handle its domestic affairs — but as one ham respectfully attempting to improve things for other hams — I ask you to work to eliminate the limitations as they may be codified where you live.

If someone in Canada earns their "Basic with Honours," I think they've demonstrated that they can be trusted, with some Elmering, to build a simple low-power transmitter — especially any of the kits I see on the market today.

If that person is already an SWL with a decent receiver, think how inexpensively he or she could be on the air. These newcomers could gain additional "hands on" knowledge and encouragement to pass the more advanced test for full privileges. *(**WAIT A MINUTE:** Lest someone gets the wrong idea, I'm not picking on Canadians — it's just they're our neighbors and I feel I know them a little better. – WA3UVV.)*

If I'm wrong or missing some valid point of why your government still has such limitations, I welcome your opinion and education. But if you can't think of one, then perhaps you can be the start of change. In any case, I enjoy hearing from readers and welcome your thoughts and insights.

One more thing while I'm thinking internationally: Kit suppliers looking to increase their sales might want to offer guides and manuals in French and Spanish, as well. You might get some foreign language teachers to help out.

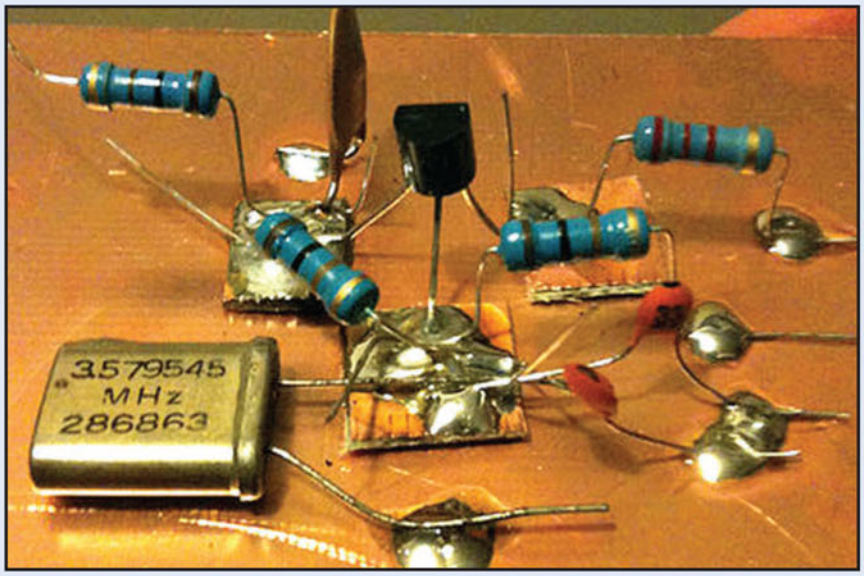


Photo D. *This little crystal-controlled oscillator could be the first step in building a transmitter for amateur radio — if your country's radio regulations allow it. (Courtesy of Wikimedia Commons)*

es in *Français*, *Español* or *Nihongo*. Learning CW would be a bonus, as something to know that not everyone else knows!

There are plenty of inexpensive kits available that could help teach and get a new ham on the air for minimal costs. CW is extremely spectrum efficient and CW is fun. Even low power can reward you with contacts in many foreign lands. Ask the QRPers in your club about all that.

Important Baby Steps

Although I'm tempted to suggest we reintroduce the Novice license to help encourage the engineering gene in many, I believe we may be able to do this with the current Tech license — mildly tweaked. *(**SEE:** See "Another Approach" accompanying this column. – WA3UVV.)*

Sure, you can just pick up an FM portable and start talking to folks on repeaters. Upgrade to something like D-STAR and you can be talking to other hams in far off places without the incessant pileups of DXers nipping at your heels.

But what about teaching the *what, why, and how* of electronic communications? In short, what if we tried Elmering the Techs the same way we used to work with the Novices?

A lot of Techs don't know how to solder. Don't just shake your heads. Help them. Building a QRP transmitter or transceiver is a wonderful way to learn, plus you get something useful when you're done!

Whatever you want to call it — Novice Roundup, Tech Roundup, or just "gathering the herd" — chances are good that a little effort to work with secondary school educators, clubs, and home school organizations will be a rewarding exercise for all concerned, if you just give it a try.

It's part of ham radio's future, as well as the future of our respective nations and planet. You might even round-up some of those inactive Novices to help ...

Perhaps Another Approach ...

By Cory GB Sickles, WA3UVV/WPC2CS

While I was wrapping up this month's column, I saw a posting on one of the many groups I subscribe to. It was from a ham whose name and callsign would be familiar to many.

On reading some of the details, my interest was piqued and I learned there's some serious thought and planning going on to do "something" about furthering amateur radio in the STEM/SET arena — with further discussion about reintroducing the Novice license, in some form. It's not my place to go into detail. That's for others.

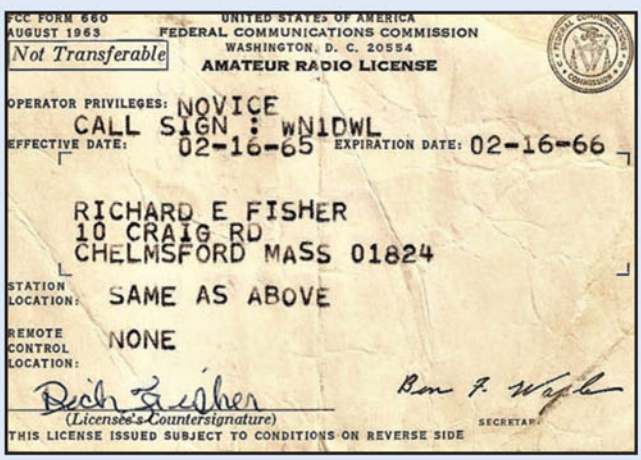
But I would like to know what you think of such an idea. Should we reintroduce a Novice/Foundation/Basic as an entry-level license, geared specifically for young people? If so:

- What questions should there be?
- What sort of Elmering effort should be encouraged after they get a ticket?
- Should it be lower power (not quite QRP, but about 20-watts output) and HF-only oriented, leaving VHF options for an upgrade?
- What about voice privileges on bands other than 10 meters — possibly some window on 75, 40, and 15 meters, too?

And what about club structure to encourage more young people to join us? Should there be a youth aspect to our "regular" clubs, or should we just assist in helping young people build clubs of their own?

The next generation coming up will visualize and conceptualize things that previous generations won't, **Photo E**. Simply, there are many aspects of life where we perceive the world differently. Thus, ham radio will be perceived differently.

Share your thoughts. I'd truly like to know what all of you think about all of this. I'm sure others would, too. Write: <WA3UVV@gmail.com>. I look forward to hearing from you.


FCC FORM 660
AUGUST 1963
UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D. C. 20554
Not Transferable
AMATEUR RADIO LICENSE

OPERATOR PRIVILEGES: NOVICE
CALL SIGN : WN1DWL
EFFECTIVE DATE: 02-16-65 EXPIRATION DATE: 02-16-66

RICHARD E FISHER
10 CRAIG RD
CHELMSFORD MASS 01824

STATION LOCATION: SAME AS ABOVE

REMOTE CONTROL LOCATION: NONE

(Licensee's Countersignature)
SECRETARY
THIS LICENSE ISSUED SUBJECT TO CONDITIONS ON REVERSE SIDE

Photo E. *Remember this? The Novice ticket was issued by the FCC from 1951 to 1995 and became the entry point to amateur radio to many budding hams. Is it time for a return to the Novice in some form? Write: <WA3UVV@gmail.com>. (Courtesy of KI6SN)*

ARDF in the Appalachians: USA's National Foxhunting Championships

BY JOE MOELL,* KØOV

What makes a venue ideal for on-foot transmitter hunts? Your local radio club can have lots of fun in a city park, provided there are plenty of bushes, shrubs, and other features where the transmitters can be concealed. As a general rule, the less landscaping, the better.

It takes a wilderness area of one-thousand acres or more to meet the requirements for a full-scale competition under the international rules for Amateur Radio Direction Finding (ARDF), also called foxtailing and radio-orienteering. Heavily wooded sites with clear running spaces between the trees are best. There should be some trails, but competitors need to be able to go cross-country as well. That gives them many route choices, including "running the contours" to minimize ups and downs.

Sites with some hills are OK, adding challenging reflections to VHF bearings, but steep mountain terrain isn't suitable. For fairness, the site should not have been used for ARDF competition or practice for at least two years. Above all, an up-to-date map, drafted to International Orienteering Federation (IOF) standards, is a must.

*P.O. Box 2508, Fullerton, CA 92837
e-mail: <k0ov@homingin.com>
web: <www.homingin.com>

Ruth Bromer, WB4QZG, was Registrar for the 2013 USA and IARU Region 2 ARDF Championships. Here she sets up electronic scoring on practice day in her new home under construction. (All photos by Joe Moell, KØOV)

You aren't likely to find large wooded sites in Nebraska or Iowa. Some other states have promising forests but none of them are IOF-mapped. Fortunately, there are numerous locations in our country that fill the bill. For instance, the forests of North Carolina are ideal. Therefore, in 2013, for the second time, the Tar Heel State played host to the ARDF championships of the USA. This time, our national championships were combined with those of International Amateur Radio Union (IARU) Region 2, which encompasses North and South America.

In 2006, our annual championships took place near Raleigh in William B. Umstead State Park on the second weekend of April. There was lots of room for jogging and walking in the tall timber, although some care was required to avoid tripping over trees blown down by Hurricane Fran. The other peril was

Meet Director Joseph Huberman, K5JGH, who is Ruth's OM. Their dog Kiwi loves to run along with Joseph when he goes orienteering and transmitter hunting, so Joseph invited Kiwi along on one of the practice courses set by Nadia and Charles Scharlau, NZØI.

Jennifer Harker, W5JEN, and son James arrived in North Carolina a couple of days before her hubby Ken, WM5R. For the practice day only, James hitched a ride with Mom.

Ruslan Zolochevskyi of Ukraine, the youngest competitor at these championships, is preparing his map before setting out on the sprint event. On his arm, he wrote the two fox transmitter frequencies, the finish beacon frequency, and a list of the foxes he was required to find in his M19 category.

an abundance of ticks. April Moell, WA6OPS, the event's Field Medic, got a lot of use from her tweezers, especially on runners who crashed through the brush instead of staying on the trails.

That year, an early spring cold front brought frigid air to Umstead Park. The temperature was just 36 degrees as competitors entered the park for the 80-meter event. However, North Carolina warms up fast as spring progresses, and the locals say that it becomes too hot for orienteering activities through the month of September. Therefore, this year's events took place during the third week and weekend of October in the 5025-acre Birkhead Wilderness Area of the Uwharrie National Forest, just south of Asheboro. Backwoods Orienteering Klub (BOK), which claims to make the best O-maps in the world, supplied updated course maps for all of the championship courses.

Rules for ARDF competitions are established by the IARU. The object always is to find as many of the required transmitters as possible in the shortest time and then navigate to the finish line, using only one's own direction-finding equipment plus a compass and the provided map. Scoring is first by number of required transmitters found and second by elapsed time. Competitors are divided into six age categories for males and five for females, with medals awarded to winners in each category.

Meet Director for the 2013 championships was Joseph Huberman, K5JGH, who is also the President of BOK. His wife, Ruth Bromer, WB4QZG, was Registrar. She did the computer work, which included registrations (all online this time), order of starts, electronic scoring, and results tabulations. Ruth medaled at the ARDF World Championships in 2010 and 2012.

All of the courses were designed by Nadia Scharlau, who learned ARDF as a youth in her native Russia. Now a resident of Cary, NC, she has competed four times on ARDF Team USA and in 2006 was the first USA team member to win a medal at the World Championships.

In charge of setting out all of the course transmitters (a total of 42 during the five sessions) was Charles Scharlau, NZØI. He discovered ARDF in the Puget Sound area of Washington State and competed in our national Championships for the first time in 2001. He then went on to represent the USA at the World ARDF Championships four times in the last decade.

As in many European countries, USA's national championships are open, meaning that competitors visiting from other countries are welcome. The visitors compete for individual medals in an overall division that includes everyone. This year, visitors came from China, Germany, Russia, Sweden, Ukraine, and United Kingdom. Stateside radio-orienteers enjoyed comparing notes on ARDF equipment and techniques with them.

Asheboro Plays Host

The headquarters hotel for last year's championships was the Comfort Inn in Asheboro, NC, where many of the competitors stayed. Early arrivers came in Tuesday, October 8

and met near the lobby at suppertime, where they checked in and received commemorative souvenirs.

For Wednesday's practice sessions, everyone drove to Gray Owl Road on the southern tip of Asheboro, where Joseph and Ruth's new home was under construction. It's right on the edge of the Uwharrie National Forest with a canopy view. Workers were installing metal roof panels as practice sessions started and ended in the back yard. The remnants of Tropical Storm Karen had passed through two days earlier, but there was only occasional light rain and mostly cloudy skies on this day.

Snakes, ticks, and wild mammals aren't problems in North Carolina during October, but it was bow-and-arrow hunting season in these forests. Therefore, everyone was asked to wear some bright colors for safety. The organizers provided vivid orange headcovers that were plain to see at a distance, even in the cloudy weather.

Thursday was devoted to the new sport of foxoring, which took place in the Thornburg Tract. It includes a 160-acre 19th century farmstead that was purchased by the U.S. Forest Service for restoration in 2005. As a gateway to the Birkhead Wilderness, it was an ideal start and finish area. Because of a federal government shutdown, the Thornburg farm was unstaffed and the gate to the parking area was closed. Fortunately, there was some parking near the gate and along the muddy dirt road.

Foxoring is an 80-meter event that helps ARDF enthusiasts improve their orienteering skills. At the start, they get a map marked with circles for at least 10 transmitters, plus the start and finish beacon locations. The very-low power foxoring transmitters are in or very close to the circles as marked on the maps. Competitors navigate close to transmitters by means of the map and then complete the final approach by radio-direction finding.

Foxoring transmitters are very small and are usually concealed in trees, without a flag. As in all other events, the designated transmitter numbers to be found by competitors in each category are announced in advance.

It is standard practice in formal ARDF competitions for the start and finish to be in separate locations. The finish is plainly marked on the map and there is a continuously operating transmitter on a separate frequency to aid in navigating there. The length of a course is defined as the shortest viable route from the start line via the transmitters in optimum order to the finish line. To that distance is added 10 times the total upward elevation change (climb) to get the "effective course length."

For Thursday's foxoring, the effective course lengths ranged from 4.6 km for W60 category to 7.3 km for M21. There was occasional light rain, but running conditions in the forest were very good. Everyone did well, even those who had never done foxoring before.

More participants arrived Friday morning in time for the sprint competition. In the sprint, as in all other competitions except foxoring, there are no markings for the transmitters on the maps. The sprint has twice as many transmitters as a classic event, but the course is much shorter. The first group of five transmitters all are on one frequency, transmitting for 12 seconds each in a 60-second cycle. After finding the ones required by category in that group, competitors find the required ones in a second group of five on a dif-

Competitors are started in small groups at intervals, just as fox #1 comes on the air. Each competitor in a start group is in a different age/gender category. In this group at the 2-meter starting line are Leszek Lechowicz, NI1L (M40); Valeri Gueorguiev (M50); Karla Leach, KC7BLA (W60); Jay Hennigan, WB6RDV (M60); and Ian Schields (BOK volunteer timer).

ferent frequency, and then they head for the finish line.

Each day, participants received their full-color orienteering maps 10 minutes before start time. Most of them taped their maps to a lightweight and rigid flat surface, such as a discarded political-campaign sign. The Germans prefer corkboards with colored pushpins to mark their bearing crossings. GPS and other electronic supports such as Google Maps are prohibited on the courses.

This sprint starting corridor went from the long driveway of the Huberman property into the wilderness. The finish was next to their new home. Effective course lengths ranged from 1.7 km for W60 and M70 to 2.9 km for M21.

The sprint is a relatively new event for USA's foxtailers. This was only the second year that it has been included in our national championships. Eastern Europeans are much more experienced in this event and it showed. For instance, Volodymyr Gniedov of Ukraine found all 10 transmitters and completed the course in less than 22 minutes.

Vadim Afonkin, KB1RLI, heads into the forest from the 2-meter event starting line, followed by Harley Leach, KI7XF. Vadim is organizer of the 2014 USA ARDF Championships near Boston in June.

The Main Events

The last of the competitors arrived late Friday. Everyone found the way back to the Huberman property on Saturday morning for the main 2-meter event. They trekked out a trail westward from the house about 700 meters to the starting area in a large section of forest that they had not seen before. The 2-meter starting corridor went past an abandoned farmhouse and into the wilderness.

Two meters is the band where stateside foxhunters are most experienced. Almost everyone had a good day on the course, with most of them finding all required transmitters and only one person exceeding the 3-hour time limit. The best USA time of the day was 59 minutes for four required transmitters by Vadim Afonkin, KB1RLI.

It was Something Different for supper on Saturday night. Something Different is the name of the restaurant where everyone gathered to eat, receive medals, and exchange token gifts. It took a lot of effort for Joseph and Ruth to get government officials to provide invitations and visas for the Ukrainians, so everyone laughed and cheered when Mariana Marynchenko, their representative and translator, gifted them a beautiful hand-carved gavel as a "persuader" to help them eliminate red tape in the future.

Sunday's 80-meter event required everyone to drive a half-mile rutty road into the woods to a clearing at the trailhead for Robbins Branch Trail. Then they walked a half-kilometer up the trail to the starting point. Weather was cool with heavy clouds. This was the longest course of the championships and it had the largest map, printed on 11- × 17-inch paper. Effective course length ranged from 5.2 km for W60 and M70 to 9.3 km for M21.

The signal reflections that can plague transmitter hunters on 2 meters in hilly and mountainous areas are non-existent with 80-meter groundwave propagation, so it is normal for competitors' times to be shorter on this band. Most of the performances on Sunday were better than on Saturday, even though the course was longer.

After finishing, competitors walked down the trail to the parking area to download their scoring "sticks" and refresh while results were tabulated. Thanks to electronic scoring, it was possible to hold the 80-meter medal ceremony immediately after the hunt concluded, to accommodate participants who had to rush to the airport for flights home that evening.

Since Ruth and Joseph were not the course designers and had no advance knowledge of transmitter placement, they were able to compete for medals in all of the other formal competitions. Other volunteers from BOK handled the start and finish logistics and timing.

Taking first place awards among USA's competitors were Vadim Afonkin, KB1RLI (M40 2m, 80m, foxor); Ruth Bromer, WB4QZG (W60 2m, 80m, foxor); Bob Cooley, KF6VSE (M70 foxor); Marjorie Garrett, KJ4ZKC (W50 2m, 80m); Jay Hennigan, WB6RDV (M60 2m, 80m, sprint); Joseph Huberman, K5JGH (M60 foxor); Lori Huberman (W21 2m, 80m, sprint, foxor); Kuon Hunt, KB7WRG (W60 sprint); Harley Leach, KI7XF (M70 2m, 80m, sprint); Nicolai Mejevoi (M40 sprint); Alla Mezhevaya (W35 2m, 80m, sprint, foxor); George Neal, KF6YKN (M50 2m, 80m, sprint, foxor); and Csaba Tiszttarto (M21 sprint). Representing Canada were Valeri Gueorguiev (M50) and Nicholas Roethe, DF1FO (M60), who was first among Region 2 competitors on 2m and 80m.

Kudos to all of the organizers and volunteers who made these championships a big success. The courses were challenging and educating. Also thanks to everyone who attended for the interest, enthusiasm, and positive attitude that prevailed.

Much more information about these championships is available online. Start with the "Homing In" site <http://www.homingin.com> for a summary

Matthew Robbins, AA9YH, applies the brakes as he gets to the finish line in the sprint event, which was on the 80-meter band.

and more than 90 photos. Almost everyone who attended is pictured at least once. Official results are in the BOK website, <http://backwoodsok.org/ardf2013>, including every competitor's individual order of finding and time for every fox transmitter that he or she found.

Globe-trotting for ARDF

In odd-numbered years, there are multi-nation ARDF championships in all three IARU regions. Five weeks before the 2013 Region 2 championships in North Carolina, the Region 3 championships took place in Hongcheon, Gangwon Province, Korea, which is about 100 kilometers northeast of Seoul. The Koreans put on classic 2-meter and 80-meter ARDF competitions only. There were no sprint or foxoring events.

The USA has territories within the boundaries of ITU Region 3 (Guam, for instance). Because of this, the ARRL is a member society of IARU Region 3 and the USA is entitled to enter a team of competitors in Region 3 ARDF events. Our 2013 team consisted of Vadim Afonkin, KB1RLI; Bob Cooley, KF6VSE; Nicolai Mejevoi; and Alla Mezhevaya. They went up against 210 of the best radio-orienteers from China, Japan, Korea, and Mongolia.

Team USA did well in the medal count. In the 2-meter classic competition, Vadim, Bob, and Alla captured individual gold

what's new

Pasternack Unleashes a Torrent of New Components

Pasternack Enterprises, Inc. has been busy recently by introducing new lines of RF isolators and circulators, RF loads, and multi-octave power dividers.

Owners of repeaters will be very interested in Pasternack's new line of RF circulators and isolators. These new ferrite circulators and isolators cover many of the common communications bands including UHF, AMS, tetra, cellular, PCS, UMTS, and LTE frequencies.

Both the three-port and two-port circulators are constructed with ferrite materials and designed with SMA or Type-N connectors. They operate between 380 MHz and 2.2 GHz, have maximum power ratings to 1,000 watts, and have up to 20dB isolation, depending on desired configuration.

Hams will also be interested in Pasternack's new line of medium- and high-powered RF loads. These RF terminations come in 25-, 50-, and 100-watt models and are offered with many connector configurations including male/female SMA, N, TNC, and 7/16 DIN. The 25- and 50-watt models operate up to 18 GHz with the exception of the 7/16 DIN version, which is rated to 8 GHz. All of the 100-watt RF loads operate to 8 GHz. The new loads are constructed with black, anodized cooling fins for convection cooling. These coaxial terminations require no additional heatsink and operate in temperatures from -55° to 125° C.

Pasternack will also begin offering multi-octave power dividers from Wilkinson. These power dividers cover 0.5 to 2.7 GHz including 3G and 4G plus Wi-Fi bands. They will come in two models covering the 0.5 to 2 GHz and 0.7- to 2.7-GHz bands. The 0.5 to 2 GHz band power dividers utilize SMA connectors and are available as 2-, 4-, and 8-way configurations. The 0.7 to 2.7 GHz band power dividers are available with SMA or N connectors and are available in 2-, 3-, 4-, and 8-way configurations. Power ratings for the group range from 10 to 30 watts and have maximum insertion loss of 1.2dB. Maximum VSWR is 1.4:1 and phase balance ranges between 2 and 8 degrees. Each of the power dividers meets MIL-STD-348 standards and is RoHS-compliant. For more information on Pasternack's new products, contact: Pasternack Enterprises Inc., (949) 261-7451. Website: <http://www.pasternack.com>.

Note: *"What's New" is not a product review and does not constitute a product endorsement by CQ. Information is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of "What's New" is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*

medals in their age/gender categories and Nicolai got a bronze. Also a team gold medal was earned by Vadim and Nicolai in M40 category. There was another M40 team gold two days later in the 80-meter competition, where individual golds were won by Vadim and Bob, and Alla took silver.

One week later, it was time for the Region 1 championships at Klodzko Valley in the Sudety Mountains of Poland. In attendance from the USA were Vadim Afonkin, KB1RLI; Bob Cooley, KF6VSE; and Leszek Lechowicz, NI1L. The ARRL is not an IARU Region 1 member society, so Vadim and Bob were considered "visitors" and the official results did not list their places in the contests. Les is originally from Poland, so he was able to run with the Polish team. See: <http://www.ardf2013.pl>.

Medals were awarded to the top three finishers in each age/gender category for each event. Displaying their medals in M70 category after the 80-meter run are Yurii Tagotin (third); Harley Leach, KI7XF (second); and P-A Nordwaeger, SMØBGU (first).

The Championships Return to Boston

If you missed all the fun in Asheboro, you will have another opportunity to compete against USA's best soon. The 2014 USA ARDF Championships will take place in the Boston area from June 5 through 8. The Lead Organizer and host is Vadim Afonkin, KB1RLI, who also organized the championships there in 2009.

National ARDF championships around the world usually take place in late summer or early fall. However, the 2014 ARDF World Championships will take place in early September. To provide plenty of time for selection of Team USA and for overseas travel planning, the 2014 USA Championships must take place three months before.

As a youth, KB1RLI learned ARDF and won awards for it in his native Russia. After coming to America, he first participated in USA's national championships in 2003, where he won silver and bronze medals in the five-fox M21 category. He has competed in almost every USA championship since then and has won numerous gold medals. As a member of ARDF Team USA, Vadim has been to every World Championships since 2004. At the 2012 WCs in Serbia, he captured gold, silver, and bronze medals. He also took home three gold medals from the 2013 national championships in North Carolina.

USA's ARDF Championships are open to anyone of any age who can safely navigate in the woods with handheld radio gear for several kilometers. Participants will be divided into 11 age/gender categories as defined by IARU. Don't worry if you are inexperienced at radio-orienteering, as this is a chance to learn from experts. Most will be licensed hams, but an amateur radio license is not a requirement.

Registration is now open, and it's very simple with the online entry form on the Boston ARDF website: <http://www.bostonardf.org>. There is no standard registration package this year; everything is *a la carte*. Get your registration in early, because the deadline for lowest fees is May 1.

Winners of this year's championships will be under consideration for membership in ARDF Team USA 2014, which will travel to Burabay, Kazakhstan for the 17th ARDF World Championships September 6–13. A maximum of three competitors in each age-gender category may be on a nation's team. They will be selected from the best performers at the 2013 and 2014 USA Championships.

Summary

Now is the time to start preparing your equipment and yourself. It's also a good time to help others in your local club to do the same. Regular informal practice sessions in local parks, with or without maps, will go a long way toward developing good radio-orienteering techniques. Participating in the events of your local orienteering club will improve your ability to do map-and-compass navigating in the woods. I hope to see you at this year's national championships! 73, Joe, KØOV

Build a Mystery Resonant Speaker That Can Speak Volumes

BY RICHARD FISHER, *KI6SN

easy does it

In our last go 'round with *Easy Does It* we described a neat little audio amplifier using the ubiquitous LM386 chip, putting out about 350mw of listening power. *(**SEE:** "A Super Simple Audio Amplifier You Can Build" in the March-April edition of CQ Plus, page 159. – KI6SN.)*

While that's a sufficient amount of audio for headphones and a small speaker in quiet environs, some operators might like a bit more *oomph.*

I'd promised to bring readers the option of adding an audio pre-amplifier to place ahead of the LM386 to boost the output. As Robert Burns put it: *The best laid schemes o' mice and men ...*

At KI6SN we prototyped four or five pre-amp circuits with less-than-satisfactory results. Added noise, intermittent "motor boating," squealing and so on came with these circuits. We tried post-amplifiers, as well. None of them respected the purity of the basic LM386 amplifier. *What to do?*

Seeking an Unconventional Solution

The conundrum prompted us to think of something completely different. Why not let the amplifier do its work and leave further amplification to the speaker — a resonant audio speaker that peaks the tone of its output at a certain frequency?

At the drawing board we noted that determining the resonant frequency of sound is much like figuring the resonant frequency of an antenna. But instead of the speed of light, for audio calculations we use the speed of sound — 1,100 feet per second.

We'd decided to use inexpensive, readily available PVC as the speaker cavity, so our calculations would be based on a tube with one end closed, where the speaker would be placed.

The formula:

- $L_F = 1{,}100/2F$

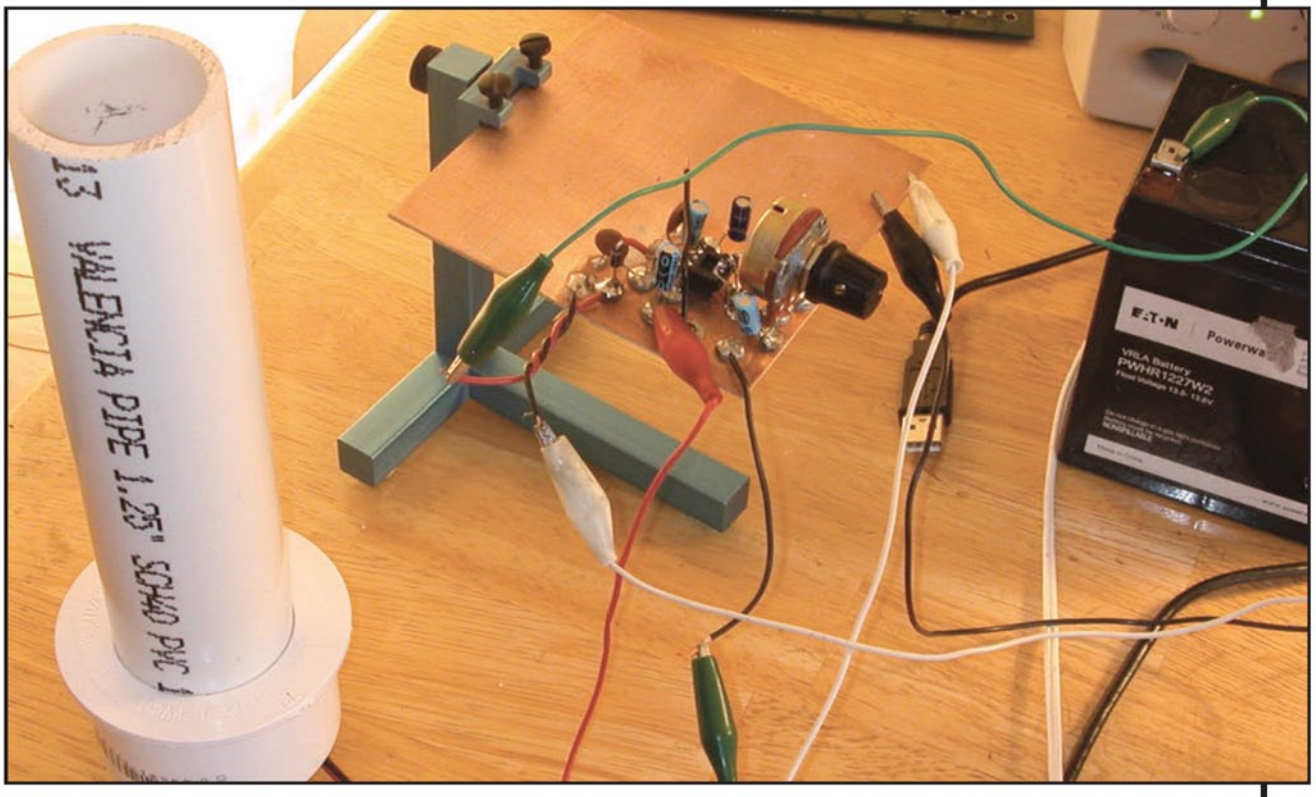
That is: The length in feet of the closed-end tube is 1,100 divided by 2 times the audio frequency. In the case of our resonant speaker-amplifier, 630 Hz was chosen — a comfortable audio frequency for copying CW — Morse code.

So, running the numbers, that's:

- L_F = 1,100 divided by 630 times two, or
- L_F = 1,100 divided by 1,260
- L_F = 0.87302 feet, or 10 and 15/32 inches

*(**HINT:** To save you from a bunch of decimal feet-to-inches number crunching, simply use the online*

* email <ki6sn@cq-amateur-radio.com>



With the "Super Simple Audio Amplifier" hay-wired in the background, the KI6SN PVC Mystery Resonant Speaker stands tall to the left during testing.

A 1:15 minute video demonstrates the resonant speaker designed and tested at KI6SN. It is used with the "Super Simple Audio Amplifier" described in March-April's CQ Plus. The resonant speaker works nicely on CW "barefoot," as well. Watch the video at <http://bit.ly/1IDXHw2>.

converter at <http://bit.ly/1iftHJa>. Put the decimal figure in the box we've circled in red and press convert. – KI6SN.)

So, about 10-and-a-half inches of PVC pipe is what we'd be looking for.

At the local Home Depot we found 2-foot-long pieces of 1.25-inch PVC for $2.61. A 2-inch by 1.25-inch bushing — perfect for mounting our 2-inch (50.8mm) diameter speaker — was 98 cents.

The actual speaker, by the way, is the kind you'll find in computers**.**

*(**SUGGESTION:** Do a Google search for 2" speaker, 2-inch speaker, 50mm speaker, tweeter, or small speaker. You will find several distributors from which to choose — inexpensively. For example, Futurlec's Small Speaker — Part Code SMSPK — is just $1.15 <http://bit.ly/1cxVHWn>. The company has no "minimum order," which certainly keeps the price in check. – KI6SN.)*

Design in Hand, Ready to Experiment

So, we have gathered our parts, now what? Well, that 2-foot-long piece of PVC needs to be cut to 10-and-a-half inches in length, for starters. At KI6SN a mitre board was used to keep the cuts neat and accurate.

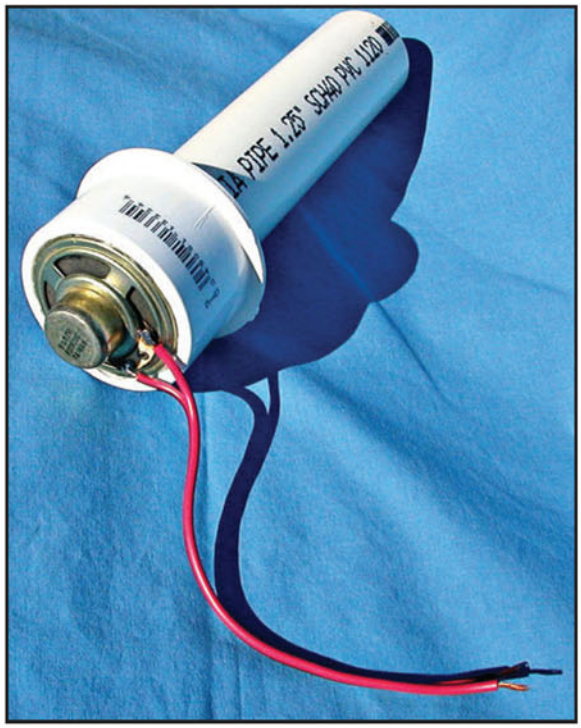
With the 10-and-a-half-inch length of PVC, the 2-inch by 1.25-inch bushing, 2-inch diameter speaker, short length of speaker wire, a bunch of clip leads and the *Super Simple Audio Amplifier* (SSAA) we headed to the laptop for testing. By the way, you don't need an outboard amplifier to use a resonant speaker. Simply plug it directly into your radio, laptop, iPod, or whatever. It's going to resonate at the source frequency you've chosen, no matter the audio source.

OK, so what does a tone at 630 Hz sound like? What is its note? An easy way to find out is to visit the Online Tone Generator site on the Internet <http://onlinetonegenerator.com>. Simply type in the frequency of the tone you'd like to hear and press *Play.*

Now we've heard the tone that should be resonating within our carefully cut piece of PVC.

Next:

- Plug the 10-and-a-half-inch length of PVC into the PVC bushing.



A carefully-designed resonant speaker — made primarily and inexpensively with PVC — can add amplification to any audio source, without have to scrounge for electronic parts.

- Carefully place the PVC bushing atop the 2-inch diameter speaker.
- Connect the speaker wires to the output of the *Super Simple Audio Amplifier,* whose audio input is plugged into your computer's speaker jack, or plug directly into the speaker jack of your computer, skipping the SSAA.

It's time to see what this little plastic wonder can do. For assessing performance we do an audio sweep through the speaker — from 20 Hz to 20,000 Hz. Here's how:

Go to the YouTube video titled "Hearing Test HD" at <http://bit.ly/1oumylU> and press play. *(**USE EXTREME CAUTION:** Pay close attention to the warnings throughout the video. Volume through the resonant speaker changes dramatically across the audio range — to the point of potential damage to hearing. Make adjustments as directed, and use common sense. – KI6SN.)*

You will note points across the range where the volume peaks. By all calculations, our 10-and-a-half-inch long PVC speaker should be peaking around 630 Hz. Since we've already generated that tone, we know what it sounds like. The video indicates what frequency is being generated throughout the sweep.

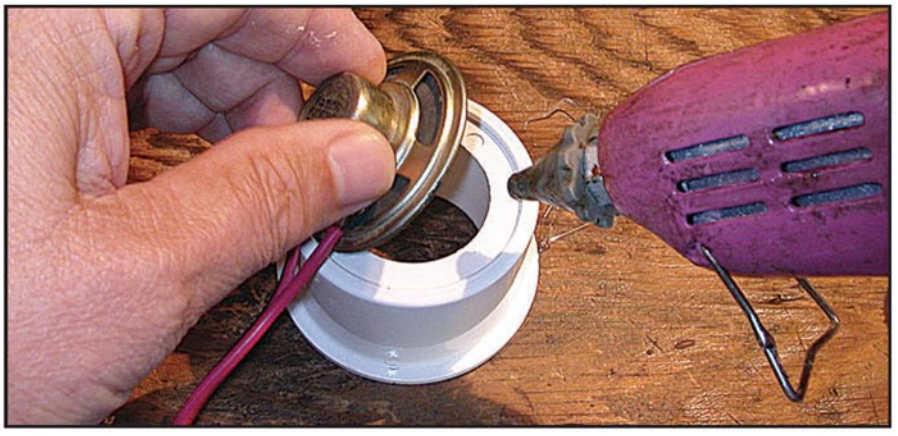
At 59 Hz, the video instructs to turn down the volume. This is where things start to get interesting. The sweep is at the point where the tone is audible by the human ear and could cause damage to hearing if the volume is high.

We listen as the Hearing Test HD courses through its audio range all the way up to 20,000 Hz. And we note at what points the PVC cavity resonated.

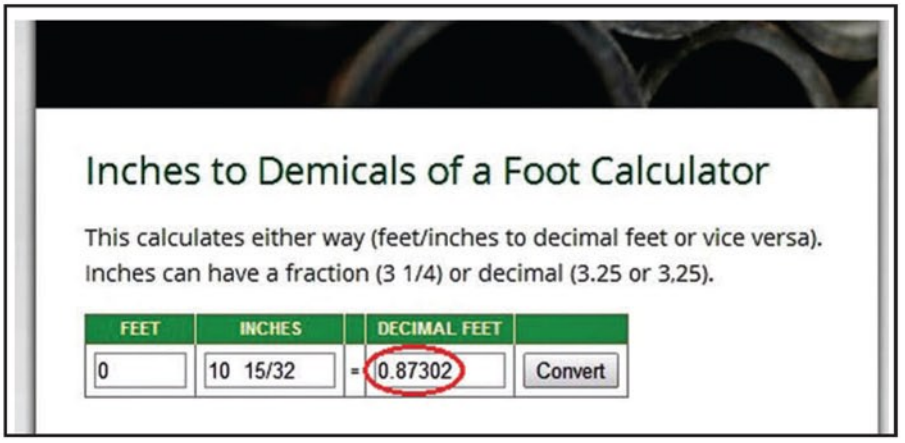
OMG, What's Going On?

At KI6SN, the 10-and-a-half-inch long PVC cavity wasn't cooperating at 630 Hz. We checked and double-checked the

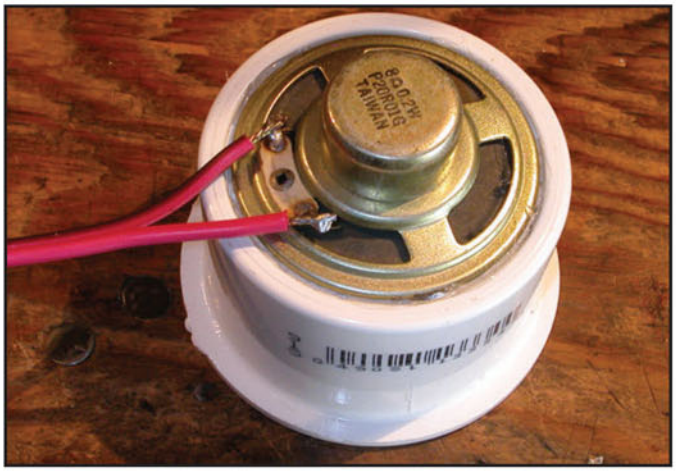
The cut-and-try method of scientific experimentation was used to find the optimum length of PVC pipe for resonance at a 630-Hz audio tone at KI6SN. A mitre board and hobby saw made the job neat and easy.



A hot-glue gun was used to apply the adhesive needed to hold the 2-inch-diamater speaker in place at the base of the PVC coupler. This 2-inch to 1-and-quarter-inch PVC pipe coupler was the perfect housing to mount both the speaker and the 1-and-a-quarter-inch PVC speaker cavity.

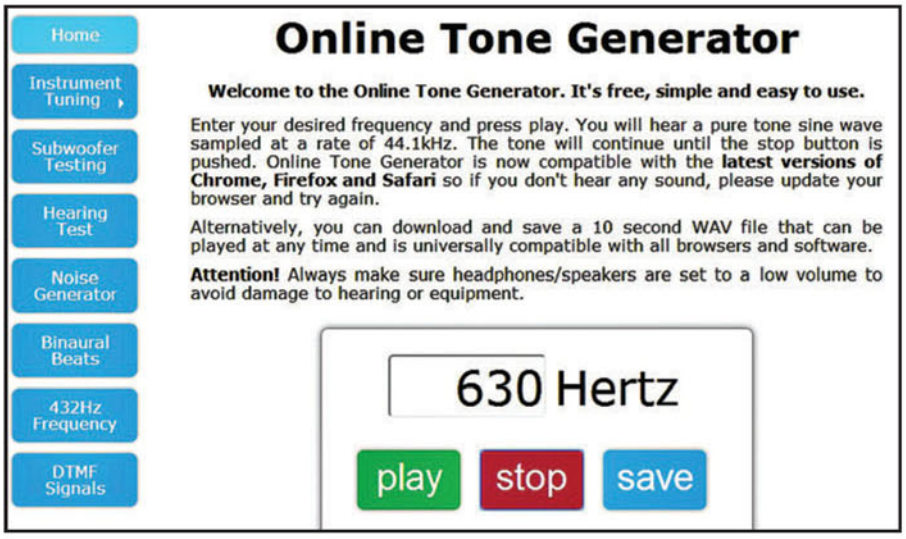


To make conversion from decimal inches to fractions of inches easy, use the online converter at <http://bit.ly/1iftHJa>. Simply punch the decimal-inch figure determined by formula into the box — circled here in red — and press "Convert." Feet, inches, and fractions of inches will appear in the boxes to the left.



Once the 2-inch-diameter speaker was glued in place, standard audio speaker wire was used to create the link between the audio source and the resonant speaker.

Here's how the 2-inch diameter speaker looks from the 1-and-a-quarter-inch side of the PVC coupler.



This free tone generator on the Internet will give you the exact tone for any audio frequency between 20 and 20,000 Hz. For KI6SN resonant speaker tests, 630 Hz was entered and played.

calculations. What the heck? The 10-plus-inch pipe was hitting a peak at about 530 Hz — fully 100 Hz below our target.

So, we did what any curious home-brewer would do: throw away the calculation, get out the mitre board and saw and start trimming the pipe's length.

After a couple of hours of experimentation, the pipe — now at 7-and-one-quarter inches in length — was singing like a bird at 630 Hz.

At KI6SN, we're at a loss as to why this resonant speaker does not seem to cooperate at 10+ inches, but that's the fact. A mystery, indeed.

Exhibit A: The 'Reveal' Video

To illustrate the point, we made a video of the SSAA and resonant speaker in action. Using the remote Internet receiver at the Universite of Twente <http://bit.ly/1g3mAy6 > we tuned to 7038.09 kHz in the 40-meter band. That's the location of what is believed to be a Russian beacon transmitter repeatedly sending the letter D in Morse — *dahdidit dahdidit.*

*(**WATCH AND LISTEN:** As the resonant speaker — attached to the SSAA – is put through its paces while tuning below, at, and above the 630-Hz tone using the Russian beacon as its test case. Link to: <http://bit.ly/1IDXHw2>. – KI6SN.)*

After confirming the speaker had been trimmed to operating length, it was time to button up the parts for permanent use.

Final Construction Steps

A hot-glue gun was used to apply the necessary adhesive to keep the 2-inch diameter speaker in place on the base of the PVC coupler. A standard audio plug was soldered to a short length of speaker wire attached to the speaker's terminals. Then the 7-and-a-quarter-inch PVC pipe was hot glued into the 1-and-a-quarter inch side of the coupler. Now we're ready for prime time!

Your Help, Please ... Please!

The odd length of PVC pipe reaching 630-Hz resonance is a real mystery. If there are any audio experts or others with resonant speaker experience who can shine light on what's going on, please contact me at <ki6sn@cq-amateur-radio.com>. I'm eager to hear your explanation of what might be happening here.

Note that the resonant speaker was used with the SSAA as well as "barefoot" (without additional amplification) with similar results.

Why Not Experiment for Yourself?

OK, with such a small cash outlay, it's time for you to experiment with resonant speaker technology.

You may want to use audio frequencies more suited to voice than Morse code. Or design something that would be nice in the audio spectrum of music. With just a handful of parts you can spend a lifetime playing with this discrete form of amplification. Who knows what you'll find.

Please share your experiences with *Easy Does It.* And if you've got an awesome resonant speaker design you swear by, send it along. We'd like to share it with other *CQ* readers. *Now hear this. – **KI6SN***

BY CORY GB SICKLES, *WCQ2CS

SO2R: Single Operator, Two Receivers

The Value and Joy of Adding a Scanner in Your Listening Post

Do you have a scanner in your shack? If not, you might want to consider getting one — especially if it covers CB. Many of the models on the market today have AM reception for the 27-MHz range. Having a second receiver has some utility, whether listening for assistance requests on channel 9, general calls on channel 11, or friends on a different channel than you normally listen to.

If you like to work DX — a.k.a. "skip," and I've shared my thoughts on this in the past — then a rise in the noise floor will give you some idea that the band is opening. Likewise, listening to broadcast STL (studio to transmitter links) transmissions between 25~27MHz can reward you with some interesting listening from distance places, while indicating some excitement in the ionosphere.

*(**NOTE:** To readers who are hams: while 10 meters may sound dead, if you hear whines and heterodynes on more than a few CB channels, then don't just listen. Call CQ. – WA3UVV.)*

The Value of Scanning

Along with the normal public service communications in your area, monitoring MURS and GMRS frequencies will give you some idea of who's around. It might even make you want to invest in some additional gear so you can be involved in the action within those aspects of CB.

Also, if you are curious about area hams and some of their activities, then listening from 29.3~29.7, 52~54, 145~148, 222~225, and 440~450 MHz should let you eavesdrop and see what's going on. If you hear some chatter about upcoming meetings or a hamfest, then consider it an invitation to drop in and meet some new folks. (These are ranges. Check out <http://www.radioreference.com> for specific frequencies in your area.)

… and When It Snows

Having a scanner can have other benefits, as well, depending upon your circumstances. When it snows in "significant amounts" (a term I define differently than my Delaware Valley neighbors, who panic at the mere mention of white powder) I turn on a scanner in the kitchen and listen to the public works frequencies.

You see, I have a corner property, located at the boundary of two towns. One of the streets is a county road. Thus, I have to contend with snow removal (piling on the corner) by one town and the county plow truck — which I've dubbed Mr. Speedy, as this is a family publication.

I typically sit back and enjoy my Caffeine Delivery System while waiting for the backhoes to play and Mr. Speedy to come zipping up the road — in excess of the posted speed limit, mind you — until I go out with the shovel or snow blower.

After I've cleared the sidewalks and driveway, I listen some more ... for the dreaded second pass. Whenever the signals are strong enough, I head back outside — shovel vertically in hand like an *homage* to 'American Gothic' — as I stand defiant against the plow advancing up the hill, flinging snow

*<wa3uvv@gmail.com>

The Uniden Bearcat BC355C 800 MHz base-mobile includes six pre-programmed service banks that monitor police, fire, and emergency medical services, along with marine, air, weather, and Citizens Band frequencies. You can also save up to 300 frequencies that are scanned along with the presets.

into everyone else's sidewalk and yard as he approaches. With me standing there, he begrudgingly lifts his plow and hurries by, dropping it before the next block and resuming his incessant torment of homeowners. I stand steadfast, *triumphant once more!*

For those of you keeping score at home, this exercise will be repeated later in the day, as well as a re-enactment at the head of my driveway for the crew from town, all made possible by my scanner and large windows that let me see flashing amber lights from a distance.

Antenna Considerations

While a back-of-set antenna or "rubber duck" on a portable will give you some local coverage, the best antenna is an external one. Get something that is multi-band and easy to mount. Using good quality coaxial cable with low-loss characteristics is best. Less of the signal will be lost on the way down to your scanner.

Also, don't be afraid to use 75-ohm RG-59 or RG-11 cable, if you find an attractive price. The receiver cares less about the impedance difference. The typically decreased loss per foot is a bonus.

As always, practice safety on the roof and be aware of power lines and other hazards. I suppose that includes the eventual scenario of "Mr. Speedy," when he is on his last shift before retirement.

Monitoring NOAA WX Updates

Speaking of weather, a scanner functions as one more way to listen to NOAA All Hazards Weather Radio. Running every 25 kHz from 162.40~162.55MHz, these continuous broadcasts let you know about current weather conditions and forecasts.

Alerts for flash flooding, hurricanes, tornadoes, derechos, and extreme temperatures are also helpful.

Many scanners on the market today have weather alert tone decoders or at least, a front-panel button to quickly switch to this mode. *Many CB rigs have this now, too.*

Learning to Love Your Scanner

With scanners capable of hundreds of memories — grouped into banks — tuning in and out of various services is just too easy.

Having a scanner complements your CB activities and can help make you more informed, better prepared, and let you get to know others interested in two-way communications around you.

Making friends and having fun is a big part of what the communications hobby is all about.

WANTED: Photographs of Your Operation

I was reminded recently about the sheer fun that can be had with the elegant simplicity of a station that is nothing more than a power supply, transceiver, and resonant antenna system. In this case, there was no microphone, just a 60-plus-year-old straight Morse code key. Many times, hams and CBers revel in pictures of massive arrays of equipment and accessories in someone's shack. At the other end of the spectrum is the basic station. Both are enjoyable, while the latter takes up a lot less space.

If you'd like to share some pictures of your (simple or elaborate) CB and/or GMRS stations, *please do so.* All I ask is that you use a high-resolution digital camera, good lighting, and frame things so that everything you want to show (framing) fits within 85 percent of the overall picture. Sharp focus is a given, as is a neatened-up area — *sans coffee or sauce stains*. It's not difficult, just think of the *mise-en-scène* (things put in the scene) and you'll do fine. Send them as JPEGs, with a paragraph or two as a description to my email address <WA3UVV@gmail.com>. I'll try to get as many of them published as possible.

Manufactured by Realistic between 1976 and 1977, the RadioShack® PRO16A VHF/UHF scanner would be a great listening post addition even today. Its 16 channels can be set to cover frequencies from 30 to 50, 148-174, and 450-512 MHz — spectrum that is rich with activity.

"After I've cleared the sidewalks and driveway, I listen some more ... for the dreaded second pass," WA3UVV says. "Whenever the signals are strong enough, I head back outside — shovel vertically in hand like an homage to 'American Gothic' — as I stand defiant against the plow advancing up the hill." (Billboard magazine, November 1972 courtesy of Wikimedia Commons)

Three Interesting Propagation Mini-Bits

BY CARL LUETZELSCHWAB, *K9LA

This month we focus on a trio of fascinating short subjects:

- Above-the-MUF propagation
- Probabilities of high- and low-latitude sporadic E
- The Pedersen Ray

Sounds interesting, eh? *Let's get to them.*

Above-the-MUF propagation

Most of our QSOs via the F_2 region are due to refraction. This means there is sufficient ionization in both the horizontal extent and the vertical extent to bend the electromagnetic ray back to Earth. In other words, the MUF (maximum useable frequency) is high enough. To see this, take a look at **Figure 1**.

It consists of ray traces launched at a 2-degree elevation angle (close to the horizon) during the daytime for a January month at very high solar activity for a path from my QTH (location) in Fort Wayne, Indiana to California. Ray traces from 40 MHz to 52 MHz were done in 1-MHz steps. This plot comes from the PropLab Pro V3 software offered by Solar Terrestrial Dispatch. *(**IN DEPTH:** For more on Pro V3 software, visit <http://www.spacew.com/www/proplab.html>. – K9LA.)*

The path could support refraction up to 42 MHz.

*K9LA@arrl.net

Any higher frequency goes through the ionosphere. Thus our conclusion would be that 6-meters (50 MHz) could not be supported on this path. But there's a possibility that a QSO could happen.

How? Because ionospheric scientists observed that paths could be open even though the MUF didn't appear to be high enough. They believe this is due to a scatter mechanism.

Now scatter implies additional loss, so the result of this is a rather simple equation that ties the additional loss in dB due to scatter to the operating frequency (F_{op}) and the MUF. The equation for the additional loss is 36 times $[(F_{op} / MUF) - 1]^{1/2}$.

For the record, VOACAP uses this equation in its propagation predictions.

For our conditions in **Figure 1**, the additional loss on 50.1 MHz with the MUF at 42 MHz would be 15.8 dB — about three S-units. That's the bad news. But the good news is that ionospheric absorption on 6 meters is very low because ionospheric absorption is inversely proportional to the square of the frequency. The higher the frequency, the less the absorption. So of all the bands, 6 meters could tolerate the most additional loss.

Note that the vertical and horizontal extent cited in the first paragraph of this item is very well demonstrated in **Figure 1**. At 42 MHz, the ray needs 40 km in vertical extent and more than 1,000 km in horizontal extent to bend back to Earth. Thus the ray does not turn around at a single point in the ionosphere.

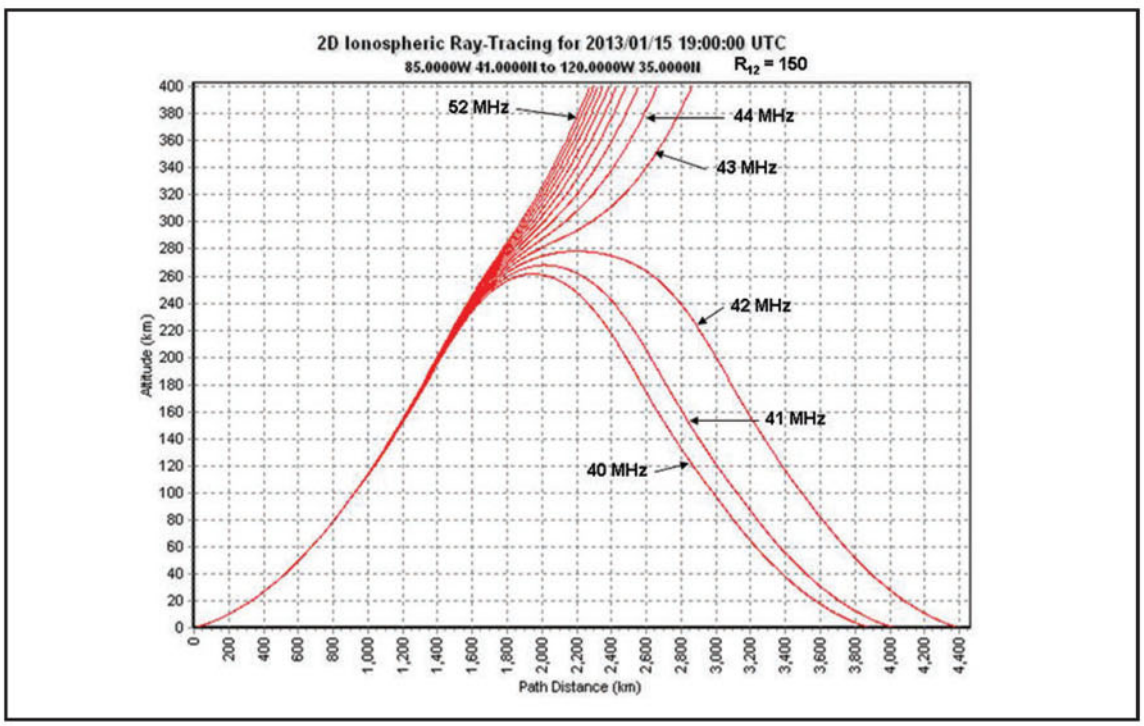


Figure 1. *Ray traces versus frequency*

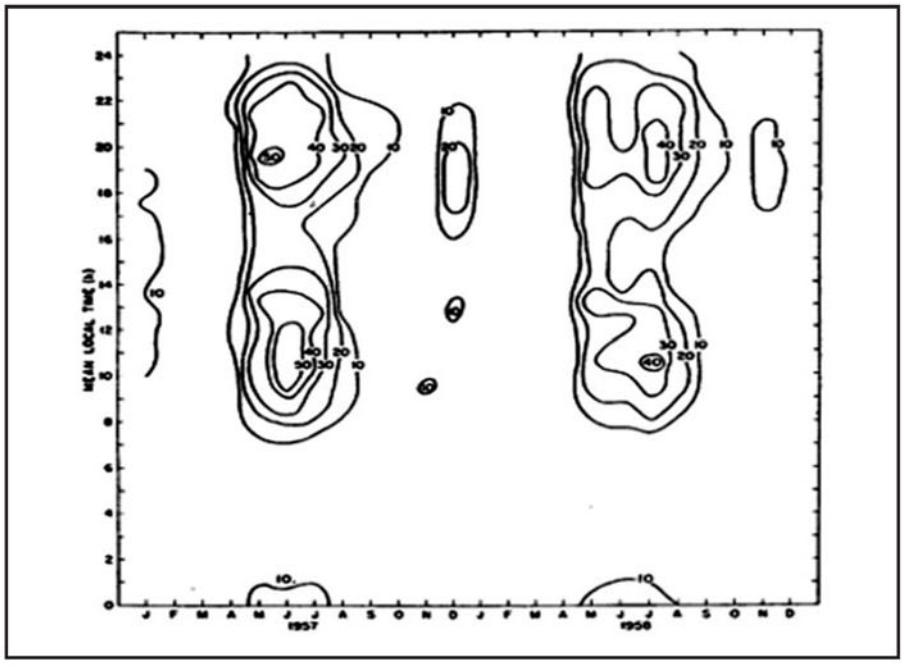


Figure 2. *50-MHz E_S possibilities*

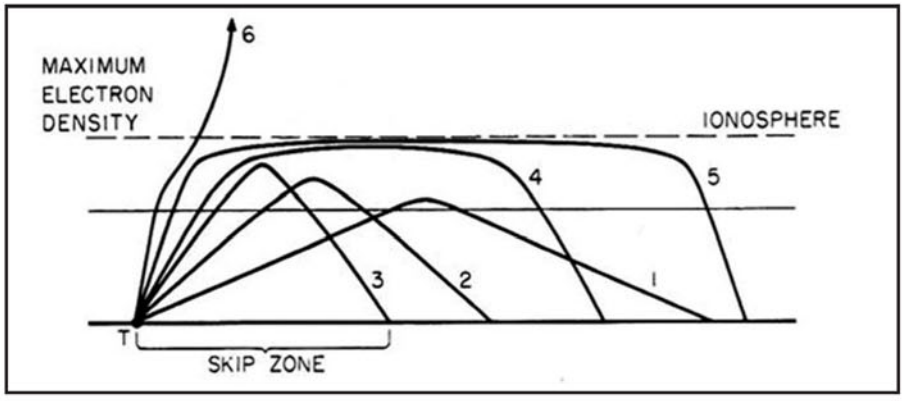


Figure 3. *The Pedersen Ray*

Of course, the vertical and horizontal extent become smaller as the frequency is lowered, which comes from the fact that the amount of refraction is inversely proportional to the square of the frequency. The lower the frequency, the more the ray is bent.

In essence, over-the-MUF propagation can make the MUF look higher than it really is.

Probabilities of Low- and High-Latitude Sporadic E

Many *CQ Plus* readers live in the mid latitudes of North America. Thus we are probably quite familiar with mid latitude sporadic E – E_S for short. It occurs with the highest probability in the summer months, with a late morning peak (local time) and an early afternoon peak (local time).

There's also a lower probability in December in the late morning hours (local time). **Figure 2**, a plot on my website in the article titled "Summer 6m E_S Probabilities," shows these probabilities. See the article at <http://bit.ly/1f477v2>.

E_S occurs at low latitudes and high latitudes, too. The probabilities for these E_S openings are probably not so well known to most of us. The best presentation I've seen of the low- and high-latitude probabilities of E_S is in Figure 5.17 in *Ionospheric Radio* by Kenneth Davies, published by Peter Peregrinus, 1990. ***(IN DEPTH:*** *See Figure 5.17 at <http://bit.ly/1hC4N6g>. – K9LA.)*

At high latitudes, the highest likelihood for E_S is in the late evening (local time) throughout the entire year. At low latitudes, the highest likelihood is around noon (local time) throughout the entire year.

Plots in Figure 5.17 show the probability that foE_S (the E_S critical frequency) is above 5 MHz. This means the E_S MUF will be above about 25 MHz.

Exploring the Pedersen Ray

Most of the time low-elevation angles are the norm for our DX QSOs via the F_2 region on the higher bands. Of course there are exceptions to this, and incidences of these occurrences are documented in amateur radio literature. These instances of higher elevation angles usually are normal one- or two-hop mechanisms over shorter distances — for example, North America to the Caribbean or North America to Europe via two higher-elevation angle hops.

But there's another mechanism involving even high-elevation angles which also involves longer distances. It's called the Pedersen Ray, and was first demonstrated in the late 1950s by Canadian scientists at the Defense Research Telecommunications Establishment in Ottawa (E. Warren and E. L. Hagg; *Single-Hop Propagation of Radio Waves to a Distance of 5,300 km*; *Nature;* January 4, 1958). Conceptually the Pedersen Ray is ray 5 in **Figure 3**.

Rays 1, 2, and 3 are low-elevation angle rays, and the distance covered is progressively less as the elevation angle goes higher. But ray 4 ends up even farther down the road than ray 2. Ray 5 is the highest elevation angle that still propagates to a distant location, and the distance is the farthest. Ray 6 goes through the ionosphere.

Please realize that **Figure 3** is a rectangular projection of the spherical Earth-ionosphere system. Thus the Pedersen ray follows the curvature of the Earth over a long distance. This requires a very stable ionosphere over a very long distance. This leads to the comment that the Pedersen Ray, when it occurs, tends to peak near noon at the mid point of the path when horizontal gradients of the electron density along the path are at a minimum.

Thus the usefulness of the Pedersen Ray is somewhat suspect. It may happen, but it may happen only very occasionally and for a short period of time. There's not a lot in the ionospheric literature on the Pedersen Ray, so we don't have a lot of previous research on which to rely.

Additional Propagation Charts
For Tomas Hood's, NW7US's propagation charts, visit <http://www.CQPlusPropagation.blogspot.com>.

Optimum Working Frequencies (MHz) - For April 2014 - Flux = 138, Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	27	27	26	25	23	21	19	17	16	15	14	13	13	16	20	22	23	25	26	26	27	27	28	28
NORTHERN SOUTH AMERICA	35	35	34	31	28	26	24	22	21	19	18	17	17	19	23	26	28	30	31	33	34	34	35	35
CENTRAL SOUTH AMERICA	35	32	29	27	24	23	21	20	19	18	17	19	18	21	26	29	32	34	35	36	36	37	36	36
SOUTHERN SOUTH AMERICA	33	30	26	24	22	21	20	19	18	17	16	16	17	18	21	25	28	31	33	34	36	36	37	35
WESTERN EUROPE	18	15	12	11	15	18	13	12	12	11	13	18	20	21	22	23	23	23	23	23	22	21	20	19
EASTERN EUROPE	11	11	11	10	15	18	18	16	12	11	16	18	19	20	21	22	22	21	21	20	19	17	12	12
EASTERN NORTH AMERICA	31	30	29	27	24	22	20	19	18	16	16	15	17	22	25	27	29	30	31	32	32	32	32	32
CENTRAL NORTH AMERICA	17	17	16	16	14	13	12	11	10	10	9	8	8	10	13	14	15	16	17	17	18	18	18	18
WESTERN NORTH AMERICA	9	9	9	9	8	7	7	6	6	5	5	4	4	4	6	7	8	8	9	9	9	9	9	9
SOUTHERN NORTH AMERICA	29	28	28	27	25	23	21	19	18	17	15	15	14	15	19	22	24	25	27	28	28	29	29	29
HAWAII	24	25	25	24	24	23	22	20	19	17	16	15	14	13	12	12	14	17	19	20	22	23	23	24
NORTHERN AFRICA	16	15	14	13	13	12	13	12	12	11	11	17	20	21	23	23	24	25	25	24	23	21	19	18
CENTRAL AFRICA	20	18	17	16	15	16	13	12	11	11	12	18	20	21	22	23	24	24	25	25	25	25	23	21
SOUTH AFRICA	22	21	19	18	17	17	18	17	16	15	14	14	21	24	26	28	29	30	30	31	31	28	26	24
MIDDLE EAST	13	13	12	13	18	19	18	14	12	11	15	18	20	21	22	22	23	23	22	20	18	16	15	14
JAPAN	25	25	25	25	24	23	21	19	16	14	14	13	12	12	11	14	13	12	12	16	19	22	23	24
CENTRAL ASIA	26	25	25	24	24	23	21	19	15	14	13	13	12	12	11	18	20	18	17	16	15	17	21	24
INDIA	20	20	20	21	21	20	19	18	16	13	11	15	15	11	11	11	10	10	10	13	16	17	18	19
THAILAND	21	23	25	24	23	22	21	19	16	13	13	12	12	11	15	19	21	21	19	18	17	16	15	18
AUSTRALIA	33	35	36	37	37	36	34	31	29	26	24	22	21	19	18	18	19	18	18	17	19	24	28	31
CHINA	24	24	24	24	23	22	21	19	16	13	12	12	11	11	16	15	14	13	12	12	12	18	20	22
SOUTH PACIFIC	37	38	38	37	37	35	33	30	26	24	22	21	19	18	18	17	16	16	16	26	30	33	35	37

UTC TO/FROM US MIDWEST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	31	31	30	28	25	23	21	19	18	17	16	15	16	20	23	25	27	28	29	30	31	31	32	31
NORTHERN SOUTH AMERICA	32	32	31	28	25	23	22	20	19	17	17	16	15	19	22	24	26	28	29	30	31	32	32	32
CENTRAL SOUTH AMERICA	35	32	29	26	24	22	21	20	18	18	17	18	20	24	27	30	32	34	35	36	36	36	36	36
SOUTHERN SOUTH AMERICA	33	29	27	24	23	21	20	19	18	17	16	16	18	21	24	27	30	32	33	35	36	36	37	35
WESTERN EUROPE	17	12	12	11	11	13	12	12	11	11	17	20	21	23	23	24	24	24	24	23	23	22	21	19
EASTERN EUROPE	12	11	11	11	13	13	12	12	11	11	17	20	21	22	23	23	23	23	22	21	20	19	17	13
EASTERN NORTH AMERICA	22	22	20	19	17	16	15	14	13	12	11	11	14	16	18	20	21	22	22	23	23	23	23	23
CENTRAL NORTH AMERICA	10	10	10	9	8	7	7	6	6	5	5	5	5	7	8	9	9	10	10	10	11	11	11	10
WESTERN NORTH AMERICA	18	17	17	16	15	13	12	11	10	10	9	9	8	10	13	14	15	16	17	17	18	18	18	18
SOUTHERN NORTH AMERICA	20	20	19	19	17	16	14	13	12	11	11	10	10	12	14	16	17	18	19	20	20	20	20	20
HAWAII	29	29	29	28	27	25	23	21	19	18	17	16	15	14	14	14	16	19	22	24	25	26	27	28
NORTHERN AFRICA	21	20	18	17	15	14	13	13	12	12	15	19	21	23	24	25	25	26	26	26	26	25	25	23
CENTRAL AFRICA	20	19	18	16	15	14	13	13	12	11	16	19	21	23	24	25	25	26	26	26	26	25	24	22
SOUTH AFRICA	22	20	19	18	17	17	17	21	20	19	18	21	26	29	32	34	36	37	36	34	31	28	26	24
MIDDLE EAST	14	13	13	12	14	13	13	12	11	11	17	20	22	23	24	24	25	24	23	22	19	18	16	15
JAPAN	25	25	24	23	22	20	17	14	13	13	12	12	11	15	14	14	13	12	12	16	20	22	23	24
CENTRAL ASIA	25	24	24	23	21	20	16	14	13	12	12	11	12	18	20	21	20	18	17	16	15	16	21	24
INDIA	14	16	17	18	19	17	12	12	11	11	15	18	19	19	18	17	16	14	11	11	11	10	10	10
THAILAND	21	23	23	22	21	19	16	13	12	12	11	11	17	20	21	22	23	21	19	18	17	16	15	17
AUSTRALIA	34	36	37	36	35	33	30	27	25	23	22	20	19	18	19	20	19	18	17	17	20	25	29	32
CHINA	23	24	23	22	21	19	16	13	12	12	11	11	17	19	16	14	14	13	12	12	11	17	20	22
SOUTH PACIFIC	38	38	37	36	35	33	30	27	24	22	21	19	18	17	17	16	16	15	20	28	32	34	36	37

UTC TO/FROM US EAST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	25	24	23	21	19	18	16	15	14	13	12	12	15	17	19	21	22	23	24	24	25	25	25	25
NORTHERN SOUTH AMERICA	28	28	26	24	22	20	18	17	16	15	14	14	16	18	21	22	24	25	26	27	28	28	28	29
CENTRAL SOUTH AMERICA	34	31	28	26	24	22	20	19	18	17	17	18	22	25	28	30	32	33	34	35	36	36	36	35
SOUTHERN SOUTH AMERICA	32	29	26	24	22	21	20	18	18	17	16	16	20	24	27	29	31	32	34	35	35	36	36	35
WESTERN EUROPE	14	13	12	12	11	11	12	12	11	14	18	20	22	23	23	24	24	24	23	23	22	21	20	17
EASTERN EUROPE	15	12	11	13	14	13	12	12	11	16	19	21	23	23	23	23	23	23	22	22	21	20	19	18
EASTERN NORTH AMERICA	11	10	10	9	8	7	7	6	6	5	5	6	7	8	9	10	10	11	11	11	11	11	11	11
CENTRAL NORTH AMERICA	23	23	21	20	18	17	15	14	13	12	12	11	15	18	20	21	22	23	24	24	24	24	24	24
WESTERN NORTH AMERICA	31	30	29	27	25	22	21	19	18	17	16	15	17	22	25	27	29	30	31	32	32	32	32	32
SOUTHERN NORTH AMERICA	25	24	24	22	20	18	17	16	14	14	13	12	13	16	19	21	22	23	24	25	25	25	25	25
HAWAII	31	31	30	28	26	24	22	20	19	17	16	16	15	17	16	15	18	21	24	26	27	29	30	31
NORTHERN AFRICA	22	20	19	18	17	16	15	16	15	16	21	25	27	29	30	31	32	32	32	31	30	29	27	24
CENTRAL AFRICA	21	19	18	17	16	15	17	16	15	16	21	25	27	29	30	31	32	31	31	31	30	27	25	23
SOUTH AFRICA	22	20	19	18	17	17	17	20	19	18	19	23	27	29	32	33	35	36	36	34	31	28	26	24
MIDDLE EAST	18	17	16	15	15	14	13	12	12	15	19	21	23	24	25	26	26	26	26	26	26	23	22	20
JAPAN	24	23	22	19	16	15	14	13	12	12	11	17	16	15	14	13	13	12	11	16	20	22	23	24
CENTRAL ASIA	23	22	21	19	15	14	13	12	12	11	14	19	21	22	23	22	20	19	17	16	15	15	20	24
INDIA	11	11	10	10	14	13	12	12	11	14	19	21	21	21	21	21	21	20	19	18	16	13	12	11
THAILAND	19	21	20	16	14	13	12	12	11	12	18	20	22	23	24	25	24	22	20	19	17	16	15	15
AUSTRALIA	35	36	36	34	32	29	26	24	22	21	20	19	18	22	21	20	19	18	17	16	21	26	30	33
CHINA	23	22	20	18	14	13	13	12	12	11	17	20	22	20	17	15	14	13	12	12	11	16	20	21
SOUTH PACIFIC	37	37	36	34	31	28	26	23	21	20	19	18	17	16	16	15	15	15	24	30	33	35	36	37

BY CAROLE PERRY, WB2MGP

They're Pillars Supporting Scouting and Amateur Radio

In the fall of 2013 I had the wonderful experience of meeting with Sid Hughes, KØSCH, and George Weber, KAØBSA at Peaceful Valley Scout Ranch near Elbert, Colorado.

A member of my RCA Youth Activities Committee, Stan Reubenstein WA6RNU, arranged for me to go to this fabulous location and meet with two of the driving forces behind the excellent scouting program there.

We're always on the lookout for youth groups incorporating amateur radio that may be in need of some assistance from our Radio Club of America Youth Activities Program.

KØSCH

Sid Hughes upgraded to Extra in February 2008. He is semi-retired, after having spent 20 years in the Army, retiring in 1992 as a lieutenant colonel. He is very active in the Boy Scouts of America, at both the troop and district level.

"Scouting was important to me as a young man, and I felt it was time to give something back; and have fun doing it, too," Sid said. Like many other hams that are involved in scouting, Sid had a passion for combining interests in scouting with amateur radio. He was on the staff of K2BSA, the Boy Scouts' amateur radio station at the 2010 and 2013 National Jamborees. He is the trustee of the Council's amateur radio club, KBØBSA.

KAØBSA

George Weber wanted to get his amateur radio license when he was 12 years old because some of his friends did. He had a problem learning the Morse code and couldn't get beyond Second Class in the Boy Scouts. Not to be defeated, when he was in graduate school at University of Colorado Boulder years later, he took a Novice class sponsored by the Boulder Amateur Radio Club and learned enough CW to pass the code test and the written test to get his ticket in 1978.

With typical ham perseverance, George got his Amateur Extra license and was able to request and receive the vanity call — KAØBSA. When his sons got into scouting, George got involved, too, as a leader. He did four tours at the National Boy Scout Jamboree.

KBØBSA: Putting Together a Plan

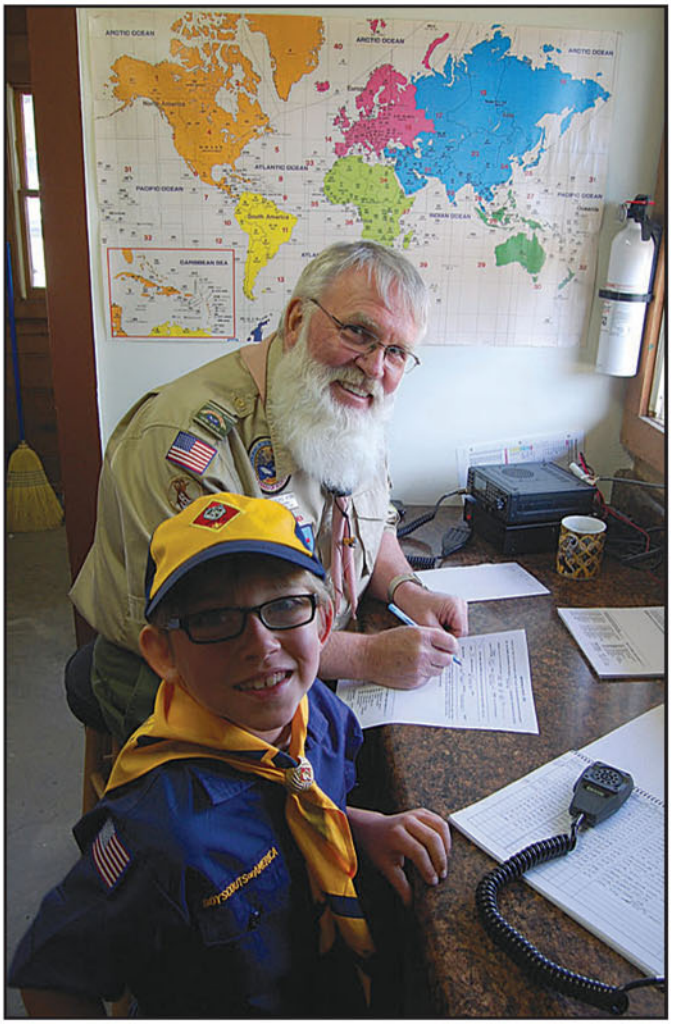
In 2010, at the Centennial Jamboree, George met Sid, who also resided in Colorado. In June 2011 the two of them began working on establishing an amateur radio club affiliated with their local council. A constitution, by-laws, and operating procedures were drawn up, and approved by a core membership of Scouter/HAM's. The Club was formed and was granted its request for the club callsign KBØBSA. By the summer of 2012 the permanent radio station was set up at the council's main camp at peaceful Valley Scout Ranch.

The purpose of the club and the station is twofold:

- To promote and support the Radio Scouting program concept for the scouts of the Denver Area Council. Radio scouting consists of merit badge support in radio, electronics, communications, emergency preparedness, and so on; Jamboree on the air (JOTA), scout camps on the air, and the amateur radio hobby — including training, licensing, and fox hunting.

*<wb2mgp@gmail.com>

Sid Hughes, KØSCH, mentors a young scout at Peaceful Valley Scout Ranch near Elbert, Colorado. (Photography courtesy of KØSCH and KBØBSA)



George Weber, KAØBSA, a strong proponent of scouting and amateur radio, has done four tours of duty at the National Boy Scout Jamboree.

Foxhunting using hand-held, direction-finding VHF antennas, is a very popular activity among the scouting community.

An ICOM transceiver and LDG auto tuner are part of the HF operation at Peaceful Valley Scout Ranch.

- To serve as an emergency communications station to support the camp operations and neighboring communities in times of natural or man-made emergencies.

The first official activity supported by KBØBSA was the Denver Area Council 100th Anniversary Camporee in September 2012. The station provided scouting program communications and served as an auxiliary communications center for Elbert County first responders and the Douglas-Elbert counties' ARES® group.

Jamboree On The Air

The second official activity was JOTA in October 2012. It was a daylong event with several scout and Scouter visits during the day.

According to Sid, the 2013 JOTA event was well attended, focusing on JOTA radio contacts, Radio Merit Badge class, fox hunting, and amateur

radio hobby orientation. “There were 15 scouts who earned the Radio Merit Badge” Sid proudly reported. The scouts contacted stations coast to coast and worldwide, using HF, VHF/UHF, IRLP, and EchoLink modes.

The station is equipped with two HF radios, one VHF/UHF dual-band radio dedicated to voice/phone and one VHF radio for packet communications. The equipment was acquired through private donations.

The Colorado crew takes part in Jamboree On the Air each October — among more than 6,000 amateur stations on the air in 150 countries during the international event.

Antennas included a G5RV HF dipole and an Alpha-Delta tri-band for HF operations, a 3-foot vertical for VHF/UHF and a 6-foot vertical for packet. The antennas were mounted on two 30-foot telephone poles.

During my wonderful visit to this beautiful site, both Sid and George told me that the goals of Club/KBØBSA in 2014 are:

- To improve the station facility by adding better Wi-Fi access
- To add a commercial-band base unit to interface with the existing camp radio network.
- To receive donations to support purchase of administrative supplies such as QSL cards, postage, envelopes, and expendable office supplies.

My RCA Youth Activities Committee will continue to offer assistance to this dynamic organization that combines the best of the broad opportunities now available in both scouting and ham radio. For more information about this specific amateur radio club, contact George at <ka0bsa@arrl.net> or Sid at <kb0bsa@arrl.net>.

W3LNE and K5ND

Another ham radio friend who is passionate about scouting and ham radio is Don Kunst, W3LNE, offered to be available for questions as well at <w3lne@arrl.net>.

Don’s son, Garrison, KB3LEZ, was a young presenter on scouting at the Dayton Hamvention® Youth Forum a few years ago.

Jim Wilson, K5ND, is the point man for scouting and amateur radio at K2BSA:

- Email: <jota@scouting.org>
- Website: <http://www.k2bsa.net>
- Scouting and ARRL: <http://bit.ly/1djreWD>

In January 2011 the ARRL and the Boy Scouts of America signed a memorandum Of Understanding (MOU) designat-

George Weber, KAØBSA, spends many hours in the classroom preparing young scouts to achieve their Radio merit badge and sparking interest in becoming a radio amateur.

Telephone poles are put to good use in the antenna farm at Peaceful Valley Scout Ranch in Colorado.

ing the ARRL as a key resource for K2BSA and Merit Badge training at the BSA National Scout Jamboree and establishes the ARRL as the go-to source for scouts interested in learning about and becoming involved in radio communications.

N9JA and ICOM's Ongoing Support

Besides being a huge supporter of Dayton Youth Forum presenters through the outstanding support of Ray Novak, N9JA, in May 2012 ICOM America and the Boy Scouts of America announced a joint sponsorship for the K2BSA operation at the 2013 national Scout Jamboree.

ICOM provided all the transceivers for the Jamboree. They also installed three amateur radio repeaters at the site of the Jamboree, held at the Bechtel Scout Reserve in West Virginia. The repeaters, callsign WV8BSA, are installed and operational on an on-going basis to support all events at The Summit.

ICOM and the BSA also launched an amateur radio station loan program for local Scout Councils that provides complete stations for loan to councils in support of Radio Merit Badge workshops, summer camp, and Jamboree on the Air events.

In addition, ICOM supplies promotional support for JOTA, the largest Scouting event in the world with many thousands of scouts participating on more than 6,000 amateur radio stations in 150 countries. This takes place the third weekend in October every year.

For even more information about the station loans use the following links:

<http://www.k2bsa.net/icom-jota-support>
<http://www.k2bsa.net/icom-station-loans>

In Appreciation

Thanks to Sid, George, Don, Jim, and Ray for all their great efforts to help youngsters enjoy the very best that scouting and amateur radio have to offer. – WB2MGP

A visual prompt atop the ICOM transceiver reminds young operators: "At the end of your transmission say 'OVER.'"

There is always a lot of activity both inside and outside the JOTA operations tent at Peaceful Valley Scout Ranch.

BY RICHARD FISHER, *KI6SN

Please Stand By! 2 Premiere T-FR Operating Events Are Coming Soon!

It is hard to believe that two premiere trail-friendly QRP outdoor operating events of the year are already coming up next month and the following: ARRL Field Day, June 28-29, and the Adventure Radio Society-sponsored Flight of the Bumblebees, July 27.

Each event is held annually and is a great opportunity to give your T-FR operations a rigorous workout.

Of course, ARRL Field Day is a wild weekend affair and includes individuals and club stations of every power category and mode you can dream of. For details about 2014 ARRL Field Day, visit <http://bit.ly/1eLgpNu>.

The ARS Flight of the Bumblebees (FOBB) is a one-day, 4-hour operating sprint that finds lots of in-the-field operators — officially registered as "bumblebees" — on the air trying to contact one another and all home stations participating in the contest.

This lesser-known on-air activity attracts operators from across North America and DX locations. A total of 94 logs were received from "bumblebees" and home stations following 2013's FOBB *(**SEE:** 2013 FOBB's scoreboard at <http://bit.ly/1fRhjfP>. – KI6SN.)*. The Top 10 scorers included:

- N4BP
- KXØR
- N7OU
- NØSS
- AC7A
- K6XM
- K4BAI
- AB9CA
- N1EU
- K7TQ

To see a full roster of last year's 180 registered "bumblebees" and from where they operated, visit: <http://bit.ly/15aGgN1>. Many of the locations are truly remarkable.

*(**SEE:** Rules for "Flight of the Bumblebees" at <http://bit.ly/PIQRLM>. - KI6SN)*

What's a 'Bumblebee' Look Like?

Here are snapshots of a couple of field operators from FOBB 2013, including a brief description of their experience during the 4-hour contest.

Al Woodhull, N1AW, BB No. 108, Ball Mountain, Leyden, Massachusetts: "I operated from the Leyden Wildlife Management area and during the contest made 12 contacts, which included 7 other 'bumblebees.'

"2013 was a good year," he wrote. "The best FOBB yet. In the three previous FOBBs in which I had participated I did not find many registered BBs ("bumblebees"). Last year there seemed to be many.

*email <ki6sn@cq-amateur-radio.com>

A Morse straight key, Yaesu FT-817 transceiver, and LDG auto tuner were the workhorses of Al Woodhull, N1AW's, 2013 "Flight of the Bumblebees" field operation from Ball Mountain in Leyden, Massachusetts. (Courtesy of N1AW)

FOBB 2013 Bumblee Numbers

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Bumblebee Number	Callsign	Name	Expected Location
1	WØCH	Dave	In the woods of SW Missouri
2	W1PNS	Pete	Joe's Rock,Wrentham, MA
3	AC7MA	Rich	Washington Cascades
4	KK5NA	Joe	By the Pond, Arlington, TX
5	KI6SN	Richard	Anza Narrows Park, Riverside, CA
6	KB9FKO	Drew	Somewhere in San Diego County, CA
7	AC7A	Thomas	Santa Catalina Mountains, southern Arizona
8	W2KJ	Joe	Local park in Hampstead, NC
9	WC7S	Dale	State lines of Colorado, Nebraska and Wyoming
10	NW8L	Bob	Ojito Wilderness, NM
11	KD5ONS	Kevin	Coast Range, OR
12	W3BBO	Bob	Erie, PA
13	K7TQ	Randy	Mountains east of Moscow, ID
14	N6GA	Cam	Mt. Baldy Ski Area, CA
15	N7OU	Bill	Tillamook Bay, OR
16	W2LJ	Larry	Washington Rock, Greenbrook, NJ
17	NK9G	Rick	City Park in New Berlin,WI
18	N9AW	Jerry	City Park in New Berlin,WI
19	NØJBF	Richard	County Lake Park or Pine Ridge Campground, Ashland, MO
20	KG3W	Scotty	Outback in Grove City, PA
21	NØSS	Kent	Pine Ridge State Park, Ashland, MO
22	K9EW	Ed	Maple Grove Forest Preserve, Downers Grove, IL
23	K4UDG	Kelly	Lake Frederica, Orlando, FL

An Internet screen grab of part of last year's FOBB roster shows the wide variety of operating locations "bumblebees" journeyed to for the four-hour contest. See the full roster at <http://bit.ly/15aGgN1>.

"I got a late start and then a false start, as my first attempt to rig an antenna failed. I operated about two hours. I used an FT-817 with a portable 20-15-10 dipole, and all but two contacts were on 20. Ten meters was dead. Fifteen was almost dead — I could hear one or two very weak W/K6s.

"I was able to get some power radiated on 40 meters, and made two contacts there. Next year I'll put up a longer dipole.

"I did not count my first QSO with W3BBO (BB No. 12). I copied his report, but then I was stung by a *real bumblebee,* with the result that my battery was kicked loose and I was delayed until getting set up again further from the bumblebee nest."

According to his QRZ.com information page, Al "was first licensed as KN1BOW/K1BOW (Novice and Technician) in 1957 at the age of 14. Getting my code speed to 13 wpm was hard.

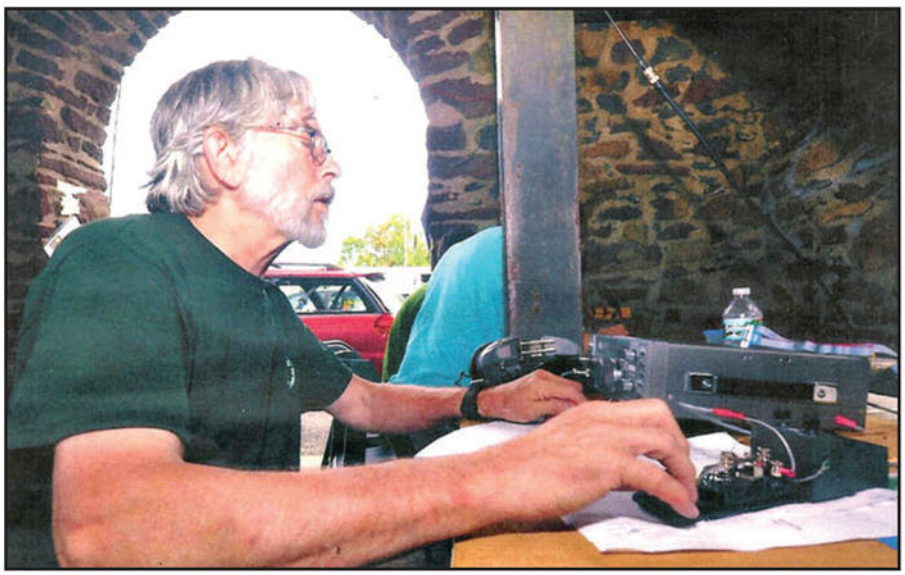
"I upgraded to General just in the nick of time to retain HF privileges (the Novice license was then valid for one year, non-renewable). I lived in Lexington, Massachusetts and was the first trustee of Lexington High School club station K1JMQ.

"Following college and Peace Corps service in West Africa I moved to Seattle for graduate school in 1967. In those days you had to get a new call when you moved between U.S. call areas, and I held W7FHK for five years.

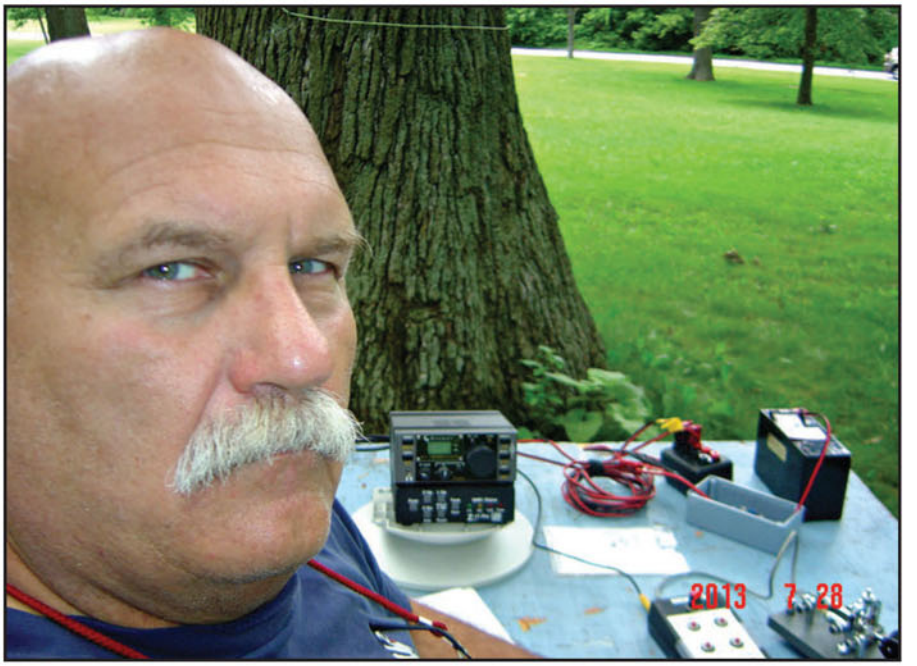
"It was back to Massachusetts and W1GSJ in 1972. At that point I upgraded to Extra, and when the opportunity to choose your own call came along in 1977 I opted for N1AW, which I have held since then.

"I also was trustee of Hampshire College club station WA1WDU. Between 1985 and 1997 I made a number of visits to Nicaragua where I taught at two different universities. In 1990 I operated as N1AW/YN1, and then in 1993 I was issued YN1ASW.

"I'm a member and officer of the Franklin County (MA) Amateur Radio Club, and one of the webmasters of the website <http://www.fcarc.org>. I belong to other clubs in western Massachusetts — the Mt. Tom Amateur



Here's a look at N1AW's set-up for ARRL Field Day in 2010. (Courtesy of N1AW)



Rick McGaver, NK9G, had a "down to business" look for this picture during his 2013 FOBB field operation from Sheridan Park, Cudahy, Wisconsin. He used an Elecraft KX-1 and LDG Z11pro in the contest, making a great showing. (Courtesy of NK9G)

Repeater Association and the Hampden County Radio Association.

"I enjoy CW operation, and low-key contesting such as Field Day. I operate QRP in contests like ARRL November Sweepstakes for CW, and ARRL 160-meter contest and have received several certificates for first place QRP in Western Massachusetts — sometimes as the only entrant in the QRP category. I'm not a super-competitive contester. My goal is usually to beat my previous year's score or to equal it with fewer hours on the air. I'm also active as a SOTA chaser, hoping to also do some summit activations.

"I'm a member of NAQCC (No. 1332) and SKCC (No. 10565) but not active enough that I always can remember my number when asked on the air."

The bugs must have been so fierce at the NK9G/BB operating location, Rick was hard pressed to hold the can of Repel® steady enough to stay in focus for this bug repellant snapshot. (Courtesy of NK9G)

Rick McGaver, NK9G, BB No. 17, Sheridan Park, Cudahy, Wisconsin: "Sheridan Park is part of the Milwaukee County Park System. That's where I operated for 2013 FOBB using an Elecraft K1 transceiver on 20 and 40 meters — battery powered.

"On 40 meters I put up a dipole, while on 20 I used a delta loop," he writes. "They were attached to an LDG Z11Pro autotuner.

"I made a total of 49 contacts during the contest:

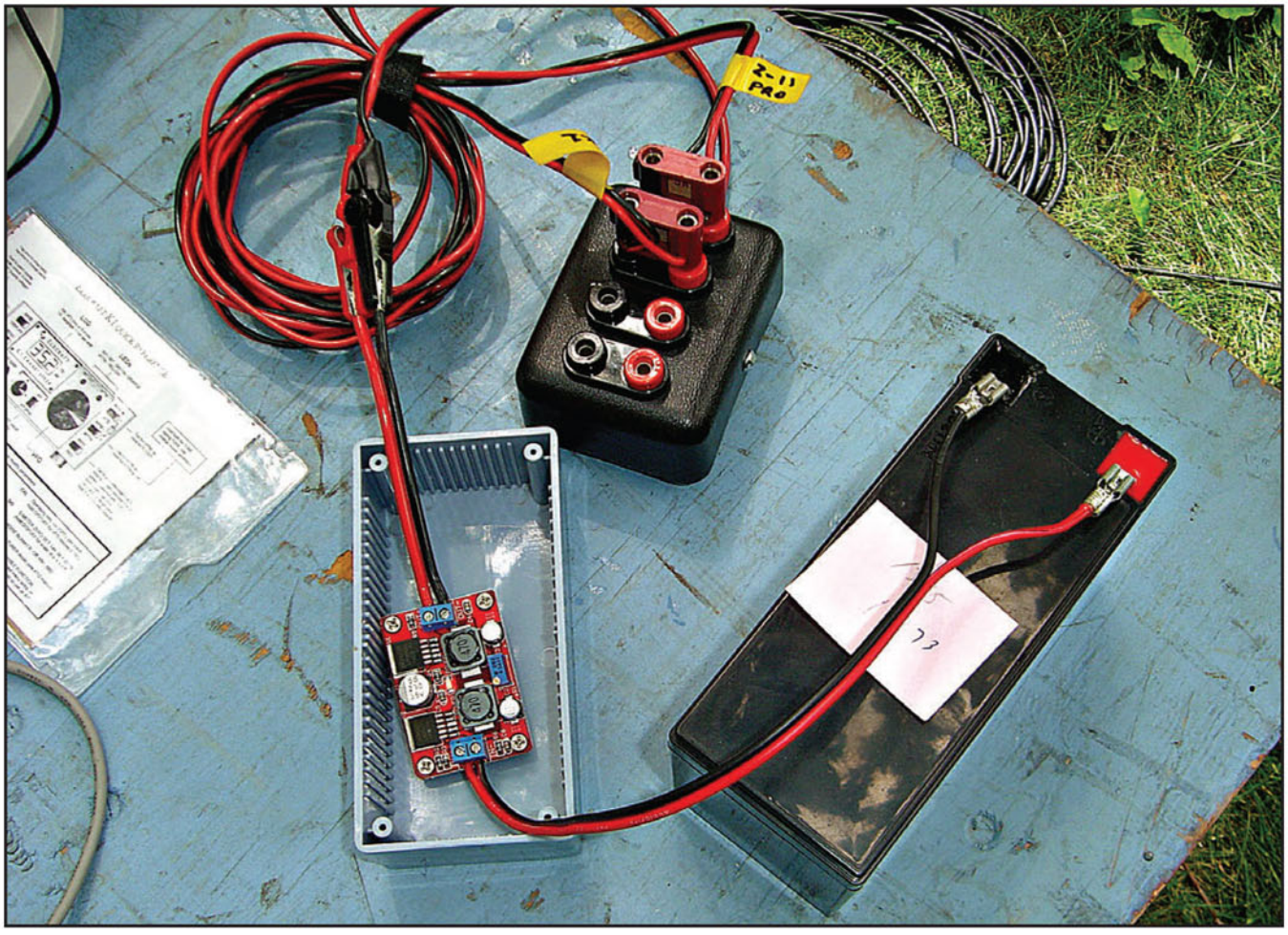
- 41 QSOs on 20 meters with 29 BBs and 13 non-BBs
- 10 QSOs on 40 meters with 6 BBs and 4 non-BBs

"For my 2013 FOBB operation, I made 49 QSOs with a multiplier of 105 for a final score of 5,145 points.

"I operated from a location I'd been before. It was great.

"Upon arrival at 10:45 a.m., I went to work setting up the 20-meter delta loop. The feed point was about 15-18 feet. The 40-meter inverted V was at 50 feet for sure — and played well.

"I was ready to go 5 minutes before the contest started, using my K1 20/40



A gel cell and controlling circuitry powered the KX-1 for NK9G/BB. (Courtesy of NK9G)

NK9G's home station is as impressive as his T-FR layout. At home in Cudahy, Wisconsin, he's set up for HF and VHF operation. (Courtesy of NK9G)

on battery. Initially I was crushed by QRM, so I moved down the band. I think the home stations with the better antennas were the difference.

"I missed WA5RML, W1PNS, and N1AW. The great signals of the day were from WC7S, N1FJ, and WJ9B.

"Coincidentally, I operated near where a Cessna four-seat aircraft had crashed into Lake Michigan the day before. My site was just two miles from the accident location.

"I was on a bluff overlooking the lake. There were lots of gawkers passing by during the contest period. Some of the visitors thought I was part of the plane crash rescue team.

"Before the 2014 FOBB I plan to get back out into the field and do some more antenna experiments."

Rick is a member of the W/K Amateur Radio Club of Greater Milwaukee, Greater Milwaukee DX Association, QRP Cheeseheads Amateur Radio Club and is a registered ARRL Volunteer Examiner. He is owner/trustee of the NK9G/R repeater (223.300/224.900 MHz) in Cudahy.

BY RICHARD FISHER, *KCQ6CQ

How to Join the CQ Monitoring Station Program, Step By Step

Now that we've gotten the *CQ Monitoring Station* Certificate of Registration designed and the CQMS online database updated, it's time to get going on growing our already growing community of shortwave, scanner, AM broadcast band, digital, and TV DX monitors. Last month we laid out the fundamentals. This month it's the *nitty-gritty.*

Looking back 2+ years, a bit of monitoring history was made January 1, 2012 when *Popular Communications* magazine made its bid to revitalize a shortwave listening community that had been exciting and vibrant 50 years ago.

Today, that revitalization program is alive and well in the form of the *CQ Monitoring Station* program — born out of the consolidation of *Popular Communications* magazine into *CQ Plus.*

As we noted on New Year's Day 2012, we are creating a platform for exploration of the far reaches of today's communications technology. Please join us!

CQ Monitoring Station Program History

Prompted by a question on *Pop'Comm's* Facebook page in summer 2011, and energized by hundreds of readers' warm memories of decades-old WRØ, WPE, and WDX station identification signs, the idea of forming a new community of communications monitors caught fire and quickly answered our question: *"Should Pop'Comm launch a monitoring station identification sign program of its own?"*

Quickly, hundreds of shortwave listeners, scanner monitors, AM broadcast band, and TV DXers lined up to become part of this new community.

With the advent of *CQ Plus*, the program is today the *CQ Monitoring Station* program with nearly 1,500 registered members representing 50 U.S. states and many countries from around the world. Our numbers grow every day.

Become Part of the CQMS Community

For the expanding *CQ Plus* audience, *Monitoring* this month will focus on how you can become a member of the *CQ Monitoring Station* community, obtain a station identification sign, and download a CQMS certificate to hang on the wall at your listening post. We'll do it step-by-step.

Housekeeping: New On the Web

Email: A special email account has been established exclusively for *CQ Monitoring Station* participants. It's your conduit for all things regarding the program: <CQPlusCQMS@gmail.com>.

Here is the new CQ Monitoring Station certificate of registration. Many of you will notice it takes elements of design from Popular Electronics' WPE certificate, circa 1959. The late Tom Kneitel, WPC4A, founding editor of Popular Communications*, was responsible for the popularization of the WPE program. It's a legacy we continue today.*
(Design courtesy of Katie Fisher, KCQ4KT)

***CQ Monitoring Stations* Blog:** The program has its own blog, as well: <http://www.cqplusCQMS.blogspot.com>. It's the place to find information updates and quick links to important websites related to the program.

It explains:

- *How to access* the *CQ Monitoring Station* ID Sign Database for assistance in selecting your station ID.
- *How to fill out* your official *CQ Monitoring Station* Certificate of Registration — suitable for printing, framing, and hanging on the wall at your listening post.

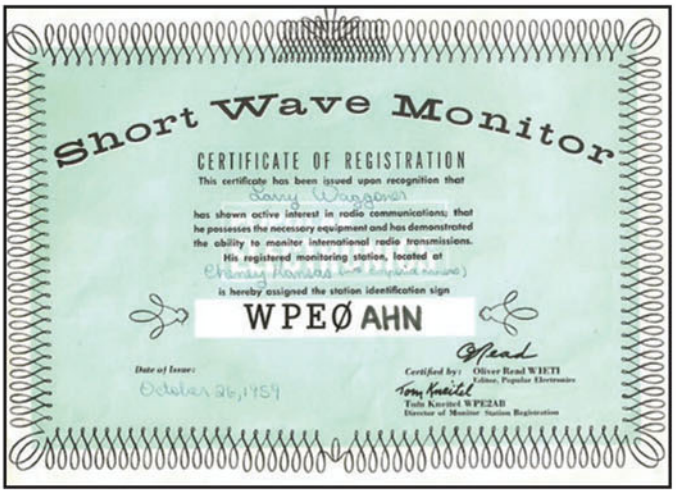
Quick links to the official Certificate of Registration, the CQMS database and other information.

Those Station ID Signs: Let's Get Started

As you will see, every station ID, no matter where the listening post is located on the planet, has the letters CQ — for *CQ* magazine — at its heart. *(**NOTE:** Your station ID prefix must reflect the country in which your listening post is located.)*

Those monitoring stations in the database with PC in their prefix — WPC or KPC, for example — are grandfathered into the *CQ Monitoring Station* program with the option of the listener keeping their original identification sign or changing to WCQ, KCQ, and so on. Going forward, though, only CQ prefixes will be issued to new members. For example, KCQ6JF.

* email <CQMS@gmail.com>



This classic WPE Popular Electronics Short Wave Monitor certificate of registration, bearing the signature of Tom Kneitel, WPE2AB, was issued October 29, 1959 to Larry Waggoner, WPEØAHN, whose listening post is noted as "Cheney, Kansas."

OK. Let's walk through this, starting with the United States — the contiguous kind — and broaden things from there.

Prefixes: WCQ or KCQ in the Contiguous U.S.

Monitoring stations in the *lower 48* United States have two prefixes from which to choose: WCQ, generally designated for stations east of the Mississippi River, and KCQ, generally for stations west.

Of course, given the vanity status of the *CQ Monitoring Station* program, stations may choose either a WCQ or KCQ prefix — regardless of their location in the U.S. It's just an option if you wish to exercise it.

The numerical portion of the WCQ-KCQ station identification sign follows the call district convention established by the FCC for radio amateurs in the contiguous United States.

The accompanying map shows which number (Ø to 9) corresponds with the states covered in each district. Again, given the vanity status of our program, any single-digit number can be requested, without regard to your location.

Non-Contiguous U.S. States and Possessions

What about monitoring stations that do not fall inside *the lower 48?*

In these cases, the amateur radio prefix of the state or U.S. possession in which the monitor is located is used.

For example:

- KHCQ7ABC – Hawaii has two callsign designations 6 and 7. This monitoring station corresponds with radio amateurs' KH7.
- KH2CQDEF – This listener, on the other hand, is on Guam. It's a U.S. island possession for which the KH2 prefix has been issued exclusively.

In Puerto Rico, however, where there are two numerical callsign designations within the island country, the monitoring station ID could be:

- KPCQ3XYZ would be represent Puerto Rico's 3 call signs, and ...
- KPCQ4QSO would represent PR's fourth. *Get it?*

DX Monitoring Station Prefixes: Alphabet Soup

Casting our monitoring station net more broadly into the DX world, we find the same kinds of variables. Take Canada, for example:

VECQ6ABC – This monitoring station is in the Canadian province of Alberta – the sixth of the country's eight call districts.

VO2CQDEF – VO2 is issued only to stations in Labrador, Canada, so the prefix is used in full in the prefix for the PC monitoring station ID.

A couple of other examples:

VKCQ7RST – A listener in Australia's seventh call district.

VR2CQABC – This monitoring station is in Hong Kong, for which the VR2 prefix is exclusive.

If your mind is boggled, *worry not.* Given the variety of DX prefixes that span the globe, there are bound to be questions. We will work with all applicants to assure every listening post in every DX entity can be part of this program. Just drop an email with your question to: <CQPlusCQMS@gmail.com>.

What is a Suffix?

Remember, the letter combination CQ is the heart of each station ID sign. The suffix follows either a digit or the letters CQ.

- In the case of KCQ6MUG in Southern California, the letters MUG constitute the suffix.
- With VECQ6ABC in, say, Alberta, Canada, the letters ABC are the suffix.
- For VR2CQXYZ in Hong Kong, the letters following CQ – XYZ – make up the suffix.

Now, let's move on to selecting your *CQ Monitoring Station* identification sign.

Suffixes: Those Not Available for Open Selection

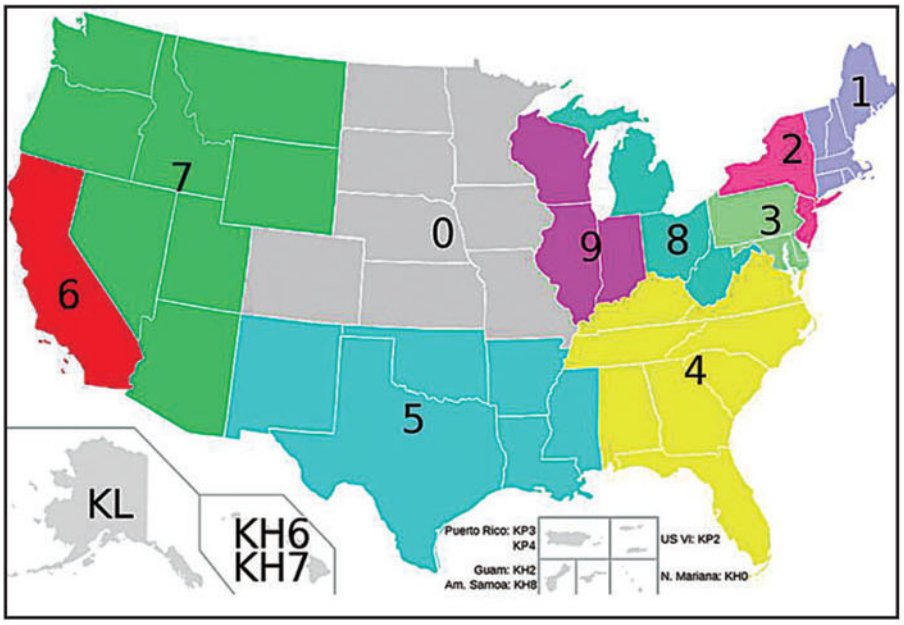
First a note of which suffixes *not* available: *All with just a one-letter suffix*.

They are reserved for:

- **Highly-distinguished** members of the monitoring community — those alive and deceased. For example: CQ Communications Publisher **Dick Ross,** who founded *Popular Communications* magazine, holds **WCQ2A**. The late **Tom Kneitel**, founding editor of *Pop'Comm* and the person responsible for the popularization of *Popular Electronics'* WPE *Short-Wave Monitor* program, has been posthumously awarded **WPC4A**.
- **Temporary special event** monitoring or contest stations: Say, for example, you embark on a listening DXpedition into the Arctic Circle, taking advantage of an opportunity like that presented in the November 2011 *Pop'Comm* feature *"Listening to a Dream: DXpedition to the Top of the World"* by Bruce A. Conti. Venture to the Artic in outer reaches of Finland and we'd be happy to issue you **OHCQ2A** temporarily. If you or a team of listeners is participating in a *CQ* listening competition, one-letter suffixes will be issued for the contest period: **KCQØB,** for example.

Suffixes: Your Smorgasbord of Choices

Even with single-letter suffixes off the table, you'll not be for wont of great station ID sign choices. All two-letter and three-letter suffixes are fair game.



CQ's WCQ-KCQ monitoring station identification signs for listening posts in the contiguous United States follow the amateur radio callsign districts established by the Federal Communications Commission. (Courtesy of Chris Ruvolo via WikiMedia Commons)

This grainy black and white photo is of the late Tom Kneitel, WPE2AB, founding editor of Pop'Comm and the man who almost single-handedly built the monitoring station community dating to his time at Popular Electronics in the late 1950s. (Courtesy of Judy Kneitel)

Here are some examples:

- Rich Moseson, Editor of *CQ Amateur Radio* (*CQ* magazine), for example, has chosen **WCQ2RIY,** to complement his WPE2RIY and WDX2RIY monitoring station ID sign from programs he took part in as a kid.
- As editor of *CQ Plus,* I was compelled to select **KCQ6CQ**: First, KCQ to indicate I'm west of the Mississippi river, 6 to indicate I'm in California and the suffix CQ, two letters to proudly fly our CQMS colors in abbreviated form.

The same two- and three-letter suffix guidelines apply for station ID signs issued to monitors outside the contiguous United States and DX stations.

How to Apply for Your CQ Monitoring Station ID Sign

Our *CQ Monitoring Stations* blog <http://www.CQPlusCQMS.blogspot.com> will show you how to access the station ID database — where you can see which ID signs have already been assigned — and how to customize and print out your Certificate of Registration.

ID signs are issued on a first-come basis, determined by the date and time on your email or the postmark of the request you send via the U.S. Postal Service.

How to apply: Write us with your top three station ID sign choices. Put them in order of priority — your favorite at the top. Include your **full name**, **city**, and **state or country** in which your listening post is located. Send your email to: <CQPlusCQMS@gmail.com>.

Via the USPS, write: *CQ Monitoring Stations,* CQ Magazine, 25 Newbridge Rd., Hicksville, NY 11801-2953 USA. Be sure to include a self-addressed and stamped envelope if you want us to print your certificate.

Upon receipt, we'll check your top choice against the database, and if it hasn't already been taken, will add you to the membership with your newly-issued station ID. If your favorite has already been taken, we'll check your second choice, then third.

Check the database to see which ID has been assigned you. Then download the CQMS Certificate of Registration, fill it in, and print it out!

Coming Next Month

Once everyone has had a chance to get on board with their new station ID signs, Certificate of Registration and the CQMS blog, it's time to talk about what you'd like to see in the way of awards, contests, and other listening post initiatives. So please be thinking about that.

Until the next Monitoring Station column, good listening and may your noise level be low and your spirits high!

– Richard Fisher, KCQ6CQ

Spring Finds at the CQ Store

FREE shipping on orders of $100 or more!

DX World Guide

by Franz Langner, DJ9ZB

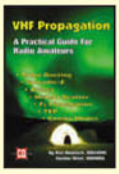
This 384-page DXer's guide-book is the first edition using color throughout and the first to be entirely in English.

Includes info on well over 300 DX entities. Geographical info, WAZ and ITU zones, ITU callsign allocations, amateur prefixes and more!.

6 X 9 Paperback $42.95
***New!* CD Version $22.95**
Buy both for only $60.95

VHF Propagation

by Neubeck, WB2AMU & West WB6NOA



A comprehensive source-book on VHF propagation by two great authors. Includes: Tropo ducting, Aurora, Meteor Scatter, TEP, Sporadic-E, Combo Modes and more!

6 x 9 Paperback $15.95

Lew McCoy on Antennas

by Lew McCoy, W1ICP

Unlike many technical publications, Lew presents his invaluable antenna info in a casual, non-intimidating way for anyone!

8.5 X 11 Paperback $19.95
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Up The Tower

The complete Guide To Tower Construction

by Steve Morris, K7LXC

A highly experienced professional tower installer Steve has over 25 years of tower experience on over 225 amateur radio installations as well as dozens of commercial sites and has a rich background of tower and antenna construction

6 X 9 Paperback $35.00

Understanding, Building & Using Baluns & Ununs

by Jerry Sevick, W2FMI

The successor to the popular and authoritative Baluns and Ununs. Great deal of new tutorial material, and designs not in previous book, with crystal clear explanations of how and why they work.

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***New!* CD Version $14.95**
Buy both for only $29.95

The Short Vertical Antenna and Ground Radial

by Sevick, W2FMI

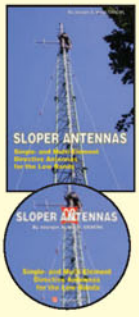
This small but solid guide walks you through the design and installation of inexpensive, yet effective short HF vertical antennas. With antenna restrictions becoming a problem, it could keep you on the air!

6 x 9 Paperback $10.00

Sloper Antennas

By Juergen A. Weigl, OE5CWL

Single- and Multi-Element Directive Antennas for the Low Bands



With calculations and practical experience, this book shows which basi concepts have to be considered for sloper antennas for the low bands.

6 X 9 Paperback $24.95
***New!* CD Version $18.95**
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Reflections III

by Walter Maxwell, W2DU

Includes all the information in Reflections I & II and much, much more! This fully revised and updated, this 424-page, third edition is truly a must have!

8.5 X 11 Paperback $39.95
***New!* CD Version $29.95**
Buy both for only $59.95

2014-15 calendar

15 months of value
January 2014
through March 2015

Fifteen spectacular color images of some of the biggest, most photogenic shacks and antennas from across the country and. . . new this year. . . we've included three Classic Radio and three CQ Contest pictures for good measure! These six shots, along with nine interesting and diverse Amateur Radio Operator's shacks from various locations across the country, comprise what we're sure you'll agree is our best calendar to date!

SALE! **$6.95 plus shipping**

Shipping charges: USA $3; Canada/Mexico $5; All other countries $10.

The NEW Shortwave Propagation Handbook

by W3ASK, N4XX & K6GKU

This authoritative book on shortwave propagation is your source for easy-to-understand information on sunspot activity, propagation predictions, unusual propagation effects and do-it-yourself forecasting tips.

8.5 X 11 Paperback $19.95
***New!* CD Version $14.95**
Buy both for only $29.95

W6SAI HF Antenna Handbook

by Bill Orr, W6SAI

W6SAI was known for his easy-to-understand writing style. In keeping with this tradition, this book is a thoroughly readable text for any antenna enthusiast, jam-packed with dozens of inexpensive, practical antenna projects that work!

8.5 X 11 Paperback $19.95
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BY ROB DE SANTOS, K8RKD*

GPS: The Multiplying World of Project 621B

A half century ago, in the early 1960s, there was a military project known as Project 621B, where the first fully-conceived concept of a satellite based navigation, timing, and location system was outlined.

As far as I can tell, it mostly passed without much public notice even though some aspects were publicly known. Today we know it as the Global Positioning System or GPS.

In the 1980s, when the U.S. launched the first GPS satellites, it was a revolution for the military. A decade later when President Clinton opened the system to commercial use and the first consumer devices soon appeared it heralded a revolution for ordinary people. Of course, you probably knew that part.

From the outset, it was a U.S.-built and controlled system. Many other countries weren't so sure that was a good thing, particularly after seeing what it could do during the first Gulf War. It didn't help that the U.S. maintained a higher grade system open only to its own government uses and an ability to degrade or turn the system off for other users should the U.S. feel it necessary for its own security.

Not surprisingly, efforts began to build systems controlled by other governments. Those efforts are now becoming operational and it is heralding a change.

Satellites Here, There ... and Everywhere

Do you own a smartphone with GPS? If you do, you might want to get a GPS app that shows you which satellites it can see — *or is it hear?* — at any given time. The U.S. system has always been based on at least 24 operational satellites. ***(NOTE:*** *As I write this, the U.S. has 31 operational GPS satellites. – K8RKD.)*

As long as you have at least three visible you can get a theoretical positional fix but practically, four or five are required. While I'm writing, my phone can see and use 18 satellites. Wait, where did they come from? Whose are they? The European Union, Russia, China, India, Japan ... the list is growing.

Most likely, what my phone is seeing are mostly U.S. (GPS), Russian (GLONASS) satellites, and one or two European (Galileo) satellites. The systems are all slightly different in terms of frequency, technology, orbit, and so on.

The GLONASS system is global, but better at high latitudes. Galileo is global with the best coverage over Europe. The Chinese have two systems in development: COMPASS which is global, and for their own territory and the west Pacific they will have Bediou.

The Indian system known as IRNSS will be limited to India and the northern Indian Ocean. The Japanese QZNS system is designed for Japan and Oceania and to maximize high-altitude visibility over Japan. GPS and GLONASS are operational and Galileo will be soon. COMPASS is half way there. All told, the number of satellites is now more than 75 and climbing.

For the end user, though, this means that as more and more devices are able to use multiple systems, there is potentially higher accuracy and reliability anywhere on the planet. It also means that global positioning will be with us in more and more ways going forward.

No matter what happens, we may never face a day when GPS won't work. With at least 32 usable satellites, this would result in at least nine satellites visible from any spot on Earth almost all the time.

To improve accuracy, reliability, and to support multiple uses, the satellites transmit multiple signals on multiple frequencies. U.S. GPS uses five frequencies at present between 1176.45 MHz and 1575.42 MHz. For end users, there is some cross compatibility between the systems so that many devices are able to use GPS, GLONASS, Galileo, and QZNS satellites.

Most of us think of GPS as a tool for navigation: to get from where we are to where we want to be. It's more, though, as any crime drama will tell you.

Law enforcement and families can use it to find someone or something. It is a very accurate timing system as all those satellites are carrying atomic clocks up there in space. GPS also provides tools for altitude, map making and surveying. It's a tool for scientific research on changes due to ground movement — *think earthquake prediction and tsunamis* — and global temperature change.

Other uses include power grid management, mining, meteorology, astronomy, and on it goes. ***(NOTE:*** *The first use ever conceived, prior to the military, was a test of Einstein's theory of general relativity as the satellites are moving clocks in space. Every GPS system has built-in correction factors to account for relativistic time shifts. –K8RKD)*

What is your experience with GPS? How do you use it? Send your thoughts by e-mail or postal mail (c/o the magazine) while I figure out where I am. Next month we'll tackle more horizons of communications.

* email: <commhorizons@gmail.com>

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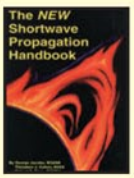

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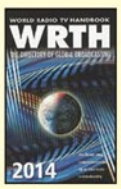

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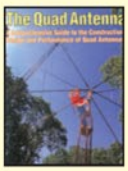
The Quad Antenna

by Bob Haviland, W4MB



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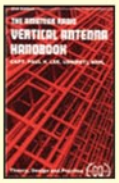

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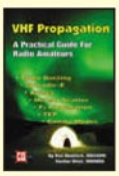

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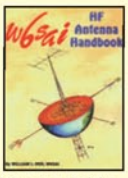

W6SAI was known for his easy-to-understand writing style. In keeping with this tradition, this book is a thoroughly readable text for any antenna enthusiast, jam-packed with dozens of inexpensive, practical antenna projects that work!

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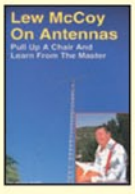

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CQ's 6 Meter and Satellite WAZ Awards

(As of February 1, 2014)

By Floyd Gerald,* N5FG, CQ WAZ Award Manager

6 Meter Worked All Zones

No.	Callsign	Zones needed to have all 40 confirmed
1	N4CH	16,17,18,19,20,21,22,23,24,25,26,28,29,34,39
2	N4MM	17,18,19,21,22,23,24,26.28.29,34
3	JI1CQA	2,18,34,40
4	K5UR	2,16,17,18,19,21,22,23,24,26,27,28,29,34,39
5	EH7KW	1,2,6,18,19,23
6	K6EID	17,18,19,21,22,23,24,26,28,29,34,39
7	KØFF	16,17,18,19,20,21,22,23,24,26,27,28,29,34
8	JF1IRW	2,40
9	K2ZD	2,16,17,18,19,21,22,23,24,26, 28,29,34
10	W4VHF	16,17,18,19,21,22,23,24,25,26,28,29,34,39
11	GØLCS	1,6,7,12,18,19,22,23,28,31
12	JR2AUE	2,18,34,40
13	K2MUB	16,17,18,19,21,22,23,24,26,28,29,34
14	AE4RO	16,17,18,19,21,22,23,24,26,28,29,34,37
15	DL3DXX	18,19,23,31,32
16	W5OZI	2,16,17,18,19,20,21,22,23,24,26,28,34,39,40
17	WA6PEV	3,4,16,17,18,19,20,21,22,23,24,26,29,34,39
18	9A8A	1,2,3,6,7,10,12,18,19,23,31
19	9A3JI	1,2,3,4,6,7,10,12,18,19,23,26,29,31,32
20	SP5EWY	1,2,3,4,6,9,10,12,18,19,23,26,31,32
21	W8PAT	16,17,18,19,20,21,22,23,24,26,28,29,30,34,39
22	K4CKS	16,17,18,19,21,22,23,24,26,28,29,34,36,39
23	HB9RUZ	1,2,3,6,7,9,10,18,19,23,31,32
24	JA3IW	2,5,18,34,40
25	IK1GPG	1,2,3,6,10,12,18,19,23,32
26	W1AIM	16,17,18,19,20,21,22,23,24,26,28,29,30,34
27	K1LPS	16,17,18,19,21,22,23,24,26,27,28,29,30,34,37
28	W3NZL	17,18,19,21,22,23,24,26,27,28,29,34
29	K1AE	2,16,17,18,19,21,22,23,24,25,26,28,29,34,36
30	IW9CER	1,2,6,18,19,23,26,29,32
31	IT9IPQ	1,2,3,6,18,19,23,26,29,32
32	G4BWP	1,2,3,6,12,18,19,22,23,24,30,31,32
33	LZ2CC	1
34	K6MIO/KH6	16,17,18,19,23,26,34,35,37,40
35	K3KYR	17,18,19,21,22,23,24,25,26,28,29,30,34
36	YV1DIG	1,2,17,18,19,21,23,24,26,27,29,34,40
37	KØAZ	16,17,18,19,21,22,23,24,26,28,29,34,39
38	WB8XX	17,18,19,21,22,23,24,26,28,29,34,37,39
39	K1MS	2,17,18,19,21,22,23,24,25,26,28,29,30,34
40	ES2RJ	1,2,3,10,12,13,19,23,32,39
41	NW5E	17,18,19,21,22,23,24,26,27,28,29,30,34,37,39
42	ON4AOI	1,18,19,23,32
43	N3DB	17,18,19,21,22,23,24,25,26,27,28,29,30,34,36
44	K4ZOO	2,16,17,18,19,21,22,23,24,25,26,27,28,29,34
45	G3VOF	1,3,12,18,19,23,28,29,31,32
46	ES2WX	1,2,3,10,12,13,19,31,32,39
47	IW2CAM	1,2,3,6,9,10,12,18,19,22,23,27,28,29,32
48	OE4WHG	1,2,3,6,7,10,12,13,18,19,23,28,32,40
49	TI5KD	2,17,18,19,21,22,23,26,27,34,35,37,38,39
50	W9RPM	2,17,18,19,21,22,23,24,26,29,34,37
51	N8KOL	17,18,19,21,22,23,24,26,28,29,30,34,35,39
52	K2YOF	17,18,19,21,22,23,24,25,26,28,29,30,32,34
53	WA1ECF	17,18,19,21,23,24,25,26,27,28,29,30,34,36
54	W4TJ	17,18,19,21,22,23,24,25,26,27,28,29,34,39
55	JM1SZY	2,18,34,40
56	SM6FHZ	1,2,3,6,12,18,19,23,31,32
57	N6KK	15,16,17,18,19,20,21,22,23,24,34,35,37,38,40
58	NH7RO	1,2,17,18,19,21,22,23,28,34,35,37,38,39,40
59	OK1MP	1,2,3,10,13,18,19,23,28,32
60	W9JUV	2,17,18,19,21,22,23,24,26,28,29,30,34
61	K9AB	2,16,17,18,19,21,22,23,24,26,28,29,30,34
62	W2MPK	2,12,17,18,19,21,22,23,24,26,28,29,30,34,36
63	K3XA	17,18,19,21,22,23,24,25,26,27,28,29,30,34,36
64	KB4CRT	2,17,18,19,21,22,23,24,26,28,29,34,36,37,39
65	JH7IFR	2,5,9,10,18,23,34,36,38,40
66	K0SQ	16,17,18,19,20,21,22,23,24,26,28,29,34
67	W3TC	17,18,19,21,22,23,24,26,28,29,30,34
68	IKØPEA	1,2,3,6,7,10,18,19,22,23,26,28,29,31,32
69	W4UDH	16,17,18,19,21,22,23,24,26,27,28,29,30,34,39
70	VR2XMT	2,5,6,9,18,23,40
71	EH9IB	1,2,3,6,10,17,18,19,23,27,28
72	K4MQG	17,18,19,21,22,23,24,25,26,28,29,30,34,39
73	JF6EZY	2,4,5,6,9,19,34,35,36,40
74	VE1YX	17,18,19,23,24,26,28,29,30,34
75	OK1VBN	1,2,3,6,7,10,12,18,19,22,23,24,32,34
76	UT7QF	1,2,3,6,10,12,13,19,24,26,30,31
77	K5NA	16,17,18,19,21,22,23,24,26,28,29,33,37,39
78	I4EAT	1,2,6,10,18,19,23,32
79	W3BTX	17,18,19,22,23,26,34,38
80	JH1HHC	2,5,7,9,18,34,35,37,40.
81	PY2RO	1,2,17,18,19,21,22,23,26,28,29,30,38,39,40
82	W4UM	18,19,21,22,23,24,26,27,28,29,34,37,39
83	I5KG	1,2,3,6,10,18,19,23,27,29,32.
84	DF3CB	1,18,19,32
85	K4PI	17,18,19,21,22,23,24,26,28,29,30,34,37,38,39.
86	WB8TGY	16,17,18,19,21,22,23,24,26,28.29,30,34,36,39
87	MU0FAL	1,2,12,18,19,22,23,24,26,27,28,29,30,31,32
88	PY2BW	1,2,17,18,19,22,23,26,28,29,30,38,39,40.
89	K4OM	17,18,19,21,22,23,24,26,28,29,32,34,36,38,39.
90	JHØBBE	33,34,40
91	K6QXY	17,18,19,21,22,23,34,37,39
92	JA8ISU	7,8,9,19,33,34,36,37,38,40
93	YO9HP	1,2,6,7,11,12,13,18,19,23,28,29,30,31,40
94	SV8CS	1,2,18,19,29
95	SM3NRY	1,6,10,12,13,19,23,25,26,29,30,31,32,39
96	VK3OT	2,10,11,12,16,34,35,37,39,40
97	UY1HY	1,2,3,6,7,9,12,18,19,23,26.28,31,32,36
98	JA7QVI	2,40
99	K1HTV	17,18,19,21,22,23,24,26,28,29,34
100	OK1RD	2,7,8,9,11,13,18,19,21,22,28,39,40
101	S51DI	1,2,6,18,19
102	S59Z	1,2,6,7,10,12,17,18,19,22,23,24,26,31,32
103	UY5ZZ	1,2,3,6,7,10,11,12,13,18,19,29,31,32,39
104	UXØFF	1,2,6,7,10,12,13,18,19,22,28,29,31,32
105	EI3IO	1,3,12,18,19,23,29,30,31,32
106	JJ2BLV	2,4,5,7,8,9,16,18,19,34,35,36,37,38,40
107	EA6SX	1,2,10,12,18,19,22,26,27,28,29,30,31,32.
108	PE5T	1,2,3,6,12,18,19,22,27,29,30,31,32,39
109	SP3RNZ	1,2,3,6,7,13,18,19,23,24,26,28,31,32
110	W9VHF	17,18,19,21,22,23,24,26,28,29,30,34,36,39
111	UT5URW	1,2,3,4,6,7,10,11,12,18,19,29,30,31,32
112	KR7O	18,19,21,22,23,26,28,33,34,35,36,37,39,40
113	K8SIX	19,13,17,18,19,21,22,23,24,26,29,30,34,37
114	K7CW	16,18,19,21,22,23,24,26,28,33,34,35,36,37,39
115	SP3E	1,2,6,7,10,12,13,18,19,22,27,29,30,31,32
116	UT9FJ	1,2,3,4,5,6,7,10,11,18,19,23,30,31,32
117	9H1SP	1, 2, 6, 10, 13,18,19,23,28,29,30,31,32

*P.O. Box 449, Wiggins, MS 39577-0449; e-mail: <n5fg@cq-amateur-radio.com>

Satellite Worked All Zones

No.	Callsign	Issue date	Zones Needed to have all 40 confirmed
1	KL7GRF	8 Mar. 93	None
2	VE6LQ	31 Mar. 93	None
3	KD6PY	1 June 93	None
4	OH5LK	23 June 93	None
5	AA6PJ	21 July 93	None
6	K7HDK	9 Sept. 93	None
7	W1NU	13 Oct. 93	None
8	DC8TS	29 Oct. 93	None
9	DG2SBW	12 Jan. 94	None
10	N4SU	20 Jan. 94	None
11	PAØAND	17 Feb. 94	None
12	VE3NPC	16 Mar. 94	None
13	WB4MLE	31 Mar. 94	None
14	OE3JIS	28 Feb. 95	None
15	JA1BLC	10 Apr. 97	None
16	F5ETM	30 Oct. 97	None
17	KE4SCY	15 Apr. 01	10,18,19,22,23, 24,26,27,28, 29,34,35,37,39
18	N6KK	15 Dec. 02	None
19	DL2AYK	7 May 03	2,10,19,29,34
20	N1HOQ	31 Jan. 04	10,13,18,19,23, 24,26,27,28,29, 33,34,36,37,39
21	AA6NP	12 Feb. 04	None
22	9V1XE	14 Aug. 04	2,5,7,8,9,10,12,13, 23,34,35,36,37,40
23	VR2XMT	01 May 06	2,5,8,9,10,11,12,13, 23,34,40
24	XE1MEX	19 Mar. 09	2,17,18,21,22,23, 26,34,37,40
25	KCØTO	17 Mar. 11	None
26	TI5RLI	10 July 12	2,16,19,22,23,24,26,34
27	K7YCH	23 Oct 13	10,19,21,26,34,36, 37,38,39
28	AHØU	26 Nov 13	2,9,17,18,20,34,36,39

CQ offers the Satellite Work All Zones award for stations who confirm a minimum of 25 zones worked via amateur radio satellite. In 2001 we "lowered the bar" from the original 40 zone requirement to encourage participation in this very difficult award. A Satellite WAZ certificate will indicate the number of zones that are confirmed when the applicant first applies for the award.

Endorsement stickers are not offered for this award. However, an embossed, gold seal will be issued to you when you finally confirm that last zone.

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 the 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* or *CQ VHF* 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>.

unwired *(from page 183)*

Bell, co-founder and original host of *Coast to Coast AM,* allegedly retired in 2003 to spend more time with his family but SiriusXM made him an offer he couldn't refuse.

The radio world was all a-twitter in July 2013 when it was announced by SiriusXM, with a lift-off date of September 16. *Whoopie!*

Bell's *Dark Matter* was to mark "the return of the trailblazing late night host to radio with a new, expanded live, nightly call-in show on which he will explore the paranormal, unexplained, and more with expert guests and listeners nationwide."

Whahoppin'? For starters, illegal streaming of the show and the 1001 errors individuals were getting with the SiriusXM app prompted Bell to ask the satellite radio network to stream live free from his website. *Negative.*

Photo B. *You decide. During Paula White's last show on BBC Radio Stoke: Was she or wasn't she? Listen at <http://bit.ly/1cVCngH>. (Internet screen grab)*

"We are sorry that *Dark Matter* on SiriusXM has come to an abrupt end," Bell said. "We'll examine our options and may be able to return in a different format and medium. In the meantime, <http://www.ArtBell.com> will still operate as long as financially possible, hoping for a workable solution ... Keep checking back here often."

10 Worst TV Talk Hosts of All Time

"Being a talk show host is difficult," writes Tom Tennant on *About.com Talk Shows.* "It takes a certain breed to do it right, to pull it off, and to make it work. Just because you are a great comedian, stellar athlete, talented actor, or supermodel doesn't mean you will instantly be a great ... talk show host. It doesn't even mean you'll be adequate. It's annoying to the critics and to the fans and to the hardworking men and women who consider hosting a talk show a craft. So with that reason alone, we give you the *Top 10 Most Annoying Talk Show Hosts of All Time* (in alphabetical order)."

- Tyra Banks, *The Tyra Banks Show*
- Rosanne Barr, *The Rosanne Show*
- Chevy Chase, *The Chevy Chase Show*
- Magic Johnson, *The Magic Hour*
- Craig Kilborne, *The Late, Late Show*
- Jay Leno, *The Tonight Show With Jay Leno*
- Sharon Osbourne, *The Sharon Osbourne Show*
- Pat Sajak, *The Pat Sajak Show*
- Alexandra Wentworth and Jack Ford, *Living It Up! With Ali & Jack*

To see Tom defend his choices, visit <http://abt.cm/1eQOCgJ>.

From Doughnuts to Doublets: Understanding The Dipole's Radiation Pattern

BY KURT N. STERBA*

It is difficult for some radio amateurs to get their heads around the concept of the doughnut shape the radiation pattern takes for a simple dipole antenna. Kurt can sympathize. It is much more fun to eat them — doughnuts, that is — than to use them in a classroom for instruction.

But this month, that's exactly what the Squishy, *er*, Krusty One is going to do.

What you'll need:

- A local doughnut shop
- A nice, plump doughnut — with a hole in the center, of course. A bear claw or lady finger will not do.
- A coffee cup swizzle stick

First thing, put a little dent in the center of the length of the swizzle stick. Then hold it parallel to the ground. There's our horizontal dipole.

Now, holding the doughnut, slide it across the swizzle stick and center the stick's dent in the middle of the doughnut's center.

OK, the horizontal stick should now be in the center of the doughnut and the doughnut is in the center of the length of the stick, **Photo A**.

* c/o <CQPlusDigital@gmail.com>

Now Visualize

Imagine the swizzle stick is a half-wave, or shorter dipole and the big, plump doughnut is the antenna's radiation pattern in *free space.* To visualize the RF radiation in any direction, just draw a straight line — using your imagination — from the center dent of the swizzle stick to any direction in space. The more of the doughnut those imaginary lines have to go through, the more RF is being radiated in that direction.

For example, a line going straight to the left and right of the center of the stick passes through the fattest part of the doughnut. This is the direction of maximum radiation. In your mind, rotate this line at any angle around the doughnut and you have the same amount of radiation — *maximum.*

Tilt the imaginary line away from vertical and toward parallel to the swizzle stick and you can see it pierces less of the doughnut. At small angles to the doughnut there is little radiation. Eventually the line is not passing through the doughnut at all. Theoretically, there's no radiation at all in that direc-

Photo A. *In Kurt's coffee shop demonstration, a plump doughnut represents the radiation pattern of the common dipole. The dipole itself is represented here by a coffee-cup swizzle stick. The feed point of the dipole, so to speak, is in the doughnut's center. In this picture, the antenna is floating in free space, allowing RF radiation to flow from the antenna through the doughnut's top, bottom, and sides.*

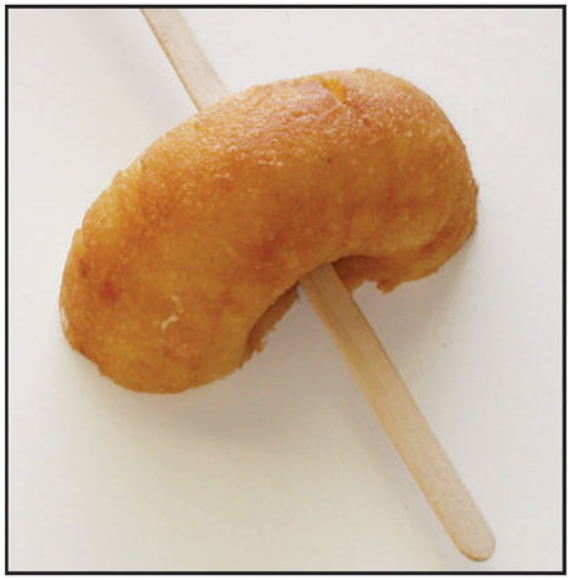

Photo B. *String the dipole near the surface of the Earth, though, and the half of the doughnut nearest terra firma disappears. All is not lost, though, according to the Krusty One. A phenomena known as "ground reflection" bounces the radiation up through the atmosphere. See text.*

tion. Remember, at this moment our dipole is in *free space* — like it's in Earth orbit.

Down to Terra Firma

Imagine the antenna is now in your backyard. Other factors now come into play. Keeping our imagination to scale, the dipole near terra firma gives us a configuration where the bottom half of the doughnut disappears. It is replaced by the surface of the Earth, **Photo B**.

A portion of the antenna's radiation hits the ground and is reflected upward. This affects the low-angle radiation near ground level. As Kurt points out in his book *"Kurt Speaks Out,"* our imaginary line going straight up still goes through the maximum amount of doughnut, indicating maximum radiation.

But now, as you rotate this imaginary line at other angles to the swizzle stick, as it approaches horizontal, the radiation drops off sharply until — when the line *is* horizontal — there is little radiation, even though the imaginary line still goes through the thick part of the doughnut.

What this tells us is that we don't get low-angle radiation for a horizontal dipole when it is not far above ground.

The higher the dipole is strung above ground, though, the lower angle of radiation you will get. So, the rule is this: To work DX with a dipole, get it as high in the air as you safely can.

Myth Buster

You may have been told there is no radiation off the ends of a dipole. In truth, a dipole radiates in all directions — just not very efficiently off its ends. The patterns showing a null on the ends are based on zero-degree elevation.

Imagine your imaginary radiation line parallel with each side of the dipole. Raise the line from each end and you'll see it soon hits the doughnut. The higher the angle the more of the doughnut the line intercepts. But it does pass through the doughnut at a low angle. Just know you can work stations in all compass directions with your dipole — some just better than others. In fact, at the low angles, ground reflection gives additional radiation strength.

In general terms, end radiation is reduced from maximum by about:

- 8 dB at 30 degrees elevation
- 14 dB at 15 degrees
- 18 dB at 9 degrees

Sounds awful, doesn't it? Kurt advises to hold your horses. At 18 dB you'd be down just three S-units. Instead of an S-9, you'd be an S-6. *Big deal.* Three S-units is often chump change in the world of F_2 region reflection.

Dipole Placement

So, if you have the option of choosing in which direction to hang your dipole, do it so the area of the world in which you want the strongest part of your signal to travel is off the sides. If you're a budding DXer, get the antenna as high in the air as it is safe to do so.

A dipole is extremely efficient. It's no accident that it is by far the most popular antenna in amateur radio.

Krusty ol' Kurt welcomes questions from readers. Write to him at <CQPlusDigital@gmail.com>. The editors will assure it gets to Kurt at his Krusty Acres estate.

The Weirder Side of Wireless, and Beyond

unwired

BY RICHARD FISHER, KPC6PC

Alabama FM Frequency Taken Over By 'Space Aliens'

Star 94.9 FM in Florence, Alabama, pulled off a stunt making it seem the radio station's frequency was being hacked by aliens. *Space aliens!* Shades of *War of the Worlds!*

Without explanation, the station aired the messages and was inundated with calls from clueless listeners, police, and school officials. *"What is going on?"*

*(**LISTEN:** <http://bit.ly/1bbEDkw>, **Photo A**. Thanks Cory Deitz – KCQ6CQ)*

BBC: A Designated Driver, Please

BBC Radio Stoke presenter Paula White made it through about 30 minutes of her live music show on a certain Friday before disappearing from the air.

It came as no surprise to most listeners, though, because they had complained she sounded intoxicated. It was her final show, and she went out in a blaze of publicity.

"For the last time on lunchtime let's sssssssssay you pick the music," the popular host slurred. "It's a P-A-R-T-Y because I said sooooo ... Some people will say, 'Oh, thank goodness she's gone.'" *(**LISTEN:** To snippets from Paula White's swan song on BBC Radio Stoke at <http://bit.ly/1cVCngH>, **Photo B**. – KCQ6CQ.)*

"I'm not drunk, I've had a couple of drinks, I'm not drunk ... I'm sad," White giggled after a listener sent a text to producers suggesting she was loaded.

A colleague soon took over: "Paula is not feeling well with it being her last afternoon show and has gone home."

In Paula's case, let's hope, as Montell Jordan noted in his 1995 hit *This Is How We Do It:* "... Designated driver, take the keys to my truck."

Where For Art Thou, Art? For Whom the Bell Now Tolls?

Now you hear him, now you don't. It was for just six weeks that paranormal radio host Art Bell returned to the airwaves, and then *poof.* He's gone.

His new show on SiriusXM was abruptly terminated. *Déjà vu.*

(Continued on page 181)

***Photo A.** Listen to Star 94.9 being "hacked" by "space aliens" on the air in Florence, Alabama at <http://bit.ly/1bbEDkw>. (Internet screen grab)*

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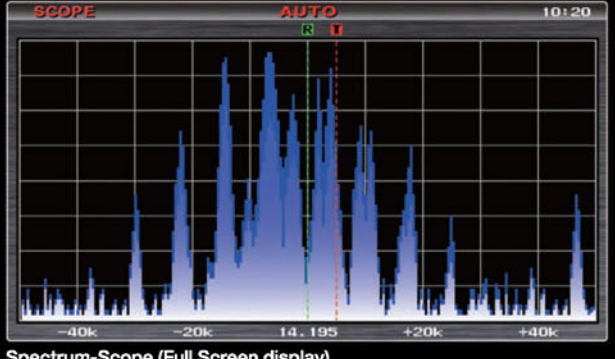

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