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CQ Amateur Radio

COMMUNICATIONS & TECHNOLOGY

NOVEMBER 2014

Celebrating Our 70th Year!

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  - Being the "New Kid on the Block," p. 10
  - The Ragchewer's Conversation Guide p. 16

and more...

- CW Results, 2014 CQ WPX Contest, p. 24
- Remote Ham Radio and DXing, p. 44
- WRTC 2014: A New Ham's Perspective, p. 117

On the Cover: Steve Werner, KD3WK, of Downingtown, Pennsylvania. Details on page 96.

The Legend Continues

The TS-590SG

Back in 1973, Kenwood introduced the first affordable HF radio to the world, the legendary TS-520... 27 years later, the TS-570D and the TS-570S with 6 meters were by far the most popular HF and HF+6 transceivers on the market.

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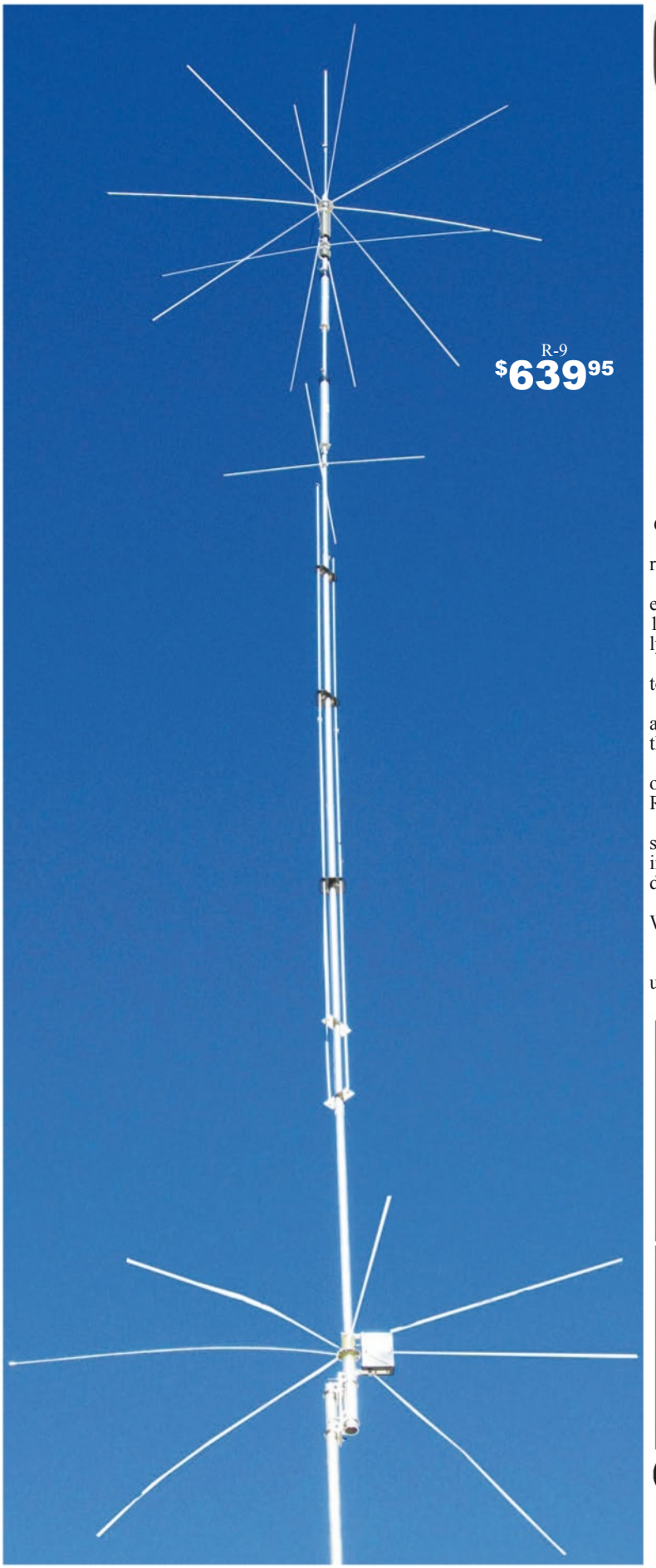

Cushcraft

R9

80-6 Meters!
No Radials!

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 and 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.

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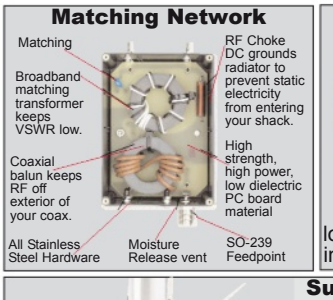
Rugged Construction: Thick fiberglass insulators, all-stainless steel hardware and 6063 aircraft-aluminum tubing is double or triple walled at key stress points to handle anything Mother Nature can dish out.

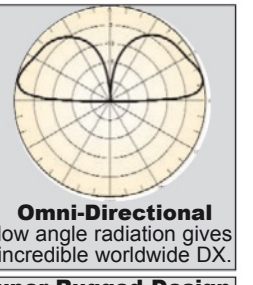
31.5 feet tall, 25 lbs. Mounting mast 1.25 to 2 inches. Wind surface area is 4 square feet.

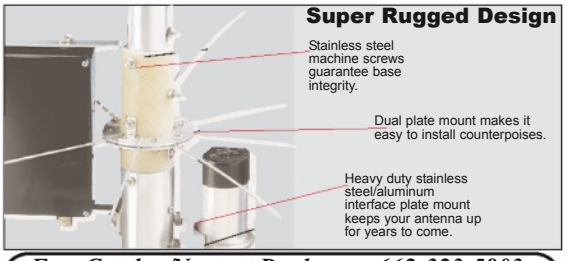
R8, $539.95. Like R9 antenna but less 75/80 Meters.

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.







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announcements

ENID, OKLAHOMA — The Enid Amateur Radio Club will hold the **2014 Enid Hamfest** Saturday, November 1 at the Garfield County Fairgrounds-Hoover Building. Contact: Enid ARC, P.O. Box 261, Enid, OK 73702. Website: <http://www.enidarc.org>. Talk-in 145.290-. VE exams.

LAKEWOOD, COLORADO — The 285 TechConnect Radio Club will hold the **2014 Fall TechFest** Saturday, November 1 at the Lakewood Elks Club. Email: <techfest@centurylink.net>. Website: <http://www.na0tc.org>. Talk-in 147.225+ (PL 107.2).

APPLETON, WISCONSIN — The Fox Cities Amateur Radio Club (W9ZL) will hold the **2014 Swapfest** Sunday, November 2 at Monarch Gardens. Contact: FCARC Swapfest, Anthony L. Mach, AB9IO, 733 Yorkshire Road, Neenah, WI 54956. Phone: (920) 722-0482. Email: <hamfest@fcarc.us>. Website: <http://www.fcarc.us>. Talk-in 146.76 (PL 100). VE exams.

DAVENPORT, IOWA — The Davenport Radio Amateur Club will hold the **43rd Annual Davenport Radio Amateur Club Hamfest/Computer Show** Sunday, November 2 at the Clarion Hotel. Contact: Kelly Lovely, W1HAM, 1261 Woodlawn Avenue, Clinton, IA 52732. Phone: (563) 321-7559. Email: <w1ham@arrl.net>. Website: <http://www.arcsupport.com/drac/hamfest.html>. Talk-in 146.28+ (PL 77) or 146.10+.

MASSILLON, OHIO — The Massillon Amateur Radio Club will hold it **54th Annual Hamfest** Sunday, November 2 at the Massillon Boy's & Girls Club. Contact: Terry Russ, N8ATZ, 3420 Briardale Drive NW, Massillon, OH 44646. Phone: (330) 837-3091. Email: <truss@sssnet.com>. Website: <http://www.w8np.org>. Talk-in 147.18+.

WASHINGTON, PENNSYLVANIA — Washington Amateur Communications will hold the **WACOM 2014 Hamfest** Sunday, November 2 at the Washington County Fairgrounds. Contact: N3TIR (724) 350-6745. Email: <bud@n3tir.com>. Website: <http://www.wacomarc.org>. Talk-in 146.790. VE exams.

ARANSAS PASS, TEXAS — The South Texas Hamfest Inc. will hold the **16th Annual South Texas Hamfest** Friday, November 7 and Saturday, November 8 at the Aransas Pass Civic Center. Contact: Gary MacGregor, KF5DZQ, P.O. Box 1273, Orange Grove, TX 78372. Email: <info@southtexashamfest.org>. Website: <http://www.southtexashamfest.org>. Talk-in 146.820- (PL 107.2). VE exams.

CONWAY, SOUTH CAROLINA — The Grand Strand Amateur Radio Club will hold the **Annual Grand Strand ARC Beachfest 2014 & Computer Expo** Saturday, November 8 at the Old Pee Dee School/Academy of Hope. Contact: Beachfest 2014, P.O. Box 2135, Myrtle Beach, SC 29578-2135. Website: <http://www.w4gs.org>. Talk-in 145.110 (PL 85.4). VE exams.

MARANA, ARIZONA — The Oro Valley Amateur Radio Club will hold the **Tucson Hamfest** Saturday, November 8 at the Marana Middle School. Contact: OVARC, 21 E Speedway Boulevard, Tucson, AZ 85705-7114. Email: <hamfest@tucsonhamradio.org>. Website: <http://www.tucsonhamradio.org>. Talk-in 146.620- (PL 156.7) or 444.100+ (PL 156.7). VE exams.

MONTGOMERY, ALABAMA — The Montgomery Amateur Radio Club will hold **The 2014 Montgomery Hamfest** Saturday, November 8 at the Alcazar Shrine Temple. General contact: Fred Beatty, K8AJX, (334) 270-0909. Email: <k8ajx@arrl.net>. Website: <http://www.w4ap.org>. Talk-in 146.84-. VE exams.

NIXA, MISSOURI — The Nixa Amateur Radio Club will hold **NARCFEST** Saturday, November 8 at the Nixa Event Center. Contact: Larry Grinstead, WAØJZK, (417) 887-8517. Email: <lgrinste@hotmail.com>. Website: <http://nixahams.net>. Talk-in 147.015+ (PL 162.2). VE exams.

PINELLAS PARK, FLORIDA — The St. Petersburg Amateur Radio Club will hold **SPARCfest** Saturday, November 8 at Freedom Lake Park. Contact: Clayton Parrot, KJ4RUS, (727) 215-8140. Email: <clayton_parrot@yahoo.com>. Website: <http://www.sparc-club.org>. Talk-in 147.06+. VE exams.

BILOXI, MISSISSIPPI — The Jackson County Amateur Radio Association, Inc. will hold its annual **Hamfest** Friday, November 14 and Saturday, November 15 at the St. Martin Community Center. Contact: Chris, K5MOZ, <k5moz@arrl.net>. Website: <http://www.qsl.net/w5wa/>. Talk-in 145.11- (PL 123). VE exams.

CONGRESS, ARIZONA — The Hassayampa Amateur Radio Klub (HARK) will hold the **HARKFEST Tailgate Hamfest** Saturday, November 15 at the North Ranch Escapees RV Park. Email: <n0daj1950@gmail.com>. Talk-in 146.620 (PL 162.2) or 146.580. VE exams.

FORT WAYNE, INDIANA — The Allen County Amateur Radio Technical Society will hold the **42nd Annual Fort Wayne Hamfest & Computer Expo** and **2014 Indiana ARRL State Convention** Saturday, November 15 and Sunday, November 16 at the Allen County War Memorial Coliseum Exposition Center. Contact: ACARTS/Fort Wayne Hamfest, P.O. Box 10342, Fort Wayne, IN 46851-0342. Phone: (260) 579-2196. Email: <tables@fortwaynehamfest.com>. Website: <http://www.fortwaynehamfest.com>. Talk-in 146.880-. VE exams.

TOMS RIVER, NEW JERSEY — The Jersey Shore Amateur Radio Society will hold the **Hamfest By The Shore** Sunday, November 16 at Riverwood Park. Contact: JSARS, P.O. Box 295, Toms River, NJ 08754. Phone: Darleen (732) 237-9448. Email: <jsars910@gmail.com>. Website: <http://www.jsars.org>. Talk-in 146.910- (PL 127.3). VE exams.

FAIR LAWN, NEW JERSEY — The Fair Lawn Amateur Radio Club will hold the **Fair Lawn Radio Emergency Service Auction** Friday, November 28 at the Fair Lawn Senior Center. Email: <fairlawnres@yahoo.com> or <w2npt@arrl.net>. Website: <http://www.flres.net>. Talk-in 145.470- (PL107.2).

OKEECHOBEE, FLORIDA — The Okeechobee Amateur Radio Club will hold the **Hamfest In The Woods** Saturday, November 29 at the Freedom Ranch. Contact: Charles Whipple, W4PHD, <charles.whipple4@embarqmail.com>. Talk-in 147.195 (PL 100). VE exams.

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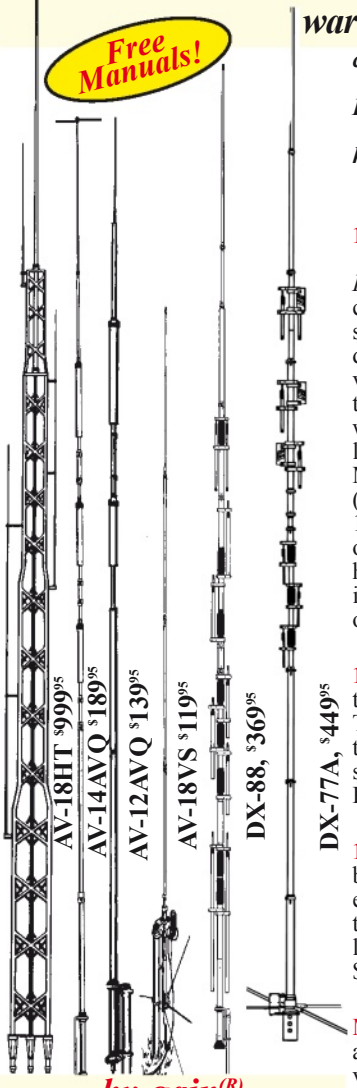

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They offer remarkable DX performance with their extremely low angle of radiation and omnidirectional pattern.

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.

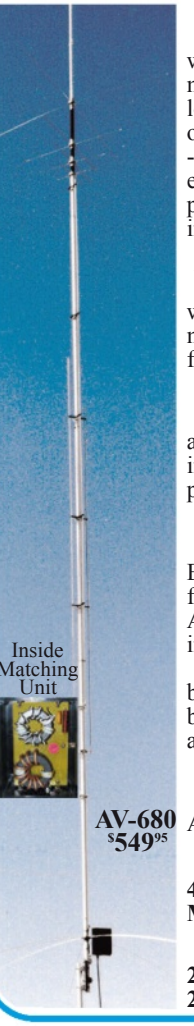
No ground radials required! Off-center-fed Windom has 55% greater bandwidth than competitive verticals. Heavy-duty tiltable base. Each band independently tunable.

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*® 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® 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 11

CQ November 2014

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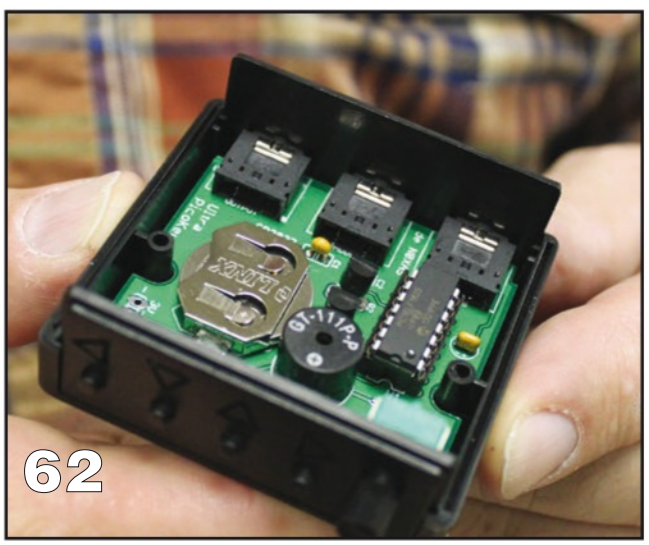


FEATURES

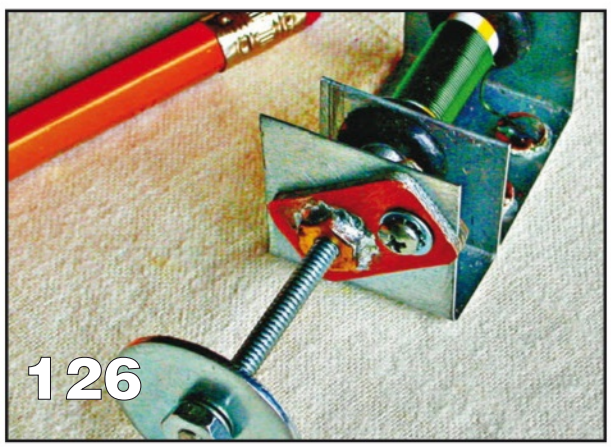
Be a Newbie Again ...

DEPARTMENTS

CQ plus (digital edition only)

FEATURES

COLUMNS



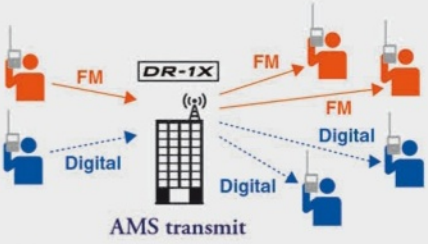
System Fusion

The Best Solution for the Future

System Fusion provides Total Integration of Digital and Conventional FM

FM Friendly Digital & Auto Mode Select (AMS)

System Fusion is designed to enable seamless intercommunication between conventional FM and C4FM Digital using a single unified platform, without manually switching between the communication modes.



This is made possible in System Fusion by the Auto Mode Select (AMS) function. With AMS, the modulation mode of your station is automatically selected according to the received signal. If a member transmits the conventional FM, the other System Fusion radios automatically select their modulation to conventional FM and permit communication between all members.

The Choice of C4FM Digital & New Attractive Digital Functions

System Fusion - C4FM Digital makes possible **9600 bps data speed** utilizing **12.5 kHz bandwidth**. **9600 bps data transmission speed** enables the high speed data communication and provide the new attractive digital functions to expand your enjoyment of the amateur radio communication.

Digital Group Monitor (GM)

Automatically checks whether members registered to a group are within the communication range, and displays the distance and the direction with each call sign on the screen.

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Real-time navigation function enables location checking at any time. With the simple touch of a button, you can start navigating to your departure point or any location previously saved. (Backtrack Function)

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Simply connect an optional speaker microphone with camera (MH-85A11U), you can take snapshots and easily send them to other System Fusion radios.

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System Fusion Lineup

C4FM Digital Communication Clear and Crisp Voice Technology

144/430 MHz DUAL BAND
C4FM/FM DIGITAL REPEATER

DR-1X

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

Exciting New Amateur Digital Transceiver

C4FM Digital Communication Clear and Crisp Voice Technology

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

FT1DR Heavy Duty Package

(1800 mAh Li-Ion Battery FNB-102LI included)

- 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 Communication 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

Advanced VoIP wireless WIRES-X

C4FM Digital Communication Clear and Crisp Voice Technology

Amateur Radio Internet Linking Kit

HRI-200

- Advanced Internet VoIP radio communication is available with C4FM.
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zero bias – a CQ editorial

BY RICH MOSESON,* W2VU

Become a Newbie!

Plus Remote Possibilities

This is another one of those issues that not only seemed to put itself together, but also went out and picked a theme for itself. Perhaps it felt left out, being sandwiched between our Emergency Communications Special in October and our Technology Special in December. This issue's theme, it informed us, is a focus on "newbies."

We have no less than five articles (highlighted in the Table of Contents) aimed either at helping newer hams with operating activities, understanding more about the technology that we use, or building on existing skills to become mentors to other hams even as newcomers to the hobby themselves.

For example, Mike Pulley's "New Kid on the Block" article offers tips to new (or returning) hams on finding a repeater that will welcome them, the basics of repeater etiquette, and who to get to know in your ham community (as well as who not to listen to). Dee Logan takes us to the HF bands with tips on expanding "5-9, 73" type contacts into real conversations. Columnist Wayne Yoshida covers the proper way to attach coax connectors. And "Learning Curve" editor Ron Ochu continues his discussion on understanding antenna radiation patterns. In addition, two articles in our *CQ Plus* expanded digital edition offer newcomers' perspectives on different aspects of amateur radio.

It has been part of our mission for the past seven decades to help newcomers to amateur radio. This is a responsibility we have always taken seriously (we had the first Novice column in any ham magazine back in the '50s, and today we are the only magazine with a monthly column focused on the beginning ham — "Learning Curve").

Most of the articles and columns we've mentioned so far follow the traditional "track" of teaching and learning — people with considerable experience and knowledge in particular areas sharing their knowledge with others through the pages of our magazine. But there is one article in this issue that flips that model on its head, and it's something I'd like to focus on here:

When Randy Schulze became a ham just five years ago, his interest was immediately drawn to FM satellites as a fun and hi-tech way of expanding the range of his VHF/UHF handheld. He soon found that he'd qualified for several different certificates on the basis of his satellite contacts, shared that with his club and was asked to present a program on how he'd done it. In short order, Randy and two friends licensed at the same time became fixtures on the club and hamfest circuit in the Kansas City area, presenting "Hams in Space" ... even though they'd been licensed for less than a year. They had developed experience and knowledge in a specialized area of ham radio that they were then able to share with people who had been licensed far longer, but who had little to no experience in their particular specialty — working DX via FM ham radio satellites. Randy's article, on page 18, is more about how they developed their presentation — and how you can do the same in an area of interest to you, regardless of how long you've been a ham — as it is about working the birds.

One of the fascinating things about ham radio is that it is such a broad-based hobby encompassing so many smaller sub-hobbies and activities that all of us — even grizzled veterans — are still newbies at something. There is no one in this hobby that I know of who is good at everything ham radio offers, or even who has tried everything. And even if you think you *have* tried everything, well, there's always something new coming along.

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

Remote Possibilities

In our August and September issues, Contributing Editor Cory Sickles, WA3UVV, wrote at length about Yaesu's new "System Fusion" digital voice and data system; and in this issue, Gary Liljegren, W4GAL, introduces us to Remote Ham Radio, yet another marriage of ham radio and the Internet that allows antenna-restricted hams to essentially rent a timeshare on well-equipped stations around the U.S. and even in Europe and the Pacific. While the use of remote station technology is growing in popularity, the bottom line is that the vast majority of us have never tried it and know only what we've heard on Internet rumor mills. Gary's article offers some first-hand understanding of what Remote Ham Radio is all about, how it works, and why it's something that's becoming an attractive option for more and more hams.

(While remote station technology is growing in popularity, it is also growing controversial, especially among DXers. The ARRL Board of Directors will take up the issue at its next meeting, and the subject has been a topic of considerable discussion by the CQ Awards Committee. We have decided to create separate award tracks for stations using remote technology. Details are on page 93.)

Become a Newbie (Again)

Every once in a while, I come across hams who say they're getting bored with the hobby. It usually turns out that they're bored with the particular aspect of the hobby they've been pursuing. My response to these people is always to encourage them to try something different — become a newbie again — and begin learning from the ground up about an entirely new aspect of ham radio.

Over the past couple of years, I've chronicled my experiences as a newbie in the overlapping fields of QRP (low-power radio) and trail-friendly radio. I still consider myself a newbie in this arena and still regularly consult my excellent mentors on the subject. As a side benefit, I've found that getting active in QRP and trail-friendly radio has reignited my interest in building and spurred me to make connections with my local Maker group, HackNCraft NJ (see more in this issue's Makers column on page 81).

So, if whatever you're doing in ham radio is getting to be a little old — or even if it isn't — I encourage you to find something in our hobby that you haven't done before and become a newbie! Explore. Experiment. Learn. Share. You never know where it might lead.

Happy Thanksgiving to all of our readers in the U.S.

73, Rich

Introducing Associate Editor Jason Feldman

With the recent departure of Gail Sheehan, K2RED, after more than three decades as *CQ*'s Managing Editor, her responsibilities are being taken over by Jason Feldman, who has already been an integral part of our organization for the past several years. Before their incorporation into *CQ Plus*, Jason was Associate Editor of *Popular Communications* and *WorldRadio Online*. He has continued in that role with *CQ Plus*, our expanded digital edition, and now takes on similar responsibilities for the entire magazine. Jason is an active shortwave listener, administers the *CQ* (formerly *Pop'Comm*) monitor registration program and enjoys fishing in his free time (his monitor registration ID is WPC2COD!),

We welcome Jason to the "front of the book" and are confident that the transition will be seamless. Now all we have to do is get him a ham license!

Ham Shares Nobel Prize in Chemistry

Move over, K1JT. William Moerner, WN6I, of Los Altos, California, has just joined the ranks of Nobel-prize winning hams. Moerner, a chemistry professor at Stanford University, shares the prize with two others — Eric Betzig of the Howard Hughes Medical Institute in Ashburn, Virginia, and Stefan Hell of the Max Planck Institute for Biophysical Chemistry in Germany. The three were recognized for separate work on what's called *super-resolved fluorescence microscopy* or *nanoscopy*, techniques that allow an optical microscope to observe cellular activity on the molecular level. According to the Nobel prize news release, the techniques use fluorescent molecules to allow researchers to "track proteins involved in Parkinson's, Alzheimer's, and Huntington's diseases as they aggregate, (and to) follow individual proteins in fertilized eggs as these divide into embryos."

Moerner, Betzig, and Hell will share the 8 million Swedish Krona ($1.1 million U.S.) prize that comes along with the honor. Each scientist's share is approximately $368,000 U.S.

EU Crisis Response Commissioner: Ham Radio is "Last Technical Miracle"

The European Union's Commissioner for International Cooperation, Humanitarian Aid, and Crisis Response says radio amateurs are "the eyes and the ears of the world in time(s) when all other information channels are silent," and that when hams work together "in a Union," they are "a communication superpower in times of total electronic darkness." According to the *ARRL Letter,* Kristalina Georgieva's comments were delivered on her behalf to the general conference of International Amateur Radio Union (IARU) Region 1, held in Bulgaria in September. IARU Region 1 covers Europe, Africa, and the Middle East. "In short," her statement added, "you are the last technical miracle, which is an independent, reliable information channel, which can transmit an important piece of news from any place in the world, anytime, by anyone who knows how to operate this wonderful creature, called radio."

Her remarks echo the opinions of her U.S. counterpart, FEMA Administrator Craig Fugate, KK4INZ (see interview, October 2014 *CQ*). The ARRL says Fugate's keynote address to the League's centennial convention banquet is now available on YouTube. The link is at <http://bit.ly/1vWYKhx>.

Walden Receives First ARRL Goldwater Award

Oregon Representative Greg Walden, W7EQI, is the first recipient of the ARRL's Barry Goldwater, K7UGA, Achievement Award. The award, created last year, is given to an elected federal official "who has, in a significant way, supported the well-being and continuity of the Amateur Service in the U.S.," according to the *ARRL Letter*. Walden has been a Congressman for the past 12 years and is chairman of the House Subcommittee on Communications and Technology. He has been a prominent proponent of amateur radio interests in Congress.

Competing Views on International Allocation for 60 Meters

At press time, we were awaiting news from Mexico on action taken by CITEL, the Inter-American Telecommunications Commission, regarding an official recommendation for an international amateur allocation at 5 MHz. The topic is on the agenda for next year's World Radiocommunication Conference (WRC-15). There were separate proposals from Canada and Brazil, along with overall opposition from the U.S. National Telecommunications Information Administration (NTIA), according to the ARRL. Canada had put forth the Radio Amateurs of Canada recommendation for two 25-kHz segments, 5330-5355 kHz and 5405-5430 kHz. Brazil proposed a single allocation from 5275-5450 kHz, all on a secondary basis. The Brazilian proposal matches the frequency recommendation of the FCC's WRC-15 Advisory Committee. However, NTIA is calling for no change in the international allocation, despite a decade of domestic operation by U.S. hams without any interference problems that were not quickly resolved. CITEL held a WRC preparatory meeting in early October, but results were not available as of our deadline.

ARRL Web Server Hacked

The ARRL reports that its web servers were the victim of a hacking attack in late September. According to the *ARRL Letter*, IT Manager Mike Keane, K1MK, said the affected servers were taken offline and isolated from the Internet when the breach was discovered. He said no sensitive personal information was affected, but still urged members who have not updated their passwords since April 2010 to do so now.

Hamvention® Award Nominations Open

The Dayton Amateur Radio Association — sponsor of the Dayton Hamvention® — is seeking nominations for 2015 Hamvention® awards for Amateur of the Year, Special Achievement, Technical Excellence, and Club of the Year. Nominations must be received by January 16, 2015. Details and nomination forms are available on the Hamvention website at <www.hamvention.org/awards.php>.

A New Home for Ham-Com

On the topic of large ham radio conventions, Texas's Ham-Com will be moving to a larger space as of 2015. The Ham-Com board of directors announced in late September that the show, which has made its home in recent years at the Plano Centre, will be moving to the Irving Convention Center in order to accommodate a growing number of vendors. According to a news release, the new facility has three times as much space available, with room for additional growth, as well as greater choices for hotels and restaurants and easier access to both Dallas-area airports. Ham-Com 2015 will be held on June 12-13.

Qatari Satellite to Include Geostationary Ham Transponders

A commercial communications satellite planned for launch by Qatar in late 2016 will include two amateur radio transponders, one on 2.4 GHz and the other on 10 GHz. The satellite is planned for a geostationary orbit and if all is successful, will provide the first "Phase 4" amateur satellite ever orbited.

The *Es'hail 2* satellite's primary function will be to provide TV and commercial communications services across the Middle East and North Africa, according to the AMSAT News Service. It should cover approximately one-third of the Earth's surface, extending approximately from Brazil to India. Phase 4 amateur satellites, unlike all others launched to date, will always appear to be in the same spot in the sky and will always be available to hams within their coverage areas. For more information, see <http://bit.ly/1vbMZ7W>.

New to amateur radio? New to town? Returning after a hiatus from the ham bands? Fit in with your local repeater group by using these practical principles.

Being the New Kid on the Block

BY MIKE PULLEY,* WB4ZKA

Back in the Novice days, entry-level licenses launched us on the HF bands where every contact was with a stranger we'd probably never meet again. Our screw-ups didn't return to haunt us on the next contact. Not so today. Today's entry-level license throws newbies headlong into the world of VHF and UHF repeaters.

On repeaters, you talk with the same group of hams every day. Not only do you have to face the same ham who witnessed your screw-up yesterday, but those hams talk among themselves, and you can develop a reputation that either helps or hurts you later. It really is like moving into a new neighborhood, starting over as the new kid on the block. It can be both a curse and an opportunity.

I'm not an expert, but I still remember what it's like to be the new kid (literally!) on the repeater and to learn through mistakes. That taught me not to take myself too seriously and to appreciate others who make mistakes, too. Here's your opportunity to learn through my goof-ups so you don't have to repeat them all.

I confess that I've done every stupid thing on the air that you can do and live to be embarrassed by it. I was first licensed as a nervous Novice at the awkward age of 14 (Photo A). My Elmer and Boy Scout leader, Bob Ray, K5VVA, encouraged us newbies to upgrade to General quickly, where I discovered 2-meter repeaters (Photo B). Thereafter, in full view of the Birmingham, Alabama amateur community, I learned about school and girls and driving and girls and work and girls and radio and girls. It wasn't pretty. You shouldn't be eligible for a ham license until age 25.

So, here are some ways you can merge yourself smoothly onto the on-ramp of amateur radio in your community.

Photo A. The author as a teenage ham getting it wrong until he got it right. Novices enjoyed a certain anonymity on HF because most contacts were one-time events with strangers they'd never meet again. Embarrassing mistakes rarely haunted them later down the logbook.

Survey the Landscape

A repeater (Photo C) has less to do with a high-elevation locale, automated radios, duplexers, and antennas than with the function it serves. A repeater is a community center … a water cooler where hams congregate on the air and socialize. Each repeater has its own culture based on those who use it. Some repeaters sound almost exactly like CB channel 19, and that's fine. Others are dedicated to old timers reminiscing about the Good Old Days and aches and pains in what I've heard called "organ recitals." Some repeaters seem to be war zones where angry hams snipe at each other. Yet others seem to be where the DXers, off-roaders, or public service communication enthusiasts gather. Recognize the different cultures you hear on your local repeaters and find the one that welcomes newcomers. Here's the key: Listen for the one where you hear people introducing themselves to one another. If you don't hear new callsigns and introductions, if everyone on a repeater already seems to know one another with no new blood, you might want to keep scanning.

Put In a Good Signal

Nothing annoys a ham community more than a habitually lousy signal into the repeater. They can't welcome or help you if they can't hear you.

Most new hams today begin with a handy-dandy, do-all, shack-on-your-belt handheld radio (Photo D). It's affordable, flexible, convenient, and just so darned cool! It does everything, and does it well. Until you transmit. A handie-talkie (HT) is by nature a study in compromise. To be small and lightweight, it must necessarily sip from the batteries and minimize the antenna. Not bad on receive, but low transmit power and a small, indoor or in-car antenna are the perfect recipe for an abrasive, weak signal into the repeater.

Therefore, design your station to make a good first impression. Improve your signal with an external antenna such as a magnetic-mount mobile antenna outside the car or a simple ground plane or "J-pole" vertical outside your home.

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e-mail: <Mike.J.Pulley@cox.net>

Furthermore, get the DC adapter cable for your HT to power it from the car cigarette lighter jack or a 12-volt DC power supply at home. The higher supply voltage usually translates into higher transmit power. And it doesn't drop over time as your battery discharges. Give your HT every opportunity to put your best signal forward.

Then, when you're ready to upgrade your gear, get a mobile or base radio capable of 5 to 50 watts to a respectable antenna and you'll be up there with the Big Kids. You'll be surprised how satisfying it is to be clearly heard everywhere you go around town. (*Cranky editor's note: Having higher power available doesn't mean you have to use it. If you're "full quieting" into the repeater with 10 watts, there's no need to run 50.*)

Photo B. This and radios like it were the culprits that exposed the author's teenage foibles to the entire Birmingham, Alabama amateur community. Those were patient hams that helped Mike learn by doing.

Photo C. A repeater isn't about a rack of equipment and antenna on a mountaintop. Those are just its parts. A repeater is an on-air meeting place for hams, and each repeater seems to develop its own culture. Find one that welcomes newcomers.

Embrace Your Mistakes

Active participation and mistakes made and corrected are the currency of learning. Back in engineering school, some friends and I began each new term with a clean, fresh, block eraser. At the end of each term, we'd meet in an empty room and pull out our erasers. The student with the smallest eraser clearly made and corrected the most mistakes, and therefore learned the most. The rest of us bought him a Coke.

I recommend excellence over perfection. Perfection insists on being right all the time. Excellence takes advantage of mistakes to reach a superior result. If Thomas Edison insisted on perfection, we'd still be lighting our homes with kerosene and whale oil. Instead, by making mistake after mistake and learning from each one, he achieved the electric light bulb. Don't let fear of looking foolish on the air lock you into pretending to already know everything. Everyone can see through the façade, and it brands you as a poser, too afraid to learn.

So make mistakes, especially in the early days when mistakes are more easily overlooked by the amateur community. The key is to make the right kinds of mistakes, learn from them, and thereby improve.

I have a motto: Anything worth doing is worth doing well. Anything worth doing well is worth screwing up while you're learning. (I refer you to the introduction to this article for proof.)

British author and poet Rudyard Kipling advised his son, "… meet with triumph and disaster, and treat those two impostors just the same."[1] Both will happen; one doesn't make you a "winner" and the other a "loser." They're just different sides of the same coin. Embrace and learn from both. So, jump in with both feet, ask questions, accept correction, try new things, and encourage others to do likewise. You'll get by with a little help from your friends, so let them know that you need a little help.

Keep Your Original Callsign

The best way to let the ham community know that you are a neophyte and therefore need a little accommodation is to keep your original callsign. At least for a year or so. An upgraded 1x3 or 2x2

Photo D. Most new hams today begin with a does-it-all handheld radio. Add an external antenna and 12-volt power supply to help yours put out the best signal possible.

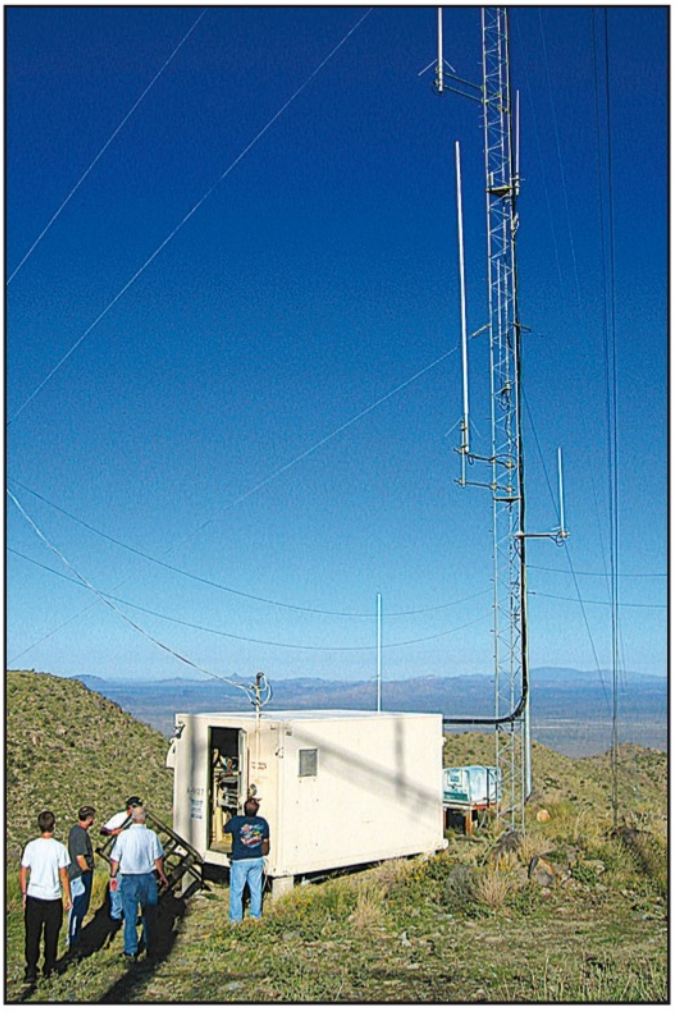

Photo E. Be thankful for and support your local repeater. Maybe pitch in on repeater work parties. The camaraderie and scenery can be spectacular.

callsign implies experience. Other hams don't expect you to need help with the fundamentals. So, when you make mistakes, they stick out like a sore thumb. If a fresh ham with a newly-minted callsign slips up with a "10-4" or says his own callsign first when calling a station, everyone listening understands it's curable ignorance. But if that same ham with a 1x3 or 2x2 callsign that implies wizened experience does the same thing, he often doesn't get the benefit of the doubt. It's easy for the ham community to conclude that you're unteachably stupid and give up on you.

Instead, your original, newly-minted callsign accomplishes the same thing as back in the Novice days when the "N" in my WN4ZKA callsign flagged me as a beginner. That told people to cut me some slack. I wasn't stupid (well, don't ask my wife about that), just learning.

It also explained my unbridled, "gee whiz!" enthusiasm. Which leads us to cultivating an attractive attitude.

An Attitude of Gratitude

Deliberately and transparently enjoy amateur radio. Enjoy the people you meet. Enjoy the things you learn. Appreciate the help and acceptance you receive. A happy, grateful ham is much more attractive than either a stuffy sophisticate or a constant complainer. It sounds silly, but I've even heard some new hams try to demand, whine, or pout their way into acceptance by other hams. Misguided at best, misanthropic at worst, such childish attempts at manipulation never work. Avoid this landmine.

One thing to be grateful for is the repeater.

Support Your Friendly Neighborhood Repeater

With great repeaters comes great responsibility. (Apologies to Stan Lee, Marvel Comics, and Spiderman.)

Part of being grateful is putting your money where your mouth is. In this case, contribute to the club or association that provides the repeaters (Photo E).

For example, in the Phoenix area, the Arizona Repeater Association set the local standard for repeater support. It provides open repeaters to all comers and advocates the philosophy of "You support your club's repeaters, we'll support ours, and hams from all groups are welcome to use any of them." So, at least in the Phoenix Valley of the Sun, you're not expected to write a check to every repeater you could possibly use. Just support your favorite one(s), and everyone benefits.

These repeaters, these repeater cultures, these clubs were all here before you arrived. Nothing says "outsider" like someone who accepts benefits from others but doesn't pitch in to help.

Another way to support the repeater and its culture is to adopt the local on-air protocol. If you come from the ranks of CB, law enforcement, fire, military, or commercial 2-way radio that's fine. But don't assume the way you do things there also works on your amateur repeater. Listen to the proficient examples on your repeater and imitate their protocol.

- How do they make or respond to a call?
- When and how do they identify?
- What phonetics do they use?
- In a casual roundtable or directed net, how do they indicate who should transmit next?
- How do they report signal quality to other stations?
- What attitudes do you hear in their voice?
- How do you avoid or unravel two stations transmitting over one another (doubles)?

Photo F. Everyone prefers to talk with friends. Look for face time with your local ham group, such as this picnic gathering. The stories you swap don't have to be true, just entertaining. Here, Ed Karsten, K9EDK, spins a yarn for (L-R) Rick Aldom, W7STS; Dave Strieter, KC7KMT; and Steve Gerlach, W7KMG. (You can see from their faces that they're a little dubious, but interested anyway.)

- How do you include a breaking station during a conversation?
- What terminology, jargon, and jokes are acceptable?

Everyone Prefers to Talk With Friends

Get to know the hams as people, not just voices on the air. Invest in a small notebook and jot down callsigns, names, and a few details that you can expand on as you talk with folks. After a while, those details will become second nature to you as these people move from strangers to acquaintances to friends. Then you can set aside your notebook.

Furthermore, let yourself be known. Put your callsign out on the air when you have time. Don't be discouraged if you aren't answered the first several times. People may be busy with other activities at the moment. For instance, in many large cities don't expect a reply between 8 and 11 a.m. on weekdays. That's after the morning commute when people are focused on projects before the lunch break. You'll have better luck through the afternoon when people are out doing errands and during the afternoon commute "going home show." Answer others who put out their callsigns, and go through the process of swapping introductions. Don't skip the introductions as is the habit of some. You can be sure that others are probably listening, and so you'll be introducing yourself to several people at once. (See my "Ragchewing 101" article in *QST*[2] on ways to make a favorable impression on the air, and/or W1HEO's "The Ragchewer's Conversation Guide," elsewhere in this issue.) As you become known and interesting in the repeater community, you'll have more people responding to your calls. Give this phase a year or so, in my experience.

One ham in my community spent his first year on the air cheerfully giving his name every time he identified. "KE6LL-Zed, Jimmy G." He knew the value of helping the other hams associate his name, callsign, voice, and personality. It worked.

Don't stop with on-air conversations. Find opportunities (Photo F) to meet hams in person — especially the influential personalities — for coffee, lunch, or an "eatin' meetin' before the meetin'" prior to a club meeting.

Specifically, find an influential person on the repeater to be a content expert or mentor. After talking with him on the

air for a few weeks to see if you two "click," invite him to lunch one-on-one. Pick his brain about the history of the repeater group. Ask for help on a technical question. Ask about his background. Show an interest and a willingness to learn, and thereby foster his interest in you. Cultivate a bond with this person. Not only will you make a friend, but you'll likely earn an ally who can advocate for you behind the scenes when grouches start criticizing the current batch of newbies. Which brings us to the critics among us.

Critics Don't Count

Learn the difference between someone who offers you constructive feedback and a critic who is just grumpy and takes it out on newbies. Appreciate the former, disregard the latter.

First, don't give critics too much credit. Theodore Roosevelt said, "It is not the critic who counts: Not the man who points out how the strong man stumbled or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena."[3] Know-it-all critics grow like weeds. Look closely, and you'll usually discover that they fall into that unhappy lot who cling to the illusion of their own perfection and therefore cut themselves off from learning. They only fool themselves.

Second, and more importantly, don't become one. Bypass the local politics. Avoid getting embroiled in the amateur radio us-versus-them version of the Hatfields and McCoys[4]. Deliberately refuse to choose sides. People get their feelings hurt and sometimes behave like children, amateur radio licenses notwithstanding. Rise above such nonsense without looking down on anyone. You'll earn big points in the long run.

Pay It Forward

Finally, pass along your learning to others. Freely you have received, so freely give. Another generation of immigrants to amateur radio will arrive on your repeater "shores" right behind you. Welcome them, get to know them, and help them integrate into the repeater community.

Furthermore, help propagate the best of your repeater's culture. Extend a welcoming hand and offer patient hospitality to newcomers. Usually, repeater culture is not overtly spelled out, but instead is taught by example and caught by imitation. Pass on the benefits you've received.

Again an illustration from my college days: We were taught that we would all graduate together or not at all. If I had a problem in a class, I was expected to go to an upperclassman or woman for help. None of them had the time, but they gave it anyway. No way could I help them in return; they were already beyond my classes. Instead, my responsibility was to turn around and help the next person behind me.

"Learn the difference between someone who offers you constructive feedback and a critic who is just grumpy and takes it out on newbies."

One particular student never grasped that economy. She often accepted help, but never seemed available when others approached her for help. When word of her unwillingness to pay it forward got around, suddenly no one was willing to help her any more. She spent the final two years of engineering school slogging it out entirely on her own.

Avoid that fate. Treat the newcomers with hospitality. For that matter, help the Big Kids with antenna parties, repeater repair parties, or Christmas parties. (Hmm. Parties don't sound so bad, do they?) The point is to bring something to the party.

Here's another way to pay it forward: Unfortunately, those who most need these principles won't see this article. They will be too new to subscribe to this magazine yet or they'll arrive on the air after this month's issue. So save this copy to pass on to the next struggling newbie you meet. Do it for their sake and for yours.

Because being a new kid on the block is almost as painful as listening to him flail away, bumbling through avoidable mistakes. Help him merge onto the repeater superhighway with you.

And then you won't be the new kid on the block any more!

Notes:

1. "IF" by Rudyard Kipling. <www.kipling.org.uk/poems_if.htm>
2. "Ragchewing 101" by the author, QST, 2013 August, page 65.
3. <http://thinkexist.com/quotes/theodore_roosevelt/>
4. A 28-year black eye in American history in which two families killed and maimed one another, each trying to settle an imagined score. <http://en.wikipedia.org/wiki/Hatfield-McCoy_feud>

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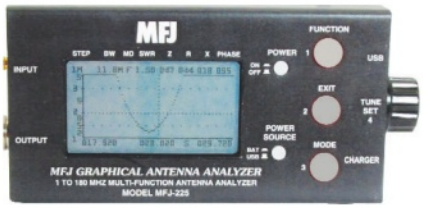

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F. MFJ-5510, $9.95. 12VDC cigarette lighter adapter.
G. MFJ-7737, $5.95. PL-259 to BNC Female.
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So you want to talk about more than just the weather and the other guy's radios, but you don't know where to start? Here are some tips from a longtime "ragchewer" for starting interesting radio conversations.

The Ragchewer's Conversation Guide

BY DEVERE "DEE" LOGAN,* W1HEO

We hams are fortunate to enjoy the pleasure of chatting with interesting people around our town or throughout the world. Our QSOs have the potential to offer us a rich variety of insights into different lifestyles, interests, and much more. When we do this, especially when chatting with DX stations, we engage in one of the FCC's stated purposes of the amateur radio service: Our unique ability to enhance international goodwill. It's through conversations during DX contacts, as well as those closer to home, that we are able to do this.

Radio chats are a bit different from face-to-face conversations. Facial expressions are missing, as is body language. On CW, we lack the sound of a human voice (although sending "HI" does convey a laugh). Despite these things, radio contacts do provide most of what is essential for meaningful conversations. There are some things that can make our electronic conversations better, but others that will stop things cold. Here are my thoughts and suggestions that are worth considering.

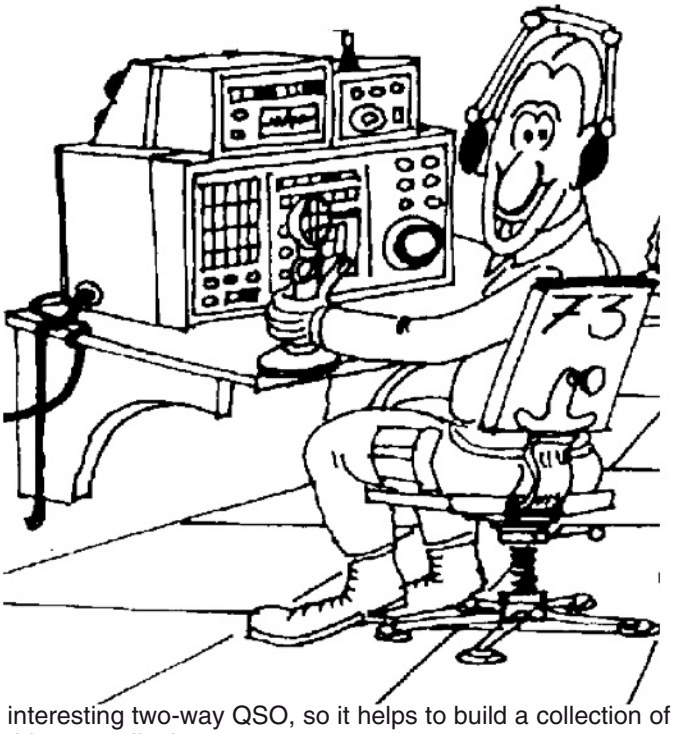
Some Basics

Most contacts begin with a standard exchange of signal reports, QTH, names, and equipment. But after that, there's a great opportunity for a chat that may take us beyond ham radio and into many other topics, including learning something unique about the operator, their locale, families, and other interests.

English is the most common language heard on the bands, and some DX operators may know a little and even speak to us in simple terms. We should acknowledge their efforts. It's a good idea to speak slowly and use common words. For those who know a second language, speaking it — even if we know only a few words — can make conversation more comfortable to the DX operator.

Good conversational speaking is a two-way street. It's not a monologue. So when a ham talks and talks and talks during a long transmission — mostly about himself — a dialogue becomes difficult if not impossible. A long-winded blabbermouth can monopolize a contact and quickly kill a QSO before it gets started. A true conversation will often involve short exchanges.

Remember VOX (voice-operated switching)? When you stop talking for a second or so, your rig automatically switches from transmit to receive. Let it, and switch your brain into listening mode (more on that below). Such a back-and-forth helps stimulate comments on topics as they arise. Various subjects beyond rigs or antennas can be the path to a more interesting two-way QSO, so it helps to build a collection of things to talk about.



Some Conversational Tips

The first step to a good conversation is to *listen.* This helps us hear some things that can be the basis for discussion. So after making a contact, begin with a warm hello and thank the operator for answering your CQ or for coming back to your call. Comment on their signal if it's good, or congratulate them on their audio. Sound pleased to be having the contact. A compliment is always a good way to start a chat.

- Most people love to talk about themselves and their stations, so get them going by asking a question about their location, how they like their rig, details of their antenna, where they learned their English (if appropriate), etc. Asking an open-ended question will stimulate a response.
- Comment on something the operator mentions. This is an easy way to keep the dialogue going.
- Mention the name of the operator early and often. This personalizes your transmissions. The most beautiful sound a person can hear is his or her own name.
- Some attitudes to cultivate in dialogues include: Interest in the person, interest in the subject, friendliness, sincerity, and helpfulness.

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• Be conservative as you describe your station.

Instead of mentioning your $2,000 super-duper transceiver, simply mention your power. The other operator may have only a modest station, so don't overdo it when listing the big-ticket items you own.

Things to Avoid

There are several topics that should be avoided, and certain attitudes that can turn a conversation sour in a hurry. Politics, religion, racial comments, and gossip are a few of the obvious ones.

Here are few more things to keep in mind:

• It's not all about you. If your end of a QSO is all about you and your station, and your transmissions are long, you're going to reduce the chance of having a true two-way conversation. Try to focus on the other person.

• Don't preach or argue. This will kill a conversation quickly and lead to an emotional meltdown.

• Don't give advice unless it's requested by your QSO partner.

• Never contradict or loudly disagree with the other person. It can be interpreted as an insult.

Practice These Techniques

Conversation, like most skills, is improved by practicing some of the basics. You can hear many examples, both good and bad, by tuning the bands.

From time to time, analyze how your own QSOs become more interesting and the steps you've taken that open up your chat to subjects unrelated to radio alone.

In our research for this article, we found a definition of a good conversationalist and a list of things that are associated with an ideal one. Here are a few:

Being well-informed certainly helps. Certainly being interested in life and people, plus the ability to draw out the other person, is helpful. Being attentive and having a sense of humor, along with being considerate, flexible, and enthusiastic are some more.

Now Get Back on the Radio!

Our hope is that you find that applying some of these suggestions in your own contacts will result in more interesting, rewarding, and memorable on-air conversations. Who knows? They may lead to new friendships that will enrich your amateur radio career in a very special way.

How did three new hams suddenly find themselves as a sought-after team to make presentations on a very specific type of ham radio operation? And can you do it, too? KDØHKD says yes!

On the Road With "Hams in Space," or Maybe YOU Should Give a Ham Radio Presentation

BY RANDAL R. SCHULZE,* KDØHKD

This is the story of Eddy, Jeremy, and Randy, and their adventures presenting as *Hams in Space!* Although our topic is amateur radio satellite communications, this article is more about hitting the road (Photo A) and giving presentations to the amateur radio community at club meetings and hamfests than the specifics of our talks.

Going on five years now — starting very soon after we all got our ham licenses — Eddy Paul, KYØF (Photo B); Jeremy Widner, ACØDX (Photo C); and I, Randy Schulze, KDØHKD (Photo D), have been providing presentations to the amateur radio community on the topic of FM amateur radio satellites. To date, we have presented to over 40 events for hundreds of people across the Midwest (Photo E), and have more scheduled.

Would I recommend that others get involved in providing presentations? You bet I would! Although it has been a lot of work, and a degree of travel and expense, it has been a very rewarding experience. Here's a look at our adventures as *Hams In Space.*

Photo A. Hitting the road with your ham radio presentation can be a fun and rewarding experience. (Photos by and courtesy of the author)

In the Beginning …

Although involved in communications professionally most of my adult life, I didn't earn my amateur radio ticket until 2009. I'd always known about, and was interested in, ham radio. It just seemed that something always came up, or got in the way of my studies until a friend urged me to just go out and test for my license.

After I earned my Technician Class license, one of the first things to capture my imagination was working the FM amateur radio satellites. This was great fun, and a not-too-expensive way to work some amazing distances with an HT. I was working satellites every chance I got, and it was not very long before my neighbors grew accustomed to seeing the crazy fat man with the purple, gnarly looking antenna wandering about his yard day and night, mumbling cryptic phrases into a little black box. I was even working satellites during breaks at work.

In pretty short order, I started accumulating a pretty good stack of QSL cards from all over North America, including Canada, Alaska, and Mexico! Soon, the same Elmer who suggested I go out and test for my Technician license said, "You know, you're probably eligible for a certificate for working all those hams via satellite …" So I went out to the AMSAT[1] website, and sure enough, I had worked enough contacts for the OSCAR[2] Satellite Communications Achievement Award. I gathered up my QSL cards and submitted the application. To my surprise, I received not only the certificate I applied for, but also the South African Satellite Communications Achievement Award. *Holy Cow!*

Then my Elmer asked, "Didn't you work all those satellites with five watts or less?"

Seven days later, I received a QRP award with satellite endorsement.

The Presentation is Born

A few weeks later, I was attending a meeting of my amateur radio club, where it was asked, "Has anyone done anything interesting in ham radio this month?" So I said, "Sure! I got these really cool certificates for working satellites." I got a lot

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Photo B. Eddy Paul, KYØF, is one of the three members of the "Hams in Space" team. In addition to operating satellites, Eddy enjoys remote control airplanes, cowboy action shooting, and fishing.

Photo C. Jeremy Widner, ACØDX, rounds out the Hams in Space team. He also enjoys fishing, youth ministry, and rooting for the Nebraska Cornhuskers.

of pats on the back and congratulations all around from my friends at the club, which I really appreciated. The news was published on the club's website, and appeared in several of the local amateur radio newsletters. I enjoyed the limelight, but was rather surprised at the response because I had not really been trying to win these awards, but rather, sort of stumbled into them.

Soon, I received a call from the organizers of one of the area's big hamfests, who asked if I could provide a presentation on how such a newly-minted ham had earned all these certificates in such short order. Wow! I'd given a few presentations at work before, but those were before a captive audience, on some less-than-exciting topic like application development coordination, or information technology resource management, *or zzzzzzzzzzzz*… This was going to require a different approach.

Photo D. Author Randy Schulze, KDØHKD, got "hooked" on FM amateur satellites soon after getting his ham license in 2009 and soon found himself being asked to make a presentation on how to work them.

Version 1 of the presentation was way off the mark, as it focused on trying to justify how the new guy was able to succeed. A friend quickly pointed out that my audience would not be interested in why the awards were earned, but rather *how* it was done, and how *they* could earn the awards, too. Version 2 followed this approach, and was presented to my ham club as my guinea pigs. I asked for, and received, good, candid advice. Ideas like, "Add some history of the amateur radio satellite program," "Tell us more about the equipment used," "How expensive was the equipment?" "How difficult was the process?" and "What challenges did you experience?" That's when the theme for the presentation dawned on me: *Exciting Communications Made Fun and Easy!*

Version 3 of the presentation was fine-tuned, and made ready for the hamfest. In addition to many of the members of my ham club in attendance, a couple of my best friends who had also been working satellites (and were also new hams) were there to lend moral support, as well as our local coordinator from AMSAT. So the presentation began, and the most amazing thing happened … My friends and I developed a banter during the presentation based on our experiences working satellites, and it really clicked! It was fun and entertaining, not just for us, but especially for our audience. By the end of the presentation, I had requests from two or three other organizations for *The Team* to come to their functions to give our presentation. Version 4 was developed, and The Team of Eddy Paul, KYØF; Jeremy Widner, ACØDX; and Randy Schulze, KDØHKD, hit the road.

The Dog & Pony Show Hits the Road

Early on, news of our presentation had passed along by word of mouth. We did not need to advertise very much. Right off the bat, the team provided presentations to four area amateur radio clubs with great success. Many of these fine organizations would announce their upcoming meetings on Larry's List[3]. We soon realized how much fun it was visiting all of the various ham clubs and events, meeting other hams, and seeing how other clubs run their meetings. As time went by, we gained more experience, and honed our skills at giving our presentation. We also started to add new information to our presentation based on frequently asked questions, and soon developed a companion website where people could go to for follow-up information after the presentation. During the first year, we logged 12 appearances at clubs and hamfests.

Lessons Added to the Presentation

A presentation was given to a ham club in a rural Missouri community. We typically have a slide in which we explain what one should actually say on the air when communicating via amateur radio satellite, such as the custom or protocol used to contact another operator. About a week later, while working a satellite pass, a young operator who indicated he was in Missouri was taking two or three minutes at a time calling, "CQ CQ CQ Satellite!" Calling CQ is typically not the correct procedure to use on the FM amateur satellites, and caused great consternation among the other operators. We feared that perhaps this new operator was at our recent presentation, and had incorrectly picked up this behavior from us. I immediately amended our slide in the presentation to emphasize that calling CQ is not the correct protocol to use while working the FM satellites. About a year later, we were at another ham club in rural Missouri, and brought up this experience during the presentation. One of the members of the club piped up, "That was about a year ago on the AO-51 satellite? That was one

of our guys! We know exactly who that was and we've corrected the problem!"

You Know You've Made the Big Time …

Our presentations started small, with no real plan in mind. We've never set out with a goal that we were going to do this more than once, or with any particular venue or event in mind. The first year was mostly to amateur radio clubs. While we still do ham clubs, most of our recent appearances have been at hamfests, conventions, and a few institutions. Most recently, we've provided our presentation (Figure 1) at the ARRL Midwest Division Convention and the 2014 Dayton Hamvention®! Twice, we've had the honor of having NASA astronauts participate in our presentation! (Photo F) Around 2011, we formalized our name from "those satellite guys" to *Hams In Space*, and came up with an original logo (Figure 2). Here and there, we've put together a few videos which we've published on YouTube. I'll admit they are very amateur in nature, but we hope they provide good information to the interested ham.[4]

We've observed that our videos and other materials have been published widely in the U.K., Europe, and elsewhere around the world (Photo G). It's very interesting to see our presentation deck, with all our photos and formatting translated into an exotic, foreign language or script (Figure 3). During a recent Google® search on my callsign, returning among the many hits was, "KDØHKD Hams in Space T-Shirt." Although not a bad idea, I've never produced a t-shirt for our presentations. A friend, Clint Bradford, K6LCS[5], who also does presentations, remarked, "*You know you've made the big time when others start pirating your brand name!*"

Photo E. A typical Hams in Space presentation, this one at the 2012 Ararat Hambash in Kansas City, Missouri.

Figure 1. The front page of the Version 7 issue of the Hams in Space presentation. This version uses the group's new logo.

"The One"

Every club or hamfest has its own unique culture or personality. Some clubs call their meetings to order, read the minutes from the last meeting, confirm there's money in the bank, and move on to start the guest presentation, all within the first five minutes. Others go through very complex and lengthy agendas and attempt to resolve the issues of world peace before getting to the presentation. One club went so far as to have a 30-minute discussion comparing the writing styles of two different authors in one of the popular amateur radio magazines.

The single thing we've found in common to all venues is *"The One."* The One is that guy or gal from way out in the weeds who comes up with the most bizarre question or point of view, and typically *won't let it go!* We were at one venue where we explained that when operating the satellites, it's always good to give your callsign and grid square phonetically. For instance, grid square EM28 should be sent out as Echo-Mike-Two-Eight. The One in this case took hold of the topic and explained that all operators must "*provide all information*

Figure 2. The Hams in Space logo. It's copyrighted but that hasn't stopped it from showing up on websites around the world.

Figure 3. Version 5 of the Hams in Space presentation on a Japanese website. Randy says the group's presentations have been "borrowed" by many other groups and translated into several different languages (all without permission).

Photo F. Hams in Space team with NASA Astronaut Col. Doug Wheelock, KF5BOC, at the 2014 Dayton Hamvention®.

slooooooowly and pho-net-ic-ly … At least three times or more, as often as it takes, for as long as it takes … slooooooowly and pho-net-ic-ly!" I responded by stating that this was good information and thanked him, when the gentleman gets loud, "*NO! You must be speaking slooooooowly and pho-net-ic-ly!*" The remainder of the presentation was stopped several times with "*slooooooowly and pho-net-ic-ly" being* interjected into the conversation. After the meeting, the guy even followed me out to the parking lot while we were loading our equipment, adamantly exclaiming, "*slooooooowly and pho-net-ic-ly!"*

While we were setting up at another large event, The One from this particular location takes me to the side and explains that he so glad the satellite guys had arrived, and that he wanted to show us something. He took Jeremy and me outside and pointed to a bright star or planet in the western sky, and explained, "*I think that thing was built by the Russians, and is spying on that town over there!*" He went on to say, "*It might have been built by the Navy … It looks like a Klingon Bird of Prey* ...!" What could I say?

Logistics

Over the years, we've provided presentations to audiences in Missouri, Kansas, Iowa, Nebraska, and Arkan-

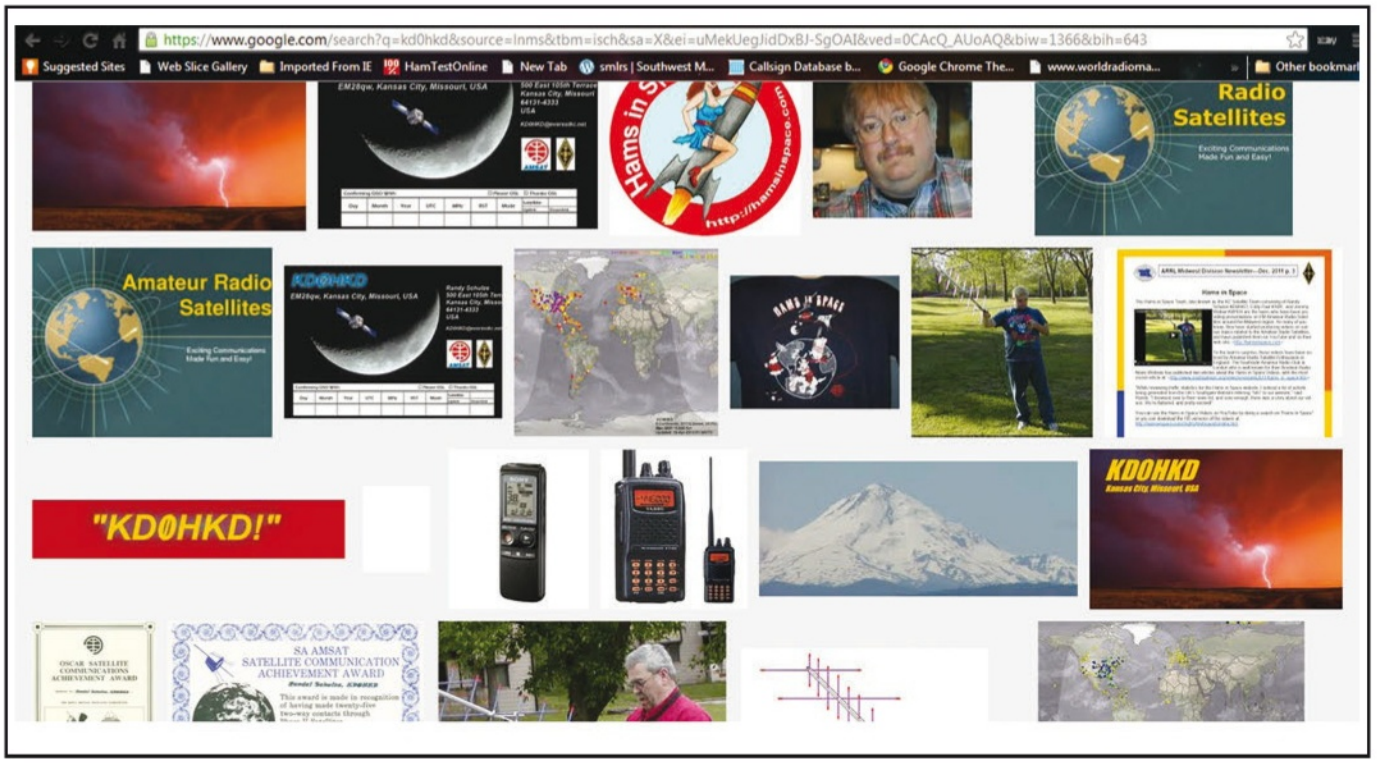

Photo G. Screen shot of part of Google's query response to Hams in Space. Very few of the "hits" are for items posted by the Hams in Space group.

sas. Some groups have been as small as three or four people, while some have had 75 to 100 people in attendance. Just about every ham in the metropolitan Kansas City area has seen our presentation, so most of our appearances now occur farther away from home. With the price of gas being what it is today, traveling to some of these locations has become prohibitively expensive. As such, we typically ask for expenses to be covered by the club or event if distant travel or overnight lodging is required. Some organizations are happy to provide funds to cover expenses, while others want to negotiate over the costs. We try to emphasize that we're not trying to make a profit, although breaking even would be nice.

We've not done a lot of advertising recently, but we still get many requests for appearances, and sometimes have to turn down requests due to schedule conflicts. It's interesting to note, that when we started doing our presentations in 2009, there were five working FM amateur radio satellites, and a very active astronaut/ham, Colonel Doug Wheelock, KF5BOC, on the International Space Station. Today, we have only one working FM amateur radio satellite[6], and although the International Space Station is still there, the current crew members rarely get on the air for general ham radio contacts. When asked to do a presentation, we point out that the satellite fleet is not what is used to be, and want the organizations to know this before they provide good money to cover our expenses. Nonetheless, we still seem to be in high demand on the topic of FM amateur radio satellites.

Even if expenses such as travel and lodging are covered, money must be spent in order to provide a quality presentation. Quality written materials must be on hand with information for follow-up contact, and there are always costs, even if you are trained as a web developer, for maintaining and hosting a website. We also like to provide some sort of

About the Hams in Space

"Hams in Space" is comprised of three longtime friends, Eddy Paul, Jeremy Widner, and Randy Schulze, who met while all three were employed together with Information Services and Systems Development at Sprint during the mid to late 1990s. Although coming from different areas of the U.S., each enjoyed common interests, which included amateur radio and fishing.

Eddy, KYØF, is from Louisiana and served in the U.S. Army Signal Corps and as a computer programmer for the Louisiana Department of Revenue before coming to Sprint, where he spent 25 years in information technology management and engineering before retiring. He has been a ham since 2009 and holds an Extra Class license.

Jeremy, ACØDX, grew up in California, attended York College in Nebraska, and has worked as a software engineer and systems engineer for the past 13 years, currently working for the Veterans Administration. Also licensed since 2009, Jeremy upgraded to Extra in 2011.

Randy, KDØHKD, grew up in Nebraska. Randy served 16 years as a law enforcement officer in Nebraska and Missouri before changing careers and going to work in Information Technology for Sprint and now, CenturyLink in Overland Park, Kansas. Like his partners in Hams in Space, Randy was first licensed in 2009 and upgraded to Extra by 2012.

Hams in Space, based in Kansas City, provides entertaining and informative presentations to amateur radio events, such as hamfests, conventions, club meetings, and other related events. More information and details can be obtained at <http://hamsinspace.com>. Hams in Space Videos can be found on YouTube, with the search string of "Hams in Space."

memento of our appearance. I've obtained a batch of pin-on buttons with our logo that we give away to members of the audience. They're reasonably priced, and have proven to be a big hit.

There are also scheduling considerations when it comes to your family and personal life. Trust me when I tell you that your wife will certainly note the amount of time and materials you are investing in this type of activity. I highly recommend that one maintain a reasonable balance.

Branching Out

We've considered providing presentations on amateur radio topics other than satellites. Jeremy is very adept at working the digital modes, and we've seriously considered building a presentation focused on digital as soon as Eddy and I gain more experience in that area. I personally like the idea of coming up with something unique and off the wall, like how to make ham radio part of your next fishing vacation.

The End Result

All in all, I have found the presentation circuit to be fun and very rewarding. Has it been a lot of work? Sure it is. In return, I've had the opportunity to meet some amazing people, and have been to a lot of great hamfests that I otherwise might not have attended. It has also provided some great experience that I've applied to my professional life. I now know what it takes to build, maintain, and present an effective, entertaining, and informative presentation that can be tailored to small or large audiences in a variety of venues. If my boss asks me to prepare a presentation for something in the company, I can confidently reply, "No Problem! When would you like it?"

Most of all, it has been great fun for all of us, and something I'm very glad I've experienced! As I said at the beginning, would I recommend that others get involved in providing presentations? *You bet I would!*

Notes:

1. AMSAT is the Radio Amateur Satellite Corporation. See <www.amsat.org>.
2. OSCAR stands for Orbiting Satellite Carrying Amateur Radio.
3. Larry's List is one of the great services provided to the Kansas City area ham radio community by Larry Staples, WØAIB. His award-winning e-mail thread reaches over 1,300 subscribers daily! <http://larryslist.info>.
4. The videos can be found on <http://youtube.com> by doing a search on *Hams in Space*.
5. Clint Bradford, K6LCS, is the former AMSAT Coordinator for Southern California, and is nationally recognized for his presentations on working FM Amateur Radio Satellites, and coordinating educational contacts with the International Space Station with schools via amateur radio. See <http://worksat.com>. Also see the article, "*Working the Birds*" by Rich Arland, K7SZ, in the May 2012 edition of *CQ*.
6. Why has the fleet of satellites been shrinking? These satellites "wear out" for various reasons, most prominently battery failure, especially on the older satellites which use older battery technology. Another issue is that outer space is a pretty rough environment for anything to survive in. Sometimes, the satellites' circuitry is exposed to cosmic radiation and simply burns out. Finally, building and launching any satellite is a very expensive undertaking, thus replacement satellites take a great deal of financial resources. The good news is, it was recently announced by AMSAT, that the *Fox-1 Satellite*, an amateur radio satellite using state-of-the-art technology in an amazingly small package, is scheduled for launch during 2015. See <http://ww2.amsat.org/?p=529>.

Results of the 2014 CQ WW WPX CW Contest

BY TERRY ZIVNEY,* N4TZ

Some people think that the activity in amateur radio contests is driven by propagation. When the bands are in better shape, more people are on the air so there are more opportunities to make contest contacts. Not only have we apparently passed the (second) peak of the current sunspot cycle, but the end of May generally ushers in some summertime doldrums. So participation took a dip in 2014, but we still received over 4,000 logs. Propagation was decent, but not spectacular. Many experienced more difficulty in working across the oceans than they expected at a solar cycle peak. In most, but not all of the categories, the champions had lower scores than it took to win last year.

The ever-growing number of prefixes available largely offset the slight downturn in the number of participants. UA5C had 1,185 prefixes as a single operator, while ES9C had an all-time record of 1,632 prefixes worked. Last year, 74 stations worked at least 1,000 prefixes. This year, 144 stations did it. It takes 300 prefixes confirmed on CW to qualify for *CQ's* WPX award. Over 1,500 stations had at least 300 prefixes worked during the CW contest weekend.

Many stations use an unusual call or prefix for the WPX contests. However, it's a fine balancing act between having a callsign that is unusual enough to attract attention on the crowded bands and having one that is too difficult to copy or too cumbersome to send. Sometimes this attempt to give out a new multiplier can backfire. W2GD and PA3FYM reported two outstanding examples of the saying "no good deed goes unpunished." First, while testing his new P44W callsign before the contest, John, W2GD, found that the skimmer network was spotting him very infrequently, making him feel very weak. He found from skimmer guru, N4ZR, that the skimmer network was filtering out the P44 prefix as not being assigned by the Aruba authorities. Fortunately, in the case of P44W, many of the skimmer owners were able to patch their files before the contest, providing a little extra punch for John's low-power signal.

Remco, PA3FYM, did not fare quite so well in his encounter with modern contest technology, especially logging programs whose Super Check Partial function would not recognize his assigned callsign of 7QNL. After a very slow first evening, Remco decided to sleep on it and see what happened the next day; because he was still having a problem with people not accepting his 7QNL callsign, he changed his call to 7ØQNL which seemed to be readily accepted by everyone's logging programs. He wrote, "After all [that], the contest was fun, but the fundamental fact [is] that nowadays one [also] has to contest against databases and software [and that] left a bad taste in my mouth." Thanks for persevering, Remco.

These examples serve as reminders that in our world, even the proverbial "boy and his radio" is impacted by the non-essential technology adopted by others. Speaking of a "boy and his radio," Tony, K2NV/VE3, reported that he had "great fun during our first cruise of the season aboard our sailboat *BellaDonna*. I was surprised to work BY1AA and BY2AA on 15 meters using 100 watts and an insulated backstay. I have enjoyed this contest from the boat for over 20 years!" (Photo A)

Photo A. K2NV/VE3 enjoyed working the DX from his sailboat.

Single-Operator All Band

Andy, AE6Y, returned to his Aruba station (P49Y) and edged R9DX, who was perched in CT9-land. Andy's 40-meter QSO total was the difference here, as both stations are located in that "sweet spot" running from northern South America to northwestern Africa where nearly all QSOs receive maximum points, yet are still close to population centers.

K6LA used his VY2TT station to claim third place overall while edging LZ4AX operating KC3R. A65BP was piloted by RV6LNA to the top Asian score (sixth overall) and UZ2M (URØMC, op) was the top European station, eighth in the world.

Single-Operator Single Band

Summertime propagation conditions make the 10-, 80-, and 160-meter bands especially sensitive to location. As usual, a Southern Hemisphere station, in this case 5W1SA, had the top high-power, 10-meter score. EF3W (EA3GXJ, op) was the highest European 10-meter score with over 1 million points while K2SSS won the U.S.A. plaque with a score of only 225,000 points. The best locations for 80 and 160 meters, on the other hand, seem to be somewhere in central or eastern Europe, with UT5UGR the 80-meter champ and LY7M beating out E71A on the 160-meter band. This year, the top 10 scores on 40 were turned in by European stations, led by IY9A, S51F, and HA8JV.

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2014 WPX CW TROPHY WINNERS AND DONORS

SINGLE OPERATOR ALL BAND

WORLD: Steve Bolia, N8BJQ Trophy. Won by: **P49Y operated by Andrew Faber, AE6Y**
WORLD Low Power: Caribbean Contesting Consortium Trophy. Won by: **P44W operated by John Crovelli, W2GD**
WORLD QRP: Bill Parker, W8QZA Trophy. Won by: **HG3M operated by Istvan Vajda, HA3MY**
USA: Dennis Motschenbacher, K7BV Trophy. Won by: **KC3R operated by Alexander Avramov, LZ4AX**
USA Low Power: Ken Boasi, N2ZN Trophy. Won by: **Maury Peiperl, W3EF**
USA QRP: John T. Laney, K4BAI Trophy. Won by: **Gary Hembree, N7IR**
USA Zone 3 High Power: Northern California Contest Club Trophy. Won by: **KR7O/6 operated by Robert Wilson, N6TV**
USA Zone 3 Low Power: Arizona Outlaws Contest Club Trophy. Won by: **AD7JP operated by Bill Conwell, K2PO**
USA Zone 4 High Power: Society of Midwest Contesters Trophy. Won by: **WX0B operated by Roy Radlek, AD5Q**
USA Zone 4 Low Power: Society of Midwest Contesters Trophy. Won by: **Marvin Bloomquist, N5AW**
USA Zone 5 High Power: Paul Obert, K8PO Trophy. Awarded to: **Bud Trench, AA3B***
EUROPE High Power: Ivo Pezer, 5B4ADA/9A3A Trophy. Won by: **UZ2M operated by Roman Tkachenko, UR0MC**
EUROPE Low Power: Vitor Santos, PY2NY Trophy. Won by: **MJ5Z operated by Kazunori Watanabe, JK3GAD**
EUROPE QRP: Bruce Olney, WY7N Trophy. Won by: **Joseph Presman, UU2CW**
AFRICA: Chris Terkla, N1XS Trophy. Won by: **CT9/R9DX operated by Vadim Ovsyannikov, R9DX**
ASIA: Rick Tavan, N6XI Trophy. Won by: **A65BP operated by Alexander Lunev, RV6LNA**
NORTH AMERICA: Louisiana Contest Club Trophy. Won by: **KP2AA operated by John Bednar, K3TEJ**
NORTH AMERICA Low Power: Dick Green, WC1M Trophy. Won by: **KP2M operated by Philip Allardice, KT3Y**
NORTH AMERICA QRP: Dale Martin, KG5U Trophy. Won by: **Reynaldo H. Rodriguez Guzman, CO6RD**
OCEANIA High Power: Lloyd Cabral, KH6LC Trophy. Won by: **Holger Hannemann, ZL3IO**
OCEANIA Low Power: Pacific DXers Trophy. Won by: **Kevin Smith, VK6LW**
SOUTHERN CONE (CE, CX, LU) Low Power: LU Contest Group Trophy. Awarded to: **Nicolas Herrera G., XQ1KZ***
CANADA High Power: Radio Amateurs of Canada (RAC) Trophy. Won by: **VY2TT operated by Ken Widelitz, K6LA**
CANADA Low Power: Contest Club Ontario Trophy. Won by: **Vladimir Milutinovic, VE3JM**
JAPAN: Wes Printz, W3SE/ZL3TE Trophy. Won by: **Masaki Okano, JH4UYB**
CHINA: LZ9W Contest Team. Won by: **Chenxing Yu, BG9XD**

SINGLE OPERATOR, SINGLE BAND

WORLD 28 MHz: Steve Hodgson, ZC4LI Trophy. Awarded to: **Atsuo Sakuma, 5W1SA**
WORLD 28 MHz Low Power: Six Stars Contest Station LS1D Trophy. Won by: **LO5D operated by Mariano Colacilli, LU8EOT**
WORLD 21 MHz: Andrei Stchislenok, NP3D Trophy. Won by: **YW4D operated by Paolo Stradiotto, YV1DIG**
WORLD 14 MHz: Gene Walsh, N2AA Trophy. Won by: **P4ØA operated by John Bayne, KK9A**
WORLD 7 MHz: LZ2RF Memorial Trophy (OR2F Sponsor): Won by: **IY9A operated by Simone Candotto, IV3NVN**
WORLD 7 MHz Low Power: Neal Campbell, K3NC Trophy. Won by: **Juraj Kovacik, OM3ZWA**
WORLD 3.5 MHz: Ranko Boca, 4O3A Trophy. Won by: **Dimitry Stashuk, UT5UGR**
WORLD 1.8 MHz: Dusko Dumanovic, ZL3WW Trophy. Won by: **Algirdas Uzdonas, LY7M**
USA 28 MHz: Paul Beringer, NG7Z Trophy. Won by: **Zeljko Repic, K2SSS**
USA 21 MHz: Charlie Wooten, NF4A Trophy. Won by: **K3LR operated by John Golumb Jr., N2NC**
USA 14 MHz: Kansas City DX Club Trophy. Won by: **KJ3X/4 operated by Bill Kollenbaum, K4XS**
USA 7 MHz: Yankee Clipper Contest Club Trophy. Won by: **KZ5AA/4 operated by Robin Gist, K4VU**
USA 3.5 MHz: Darin Divinia, WG5J Trophy. Won by: **Steven Sussman, W3BGN**

SINGLE OPERATOR ASSISTED

WORLD: D4C Station Trophy. Won by: **EF8U operated by Juan Hidalgo, EA8RM**
WORLD QRP: Explorers Radio Club Trophy. Won by: **Nick Kornev, RA3AN**
USA: Ron Sigismonti, N3RS Trophy. Won by: **Michael Schwartzman, AB3CX**
EUROPE: Martin Huml, OL5Y Trophy. Won by: **Krzysztof Sobon, SN7Q**
CANADA: Anthony Ratajczak, VE1ZA Trophy. Won by: **Art Tolda, VE3UTT**

OVERLAY CATEGORIES

WORLD Tribander/Single-Element: Helmut Mueller, DF7ZS Trophy. Won by: **NP2P operated by Yuriy Rakushchynets, N2TTA**
USA Tribander/Single-Element: Paul Newberry, N4PN Trophy. Won by: **NF4A operated by Paul H. Newberry, Jr., N4PN**
Europe Tribander/Single-Element: Matija Brodnik, S53MMTrophy. Won by: **TM77M operated by Laurent Fontaine, F5MUX**
WORLD Rookie: Val Edwards W8KIC Memorial (K3LR sponsor) Trophy. Won by: **Philip Springer, DK6SP**
NORTH AMERICA Rookie: Chris Kantarjiev, K6DBGTrophy. Won by: **Alan Spies, KV4QS**

MULTI-OPERATOR, SINGLE-TRANSMITTER

WORLD: Steve Miller, NØSM Trophy. Won by: **P33W operated by HA1AG, UT5UDX, UA4WI, RA2FA, UA4FER, RW4WR, and RA3AUU**
WORLD-Low Power: Hoosier DX and Contest Club Trophy. Won By: **9A7T operated by 9A2EU, 9A2NO, 9A4KJ, 9A5MR, and 9A7TM**
USA: Phil Allardice, KT3Y Trophy. Won by: **NY4A operated by AA4FU and N4AF**
AFRICA: Rhein Ruhr DX Association Trophy. Won by: **CN3A operated by IK2QEI, RX3APM, RA3CO, and UA2FM**
ASIA: W2MIG Memorial (NX7TT Sponsor) Trophy. Awarded to: **P3N operated by R2AA, R3GM, RN3TT, RT5K, RT9T, and RW3QNZ***
EUROPE: YO3CTK Memorial by Andy Ruse YO3JR/YR1ATrophy. Won by: **OM7M operated by OK2BFN, OM2KI, OM3PA, OM3PC, OM5RM, OM5RW, and OM5ZW**

MULTI-OPERATOR, TWO-TRANSMITTER

WORLD: UA1DZ Memorial (W3UA Sponsor) Trophy. Won by: **ZF1A operated by AC6T, N5DO, K6AW, N5DX, and K5GO**
USA: Florida Contest Group Trophy. Won by: **KD4D/3 operated by KD4D, K3RA, N2YO, W3KX, and AC6WI**
AFRICA: Walter Skudlarek, DJ6QT Trophy. Won by: **No Entry**
EUROPE: Tom Georgens, W2SCTrophy. Won by: **II9P operated by IK1HJS, IT9AUG, IT9CHU, IT9CJC, IT9EQO, IT9GSF, IT9INO, IT9NJE, IZ8JAI, and LY5W**

MULTI-OPERATOR, MULTI-TRANSMITTER

WORLD: Steve Merchant, K6AW Trophy. Won by: **ES9C operated by ES2DW, ES2MC, ES2NA, ES2RR, ES4RD, ES5GP, ES5JR, ES5QX, ES5RY, ES5TV, ES5QA, ES7GM, LY2IJ, OH1RX, OH2IW, OH7JR, YL1ZF, YL2KL, YL2PJ, YL2VW, YL3AD, and YL3DW**
USA: Jim Reisert, AD1C Trophy. Won by: **NQ4I operated by AA4LR, VE7ZO, N4XL, W4IX, WB5EIN, K4TD, N4FD, K4BAI, and NQ4I**
EUROPE: Jeff Demers, N1SNB Trophy. Awarded to: **9A1A operated by 9A9A, 9A5W, 9A6A, 9A7R, 9A2DQ, 9A4WW, 9A8A, and 9A2WJ***
CHINA: Andrey Sachkov, LZ2HM Trophy. Won by: **BY5CD operated by BA5CW, BA5FB, BD4AGK, BD4GNV, BG4HJE, and OH7WV**

CONTEST EXPEDITION

WORLD: Phil Goetz, N6ZZ Memorial by Paul Goetz Trophy. Won by: **Hall Offutt, SV9/W1NN/P**

COMBINED AWARDS

WORLD Single Operator Combined Score: (SSB and CW) Yuri Blanarovich, K3BU Trophy. Won by: **P49Y operated by Andrew Faber, AE6Y**
USA Single Operator Combined Score: (SSB and CW) Bill Fisher W4AN Memorial (KM3T Sponsor). Won by: **WF4W/NF4A operated by Paul Newberry, N4PN**
WORLD Single Operator Combined Prefixes: Norm Koch, WN5N Memorial by Gail M. Sheehan, K2RED Trophy. Won by: **P49Y operated by Andrew Faber, AE6Y** (2403 total)
CQ WPX Contest Triathlon Award: (Single Operator Combined Score on RTTY, SSB, and CW). Rudy Bakalov, N2WQ Trophy. Won by: **Bud Trench, AA3B** (19,569,714 points, 7,228 QSOs)
WORLD Club Score: CQ Magazine trophy. Won by: **Bavarian Contest Club**

On 15 meters, YW4D (YV1DIG, op) handily beat K3LR (N2NC, op). Stations from Kazakhstan (UN9GD), Slovenia (S5ØA), Serbia (YT6A), and Poland (SN5X) also "made the box" on 15 meters with multi-million point scores. The round-the-clock nature of 20 meters in the summertime found stations all around the world posting respectable scores, led by a couple of "alpha males" P4ØA and 4L8A. Half of the N6RO M/M team was unavailable so WA6O used the 20-meter station to place second in the U.S.A. to KJ3X/4, while Bob, K3EST, used the 15-meter position to place first in 15-meters assisted.

Even though the big multi-multi stations keep six frequencies in use, at least they only win one category! Just think: If all the M/M stations were broken up, there would be less wallpaper available for the rest of us.

Single-Operator Low Power

The most popular category by far remains the single-operator unassisted low power all band. P44W (W2GD, op) duked it out with PJ2T (WI9WI), with W2GD -- last year's USA QRP champ -- triumphing over last year's worldwide QRP champ, Jim, WI9WI. As in 2012 and 2013, W3EF beat out N5AW for U.S.A. bragging rights. This is the fourth straight runner-up finish for Marv, N5AW. Kazu, MØCFW, traveled to MJ5Z to repeat in Europe.

You can have a lot of high-powered fun running low power on a single band. The single-band categories enable competitors to tailor their activity to fit their individual operating time and station capabilities. LO5D (LU8EOT, op) had the highest 10-meter score, regardless of power. D3AA, last year's 15-meter winner, won on 20 meters while CN8KD, last year's 20-meter winner, took home the plaque on 15. The top five low-power stations on 40 would have placed in the top 10 high power, while the leading scores on 80 and 160 would all have placed in the top five high-power scores.

Single-Operator Assisted

Over 1,300 entries reported using QSO alerting assistance. Worldwide, EA8RM repeated as all band high power assisted, this time using the callsign EF8U, while NY3A was tops in the U.S.A. A lot of action took place in the assisted single band categories as well. PY2EX smoked the competition for 10-meter honors, while countryman PX2X (PY2EL, op) led the crowded 15-meter field. All other assisted single band champions were located in Europe:

Photo B. IT9BLB SOA 15 meters and IT9VDQ SOA 10 meters shared the IB9T/IR9Y contest QTH, en route to top 10 performance.

Photo C. The UA7K M/2 team (R6KA, UT5EO, UU4JMG, and UB7K).

S57AW on 20, IKØYVV on 40, S566ØR (S56M, op) on 80, and SP1GZF on 160. (Photo B)

PY1NX took first place in the all band low power assisted in the world. PR3A (PY3OZ) move was king of 10-meter low power assisted, while MWØEDX on 15 meters, SN8N (SP8HZZ, op) on 20 meters, S56A on 40 meters, YO5LD on 80 meters, and YU2A on 160 meters were the remaining LP assisted winners.

Single-Operator QRP

Over 300 hardy individuals used 5 watts or less compared with 262 during the recent SSB weekend. HG3M (HA3MY) was the world QRP champ while N7IR led the U.S.A. contingent. Six QRP stations had scores above 1 million points.

Overlay Categories

The Rookie overlay category was established to encourage recently-licensed hams to try the contest experience. This year, 59 entries checked this overlay category. Only 15 of the rookies entered an assisted category with most using low power or QRP. DK6SP was world high with 1.27 million using low power while KV4QS teamed up spotting assistance with his low power station to score 941,000 and take the North America plaque.

The Tribander/Single-Element overlay category recognizes that many stations face space constraints for antennas. Approximately 750 entrants selected this overlay. KP2AA (K3TEJ) had the top score, with NP2P (N2TTA) coming in second. Seems tribanders play well in the Virgin Islands. N4PN was again the leader among the U.S.A. Tribander/Single-Element competitors, this time using the NF4A callsign. S53F led the low-power, tri-band-wires crowd, while WD4AHZ had a fine 3 million score to pace the U.S.A. low-power group.

Multi-Operator

P33W narrowly beat their existing record in the Multi-Operator Single-Transmitter category, while P3N again gave them some stiff competition. NY4A repeated as the lead dog of the U.S.A. contingent.

9A7T won the inaugural plaque in the new Multi-Single Low Power category. KØAV was second worldwide, edging out W1UE/HR9 who was testing out a new QTH.

There was plenty of competition in the Multi-Operator Two-Transmitter category as well. PS2T again came in second, this time to ZF1A for overall bragging rights. KD4D/3 had the highest score of any U.S.A. multi-two station, beating last year's winner, NR3X/4. Several WRTC-bound teams took the opportunity to operate as a twosome before the July competition. Eventual WRTC champs N6MJ and KL9A operated NK7U for 24 hours going head-to-head against local WRTC competitors K7RL and KL2A at KW7Y. Other top WRTC teams took advantage of this contest to test their low-power M/2 setups; this included DL5MW with DL1IAO and K9VV with VE3EJ. Both of these teams placed in the top five in New England's WRTC. (Photo C)

It may to be hard to staff a full-fledged, multi-multi operation as summer approaches and the weather seems so nice, but 18 teams took up the challenge. ES9C beat last year's champs, 9A1A, and set a new record for the number of multipliers worked in the contest. NQ4I took stateside honors, with K9CT posting a fine score from the Midwest.

Club Competition

The same clubs led the list this year as last year, but the point totals were considerably higher than last year. The Bavarian Contest Club's impressive total score of nearly 375 million points built up from 235 club logs, 10 fewer logs than last year. The Potomac Valley Radio Club's 137 logs totaled 250 million points, also up substantially.

Records

Even though there was a lower overall level of activity, the increase in the number of multipliers available resulted in several new records: P33W (World M/S), CS2C (Europe 14 MHz), KC3R (USA All Band), K3LR (North America 21 MHz), 5W1SA (Oceania 28 MHz), ZF1A (North America M/2), and ES9C (Europe M/M). Records for all of the various categories and countries can be found at < www.cqwpx.com/records.htm >.

Miscellaneous Statistics

Low power entries were submitted by 2,127 single operator stations, a slight increase over last year, while 1,223 used higher power and 328 went QRP, both categories down from a year ago. Overall, unassisted operation was still favored by a nearly two to one margin, 2,350 to 1,328. High-power stations narrowly favored unassisted (620 vs. 603) while low-power operators overwhelmingly endorsed the "boy and his radio" style of operation (1,487 unassisted vs. 640 assisted)

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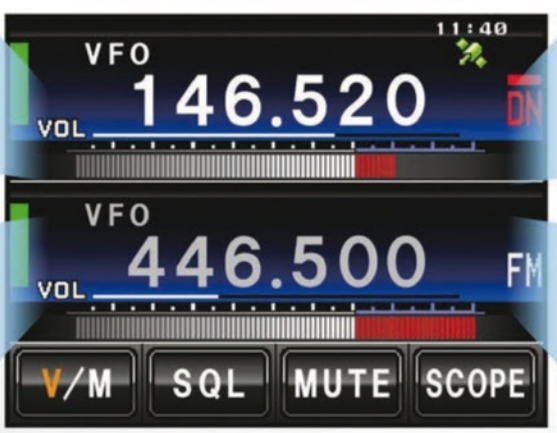

The icon symbols, multi-function key display and pop-up messages are all displayed in high-resolution color thanks to the full-color, high luminance TFT liquid crystal screen.

Smart Navigation Screen

Frequency Direct Input Screen

and the QRP ops voting 243 to 85 for the unassisted style of operation. Even rookies were three times more likely to be operating without than with assistance. The proportions of operators making these various "style" choices were very similar to those in the SSB weekend.

Corrections to previous write-ups

A few corrections to my previous WPX write-ups are in order. First, for the 2013 CW WPX plaques, there were two omissions and one busted call. The busted call was that the CQ WPX Contest Triathlon Award was won by VE3DZ who used 6Y2T, VE3DZ, and VP9FOC in the three events.

The two omitted plaques were the World 7 MHz: LZ2RF Memorial (OR2F sponsor) Trophy, won by John Laney, K4BAI, operating PJ4A; and the Multi-Operator, Single Transmitter North America plaque in memory of Nusret Abadzic E73N (Bosnia and Herzegovina Contest Club sponsor) won by PJ6A, operated by G3SXW, K4UEE, VE7CT, and W6IZT.

I also busted the callsigns of the sponsor and winner of the 2013 SSB WPX USA Rookie plaque. The sponsor is Joe Cazzalino, WX4CAZ, and the winner is Walter Haumesser, KA4SFD. Thanks to all of the plaque sponsors and congratulations to all the winners.

Final Observations

Unfortunately, a number of stations who would have won certificates submitted their logs after the five-day deadline spelled out in the rules. Logs received after the official deadline are shown in italics in the line scores and are not eligible for any awards.

Speaking of rules, there didn't seem to be too many complaints about stations not identifying often enough. Thank you for your cooperation. On the topic of unsportsmanlike conduct, Rule XIII A.5 refers to "signals with excessive bandwidth (e.g., splatter, clicks) or harmonics on other bands." If your signal is 10-dB stronger than other stations, your signal needs to be 10-dB cleaner. Whether you like it or not, contesters, as a byproduct of our seeking to be readily heard by other stations, serve as role models to other amateurs, and indeed to all observers of our spectrum.

There are a number of volunteers who make running and reporting the contest possible. The software support from K1EA and K5TR is more important than ever with the rapid log adjudication cycle. WI9WI, K3WW, and K5ZD helped provide the skilled analysis of the logs that computers alone cannot provide. Doug, K1DG, handles the plaques, while Barry, W5GN, prints and mails your certificates, both in a very timely manner. Paper logs were manually entered by WU9D, KD9MS, KJ9C, K9ZM, KM9M, and N4TZ. K5ZD runs and improves the already outstanding CQ WPX website and helps with almost every part of running the contest.

The 2015 CQ WPX CW Contest will be held **May 30-31**. The log deadline is five days after the conclusion on the contest, **June 5** at **2359Z**. Updated rules will be published in the February issue of *CQ* and will be posted on the website.

CQ World-Wide WPX CW Contest All-Time Records

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

WORLD RECORD HOLDERS

Single Operator

1.8	IH9/OL5Y('98)	341,068	182
3.5	TM5Y('08)	1,983,366	567
7.0	3V8CB('10)	10,758,020	805
14	UP2L('09)	7,928,886	1043
21	HK1R('13)	8,337,384	1044
28	ZX5J('02)	6,787,440	857
AB	EF8M('12)	19,538,250	1195
LP	P49Y('11)	11,008,296	936
QRP	P4ØW('97)	4,018,208	632
Assisted	6Y3W('12)	12,916,100	1060

Multi-Operator Single Transmitter

P33W('14)		33,405,756	1478

Multi-Operator Two Transmitter

PW7T('12)		34,156,451	1457

Multi-Operator Multi-Transmitter

HC8N('99)		54,697,072	1264

CLUB RECORD

Bavarian Contest Club ('12)		441,610,686	

U.S.A. RECORD HOLDERS

Single Operator

1.8	WV8JR('07)	56,760	132
3.5	W3BGN('08)	641,092	332
7.0	KG1D('04)	3,681,828	657
14	N2NC('06)	5,418,630	915
21	K3LR('14)	5,887,365	1023
28	WW4M('01)	2,547,046	674
AB	KC3R('14)	11,389,710	1110
LP	W3EF('12)	5,704,362	933
QRP	N2WN/4('12)	1,686,608	592
Assisted	NY3A('12)	9,923,563	1079

Multi-Operator Single Transmitter

KM3T/1('12)		15,311,340	1254

Multi-Operator Two Transmitter

NN3L('12)		21,964,974	1362

Multi-Operator Multi-Transmitter

NR4M('12)		26,785,984	1426

CONTINENTAL RECORD HOLDERS

AFRICA

1.8	IH9/OL5Y('98)	341,068	182
3.5	7X0RY ('08)	1,701,260	407
7.0	3V8CB('10)	10,758,020	805
14	6W1SJ('09)	6,755,364	924
21	5X1Z('01)	6,362,352	782
28	ZS4TX('01)	4,602,028	722
AB	EF8M('12)	19,538,250	1195

ASIA

1.8	4X4NJ('96)	259,420	170
3.5	TAØ/Z33F('02)	1,452,552	348
7.0	ZC4LI('10)	4,770,336	632
14	UP2L('09)	7,928,886	1043
21	A45XR('99)	6,557,697	843
28	HZ1AB('02)	3,669,994	659
AB	4L0A('09)	12,560,363	967

EUROPE

1.8	SN7Q ('08)	339,542	307
3.5	TM5Y('08)	1,983,366	567
7.0	CT1JLZ('09)	6,075,936	816
14	CS2C ('14)	5,550,012	1062
21	CR1X('12)	7,293,280	1154
28	9HØA('01)	3,965,315	841
AB	CR2X('11)	10,498,800	1040

NORTH AMERICA

1.8	VA1A('99)	103,680	120
3.5	FM5BH('97)	833,490	315
7.0	V26BA('97)	6,227,550	659
14	N2NC('06)	5,418,630	915
21	K3LR('14)	5,887,365	1023
28	FM5GU('01)	2,849,769	621
AB	VY2TT('12)	14,249,235	1155

OCEANIA

1.8	KH6ND('07)	22,100	50
3.5	KH6ND('09)	596,673	231
7.0	ZM3A('09)	6,437,695	737
14	KH6ND('03)	4,126,690	730
21	KH6ND('99)	6,107,256	813
28	5W1SA('14)	1,653,260	482
AB	NH2T('12)	11,438,122	991

SOUTH AMERICA

1.8	HK1MW('11)	18,300	50
3.5	YX3A('89)	1,004,060	305
7.0	PJ4A('13)	8,744,862	826
14	HK1X('11)	7,254,266	1006
21	HK1R('13)	8,337,384	1044
28	ZX5J('02)	6,787,440	857
AB	PJ4A('11)	16,272,730	1018

MULTI-OPERATOR SINGLE TRANSMITTER

AF	CQ3A('11)	26,093,210	1285
AS	P33W('14)	33,405,756	1478
EU	ES9C('12)	17,760,738	1438
NA	8P4A('02)	18,516,960	1056
OC	AH2R('01)	11,541,420	957
SA	P49V('01)	19,760,744	1034

MULTI-OPERATOR TWO TRANSMITTER

AF	EF8M('07)	33,324,192	1256
AS	UP2L('13)	26,207,251	1273
EU	TM6M('13)	22,126,482	1407
NA	ZF1A('14)	28,994,049	1487
OC	KH6LC('12)	17,095,460	1198
SA	PW7T('12)	34,156,451	1457

MULTI-OPERATOR MULTI-TRANSMITTER

AF	CQ3L('10)	28,736,154	1173
AS	A61AJ('02)	42,766,232	1244
EU	ES9C('14)	34,805,664	1632
NA	6Y2A('02)	38,821,328	1274
OC	ZL6QH('04)	16,143,840	1010
SA	HC8N('99)	54,697,072	1264

QRP

AF	5Y4FO('92)	649,057	311
AS	ZC4BS('02)	2,515,388	521
EU	LY5A('01)	2,331,414	646
NA	TI5X('01)	2,568,470	615
OC	FO8JP('86)	572,131	259
SA	P4ØW('97)	4,018,208	632

W1NN Wins N6ZZ Memorial DXpedition Plaque

Hal Offutt, W1NN, won the N6ZZ Memorial DXpedition plaque to remind him of the great time he had operating as SV9/W1NN/P (Photo D). This portable operation was from a rental house on the northern coast of Crete. All equipment and antennas were transported to the temporary QTH in two suitcases. The house was about 300 feet from the water — just a little too far to put verticals at the water's edge. He began the contest with an inverted L but felt weak during the night on 40 meters, where his location should have him performing well. Saturday morning he took some off time to build a G5RV on a homemade mast about 100 feet from the beach which worked much better. "In addition to the antenna problems the first night, QRN was bad on the low bands so 74% of my 1,746 contacts were lower-point QSOs on the high bands, holding down the overall score. Nonetheless, it was wonderful to gaze at the deep blue Mediterranean while operating one of my favorite contests." (Photo E)

Photo D. SV9/W1NN/P enjoys his morning coffee.

Photo E. SV9/W1NN/P used this G5RV antenna overlooking the Mediterranean.

2014 WPX CW CLUB SCORES

United States

Club	# Entrants	Score
POTOMAC VALLEY RADIO CLUB	137	250,770,470
NORTHERN CALIFORNIA CONTEST CLUB	67	142,572,409
FRANKFORD RADIO CLUB	62	136,478,857
SOCIETY OF MIDWEST CONTESTERS	71	112,934,204
YANKEE CLIPPER CONTEST CLUB	76	104,524,542
FLORIDA CONTEST GROUP	56	75,734,482
SOUTH EAST CONTEST CLUB	20	65,954,930
GEORGIA CONTEST GROUP	7	43,711,453
DFW CONTEST GROUP	36	43,161,154
ARIZONA OUTLAWS CONTEST CLUB	57	42,903,713
NORTH COAST CONTESTERS	16	38,046,380
MAD RIVER RADIO CLUB	16	30,049,079
CENTRAL TEXAS DX AND CONTEST CLUB	19	26,753,050
NORTH TEXAS CONTEST CLUB	8	25,468,487
HUDSON VALLEY CONTESTERS AND DXERS	16	24,511,187
ALABAMA CONTEST GROUP	26	22,151,411
SOUTHERN CALIFORNIA CONTEST CLUB	36	19,607,492
TENNESSEE CONTEST GROUP	28	18,976,590
MINNESOTA WIRELESS ASSN	32	15,022,319
ROCHESTER (NY) DX ASSN	9	13,537,030
WILLAMETTE VALLEY DX CLUB	25	13,425,521
MOTHER LODE DX/CONTEST CLUB	17	10,749,436
KANSAS CITY CONTEST CLUB	13	10,664,170
GRAND MESA CONTESTERS OF COLORADO	15	10,510,628
CTRI CONTEST GROUP	9	8,655,785
TEXAS DX SOCIETY	5	8,580,466
BOZINGA DX AND CONTEST CLUB	6	6,784,725
CAROLINA DX ASSOCIATION	6	4,931,472
CONTEST CLUB CALIFORNIA PENINSULA	11	4,291,623
LOUISIANA CONTEST CLUB	9	4,259,361
SPOKANE DX ASSOCIATION	12	4,189,151
ORDER OF BOILED OWLS OF NEW YORK	5	2,685,472
ALLEGHENY VALLEY RADIO ASSOCIATION	5	2,300,898
HILLTOP TRANSMITTING ASSN	8	2,235,036
MISSISSIPPI VALLEY DX/CONTEST CLUB	6	2,181,958
BRISTOL (TN/VA) ARC	7	1,981,764
BERGEN ARA	4	1,691,337
NIAGARA FRONTIER RADIOSPORT	8	1,478,885
SHENANDOAH VALLEY WIRELESS	7	1,242,164
METRO DX CLUB	8	863,882
WEST PARK RADIOPS	8	772,662
SKYVIEW RADIO SOCIETY	6	551,245
UTAH DX ASSOCIATION	6	477,379
BADGER CONTESTERS	4	420,307
STERLING PARK AMATEUR RADIO CLUB	4	389,662
GREAT SOUTH BAY AMATEUR RADIO CLUB	5	382,860
NE MARYLAND AMATEUR RADIO CONTEST SOCIETY	5	340,961
SWAMP FOX CONTEST GROUP	4	242,275
BRAZOS VALLEY AMATEUR RADIO CLUB	7	226,820
MILFORD OHIO AMATEUR RADIO CLUB	4	226,047

DX

BAVARIAN CONTEST CLUB	235	375,011,915
RHEIN RUHR DX ASSOCIATION	134	232,681,776
ITALIAN CONTEST CLUB	45	223,753,435
ARAUCARIA DX GROUP	61	182,173,108
CROATIAN CONTEST CLUB	50	175,885,819
LU CONTEST GROUP	46	169,920,967
EA CONTEST CLUB	47	154,150,686
SLOVENIA CONTEST CLUB	38	125,105,303
CONTEST CLUB FINLAND	44	117,546,439
CONTEST CLUB SERBIA	73	114,099,836
URAL CONTEST GROUP	29	112,820,891
HA-DX-CLUB	19	106,205,702
KAUNAS UNIVERSITY OF TECHNOLOGY RADIO CLUB	46	99,449,763
UKRAINIAN CONTEST CLUB	81	98,767,163
CONTEST CLUB ONTARIO	61	97,883,727
ORCA DX AND CONTEST CLUB	26	86,065,415
SP DX CLUB	57	82,432,454
BLACK SEA CONTEST CLUB	71	63,894,856
RUSSIAN CONTEST CLUB	28	52,867,007
LATVIAN CONTEST CLUB	33	50,902,825
WEST SERBIA CONTEST CLUB	7	46,232,556
WORLD WIDE YOUNG CONTESTERS	14	37,657,933
VK CONTEST CLUB	26	36,844,148
BELOKRANJEC CONTEST CLUB	12	34,848,253
VYTAUTAS MAGNUS UNIVERSITY RADIO CLUB	13	34,809,728
BOSNIA AND HERZEGOVINA CONTEST CLUB	17	32,319,779
BELARUS CONTEST CLUB	23	31,931,030
RIO DX GROUP	30	31,569,837
SOUTH URAL CONTEST CLUB	18	29,774,982
CLIPPERTON DX CLUB	8	27,432,976
CHILTERN DX CLUB	9	20,624,728
DXARC DX COLOMBIA AMATEUR RADIO CLUB	4	15,839,864
CDR GROUP	7	14,590,774
RADIO CLUB VENEZOLANO CARACAS	6	14,092,574
LA CONTEST CLUB	13	13,585,062
LES NOUVELLES DX	5	13,493,183
CE CONTEST GROUP	7	12,612,929
RUSSIAN CW CLUB	41	12,528,533
THREE A'S CONTEST GROUP	4	11,799,659
GUARA DX GROUP	16	11,722,221
SKY CONTEST CLUB	4	11,188,073
599 CONTEST CLUB	4	11,130,566
SIAM DX GROUP	6	10,328,624
IRKUTSK RADIO CLUB	7	9,711,436
CSTA BUCURESTI	7	9,537,404
CONTEST GROUP DU QUEBEC	10	9,531,495
CENTRAL SIBERIA DX CLUB	6	9,449,568
CENTO DX TEAM	4	9,256,976
NOVOKUZNETSK RADIO CLUB	14	8,604,974
THRACIAN ROSE CLUB	23	8,345,476
SRR	5	8,152,328
YB LAND DX CLUB	28	7,818,488
DONBASS CONTEST CLUB	23	7,751,846
DANISH DX GROUP	13	7,630,350
UA2 CONTEST CLUB	6	7,517,949
RADIO AMATEUR ASC. OF WESTERN GREECE	4	7,480,027
ARCK	14	7,414,809
ALRS ST PETERSBURG	11	7,217,996
VU CONTEST GROUP	13	7,002,983
SHAKHAN CONTEST CLUB	5	6,643,367
YO DX CLUB	16	6,458,853
VRHNIKA CONTESTERS	8	6,330,355
PODOLSK	4	6,024,295
URE*	10	5,990,593
SAMARA RADIO CLUB	6	5,981,229
MARITIME CONTEST CLUB	12	5,954,316
CSM CRAIOVA	4	5,313,809
OMSK RADIO CLUB	6	5,200,939
CATALONIA CONTEST CLUB	6	5,105,071
CSM BAIA MARE	4	5,104,878
SAUDI CONTEST GROUP	7	5,006,557
TEMIRTAU CONTEST CLUB	5	3,485,399
RU-QRP CLUB	16	3,222,977
LITHUANIAN CONTEST GROUP	5	3,197,155
RADIO CLUB PARMA	5	3,049,115
VERENIGING VAN RADIO ZEND AMATEURS	6	2,982,577
MEDITERRANEO DX CLUB	13	2,952,919
LIPETSK RADIO CLUB	4	2,901,131
SP CONTEST CLUB	7	2,656,341
R4F-DX-G	6	2,467,446
DARC*	16	2,400,008
PZK*	4	2,391,892
RADIO CLUB HENARES	4	2,202,286
DELARA CONTEST TEAM	4	2,092,285
BARIVM DX TEAM	11	2,035,061
SARATOVSKAYA OBLAST RADIO CLUB	8	1,947,444
MERIDEN ARC	4	1,928,847
GIPANIS CONTEST GROUP	4	1,887,752
VITEBSK CONTEST CLUB	4	1,824,182
CS PETROLUL PLOIESTI	4	1,684,570
UNIVERSITY OF TOKYO CONTEST CLUB	5	1,637,524
RCWC	6	1,371,526
PERUGIA CONTEST CLUB	4	1,343,340
EPC	4	1,342,950
ADMIRA ARAD	5	1,289,976
TURKISH SPECIAL WIRELESS ACTIVITY TEAM	5	1,259,232
BASHKORTOSTAN DX CLUB	5	1,180,072
MONGOLIA DX CLUB	6	1,136,317
CHELTENHAM AMATEUR RADIO ASSOCIATION	4	898,649
VLADIMIR CONTEST GROUP	7	887,024
RAST	7	815,374
BRACKNELL AMATEUR RADIO CLUB	4	809,267
GMDX GROUP	4	799,385
NEW MOSCOW DX CLUB	5	618,710
ARI	4	577,336
ARKTIKA	4	573,345
KOREA CONTEST CLUB	5	545,814
SPEKTR	5	540,500
MOSCOW RADIO CLUB	5	490,588
SOUTH GERMAN DX GROUP	4	452,960
CHILEAN PACIFIC DX GROUP	8	382,011
DELTA JANDARMI ASOCIATION TULCEA	4	374,110
CWJF GROUP	4	370,796
WYTHALL RADIO CLUB	5	330,635
VERON*	5	241,136
SPORT CLUB MIERCUREA-CIUC	4	232,429
EDIT14	5	231,693
RADIO CLUB KVARNER RIJEKA	5	221,579
NANAIMO AMATEUR RADIO ASSOCIATION	4	211,205
TURKISH CONTEST TEAM TC3T	6	169,767
PHILIPPINE AMATEUR RADIO LEAGUE*	4	165,712
SOUTH GERMAN DX GROUP	4	452,960
DELTA JANDARMI ASOCIATION TULCEA	4	374,110
CWJF GROUP	4	370,796
SPORT CLUB MIERCUREA-CIUC	4	232,429
NANAIMO AMATEUR RADIO ASSOCIATION	4	211,205
BITTERN DX GROUP	3	817,488
YB LAND DX CLUB	5	619,059
CSM CLUJ-NAPOCA	3	542,862
IVANOVO DX CLUB	4	431,188
PERUGIA CONTEST CLUB	6	423,665
UNIVERSITY OF TOKYO CONTEST CLUB	3	243,804
RU-QRP CLUB	4	205,682
VOLYN CONTEST GROUP	3	176,018
GRIMSBY AMATEUR RADIO SOCIETY	3	161,653
WATERLAND	3	59,242

ARD300 Multi-Mode Decoder

Works with the Most Popular Digital Voice Modes!

The ARD300:

- Converts your analog receiver (equipped 10.7 MHz or 45.05 MHz IF output) into a digital receiver
- Decodes analog NFM (Narrow FM) signals
- Is compatible with AR8600MK2, AR5000(A/+3), AR2300, AR5001D and AR6000
- Modifiable to be compatible with AR8200MK3
- Compatible with other receivers featuring a 10.7 MHz or 45.05 MHz IF output

With its compact size and versatile multi-mode capabilities, the ARD300 is destined to become a favorite of federal, state and local law enforcement agencies, the military, emergency managers, diplomatic service, news-gathering operations, security professionals and monitoring enthusiasts.

Get the Instant Digital Upgrade for your Analog Receiver!

***The ARD300** Multi-Mode Digital Decoder allows many existing receivers to monitor analog AND digital voice communications.*

Many government and commercial operators have shifted to digital formats that cannot be monitored by conventional receivers. However, if your receiver has a 10.7MHz or 45.05 MHz IF output, adding the ARD300 allows you to listen to several widely-used different digital modes heard on commercial, public safety and amateur radio frequencies.

The ARD300 adds the ability to monitor the APCO P25 format used by the US Military, and public safety agencies. You can also hear NXDN® and popular amateur radio digital modes such as Icom D-Star®, Alinco® and Yaesu® digital formats.

Add new life to your existing receiver with the ARD300!

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Torrance, CA 90501, USA
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info@aorusa.com • www.aorusa.com

2014 WPX CW TOP SCORES

WORLD

Single Op All Band High Power
P49Y (AE6Y) 15,271,734
CT9/R9DX 14,802,432
VY2TT (K6LA) 11,629,030
KC3R (LZ4AX) 11,389,710
CF3A (VE3AT) 10,492,076
A65BP (RV6LNA) 10,390,458
OC4WW 9,717,778
UZ2M (UR0MC) 9,447,798
KP2AA (K3TEJ) 9,427,886
AA3B 9,270,752

Single Op 28 MHz High Power
5W1SA 1,653,260
EF3W (EA3GXJ) 1,024,190
S57DX 809,991
ZL1AIH 672,989

Single Op 21 MHz High Power
YW4D (YV1DIG) 7,155,109
K3LR (N2NC) 5,887,365
UN9GD 4,846,077
S50A 4,435,580
YT6A 4,299,178

Single Op 14 MHz High Power
P40A (KK9A) 7,089,667
4L8A 6,375,618
CS2C (OK1RF) 5,550,012
4Z4AK (UT7DK) 4,902,091
KJ3X/4 4,610,940

Single Op 7 MHz High Power
IY9A (IV3NVN) 3,451,140
S51F 3,113,792
HA8JV 3,031,656
IV3SKB 1,994,240
IZ1GAR 1,910,664

Single Op 3.5 MHz High Power
UT5UGR 833,460
YT4A (YT1AA) 686,799
E77EZ 389,681

Single Op 1.8 MHz High Power
LY7M 190,762
E71A 162,960
YO5AJR 71,149

Single Op All Band Low Power
P44W (W2GD) 9,570,592
PJ2T (WI9WI) 9,181,110
KP2M (KT3Y) 7,757,100
FY5FY 7,339,348
YN2GY (K9GY) 5,716,236
W3EF 5,441,712
N5AW 4,802,568
NV1N 4,687,736
MJ5Z (JK3GAD) 4,604,650
YT8A (YU1EA) 4,355,561

Single Op 28 MHz Low Power
LO5D (LU8EOT) 1,773,486
XQ1KZ 1,555,232
LU6UO 666,357
9A3VM 575,910
LU7YWC 463,203

Single Op 21 MHz Low Power
CN8KD 4,746,168
LY8O 1,744,470
UK8AR 1,422,720
IF9/IT9PPG 1,394,680
KU2M 1,366,512

Single Op 14 MHz Low Power
D3AA 2,008,655
RW0AJ 1,314,681
K9QVB 1,282,112
HA6OA 1,262,940
YS1YS (JA6WFM) 1,139,205
DL9ZP 1,106,136

Single Op 7 MHz Low Power
OM3ZWA 1,478,620
E77R 1,315,080
UT5IA 1,257,149
PA2REH 1,182,465
CO7EH 1,053,780

Single Op 3.5 MHz Low Power
UN7CW 457,677
S54A 453,870
LY5I 434,808
SP4GL 321,044
SM7MX (SM5MX) 300,195

Single Op 1.8 MHz Low Power
OK1JOK 35,941
E75A 25,620
ER2RM 24,038

Single Op All Band High Power Assisted
EF8U (EA8RM) 12,102,300
RG9A 11,115,055
SN7Q 10,248,280
OM3GI 9,871,818
RT9A 9,527,231
S53MM 9,477,326
LZ8E (LZ2BE) 9,361,072
UA9MA 9,132,168
YP9W (YO9WF) 8,638,650
EF2A (EA2AYD) 8,102,220

Single Op 28 MHz High Power Assisted
PY2EX 4,348,366
9K2/SP4R (SP4R) 1,693,712
9A5Y (9A3NM) 1,394,424
IT9VDQ 1,322,100
IQ7AF (IK7JWY) 1,278,200
LZ2HM 1,053,837

Single Op 21 MHz High Power Assisted
PX2X (PY2EL) 5,128,635
HG3R (HA3NU) 4,949,140
OK1FFU 4,528,854
RU7M (R7LV) 4,331,594
9A8M (9A7DM) 4,097,782
IT9BLB 4,066,686

Single Op 14 MHz High Power Assisted
S57AW 5,571,072
VE6JY (VE5MX) 5,131,858
OK8NM (OM6NM) 4,683,120
RT5Z (RA3CW) 4,494,990
OL6P (OK2PP) 4,294,031
G8DX 4,039,660

Single Op 7 MHz High Power Assisted
IK0YVV 2,629,923
S56X 2,495,976
RL5A 1,997,970
9A4WY 1,601,060
RG6A (UU9JH) 1,508,510

Single Op 3.5 MHz High Power Assisted
S566ØR (S56M) 816,732
EW8DJ 666,500
HK1N 489,766

Single Op 1.8 MHz High Power Assisted
SP1GZF 102,483
UR5WA 89,573
DF2UU 39,767

Single Op All Band Low Power Assisted
PY1NX 6,464,145
IO4T (IK4VET) 6,076,347
NN3L (N3RS) 5,535,324
S53F 4,985,906
UX4U (US7UX) 4,432,764
9A1AA 4,279,058
LY3B 4,251,637
K3AJ 3,963,330
RT9S 3,907,098
UT4LW 3,653,124

Single Op 28 MHz Low Power Assisted
PR3A (PY3OZ) 2,303,238
LZ4T (LZ4TL) 1,243,288
CW4MAX (CX2DK) 954,270

Single Op 21 MHz Low Power Assisted
MW0EDX 3,437,278
HG5D (HA8QZ) 2,539,653
UX1AA 2,233,088
E74A 1,852,312
BH8BJO 1,292,147
W2AW (N2GM) 1,157,988

Single Op 14 MHz Low Power Assisted
SN8N (SP8HZZ) 2,017,081
UY6IM 1,994,080
IT9/OL9R (OK6RA) 1,673,683
CE3AA (XQ4CW) 1,584,780
S54X 1,417,080
YT2AAA 1,389,718

Single Op 7 MHz Low Power Assisted
S56A 2,391,074
DF1LX 1,320,775
OK1AY 912,896

Single Op 3.5 MHz Low Power Assisted
YO5LD 383,782
S50P 334,304
UX1VT 210,870

Single Op 1.8 MHz Low Power Assisted
YU2A 84,728
SN5J (SP5JXK) 55,692
HA5NB 41,216

Single Op All Band QRP
HG3M (HA3MY) 1,802,986
UU2CW 1,455,021
IZ8JFL/1 1,263,845
TM3T (F5VBT) 1,248,480
UA7G 1,109,619
DF5RF 1,074,600
UX1UX 982,997
UX2MF 907,915
N7IR 858,186
US2IZ 817,570

Single Op 28 MHz QRP
LT7H 608,685
LZ2RS 159,500
Z35F 91,168

Single Op 21 MHz QRP
HA1ZZ 246,750
JQ1NGT 169,510
S51Z 156,348
SP4GFG 154,012

Single Op 14 MHz QRP
PG2AA 367,638
HG72QRP 289,520
UX5UU 255,942

Single Op 7 MHz QRP
OM2ZA 364,364
OK1FKD 231,825
UX7UW 223,270
CO8DM 215,600
OK5WF 196,238

Single Op 3.5 MHz QRP
UA3TW 85,540
UT5UUV 68,510
UT5DJ 24,592

Single Op 1.8 MHz QRP
9A4DC 4,092
RA2FB 1,404

Single Op All Band QRP Assisted
RA3AN 1,461,662
OU2M (DK3WE) 1,382,876
RZ3QS 813,392

Single Op 28 MHz QRP Assisted
7Z1SJ 155,760
DJ6QT 88,168

Single Op 21 MHz QRP Assisted
IK6FWJ 691,119
HG1ØCC (HA3JB) 464,901
JH8PNE 291,718

Single Op 14 MHz QRP Assisted
F/E73CQ (E73CQ) 464,070
9A/S53V (S53V) 326,655
VA1MM 254,569

Single Op 7 MHz QRP Assisted
YU1LM 685,860
9A2U (9A3ZA) 626,221
S51DX 135,072

Single Op 3.5 MHz QRP Assisted
S55W (S50XX) 135,366
HG6C (HA6IAM) 6,612

Single Op 1.8 MHz QRP Assisted
OL1A (OK1CW) 36,068

Multi-Single High Power
P33W 33,405,756
P3N 32,373,179
CN3A 22,977,264
UP2L 20,610,447
PJ4J 17,388,540
PW2D 14,023,066
OM7M 13,115,328
RW0A 12,680,442
NY4A 11,644,407
SP8R 11,219,868

Multi-Single Low Power
9A7T 5,901,165
K0AV 3,923,360
W1UE/HR9 3,728,560
VB7X 2,129,745
BY1WJ 1,638,168
DL1NKS 1,498,720
KK5I 1,327,088

Multi-Two
ZF1A 28,994,049
PS2T 27,654,081
CW5W 24,045,840
II9P 21,792,904
LX7I 20,370,690
YU5R 19,092,150
HG7T 19,005,000
KD4D/3 18,242,900
UA7K 17,842,425
NR3X/4 17,583,720

Multi-Multi
ES9C 34,805,664
9A1A 31,679,550
LZ9W 27,710,146
NQ4I 24,247,022
K9CT 19,682,880
LY7A 16,745,210
BY5CD 15,694,380
JA3YBK 15,569,001
DM4X 15,060,728
VC7X 14,162,505

Rookie
Single Op All Band High Power
SV1RHL 173,013
K5WL 152,544

Single Op All Band Low Power
DK6SP 1,272,888
EU6ML 946,608
KV4QS 941,472
RO4A (R4AAT) 894,874
W4TTM 703,954
DM3ZM 682,925
EI3HMB 391,104
DL2IC 273,546
HS4DDQ 256,608
HS1FVL 246,942

Single Op 21 MHz Low Power
UA3XAO 693,525
IT9CLN 496,799
BG9HKP 263,025
EW1TO 178,350
HA8RT 74,613

Single Op 14 MHz Low Power
KK4DZP 19,176

Single Op 7 MHz Low Power
E77CW 45,375

Tribander/Single Element
Single Op All Band High Power
KP2AA (K3TEJ) 9,427,886
NP2P (N2TTA) 7,021,440
TM77M (F5MUX) 6,542,502
RJ4P 6,443,736
VE3DZ 5,956,704
NF4A (N4PN) 5,308,513
K3EL/2 5,161,315
EV1R 4,971,105
LY7Z 4,657,048
N3QE 4,503,600

Single Op 28 MHz High Power
5W1SA 1,653,260
EO1I (UT1IA) 383,306
4X0A (4X1VF) 139,682

Single Op 21 MHz High Power
C4Z (5B4AIZ) 4,101,432
S51NZ 2,020,333
WR9D (KB9UWU) 1,661,127

Single Op 14 MHz High Power
4Z4AK (UT7DK) 4,902,091
G8DX 4,039,660
UA1AFT 2,150,517

Single Op 7 MHz High Power
IK0YVV 2,629,923
IV3SKB 1,994,240
KZ5AA/4 (K4VU) 385,581

Single Op 3.5 MHz High Power
YT4A (YT1AA) 686,799
EW8DJ 666,500
YT6T (YU7CM) 328,680

Single Op 1.8 MHz High Power
E71A 162,960
DF2UU 39,767

Single Op All Band Low Power
S53F 4,985,906
9A1AA 4,279,058
RT9S 3,907,098
UT4LW 3,653,124
SN7O (SP7IVO) 3,479,986
WD4AHZ 3,030,698
S52W 2,866,590
UA5B 2,523,888
DL6RAI 2,441,288
JI1RXQ 2,326,030

Single Op 28 MHz Low Power
Z39A 298,242
EF5R (EA5BWR) 161,100
HZ1OS 146,371

Single Op 21 MHz Low Power
MW0EDX 3,437,278
IF9/IT9PPG 1,394,680
RU4SO 787,472

Single Op 14 MHz Low Power
IT9/OL9R (OK6RA) 1,673,683
CE3AA (XQ4CW) 1,584,780
S54X 1,417,080

Single Op 7 MHz Low Power
DF1LX 1,320,775
E77R 1,315,080
UT5IA 1,257,149

Single Op 3.5 MHz Low Power
S54A 453,870
YO5LD 383,782
SP4GL 321,044

Single Op 1.8 MHz Low Power
HA5NB 41,216
ER2RM 24,038

UNITED STATES

Single Op All Band High Power
KC3R (LZ4AX) 11,389,710
AA3B 9,270,752
WX0B/5 (AD5Q) 8,068,445
WR3O/4 (K4RO) 7,628,448
K1ZZ 7,361,886
NG4US (K5KG) 6,330,779

Single Op 28 MHz High Power
K2SSS 225,180
WZ7ZR 85,988

Single Op 21 MHz High Power
K3LR (N2NC) 5,887,365
KS9K (N4TZ) 3,742,200
K5YAA 1,246,955

Single Op 14 MHz High Power
KJ3X/4 (K4XS) 4,610,940

WA6O (@N6RO).....2,269,368
KN7T.....1,655,640

Single Op 7 MHz High Power
KZ5AA/4 (K4VU).....385,581
K2UF.....303,396
K3UA.....188,190

Single Op 3.5 MHz High Power
W3BGN.....262,328
WN2O (N2GC).....64,242

Single Op All Band Low Power
W3EF.....5,441,712
N5AW.....4,802,568
NV1N.....4,687,736
NM5M.....3,786,237
NA8V.....3,566,541
AD7JP (K2PO).....3,187,829

Single Op 28 MHz Low Power
KN4Y.....53,756
W2TF.....14,896
WE6EZ/5.....13,608

Single Op 21 MHz Low Power
KU2M.....1,366,512
WB4TDH.....805,608
N3GD/4.....200,928

Single Op 14 MHz Low Power
K9QVB.....1,282,112
W8IQ.....532,507
WO3Z.....526,080

Single Op 7 MHz Low Power
W2EG.....856,050
K9UIY.....391,194
WO9S.....312,660

Single Op 3.5 MHz Low Power
KI6LZ.....11,550
K5CAO/6.....6,156

Single Op 1.8 MHz Low Power
WD8DSB/9.....5,400
NA4W (K4WI).....1,860

Single Op All Band High Power Assisted
AB3CX/2.....7,536,468
N3RR.....6,252,633
W8MJ.....5,748,450
W3FV.....4,868,500
N3QE.....4,503,600
K3MD.....3,539,332

Single Op 28 MHz High Power Assisted
NR6O (N6RO).....91,696

Single Op 21 MHz High Power Assisted
K3EST/6.....2,845,004
WR9D (KB9UWU).....1,661,127
NQ5K (W5ASP).....1,147,961

Single Op 14 MHz High Power Assisted
KT3M (N3AD).....3,744,048
K5NZ.....511,264
WR2G.....247,800

Single Op 7 MHz High Power Assisted
KB7Q.....1,019,844
W3YY/4.....258,720

Single Op 3.5 MHz High Power Assisted
AA4VV.....23,616

Single Op All Band Low Power Assisted
NN3L (N3RS).....5,535,324
K3AJ.....3,963,330
WD4AHZ.....3,030,698
N1EN.....2,282,892
W3KB.....2,214,270
NE5LL (N1CC).....1,578,808

Single Op 28 MHz Low Power Assisted
K7BX.....16,632

Single Op 21 MHz Low Power Assisted
W2AW (N2GM).....1,157,988
N9NA.....59,452
W9IL/4.....53,268

Single Op 14 MHz Low Power Assisted
AB1J.....487,625
WK4AA.....225,204
W6AWW.....179,024

Single Op 7 MHz Low Power Assisted
WA1FCN/4.....668,136

Single Op All Band QRP
N7IR.....858,186
K7HBN.....256,032
WQ8RP (N8XX).....135,252
W6QU (W8QZA).....133,563
NE1RD.....121,448

Single Op 28 MHz QRP
K5NA.....86,580
K3TW/4.....33,360

Single Op 21 MHz QRP
WA6FGV.....63,961
N7RVD.....34,932

Single Op 14 MHz QRP
NU4B.....49,632

Single Op 7 MHz QRP
W8NNC.....8,250

Single Op All Band QRP Assisted
KE8M.....584,600
N3WD.....250,320
NA1DX/3.....245,504

Single Op 21 MHz QRP Assisted
NN3U/4 (N4GU).....116,208

Single Op 14 MHz QRP Assisted
W1WBB.....64,790
NK5G.....62,918

Single Op 7 MHz QRP Assisted
K9JWV/7.....21,489

Multi-Single High Power
NY4A.....11,644,407
KGØF.....9,568,233
K5RX.....7,993,604
NQ2F.....7,507,592
KC4D.....5,158,528
KR2T.....5,022,134

Multi-Single Low Power
KØAV.....3,923,360
KK5I.....1,327,088
WA4NZD.....200,860

Multi-Two
KD4D/3.....18,242,900
NR3X/4.....17,583,720
AD4Z.....16,698,000
WW4LL.....14,254,032
NA2U/7.....9,873,058
WQ6X.....8,838,492

Multi-Multi
NQ4I.....24,247,022
K9CT.....19,682,880

Rookie
Single Op All Band High Power
K5WL.....152,544

Single Op All Band Low Power
KV4QS.....941,472
W4TTM.....703,954
AB3TM.....105,105
KK4HEG.....83,482
AG6RB.....43,731

Single Op 28 MHz Low Power
AE7DW.....4,141

Single Op 14 MHz Low Power
KK4DZP.....19,176

Tribander/Single Element
Single Op All Band High Power
NF4A (N4PN).....5,308,513
K3EL/2.....5,161,315
N3QE.....4,503,600
K3MD.....3,539,332
NK4A (NF4A).....3,293,199
AB3CV.....2,688,642

Single Op 21 MHz High Power
WR9D (KB9UWU).....1,661,127
WK7S (K6LL).....1,043,675
KZ5J.....718,340

Single Op 14 MHz High Power
KN7T.....1,655,640
KXØA (K9DU).....602,616

Single Op 7 MHz High Power
KZ5AA/4 (K4VU).....385,581
W3YY/4.....258,720
NX4N.....127,257

Single Op 3.5 MHz High Power
WN2O (N2GC).....64,242

Single Op All Band Low Power
WD4AHZ.....3,030,698
N1EN.....2,282,892
K8BL.....1,549,866
K3IE/4.....1,126,664
N2UU.....927,463
NA5NN (W5UE).....868,205

Single Op 28 MHz Low Power
WE6EZ/5.....13,608

Single Op 21 MHz Low Power
NN3U/4 (N4GU).....116,208
W9IL/4.....53,268
N7RVD.....34,932

Single Op 14 MHz Low Power
W8IQ.....532,507
AB1J.....487,625
NJ3K.....335,472

Single Op 7 MHz Low Power
WN4AFP 163,155
KØPK 139,748

EUROPE

Single Op All Band High Power
UZ2M (URØMC) 9,447,798
9A8WW (S55M) 8,616,375
UA5C 8,579,400
RW1A 8,353,415
YT6W 8,147,838
YT9X (YU1ZZ) 7,303,296

Single Op 28 MHz High Power
EF3W (EA3GXJ) 1,024,190
S57DX 809,991
HGØR (HAØNAR) 493,740

Single Op 21 MHz High Power
S5ØA 4,435,580
YT6A 4,299,178
SN5X (SP5GRM) 4,297,158

Single Op 14 MHz High Power
CS2C (OK1RF) 5,550,012
YL3FT 3,592,270
S53O 3,031,735

Single Op 7 MHz High Power
S51F 3,113,792
HA8JV 3,031,656
IV3SKB 1,994,240

Single Op 3.5 MHz High Power
UT5UGR 833,460
YT4A (YT1AA) 686,799
E77EZ 389,681

Single Op 1.8 MHz High Power
LY7M 190,762
E71A 162,960

Single Op All Band Low Power
MJ5Z (JK3GAD) 4,604,650
YT8A (YU1EA) 4,355,561
LY6A 3,703,784

Single Op 28 MHz Low Power
9A3VM 575,910
LZ2HR 261,621
RO5O 219,744

Single Op 21 MHz Low Power
LY8O 1,744,470
IF9/IT9PPG 1,394,680
OK3C (OK2ZC) 1,275,012

Single Op 14 MHz Low Power
HA6OA 1,262,940
DL9ZP 1,106,136
HA8GY 1,020,000

Single Op 7 MHz Low Power
OM3ZWA 1,478,620
E77R 1,315,080
UT5IA 1,257,149

Single Op 3.5 MHz Low Power
S54A 453,870
LY5I 434,808
SP4GL 321,044

Single Op 1.8 MHz Low Power
OK1JOK 35,941
E75A 25,620
ER2RM 24,038

Single Op All Band High Power Assisted
SN7Q 10,248,280
OM3GI 9,871,818
S53MM 9,477,326
LZ8E (LZ2BE) 9,361,072
YP9W (YO9WF) 8,638,650
EF2A (EA2AYD) 8,102,220

Single Op 28 MHz High Power Assisted
9A5Y (9A3NM) 1,394,424
IT9VDQ 1,322,100
IQ7AF (IK7JWY) 1,278,200

Single Op 21 MHz High Power Assisted
HG3R (HA3NU) 4,949,140
OK1FFU 4,528,854
RU7M (R7LV) 4,331,594

Single Op 14 MHz High Power Assisted
S57AW 5,571,072
OK8NM (OM6NM) 4,683,120
RT5Z (RA3CW) 4,494,990

Single Op 7 MHz High Power Assisted
IKØYVV 2,629,923
S56X 2,495,976
RL5A 1,997,970

Single Op 3.5 MHz High Power Assisted
S566ØR (S56M) 816,732
EW8DJ 666,500
YT6T (YU7CM) 328,680

Single Op 1.8 MHz High Power Assisted
SP1GZF 102,483
UR5WA 89,573

Single Op All Band Low Power Assisted
IO4T (IK4VET) 6,076,347
S53F 4,985,906
UX4U (US7UX) 4,432,764
9A1AA 4,279,058
LY3B 4,251,637
UT4LW 3,653,124

Single Op 28 MHz Low Power Assisted
LZ4T (LZ4TL) 1,243,288
IØUZF 653,940
HA3DX (HA3UU) 405,657

Single Op 21 MHz Low Power Assisted
MWØEDX 3,437,278
HG5D (HA8QZ) 2,539,653
UX1AA 2,233,088

Single Op 14 MHz Low Power Assisted
SN8N (SP8HZZ) 2,017,081
UY6IM 1,994,080
IT9/OL9R (OK6RA) 1,673,683

Single Op 7 MHz Low Power Assisted
S56A 2,391,074
DF1LX 1,320,775
OK1AY 912,896

Single Op 3.5 MHz Low Power Assisted
YO5LD 383,782
S5ØP 334,304
UX1VT 210,870

Single Op 1.8 MHz Low Power Assisted
YU2A 84,728
SN5J (SP5JXK) 55,692
HA5NB 41,216

Single Op All Band QRP
HG3M (HA3MY) 1,802,986
UU2CW 1,455,021
IZ8JFL/1 1,263,845
TM3T (F5VBT) 1,248,480
UA7G 1,109,619
DF5RF 1,074,600

Single Op 28 MHz QRP
LZ2RS 159,500
Z35F 91,168
HA3HX 58,962

Single Op 21 MHz QRP
HA1ZZ 246,750
S51Z 156,348
SP4GFG 154,012

Single Op 14 MHz QRP
PG2AA 367,638
HG72QRP 289,520
UX5UU 255,942

Single Op 7 MHz QRP
OM2ZA 364,364
OK1FKD 231,825
UX7UW 223,270

Single Op 3.5 MHz QRP
UA3TW 85,540
UT5UUV 68,510
UT5DJ 24,592

Single Op 1.8 MHz QRP
9A4DC 4,092
RA2FB 1,404

Single Op All Band QRP Assisted
RA3AN 1,461,662
OU2M (DK3WE) 1,382,876
RZ3QS 813,392

Single Op 28 MHz QRP Assisted
IDJ6QT 88,168
DJØMY 16,328

Single Op 21 MHz QRP Assisted
IK6FWJ 691,119
HG1ØCC (HA3JB) 464,901
II4K 240,426

Single Op 14 MHz QRP Assisted
F/E73CQ (E73CQ) 464,070
9A/S53V (S53V) 326,655

Single Op 7 MHz QRP Assisted
YU1LM 685,860
9A2U (9A3ZA) 626,221
S51DX 135,072

Single Op 3.5 MHz QRP Assisted
S55W (S5ØXX) 135,366

Single Op 1.8 MHz QRP Assisted
OL1A (OK1CW) 36,068

Multi-Single High Power
OM7M 13,115,328
SP8R 11,219,868
OL3Z 10,334,460
HG6N 9,997,190
ED7W 9,920,988
YR1C 9,516,780

Multi-Single Low Power
9A7T 5,901,165
DL1NKS 1,498,720
4U1VIC 436,182
EH2OLA 358,938
YO6KNY 343,026
IB5T 333,207

Multi-Two
II9P 21,792,904
LX7I 20,370,690
YU5R 19,092,150
HG7T 19,005,000
UA7K 17,842,425
DR4A 17,366,970

Multi-Multi
ES9C 34,805,664
9A1A 31,679,550
LZ9W 27,710,146
LY7A 16,745,210
DM4X 15,060,728
SN15ØSZ 6,645,689

Rookie
Single Op All Band High Power
SV1RHL 173,013

Single Op All Band Low Power
DK6SP 1,272,888
EU6ML 946,608
RO4A (R4AAT) 894,874
DM3ZM 682,925
EI3HMB 391,104
DL2IC 273,546

Single Op 21 MHz Low Power
UA3XAO 693,525
IT9CLN 496,799
EW1TO 178,350

Single Op 7 MHz Low Power
E77CW 45,375

Tribander/Single Element
Single Op All Band High Power
TM77M (F5MUX) 6,542,502
RJ4P 6,443,736
EV1R 4,971,105
LY7Z 4,657,048
E77W 4,062,960
OM7RU 4,036,860

Single Op 28 MHz High Power
EO1I (UT1IA) 383,306

Single Op 21 MHz High Power
S51NZ 2,020,333
M3I (GØORH) 1,074,460
EF1A (EA1XT) 1,036,346

Single Op 14 MHz High Power
G8DX 4,039,660
UA1AFT 2,150,517
IO3X 1,513,044

Single Op 7 MHz High Power
IKØYVV 2,629,923
IV3SKB 1,994,240

Single Op 3.5 MHz High Power
YT4A (YT1AA) 686,799
EW8DJ 666,500
YT6T (YU7CM) 328,680

Single Op 1.8 MHz High Power
E71A 162,960

Single Op All Band Low Power
S53F 4,985,906
9A1AA 4,279,058
UT4LW 3,653,124
SN7O (SP7IVO) 3,479,986
S52W 2,866,590
UA5B 2,523,888

Single Op 28 MHz Low Power
Z39A 298,242
EF5R (EA5BWR) 161,100
YO2IS 110,628

Single Op 21 MHz Low Power
MWØEDX 3,437,278
IF9/IT9PPG 1,394,680
RU4SO 787,472

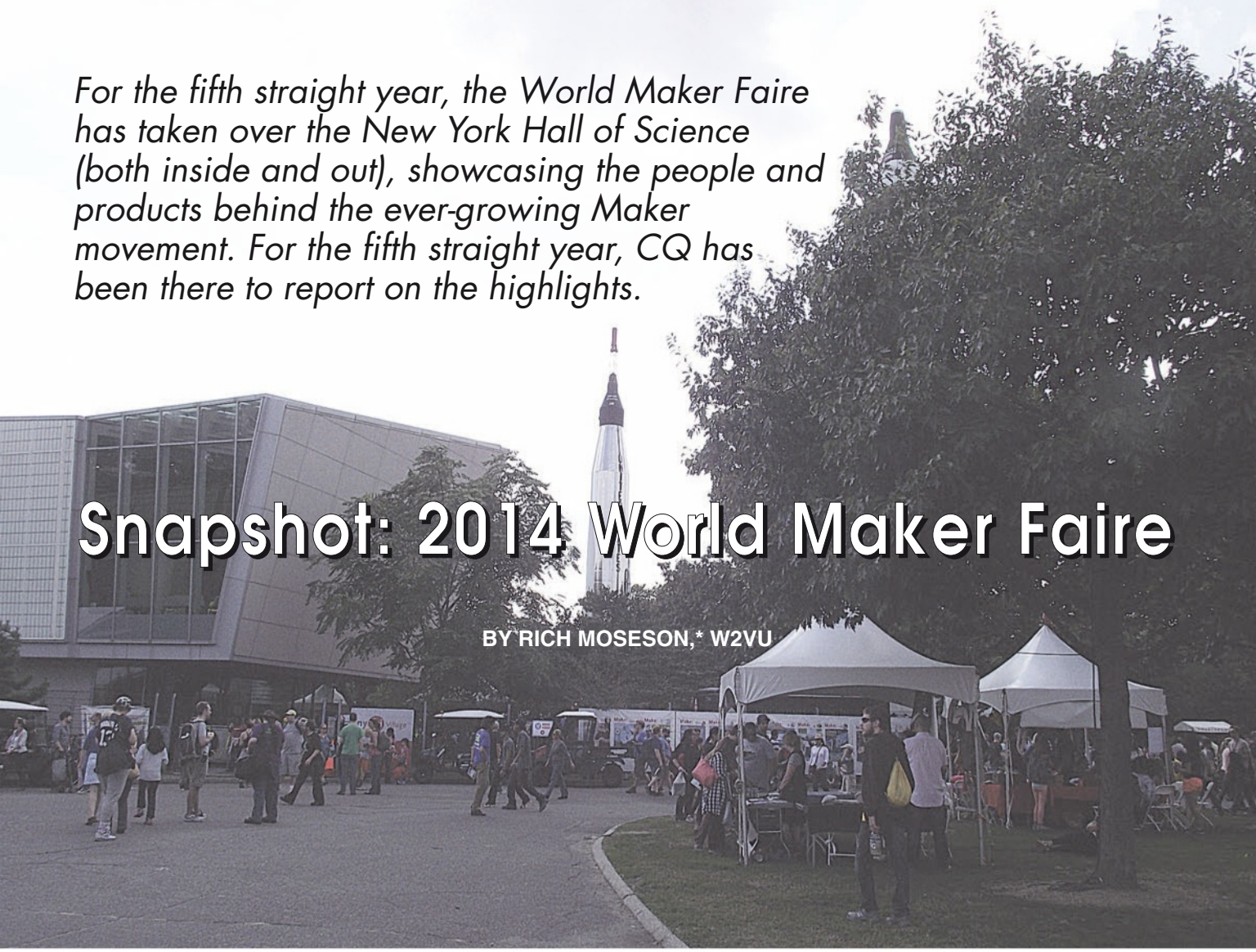
Single Op 14 MHz Low Power
IT9/OL9R (OK6RA) 1,673,683
S54X 1,417,080
YT2AAA 1,389,718

Single Op 7 MHz Low Power
DF1LX 1,320,775
E77R 1,315,080
UT5IA 1,257,149

Single Op 3.5 MHz Low Power
S54A 453,870
YO5LD 383,782
SP4GL 321,044

Single Op 1.8 MHz Low Power
HA5NB 41,216
ER2RM 24,038

For the fifth straight year, the World Maker Faire has taken over the New York Hall of Science (both inside and out), showcasing the people and products behind the ever-growing Maker movement. For the fifth straight year, CQ has been there to report on the highlights.



Snapshot: 2014 World Maker Faire

BY RICH MOSESON,* W2VU

Photo A. The 2014 World Maker Faire returned to the New York Hall of Science for the fifth straight year. CQ writers at the show included Editor Rich Moseson, W2VU, and Digital Editor Don Rotolo, N2IRZ. (Photos by Rich Moseson and Jack Teadore)

Trying to see everything at the New York Maker Faire in one day is like trying to see everything at Dayton in one day — it simply can't be done. And I had only about four hours to tour the show this year (Photo A), so there is probably more stuff that I *didn't* see than stuff that I did.

For example, I learned at my maker group meeting the week after the show that one booth I missed featured a circuit-building robot that started out by 3D-printing the basic circuit board, using conductive ink to lay down the traces; then applied glue to pads where components would be mounted and finally, on a third pass, used pick-and-place technology to select the proper surface-mount components and attach them in the proper places on the board. Wish I'd seen that one …

Overall Impressions

So, what *did* I see? First of all, my overall impression was that the crowds weren't quite as large as in previous years, even though the mid-September weather was absolutely perfect (maybe the $40 per person admission fee played a role). I also saw a continuation of the trend that started last year of greater participation and influence by large corporations that you wouldn't normally associate with the Maker movement — such as Disney (the "presenting sponsor" — as in "Maker Faire-Presented by Disney") or appliance manufacturer LG.

Hackerspaces, the traditional core of the Maker movement, were relegated to a corner of the show grounds, a corner shared with the ham station, the 3-D printer "village," and the Fix-It "village."

On the other hand, I was pleased to see my favorite computer store, MicroCenter, at the show, since that company has always dedicated a significant portion of its stores to do-it-yourself computer builders. And despite its recent financial troubles, RadioShack was still there with its always-popular "Learn to Solder" tent (Photos B & C). One other good thing: The RadioShack tent was only one of at least three places where attendees could sit down with a soldering iron and build something. The Hall of Science Amateur Radio Club (HOSARC) booth was another. In addition to its demonstration station, HOSARC brought in kit-master Rex Harper, W1REX, of QRPMe, to show his line

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Photo B. As always, there was a long line to get into RadioShack's "Learn to Solder" tent.

of tuna-tin kits and teach electronic building basics one-on-one (Photos D & E).

Also back for the fifth straight year was Texas Instruments, which continues to promote its "Launchpad" microcontroller platform to makers (Photo F). I met the company's new Launchpad Applications Manger, who let me know he's "one of us" — Trey German, KF5EZO. He was showing off a prototype quad-copter drone controlled by a Launchpad (Photo G). (At a different booth, we met Eric Brundick, who's built a Launchpad-based lightning detector. See Photo H and <http://bit.ly/1rkbyLV > for details.)

NASA had a booth at the fair for the first time. It was pro-

Photo C. A RadioShack booth staffer helps two fair-goers "learn to solder."

Photo D. Rex Harper, W1REX, of QRPMe, helps a young visitor learn to build at the Hall of Science Amateur Radio Club booth.

Photo E. Rex brought along a selection of his "canned kits" to display at the HOSARC table.

Photo F. The Texas Instruments Launchpad booth was yet a third spot where visitors to the Maker Faire could get hands-on instruction in soldering and construction techniques.

Photo G. TI Launchpad Applications Manager Trey German, KF5EZO, shows off his prototype Launchpad-controlled quad copter.

moting its CubeSat initiative (Photo I), which we've covered in our news column and in the VHF-Plus column. Two other first-timers at the show from the corporate sector (and these make sense for builders): Intel (Photo J) — which seems to be making a new push into the individual builder market — and Dremel, the miniature tool manufacturer.

Hams All Around

Among the individuals and groups I managed to see, in addition to HOSARC, I was pleased to note the presence of hams in a growing number of booths and activities not directly related to amateur radio. For example, the combined NOVALabs/HacDC booth (makerspaces in northern Virginia and Washington, DC) was staffed by two hams, Lee Ciereszko, N4TCW (Photo K), and Bob Coggeshall, N0HFV. Lee was wearing a callsign badge, noted that he and Bob routinely teach "Ham Radio for Makers" courses at NOVALabs and pointed out that HacDC has the only publicly-accessible club ham station in Washington (others

Photo H. Maker Eric Brundick had his own booth, where he was showing off the Launchpad-based lightning detector that he's built. Could come in handy for us hams!

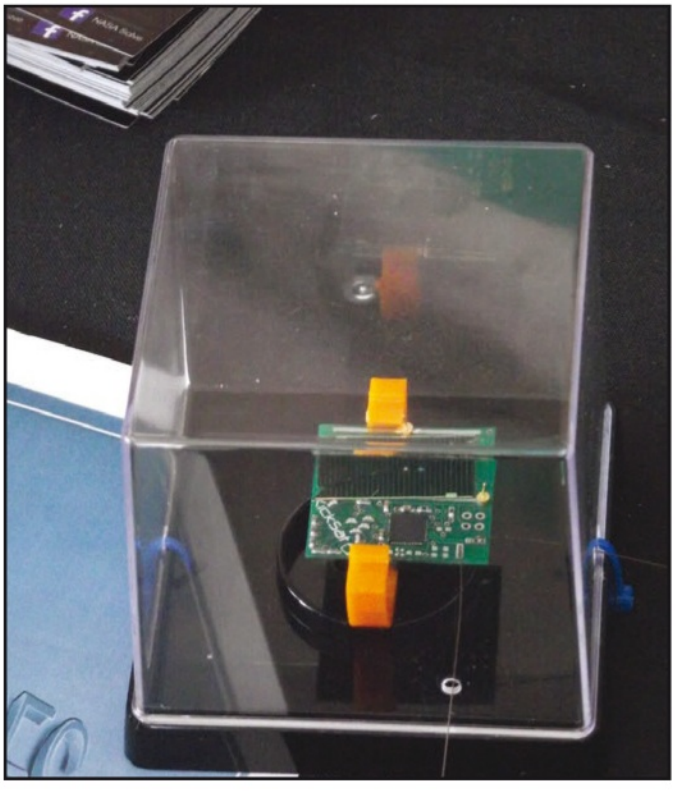

Photo I. How big is a cubesat? This 1U (1 unit) sample at the NASA booth provided the answer. NASA was there to promote its CubeSat Initiative.

are limited to employees of certain federal agencies or university students/faculty). RTTY fans will enjoy this: Bob was demonstrating a Raspberry Pi teletype (Photo L), in which he had a Pi computer controlling an old Model 15 teletype machine! He'd also connected a keyboard so visitors could type messages that would then print out on the teletype machine. Bob is also president of Small Batch Assembly, a company that provides "low-volume, no-frills electronics assembly" of surface-mount boards for various projects. You supply the boards and parts, he puts them

Photo J. Chip-maker Intel appears to be jumping into the small-volume maker market with both feet … and a big tent at the Maker Faire.

Photo K. Lee Ciereszko, N4TCW — wearing a callsign badge — staffed the combined booth for the NOVALabs and HacDC maker groups in the Washington, DC area. He and fellow ham Bob Coggeshall, NØHFV, conduct "Ham Radio for Makers" classes at NOVALabs.

Photo L. That's Bob, NØHFV, rolling up the printout from his Raspberry Pi teletype, combining old and new by using a Raspberry Pi microcomputer to control an old Model 15 Teletype machine.

Photo M. One of the features of Maker Faire that helps draw large crowds is the occasional just-for-fun project with little to no obvious practical value. This fish car is a perfect example!

together for you! (For more info, see <http://www. small-batchassembly.com>.)

Finally, there were — as usual — some just plain fun and silly things (like the fish car, Photo M) to see and do, and lots of activities focused on kids, making the show more attractive to families than your typical hamfest.

Bottom Line

Even though I found some aspects of this year's show somewhat disappointing, it was still a great experience and we hams can still learn a lot from shows like this in terms of hands-on engagement to liven up our hamfests and attract a greater number of younger hams (they're out there!) and their families.

I also had a great time spending time with *CQ* Digital Editor Don Rotolo, N2IRZ, who provided chauffeur services (HI), as well as Nathaniel Frissell, W2NAF, a neighbor of mine who's also finishing up his Ph.D. in space science at Virginia Tech and may be on his way to Antarctica by the time you read this! (Nathaniel wrote an article for *CQ* in June 2013 about his work on the SuperDARN auroral research project as well as getting on the ham bands from a SuperDARN site in the Aleutian Islands.)

The number of full-fledged Maker Faires and mini-Maker Faires continues to grow. If there's one near you, go and learn. Better yet, gather up some of your homebrew or kit-built ham gear, get a booth, and go teach!

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(877) 892-1748
Eric, K6EJC, Mgr.
Magnolia between
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burbank@hamradio.com

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atlanta@hamradio.com

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(800) 444-4799
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Listening to Ham Instructors' Frustrations

BY PETE TROTTER, KB9SMG

"Our coast-to-coast Ham Instructor Academy classes are not just for teaching Elmers how to conduct a class," comments Gordon West, WB6NOA. "I also listen carefully to instructors comments about obstacles they encounter and their ideas for making it easier to put on ham radio classes. Then we try to respond by making our Ham Instructor program easier to use for the Elmers who are out there teaching classes."

Gordo has been offering his Ham Instructor Academy classes for over a year now. He has heard first-hand some common "gripes" about obstacles to mounting successfully amateur radio classes. Here's a rundown of the more common frustrations and how the W5YI Group Ham Instructor program is responding.

"Listings of ham class schedules on national organization websites are hopelessly out of date. Students get turned off calling disconnected phone numbers," comments a ham Academy graduate from San Diego.

On W5YI Group's new HamInstructor.com website, there is a page where ham class students can search for active ham radio classes in their area. Registered Instructors are able to post their upcoming classes. Once the class is past its completion date, the posting automatically disappears, which keeps the list of classes up-to-date.

"I need the flexibility of bringing in my class textbooks at a discount, and the ability to return extra books or exchange them for an upgrade class in the future," is a frequent remark.

Instructors who register on HamInstructor.com earn a volume discount up to a 25 percent when they order books in quantity for their classes. Unused books can be returned for credit, or exchanged for books for their next upgrade class.

"How do we get our students to open the book before coming to class? I don't offer a cram class with students coming in cold – I need a way to get them to pre-study."

This is a very common concern for instructors across the country. Gordo has developed pre-study, fill-in-the-blank homework pages that encourage the student to read through the entire study manual. Instructors can download a PDF of this homework from the HamInstructor.com website for distribution to their students. The new website also provides a place where students can download this homework to their own computer.

For students ordering books on their own, a Gordon West Welcome letter shows them exactly how to download the pre-study pages for printing. The pre-study pages show the Gordo book page numbers for locating the correct answers.

The Gordon West "hotline" – 714-549-5000 – is also part of the pre-study package, so students with a question can contact Gordo direct.

"Sometimes, our students bring in a variety of study manuals. The League's material seems to overwhelm them. The Gordon West books are fun to read, with a very logical question arrangement that makes it easier for us to teach in bite-size topics," a ham from the Peoria, Illinois, Ham Instructor Academy reports.

Only the Gordo books are specifically geared for logical teaching and student learning – beginning with Rules and Regs, and ending with Safety Practices. W5YI offers free Instructor Guides for each of the Gordon West study manuals. These Guides perfectly correspond to the Gordo books, with the questions rearranged for easier learning. If you are basing your class instruction using one of the W5YI Instructor

Guides, you can only use the Gordo textbook for class. Otherwise, your students will get lost in their study efforts.

"Two potatoes as a battery! Pickles that glow with applied voltage for Ohm's Law! And that "magic" light sabre that glows when students complete a circuit by holding hands! What great demos!" comments a ham instructor out of the Santa Clara Ham Instructor Academy.

These and hundreds of other live action demos are detailed in the Instructor Guides that complement the Gordon West study manuals. The Guides even include information on where to get the conductance tube, plus a schematic for the potato creating a voltage source. There is even a timeline for when to pull off these fun experiments during discussions on specific page numbers in the Gordon West Technician, General and Extra Class books.

"Where do I get ideas for class fliers or student name tags?" asks an attendee in New Jersey.

Our Instructor Guides are filled with suggestions and ideas for organizing and putting on a successful ham radio class. They show a sample class brochure, with suggestions for using Avery™ labels to make up student name badges. We also go into classroom layouts, suggest how you can request using served agency facilities for free classroom space, urge you to perform classroom safety checks, and set-up a simple CW setup to add a little Morse code.

Gordo also provides very personalized support to ham instructors for their classes. "I regularly speak to local classes," he explains. "I work with the instructors to pre-arrange a session over the HF airwaves, using a Skype connection, or on an IRLP or Echolink hook-up. I'm the only ham radio training book author who literally comes with the book, audio, and computer courses," he adds.

Gordo says he is "pleased to say that the W5YI Group is going all out for ham instructors. They are not so large that the student receives just a textbook and nothing more. With a W5YI registered instructor order, or for a student who indicates enrollment in your upcoming class, they will receive a lot more material along with sincere care about their progress.

"Best of all, I come along with our courses, so take advantage of this instructor program by registering yourself and your class at www.haminstructor.com. Call me direct in California Monday through Thursday, 10 am to 4 pm 714-549-5000. My best to you for teaching success!"

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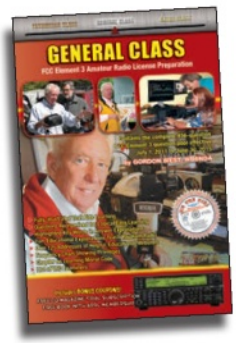

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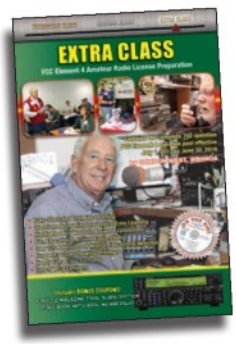

Extra Class Book

2012-2016 book includes all Element 4 questions and answers, along with Gordo's educational explanations. Full of Gordo's great memory tricks for those tough math and electronic theory questions (wait 'til you meet "Eli the Ice Man")! Bonus "On The Air!" CD highlights Extra Class operations. **GWEM $24.95**

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Advances in Internet technology are making remote operation of ham stations much more commonplace, and have provided a business model for a group of enterprising hams with access to prime locations, a model that is bringing back the excitement of ham radio to many amateurs in space – or antenna-restricted locations. W4GAL shares his experiences with RemoteHamRadio.com

Counting Countries Again: How Remote Ham Radio Re-Energized My DXing

BY GARY LILJEGREN,* W4GAL

I'm sitting in a hotel room in Jacksonville, Florida, as I write this article on my Acer laptop. About 12 minutes ago, using this same laptop, I worked the ZD9XF DXpedition at Tristan da Cunha in the South Atlantic, a new one for me. I was operating remote via the Internet on 30-meter CW through RemoteHamRadio.com (RHR) to the RHR Blueberry Hill site in upstate New York. That site has an Elecraft K3, an Expert 1K-FA amplifier, and for 30 meters, a Cushcraft A3WS antenna at 70 feet. On 30 meters, the output power of the K3 automatically drops so the amplifier output is no more than 200 watts. The only ham-related item I have here with me in my hotel room is a Heil Media Pro headset plugged into the laptop. Photo A is a screenshot of the RHR website right after making the ZD9 QSO. I didn't have a way of taking a picture of myself as I finished the QSO; I was leaning back in my chair, smiling!

* e-mail: <gary@liljegren.com>

How All This Happened

I have a nice station (Photo B), but my antenna situation is horizontally and vertically challenged because of living in a

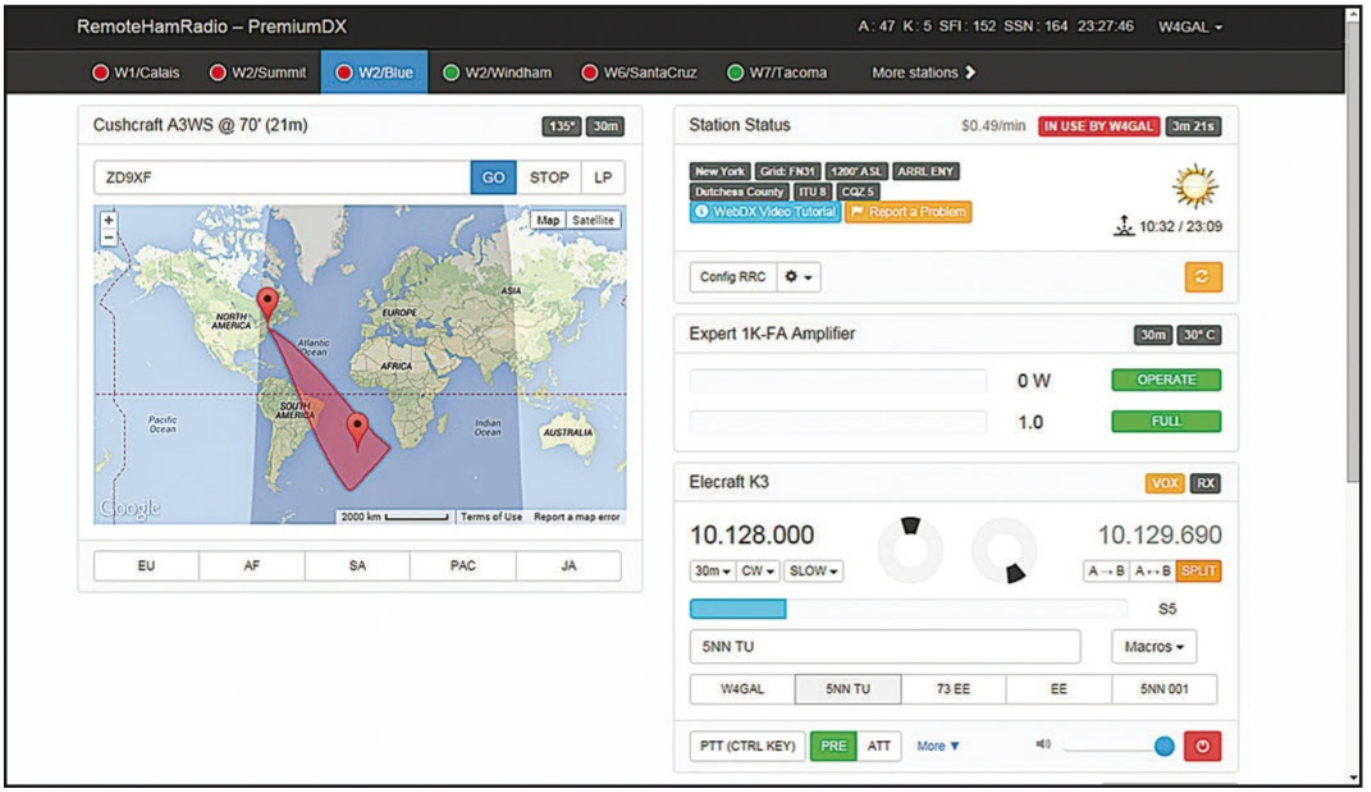

Photo A. Screenshot of the RemoteHamRadio website just after the author completed his remote QSO with the ZD9XF DXpedition through an RHR station. (W4GAL photo)

Photo B. The author's home station. The Elecraft K3 underneath the center monitor is a control head only, connected via the Internet to a complete K3 at a RemoteHamRadio station location. (W4GAL photo)

HOA (homeowners association) restricted community. I do pretty well at most times with a transceiver in each ear and separate antennas on each rig, but when the going gets tough (as in DXpeditions), I can't run very well with the big dogs.

A year ago, I was really bummed out. In November 2013, a local friend of mine, Jay Garlitz, AA4FL, was one of the team members on the Banaba T33A DXpedition. The team was there for two weeks, and day after day I was into the fray, trying to make contact. No success. After nine days and many hours of calling, I quit; I was so discouraged. My 10 or so Friday DX lunch buddies got results, enjoyed talking about band-slots, and I gave up trying to make one lone contact with T33A. I don't consider my lunch buddies as any better in a pileup than I am, but their antennas are certainly light-years ahead of mine. The same things happened this past spring with a number of other DXpeditions. I got one, but with all the rest, I couldn't make the grade.

Then in April, I learned about RemoteHamRadio.com. RHR is an online, web-based subscription service that provides the opportunity for a licensed ham to operate remotely from as many as 14 superb ham stations in the United States and one in Sicily. I saw right away it was the perfect solution for me. I could connect into great sites with antennas I could only have imagined using in the past. I signed up and was on the air immediately.

I don't get on phone much, but on my first Friday night with RHR, I was tuning around and heard a major commotion on 14.175 MHz. It was Mike Kutiumov, D3AA, in Angola. The behavior on the frequency was under control and he was not operating split, but there were a lot of callers. I could just barely hear Mike from home on my vertical, so I connected into the RHR site in Monticello, New York, aimed the 4-element Yagi at 140 feet at him, and his signal was huge. I spoke my call once, calmly, without raising it an octave and sounding desperate, and he came right back on the first call. I was amazed it worked so well.

The WebDX Technology

I started with a Novice license in January 1955. The advances in technology from my three-tube transmitter in 1955 to now being able to operate remotely from a number of sites from the west coast of the U.S. to the east coast, to the island of Sicily in the Mediterranean is like comparing driving on a mud road to Star Trek.

The RemoteHamRadio.com website provides two choices for the DXer: The *RemoteDX Plan* with nine stations running from 100 to 500 watts, and the *PremiumDX Plan* with the nine RemoteDX stations plus six more world-class stations running 500 watts to 1.5 kilowatts, and with antennas that are next to unbelievable!

All the stations perform well with a Google Chrome browser. The WebDX technology works with 3G or 4G service. The functions are controlled from the operating page known as the *console*. I can select the band, frequency, and mode; aim the antenna, adjust the compression on phone, set power level, CW speed, audio gain, and the receiver bandwidth. Since I am primarily a CW operator, I can load a few things into the macros and that usually covers my needs for quick DX contacts. If I wish to be wordier, I can type on my keyboard and the remote site immediately sends the CW. When I connect to an RHR station, I am anonymous to all other subscribers. That station is shown as "In Use," but other users can only see what band and mode are being used and the antenna direction. Another feature is the optional Chat Room where all subscribers can get together and discuss DX: who, where, what, when, etc. It is not necessary to be connected to a station to use the Chat feature.

Just when I think things can't get any better for me on RHR, they make it better. RHR has added a live DX Cluster. If I see someone I want to work, I click on the call, click on "Tune and Turn," and the site changes to the right band, right frequency, selects the right antenna, and turns the antenna to the right heading. Cool. This feature is live even when you are not connected to a station. You can watch the cluster and then make a decision on which station you wish to use.

All the RHR sites use Elecraft K3 transceivers. Another option one can choose using the WebDX technology is to use an ElecraftK3/0-Mini control head[1] and a RemoteRig interface at your shack which connect via the Internet to the RemoteRig and K3 radio at the sites. This provides the "real feel" of a radio so it seems for me like I have another fully-functioning transceiver at my operating desk. All the controls

Photo C. Looking up the tower at the RemoteHamRadio location in Quaker Hill, New York … something apartment — or HOA — bound hams used to only be able to dream of using. (Photo by Lee Imber, WW2DX; courtesy RemoteHamRadio)

work like a normal K3. I plug my headset and keyer paddle into the K3/0-Mini and it makes the realism complete.

On-the-Air Experiences

I was watching the DX Cluster one recent evening and had an unusual QSO. Someone spotted Ali Alwazzan, 9K2WA, in Kuwait on 14.215 MHz. I looked him up on QRZ.com as I was listening and discovered he was operating remote from Sydney, Australia. I thought, "This is too good to pass up." I could hear him at home with my Kenwood TS-590 and vertical, but he was weak. So I got on the RHR Quaker Hill, New York site (Photo C) and listened to him trying desperately to get the complete call of a VE1. They were both having trouble hearing each other, but Ali was 5x9 at the Quaker Hill site! When they finished, I said my call once. He came right back. I said my name was Gary and I was in New York. Then Ali said, "QRZ lists you as being in Florida." I replied that I saw he was remote from Australia to Kuwait and that I was remote from Florida to upstate New York. He then asked me to describe the equipment and antenna I was using!

When I first subscribed to RHR, I found it fun to transmit on one of the remote stations and hear myself on my TS-590. Now I have set up my "portable station" ICOM 718 on a separate desk in my shack, and when I have a ham visitor, I sit him or her down at that rig and have them work IT9/W4GAL as I sit at the K3-Mini and operate remotely to the station in Sicily (Photo D). It makes for an entertaining demo. The USA and Italy are both signatories to the CEPT agreement[2] so all that is necessary for me to operate remote from Sicily is to use the "IT9/" prefix in front of my call.

List of RemoteHamRadio Station Locations

At press time, there were 15 active RemoteHamRadio stations, 14 in the United States and one in Italy. All 15 are available to PremiumDX members; only the first nine for RemoteDX members:

RemoteDX
Monticello, NY
Quaker Hill, NY
Taconic, NY
Windham, NY
Sprain Brook(Yonkers), NY
Reno, NV
San Joaquin, CA
Honolulu, HI
Vicari, Sicily (Italy)

PremiumDX
Calais, ME (Bay of Fundy)
Summit, NY
Blueberry Hill, NY
Santa Cruz, CA
Tacoma, WA
Portland, OR

Some years ago, I was licensed as VP2MBH and operated for a week from Montserrat. It was a fun experience being on the other end of the chase. I now have the same feeling with that Sicilian station and I avoid all the travel frustrations and TSA hassles in physically getting there. I bought a Bialetti Italian coffee pot so I can relax with a cup of real Italian coffee while I operate the IT9 station!

I enjoy working HF all over Europe as a "local." Tonight on 40-meter CW, I worked Fred Rahlenbeck, SM7DAY/P, who was on Senoren Island (IOTA EU-138), in the Baltic Sea off the Swedish coast, near Karlskrona. Speaking of local, the IT9 station is also on 2 meters with a 16-element Yagi and your choice of USB, LSB, CW, and AM (*There is quite a bit of 2-meter weak-signal activity in Europe, with the added bonus of being able to work multiple countries over the same distances that net U.S. hams multiple states. - ed.*).

Counting Countries Again

After I subscribed to RHR and realized how enjoyable it was, I contacted the DXCC desk at ARRL. They found the records of my DXCC in1961 and posted them on Logbook of the World (LoTW). My N3FJP logging program provides for multiple address locations so I have entered all the RHR sites plus my Florida location and when I upload my current QSOs to LoTW, they are from the correct states, counties, and grids in the U.S. from which the transmissions occurred. I turned in my electronic logs of the last four years to LoTW, and I'm now going through my paper logs and QSLs from the intervening 50 years. Once again, I am in active pursuit of more countries.

The Costs …

I was talking with a long-time friend of mine, Dave Morton, W7DMM, in California. He asked about the cost when we talked about my RHR experiences. I said, "Dave, if I was a golfer …" and he interrupted me by saying, "enough said." There are a number of golf courses here in Florida that are perfect for the competitive golfing enthusiast. They are high-quality, challenging, beautiful, and great fun to play on. This is similar to the RHR RemoteDX choices. In addition to those courses, not far from my hotel is a world-class PGA golf course. It is in a different level of play and challenge. Professional golfers come here to enjoy it. This level is similar to the PremiumDX choices at RHR.

These professional golf courses have cart fees, a large annual membership or large initiation fee, and charge per round of 18 holes. This can often be many times more expensive for the serious golfer than PremiumDX is for the serious DXer. The comparison is also true for many other hobbies.

The cost of the RemoteDX subscription is $99 per year and then a charge by the minute of usage when connected to a remote site. The station near Yonkers, NY is $0.09 per minute. Others range up to $0.49 per minute. The IT9 RemoteDX station in Sicily is $0.33 per minute. The PremiumDX subscription for using world-class contest stations[3] is $999 per year and the same per-minute usage charges apply.

Controversy on Award Credit

Some amateurs believe that easy access to well-equipped remote stations in different locations gives RHR users a "propagation advantage" over neighboring hams without the same access. In fact, the ARRL's DX Advisory Committee has recommended limiting DXCC award credit *for remote contacts* to those made from stations no more than 200 kilometers (124 miles) from the licensee's home station.

As I get the picture, though, the DXAC is saying that it is fine for me to drive the

RHR and DX Awards — A Controversial Topic

The growing use of remote station technology has prompted quite a bit of controversy within the ham community, especially among DXers. The range of opinions is wide, but most people fall into one of two major groups: a) those who feel that remote station technology allows a higher level of HF activity by hams who are living with station and/or antenna restrictions, thus energizing DXing overall and contributing to higher levels of on-air activity; or b) those who feel that the ability to instantly access another station hundreds or thousands of miles away in order to make a DX contact (as illustrated in this article) provides users of remote station technology with a "propagation advantage" over nearby amateurs who do not have similar access. They feel that giving award credit for such remote contacts is unfair and dilutes the value of awards earned by traditional means.

Remote Operating and DXCC

In 2013, the ARRL Board of Directors tasked its DX Advisory Committee (DXAC) with conducting a thorough review of DXCC award rules, with a specific directive to look at the issue of remote operating. After considering input from members and discussing the issue within the committee, the DXAC this past July recommended that the ARRL board add a 200-kilometer (124-mile) limit on remote contacts to DXCC rule 1.9, which currently reads:

9. All stations must be contacted *from the same DXCC entity. The location of any station shall be defined as the location of the transmitter. For the purposes of this award, remote operating points must be located within the same DXCC entity as the transmitter and receiver.*

In other words, award credit would be given for contacts made using a remote station only if the operator was no more than 124 miles away from the remote station and in the same DX entity. The complete DXAC report to the ARRL Board of Directors is at <http://bit.ly/1riW2Qv>. As of this writing, the board had not taken action on the recommendation, but is likely to take up the matter at its January 2015 meeting.

Remote Operating and CQ Awards

Both points of view are represented on the CQ Awards Committee as well, and the topic has been a subject of spirited discussion. It is our conclusion that contacts made using remote station technology are no greater or lesser accomplishments than those using traditional technology; however, different skills are needed and therefore separate recognition is appropriate. As a result, we will phase in new remote-operating categories for our awards, either as endorsements or as separate award categories (depending on the current rules structure for each award program), beginning on January 1, 2015. Details will be found elsewhere in this issue.

-- W2VU

Photo D. Wide view of the RHR station in Sicily. At this time, it is the organization's only station outside the United States, although its newest station in Hawaii is in a separate DX entity. (Photo by Lee Imber, WW2DX; courtesy RemoteHamRadio)

350 miles to Miami to my friend's humongous big-gun station, use my call, and work Scarborough Reef. Is that legal? Yes. Has that ever happened? Regularly for the last 50 years as I have watched many people do it. And yet, they are suggesting it will *not* be okay for me to buy a set of RemoteRig units and connect to the same transmitter and antennas in Miami from my house in North Florida. The first contact would count for DXCC; the second one would not. As this is written, no final decision had been made (see sidebar, "RHR and DX Awards: A Controversial Topic," for more details).

The Final Results

I have been an active ham for 60 years, I don't climb towers like I did years ago, and I live in a HOA neighborhood. My operating desk includes three HF transceivers. Two are connected to attic and backyard antennas, and the third is the K3/0-Mini. After some months of operating with RHR, I still find it a stretch to comprehend that this third transceiver sitting in the middle of the desk is connected to antennas as far away as 5,300 miles on an island in the Mediterranean. Technology and the availability and use of RemoteHamRadio.com have taken my discouragement of a year ago and changed it into major delight with ham radio and the fun of DXing again.

[For additional information, visit <www.remotehamradio.com> or visit RHR's Facebook page at <https://www.facebook.com/remotehamradio>.]

Notes:

1 - The Elecraft K3/0-Mini is the front panel of a K3 without any RF circuitry attached. It is designed to be used for remotely controlling a full K3 at another location. For more info, see <http://www.elecraft.com/K3-Remote/k3_remote.htm>.

2 - CEPT is the European Conference of Postal and Telecommunications Administrations. The CEPT agreement allows amateur radio operators from member countries to operate freely across borders in other member countries. In addition, certain hams from non-member signatories (such as the U.S.) may take advantage of the liberal operating policies. U.S. amateurs must hold an Advanced or Extra Class license for full privileges; General Class hams have limited privileges in certain member countries. There is no CEPT equivalent to the U.S. Technician or Novice Class. For more information, see <http://www.arrl.org/cept>.

3. Each of the stations is individually owned and made available to the RHR network. During contests, some of the contest-grade stations may be taken off the network for local use by the owners. Subscribers are made aware of this in advance.

Inexpensive High Speed Pulse Generators

BY IRWIN MATH,* WA2NDM

In the past we have presented low-cost test equipment for the amateur experimenter on a limited budget. This month we would like to present another offering in this vein.

With all of the experimental work now going on at higher and higher frequencies (not to mention gigabit data rates), it occurred to us that there is really no inexpensive way for the amateur experimenter on a budget to generate the RF and/or nanosecond rise and fall times needed. Any really high gigahertz-plus signal generator seems to cost at least a dollar a MHz, which works out to be well beyond most experimenters' budgets. As a result, we started doing some really serious thinking to see what we could come up for a fraction of the cost. Serious thinking, by the way, is the best way to solve a problem - especially when you need something but can't afford it.

You may remember the column we did "way back" about shock-exciting a WWII surplus microwave cavity with a common doorbell or buzzer to produce a few microwatts of RF. Well, it worked back then and, believe it or not, still does. **Figure 1** shows how we did this.

Of course you will need a way to measure what you produce. However, borrowing test equipment to calibrate something is usually a whole lot easier, and less expensive, than purchasing. And since the technique is so unorthodox, you may get someone knowledgeable interested enough to help you further.

The reason this technique works is that the rise and fall times of the opening and closing of the doorbell mechanical contacts are practically instantaneous, or at least the closing is, and the harmonics of this rise and fall time caused the cavity to resonate at its natural frequency. Since this is also a "spark transmitter," the output will obviously not be pure but should at least be adequate to provide some microwave output, even for just routine tests.

If you are a true dyed-in-the-wool experimenter, you can try to fabricate your own cavity from a coffee or soup can, but that is another story. Keep in mind that the accuracy and stability of this method is based on the quality and ruggedness of the cavity used. But considering the cost, it is hard to beat. By the way, the microwave cavity we experimented with "back then" was a WWII military surplus device that had a "calibrated" — for those days — screw type tuning knob.

We can use a somewhat similar technique to produce fast rise-time pulses. **Figure 2** is a really crude pulse generator with a pulse-to-pulse stability that is not great but with a rise-time that is hard to beat, even with the latest semiconductor devices.

Instead of a common open frame relay, however, we have chosen a TTL-compatible reed relay due to the fact that the contacts for this device are enclosed and somewhat more stable. Operation

*c/o CQ magazine

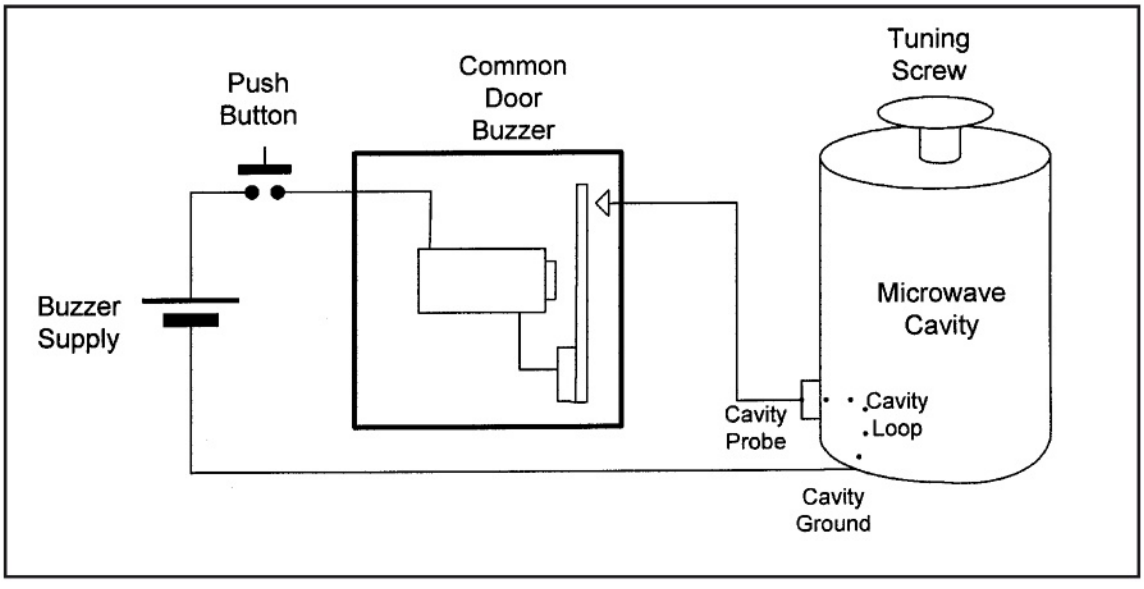

Figure 1. WWII microwave cavity signal source

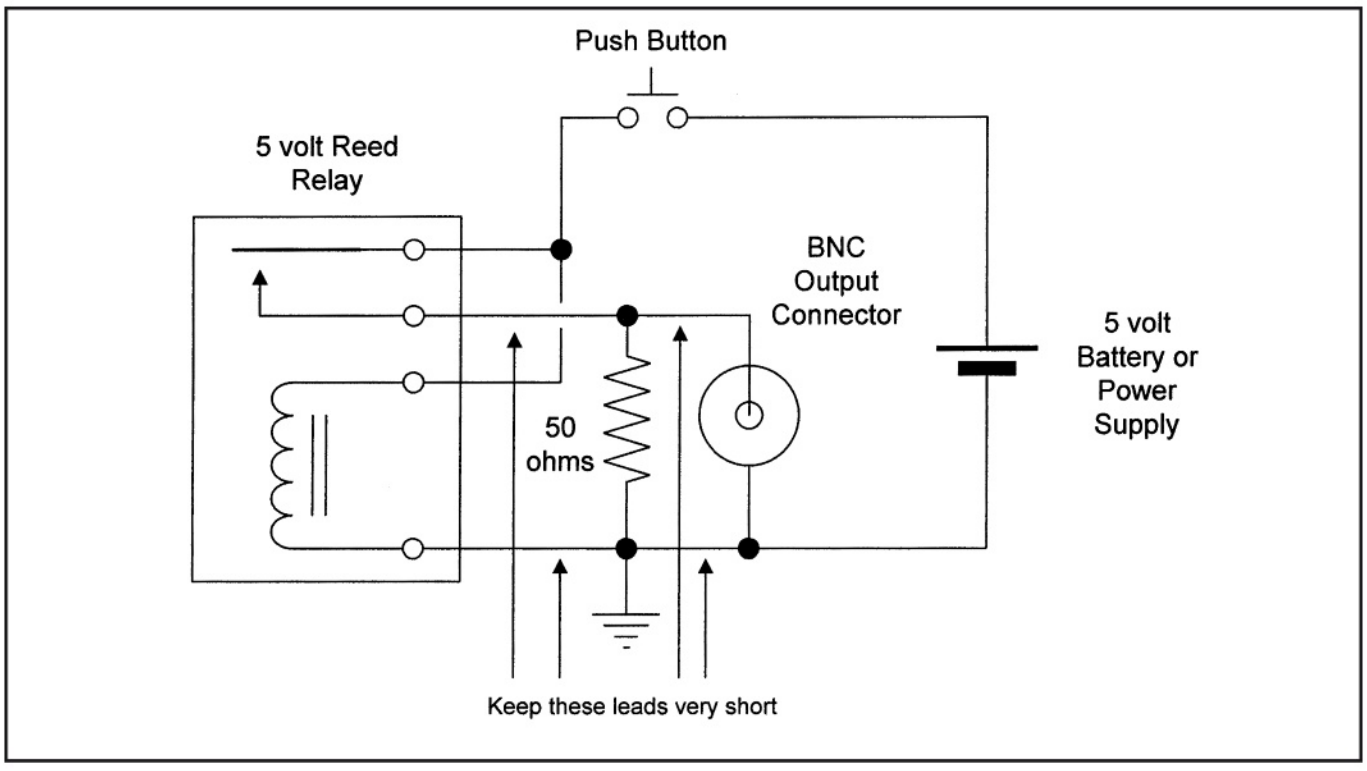

Figure 2. Simple fast rise-time pulse generator

is quite simple: When the contact is open, the output voltage is zero. When it closes, full output is available.

You will note that this system is designed to operate in a 50-ohm system since the best type of interconnection for fast rise-time pulses is a 50-ohm matched transmission line. A 9-volt battery is used for power since connecting a 50-ohm TTL load will result in half the voltage, or about 4.5 volts, which is in the proper range for TTL signals. Also note that 90 milliamperes will flow into the load each time the relay closes, so be sure to use a heavy-duty 9-volt battery. A series of higher current batteries or - if portability is not important - a DC power supply, would be an even better choice.

You may have to experiment with different reed relays to achieve the best overall response without excessive contact

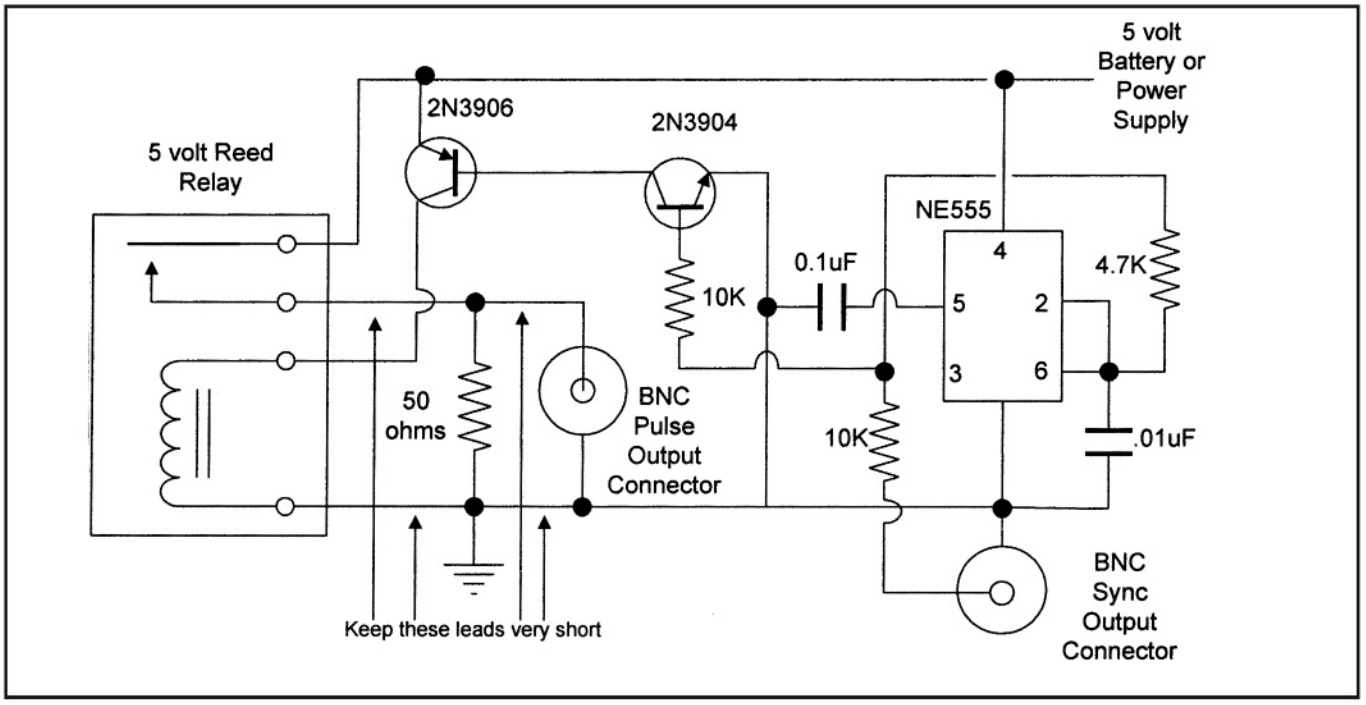

Figure 3. Complete simple fast rise-time pulse generator

bounce. Relays with conventional contacts may bounce a few times, giving you multiple pulses but if you can find a mercury-whetted relay, any bounce will be less and overall operation will be better, but that's what experimenting is all about.

Whatever type of relay you wind up using, be sure to keep all leads as physically short as possible since any stray capacitance anywhere in the relay/50-ohm/BNC portion of the circuit will affect the rise-time.

A possible driver for the reed-relay could be an LM 555 timer connected as shown in **Figure 3** in a complete low-cost pulse generator. The '555 has been configured to give a symmetrical output, but you can "play" with the values somewhat to achieve the pulse rate and width desired. The circuit is quite simple and the values given are a good starting point.

Keep in mind that the slower the pulse rate, the longer the relay will last. For example, if the reed relay were rated for 10 million operations — a typical low-end reed specification — and the pulse rate set for only 1,000 pps, the relay would theoretically only last for a few hours.

This is a calculated, number, however and what you actually get may be quite different. The circuit also provides a "sync" output that could be used for triggering an oscilloscope. However, the stability of the rise-time of the sync vs. the rise-time of the actual output pulse may not be too usable.

When using this circuit, please be certain to use good quality coax and be sure to terminate the end in 50 ohms. As in the case of Figure 2, be sure to keep all leads as physically short as possible since any stray capacitance anywhere in the relay/50-ohm/BNC portion of the circuit will affect the rise-time.

Also keep in mind that the scope and probes you use both have an upper frequency limit, so you may measure rise-times that are slower that what you actually have. For the critics in our midst, before you cringe and start to complain, don't lose sight of the performance vs. cost of this generator. I don't think we have exceeded a couple of dollars for everything.

At any rate, you get what you pay for, but at least you will have a crude way to produce fast rise-time pulses — even if you do have some bounce. Remember, Heinrich Hertz used loops of wire to experiment with what were essentially VHF signals. If you can come up with a simpler, less expensive way, please let me know and we will be glad to share it with our readers.

73, Irwin, WA2NDM

BY RICHARD FISHER,* KI6SN

EmComm: By Its Proper Name, the Critical Role Radio Amateurs Embrace

Not to belabor the point, but ... It's important for radio amateurs to recognize that in the hierarchy of terms related to the vital work we do, *emergency communications* is a far better descriptor than *public service.* We continue to underscore this after the ARRL's recent stand to the contrary caused quite a dust-up in the EmComm community.

In the big picture, public service *is* emergency communications — training and systems testing for an emergency *without the emergency.* Of course, when lives and property are at risk, we call a spade a spade: EmComm. It's important to make this a mantra for the ham community and to say it loud and proud to the communities we serve.

While we eagerly train and ready ourselves by participating in community events, let's be sure the absolute commitment of radio amateurs in emergencies — *in the U.S., abroad, and in space* — is not lost in the shuffle.

Rescues @ Sea: AMSAT and the ISS Play Key Roles

We're just hearing about the role that hams in the Radio Amateur Satellite Corporation (AMSAT) played, along with NASA and European sea rescue organizations, in saving the life of a mariner drifting at sea in January 2012.

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e-mail: <ki6sn@cq-amateur-radio.com>

It is important to recognize this event as an example of how radio amateurs team with worldwide organizations to capitalize on technologies that can save lives.

The fishing vessel *Hallgrimur* had been caught in a violent storm, capsizing in freezing waters between Norway and Iceland. Winds were 60 to 70 knots (70 to 80 mph) with wave heights from 50 to 60 feet, according to Stein Solberg, Joint Rescue Centre, Southern Norway. The Rescue Coordination Center picked up its distress signal.

"The bridge was starting to fill up with water; the ship was sinking," said Eirkur Johannsson, a crew member aboard the *Hallgrimur,* **Photo A**. All souls managed to get out and were clinging to the top of a lifeboat. "We started to separate one by one."

Soon, Johannsson was alone, "no rescue boat or nothing. The rescue boat started drifting away." All he could do was "wait and hope some kind of miracle would happen." Authorities said there was little chance of survival in such conditions.

Since 2010, the International Space Station has been equipped with a space-based Vessel ID System receiver that allows it to track ships by way of a ship's Automatic Identification System (AIS) signal. ISS has been receiving as many as 400,000 reports from more than 22,000 ships every day. When switched on it was "like a blind man starting to see," Solberg said. By having a broad overview of open-ocean ship traffic, it would be possible to direct nearby vessels to help ships in distress.

Photo A. Eirkur Johannsson, a crew member aboard the ill-fated fishing vessel Hallgrimur, is alive today due, in part, to the efforts of radio amateurs at AMSAT, NASA, and the Automatic Identification System (AIS). (Courtesy of NASA)

Photo B. The AIS antenna is deployed on the International Space Station in orbit 250 miles above Earth's surface. (Courtesy of NASA)

"We had very close cooperation with NASA and (AMSAT)," said Horst Koenig, retired Head of ESA's ISS System Engineering Section. "The AIS antenna was provided to the European Space Agency (ESA) by AMSAT, along with an additional antenna for the Amateur Radio on International Space Station (ARISS) group," **Photo B**.

Ships beyond 75 kilometers at sea are "invisible" to coastal AIS stations. But, "when you think about (ships') signals going straight, they go, maybe, several hundred kilometers out into space," said Richard Olsen of the Norwegian Defence Research Establishment. "And do you know what circles around the Earth about 400 kilometers (250 miles) above us? — The International Space Station."

All ships on the open ocean must regularly transmit their identity, position, speed, and heading. "It's kind of like air traffic control for the sea," said Terje Wahl of the Norwegian Space Centre, **Photo C**.

*(**WATCH and LISTEN:** To a NASA video chronicling this harrowing rescue at <http://bit.ly/Zo49lr> – KI6SN.)*

In the *Hallgrimur* disaster, the coordinated systems showed "we had other vessels in the area that we contacted who continued to the area and they searched together with the helicopters," Solberg said. "Nobody expected to find anyone surviving in (those) conditions. They actually spotted one man in the sea" – Johannsson.

"After floating in the North Atlantic Ocean for four hours, I was finally rescued," Johannsson said. He felt lucky that "technology that made something that was basically impossible to survive, possible."

"Thanks to AIS data and AIS data from the space station, this lone survivor was rescued — an absolutely happy ending for him," Solberg said.

*(**IN DEPTH:** More on NASA's Vessel ID System experiment can be found at <http://1.usa.gov/1sh6NAg>. For details on the AIS on ISS and assembling the experiment link to <http://bit.ly/1Df7hiU>. – KI6SN.)*

Radio Amateurs Turn Out in Force for California Wildfire

Northern California amateur radio emergency communications teams were called out in late July to provide EmComm to the agencies fighting the El Portal wildfire burning in Tuolumne County.

"Hams were assigned to shadow Red Cross officials and provide communications at an evacuation shelter in the town of Groveland," according to published reports. "A number of repeaters were linked to provide a direct communication channel from the shelter to the Red Cross nerve center in Fresno. In all, the hams who volunteered spent close to a full day before being relieved of communications duty. *(**SOURCE:** ARN – Amateur Radio Newsline)*

Hams Step Up to Help Stem the Tide Northeast of 'Vegas

ARES/RACES members in Clark County, Nevada, activated Monday, September 8, after heavy rains brought on flash flooding.

"The amateur radio volunteers deployed after being called up by local emergency managers to support communication during recovery efforts in the Moapa Valley northeast of Las Vegas," according to the *ARRL Letter.* "At least two people died as a result of the flooding."

A Hurricane Norbert-related storm system pummeled the

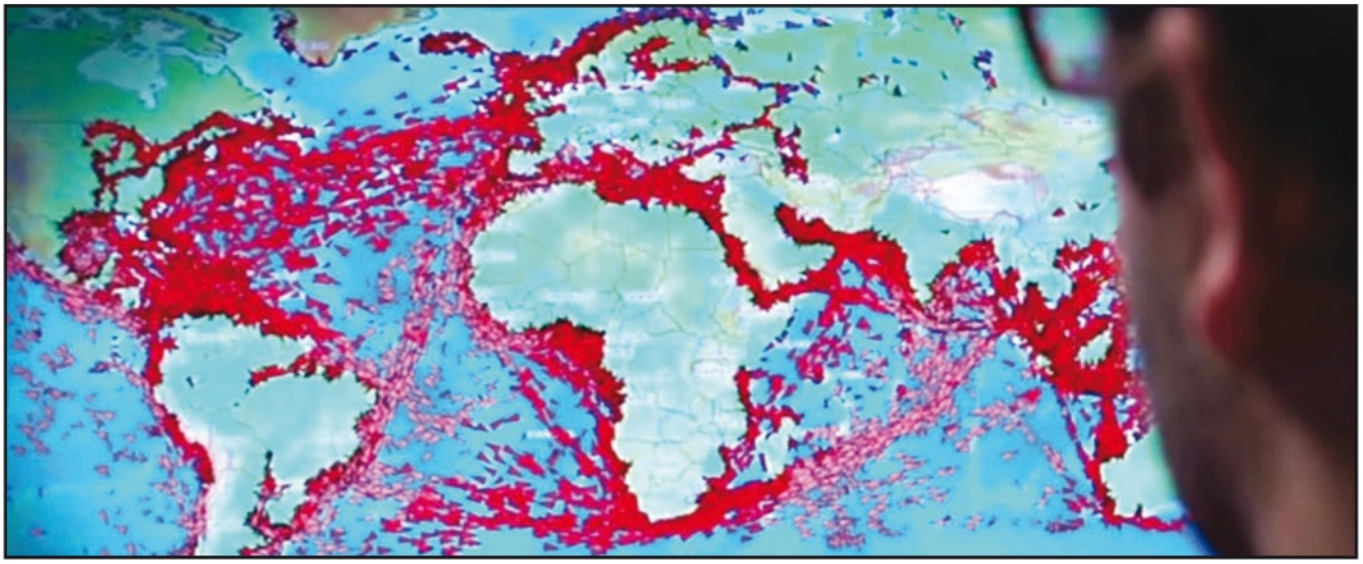

Photo C. Terje Wahl of the Norwegian Space Centre describes AIS systems on Earth and in space as "kind of like air traffic control for the sea." (Courtesy of NASA)

town of Moapa with nearly four inches of rain in 90 minutes. "Heavy flooding and mud closed nearly 50 miles of Interstate 15, stranding motorist and truckers, buckling or washing away pavement in many areas," the report noted. "The flooding has been called the worst in more than 30 years." *(**SOURCE:** ARRL)*

Multiple Amateur Organizations Provide EmComm for 'Arthur'

The Hurricane Watch Net was activated twice during Hurricane Arthur. The first time was on July 3 as the storm was headed toward North Carolina's Outer Banks. It made landfall at 11:15 p.m. EDT with maximum sustained winds of 100 miles per hour threatening homes and cutting off island communities from the mainland.

Also activated was the VoIP Hurricane Watch net, which uses local FM repeaters, Echolink, and IRLP to provide information to and from volunteer storm spotters along the storm's projected path.

Arthur hit the North Carolina coast with winds of 70 to 90 mph and gusts up to 110. As it worked its way up the eastern seaboard, a second activation was called on July 5 before the storm fizzled to a tropical storm as it neared Canada.

Net operations on the high-frequency bands were on 14.325 MHz and 7.268 MHz depending on propagation. The VoIP Hurricane Watch Net could be monitored on several Echolink nodes, IRLP, and other monitoring services worldwide. Both SKYWARN in the U.S. and CANWARN in Canada were involved in the first hurricane callout of the 2014 season.

*(**SOURCES:** ARN, VoIP Hurricane Net, published reports)*

South Africa Hams Step in When Satellite Link Fails

Amateur radio was used to send an important message when a satellite link to Gough Island failed, according to the South Africa Radio League (SARL). Gough Island is an isolated dot of land in the South Atlantic, roughly halfway between Africa and South America. It is part of the British overseas territory of Saint Helena, but South Africa has operated a weather station there since 1956, according to SANAP, the South African National Antarctic Programme.

"The story started when Pierre Tromp, ZS1HF, volunteered to go to Gough Island in February 2014, after a member of the 2013/2014 Gough Team sadly passed away on the island," according to a report on *Southgate Amateur Radio News*. "Pierre passed the necessary tests and was shipped to Gough Island, where he was allocated the callsign ZD9M."

ZS1HF and Trevor Brinch, ZS1TR, started the 7110 SARL Hamnet Emergency Net in January 2014, and established daily communication on 30 and 40 meters — depending on propagation.

"We tried to maintain daily calls, but obviously due to the distance to Gough, we had to adjust our frequencies," Brinch told *SARL News.* "In the summer months we could work all bands, but as the winter approached it was trickier — mainly favoring the lower frequencies."

The SARL report said communications later developed into a regular call-in at 10 minutes after the hour. "As winter approached, the satellite signal from Gough to the Republic of South Africa (RSA) became intermittent due to the cloud cover and other climatic conditions."

ZS1HF's more-reliable communication with home was via the high-frequency (HF) bands, with Tromp relaying messages to technicians to try and get the satellite system reset and working again.

But on the weekend of August 9, "a serious incident occurred on Gough Island. As the satellite connection to RSA had been bad since the first week of August, Pierre decided to (HF radio) it to Trevor for relay via email to Cape Town," the SARL reported. "The message contained 836 words, excluding the many email recipients, and was sent a few words at a time and corrected and repeated back for confirmation.

"The entire process took about 1 hour 45 minutes to transfer via HF radio, which forced them to alternate between 20 and 30 meters as conditions were fading in and out on both frequencies. *(**SOURCE:** SARL News <http://bit.ly/1ycxmPK>, published reports)*

SKYWARN® Activates When Tornado Hits Southern New England

When severe weather erupted in Southern New England in late July, SKYWARN® volunteers went on alert to help

...and Further Serving Our Communities

The never-ending call for amateurs to provide communications for community events is EmComm, as well. Training for emergencies is a constant, a role we fully embrace, as well. – KI6SN.

Northern New York Amateurs Support IRONMAN 2014

Thirty-two ham operators from across northern New York State supported the IRONMAN Lake Placid 2014 endurance competition in late July, according to the *ARES E-Letter*.

"Operators established communication stations and worked them for coverage of a three-county course area," the *E-Letter* noted. "Vital communications links were established among emergency management, EMS personnel in numerous ambulances, aid stations along the course route, and for health and welfare traffic."

"Our communications are coordinated with IRONMAN, EMS, and state, county and municipal authorities," said Thomas Dick, KF2GC, ARRL Northern New York Section Manager. "Over the past 15 years of experience with supporting this event, we have helped many of our amateurs refine their communication skills in emergency ICS (Incident Command System) protocols and technical performance. Many amateurs work long 8-18 hour shifts covering a host of different tasks.

"We often help ambulance drivers by relaying routing information for various medical facilities, while keeping those en route safe and respecting the traffic routing restrictions imposed by event managers," Dick said.

The story further noted net controllers keep the supporting amateur up to date with the latest information and relay all health-and-welfare traffic to authorities. "They also keep EMS aware of athletes who are having medical issues and if they need transport to the Med Tent or hospitals. Station operators in the field often track down reports of athletes who are experiencing health-related issues such as injuries, cramps, heat exhaustion, and dehydration. Each year is different from the next, owing to weather, road conditions, and the numbers of athletes competing in the IRONMAN.

"One thing is for sure from the starting gun at the Lake Placid Beach until the last runner comes across the finish line many hours later," KF2GC said. "Amateur radio volunteers will be there helping the athletes in many ways by providing communications of their health and welfare status and keeping all safe."

U.K. Radio Amateurs Help Double Visitors to Military Fort

The Grey Point Fort Amateur Radio Society was cited in a BBC story "about one of the best preserved early 20th century coastal forts anywhere in the United Kingdom," according to *Southgate Amateur Radio News*, **Photo D**.

"The BBC quotes local historian Robin Masefield, one of a group of volunteers who help out at the fort: 'We and the Grey Point Fort Amateur Radio Society have worked in partnership with Environment Agency to promote the fort. We've doubled the visitor numbers in recent years to 15,000 (annually).'" Read the full BBC story at <http://bbc.in/1u2l1pH>. *(**SOURCE:** Southgate ARN and BBC)*

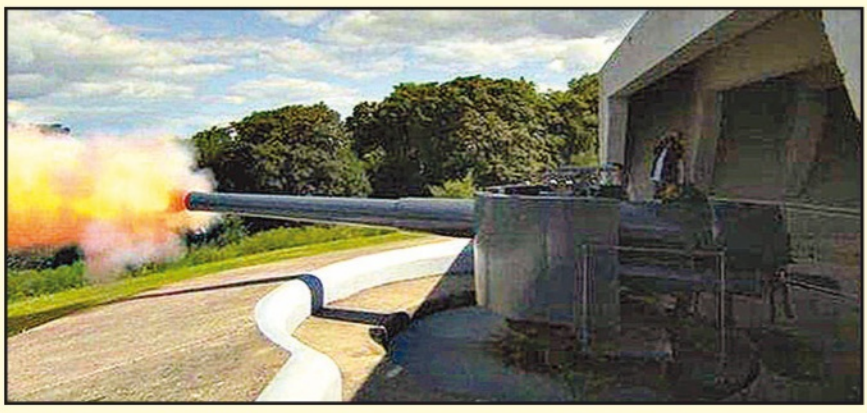

Photo D. Radio amateurs in Great Britain are credited with helping to double the number of visitors to Grey Point Fort. (Internet screen grab <http://bbc.in/1u2l1pH>)

forecasters track conditions and, afterward, to assist authorities with assessing damage.

"A super-cell storm system organized over northern Norfolk County, Massachusetts, on the morning of July 28 and raced through portions of northeastern Massachusetts, causing wind damage in sections of Needham," SKYWARN Coordinator Rob Macedo, KD1CY, reported.

"The storm was tracked using the SKYWARN® self-activation protocol," he told the *ARRL Letter.* "The system subsequently generated an EF-2 tornado, which swept through Revere, Massachusetts, leaving a swath of significant damage in its wake."

Macedo said that "within 15 or 20 minutes of the storm's passage, (SKYWARN) received reports of many trees and wires down and structural damage in Revere. Other pockets of straight-line wind damage and flash flooding occurred elsewhere in southern New England, rounding out a two-day stretch of severe weather in the region."

The *ARRL Letter* reported that "spotters Jim Palmer, KB1KQW, and Marek Kozubal, KB1NCG, worked with National Weather Service-Taunton Warning Coordination Meteorologist Glenn Field, KB1GHX, local first responders, and Massachusetts Emergency Management Agency personnel in surveying the damage." All are affiliated with WX1BOX, the ham station at NWS-Taunton. ***(SOURCE:** ARRL)*

MARS Envisions Growing Role in Global Disaster Relief

A new take on training and a growing role in global disaster relief were primary discussion topics at the Army Military Auxiliary Radio System (MARS) leaders' workshop August 24-26 in Arizona. Behind the official agenda, however, loomed an understated theme:

MARS is seeking younger tech-oriented hams — or potential hams — and recently retired members of the military to join its corps of seasoned volunteer communicators.

An official auxiliary within the U.S. Department of Defense, MARS is formed of ham operators who volunteer their time and equipment to support emergency communication in the event the Internet and telephone services are disrupted by natural or manmade disaster. The Army, Navy, and Air Force each have branches.

Army MARS Headquarters introduced a new national staff officer from the business world to head up its youth-oriented effort — Planning Officer Kurt Edelman, KF7PDV, of Willcox, Arizona.

"We discussed difficult issues, explored new ideas, and shared our successes and shortcomings," Army MARS Program Officer Paul English, WD8DBY, said. "At the end of the day we are stronger and more cohesive than ever."

During the August gathering at Army MARS Headquarters station in Fort Huachuca, Arizona, 11 region directors joined by national staff officers discussed an innovative instructional methodology, debated eliminating membership qualifications based solely on hours on the air, and pondered marking the auxiliary's 90th anniversary next year with a vigorous recruiting drive.

Juanita Portz, the senior contract operator, guided attendees through the battery of military-standard transceivers that continuously monitor MARS and regular Army frequencies for traffic. The leaders checked into an Arizona net and got familiar with military radio models that may turn up on MARS nets down the road.

Edelman briefed leaders on an advanced instructional system that MARS now is considering for possible replacement of current training and participation requirements. Known in the active Army as METL (for Mission-based Essential Task Lists), it replaces traditional generalized basic training with instruction in the specific tasks associated with an individual's duty assignment, and *only* those. METL could require annual qualification in tasks rather than simply requiring people to accumulate a minimum number of hours served. A former vice president in charge of new technology at a Fortune 500 financial firm, Edelman leads a workgroup of region directors and trainers drafting a preliminary METL program, which he expects to deliver as early as 2015.

Wrapping up the meeting was preliminary discussion on commemorating the 90th anniversary of the Army's invitation to the ARRL to partner in disaster communication. Although hams had collaborated with the Army and Navy during World War I, the Army-Amateur Radio System — launched in August 1925 — was the first permanent amateur-government accord in the U.S. It became Army MARS after World War II, and independent Air Force and Navy-Marine Corps branches soon followed. *(**SOURCE:** MARS, published reports)*

Finis ... for this Month

We invite you to share your EmComm experiences with readers of *CQ* worldwide. Please let us know what you or your organization has been up to and we'll take it from there.

Whether it's an EmComm reality, exercise, or support of a community event, share your stories and photographs by writing to <ki6sn@cq-amateur-radio.com>. We look forward to hearing from you soon. – *KI6SN.*

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Get ham radio's *toughest* tube with the Ameritron AL-1200 -- the *Eimac*(R) 3CX1200Z7. It has a 50 Watt control grid dissipation. What makes the Ameritron AL-1200 stand out from other legal limit amplifiers? The answer: A super heavy duty power supply that loafs at full legal power -- it can deliver the power of more than 2500 Watts PEP two tone output for a half hour.

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Use 1 coax for **4** antennas. No control cable needed. SWR <1.25, 1.5 - 60 MHz. Useable to 100 MHz.

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Replace **5** coax with 1! 1.2 SWR at 250 MHz. Useable to 450 MHz. < .1 dB loss, 1kW@ 150MHz.

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BY CAM HARTFORD,* N6GA

QRP Fun With Tuna Tins and Android

One of my favorite events at Dayton is the annual Friday night "Four Days in May" (FDIM) Homebrew Contest/Show & Tell event. If this sounds familiar to you, it's because I mentioned this affliction in my last column and threatened to continue in the same vein. This year at FDIM was no exception. The pursuits that other QRPers immersed themselves in were numerous and fascinating. There were antenna projects, radios, microcontrolled antenna analyzers, keyers, and paddles. You name it, it was probably there.

During the evening, I managed to walk around the entire room just one time. So many people, so many projects to ogle. At one table, I encountered a whole array of small, well-built rigs surrounding an original-looking Tuna Tin (Photo A). The proprietor, Bob Chapman, W9JOP, showed me some photos of him holding up Worked All States (WAS) certificates. Asked how he accomplished WAS, he replied, "Using Tuna Tins!"

"I thought they were crystal controlled and ran very low power?" I responded.

"They are!" was the answer.

Thus began a long conversation that continued through email long after FDIM was finished.

Bob and his wife had sold their home and entire ham station in Indiana in 1995 and moved to Virginia. He was off the air until 2000 when he'd started itching to get back on. He saw the Tuna Tin and decided to build it. This rig was crystal-controlled on 40 meters and put out about 250 mW. He used it with a G5RV antenna at 50 feet and over the next year, he worked all of the lower 48 states.

As an aside, I can't possibly imagine how a person could work the lower 48 using nothing but a G5RV and a crystal-controlled quarter-watt. I told Bob this much and as punishment, he sent me one of his rigs. More on this later.

Feeling like he hadn't finished the job, Bob built a 20-meter version and worked both Alaska and Hawaii. For his efforts, he was awarded both the QRP ARCI Worked All States award and the ARRL WAS award with a "QRP-CW" endorsement. Bob was the first U.S. ham to receive the WAS award at that power level. In 2001, Steve McDonald, VE7SL, became the first amateur to accomplish QRPp WAS, but he was running a whopping 400 mW.

Bob's collection of homebrew rigs shown at FDIM included several with quite a history. The original Tuna Tin with which he'd worked 48 states; a 40-meter SMK-1 with which he's worked 48 states; a Sidekick N' Tuna, which consisted of a Tuna Tin transmitter and a Sidekick receiver with which he's worked 46 states; a Tuna Tin II for 20 meters on which he's worked 42 states; and a Tuna Tin II which he built for 20 and 30 meters. With the Tuna Tin II, he's worked 43 states on 20 meters and 12 states on 30 meters. Whew.

As I mentioned before, Bob sent me the 20-/30-meter Tuna Tin just so I could have a go at it. He also sent a log of the states worked with this rig. I told him I was thinking of putting it on the air with

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Photo A. W9JOP's collection of Tuna based mini-rigs. (Photo Courtesy W9JOP)

Photo B. Here's Bob, W9JOP, showing off his original 48-State Tuna Tin along with a "modernized"' clone. (Photo courtesy of W9JOP)

the goal of finishing all 50 states. He's worked 43 of them, I only have seven to go. At the time of this writing, I've made five Qs with this rig, none of them in new states. I can tell this is going to be a big project. And I'm getting a feel for the patience and skill it took Bob to work all those states with these little flea-powered rigs.

If you'd like to take a look at the original round Tuna Tin with which Gary made those first 48 state contacts, stop by the museum at ARRL HQ in Connecticut. His Tuna Tin is now sitting on the shelf next to the original. Congrats, Bob!

QRP Fun With Android

A year ago (October 2013 *CQ*), I devoted a column to having some QRP fun with the iPad. Not wanting to play favorites, I've now collected some Android apps that can also be used to good advantage with a small QRP shack. Since there is a whole slew of different Android-based hardware out there, I need to preface this rundown by saying that I used these apps on an 8-inch Galaxy Tab 3. I can't guarantee that they'll work equally well on all Android machines, but it's best to just download and try them out.

Hamlog by Pignology

Nick Garner, N3WG, has several pieces of software and hardware aimed at portable digital operation. You can access Nick's offerings on his website, Pignology.com. Last year I wrote about his Hamlog software which was written for use on the iPad. Nick has written a similar program for the Android operating system. I downloaded it onto my Galaxy Tablet and it played flawlessly from the beginning.

Key to the connection between radio and tablet is the Piglet (Photo C). All it takes is a serial cable run from the ACC1 port on the Elecraft KX3 to the Piglet's serial port. Piglet also talks to ICOM, Yaesu, and Kenwood radios. The Piglet transmits a Wi-Fi signal to the tablet so that there is no cable connection to this device. The Piglet can be configured to set up either an ad-hoc network and connect to the tablet directly or to connect via your in-home wireless network. The advantage of the first method is that it's easy. An advantage of the second method is that your tablet can connect to the Piglet while remaining connected to the Internet for things like callsign lookup.

You can also connect your rig directly to your tablet running Hamlog. If you have the necessary USB port and cable for your tablet, you can wire it directly to the data port on your radio. Hamlog depends on the KX3's built-in decoder, allowing it to work CW, PSK 31, and RTTY. I find a Bluetooth keyboard makes the data input much easier than trying to use the on-screen popup keyboard.

Once the radio is connected to the tablet, you can open up the logging page in Hamlog. If your rig is a KX3, you can tap the "PT" button and you'll be taken to the CW Terminal page where the decoded CW, PSK, or RTTY signals will be displayed. For transmitting, the upper box on the page will display your text as you type it. You can also access six buttons into which you can enter your basic PSK "boilerplate" info.

Hamlog isn't just your plain vanilla logging program, either. The Tools section lists over 30 entries for such functions as lookup, links and lists ... too many to list here. I advise you to take a look at the Pignology home page, which gives you an idea of what the program can do. Hamlog also functions quite nicely as a Field Day logger, providing dupe-checking and log exporting in ADIF or CSV formats.

KX3 Companion

KX3 Companion is an Android app written by Andrea, IU4APC <http://kx3companion.com>. It is devoted to connecting the Elecraft KX3 to your Android phone or tablet so as to be able to operate digital modes. The connection is made using the KXUSB cable that comes with the KX3 and an OTG cable which reduces the standard-sized USB connector to the mini-sized connector commonly used in Android devices. KX3 Companion can also be connected to your KX3 wirelessly through use of a Piglet from Hamlog. I tried both connection methods and both worked well.

KX3 Companion is like Hamlog in that it depends on the internal decoder in the KX3 to provide the decoded text. You can set up a great number of macros to assist in your digital Qs, but one of the features I like best is a chat mode so that those of us who don't like canned QSOs can blather away on the keyboard.

KX3 Companion also provides a spectrum and/or waterfall display, as seen in Photo D. This display is provided by the audio stream from the transceiver's

Photo C. Bluetooth keyboard connected to the Galaxy Pad, connected to the Piglet, connected to the KX3. Makes for a nice, compact digi-station.

speaker which is picked up by the tablet's microphone, so it can also include noises that are present in your operating environment. It's possible to make the display a little cleaner by making a direct connection from the headphone jack on the radio to the microphone input on the tablet. I found that when running the spectrum display my tablet would occasionally freeze up, that obviously being the result of the tablet's brain trying to multi-task beyond its means. Speaking of freezing up, I initially had a problem with the tablet freezing up every time I tried to transmit. An e-mail to IU4APC was quickly answered with some suggestions regarding baud and polling rates. After a few minutes of fiddling in the settings, we were off and running. It's comforting to know that the developer is easily accessible and responds quickly.

Once I had the rig and the KX3 Companion up and running together, I went looking for someone to chat with. The band was dead except for a loud W1AW/1 in Maine running stations on RTTY. He was looking up 3 to 5 kHz for responses so I turned on the XIT and cranked it up until the transmitted signal was 3 kHz higher than the received signal. After three tries I had him in the bag. Easy! Since then I've been able to do some PSK operating and indulged in a little keyboard CW.

One of the software's tricks is to sweep a range of frequencies and display the SWR for those frequencies in a bar graph. Photo E shows the result of a scan of my tribander centered on 14.100. OK, I admit to having a bit of a bias toward the CW end of the band.

Again, there are too many features offered by the KX3 Companion to treat in this column so I suggest you go to Andrea's website for the details.

DroidPSK

DroidPSK is one of many Android apps written by Wolfgang Philipps, W8DA, and offered on his website, <http://www.wolphi.com>. Searching

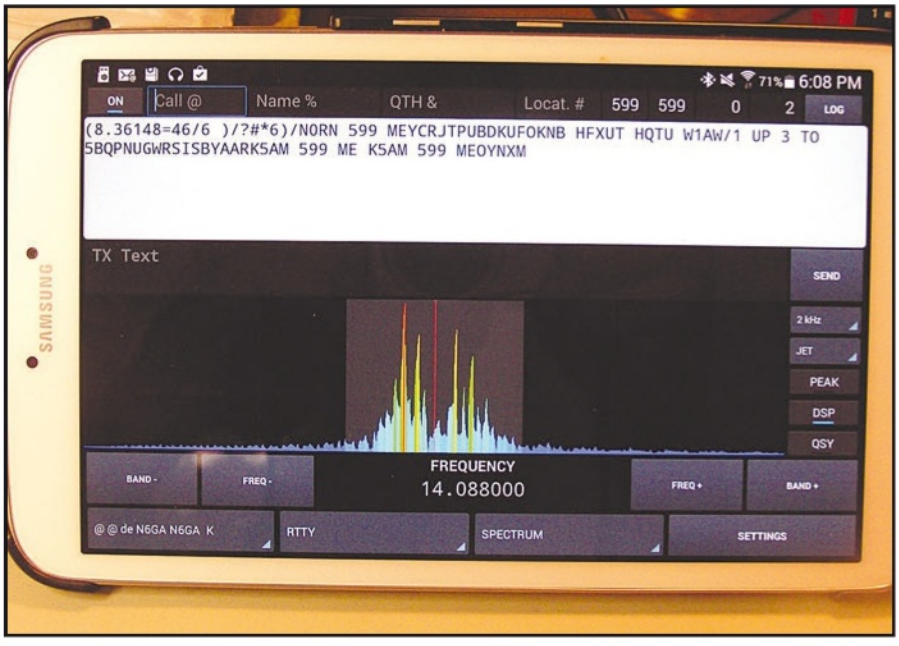

Photo D. KX3 Companion in Spectrum mode and running RTTY.

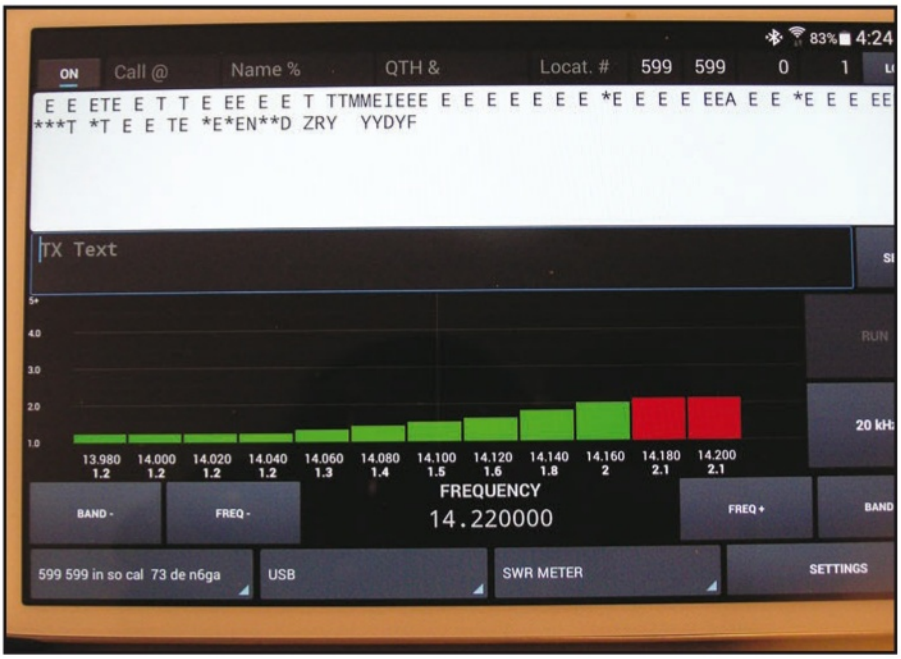

Photo E. After running a sweep of selected frequencies, KX3 Companion displays a graphical representation.

the Google Play store for Android ham radio apps, I ran across DroidPSK and eventually all the other offerings on Wolphi's website. These include DroidRTTY, CW Trainer, and Morse Decoder. There are plenty of other apps on this website worthy of your attention.

DroidPSK has the look and feel of the kind of PSK software package you'd run on your home laptop or desktop (Photo F). It features a waterfall display, receive and transmit text windows, and a whole long list of macro buttons. Without making any connection to your radio, you can start receiving PSK31 signals directly from your rig's speaker to your tablet's microphone. While it's technically possible to transmit by holding your rig's microphone near the android device's speaker, I didn't try this method. It just seemed a bit haphazard.

Wolfgang also offers an interface box on his website. This seemed like the cleanest way to make the connection.

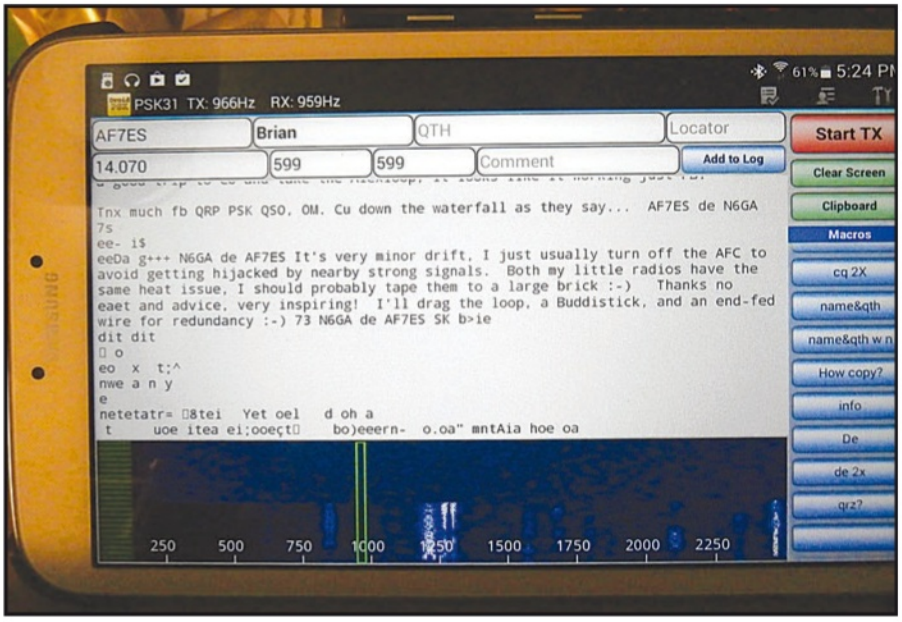

Photo F. DroidPSK in action. To select a station just tap on it's track on the waterfall display. Droid RTTY looks and acts much the same.

In the literature regarding this interface box he mentioned an article about its development which appeared in *QST*, May 2012. The author of this article said that his need for an interface arose from the fact that his Android phone's audio output wasn't high enough to drive the input of his transceiver. The question immediately popped up in my mind — wonder if the output of my Galaxy Tab would be high enough? Several audio connectors and clip leads later and the answer was a resounding "Yes!" So I homebrewed a cable that carried the audio back and forth between the tablet and my KX3 and was on the air.

In the DroidPSK software, you tune to the signal you want to copy by tapping on its trace on the touch screen, then sliding the cursor to do your fine tuning. The software quickly locks on to the trace so there's a minimum of fine tuning needed. It immediately starts printing out the received signal. To transmit, you poke the "Start TX" button and then tap whichever of the 20 Macro buttons you choose. Or tap in the transmit text box and start typing. You can populate the standard logbook fields by tapping on the appropriate word on the received text screen and then long-holding the corresponding log entry field. Just like on your laptop, but using the touch screen. When you've finished logging your contacts, there's an ADIF file upload function so you can add the contacts to your primary logging software.

As I'm writing this, I've just downloaded DroidRTTY, which looks to have the same features as DroidPSK. You might also want to check out some of the other items of interest on the Wolphi site such as programs to receive NAVTEX and HF WeFAX.

Wish List

Having so many goodies available to carry around with you in a small tablet is what my grandmother used to call the "bee's knees." A couple other items I'd like to see made available are Android versions of JT-65 and EZNEC. JT-65 continues to grow in popularity, even showing up on 6 meters whenever there's a hint of an opening. And it would be slick to be able to pull out your tablet to run a few antenna-modeling iterations whenever the mood struck. Or whenever the "verticals are better than horizontals" conversation gets heated enough to need an application of some facts!

Tnx es 72/73,
Cam N6GA

BY JOE EISENBERG,* KØNEB

Direction-Finding and CW Fun

While at Friedrichshafen, I came across a rather simple and easy-to-build Chinese direction finding kit. The PJ80 (Photos A & B) is designed to receive signals in the bottom 100 kHz of the 80-meter band (3500 to 3600 kHz), which is often used for international foxhunting, or ARDF (amateur radio direction-finding) competitions. This kit can be a great introduction to the world of HF foxhunting, and can also be useful for locating local noise sources on 80 meters. Using a low-powered TV colorburst oscillator circuit, which uses commonly available 3.579545-MHz crystals, you can make your own companion foxhunt transmitter to use with these easy-to-build receivers.

The PJ80 receiver uses both a ferrite loopstick and a whip antenna to receive signals, with the loopstick providing the directivity needed to find the transmitter by following nulls and peaks in the pattern of the antenna. The whip acts as a booster to improve reception of weaker signals. Four AA batteries are required to power it, and they can be inserted or changed after the case is assembled.

Assembly of this kit is pretty simple, and the supplied board is single-sided, which makes it very easy to desolder in case a part is placed in the wrong position. It takes about an hour and a half to assemble this kit, making for an enjoyable one-evening project. Because the kit comes from China, the original instructions are a bit difficult to understand; however a better English version is also available to download at <http://www.crkits.com>.

Using a known 80-meter signal or a colorburst oscillator makes for quick and simple alignment of the receiver. The kit comes with a set of earbuds and plugging in the earbuds also acts as the power on/off switch.

The PJ-80 is good for a group kit-building experience as well, as it is simple enough for a first-time

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e-mail: <k0neb@cq-amateur-radio.com>

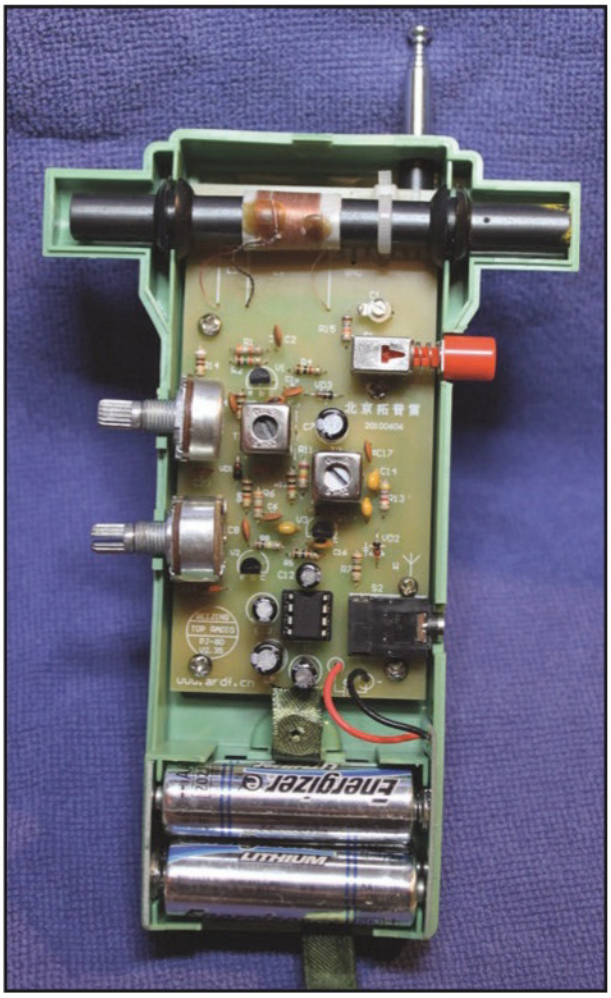

Photo A. Chinese PJ80 ARDF kit ready for alignment.

Photo B. Completed PJ80 kit ready to go foxhunting on 80 meters.

Photo C. Dale Botkin, NØXAS, the creator of the popular PicoKeyer kit holds the newest version, the Ultra PicoKeyer from HamGadgets.

kit-builder. Concluding your group kit-building experience with a foxhunt makes for a great club activity! The PJ-80 sells for $29.90 plus shipping from <http://www.crkits.com>.

Ultra Pico Keyer

At a recent HBQRP meeting in Nebraska, Omaha's own Dale Botkin, NØXAS, brought a sample of his newest version of his extremely popular PicoKeyer kit (Photo C). With its very low parts count, this is also an ideal first-time kit as well as an excellent group kit-building experience. The newest Ultra PicoKeyer shares the heritage of the original, incorporating its reliance on a single CR2032 lithium coin cell battery with no power switch due to its extremely low power consumption in the sleep mode. The size of the keyer is similar to

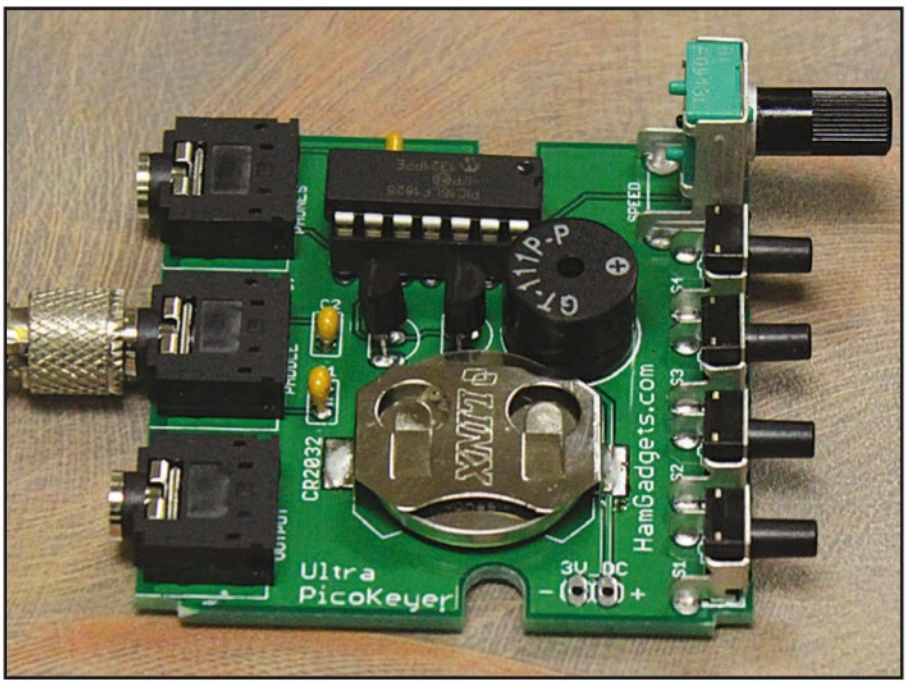

Photo D. This board is as easy as a kit gets with a low parts count and easy parts placement.

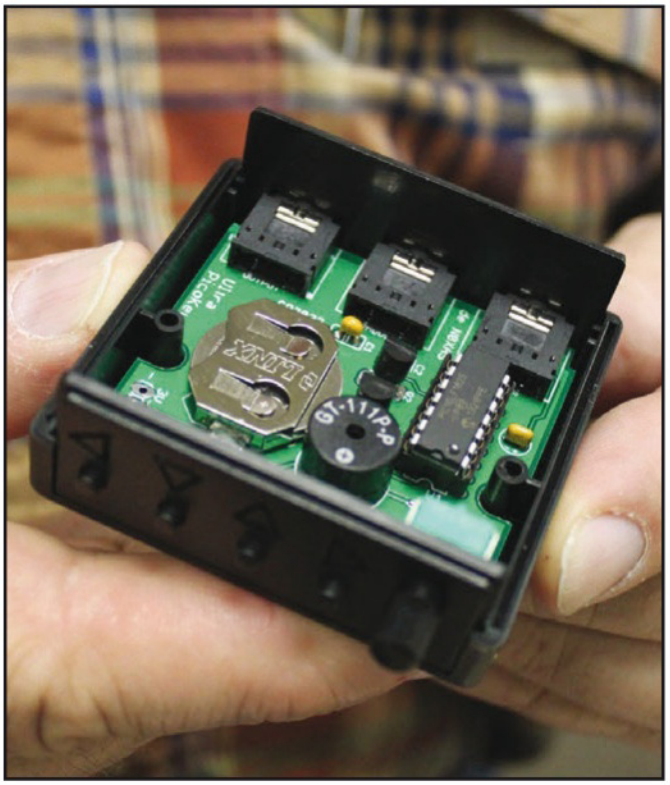

Photo E. A closeup of the Ultra PicoKeyer kit in the case.

the previous version, but now incorporates a 4-button control panel making for much easier programming.

As in previous versions, the keyer responds with menu items in code, but the newer version has the menu items spelled out instead of just single-letter items. You can program the keyer to use single-letter menu items if desired. In addition to the built-in piezo speaker, there is a headphone jack to listen to the built-in sidetone, which is great for code practice.

Because of the larger number of buttons than the original version (four instead of one) and the three jacks on the back panel, the case comes with the symbols for each button and jack machine-engraved in the front and rear panels of the supplied case. The front panel has arrows indicating left/right/up/down for the four programming and function buttons, and the rear panel has symbols for the paddle input, the keying output, and the headphone output. I saw that the headphone output easily connects to a set of amplified computer speakers, making it useful for conducting code lessons. The audio output can be varied in pitch, but changing the pitch will result in varying levels of output from the internal speaker. The audio output to external speakers will not vary as much with changes in pitch.

There are also a couple of other values of capacitors for C3 supplied with the kit that can be mounted in the C3 position for different levels of output to headphones or speakers. Read the manual carefully when selecting which value of capacitor to use for C3 as some values can make certain types of headphones too loud for comfort. The keying speed is controlled by the front panel pot.

Building the Ultra PicoKeyer is definitely less than a one-hour process — even for first-time builders — and features a two-sided, plated-through pretinned board with silkscreened parts markings for easy assembly. The manual recommends using a wooden clothespin for holding the battery holder in place on the board during construction, a procedure I agree with. The coin cell holder is an excellent conductor of heat, sometimes making it difficult to solder to the board as it can conduct heat to the opposite end, melting the solder. The clothespin keeps it steady and holds it in place for the solder to flow correctly on both ends of the holder. Do not remove the clothespin until the solder has completely cooled.

There are four identical buttons, a pot, and three jacks to mount as well as three capacitors and an IC with its supplied socket. Be sure to orient the socket and the chip correctly. The chip can be replaced as future improvements and features are added to the firmware. The tolerances are relatively tight, so making sure all switches, jacks, and the speed control pot are mounted flush to the board is essential to making the kit fit in the supplied enclosure. My kit went into its case with very little effort.

The fun of assembling the Ultra PicoKeyer is enhanced by the "73" message it gives when the battery is first installed, indicating all is well. It has lots of features associated with keyers costing a lot more and makes for a great addition to your shack or portable go-kit. The Ultra PicoKeyer can also be programmed as a beacon controller for those building their own propagation beacons. You can get the new Ultra PicoKeyer from HamGadgets at <http://www.hamgadgets.com>.

Keep Warm and Solder On

With winter upon us, it is time to enjoy some great kit building time. Stay warm and keep soldering!

Until next time, 73 de KØNEB

Fairs, Festivals, Field Day, Changes, and Some Interesting New Bands and Products

BY TOM SMERK,* AA6TS

This month, we take you around the bands, around the world and even into space…

RAST's Secretary Mans a Booth at the Tokyo Ham Fair

The Radio Amateur Society of Thailand (RAST) was represented at the Tokyo Ham Fair by RAST Secretary Chalermphol (Champ), E21EIC, and his XYL, RAST Registrar Goi (JC), E2ØNKB, along with Noppadol (Tong), HS5IGY, and other Thai radio hams.

The largest amateur radio convention in the region, this event was held August 23-24 on the outskirts of Japan's capital city. A large poster on display featured "The Rise of HSØAC," telling the story of the recovery of RAST's club station on the campus of the Asian Institute of Technology after suffering major storm damage a few years ago.

Other posters paid tribute to RAST's patron, His Majesty the King of Thailand, HS1A, and announced RAST's 50th anniversary celebrations that will be taking place in late January.

The full story with pictures is at: <http://www.qsl.net/rast/>

This next story caught our eye because of several interesting innovations, such as the "campout" atmosphere and the interesting new attendee badges.

EMF 2014 Festival

Among the highlights for British hams at the Electromagnetic Field "EMF 2014" event held from Friday through Sunday, August 29-31 was an "Amateur Radio Village" campsite and special event station, GB2EMF. The event took place near Newton Longville, just south of Bletchley, Milton Keynes, in the U.K.

EMF 2014 is a volunteer effort by a non-profit group and was planned for anyone interested in radio, electronics, space, homebrewing, robots, UAVs, 3-D printing, DIYBio, Internet culture, or related technologies.

Sponsors anticipated more than 1,000 attending forums and workshops as well as taking part in the music, games, and exhibits. Sponsors said in a blog post that every attendee, upon arrival, would receive a special badge called "TiLDA" which is a programmable, battery-powered development board that visitors wear on a lanyard. "By default it communicates with all the other badges onsite, playing a networked game that encourages you to meet other people with differing interests," the post explained.

See one of the following sites for more information:

EMF 2014 Website: <https://www.emfcamp.org/>

Twitter @emfcamp

Facebook: <https://www.facebook.com/emfcamp>

Report on the EMF 2012 event: <http://amsat-uk.org/2012/09/01/emf-2012-milton-keynes/>

[Source: AMSAT-UK, ARRL Letter]

Here's an update about two useful products, an online software defined radio and an up-and-coming worldwide repeater directory.

SUWS VHF/UHF/Microwave WebSDR Moves to New Location

The Southampton University Wireless Society "SUWS VHF/UHF/Microwave WebSDR" has now moved to its new site in Farnham, UK.

You can use the free online Web Software Defined Radio (WebSDR) from your PC or laptop to receive the International Space Station (ISS) and the many amateur radio satellites transmitting in the 144 to 146-MHz, 435- to 438-MHz bands. You can also use the WebSDR for reception of high-altitude balloons in the 434-MHz band, and coverage of the microwave 10368- to 10370-MHz band.

RAST members at Tokyo Ham Fair Booth. From left to right were: HS5JRH, HS5IGY, E20NKB, E21AOY and E21EIC. (Courtesy of E21EIC)

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e-mail: <aa6ts@cq-amateur-radio.com>

At the Tokyo Ham Fair, the Japan DX Meeting was well attended. (Courtesy of E21EIC)

Martin Ehrenfried, G8JNJ, has equipped the SUWS WebSDR with innovative, omni-directional helix antennas. Martin said, "I had been experimenting with single turn 'twisted halo' designs, and decided to try stacking them to see if I could achieve more gain. Modeling suggested that a stretched, 3-turn helix with a helix circumference of approximately 1/2 wavelength and an overall length of 1/2 wavelength at 70 centimeters and fed with a gamma match at the center would offer reasonable gain, an omni-directional pattern, and mixed polarization."

Full details of the antennas are available at <http://g8jnj.webs.com/currentprojects.htm>.

The SUWS WebSDR is located at Farnham, not far from London. Listen to it at <http://websdr.suws.org.uk/>.

[Thanks AMSAT-UK for the above information]

RFinder — The World-Wide Repeater Directory Partners With the World's Radio Societies

RFinder has been busy working with the radio societies of the world to assure that it has the latest and greatest data included in what is calls the Earth's most complete repeater directory. Now much like ARRL's TravelPlus and Repeater Directory, RFinder is offering the amateur radio societies in various countries its own branded repeater directory. RFinder donates to the society a percentage of sales in each country that signs up, they localize their apps in the native language, load the official list, and brand the apps for that country. When RFinder is opened in a participating country, it shows "Official Repeater Directory of X." Arrangements have already been made with Canada and the U.K., with five more countries currently in talks.

RFinder is a $9.99 USD subscription per year, which is included for the first year when you buy the app for Android or iPhone. More information is available at <http://www.rfinder.net> or email <w2cyk@rfinder.net>.

[Bob Greenberg, W2CYK]

Some Notes on the 630-Meter Band

Several news sources have reported that a 600/630 meters CW-only special event operation is scheduled for this fall. ARRL 600 Meter Experimental Group Coordinator Fritz Raab said of the announced participation by the Maritime Radio Historical Society (MRHS), which operates the former KPH/KSM commercial coast stations in the U.S.,"this will give listeners the best chance of copying their MF signals by operating during the fall and extending our operating hours well into the evening hours Pacific Time." KPH/KSM will operate split with U.S. amateurs, listening on the 80-meter band.

Canadian radio amateurs gained access to the 472- to 479-kHz band on May 1 of this year. Three Canadian radio amateurs will conduct cross-band communication tests with amateurs listening on 80 and 40 meters. The scheduled time for this is November 1 and 2, which will most likely be concluded by the time this issue is in your hands.

Additionally, the ARRL reports a radio amateur and medium-frequency (MF) experimenter David Isele, VK2DDI, in Australia, has received a 630-meter (475.62 kHz) transmission from John Langridge, KB5NJD, a radio amateur and Part 5 experimental operator in Texas, a distance of approximately 8,710 miles.

While not a distance record nor a "first," it does represent the sort of accomplishments that the amateur radio commu-

nity in the U.S. might come to enjoy if a band at 472-479 kHz ever becomes a reality in this country.

Langridge said "Many of us use *WSPR* as an effective means of determining band conditions very quickly, which can lead to two-way [communication]," Langridge said. "*WSPR* has a very well-established listener base, which provides tremendous amounts of data with a 2-minute transmit cycle." He also said that WSPR is a good tool to introduce newcomers to 630 meters and MF operation, and that many MF operators, including himself, stumbled into the nether ranges of the spectrum by way of monitoring *WSPR* and, as he put it, "seeing how amazing this band really can be."

[Various news sources including the ARRL Letter]

Here's a roundup of recent ham radio news around the globe:

IARU Youth Award Presented to Young South African

The Outstanding Young Radio Amateur of the Year Award was presented by the IARU Region 1 on September 13, 2014 at the Radio Technology in Action Symposium in Pretoria to Michel Mynhardt, ZS6YH, the South African Radio League's youth coordinator.

Michel became a radio amateur in his early teens and has been active in both local and international competitions. He has served the East Rand Radio Club as youth coordinator and was also involved with JOTA (Jamboree on the Air) and the Voortrekkers for the past six years.

[SARL]

Two Hams Honored by Order of Canada

Among the list of recipients of the Order of Canada appointments are Veena Rawat, VA3ITU, who was honored for her contributions to telecommunications engineering and for leadership in establishing a global regulatory framework for radio spectrum management; and Canadian astronaut Chris Hadfield, VA3OOG, who also holds the United States call KC5RNJ.

Hadfield was recognized as an Officer of the Order of Canada for his commitment to promoting scientific discovery and for sharing the wonders of space exploration with the world. Congratulations from *CQ*!

[Royal Order of Canada]

Hams Ready to Assist in Kashmir Flooding

After a quick response to the Uttarakhand floods last year, amateur radio operators from India's National Institute of Amateur Radio (NAIR) were back in action responding to the mid-September flooding in Jammu and Kashmir.

At the outset of the operation, NAIR's executive vice-chairman and director, Suri Ram Mohan, VU2MYH, reported to the *New Indian Express*: "Basically, the operation of amateur radio is banned in certain areas like Jammu and Kashmir, North East etc. Hence, we cannot jump into any action without seeking the permission from the Wireless Planning Commission and Co-ordination Wing," he said. "Hence, I will write to the wireless advisor asking him to grant us permission to visit the place to avoid any legal complications. If everything works out, we will be starting in two days as we have all the equipment in place."

The full article is at: <http://www.newindianexpress.com/cities/hyderabad/HAM-Radio-Operators-to-Help-J-and-K-Victims/2014/09/11/article2425153.ece>.

[The New Indian Express]

Canadian Regulator Accepts RAC's International 60-Meter Proposal

According to the *ARRL Letter*, Radio Amateurs of Canada (RAC) has announced that its proposal to establish an international 60-meter amateur service allocation on a secondary basis has been accepted by the Industry Canada consultative committee for the World Radiocommunication Conference 2015 (WRC-15). The Canadian proposal was on the agenda to be considered by other International Telecommunication Region (ITU) Region 2 countries in October.

The RAC proposal recommends two 25-kHz band segments for amateur radio — 5330 to 5355 kHz and 5405 to 5430 kHz. Amateur access would be on a secondary, non-interference basis.

[The ARRL Letter]

Transatlantic Signal Received on 2 Meters using FSK441

On July 6 at 1341 UTC, Radio Society of Great Britain (RSGB) VHF Manager John Regnault, G4SWX, in Suffolk, U.K. was able to completely decode an FSK441 transmission from Canadian station VC1T on 144.155 MHz. The "Brendan Quest" team reported that "they attempted to complete the QSO for 4 hours, but were not successful." However, this reception should qualify for the Brendan Plate.

Because of the initial success, the group now will use FSK441 exclusively in its Brendan bid.

[Southgate Amateur Radio News]

5-Year Notification Process Begins in Ireland

Since June 1, 2009, Ireland has been using a new amateur station licensing scheme introduced by regulator ComReg under the *Wireless Telegraphy (Amateur Station License) Regulations 2009 S.I. 192 of 2009,* where licenses are granted for the lifetime of the licensee. The provisions require that the licensee make a return to ComReg each and every five years to confirm whether the details of the license are correct.

As it has now been five years since this went into effect, ComReg has commenced notifying any licensees who have held their licenses for at least five years that their license detail confirmation is required and informing them how to comply with this license condition. Hams should receive a notification approximately two months before the anniversary of the issue of the license.

[Irish Radio Transmitters Society (IRTS) and Southgate Amateur Radio News]

Australian Amateurs to Temporarily Share 70-centimeter Band With Commercial Services

As part of its ongoing 400-MHz band plan review, the Australian Communications and Media Authority has advised the nation's ham radio community that that it will be necessary to temporarily move some commercial services into the 442.5- to 444-MHz and 446.5- to 448-MHz segments of the 70-centimeter band.

Commercial services will be assigned on a secondary basis with equal status to the amateur service. This reassignment will be required starting now and continuing through to the end of 2015.

[Wireless Institute of Australia (WIA)]

DARC to Assist Visually Impaired Hams

The Deutscher Amateur Radio Club (DARC) member's magazine, "CQ DL," will be available in the future in two additional formats to provide greater access to visually-impaired amateurs: An HTML version for direct reading on the screen — possibly with the assistance of a Braille display — and as a Daisy audiobook. The Daisy audiobook is available as a zip file, and once downloaded, can be played directly from Daisy players.

The new method was also discussed in the "Sight City 2014," Germany's largest special exhibition for blind and visually impaired people, which took place in Frankfurt from May 14 to 16.

[Southgate Amateur Radio News]

HAMSAT-VO52 "End of Mission"

Due to the failure of on-board lithium-ion batteries, the Indian Space Research Organization has decommissioned *HAMSAT-VO52*, known as "OSCAR-52" among the amateur operators.

AMSAT-India's ham radio satellite was launched on May 5, 2005 and ceased operation on July 11, 2014. During its nine years of service, it proved to be a valuable communications resource for the amateur radio community because of its high sensitivity receiver and strong transmitter.

[AMSAT News Service]

And that is also the end of my mission to bring you interesting ham radio news from around the globe — that is, until next month, when I look forward to doing this once again. In the meantime, send me information about what is happening with amateur radio in your country to <aa6ts@cq-amateur-radio.com>.

– 73 until next month!

Using H-Plane Patterns to Pick the Right Antenna

BY RON OCHU,* KOØZ

It's November and the holiday season is just around the corner. Fall is in full swing and I enjoy the warmth that my power supply, rigs, and amps provide within my shack to help take the chill out of the air. This is a good time of year to check out your antennas and connectors to make sure that everything is tightened and water resistant for old man winter.

Speaking of water tight, I'd like to thank *CQ* reader Mike Buettner, K7STO, from Yelm, Washington for his email informing me of an even better ground connection than the one I pictured in an earlier column, (Photo A). Mike pointed out that an acorn ground rod clamp is superior because it is rated for direct burial (Photo B). Direct burial rating is important because corrosion between metals is reduced; thereby, making for a better and longer duration ground connection. Mike went on to show how to properly attach the ground wire to the clamp (Photo C). Notice that the ground wire/braid is between the clamp's outer shell and the ground rod. The tightening-nut screws directly into the ground rod itself. I'd also like to include that a healthy gob of Silicon RV sealant around the grounding clamp and wire further reduces oxidation. Thank you, Mike, for sending the email; helping fellow hams is what this hobby is all about. If you have any comments or suggestions, please email me.

Antennas are near and dear to every ham radio operator's heart. Last month we examined how "Big Guns" use efficient antennas to make contacts near and far. "Little Pistols" can do likewise. The name of the game is to make your antenna as efficient as your budget will allow. Towards that end, this column examines the factors contributing to antenna efficiency. So far, we've demystified the dB in antenna gain and we just recently looked at an antenna's E-plane pattern, also called the azimuth pattern. Another important antenna characteristic is the H-plane pattern, also referred to as the elevation pattern. An example of a typical dipole antenna's azimuth and elevation pattern is found in Figure 1.

Photo A. This ground rod clamp is not rated for direct burial and can oxidize. (All photos courtesy of Ron Ochu, KOØZ)

Photo B. An acorn ground rod clamp is rated for direct burial.

Photo C. Notice that the ground wire braid comes between the clamp and the rod and it is located opposite from the grounding lug.

H-Plane Pattern

You may recall that the E pattern of an antenna stands for its "electric" field and this pattern shows the antenna's directivity. The H-plane pattern represents the antenna's magnetic field pattern which illustrates the antenna's maximum radiation. Typically the E- and H-plane patterns of an antenna are 90 degrees apart. In other words, the H plane or elevation pattern allows us to visualize where our antenna's maximum signal is with

*e-mail: <ko0z@cq-amateur-radio.com>

Photo D. KOØZ's VHF-SHF antenna array in EM59ck.

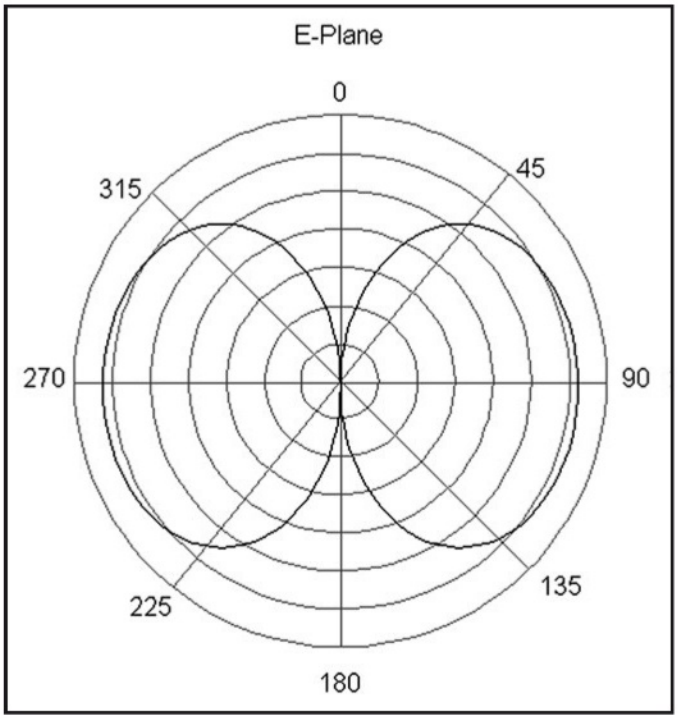
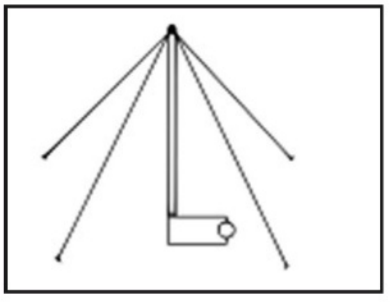


Figure 1. Charts depicting a dipole's E- (azimuth) and H-plane (elevation) patterns. (Courtesy of Wikimedia Commons)

Figure 2. Near Vertical Incidence Skywave (NVIS) antenna used to communicate within a few hundred miles on HF. (Courtesy of Wikimedia Commons)



respect to the horizon; whereas, the E-plane or Azimuth pattern reveals which direction(s) our antenna radiates.

Why is the H-Plane Important?

It is useful for us to know the H-plane/elevation pattern for it will help us to select the most efficient antenna for our intended communication needs. For example, let's say that I am interested in working stations within a few hundred miles of my QTH (location) such as a statewide ARES or traffic net. A simple backyard dipole suspended near the ground can actually be better than one suspended one-half wavelength or more above ground.

The dipole mounted higher up would be better for working DX (long distance). A Near Vertical Incidence Skywave (NVIS) antenna would be ideal in this case (Figure 2). Most, if not all, of the antenna's signal is being radiated straight upwards to the ionosphere and bouncing nearly straight back down, which results in the signal staying within a few hundred miles or so of the transmitter.

Let's Take a Closer Look

If I want to consistently work distant VHF/UHF stations from my QTH, I will need to put up an antenna that is not only directional, but will also direct most of its radiated energy towards the horizon. For example, I enjoy keeping a schedule with my friend Ron Stefanskie, W9ZIH, in Malta, Illinois, grid square EN51nv. I live in Girard, Illinois, grid square EM59ck, which puts Ron and me 176 miles apart.

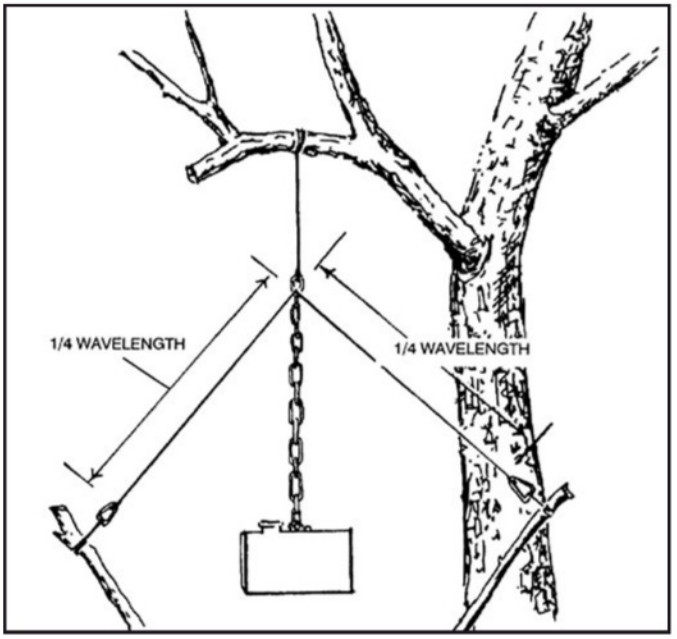


Figure 3. Inverted Vee antenna. (Courtesy of Wikimedia Commons)

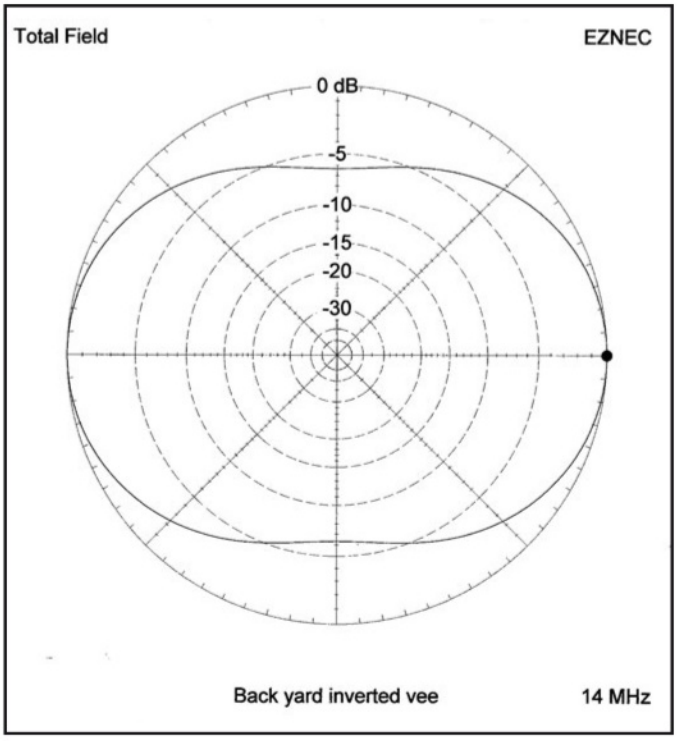


Figure 4. Azimuth pattern of an inverted vee antenna, notice that this antenna radiates in an oval shape and it is nearly omnidirectional.

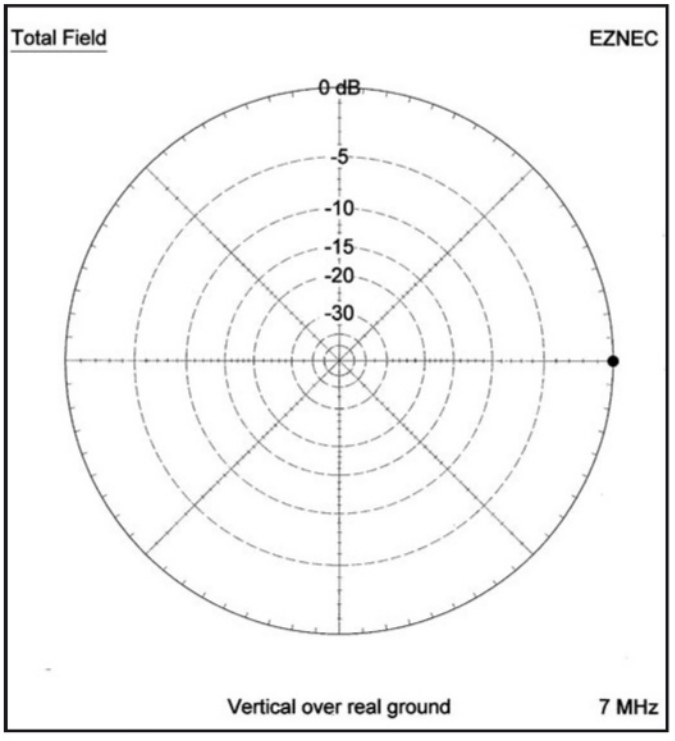


Figure 6. A vertical antenna's azimuth pattern is omnidirectional.

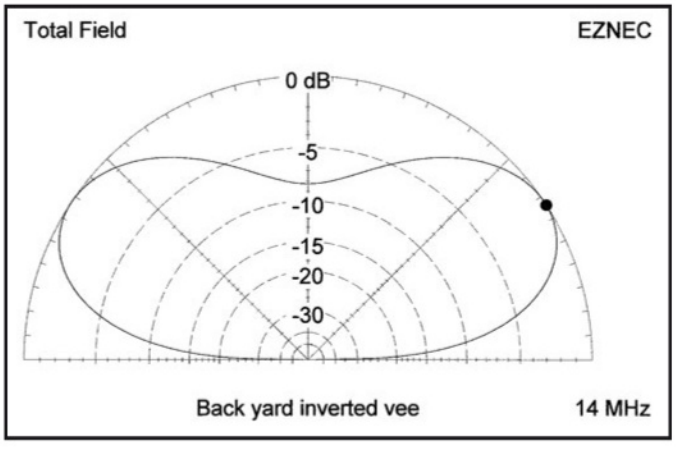


Figure 5. Elevation pattern of the inverted vee. This antenna puts most of its energy 33 degrees above the horizon.

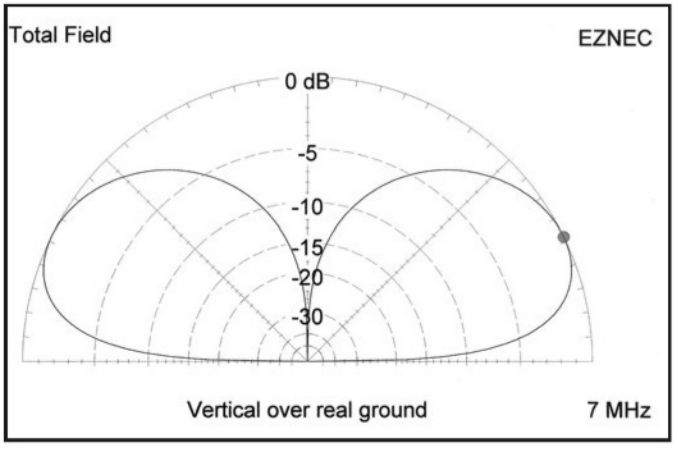


Figure 7. A vertical's elevation antenna puts most of its energy at 26 degrees above the horizon.

Both Ron and I use low-loss hardline to feed our antenna systems, which direct most of our energy towards the horizon (precisely where we want it to go; Photo D). We have no problems carrying on our QSOs (conversations) for hours on either 2-meter or 70-centimeter upper sideband! Examining an antenna's elevation pattern (H-plane) helps take the guesswork out of building an antenna.

Backyard Inverted Vee

A dipole antenna that is suspended at its middle and has each leg draped towards the ground (Figure 3) is called an inverted vee. The EZNEC antenna modeling program plots a backyard inverted vee antenna's azimuth (Figure 4) as being oval shaped. This means that this antenna is almost omnidirectional, but it does have some lobes. The same antenna's elevation pattern (Figure 5) shows that most of the signal is radiated 33 degrees above the horizon. This antenna would be a good compromise for working stations near and far. For working stations close in to your QTH, a higher angle of radiation is preferable; a lower angle of radiation is desired to work DX stations.

Vertical Antenna

The vertical is a very popular ham radio antenna. EZNEC helps us to see as to why it is a favorite. The azimuth pattern is omnidirectional (Figure 6). Now, let's take a look at this antenna's elevation pattern. Notice that it has two distinct lobes. This means that most of the antenna's signal, in this

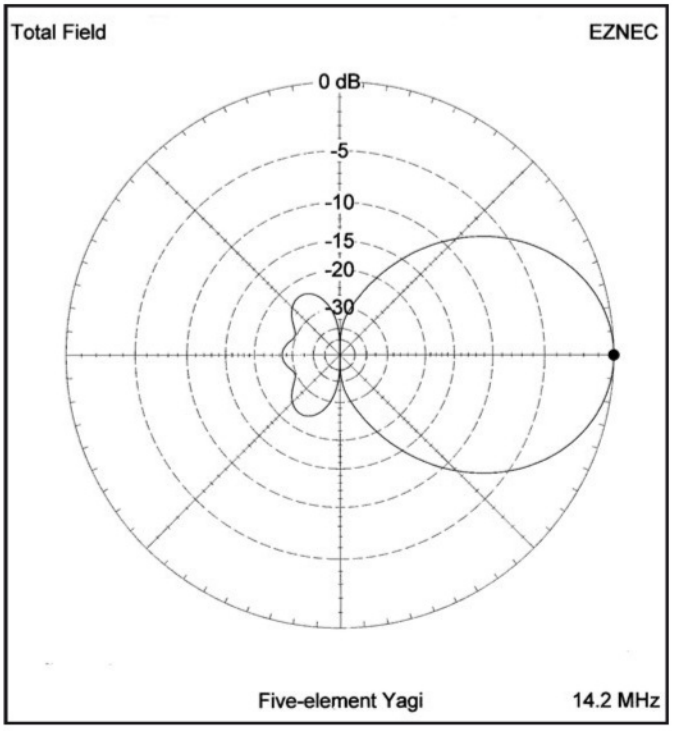


Figure 8. The Yagi antenna is directional as depicted as one major lobe in the azimuth chart.

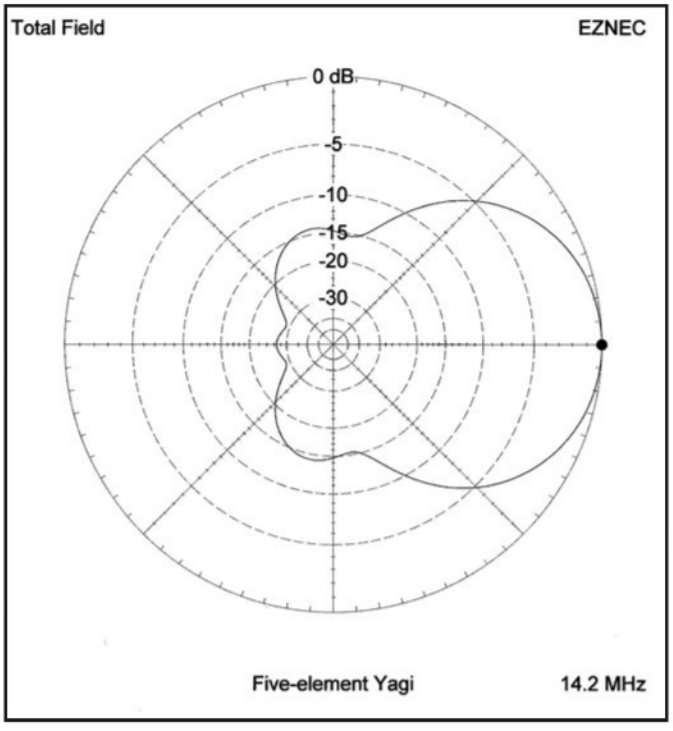


Figure 9. A Yagi's elevation pattern concentrates its energy towards the horizon.

case, is being radiated 26 degrees above the horizon. Notice that there is a distinct null at 90 degrees. More signal is being concentrated towards the horizon where we will find more amateurs to chat with and less directly above the antenna where there are assuredly fewer amateurs to work. It's important to note that this vertical is modeled over real ground. Having a good radial system underneath a vertical is the key to having an efficient vertical antenna.

A Five-Element Yagi

EZNEC also models a 5-element, 20-meter Yagi in free space. Free space doesn't mean that the cost associated with space is "free;" rather, it means that this antenna is modeled without a ground beneath it. Amateur radio applications will definitely be over ground and this modeled antenna pattern will change, but for our purposes of becoming familiar with elevation patterns we will use this model. In Figure 8, the familiar azimuth (E-plane) diagram reveals that this antenna's signal is mostly radiated in just one direction, hence the term "directional antenna."

Now let's get a more complete picture of just what this antenna is doing in the H-plane or elevation chart. Figure 9 shows that most of this antenna's energy is being directed towards the horizon. Keep in mind that this particular antenna is being modeled in free space and that is why we see the mirror image of the pattern below the chart's horizontal axis. Model this antenna over real ground and the major lobe will move upwards, but most of the signal will be concentrated towards the horizon which makes this antenna a good one for working DX.

Height Measured in Wavelengths

It's fun to examine antenna E- and H-plane patterns. When an antenna is modeled over real ground it's very interesting to see the pronounced effects ground will have on a pattern. In general, the higher up the antenna is in terms of wavelength, the closer it will come being a free space model. That's why it is easier to get better results at the smaller wavelengths of VHF/UHF frequencies as compared to HF frequencies.

For instance, we want to put a 4-element, 6-meter Yagi antenna up one wavelength. We will need to place it approximately 19-1/2-feet up on a mast. A four-element, 20-meter Yagi up one wavelength needs to be approximately 66 feet. At VHF/UHF frequencies, it is also far easier to have higher elements than HF antennas when it comes to boom length and turning radius. So here's another explanation as to why Elmers (ham radio mentors) keep telling us that when it comes to antennas, the higher the better.

That's it for now. We've only just scratched the surface of antenna plots, but you do now have a better understanding of what those antenna charts mean when pictured in the various ham radio publications. I hope some of the mystery surrounding antennas has been clarified and you will want to delve into this fascinating subject even further.

While you're "out and about," take the time to see how various operators configure their antennas. Craig Thompson, K9CT, spent two years visiting and chatting with big time DXers and contesters to see their stations. He asked them, "if you had it all over to do again, what would you keep and what would you change?" From this research, he made the plans that went into building his FB (fine business) station! To learn more about his station configuration, feel free to visit <http://www.k9ct.us/>.

Once again, I thank Mike Buettner, K7STO, for sharing his insights with me and now with you. Good luck in researching the "perfect" antenna for your station and keep in mind what your antenna interests are? Do you wish to work local stations, DX, or both? The antenna azimuth (E-plane) and elevation (H-plane) patterns will help to take a lot of the guess work out of which antenna to acquire!

Until next month, 73 and GL de Ron, KOØZ

Making the Right Connections: RF Connector Assembly

BY WAYNE YOSHIDA,* KH6WZ

For those of you with very long memories, yes, this is a reprise of Wayne's "Beginner's Corner" column in the May 2003 issue of CQ. It's a topic that needs to be revisited at least once each decade as new hams join our ranks and need to learn the best way to attach connectors to antenna feedlines. - W2VU

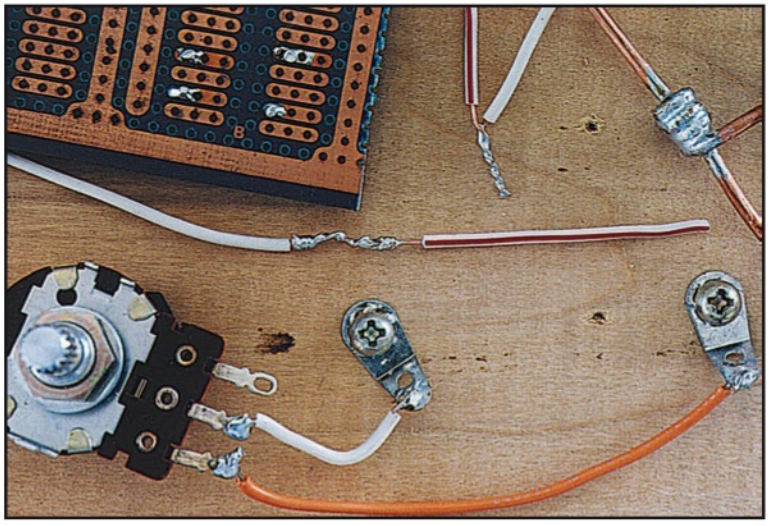


Photo 1. The soldering practice board. Practice making wire splices with both stranded and solid copper wire. These connections are especially useful for wire antennas, including the trusty dipole.

I firmly believe that there are some "hardware" skills all amateur radio operators need to possess, in order to keep their stations operating efficiently. The first and most major skill is soldering. Soldering is what holds all electronic parts together. Knowing how to solder properly will enable you to do-it-yourself, and to save yourself both time and money, two very precious commodities these days.

The skill and art of soldering is not hard to master, and will provide you with a tool to increase your enjoyment for a lifetime. You youngsters out there may even develop a career path from all of this ham radio activity, like a lot of us "old folks" already have.

Very good tutorials on soldering and building electronics projects appear in the building guides provided by companies that produce electronic kits, such as Ramsey Electronics <http://www.ramseyelectronics.com> and Elecraft <http://www.elecraft.com>.

As I write this, I remember my eighth grade electric shop teacher, Mr. Brotherton (I never knew his first name), saying, "you must learn to crawl before you can walk," as he made all of us make wire splices with a torch-heated soldering iron, paste flux, and 50/50 solid solder (we won't do that here). He wanted to emphasize to us that we must possess the basic skills before we could attempt anything else. I guess that's good advice.

The most important part of successful soldering is the proper application of heat to the joint. The phrase often used is "heat the work, not the solder." This means placing the hot iron tip at the intersection of the wire and another wire, or the wire and a printed circuit board (PCB) foil trace, heating the junction (not the solder), and the applying solder to the heated wires and/or PCB foil. In other words, do *not* attempt to use solder like hot-melt glue, dripping molten solder onto the connection. It won't make a good electrical bond.

In order to learn the skill, you must actually do it, and practice, practice, practice. Get a good soldering iron or soldering station, some 60/40 or 63/37 rosin-core electronics solder and a simple tool kit. (*Rosin-core solder is more difficult to find in 2014 than it was in 2003; silver-bearing solder is also good for electronics work. - ed.*) Again, the websites mentioned above have good recommendations. Practice on scraps of wire you might find around the garage, or perhaps you can get

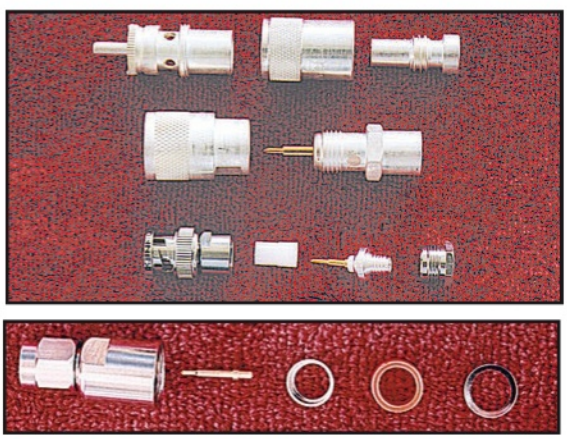


Photo 2. The most popular RF connectors you will use in your shack. Top to bottom: PL-259 and reducer for RG-8X coax, Type N, BNC, and SMA. The Type N is the "new and simplified" connector, available at most ham radio shops. It's highly recommended for UHF and microwave use, or any installation requiring as little feedline loss as possible.

28181 Rubicon Ct., Laguna Niguel, CA 92677
E-mail: <kh6wz@cq-amateur-radio.com>

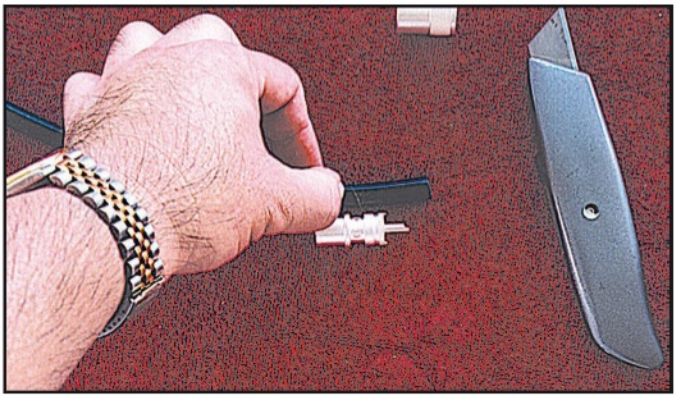
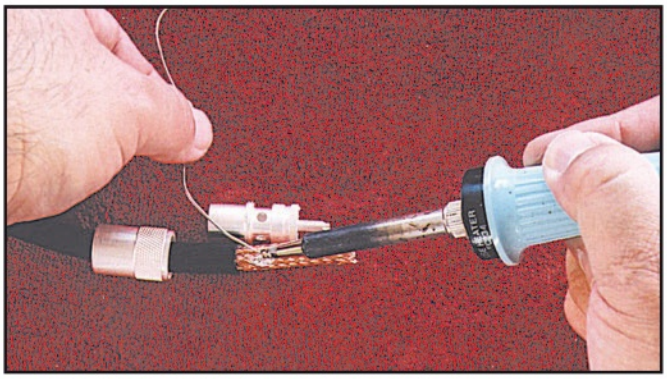


Photo 3. No need to measure. My thumb indicates where the outer jacket needs to be removed. Notice that the length of cable is slightly longer than the connector length, as indicated by the center pin.

Photo 4. Carefully remove a section of the outer jacket. See text for a neat technique to prevent nicking the braid.



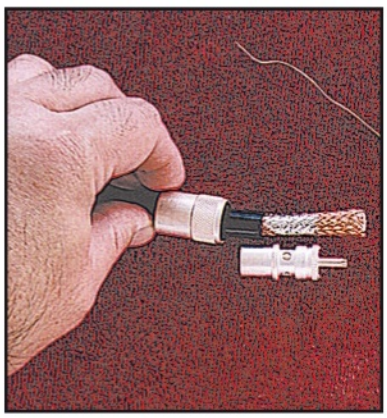


Photo 5. Tin the braid. As the solder melts into the braid, "wipe" the hot tip back and forth and along the braid, depositing a very thin film of solder on the shield. This turns the outer braid into a piece of tubing.

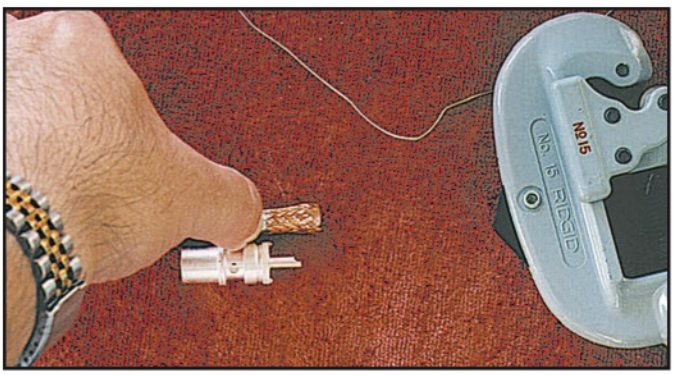
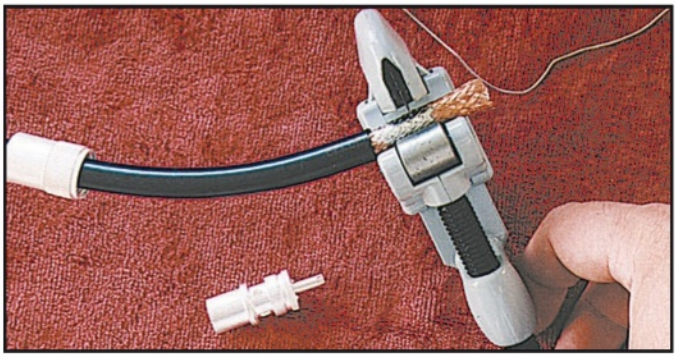


Photo 6. Again, my thumb indicates where to cut. The shield and center insulator will be cut so that the cable will fit into the connector body, and stop where the Teflon insulator joins the connector body.



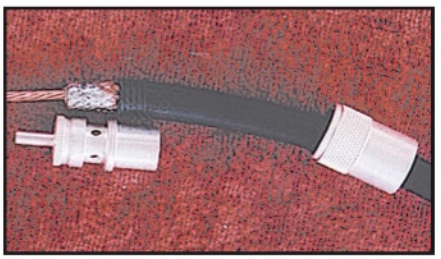


Photo 7. The tubing cutter makes removing the shield and center insulator quick and easy. Do not cut into the center conductor.

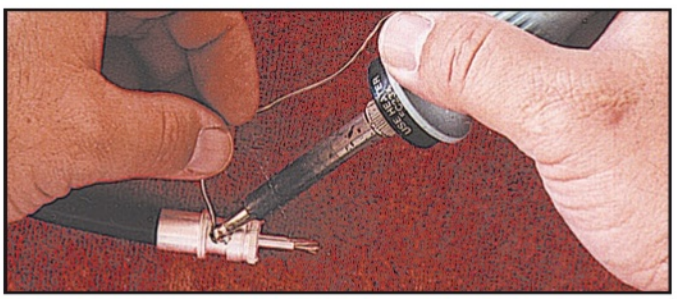


Photo 8. Screw the connector body onto the cable as far as it will go, and solder the shield to the body. When done properly, the molten solder will get sucked into the shield. Solder the center conductor to the center pin, and trim the end. File the end smooth if necessary.

Photo 9. This is how it should look.

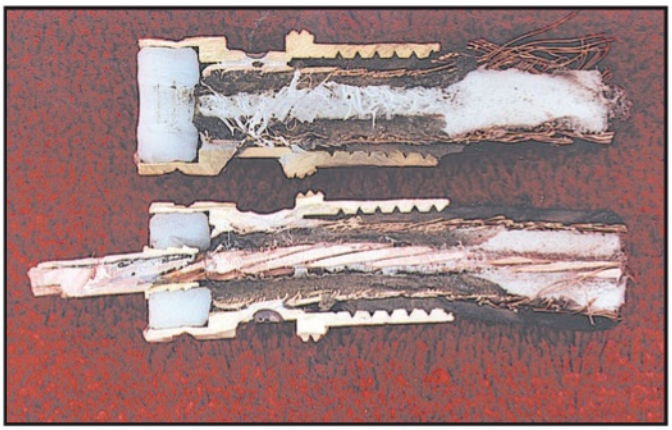


Photo 10. I have always been curious about what my PL-259 connectors looked like on the inside, so I sliced this one in half length-wise. See text for details.

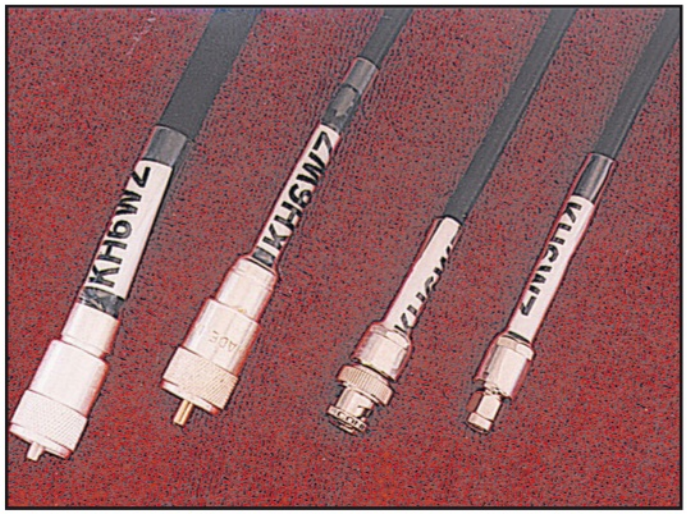


Photo 11. As a final touch, I add a callsign label to the cable, and used heat shrink tubing to add strain relief. Seen here, from left to right, are a PL-259 on RG-213, PL-259 with RG-8X reducer, BNC on RG-8X, and SMA on RG-8X.

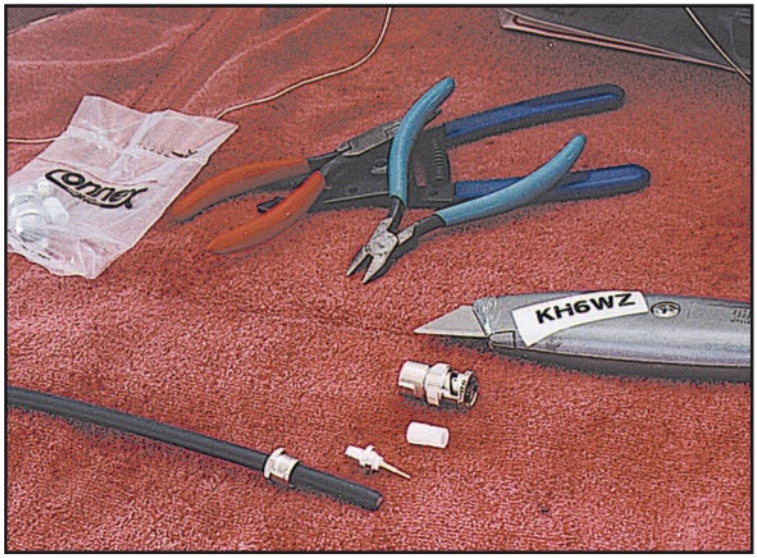


Photo 12. The BNC connector is better than a PL-259 to use at VHF and is actually easier to assemble.

some scraps from a fellow ham. The wire size and the insulation color do not matter, and you may want to get both solid and stranded wire for your practice sessions. You may be able to get various terminals, connectors and components from a junked computer or other gadget. Try splicing wires together and wiring connectors and terminals, see **Photo 1**. (*Ed. Note: Solder makes good electrical joints, but you cannot depend on it for the physical strength of a connection. Make sure you start out with a good mechanical connection before heating the joint and applying the solder.*)

Make Your Own Cables

As hams, we tend to have "wires all over the place." I hear this same phrase from the spouses of fellow hams all over the world, so I think this fascination with wires is a universal trait for us. Making your own cables may even be required, if what your need is not available off-the-shelf. Rather than asking a friend to build a cable for you, or paying someone else to do it, you can do-it-yourself, and gain some independence.

Once you get the hang of soldering, building custom cables becomes an easy task. Here are some of the tips and tricks I use. I learned some of these techniques by reading instruction sheets and books, but the best tips came from watching others, actually doing it, and learning from my mistakes.

Photo 2 shows the most common RF connectors you will see in a ham shack. As I did some research on this month's topic, the Google search engine reported 682 references to "soldering PL-259." I sort of knew that soldering the PL-259 was "controversial," and there are many different ways to properly assemble this ubiquitous connector, but I had no idea how hot this topic is.

I ran into an interesting entry on the ARRL site (*unfortunately no longer available - ed.*), in which VHF contester (and former *CQ* magazine VHF Editor) Steve Katz, WB2WIK/6, advises that you should *not* solder the coax braid to the connector shell.

Steve's advice must be sound, since he treated his connectors to a high potential (hi-pot) test. Hi-pot testing uses high voltages (500 volts and above) to check for dielectric performance. Hi-pot testing can find defects that a conventional continuity test will not find, such as high-resistance shorts.

Tools of the Trade

You'll need some good tools for good soldering. If you don't have these basic tools, this is a great excuse to go to your nearby tool store. A good soldering iron or soldering station is a must. I use the Weller WTCPS soldering station, with an 800-degree chisel tip installed. A sharp utility knife will be needed for cutting insulation. And the most important tool for this job: A good tubing cutter with a sharp blade. I use the Ridgid Number 15 (<http://www.ridgid.com>). I am assembling a length of RG-213 to a PL-259 in the sequence of photos beginning with **Photo 3**. You may want to consult the instruction sheet for your particular connector for exact dimensions and similar details. These techniques can simplify PL-259 assembly, and can be applied to soldering the "new type" Type N connector.

PL-259 Connector Assembly, Tricks and Hints

1. Remove a section of the outer jacket using a sharp utility knife. Do not nick the braid. Here's a neat trick I learned from John Johnson, WB6LMN. Bend and pinch the cable so that the jacket is under tension. Take a sharp knife, and gently

press the blade into the insulation. Continue to gently press the blade into the jacket, going around the circumference of the cable. Do not "saw" or "slice" the jacket.

2. Tin the shield. Use 63/37 solder for its lower melting temperature. I learned this trick from contest partner Mike Reagan, NI7T. The tinned section of the shield should end up being under the ring of holes in the connector body. Notice where the outer jacket ends. You want some of the outer jacket to be screwed into the connector body. Oh yes, remember to insert the outer shell onto the cable before the body. Do it now, because if the housing isn't installed, the only remedy is to chop off the connector and start all over. And don't laugh — I've done this too many times for it to be funny.

3. Use a tubing cutter to remove some of the shield and center insulator. Do not cut into the center conductor. If you do, you will have to start all over. If you do not have a tubing cutter, you can use the utility knife, by pressing the blade into the tinned shield, and rolling the cable back and forth. Keep your fingers out of the way, and again, make sure you do not cut into the center conductor. Now, remove the piece of center insulator and shield at the same time by twisting and pulling. This also twists the center conductor, preparing the cable for the next step.

4. Last chance to make sure the outer shell is slipped onto the cable first, and in the right direction (threads facing the end of the cable). Then, insert the cable into the connector body. Screw the connector body onto the cable as far as it will go, and solder the shield to the body. When done properly, molten solder will get sucked into the shield. If the solder "balls up," you do not have enough heat to make a good connection. Get a higher-temperature (higher-wattage) iron. Solder the braid to the connector through all four holes. Solder

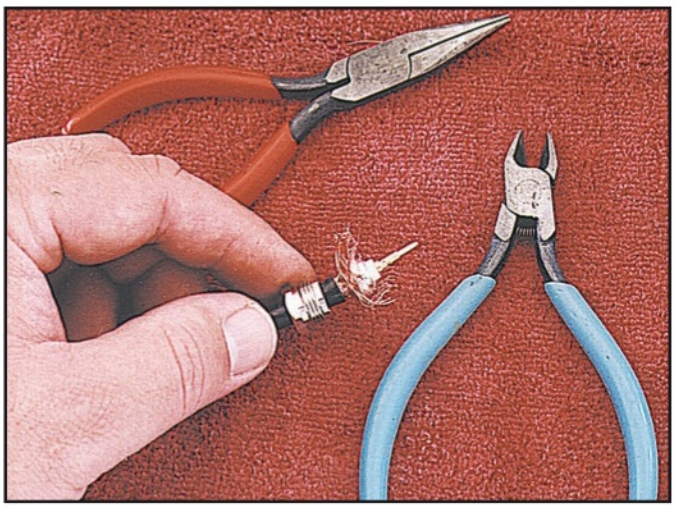


Photo 13. The BNC connector is smaller than the PL-259, so care must be taken to avoid internal shorts.

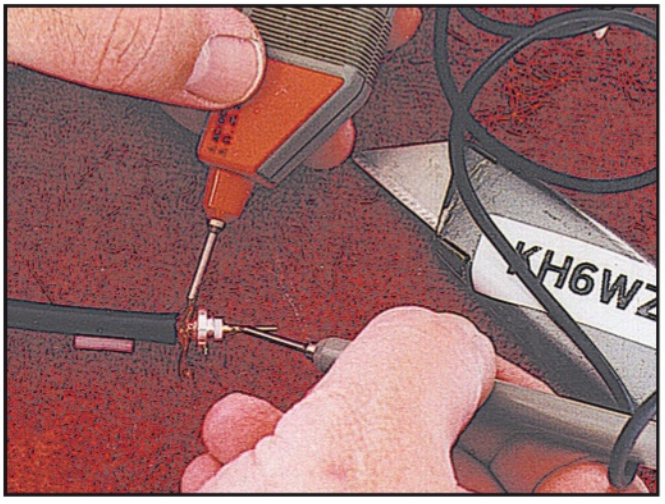


Photo 14. Check for short circuits between the center pin and shield as you assemble any connector.

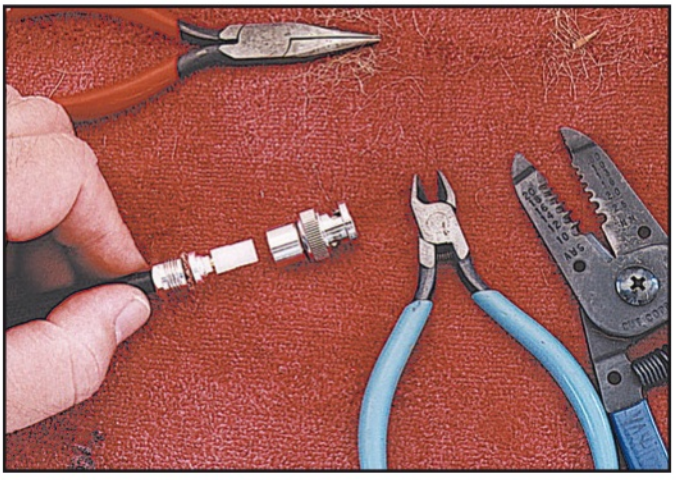


Photo 15. After soldering and checking for shorts, slide the shell onto the assembly. Hold the cable and connector body still with a wrench while you turn the locknut. Try not to twist the connector body, since that may twist the wires inside the connector.

the center conductor to the center pin, and trim the end. File the end smooth if necessary.

I have always been curious about what my PL-259 connectors looked like on the inside, after all that work. So, I took my Dremel® Moto-Tool, and sliced this connector in half length-wise (**Photo 10**). The center conductor has been fused (soldered) into the brass center pin. The center insulator remained in a constant diameter throughout the connector body, and the shield has been fused (soldered) into the connector body, creating an alloy of the copper from the shield, the silver-plated brass from the connector body and the tin-lead solder. This is exactly what should happen inside.

As a final touch, I add a callsign label to the cable, and use heat shrink tubing for added strain relief. You can even add other cable data such as length, frequency band or what antenna is at the other end, like "2M Beam" (**see Photo 11**).

Other RF Connectors

The BNC connector (**Photo 12**) is possibly a better connector to use at VHF, and is actually simpler to assemble. Well, usually. As I assembled the connector for this article, I somehow managed to short the cable (**Photo 13**). As it turns out, the center conductor was not tinned along its entire length, and bent outwards enough to short against the outer (ground) shell. Tinning the center conductor properly and trimming the length just right fixed the problem. I suggest that you check for shorts and open connections with an ohmmeter several times during assembly (**see Photo 14**). Final assembly of the connector is shown in **Photo 15**.

The SMA connector seems to scare a lot of people. In fact, when I went to my local ham radio store and asked for "a few SMA connectors so I can make my own cables," the otherwise friendly salesperson looked at me like I was crazy. So, I ordered some SMAs by mail from Universal Radio in Ohio (<http://www.universalradio.com/catalog/parts/bncconn.html>). The SMA is an interesting plug, since it accommodates RG-8X coax, and is assembled exactly like a BNC connector.

A Lifetime Skill

Soldering is a skill that you can easily learn with a bit of practice. Adding the skill of soldering to your amateu radio repertoire will increase your ability to maintain and maybe even build your own station equipment. The PL-259 connector is the most-used antenna connector in amateur radio use, so it is very important to know how to do it right.

Speaking of building stuff, have you built any useful radio or accessory projects recently? Send me a photo of your project with a short description of what it is and what it does, and I'll mention the best ones in this column.

73, Wayne, KH6WZ

Build It or Buy It?

Even though the goal of this month's column is to help you learn to build your own cables, there are times when buying certain cables makes more sense. An example is the wonderful handful of shielded audio cables I found at a local electronics surplus shop. This was a great deal — pairs of brand-new, 3-foot, shielded audio cables, with gold-plated RCA connectors on each end for 65 cents each. That is cheaper than the price of a single plug! So in this case, it makes more sense to buy it, rather than make it. Of course, deals like these aren't universally available, so you will still need to make something — or even modify a cable — for a particular need.

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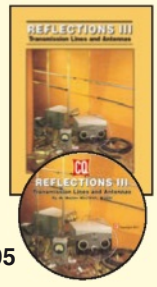
by Walt Maxwell, W2DU



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By Juergen A. Weigl, OE5CWL

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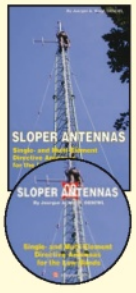

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A Half Century of "Making" With Ham Radio

BY RICH MOSESON*, W2VU

Last spring, a STEM[1]-focused middle school in my area sponsored an "Innovation Fair" and invited my maker group, "HackNCraft NJ," to exhibit. Group members, in turn, were invited to display their projects and talk about them with students, parents, teachers, and other exhibitors.

Never one to pass up an opportunity to introduce ham radio to kids, I loaded up a backpack with a variety of projects and headed off. My plan, if we were near an outside door, was to try to get an antenna of some sort up in the air and let people listen to signals on a radio I'd built myself. Actual contacts would be a bonus. As it turned out, we were in an interior gym (Photo A) that opened only to hallways and another gym. All I could hear was the buzz of the fluorescent lights (whose influence you can also see in the yellowish cast on all the photos taken in the room). Time for Plan B ... as soon as I could figure out what Plan B should be.

I looked around at the stuff I'd brought (Photo B) ... a one-tube transmitter based on 1960s technology (Photo C), a 1970s-vintage Heathkit keyer and code oscillator, a "mystery board" from the '80s that I've concluded was a packet board for my Timex-Sinclair ZX-81 computer (Photo D), a 1990s-era handheld, a couple of tuna tins, and my newly-built RockMite][transceiver (Photo E). I realized that my projects covered a span of six decades and, knowing that many kids in particular think the "maker" phenomenon is something brand new, came up with a theme for my part of the display: "A Half-Century of Making With Ham Radio." One of the other group members working the display amplified the theme by explaining to visitors that "hams are the original makers."

The day was quite successful, with interest split about evenly between older and newer equipment and the fact that, regardless of vintage, you could actually talk to people with this stuff! What seemed to impress visitors as much as anything were the full-size discrete components and point-to-point wiring on the mystery board.

Photo A. Under the yellowish cast of fluorescent lights (it didn't look as bad in person), CQ Editor Rich Moseson,W2VU, helps staff the HackNCraft NJ exhibit last spring at an Innovation Fair at Mount Hebron School, a STEM-focused magnet school in Montclair, New Jersey.

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

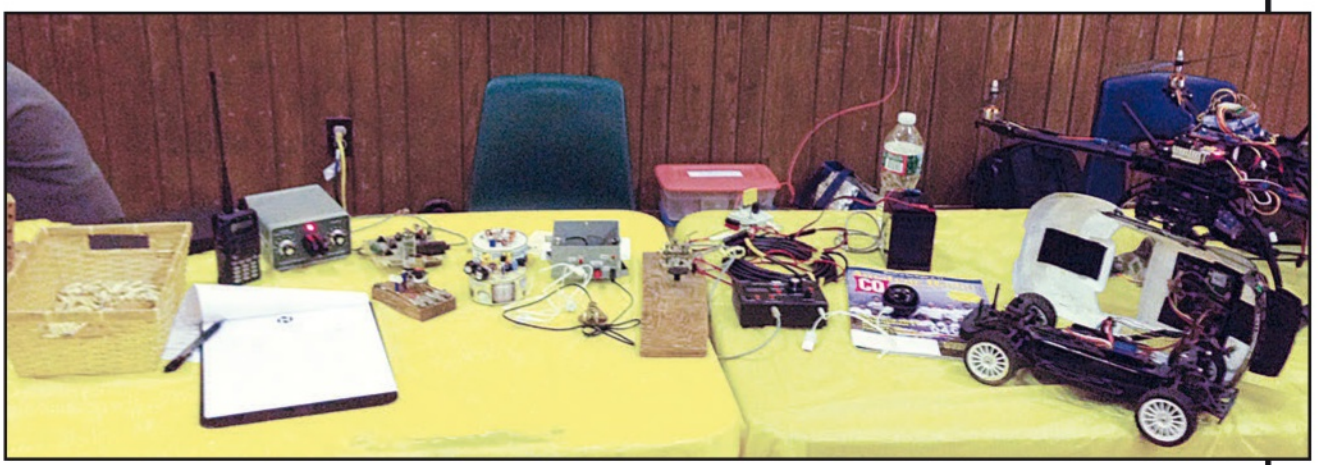

Photo B. Rich's portion of the display was "A Half Century of 'Making' With Ham Radio," demonstrating homebuilt ham technology from the 1960s to the present day.

Photo C. Anchoring the "old-tech" end of the spectrum at the fair was this flea-power transmitter based on 1960s "space tube" technology.

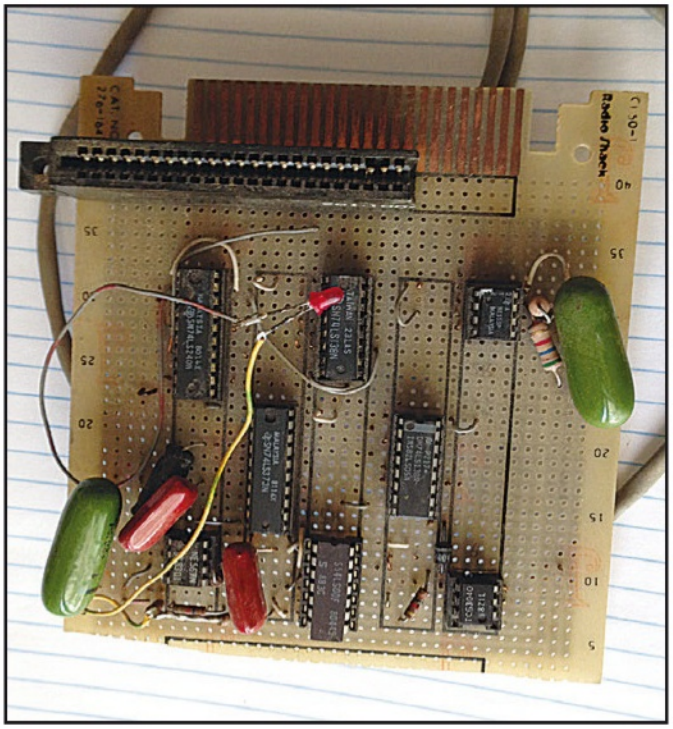

Photo D. This "mystery board" from W2VU's basement workshop was most likely a packet radio interface for his ZX-81 computer in the early 1980s.

On display next to my ham gear was a 3D-printed robot (Photos F & G) built and controlled by HackNCraft NJ member Chuck Fletcher (whom you can barely see behind the robot in Photo F). Chuck found my radio projects and stories interesting enough that he is now KD2GXP, having advanced from no license to Extra in just a few months. Welcome aboard, Chuck!

Community Connections

One of the best parts of being involved with this particular maker group (I would hope others are similar but don't know for sure) is its broad community connections. One member is teaching a technology course at the local adult school, and that got him connected with both the public library (which has a 3-D scanner and printer and needed people who knew how to use them to help out) and the public schools. This was how we got invited to the Innovation Fair, and the school is interested in expanding the relationship in the future. In fact, the school's technology coordinator attended the most recent HackNCraft NJ meeting, where we all were comparing notes about the New York Maker Faire the previous weekend (since just about everyone there had attended. See our report on the Faire on page 35 of this issue.). Keeping active in the group and keeping ham radio as part of what it does can only be a good thing as our community ties grow and deepen.

Help Wanted

If you're a regular reader of this column, you've probably noticed that we've had guest columnists through all of 2014. As you might have deduced, we are in the market for a new Makers columnist. Obviously, our focus is on the points of overlap between ham radio and the maker community, looking at what different groups are doing and offering suggestions for what others might do. You would need to have a toe in each "camp," be a decent writer, and be willing to reach out to other hams/makers for input. The column is published

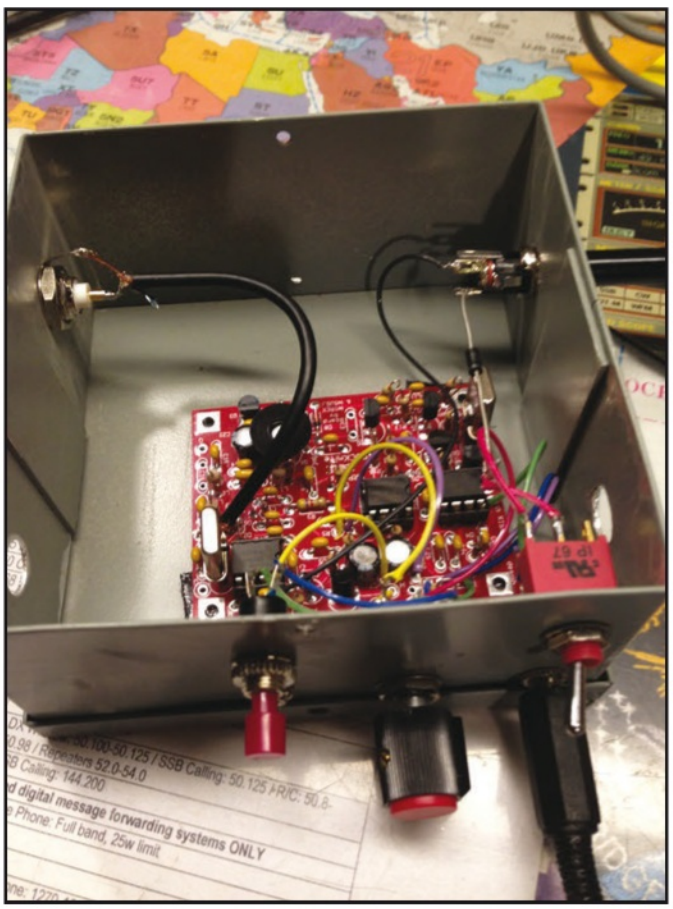

Photo E. The newest technology in Rich's display was his RockMite][transceiver from QRPMe.

Photo F. Front view of a 3D-printed robot also on display by HackNCraft NJ. Nearly visible behind the robot is designer Chuck Fletcher, who is now KD2GXP.

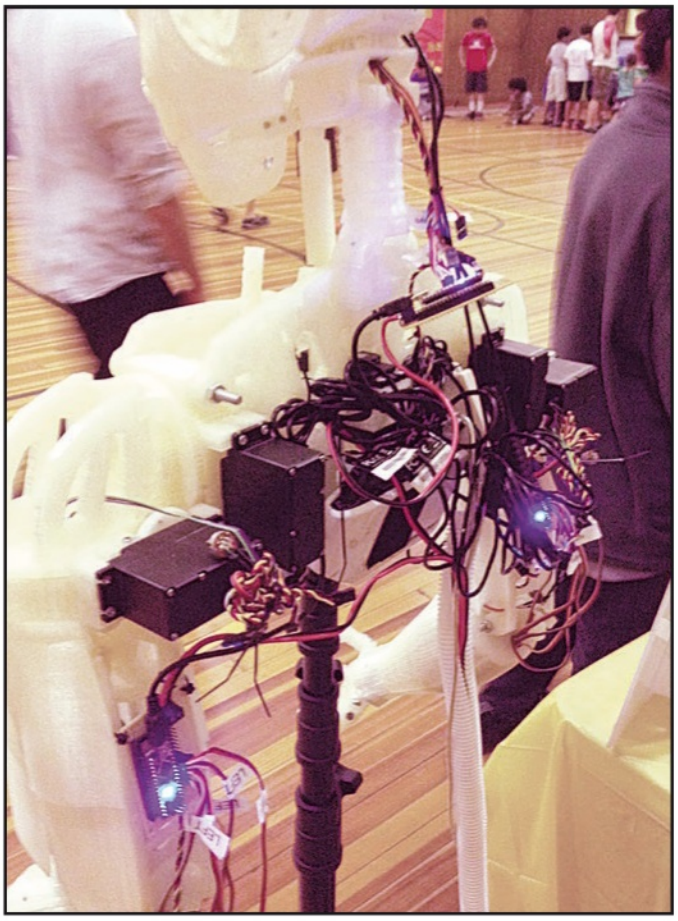

Photo G. Rear view of Chuck's 3D-printed robot, with associated electronics and control modules.

quarterly. The pay won't buy you a 3-D printer (or even 2-D right now!), but you would get to have your name and pearls of wisdom published four times a year in the world's leading independent ham radio magazine. Think about it. If you're interested, please drop me an e-mail at <w2vu@cq-amateur-radio.com>, tell me about your interests and background, previous publication experience, and either a sample of a previously-published article or a sample column for *CQ*.

73, W2VU

Notes:

1- STEM: Science, Technology, Engineering, and Math

Ham Radio and the Arts

The maker community, as evidenced by displays at Maker Faires, is about evenly split between electronics enthusiasts and crafters. And while ham radio has often been perceived as an excellent adjunct to school STEM (Science, Technology, Engineering, and Math) programs, a growing number of schools is expanding that focus to STEAM — Science, Technology, Engineering, ART and Math. There is no reason that ham radio can't fit into the art element as well. Several well-known musicians and singers are hams, including Joe Walsh, WB6ACU; Ronnie Milsap, WB4KCG, and Larnelle Harris, WD4LZC. I remember integrating amateur radio into my art class in high school, designing and printing QSL cards for our radio club as a class assignment (Photo H). And actor Tim Allen ("Last Man Standing") just got his ham license. He's now KK6OTD.

We'd like to hear from artists in the ham world — including actors, musicians, etc.— and get a sense of how your hobby relates to your work. Are there crossovers that have helped you in your career? Or does hamming provide a needed break from your work concerns? We'll collect representative comments and interesting stories into a future article. Please tell us your story at <w2vu@cq-amateur-radio.com>.– *W2VU*

Photo H. W2VU combined amateur radio with an art class by designing and printing QSL cards for his high school ham club back in the Stone Age.

BY JEFF REINHARDT,* AA6JR

'Tis the Season ...

As we close out another year, we are reminded it's time to share good thoughts of peace, goodwill, and charity toward others, reflect on the year gone by, and look ahead to the new year with all the possibilities it may bring.

Rightfully, we're also drawn to give thanks for the many blessings in our lives, beginning with family, friends, and the many material things that bring us comfort and pleasure.

Nearly every ham operator I know volunteers in some capacity or another. Using our individual and collective skills, we are ready to provide "whatever it takes" to meet an emergency, coach a newcomer, conduct an exam session, and so on. Another item I have noticed is that we're largely a humble bunch, doing what we do with little expectation of notice from the outside world.

So yes, take some time this holiday season to be thankful. It is right that you do so.

But for the next few minutes, sit back and soak in any of the following thoughts that pertain to you.

Thank you for all you do for others.
Thank you for teaching the wonder of the radio arts to a newcomer.
Thank you for helping another ham solve a problem.
Thank you for purchasing equipment that may help another in a time of need.
Thank you for volunteering to be an emergency services communicator.
Thank you for participating in Field Day and other drills that sharpen your skills.
Thank you for helping a friend get a new antenna in place.
Thank you for attending and supporting your local radio club.
Thank you for monitoring, just in case you hear someone who might need help.
Thank you for reaching out to other agencies like the Red Cross, Weather Service, Salvation Army, and others.
Thank you for working with schools.
Thank you for taking part in on-air activities like contests that add to the enjoyment of others.
Thank you for the smile and wave when you pass another ham on the road.
Thank you for becoming a VE, making it possible for others to get licensed or move up.
Thank you for being a courteous and considerate operator.
Thank you for demonstrating newer modes and techniques at a club meeting.
Thank you for bringing a shared dish to the Field Day feast. *(Thanks to your spouse, too!)*
Thank you for being a *CQ* reader. We really appreciate it!
Thank you for any role you take in promoting our hobby to others.
Thank you for being a weather spotter.
Thank you for supporting special interests like AMSAT and TAPR.
Thank you for attending the Dayton Hamvention®
Thank you for repairing a piece of gear someone else could not.
Thank you for being a good ambassador when you work DX.
Thank you for using safe practices when climbing towers or rooftops.
Thank you for bringing a family member into the fold.
Thank you for the camaraderie on the air.
Thank you for the traffic you've handled for others.
Thank you for being patient with a newbie.
Thank you for helping another achieve an operating award.
Thank you for stepping up as a net control operator.
Thank you for coming early and staying late.
Thank you for bringing coffee and cookies to the club meeting.
Thank you for donating your old rig to someone who will use it.
Thank you for meeting another ham for coffee somewhere.
Thank you for moving up or down a tad to minimize QRM.
Thank you for giving a few dollars to a technical scholarship fund.
Thank you for helping another ham install a mobile rig.
Thank you for speaking about the services we provide to a local Rotary or Kiwanis Club.
Thank you for putting a special event station on the air.

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Thank you for the hours of training you put into drills or certifications.
Thank you for working with a scout troop.
Thank you for learning a new operating mode.
Thank you for teaching someone a new operating mode.
Thank you for giving those old code tapes to someone whom wants to learn.
Thank you for leaving your old editions of *CQ* at the doctor's office, library, or coffee shop.
Thank you for working one of the less popular bands.
Thank you for responding to a need during adverse conditions like bad weather.
Thank you for assembling and maintaining a "go" kit.
Thank you for keeping your logs and QSLs (paper or electronic) current.
Thank you for smiling when someone refers to you as a geek.
Thank you for operating and maintaining a shared asset like a repeater or digipeater.
Thank you for getting us in the news each Field Day.
Thank you for volunteering as a local frequency coordinator.
Thank you for attending a regional convention.
Thank you for spending a few extras dollars to get a ham plate for your car.
Thank you for calling CQ on a band that may seem dead — but isn't.
Thank you for listening on a band that seems dead — but isn't.
Thank you for sharing that DX "spot."
Thank you for telling me there's a problem with my signal, so I can fix it.
Thank you for requesting a QSL and the SASE.
Thank you for promoting ham radio on your social media website.
Thank you for knowing when to turn it off and walk away.
Thank you for the satellite contact.
Thank you for saying more beyond your name, location, and a weather report.
Thank you for bringing your treasures to a swap meet.
Thank you for teaching a Technician licensing class.
Thank you for "paying it forward" (anonymous good deeds).
Thank you for helping a newbie program a new handheld.
Thank you for sharing some of this list with others.
Thank you for reading my column.
Thank you for going on the air and putting some *Magic In The Sky*.

vhf plus

BY TONY EMANUELE,* WA8RJF

Update on 10-GHz EME QSOs at Central States VHF Conference

For many of us, summer will be a distant memory by the time this column hits your mailbox. Looking back, one of my summer amateur radio highlights was the Central States VHF Conference held this past July in Austin, Texas. I highly recommend any of the VHF/UHF/microwave conferences that are held throughout the year as these get-togethers offer just the right blend of technical information, socialization, and traditional vacation activities.

In Austin, Steve Hicks, N5AC; Dick Hanson, K5AND, and their team hosted an outstanding event with over 125 registered attendees. Jimmy Treybig, W6JKV, was the featured speaker at the Saturday evening banquet and shared some of his many experiences from his 56 VHF DXpeditions to 42 countries, including his memorable run-in with a scorpion.

As expected, the technical program was outstanding. Notable presentations were given by Gerald Youngblood, K5SDR, who suggested a new metric for evaluating receiver performance; Jim Klitzing, W6PQL, discussed recent developments in VHF and UHF solid-state power amplifiers; Jim Kennedy, K6MIO/KH6, shared his Solar Cycle 24 insights, and Al Ward, W5LUA, demonstrated 10-GHz EME (Earth-Moon-Earth) in the hotel parking lot (see photos).

c/o CQ magazine
e-mail: <wa8rjf@cq-amateur-radio.com>

VHF Plus Calendar

Leonids Meteor Shower peak November 16th
Geminids Meteor Shower peak December 13th
ARRL EME Contest 50 MHz to 1296 MHz (first weekend) November 8th & 9th
ARRL EME Contest 50 MHz to 1296 MHz (second weekend) December 6th & 7th

Al was kind enough to provide additional details on his recent 10-GHz EME efforts. He had significant success working Rex Moncur, VK7MO, on 10-GHz EME. Rex has activated multiple grids from "Down Under" with his portable station consisting of a 0.9-meter (36-inch) dish and 50 watts. Their success prompted Al to assemble a small portable station with the intent of working OK1KIR during the Central States VHF Society Conference.

There has been a multitude of articles in various publications the past several years describing the efforts of numerous minimally-equipped stations using Joe Taylor, K1JT's, WSJT program to complete digital QSOs on the amateur bands from 50 MHz to and including 1296 MHz via EME. Notable as these QSOs may be, making the grade at 10 GHz with a small station is at least an order of magnitude more difficult.

The distance from the moon to the earth varies and at perigee is approximately 363,104 kilometers (225,622 miles) and at apogee it is approximately 406,696 kilometers (252,088 miles). The two-way

Photo A. Al Ward, W5LUA (checked shirt, center), explains his 10-GHz moonbounce (EME) station set up in the parking lot at the 2014 Central States VHF Society conference in Austin, Texas. (WA8RJF photos unless otherwise noted)

path loss varies with distance and frequency. At 144 MHz it is nominally 252 dB and at 10 GHz it is 290 dB. To state it in another way, that means that if 50 watts of 10 GHz RF is transmitted at the moon, the receiving station would expect to receive 0.00000000000000000000000000001 times as much power.

In addition to being able to detect such a weak signal, EME presents other challenges as well. A 0.9-meter (36-inch) dish has a 3 dB beamwidth of approximately 2.4 degrees and of course the target, the moon, is moving. Today the hardware and software necessary to track the moon with the required accuracy is relatively routine. But two other significant challenges remain at 10 GHz: Doppler correction and generating sufficient power.

Anyone who as observed a train passing by at high speed while sounding its horn has experienced the Doppler Effect. As the train approaches, the horn frequency changes from higher to lower as the train passes the observer. Doppler also applies to RF signals and to light. Astronomers measure the *red shift* of a distant object in space, i.e. an increase in wavelength as the observed celestial object moves toward the observer. For light, the convention is to discuss wavelength, which is the speed of light/frequency, therefore an increase in wavelength is a decrease in frequency[1]. In terms of wavelength, visible red light is approximately 650 nanometers.

If an EME station were to transmit on 10,368.100 MHz on a rising moon, the echoes due to self-Doppler will be at a frequency greater than the transmit frequency. At zenith the echoes would be received at 10,368.100 and on the setting moon the echoes due to self-Doppler would be received lower in frequency. The change in frequency at 10 GHz due to self-Doppler can be as much as 30 kHz.

Under the control of an external software program today's radios can change frequency as a function of the Doppler, greatly simplifying the duties of the operator and facilitating the use of digital modes with their narrow bandwidth requirements. Otherwise the operator would need to constantly manually adjust the receiving frequency in order to keep the signal in the passband.

The WSJT software has a several different sub-modes with different spacing between the tone frequencies. Each sub-mode has its advantages given the frequency of operation and external factors that may influence the transmitted signal as it makes its way to the moon and back. Generally JT65a is used on 50 MHz, JT65b on 144 and 432 MHz, and JT65c on 1296 MHz. The tone spacing is progressively increased from JT65a, b, and c. The sub-modes with a wider tone spacing are more tolerant of frequency drifts and spreading due to Doppler at the expense of slightly less sensitivity[2].

At 10 GHz, *libration* becomes a major factor spreading the signal as it is reflected off of the moon.

EME stations testing JT4-F at 10 GHz have concluded that it is the most suitable digital mode for EME on that band because of its much wider tone spacing relative to JT65, a distinct advantage when decoding a signal that has undergone severe spreading. And like the JT65 modes, the maximum results are achieved with very stable and accuracy frequency control. To that end, locking IF radios and transverters to a reference, typically 10 MHz, is essential.

Readily available and affordable, LDMOS RF devices capable of generating up to 1 kilowatt on 144 MHz and up to 700 watts on 432 MHz have started the shift from vacuum tube power amplifiers with the requirement of volt-

Photo B. A look at W5LUA's equipment for his portable EME contact. (Photo courtesy of W4ZST)

ages in excess of 2 kilovolts at 1 amp to solid-state power amplifiers (SSPAs) with operating voltages of 50 volts @ 50 amps or more. Be advised that both power supplies can be lethal. Take all standard and necessary safety precautions whenever working around any power supply, regardless of its voltage and current ratings.

Generating EME level of power at 10 GHz is still a challenge. SSPAs with outputs in the range of 50 watts at 10 GHz are available but are rather expensive. Clearly the shift has begun to solid state but the old standby for many is the surplus *traveling wave tube amplifier,* commonly referred to as *twt* (the traveling wave tube itself) or *twta* (entire assembly of

Photo C: Al's equipment was connected to a 35-inch dish and mount built by Robert Gormley, WA5YWC. Here, 'YWC checks the measurements of the shepherd's hook pipe supporting the VE4MA feed. ⟶

vacuum tube, power supply, and control circuitry.) Gains in excess of 50 dB and power in excess of 50 watts are common with a twta at 10 GHz. However, the power supply is usually rather large and the power supply voltages can easily exceed several kilovolts so one must take the proper safety precautions. Additionally, dangerous levels of radio frequency radiation exist inside and at short distances away from power amplifiers and antennas; therefore one must exercise all standard safety precautions.

What follows is Al's description of the equipment used during the conference QSO with OK1KIR:

I used my terrestrial setup which consisted of a DEMI transverter, homebrew 2-stage ATF-36077 LNA with about a 1 dB noise figure and a 25 watt twt. I also incorporated an N5AC A-32 PLL board so that the transverter could be locked to a 10-MHz TCXO. I then take the 2-meter IF and convert it to 10 meters with a W1GHZ mini-verter with the 116-MHz LO obtained with an N5AC VHF Apollo board, which is also locked to the 10-MHz TCXO. The 10-meter is then connected to a Flex-1500 as an IF. This setup was mated to a 35-inch prime focus dish and mount built by WA5YWC. Bob used 1/2-inch copper pipe in a shepherd's hook configuration and a VE4MA feed with scalar ring. A WR-75 waveguide switch is used to provide a low-loss TR switch. The output of the waveguide relay is connected to the dish via a 1-meter length of flexible WR-90 waveguide with a measured loss of 0.25 dB. Overall receive system noise figure is less than 1.5 dB at the feed. Transmit power at the feed measured 21 watts.

OK1KIR performed the mutual Doppler correction on both his receive and transmit signal so that all we had to do was be as close as possible to the schedule frequency of 10368.150 MHz. Using a TCXO provided a very good 10-MHz reference in the field such that we were within 50 Hz of being "dead on frequency" at 10 GHz. During our test, moon degradation was nearly 2 dB as it was close to apogee but WA5YWC was able to QSO OK1KIR with -16/-18 dB reports using JT-4F. Our sun noise measured 5 dB. We were also able to measure 0.2 to 0.25 dB of moon noise, which helped us in tracking the moon. The interest in the small-dish EME station was very high at the conference and we were very pleased with the demo.

– 73, Al, W5LUA

Until next month: 73 & CU on the bands. Tony, WA8RJF

Photo D. W5LUA takes a seat at his station as he gets set for a scheduled contact with OK1KIR in the Czech Republic.

Photo E. Screen shot of OK1KIR's signal off the moon, via the JT-4 digital mode (see text for details).

Notes:

1) Wavelength measured in meters. Frequency measured in Hertz. The speed of light is 299,792,458 meters/second.

2) WSJT User Guide Version 10.0 <http://physics.princeton.edu/pulsar/K1JT/doc/wsjt/>

awards

BY TED MELINOSKY,* K1BV

Spotlight on Canadian Awards

This month, we present the awards offered by the Radio Amateurs of Canada (RAC), the national organization for amateur radio in Canada. When the HF bands suffer from overactive or under-active sunspots, it should still be relatively easy to make contacts with Canadian amateurs. The RAC awards are colorful and have enough challenge to be "fun" without being impossibly hard.

Radio Amateurs of Canada Series

General Requirements: GCR accepted. Sponsor may request random cards for a check. SWL OK. The RAC website <https://www.rac.ca/en/rac/services/awards/> provides applications in PDF format, which should be used when you apply. They are also available by mail.

The fee for each paper award is $5 CDN for Canadians and $5 USD for all others. Plaque fee for the 5-Band Canadaward $50 USD (with backboard) for stations outside Canada and $50 CDN (with backboard) for Canadian amateurs. Without a backboard, the fees are $20 USD and $20 CDN respectively *(**NOTE:** These prices are subject to change. Always check the RAC Website to ensure pricing)*. You can send your application via postal service to: John Scott, VE1JS, 324 Church Hill Road, Sandy Cove, NS B0V 1E0, Canada.

Provinces of Canada

VO1-VO2 Newfoundland and Labrador
VE1 - Nova Scotia
VE1/VE9 - New Brunswick
VY2/VE1 - Prince Edward Island
VE2/VA2 - Quebec
VE3/VA3 - Ontario
VE4 - Manitoba
VE5 - Saskatchewan
VE6 - Alberta
VE7/VA7 - British Columbia

Territories of Canada

VE8 - Northwest Territories
VY0 - Nunavut Territory
VY1 - Yukon Territory

Canadaward

The Canadaward can be earned by confirming a contact in each of the 13 Canadian provinces and territories on or after July 1, 1977. All QSOs must be on one band only. Separate awards are available for each band or mode.

5-Band Canadaward

This award is available to any amateur who confirms two-way QSOs with Canadian amateur stations located in each of the country's provinces and territories on five separate bands. A total of 65 cards and 13 cards per band. *(**NOTE**: VO2-Labrador is a part of the province of Newfoundland and counts for Newfoundland).*

Some Canadian stations may be using different prefixes. Applicants should note that the award is based on the province or territory of residence on the QSL card, not the prefix. See general information above for details on plaque fees.

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USA-CA Special Honor Roll

Darl Deeds, NA8W
USA-CA All Counties #1246
August 2, 2014

USA-CA Honor Roll

500
W2/JR1AQN 3655
NA8W 3656
K2DSW 3657

1000
NA8W 1859

1500
NA8W 1560

2000
NA8W 1446

2500
NA8W 1361

3000
NA8W 1271

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.

Canadian Provincial Capitals Award

Work and confirm each of the 10 provincial capital cities in Canada on or after March, 31 1949.

The provincial capitals are: Edmonton (Alberta), Victoria (British Columbia), Fredericton (New Brunswick), St. John's (Newfoundland), Halifax (Nova Scotia), Winnipeg (Manitoba), Toronto (Ontario), Quebec City (Quebec), Charlottetown (PEI), and Regina (Saskatchewan).

The RAC Provincial Capital Award is granted to amateurs who make contacts in the capital cities of each of the provinces of Canada. (All photos courtesy of RAC)

The Canadaward is given to an amateur who makes contact with all of the Canadian provinces.

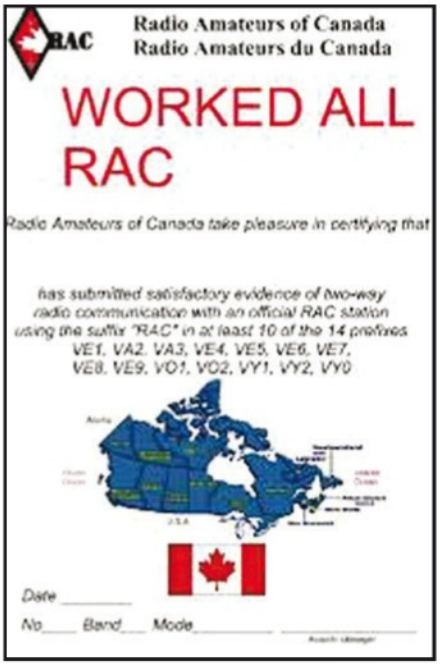
Thunder Bay, Greater Toronto, Greater Montreal, and Greater Quebec City. The remaining six may be from any municipality located along the route.

Trans-Canada Award

Work five stations in each of the 10 Canadian Provinces. Five (5) contacts with each of the 10 VE call areas (VE8, VY1 and VYØ count as one area) plus five (5) contacts with VO1/VO2, any combination. Of the five VE8/VY1 contacts required, one (1) must be in the Yukon Territory (VY1) and one (1) must be located on the off-shore islands of the Northwest Territories (VE8). A grand total of 55 contacts are required.

Worked All RAC Award

Make two-way contact with an "official" RAC station using the suffix "RAC" in at least 10 of the 18 prefixes on or after July, 1 1998. These are official stations of the Radio Association of Canada. In provinces or territories having two RAC calls. ie: VA4 and VE4, VA1 and VE1,



Work all 10 of the official RAC radio stations and the RAC Award is yours for the taking.

If you can make contacts with ten different stations along the St. Lawrence Seaway, this handsome certificate can be yours.

For amateurs in for a long haul, you can try for the TransCanada award. You must make contact with five different stations in each of the provinces and territories.

etc. only one (1) of the two prefixes count in the total of the 10 required.

The 18 prefixes are: VA1, VA2, VA3, VA4, VA5, VA6, VE1, VE4, VE5, VE6, VE7, VE8, VE9, VO1, VO2, VYØ, VY1, and VY2.

*(**HINT:** The RAC sponsors the Canada Day contest every July 1st. Canada Day celebrates the anniversary of the Constitution Act of 1867 that united the three colonies into the single country of Canada. You can work most of the RAC suffixed stations in this one contest!)*

How to Apply and Get Your Worked All RAC Certificate

Cards for the RAC official stations (all prefixes) should be sent to the call book address: Radio Amateurs of Canada, 217-720 Belfast Road, Ottawa, ON K1G 0Z5. They should NOT be sent directly to the operator.

1. Basic Award: 10 contacts, as stated above, on any band, any mode. 10 cards are required.

2. An endorsement is available to amateurs who supply proof of two-way contact with "ALL" 14 official RAC stations as listed. *(**NOTE:** When two calls are listed for a province or territory either station will count but NOT both)*. The charge for the endorsement is $1 USD.

3. Single Band: 10 contacts, as stated above, on a single band, and the following modes: CW, SSB, RTTY, Mixed, SSTV, Satellite, Other. Ten cards are required and certificates are available for each band/mode.

4. 5-Band Plaque: A special engraved plaque is available to any amateur who confirms two-way QSO's, as stated above, on five bands or more using rule for single band and mode. A total of 50 cards will be required. Cost of plaque, without backboard $20 USD for non-Canadians, $20 CDN for Canadians. With backboard $50 USD for non-Canadians, $50 CDN for Canadians.

We are always interested in learning of new awards for this column. Just supply the name of the country and a clue as to the name of the award. An Internet URL/address would be fine.

One County Hunter's Experience — Darl Deeds, NA8W, USA-CA All-Counties #1246

My parents gave me an AM broadcast band radio when I was very young. I used to listen late at night to radio stations and found out that I could hear much farther at night than during the daytime. That sparked an interest to discover why. My search led me to amateur radio. In 1962, I spent 50 cents for a copy of the *ARRL License Manual* and another 50 cents for *How to Become a Radio Amateur*.

Unfortunately with the pressure of high school and girls, the complexity of the theory, and needing to learn Morse code, I did not follow through on studying for my license. Instead I got into CB radio for many years, partially due to driving a truck and being on the road a lot.

I never lost interest in ham radio, and in 1976 I stopped driving a truck and took over farming from my retiring father. With my new career, I found I had a little more time to study. In 1977, I received my Novice license and call WD8MRF. The following year, I upgraded to General and finally in 1983 I earned my Extra Class license and new call of NA8W.

During the following years I concentrated mostly on DX and by 2010 I made the honor roll and now have only three countries left to work to complete them all. So I started looking for something else to do in ham radio. In May 2010, I attended the county hunting forum at the Dayton Hamvention®. My wife Pam, KA8JQP, and I were planning on going west for an extended vacation since she had just retired and we had the time to see the USA.

I thought it would be a great opportunity to incorporate ham radio into our trip. I found a very friendly and welcoming crowd at the forum, especially WY7LL, Leo, who had made a video on how to begin county hunting and showed it during the forum.

I thought it would be fun to put out some counties on our trip. So, with my wife's permission, I put an HF antenna on the roof of her car and an HF radio inside the car and we left on a very exciting trip from Ohio to California and parts in between.

During the trip, I transmitted from 150 counties and made over 2,600 contacts and I was smitten with county hunting. In the last four years, I have made over 35,000 contacts with other county hunters. I met a lot of other county hunters at the 2013 national convention, plus when going through their home counties or them through mine.

As I was approaching the end, I only needed seven counties, all in Kentucky, to finish my county collection. I received a call from W8FNW, Jim, and he told me that Kerry, W4SIG, was going to go to Calloway, Kentucky to get that county for me. And then Jim was going to go to the other six counties in Kentucky that I needed to finish CQ USA-CA.

Radio conditions were not ideal on their trip so I switched to CW to make a contact in Fleming, Kentucky with W8GEJ, who was on the trip with them, I finished up on SSB with W4FNW getting me my whole ball of wax.

Some other hams who went out of their way during the last four years to give me counties or help with nets were N7JPF, W7FEN, NØKV, N5UZW, N4AAT, WØNAC, and N5MLP, WG9A, and many others that I know I'm missed.

If it weren't for the net controls and mobiles, ham radio county hunting would not be nearly as much fun or rewarding. I am already working on working all counties the second time and all the other MARAC awards. Gotta go now, a new county just came on the air on 14336, 5-5 fifty five and 73.

– Darl Deeds, NA8W

CQ Awards Add Categories for Remote Operation

The CQ awards program recognizes and encourages technological advancements such as those that have resulted in the growing availability of remote station technology to the average amateur. As restrictions on antennas and towers become more widespread, such technology may represent some amateurs' only opportunity for HF operating and for the feelings of personal accomplishment that come with successful DXing and contesting efforts.

However, in recognition of the long history of the CQ awards program and of the different achievements represented by different modes of operating, we have decided to create separate remote-operation categories for most of our awards. This will permit amateurs to qualify for our awards using this technology without changing "the rules of the game" for those pursuing them on a more traditional path. Changes to specific award rules follow (WAZ award updates are still being finalized and will follow next month):

CQ DX Award/CQ DX Field Award

New endorsements are added to the existing list, as follow:

CQ DX Award

5. Special endorsements, as follows, are available for a fee of $1.00 each:

(h) Remote operation endorsement — for 100 or more confirmed countries of which *one or more* qualifying contact was made using remote station technology (operator is not physically present at the station location). All applications including contacts made using remote station technology must include this endorsement. Qualifying contacts may be made on or after January 1, 2015.

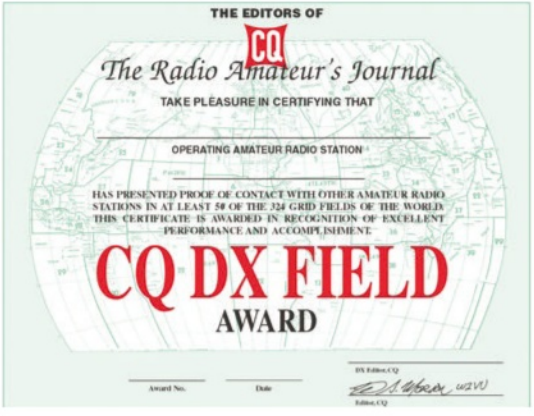
(i) All-Remote operation endorsement — for 100 or more confirmed countries of which *all* qualifying contacts were made using remote station technology (operator is not physically present at the station location). Qualifying contacts may be made on or after January 1, 2015.

CQ DX Field Award

5. Special endorsements, as follows, are available for a fee of $1.00 each:

(i) Remote operation endorsement — for 50 or more confirmed grid fields of which *one or more* qualifying contact was made using remote station technology (operator is not physically present at the station location). All applications including contacts made using remote station technology must include this endorsement. Qualifying contacts may be made on or after January 1, 2015.

(j) All-Remote operation endorsement — for 100 or more confirmed countries of which *all* qualifying contacts were made using remote station technology (operator is not physically present at the station location). Qualifying contacts may be made on or after January 1, 2015.

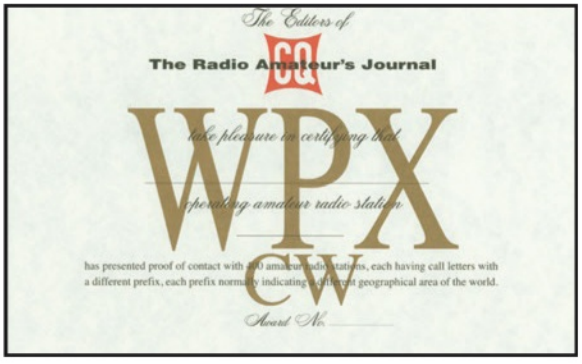


CQ iDX Award

No changes. This introductory award requires that all qualifying contacts be made using VoIP linking systems.

CQ DX Marathon

No changes. Current rules require that all contacts be made from the same location. A station using remote station technology for a Marathon entry would need to make all contacts from a single remote station. Separate submissions may be made for additional locations.



WPX Award:

Under 2. Endorsments, add a new subsection D as follows, and re-letter following subsections.

D. Remote Operation endorsement is available for contacts made on or after January 1, 2015 using remote station technology (operator is not physically present at the location of the transmitter, receiver, and antenna). Stations submitting one or more remote operation contacts must apply for the Remote Operation endorsement.

USA-CA:

Current rules permit remote operation. However, for clarity, we are adding the following (underlined) text to Rule B.4:

4. QSOs via repeaters, satellites, moon bounce, and phone patches are not valid for USA-CA. QSOs using remote station technology are permitted, provided that all contacts are made over a direct RF path between the remote station and the station contacted.

Worked All Zones / 5-Band Worked All Zones

We are still in the process of finalizing specific language for WAZ and 5BWAZ. We will publish a follow-up to this update next month.

A DXer's Centennial And a Possible New Path for IOTA

BY WAYNE MILLS,* N7NG

Walt Bernadyn's first amateur radio license was issued by the Federal Radio Commission. That was back in 1933, the year before the Communications Act of 1934 established today's Federal Communications Commission. In a piece he wrote for the North Jersey DX Association a few years ago, Walt noted that his first call was W2FPM and his first transmitter as "a single 45 tube with copper tubing from Pep Boys automotive store. The receiver was made with parts bought (on) Radio Row in New York." [Radio Row was a neighborhood of electronics and surplus stores in lower Manhattan that was torn down in the 1970s to make room for construction of the World Trade Center.]

After serving as a ship's radio operator during World War II, Walt returned to civilian life, and to ham radio, in New Jersey, where he's now been chasing DX for more than 80 years.

This past September 24, Walt celebrated his 100th birthday, with two "loving neighbors" and two "loving friends" (both hams) joining the festivities at a local pizzeria. One of those ham friends is Rich Ostrowski, N2NA, who passed along some

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e-mail: <n7ng@cq-amateur-radio.com>

Walt Bernadyn, W2FP, in his shack in Mahwah, NJ. Close friend Rich Ostrowski, N2NA, says Walt is still active chasing DX, on the air nearly every day, almost exclusively on CW. He needs only North Korea to have "worked them all." (Photos courtesy N2NA)

Walt and friends outside Kinchley's Tavern in Ramsey, New Jersey, where they celebrated his 100th birthday over pizza and beer.

Walt and friends celebrate his 100th birthday. From left to right: John Nowill, K2GJJ; Rich Ostrowski, N2NA; neighbors Joe and Lisa; and the "birthday boy," Walt Bernadyn, W2FP.

Walt's birthday pie (!) arrives, with a candle held by a piece of Italian bread.

Walt preparing to blow out the candle.

On a previous visit, Rich took Walt to P&T Surplus in Kingston, NY <http://site.ptsurplus.com/>. Rich described the visit as "a social event for Walt."

photos and tidbits about Walt's life, his own life, and how the two intersected.

A 60-Year Friendship

"Walt was my Elmer as a kid 60 years ago," Rich recalled. "Walking past Walt's house with my friend … as a new ham at the time, my friend said the guy over there could copy 40 words per minute, pointing to Walt working in his yard. From that time on, I was hooked to Walt. Today I live in Maine (but) I see Walt every time I visit New Jersey and we go out for pizza," adding that even today, Walt loves pizza and a good beer!

Rich notes that Walt "is active on CW every day and (is) as sharp as a tack," adding that he over the years, he has "worked them all" with just one exception — no surprise, P5, North Korea. Walt is also a life member of the Society of Wireless Pioneers.

For his 100th birthday, Rich says Walt "originally told me not to come to see him … the doors will be locked," adding, "but we all found a way in and I might add he loved the fuss." The accompanying photos leave no doubt about that.

Congratulations, Walt, on passing the century mark and on 81 years and counting on the ham bands!

Possible Changes Coming to IOTA Program

Speaking of anniversaries, the Radio Society of Great Britain's Islands on the

The WPX Program

CW

3539 . . . . . DL2YBG	3575 . . . . . BD4UJ
3566 . . . . . HAØGK	3576 . . . . . R6FAA
3570 . . . . . WA9PIE	3576 . . . . . JH4DYP
3571 . . . . . IW5BT	3579 . . . . . PS7DX
3573 . . . . . UN7FW	

SSB

3548.....NW3U	3566.....NF1R
3559.....WA9PIE	3567.....HK4KM
3560.....IKØUTM	3569.....DH9DX
3561.....IWØEFA	3570.....JH4DYP
3563.....UN7FW	3571.....F5OWK
3564.....W9TVX	3572.....SV1CNS
3565.....WJ6Y	

Mixed

2850.....HAØGK	2869.....SM3OMO
2857.....CX4AT	2870.....R6FAA
2858 ..... WA9PIE	2871 .....HK4KM
2859.....IKØUTM	2872 .....JE6JAS
2860 .....IWØEFA	2873 .....JH4DYP
2862.....IW2GRA	2876 .....UN7FW
2863.....IC8XIL	2878.....SV1CNS
2864.....W9TVX	2880 .....DK2LO
2866.....WJ6Y	
2867.....NF1R	

Digital

346.....CX4AT	350.....BD4UJ
347.....AE5B	352.....HB9EFK
348.....K6ESU	

CW: 350 DL2YBG, R6FAA. 400 BD4UJ, UN7FW. 450 K4JKB. 500 JH4DYP. 550 WA9PIE, PS7DX. 600 NY4G. 700 WF2S. 1100 HB9FBG. 1250 HAØGK. 1700 K6UXO. 2450 EA7AAW. 6650 WA2HZR.

SSB: 350 NF1R. 400 IKØUTM, IW5BT, WJ6Y, G3YFE, UN7FW. 450 JH4DYP, SV1CNS. 550 WA9PIE, HK4KM. 600 IWØEFA, HB9FBG. 650 K4JKB, N2GZ. 800 WF2S.

Mixed: 450 HB9EFK, R6FAA, BG4DRL, NF1R. 500 CX4AT, IC8XIL. 550 IKØUTM, 600 NY4G, IWØEFA, HK4KM, G3YFE. 650 W8RLS, BD4UJ, SV1CNS. 700 N2GZ. 750 JH4DYP. 800 IW5BT. 850 KH6SAT. 950 WA9PIE, WA3GOS. 1100 K4JKB, DK2LO. 1200 KB9OWD. 1300 HB9FBG. 1500 HAØGK. 1750 K6UXO. 1850 WF2S. 4650 WA5VGI.

Digital: 350 BD4UJ. 400 CX4AT, JE6JAS. 450 BG4DRL, AE5B. 800 WA5VGI, WA3GOS. 1300 WF2S.

160 Meters: WA9PIE, G3YFE
80 Meters:
40 Meters: WA9PIE
30 Meters:
20 Meters: WA9PIE, IW5BT, IWØEFA, N2GZ
17 Meters:
15 Meters: N2GZ, BD4UJ
12 Meters:
10 Meters: HB9FBG
6 Meters:

Africa: WA9PIE,
Asia: CX4AT, WA9PIE, R6FAA, BG4DRL, SM3OMO, BD4UJ, JE6JAS
Europe: CX4AT, WA9PIE, IKØUTM, IW5BT, IWØEFA, HB9EFK, R6FAA, BG4DRL, N2GZ, DH9DX, JE6JAS
Oceania: WA9PIE, BD4UJ, HB9FBG
North America: CX4AT, WA9PIE, NF1R
South America: WA9PIE, HB9FBG

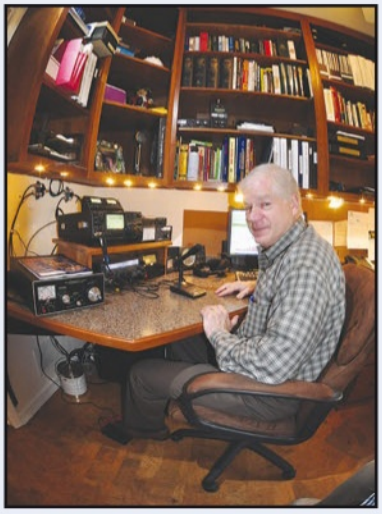
Award of Excellence:
Award of Excellence with 160 Bar: EV1R, HB9FBG, RU3FM, UN5J
160M Bar:
30M Bar: RU3FM, UN5J
17M Bar: RU3FM, UN5J
12M Bar: RU3FM, UN5J
6M Bar:
Digital Bar:

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-4ØØ3, 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, S5ØA, 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, K7LV, EA2AAZ, KØMD, RL2A, RT3M, WF2S, K4MIJ, RW5C, UT7UU, VA7CRZ, N7JXS, SV5DKL, RTØF.

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-4ØØ3, 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, S5ØA, 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, K6SIK, AB1OC, 9H1SP, EA2AAZ, KØMD, RL2A, WF2S, K4MIJ, RW5C, RTØF.

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.



On the Cover

Steve Werner first got the ham radio bug as a teenager living in the New York City suburbs in the 1950s, thanks to the father of a Boy Scout friend who was a physicist and got both boys interested in radio and electronics. A Novice license soon followed, but then so did college, girls, etc., and ham radio took a back seat until after his kids were grown and Steve and his wife bought a house on a hilltop in Downingtown, Pennsylvania.

Relicensed as KD3WK in the early '90s, Steve put up a 75-foot Rohn 55 tower that supports a Force 12 C4 Yagi for 40-10 meters, a 3-element Cushcraft beam for 6, and a Cushcraft vertical for 2 meters and 70 centimeters. His station is built around an ICOM IC-746PRO and PW-1 amplifier (the control head for the amp is on top of the 746; the amp itself is on the floor). Also visible in our photo are a remote antenna selector and a Signalink computer interface for digital modes, as well as a Yaesu FT-847 for VHF/UHF.

Steve says his main interest is working DX on 20-meter single-sideband, and while he does some CW and PSK31 operating, phone predominates because, as he puts it, "I like to talk." He has talked his way to DXCC, Worked All Continents and Worked All States awards. He is also a volunteer examiner, Boy Scout Radio Merit Badge counselor and president of the Mid-Atlantic Radio Club.

Off the air, Steve enjoys woodworking (he built all the furniture in his shack), gun collecting, and flying his own airplane. He is a retired civil engineer, having spent most of his career doing environmental projects all over the world for an energy company. *(Cover photo by Larry Mulvehill, WB2ZPI)*

Air (IOTA) program celebrated its 50th anniversary in July, and is now looking toward possible changes to "ensure (its) sustainability" over the next 50 years.

IOTA is one of ham radio's most popular award programs, and "activating" various islands around the world is the goal behind many DXpeditions and mini-DXpeditions. The RSGB says it is aware of some 2,500 active island

5 Band WAZ

As of October 1, 2014 1880 stations have attained at least the 150-zone level, and 931 stations have attained the 200-zone level.

New recipeints of 5 Band WAZ with all 200 zones confirmed:

None

The top contenders for 5 Band WAZ (zones needed on 80 or other if indicated):

K1LI	199	(24)	OK1DWC	198	(6, 31)
K3JGJ	199	(24)	W4UM	198	(18,23)
N4NX	199	(26)	US7MM	198	(2,6)
W4DC	199	(24)	K2TK	198	(23, 24)
N4WW	199	(26)	K3JGJ	198	(24,26)
W4LI	199	(26)	F5NBU	198	(19,31)
K7UR	199	(34)	W9XY	198	(22,26)
IK8BQE	199	(31)	KZ2I	198	(24,26)
JA2IVK	199	(34 on 40)	W9RN	198	(26,19 on 40)
IK1AOD	199	(1)	W5CWQ	198	(17,18)
VO1FB	199	(19)	UA4LY	198	(6 and 2 on 10)
KZ4V	199	(26)			
W6DN	199	(17)	JA7XBG	198	(2 on 80 and 10)
W3NO	199	(26)			
RU3FM	199	(1)	JA3GN	198	(2 on 80 and 40)
N3UN	199	(18)			
W1FZ	199	(26)	N4GG	198	(18,24)
SM7BI	199	(31)	K4JLD	198	(18,24)
EA7GF	199	(1)	RA6AX	199	(6 on 10)
JA5IU	199	(2)	RX4HZ	199	(13)
RU3DX	199	(6)	S58Q	199	(31)
N4XR	199	(27)	K8PT	199	(26)
HA5AGS	199	(1)	N8AA	199	(23)
JH7CFX	199	(2)	IZ1ANU	199	(1)
K2EP	198	(23,24)	IN3ZNR	199	(1)
WC5N	198	(22,26)	JK1BSM	199	(2)
ZL2AL	198	(36,37)	RW0LT	199	(2 on 40)
W6OUL	198	(37,40)	JA1CMD	199	(2)
N8LJ	198	(17,24)	I5REA	199	(31)
EA5BCX	198	(27,39)	RZ3EC	199	(1 on 40)
G3KDB	198	(1,12)	W1FJ	199	(24)
JA1DM	198	(2,40)	NS6C	198	(17,22)
9A5I	198	(1,16)	WA2BCK	198	(23,24)
G3KMQ	198	(1, 27)	KB0EO	198	(22,23)
N2QT	198	(23, 24)			

New recipients of 5 Band WAZ with all 200 Zones confirmed:

VE3EXY (200 zones)

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

UTØNN (153 zones)
JH2PWM (150 zones)

***Please note: Cost of the 5 Band WAZ Plaque is $100 shipped within the U.S.; $120 all foreign (sent airmail).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, P.O. Box 449, Wiggins, MS 39577-0449. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

The WAZ Program

10 Meters SSB

602.....K8VFV

12 Meters SSB

50.....AG9S

12 Meters CW

87 .....VE3EXY

15 Meters SSB

660 .....JN1FRL 661 .....HA5WA

17 Meters SSB

58.....W9VG

17 Meters CW

108 .....W7QDM

20 Meters SSB

1225 .....HA5WA

30 Meters CW

132 .....K8GG

160 Meters

456 ....VE3EXY (35 zones)

160 Updates

36 ...OK1DWC (37 zones)

All Band WAZ

Mixed

9153.....JH3PAS 9156.....KL1WE/W6
9154 .....K8FB 9157 .....KI4WCQ
9155 .....OE4VIE 9158 .....KD2T

SSB

5309.....JR3IUC 5310 .....JA1DCK

CW

770.....JR3IUC 772 .....SV9COL
771 .....W6SIY

RTTY

252.....DL4FAP

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>.

chasers as well as another 15,000 casual participants. The program's popularity has also led the way for a variety of other "OTA" programs, including summits, lighthouses, national parks, and even castles.

In a news release in late September, RSGB President John Gould, G3WKL, said that IOTA Manager Roger Balister, G3KMA, and other active participants have been reviewing the challenges and opportunities facing the program

The CQ DX Field Award Program

SSB Awards

WA5VGI 73

Digital Awards

WA5VGI 24

CW Endorsements

W3LL.....106 VE3CR 155

SSB Endorsements

WA5VGI 179

Digital Endorsements

W3LL.....148 JN3SAC 28MHz

Mixed Endorsements

VE7IG.....244

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, 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

1155 .....KØMD

SSB

2628.....KK4UCH

Endorsements

K6UXO.....CW 271
KØMD .....CW 1.8MHz., 3.5/7MHz, 28MHz
KØMD .....SSB 1.8MHz., 3.5/7MHz, 28MHz

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Please make checks payable to the Award Manager, Keith Gilbertson. Mail all updates to Keith Gilbertson, 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.

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.....282
W1CU 245
HAØDU 240
VE7IG 240
HA1RW.....239
K8SIX.....236
VE3XN.....234
HA5AGS 228
9A5CY 227
N8PR 224
W6OAT.....220
NI6T 220
HA1AG.....218
KØDEQ 216
VE3ZZ.....214
JN3SAC 207
HA5WA 206
F6HMJ 206
W4UM.....206
KF8UN.....205
OK1AOV 205
K8OOK 205
RW4NH.....203
K9YC 203
WA5VGI.....203
N4MM 202
IV3GOW 201
N5KE 200
N4NX 192
HA9PP.....190
BA4DW.....188
HB9DDZ 188
K1NU 187
K2AU 186
K8YTO.....186
W3LL 185
K2SHZ 182
KJ6P 180
HA1ZH.....178
W5ODD 177
NØFW 176
W3LL 176
HB9BOS 175
ON4CAS 175

SSB

W1CU.....224
W4ABW.....202
VE7SMP.....193
KØDEQ.....192
N4MM.....186
W4UM 188
JN3SAC 177
NØFW.....176
W3LL.....176
DL3DXX 175

CW

W1CU 234
DL6KVA.....233
DL2DXA.....209
KØDEQ 207
DL3DXX.....203
JN3SAC 202
W4UM.....199
OK1AOV 196
HB9DZZ.....186
WA5VGI.....186
OK2PO 184
N4MM 179
N4NX 177
N7WO 175

Digital

W1CU 184

and will put together a study group to gather input over the next nine months and to make recommendations for any changes that seem appropriate.

Problems identified so far include over-reliance on just a few key people, the need to ensure that IT support for the program is "modern and robust" and eventually includes the ability to submit credits online, and the need for a "friendlier and more accessible" website. Moving forward, the leadership is looking for a "partnership" approach with active participants rather than the current "top-down" management style. The RSGB will provide seed money and technical support for the effort, "through a market/user-led approach, to develop a plan for the 'New IOTA' programme to embrace management and governance, IT, data management and security, and a review of partnering options and other relevant topics." The RSGB says it expects to make more specific information available after the group members are appointed.

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
HB9DDZ 339
K3JGJ 339
K4JLD 339
K7LAY.....339
K9IW.....339
N4CH.....339
N4NX.....339
N5ZM 339
W7OM.....339
YU1AB.....339
K8LJG 338
KA7T 338
N6AW.....333
W4MPY.....333
G3KMQ 337
K8SIX.....337
W7IIT 337
W6OUL 336
W1DF 335
K1FK 334
K9OW 334
PY2YP.....334
K2OWE.....333
K5UO.....333
K7VV 333
K6LEB 331
N7WO 331
WG5G/QRPp.....331
JA7XBG.....329
K6YK.....329
IKØADY 328
OZ5UR 327
W9IL 327
K6CU.....326
KE3A 326
EA5BY 325
KA3S 325
KØKG 325
N7W0 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 286
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
HB9DDZ 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
VE3MR.....341
VE3MRS.....341
VE3XN.....341
W3AZD.....341
W3GH 341
W4ABW.....341
W5BOS 341
W6BCQ 341
W6DPD 341
W7BJN.....341
W8ILC.....341
W9SS.....341
WB4UBD 341
WK3N.....341
XE1AE 341
YU3AA.....341
K2FL.....340
K3UA.....340
K7LAY.....340
K7VV.....340
K9HQM 340
K9IW.....340
KØKG 340
N4NX.....340
W4UNP 340
W7OM.....340
YU1AB.....340
4Z4DX.....339
F6HMJ.....339
K1UO.....339
K8LJG 339
N7WR 339
W2CC.....339
W2FKF.....339
W7FP 339
W9IL 338
IØZV.....337
K3LC 337
EA3BMT 336
IKØAZG 336
OE2EGL.....336
VK2HV.....336
W4WX.....336
AA4S 335
EA5BY 335
K9OW.....335
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BY GEORGE TRANOS,* N2GA

Contest Logging Programs — Win-Test

In my August 2014 column, we profiled the N1MM Logger Plus contest logging software. Many other contest loggers exist and some have been around for a long time. Others are fairly new. Some of the best programs combine the finest features of both and blend them together into a coherent whole. This column will take a look at one of the most popular contest loggers — Win-Test — and its newest features.

Win-Test is contest-logging software written by Olivier, F5MZN, the author of Editest (a reference in French contest-logging software, now discontinued), and of DXNet, an open-source DX Cluster system. Prior to the evolution of Windows-based contest logging software, CT by K1EA and NA by K8CC were the pre-eminent DOS-based logging programs. Some consider Win-Test one of the best ports of these popular programs into a Windows environment. One of the features touted about Win-Test is that most keyboard shortcuts use the CT syntax. Those users familiar with the DOS-based loggers will feel immediately at home using Win-Test.

Simple Operation

Win-Test uses a main "Log Entry" window to enter all QSOs made on the primary radio. The entry portion of the window is actually on the bottom with the last nine QSOs from the log displayed above it. The window title bar displays the current log file name, the station name (e.g. "Shack"), and the current operator's callsign (for multi-ops using the OPON or LOGIN text commands).

By default, the Win-Test main window serves as a background for all other windows, but you may also choose to have every window "float" independently. Closing the log entry window will exit Win-Test. The font size, background color, and header line attributes of this window may be adjusted by right clicking and selecting the Log option. The yellow header text can be centered, left-justified, or completely hidden.

To enter new QSOs, simply enter the callsign worked and press the [Spacebar] key to quickly move the cursor back and forth between the callsign field and the received exchange field, skipping over the RST columns. When finished, press the [Enter] key to log the QSO. The [Tab] key may be used to position the cursor under the RST sent column as well as callsign and exchange. The [>] and [<] keys work similarly, but they also allow you to move the cursor to the QSO time field for direct editing. You can also change the time, date, frequency, serial number sent, and other fields of a QSO by positioning the cursor on any line and pressing [Alt-F] to display the Edit QSO pop-up menu.

Any QSO may be edited simply by typing over anything that needs correction. Use the [Up arrow] and [Down arrow] keys to edit previous QSOs. You may scroll back through the entire log by pressing

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e-mail: <n2ga@cq-amateur-radio.com>

Calendar of Events

All year	**CQ DX Marathon**	**http://bit.ly/vEKMWD**
Oct. 25-26	**CQ WW DX SSB Contest**	**http://www.cqww.com/rules.htm**
Nov. 1-2	Ukrainian DX Contest	http://urdxc.org/rules.php?english
Nov. 1-3	ARRL CW Sweepstakes	http://www.arrl.org/sweepstakes
Nov. 2	High Speed Club CW Contest	http://www.highspeedclub.org/
Nov. 2	DARC 10-Meter Digital Contest	http://bit.ly/18gGDIM
Nov. 8-9	ARRL EME Contest	http://www.arrl.org/eme-contest
Nov. 8-9	Kentucky QSO Party	http://bit.ly/Oj3Oa1
Nov. 8-9	Worked All Europe RTTY Contest	http://bit.ly/JUUR1n
Nov. 8-9	JIDX Phone Contest	http://jidx.org/jidxrule-e.html
Nov. 8-9	OK/OM CW DX Contest	http://bit.ly/19rrRjl
Nov. 8-9	10-10 Digital Fall Contest	http://bit.ly/1uGz99L
Nov. 8-10	CQ-WE Contest	http://cqwe.cboh.org/rules.html
Nov. 15-16	All Austrian 160M Contest	http://bit.ly/NXzWxr
Nov. 15-17	ARRL SSB Sweepstakes	http://www.arrl.org/sweepstakes
Nov. 15-16	SARL Field Day Contest	http://bit.ly/H0IqQf
Nov. 15-16	RSGB 2nd 1.8-MHz Contest CW	http://bit.ly/YAz917
Nov. 21	YO Int'l PSK-31 Contest	http://bit.ly/1naUW4Y
Nov. 22-23	LZ DX Contest	http://lzdx.bfra.org/rulesen.html
Nov. 29-30	**CQ WW DX CW Contest**	**http://www.cqww.com/rules.htm**
Dec. 5-7	ARRL 160-Meter Contest	http://www.arrl.org/160-meter
Dec. 6-7	Tops Activity Contest	http://bit.ly/1vixKXT
Dec. 7	SARL Digital Contest	http://bit.ly/H0IqQf
Dec. 7	10-Meter RTTY Contest	http://bit.ly/16dB5MP

the [PageUp] and [PageDown] keys. To restore the original QSO data, press [Ctrl-Z] before moving the cursor from that line. You can also delete a QSO (if single-op).

You can even enter a "?" character in the middle of a callsign or exchange as a placeholder for missing information, e.g. F?MZN. Then when you press [Spacebar], the cursor will jump directly to the "?" character, and you can overtype it with the missing data (even in the callsign field).

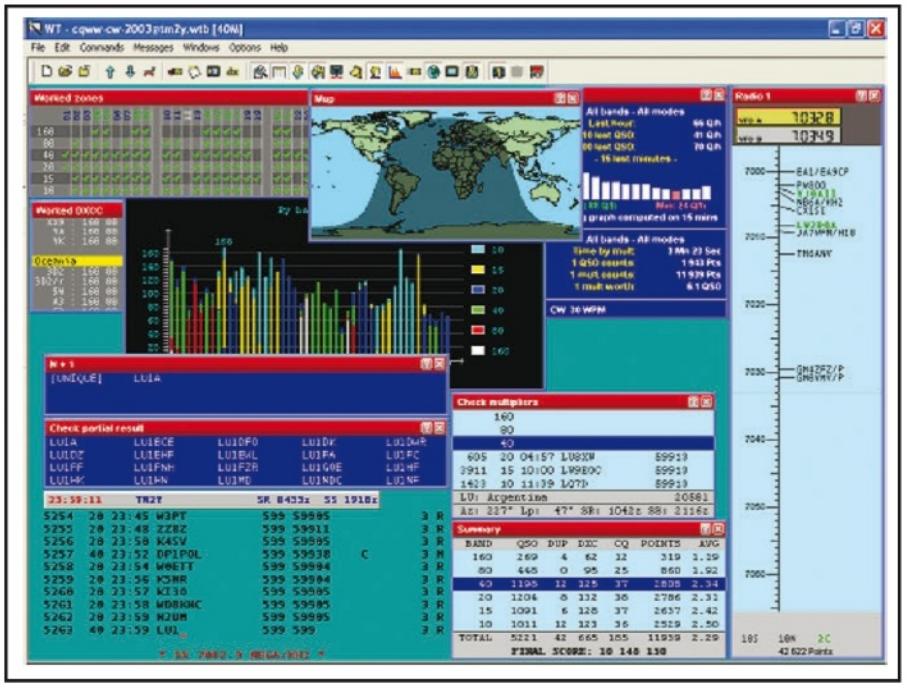
Finally, a red information line at the bottom of the window displays additional information, such as "* New zone *", "* New country *", "* Dupe with #1963 at 23:59Z 2008-11-30 (25) *", "* Spotted by F5MZN *" or brief one-line packet cluster announcements of new multipliers.

Operating Aids

The Worked Zones window provides information about zones worked and can be opened, or closed, from the **Windows | Worked Zones** menu or by pressing [Alt-Z]. The title of this menu item will fit to the chosen contest. The window displays the worked multipliers (in blue) or not (in white) on the current band, and possibly the current mode. Furthermore, with a right click on this window, if the contest is multi-band and/or multi-mode, you can display the distribution of these multipliers by band and/or mode.

The Worked DXCC window shows countries worked and can be opened or closed from the **Windows | Worked DXCC** menu or by pressing [Alt-M]. The title of this menu item will change with the contest chosen. If one DXCC country has been worked on a band (possibly a mode), this band will be displayed in blue, otherwise it remains in white. This window is resizable. A right click on this window allows you to display the countries alphabetically sorted within the same continent, or sorted by number of bands/modes worked. Also, to easily search for missing countries, the countries worked on all bands can be hidden (clean sweeps). You can easily move to the next (or previous) bookmark — displayed on a yellow background by default — by holding down the [Shift] key while rolling your mouse wheel.

The Check Callsign window can be opened (or closed) from the **Windows | Check Callsign** menu or by pressing [F9]. This window displays a checkmark if and on which bands a specific callsign has been logged before. Depending on the type of the contest, the display may show more than one column to display the different possible modes. Moving the mouse cursor over the checkmark will bring up additional information about this QSO. And a double-click on it will move the cursor to this QSO.



A sample Win-Test screen. Note the log entry window on the bottom left with the log itself above it. Above the log is the check partial and check N+1 windows. The check multiplier and summary windows are just to the right of the log. The bandmap is on the far right. On the top left is the worked zone and worked DXCC windows. A world map with daylight and darkness is in the top center with the rate window to its right.

Récapitulatif

BANDE	QSO	DBL	DXC	CQ	POINTS	MOY
160	102	3	50	13	280	2.75
80	328	5	81	21	942	2.87
40	916	31	119	29	2652	2.90
20	1208	17	140	35	3532	2.92
15	2297	69	145	34	6701	2.92
10	4334	137	145	33	12762	2.94
TOTAL	9185	262	680	165	26869	2.93

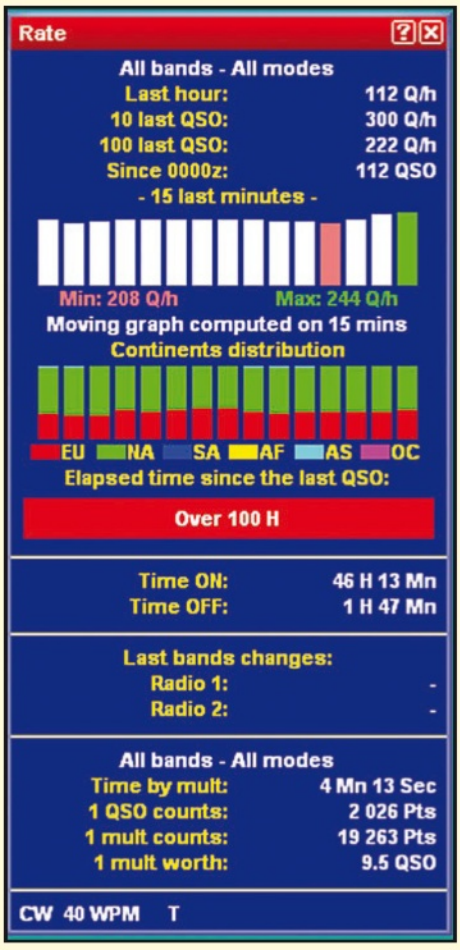
SCORE FINAL : 22 704 305

The summary window contains all of the essentials for scoring. Each band is listed showing QSOs, duplicates, countries, zones, points, and average points per QSO.

The Check Multipliers window can be opened (or closed) from the **Windows | Check Multipliers** menu or by pressing [F10]. To use this window, enter a callsign or country prefix in the data-entry area of the main logging window. The dark blue line indicates the current band. The other lines indicate whether this multiplier has been worked or not on other bands (and in other modes if the contest rules permit). If the callsign entered has been worked on other bands, Win-Test displays those QSOs. Otherwise, the callsign of the first station worked in that multiplier on that band is displayed, if any.

For the CQ World-Wide DX contest, display priority is: Same callsign, same country, and same zone. An uppercase "Z" in the last column indicates that the zone and country have been worked on the indicated band. A lowercase "z" means the zone has been worked, but not the country. And of course a blank line indicates that both the zone and country are needed. Additional information about the multiplier is displayed at the bottom: The official country prefix and country name; a small icon indicating if it is local day, night, or sunrise/sunset time in that country; the current local time in that country (suffixed by a lowercase "L"); the short (Az) and long path (Lp) beam headings (azimuths) to this multiplier (based on the station locator entered in the contest configuration screen)

The sunrise (SR) and sunset (SS)



The rate window has lots of information. The upper part displays the rate of the last hour, of the last 10 QSOs, and of the last 100 QSOs. It also displays a moving graph of the rate, computed on the last 15 minutes before the current QSO. The lower portion of that window displays additional rate information in text format. The graph is calculated on the last 15 minutes (default). Each bar, thus representing one minute on the air, calculates the moving average rate on the last X minutes, this time being selectable between five and 30 minutes. Below is a display that shows instant continent distribution of previous QSOs. The QSO Timer Alarm progress bar appears below that. This bar gives a clear visual indication of the time elapsed since your last QSO. Normally it is a green progress bar that advances from left to right. It begins as 100% green and slowly more of it turns red until it reaches full scale, when the bar becomes 100% red. The default scale is 5 minutes, but it is configurable between one and 120 minutes. The next part displays information about Time ON and Time OFF.

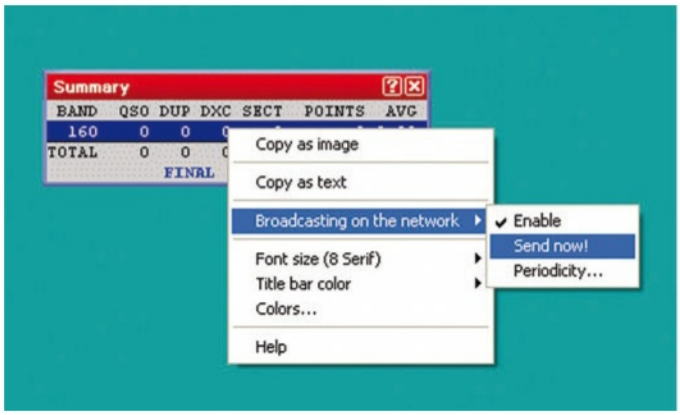
time in this country are expressed as UTC (suffixed by a lowercase "z"). Two yellow bars represent the sun over 24 hours of the day. The top bar displays the situation at the DX location, while the bottom bar represents your own location. A pink cursor denotes current time. Dotted lines represent local noon or local midnight. A double click on a line will move the cursor to the specified QSO. Press [Ctrl-End] or [Ctrl-G], [Enter] to return the cursor to the blank line at the end of the data entry area. Finally, using the context menu (right click on the window), you can change Actualize information to Automatically (recommended) or to pressing the [space bar] to indicate when you want the check multiplier screen to be updated. "Automatically" updates the screen after each keystroke. Any modification in the received exchange field (e.g. zone) also updates this check multiplier window.

The Search for Worked Multipliers or Partial QTH Locators window can be opened from the **Windows | Search for Worked Multipliers** menu or by pressing [Shift+F10]. It lists all the callsigns logged in a specified multiplier (zone, state, ARRL section, grid square locator, etc.). To quickly list everyone you have logged in a particular multiplier, sorted by band, enter the multiplier *in the callsign field* and press [Shift+F10]. The Check Partial Window will be displayed in a different format, depending on the contest. This search only works for contests in which the multiplier is logged as part of the exchange.

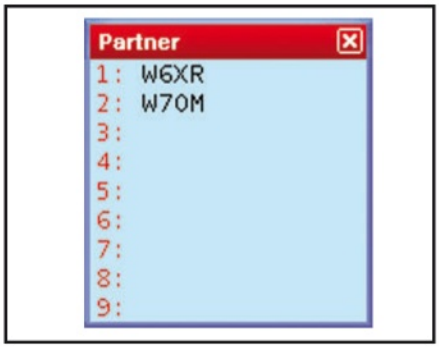
The Check Partials window can be opened from the **Windows | Check Partials** menu or by pressing [F12]. It uses a master data file such as MASTER.SCP or DEFAULT.SCP. If this window is open and at least three characters are entered in the callsign logging field, Win-Test looks in the master database for the callsigns including the 3-character string.

The white callsigns are those not worked yet. The green callsigns are stations worked on another band, but not the current band. The red callsigns are the dupes (callsigns already worked on the current band).

Right click in the window to bring up a context menu where you can choose whether Win-Test is to use the master database or just your log. There is an



The context menu also allows you to configure and enable live score reporting by using a specific UDP broadcast protocol. Please note that additional third-party software is needed to post your score to one of the live scoreboards on the Internet. For testing purposes, there is an option to create a live score broadcast "now;" typically, it will broadcast automatically every five minutes or however you set up the periodicity. Live score broadcasting in a multi-operator environment is limited to the station that is the network time master.



The partner window can be used to load a list of callers from a pileup into a call stack. Typically it used by a second operator who is also listening to the callers coming back to your CQ who can load them into the partner window. After working the first QSO, you'd be able to call the second station right away (without QRZ) and save time. With the Partner window, this is possible. Keystroke commands or function key messages can be used to facilitate this.

option to start the check partial search after the second letter is entered into the callsign field, rather than the third. Another option allows you limit the number of callsigns displayed to fit the available space in the window. Finally, the option Used files list will display the master file that Win-Test has loaded to feed the Check Partials window.

The Check N + 1 window can be opened from the **Windows | Check N + 1** menu or by pressing [F8]. If this window is open, and at least three characters are entered in the callsign logging field, Win-Test looks in the master database for the callsigns differing from the partial callsign by one character. This command also detects 2-character swap (dyslexia), as well as one missing character. The white callsigns are the stations not yet worked. The green ones are those worked on another band, but not the current band. The red callsigns are dupes. If the callsign is not included in the master database, and has not been worked yet, it is considered a UNIQUE. Otherwise, it is displayed in the first position.

Multi-Op Functions

The Partner window can be opened from the **Windows | Partner** menu. This feature is especially useful in a multi-op environment when facing large pile-ups and/or weak signals or when you are training a new operator. Sometimes you may get several callers coming back to your CQ and pull out one callsign — but maybe you are able to copy another callsign or at least parts of it. If you could remember this second call after the first QSO, you'd be able to call the second station right away (without QRZ) and save time. With the Partner window, this is possible. To do this, set up a second operator (OP2), a second computer and a second pair of headphones, sometimes a second receiver.

Both OPs now open up the Partner window on their computer. The running operator (OP1) continues as before by working the first callsign. In the meantime, OP2 supports OP1 to copy the callsign — or he can add callsigns he copied from the pile-up by entering the callsign on the QSO entry field and then pressing [Alt+Enter]. This callsign will now be displayed on all computers in the network that are set at the same band and mode. OP1 will see the new callsign after his first QSO and calls that station right away. The Partner window can hold up to nine callsigns, and these calls can be pulled into the callsign field with [Alt-1], [Alt-2] … [Alt-9].

Usually this is done by OP1 to log that callsign, while OP2 uses this function to remove the call from the partner window. Once the QSO is logged, that callsign will disappear from both partner windows. You can also swap the callsign field with one of the entries by pressing [Ctrl-1], [Ctrl-2] ... [Ctrl-9].

The Status window can be opened from the **Windows | Status** menu or by pressing [Alt-J]. This window indicates the status of each station connected to the network. Displayed information includes station name, current band and mode, station type, QSY frequency of the current band and mode, radio 1 frequency, radio 2 frequency, time left before a possible QSY, according to the 10 minutes M/S rule, or "OK" if the station is allowed to make a QSY on another band.

Note that this column only appears if the contest specifies this particular rule. Your own station is displayed in a deep blue background. The active radio of each station has its frequency in red characters. The list may be by band and station names when it gets cluttered in a very large network by using the appropriate function in the context menu. A double left click on a station name will display the chat dialog with this station name as default destination.

Opening the context menu with a right mouse click will allow you to turn on network traffic logging. This might be useful for basic network troubleshooting. This log file uses the .ntk (stands for NeTworK) file extension. A double left click on any frequency displayed will tune the current radio to that frequency.

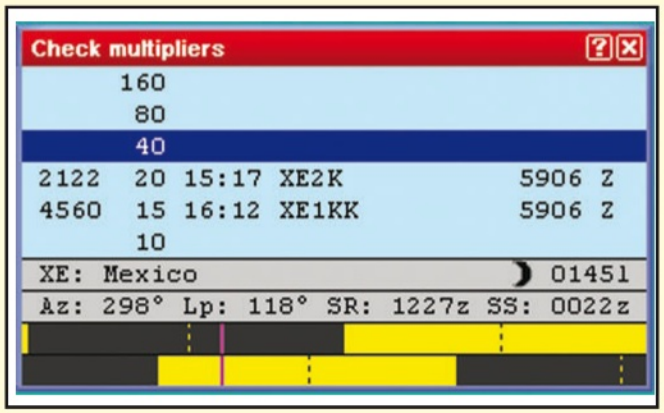
The QSY Wizard can be opened from the **Windows | QSY Wizard** menu. It can only be used if HamCAP is installed and running. After working a DX, pressing [Ctrl-P] will bring up the HamCAP window with a propagation prediction to this DX. Then, the QSY Wizard will display the bands on which to which a QSY or sked may be useful.

Scores and Rates

The Summary window can be opened from the **Windows | Summary** menu or

by pressing [Alt-S]. The displayed number of QSO does not include the dupes. Thus, the QSO column displays only the QSOs that have generated points. The context menu also allows you to configure and enable live score reporting by using a specific UDP broadcast protocol. Please note that additional third-party software is needed to post your score to one of the live scoreboards on the Internet. For testing purposes, there is an option to create a live score broadcast "now;" typically, it will broadcast automatically every five minutes or however you choose to set up the periodicity. Live score broadcasting in a multi-operator environment is limited to the station that is the network time master.

The Rate window can be opened from the **Windows | Rate** menu or by pressing [Alt-R]. The upper part displays the rate of the last hour, of the last 10 QSOs, and of the last 100 QSOs. It also displays a moving graph of the rate, comput-



The check multiplier window provides a lot of information. The dark blue line indicates the current band. The other lines indicate whether this multiplier has been worked or not on other bands (and in other modes if the contest rules permit). If the callsign entered has been worked on other bands, Win-Test displays those QSOs. Otherwise, the callsign of the first station worked in that multiplier on that band is displayed, if any. For the CQ World-Wide DX contest, display priority is: Same callsign, same country, and same zone. An uppercase "Z" in the last column indicates that the zone and country have been worked on the indicated band. A lowercase "z" means the zone has been worked, but not the country. And of course a blank line indicates that both the zone and country are needed. Additional information about the multiplier is displayed at the bottom: The official country prefix and country name; a small icon indicating if it is local day, night, or sunrise/sunset time in that country; the current local time in that country (suffixed by a lowercase "L"); the short (Az) and long path (Lp) beam headings (azimuths) to this multiplier (based on the station locator entered in the Contest configuration screen). The sunrise (SR) and sunset (SS) time in this country, expressed as UTC (suffixed by a lowercase "z"). Two yellow bars represent the sun over 24 hours of the day. The top bar displays the situation at the DX location, while the bottom bar represents your own location. A pink cursor denotes current time. Dotted lines represent local noon or local midnight. A double click on a line will move the cursor to the specified QSO.

In this example CN2R has been worked on 20 meters. After pressing [Ctrl-P] the wizard tells us that a QSY may be promising to 15, 40, 80, and 160 meters. For 10 meters, however, the wizard recommends a sked at 18:30 UT instead. This is the peak time predicted by HamCAP for this path but MUF will be only be 20.1 MHz (the mouse cursor was over the 18:30/28MHz yellow square while creating this screenshot).

ed on the last 15 minutes before the current QSO. The lower portion of that window displays additional rate information in text format. The graph is calculated on the last 15 minutes (default). Each bar, representing one minute on the air, calculates the moving average rate on the last X minutes, this time being selectable between five and 30 minutes. Below the average rate graph is a display that shows instant continent distribution of previous QSOs. It uses the same timing parameters as the instant rates above.

The QSO Timer Alarm progress bar appears below that. This bar gives a clear visual indication of the time elapsed since your last QSO. Normally it is a green progress bar that advances from left to right. It begins as 100% green and slowly more of it turns red until it reaches full scale, when the bar becomes 100% red.

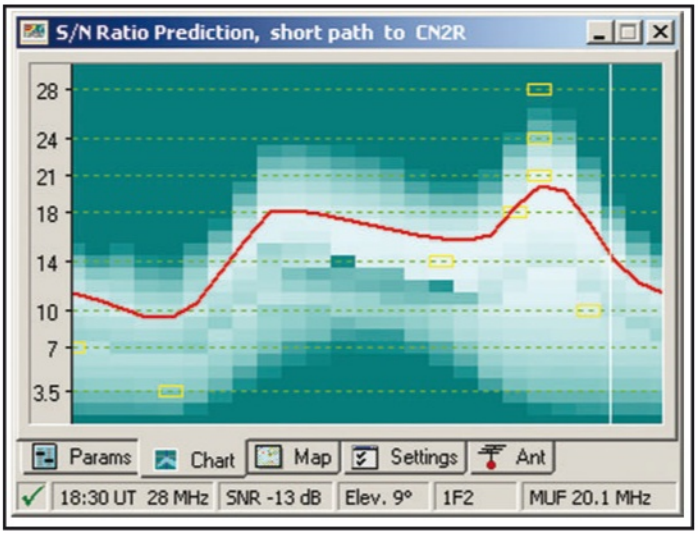
The default scale is 5 minutes, but it is configurable between one and 120 minutes. The next part displays information about Time ON and Time OFF. For new logs, the off-time calculation is based on the contest rules. You can still use a custom setting to check your operating efficiency. If the contest rule is unknown, 15 minutes will be used as a default threshold. The next part shows information about band changes.

The central part gives general information about the point statistics of the contest, e.g. time by mult, QSO counts, mult worth, etc. The bottom part indicates the current mode and, in CW, the current speed, as well as the status of the automated CQ repeats mode.

Other Features

Win-Test claims the following additional features:

- Over 100 supported international, national, and VHF+ contests
- Easy navigation in the log
- CW generation in background, leaving you free to "type ahead" (no extra hardware required)
- RTTY mode by MMTTY interfacing
- Resizable and floating windows
- Integrated voice keyer
- Networking with Ethernet or RS-232 ports (can be mixed on the same machine)
- On-the-fly log synchronization (no central server required)
- Partial and N+1 on-the-fly search
- Database assisted field auto completion
- Most keyboard shortcuts use the CT syntax
- Integrated keys remapping
- Real-time greyline display
- Easy and powerful use in SO2R
- Graphical and textual bandmaps



The QSY Wizard can only be used if HamCAP is installed and running. After working a DX, pressing [Ctrl-P] will bring up the HamCAP window with a propagation prediction to this DX. Then, the QSY Wizard will display the bands on which to which a QSY or sked may be useful.

- Real-time objectives files comparison
- Extensive statistics and decision tools updated in real time
- Numerous supported transceivers (Kenwood, ICOM, Yaesu, Elecraft, Ten-Tec, etc...)
- Propagation prediction software HamCAP interface
- Possible to interface many devices on serial ports, parallel ports, and USB
- Take skeds and pass mults between stations with ease
- Cabrillo, ADIF, text, and CSV files generation
- Easy summary generation for sending to the mailing lists
- Worked multipliers exports for post-contest analysis
- Multi-monitor support (if your OS allows it)

Summary

Win-Test appears to be a robust, fully-featured contest logging program capable of being the backbone of a single operator or multi-operator contest station. Contesting is moving ahead and logging programs must adapt to keep up. Those operators at the cutting edge of technology who want to continue to improve require a contest logger that grows with them. Win-Test has proven popular with top scoring stations. In the most recent World Radiosport Team Championship, 40 of the 59 competitors including the top three stations used Win-Test as their logging program. Win-Test offers ongoing support and development of the program. There is online documentation, a frequently asked questions area, and online interactive mailing list support. Win-Test is licensed shareware, and requires a registration key to allow full usage. There is a trial version available for download from their website <http://www.Win-Test.com> that can be used over a two-week trial period. Serious contesters are using Win-Test to provide them an edge in radiosport competition. Win-Test appears to be easy to configure and use so a newcomer can start logging quickly. Overall, this is a top-notch contest logger and it is easy to see why it is so popular in the contesting community.

BY TOMAS HOOD,* NW7US

Good to Excellent Conditions Predicted for CQ WW DX CW Contest 2014

A Quick Look at Current Cycle 24 Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, August 2014: 75
Twelve-month smoothed, February 2014: 78

10.7 cm Flux
Observed Monthly, August 2014: 125
Twelve-month smoothed, February 2014: 139

***Ap* Index**
Observed Monthly, August 2014: 9
Twelve-month smoothed, February 2014: 7

One Year Ago: A Quick Look at Solar Cycle Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, August 2013: 66
Twelve-month smoothed, February 2013: 58

10.7 cm Flux
Observed Monthly, August 2013: 115
Twelve-month smoothed, February 2013: 118

A_p Index
Observed Monthly, August 2013: 9
Twelve-month smoothed, February 2013: 7

HF radio enthusiasts celebrate the arrival of the winter DX season. November 2014 should hold moderate improvement for propagation for stations in the Northern Hemisphere, on most HF bands. During the CQ WW DX CW contest this month, we should experience great success; the Sun is active enough to breathe life even into the higher HF bands.

The 2014 CQ WW DX CW Contest <http://www.cqww.com/> will start at 0000 UTC, Saturday, November 29, and run through 2359 UTC Sunday, November 30. Looking at the 27-day rotation of the Sun, taking into consideration the current solar activity at the time of writing this column, propagation should be good on day one and excellent on day two. Expect conditions to be comparable with conditions from the 2001 and 2002 contest weekends, and with somewhat better conditions than those of last year's contest weekend. Geomagnetic activity should be stable and quiet, making night-time DX very productive.

Predictions for one 27-day rotational period are far more accurate than for three 27-day rotational periods. Be sure to carefully check conditions on November 2 and 3, since this would be one rotational period before the CW contest weekend. There is better than a ninety-percent chance that conditions observed on those days will recur during the November contest weekend.

See the "Last-Minute Forecast" for expected day-to-day conditions for the entire month of November. An updated day-to-day forecast for the CW contest weekend will appear as a bulletin at the beginning of next month's column. You can also see an up-to-the day "Last-Minute Forecast" on my propagation resource center, at <http://sunspotwatch.com/>.

Table 1 tabulates the smoothed sunspot count during previous CQ WW DX CW Contest periods since 2003, and what's predicted for the 2014 contest. Contest conditions may be quite similar with those of last year. Low to middle latitude propagation paths should be good on the lower HF bands (160, 80, 40 meters). There is a moderate chance that reasonably long windows of propagation will exist on the higher HF bands above 20 meters for paths spanning lower latitudes over sunlit and greyline termination regions. However, it is expected that the higher bands will have a lot of fluctuation in performance. The lower frequency bands will be quiet, much like last year.

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for October 2014

	Expected Signal Quality			
Propagation Index	(4)	(3)	(2)	(1)
Above Normal:				
8-9	A	A	B	C
High Normal:				
1-4,10-12,14-17,22-23,25-30	A	B	C	C-D
Low Normal:				
5,7,19-21,24	B	C-B	C-D	D-E
Below Normal:				
13,18	C	C-D	D-E	E
Disturbed:				
6	C-D	D	E	E

Where expected signal quality is:
A—Excellent opening, exceptionally strong, steady signals greater than S9.
B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing in *The New Shortwave Propagation Handbook* by George Jacobs, W3ASK; Theodore J. Cohen, N4XX; and Robert B. Rose, K6GKU.

2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 3 will be good (B) on Oct. 1 and fair to good (C-B) on the 2nd, good again on the 3rd, 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.

*PO Box 27654, Omaha, NE 68127
e-mail: <nw7us@nw7us.us>

	2003	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14
November	57	35	25	13	6	2	8	27	61	60	77	*72

**Predicted values expected during the 2014 contests*

Table 1. Smoothed sunspot numbers recorded during CQ World-Wide DX Contests since 2003 (November CW)

The DX Propagation Charts and other information in this month's column are designed to help you to make the most of propagation conditions during the contest, if you are participating. Even if you are not a dedicated contester, you should give it a try. If you are trying for your DXCC or other paper, this is the contest of choice.

Try out propagation modeling and forecasting software programs to optimize your efforts this year. Play around with the contest-specific conditions and station-based parameters such as your antenna properties, geographical location, power levels, and operating times. A program that I have reviewed in past columns is 'ACE-HF Pro'. Using such a program, you can work out an operational plan using tools like ACE-HF's Animated Coverage Maps, or the ACE-HF Pro's band opening charts for the various propagation paths you wish to target to get those extra contest points. For more information, see <http://hfradio.org/ace-hf/>, which includes past reviews and articles.

November Propagation

Last month's column contained a detailed review of conditions expected during October. Let's look at what we can expect this month.

160 Meters: Expect productive DX openings on this band during the hours of darkness and into the sunrise period. This year's season is looking to be quiet and stable. With the combined effect of the decreased seasonal static levels and longer hours of darkness in the Northern Latitudes, 160 is a workable band all through winter. During this month's CQ WW DX CW contest, participants with good DXing antenna systems should experience fair to excellent scores on this band. Look for openings toward Europe from the eastern half of the U.S. and towards the south, the Far East, Australasia, and the South Pacific from the western half of the country. These openings should be strong during the contest period. Remember, the best propagation aid for this band (and for 80 and 40 meters as well) is a set of sunrise and sunset curves, since DX signals tend to peak when it is local sunrise at the easterly end of the path.

80 Meters: This should be a great band for DX openings to many areas of the world during the hours of darkness and into the sunrise period. Eighty meters becomes a reliable long-distance band throughout the entire period of darkness. The band should peak towards Europe and in a generally easterly direction around midnight. For openings in a generally western direction, expect a peak just after sunrise. The band should remain open towards the south throughout most of the night. Noise levels will be considerably down from October, and the period for band openings in a particular direction will be a bit longer. Some contest operators may take the challenge of operating exclusively on 80, an adventure in skill and patience. The conditions are expected to be favorable for high scores on this band.

40 Meters: Competing with 80 meters, this should be a hot DX band during the dark hours as the seasonal static levels are lower than they were during the summer. Nighttime MUFs on some paths could fall below 7 MHz this month, losing some steam until morning hours. The band should be open first for DX toward Europe and the east during the late afternoon. Signals should increase in intensity as darkness approaches. Signals should peak from an easterly direction closer to midnight, and from a westerly direction just after sunrise. Remember, just as with 80, signals tend to peak as the sun rises on the eastern end of a propagation path. Working against the CW operator is the interference that increases when the propagation is excellent.

20 Meters: DX openings should be possible on this band mostly during the day, and somewhat during the night depending on the path and the path end points (where your station is located, and where your contact's station is). However, because of the shorter daylight hours in the Northern Hemisphere, nighttime path openings will be open for a shorter period this month compared to October, with signal peaks from about an hour or two after sunrise and again during the late afternoon and early evening hours for those paths that may be open. Don't forget to look for long-path openings for about an hour or so after sunrise and again for an hour or so before local sunset.

15 Meters: DX propagation conditions in the Northern Hemisphere will be poor to fair on this band, mostly at low-latitudes. A daytime band, fluctuating conditions are expected at these frequencies from shortly after sunrise through the early evening hours. The band could remain open into the evening toward southern and tropical areas.

10 Meters: With an expected 10.7-cm flux hovering around 170, ten meters will be a player not only on North/South and low-latitude paths, but may surprise with openings into DX regions both easterly as well as westerly, this month. When open, the band will peak right after sunrise, and just a bit before sunset, local time. Openings towards Europe and in

CQ WW DX SSB Contest Conditions Look Great, and Stable

Since this issue of CQ should reach most subscribers prior to the start of the 2013 CQ Worldwide DX SSB Contest weekend of October 25-26, here is an updated forecast made at press time for the general propagation conditions expected. Based on the 27-day recurrence tendencies of solar and geomagnetic conditions, it continues to look like conditions will be good, if not excellent, on both days.

Daily 10.7-cm solar flux levels are expected to be around 170 during the contest weekend. This is great news, if it holds true. The geomagnetic planetary A-index is expected to be about 3 on the both contest days, which will make the lower frequencies more productive.

Remember that at any time during the contest, if there are sunspots present, a flare may occur. When flares erupt, it could cause a radio blackout on the Sun-facing side of the Earth. These last between 10 to 60 minutes, depending on the strength and location of the flare. We don't expect any significant geomagnetic activity, however.

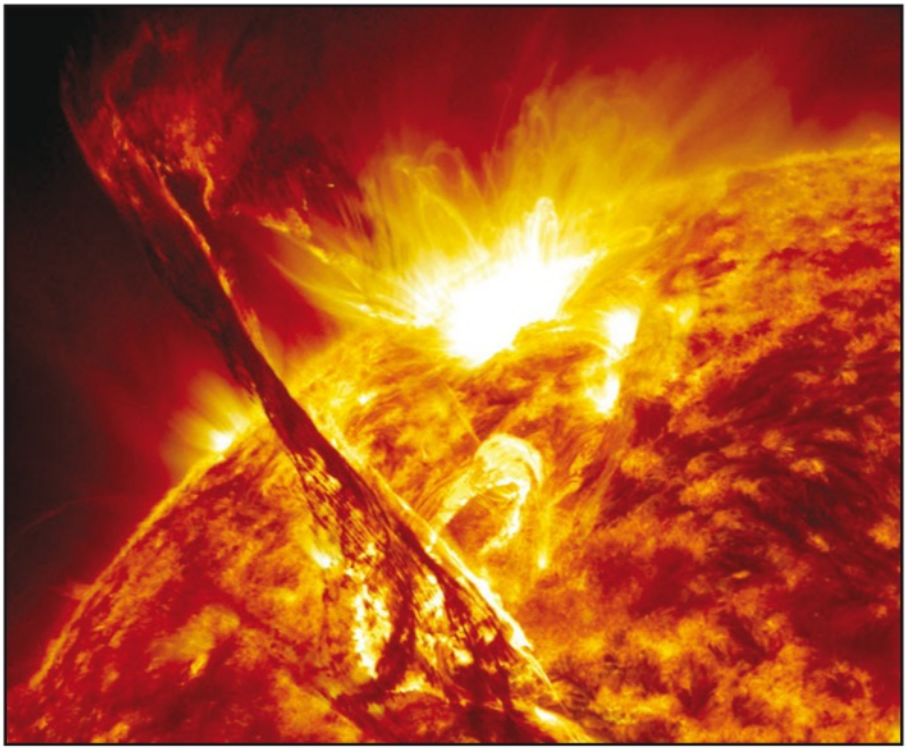


Figure 1. How do you tell the difference between a flare and a CME in NASA Solar Dynamics Observatory (SDO) images? Flares look like bright flashes of light on the sun. Coronal mass ejections look like clouds zooming out into space. Sometimes, a CME is associated with a flare, but not always. And, not all CMEs are directed toward the Earth. Check out this video for more information: <http://g.nw7us.us/flare-vs-cme>. (Courtesy of NASA/SDO)

a generally easterly direction will be possible, and should peak an hour or two before noon, while those towards South America and Africa area expected to peak during the early afternoon hours. Optimum conditions towards the Far East, Australia, southern Asia, and the South Pacific are forecast for the late afternoon and early evening hours, especially from stations in lower latitudes. This band will require a lot of skill and better-than-average antennas.

CW Contest Tips

Overall, expect good conditions on 15 and 20 meters during most of the daylight hours. For stations in the lower latitudes, 15 and 20 meters will be usable for most of the contest period, well into the hours of darkness.

From sundown to midnight, 40 meters should be the best band for openings toward the east, north, and south. Twenty meters will close in many locations before midnight, while 80 meters will be a hot band with openings into the same areas as for 40.

Between midnight and sunrise the best DX band should be 80, with 40 a close second. Openings on both bands should be possible to most areas of the world, with conditions peaking towards the south and west. Some good 20-

what's new

bhi's New Compact In-Line Module

The new bhi Compact In-Line module is the latest addition to bhi's range of DSP noise-canceling products, and incorporates their latest dual-channel DSP noise-canceling technology for cleaning up noisy signals. It is a small, handheld, battery-operated unit that is suitable for portable use and is designed to be used with a pair of stereo headphones, but will also drive a mono loudspeaker or a pair of powered stereo speakers.

The Compact In-Line module is powered by two AA alkaline or NiMH batteries, but can also be powered from a separate DC supply. The module functions are microprocessor-controlled and the unit can accept mono or stereo signals. It has separate speaker level and line level inputs with two rotary encoder controls with pushbutton action for filter level select, power on/off, volume control, and stereo/mono signal selection.

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The bhi Compact In-Line is available now and has a suggested retail price of 179.95£ (approximately $289 US). For more information, contact: bhi Ltd, 22 Woolven Close, Burgess Hill, West Sussex, RH15 9RR, U.K. Phone: +44 (0) 1444 870333. Website: <http://www.bhi-ltd.com>.

what's new

N3FJP Maine, Arizona and N.J. State QSO Party Contest Logs are Now Available

Users of the popular N3FJP Software Package contesting programs can now freely download the Maine, Arizona, and New Jersey State QSO Party contest logs. To download the newest logs, enter the state QSO party password that was supplied with your package list and you should be set. You can download the new programs here: <http://www.n3fjp.com/stateqsoparty.html>

N3FJP's Software Package includes approximately 60 programs for contesting, net management, general logging and other amateur radio related applications. In addition to full use of all these programs, registered package customers are also entitled to receive free passwords for any new software that is added to the package and free upgrades to existing programs. You'll find all the details here: <http://www.n3fjp.com/purchasepackage.html>.

Looking Ahead in

CQ *and* CQ plus

Here are some of the articles we're working on for upcoming issues of *CQ*:

Technology Special in December

- Decoding FUNCUBE-1 Telemetry
- Resurrecting the Lightning Bolt
- Audio Processing for Hams

... and in CQ-Plus (digital edition supplement):

- "Good Morning AFRTS!" – Robin Williams' Priceless Gift
- Make the Season Bright With LEDs

Upcoming Special Issues

February: QRP
June: Take it to the Field

Do you have a hobby radio story to tell? Something for one of our specials? *CQ* now covers listening and personal two-way services in addition to amateur radio. See ourwriters' guidelines on the CQ website at <http://www.cq-amateurradio.com/cq_writers_guide/cq_writers_guide.html>

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... Don't miss out on the rest of this issue!

Check out the November issue of *CQ Plus.* Featured articles include:

- A Ham Radio Newbie's View of WRTC2014
- 'The Young Radio Amateur' Goes to Friedrichshafen, Germany
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- Dawn Patrol: A Study of 17-Meter Long Path Propagation

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!

meter openings are also expected during this period, mainly towards the south and west. The 160-meter band should wake up, offering some good DX openings, similar to 80 meters but with somewhat weaker signals.

VHF Conditions

The Leonids meteor shower is typically the big event for November. This shower is active from November 6 and lasts until November 30. This year, it is expected to peak on November 17 at 22:00 UTC, with a maximum count of 15 or more visual meteors per hour. For those readers who are attempting to work off of the plasma trails of these meteors, there may well be enough hourly activity this year to make this a hot event.

Working VHF propagation off of meteor tails (the highly ionized plasma trails left by the meteor) requires some reasonable power and gain, and good operating skill. With the latest high-speed burst-mode CW software, you can possibly work even the smaller meteors.

Check out <http://www.imo.net/calendar/2014> for a complete calendar of meteor showers in 2014.

Don't forget to check out this columnist's educational "tweets" on Twitter.com; you can follow @hfradiospacewx <https://Twitter.com/hfradiospacewx> for hourly updates that include the K index numbers, as well as @NW7US <https://Twitter.com/nw7us> which will provide the daily dose of educational tidbits about the Sun and propagation. You can also check <http://sunspotwatch.com> for the latest numbers.

Current Solar Cycle Progress

The Royal Observatory of Belgium, the world's official keeper of sunspot records, reports a monthly mean sunspot number of 74.7 for August 2014, up a bit from July's 72.5. The mean value for August results in a 12-month running smoothed sunspot number of 78.4 centered on February 2014. Following the curve of the 13-month running smoothed values, a smoothed sunspot level of 72 is expected for November 2014, plus or minus 14 points. Have we seen the peak of Sunspot Cycle 24?

Canada's Dominion Radio Astrophysical Observatory at Penticton, British Columbia reports a 10.7-cm observed monthly mean solar flux of 124.7 for August 2014, just under July's 137.3. The 12-month smoothed 10.7-cm flux centered on February 2014 is 138.6. A smoothed 10.7-cm solar flux of about 130 is predicted for November 2014.

The geomagnetic activity as measured by the planetary-A index (Ap) for August is 9. The 12-month smoothed Ap index centered on February 2014 is a steady 6.9. Geomagnetic activity should be much the same as we have had during October. Refer to the Last Minute Forecast for the outlook on what days that this might occur (remember that you can get an up-to-the-day Last Minute Forecast at <http://sunspotwatch.com> on the main page).

I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. Please check out the space weather and radio propagation self-study course that this columnist is offering at <http://NW7US.us/swc>.

You may e-mail me, write me a letter, or catch me on the HF Amateur bands. If you are on Facebook, check out <http://www.facebook.com/spacewx.hfradio> and <http://www.facebook.com/NW7US>. Speaking of Facebook — check out the *CQ Amateur Radio* Magazine fan page at <http://www.facebook.com/CQMag>.

I'll be keeping my ears to the radio, hoping to hear you on the air. Happy DX! *– 73, Tomas, NW7US*

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washington beat

COMPILED BY RICHARD FISHER, KCQ6PC

Hams Warned: Identify Properly, or ...

Two radio amateurs have been sent warning letters from the FCC for failing to properly identify their stations.

Gary E. Davis, W1IT, of Inman, South Carolina, and John J. Krajewski, KB3MZQ, Newark, Delaware received letters from Special Counsel Laura Smith noting that each had failed to legally ID on 7.185 MHz. Their signals were copied at the Commission's High-Frequency Direction Finding Center in July.

Smith put Davis and Krajewski on notice that "if operation of this type reoccurs ... each operator could be subject to severe penalties," that could include monetary forfeiture, a modification proceeding to restrict the frequencies upon which each may operate or even license revocation. *(SOURCE: FCC)*

$600K Fine Levied Against Marriott for Wi-Fi Jamming

The Marriott Corporation has been fined $600,000 by the FCC for blocking the personal hotspots and other consumer Wi-Fi networks of its hotel guests during an event in Nashville in 2013. The incident took place in the Marriott at Gaylord Opryland Resort and Convention Center.

According to Enforcement Bureau Chief Travis LeBlanc, "consumers who purchase cellular data plans should be able to use them without fear that their personal Internet connection will be blocked by their hotel or conference center."

Marriott was found in violation of an FCC consent decree that mandates it not block guests' personal Wi-Fi access. The hotel chain was alleged to have used hardware known as "jammers" in order to disable personal hotspots and other forms of Internet connection, leaving event attendees only the option of using the hotel's Internet service. *(SOURCE: Multiple published reports)*

Bethany, Ohio VOA Site Celebrates 70th Anniversary

Ohio's West Chester Amateur Radio Association celebrated the 70th anniversary of the decommissioned Voice of America Bethany Relay site in September. The club makes its home in the VOA building and operates station WC8VOA — the callsign used for the special event. Bethany is also the site of the VOA Broadcasting Museum <http://www.VOAMuseum.com>. *(SOURCE: Jocelyn Brault, KD8VRX)*

Bid for 4-Meter Amateur Radio Band Quashed by Commission

The FCC has taken action to dismiss a rule-making request by Glen Zook, K9STH, of Richardson, Texas, requesting allocation of 70.0 to 70.5 MHz to the amateur radio service as the 4-meter band.

"In denying the request," reports *Amateur Radio Newsline* (ARN), "the FCC noted that there are still a trio of full power broadcasters and more than 100 low-power television broadcasters currently using TV channel 4 in the United States."

The FCC also cited "the likely re-farming of the broadcast television landscape after the upcoming incentive auction to free up UHF spectrum for broadband. This might mean numerous full-power television stations being forced to relocate to the low band broadcast allocations that includes channels 4 and 5." *(SOURCE: Amateur Radio Newsline [ARN])*

AMSAT-NA Holds Board of Director Elections

Elected to two-year terms on the Board of Directors of AMSAT North America are:

Tom Clark, K3IO, of Clarksville, Maryland; JoAnne Maenpaa, K9JKM, Carpentersville, Illinois; and Lou McFadin, W5DID, Orlando, Florida.

Jerry Buxton, NØJY, of Granbury, Texas, will serve the remainder of the term held by the late Tony Monteiro, AA2TX. First Alternate is Drew Glasbrenner, KO4MA, of New Port Richey, Florida, and Second Alternate is Frank Griffin, K4FEG, Millington, Tennessee. *(SOURCE: (AMSAT-NA)*

CQ plus

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BY GERRY DEXTER, WCQ9GLD

Viva La France? Or Should the French Fry?

I'm sure that, somewhere, sometime you've walked too closely behind someone and stepped on their heels. It's embarrassing. It makes you feel like a stumbling, bumbling klutz!

With that in mind, I wonder how Radio France International must feel, having nearly walked up the back of Radio Australia when it (RA) had its near-death experience.

RFI also nearly killed its own shortwave services close on the heels of Radio Australia's near shut-down. What kind of minds are at work here, eh?

Is it actually time to say *au revoir* to RFI? Well, let's raise our hands in surrender, turn to somewhat happier news and leave the French to fry.

Shortwave-lets

The Voice of Russia did not go to sleep for long. The alarm went off on October 1 and after the stretch and the morning tea, VOR got busy on what seems to be about as many frequencies over the 24-hour day as the old Radio Moscow used to use — stretching from the upper 5-MHz range all the way into the 16-meter (17 MHz) band. So, the chances are good that you'll be hearing this one soon, if you haven't already.

Things might be sorting themselves out at the **Voice of Greece** as **ERT Radio** has settled on this schedule:

- 9835 at 1200-0350 UTC
- 9420 at 1200-0800 UTC
- 15630 at 0100-0800 UTC
- 15650 at 1200-1950 UTC
- 15630 at 2000-0050 UTC
- 11645 at 0400-0800 UTC

Photo 1. WRMI QSL'd Rich D'Angelo with this new-ish world map card for its Okeechobee site.

You should be able to hear The Voice of Greece well at one or more of the aforementioned time-frequency pairs.

Several months ago we were blessed with the arrival of **Al Jazeera Television** on some of our cable and digital OTA TV systems, now we've been given the radio version of this "news" channel on shortwave. This Qatar-based broadcaster goes out (likely via the Kostinbrod, Bulgaria site) as follows: 1100-1555 UTC on 15760, 1600-1755 UTC on 7305, 1800-1955 UTC on 7310, 2000-2155 UTC on 7305, and 2000-0400 UTC on 7300.

For more than 20 years **George Wood** hosted ***Sweden Calling DXers*** over Radio Sweden. For several years the program also produced and mailed out weekly content summaries to interested DXers. Wood began his broadcasting tour as a

Photo 2. Views of Pyongyang's downtown on this Rich D'Angelo QSL. Unfortunately, most of the buildings are empty.

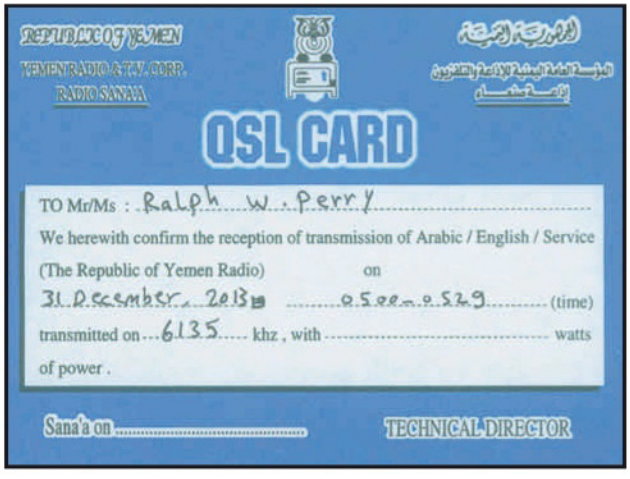


Photo 5. Ralph Perry QSL'd Republic of Yemen Radio on 6135.

freelance reporter at Radio Sweden and later took over from retiring host **Arne Skoog.** Now Wood himself is calling an end to his Radio Sweden career. *The Listening Post* salutes Wood and his longtime service to the hobby. I was a subscriber to the excellent SCDX bulletin and eagerly looked forward to getting it in the mail every week.

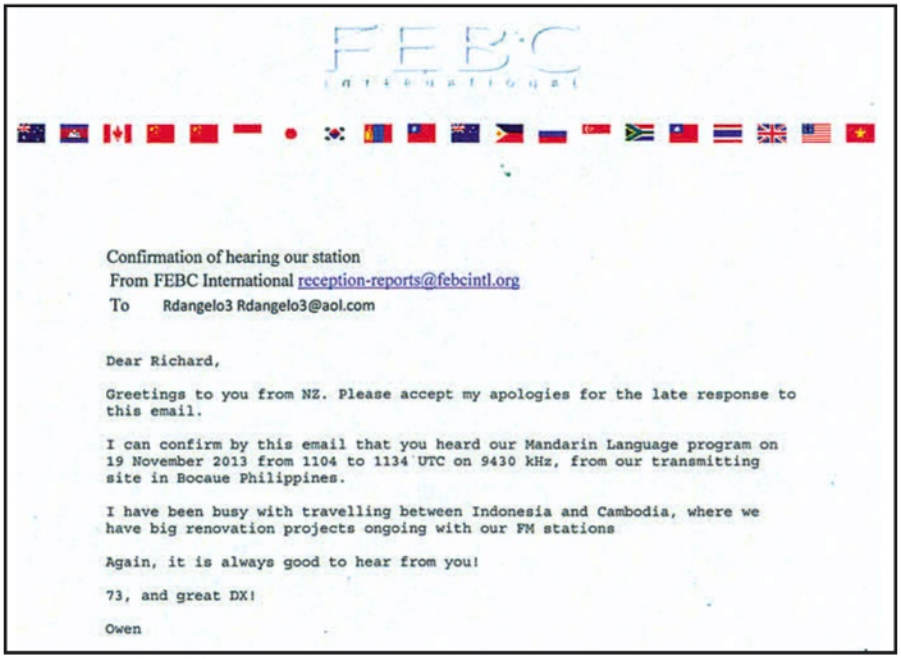
HCJB has changed its name and now operates as "**Reach Beyond Australia**." Kind of an awkward slogan — leaving the name of its sister-affiliated stations unclear.

Republic of Yemen Radio has returned to shortwave and is even using English, yet it's obviously not intended for listeners in North America, as they are using 6135 from 1800-1900 UTC. Still, it's a beginning.

Longtime **Peruvian broadcaster Radio del Pacifico**, **OAZ4X** in Lima has been reactivated on 9675. It is still listed on 4975, as well, running from 2300 until 0700 UTC.

Your Logs, Please ... PLEASE!

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


FEBC International

Confirmation of hearing our station
From FEBC International reception-reports@febcintl.org
To Rdangelo3 Rdangelo3@aol.com

Dear Richard,

Greetings to you from NZ. Please accept my apologies for the late response to this email.

I can confirm by this email that you heard our Mandarin Language program on 19 November 2013 from 1104 to 1134 UTC on 9430 kHz, from our transmitting site in Bocaue Philippines.

I have been busy with travelling between Indonesia and Cambodia, where we have big renovation projects ongoing with our FM stations

Again, it is always good to hear from you!

73, and great DX!

Owen

Photo 3. FEBC (Far EastBroadcasting) verified for Rich D'Angelo for its Bocaue site in the Philippines.

Photo 4. NASWA's weekly Flashsheet editor, Mark Taylor, visits Listening Post HQ.

Photo 6. Ralph also got Horizon FM from Tenerife, Canary Islands, on 6255.

Photo 7. Bob Brossell snared this answer from Brazil's Radio Aparecida on 11855.

include your last name and state abbreviation after each.

Also needed are spare QSLs or good copies you don't need to be 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? It's your turn to grace these pages! *Do I need a hat and play a saxophone? Or maybe get an organ-grinding monkey?*

November's SWL Logs

To see this month's logs, link to the *CQ Plus Listening Post* landing page at <http://www.CQPlusListeningPost.blogspot.com>. For all the SWLers who contributed, we offer a host of high fives, back slaps and "well dones" to the good guys who did their thing: Harold Sellers, Vernon, BC; Fotio Padazopulos, Athens, Greece; Rich D'Angelo, Wyomissing, PA; Ralph Perry, Wheaton, IL; Rick Barton, El Mirage, AZ; and Bob Brossell, Pewaukee, WI. Thanks to each of you!

And, until next month, Good listening and ... keep on keepin' on!

In Times Past

Here's your blast from the past: ex "Radio Peking," China, 7500 at 2245 in Chinese and English on November 26, 1952.

WRTC2014: A New Ham's Perspective

BY CAROLINE BAPTIST, KG7AAX

As a newbie to the ham world, I was delighted to learn about the World Radiosport Team Championship. Hearing that it's dubbed the "Olympics" of amateur radio, I knew that WRTC was something special. This was the event for contesters to put faces to callsigns, to flex their operating skills, show off hardware, and to compete with the "best of the best" on a level playing field. But there's more to this global event. Here are my observations.

All in the Family

It is a sport dominated by men: Mostly middle-aged, but also a reasonable count of operators in their late 60s to age 70. Sprinkled in were a handful of contesters in their 20s, not including the YOUTH team of Filippo Vairo, IZ1LBG (age 23), and Paul Whitman, WQ2N (age 22). Many WRTC operators received their licenses as early teens — and some started the hobby even earlier. Daniel Craig, N6MJ, and first-place winner of WRTC2014, was licensed as a Novice at the tender age of 8. Craig's exposure to amateur radio, and particularly in contesting, can be attributed to both his father and brother being active in radiosport.

Learning about amateur radio from a family member seems to be an integral part of many operators' biographies. Many of these hams have, in turn, passed on the hobby to their children. WRTC2014 even hosted a father-son team: Jeffrey T. Briggs, VY2ZM, and his son Patrick W. Briggs, KK6ZM. A true example of "like father, like son."

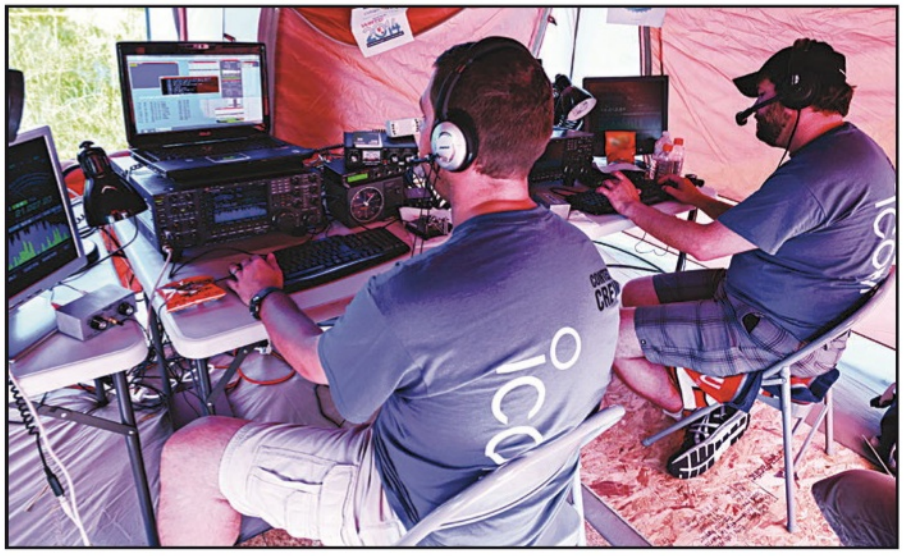
Real Contesting

However, WRTC2014 wasn't just about family tradition, or about OMs for that matter. WRTC affirmed that YLs are on the air and ready to contest. This year's YL team, Alexandra "Sandy" Raeker, DL1QQ, and Irina Stieber, DL8DYL, landed a solid 21st place finish out of 59 teams competing. To succeed as first-time competitors at WRTC, the ladies weren't afraid to ask questions, welcomed technical advice from male peers, tested their equipment repeatedly, and practiced together well before the 2014 event.

"I think the results show that girls are just as good in contesting as men. YLs are just as competitive as OMs," say Raeker and Stieber. "If you focus on a dream (like qualifying for WRTC), you will be able to reach it — no matter what gender, age, race, or family background you have. To contest like a girl is to contest like a real contester."

No-Compromise Solution

All teams contested with fierce determination and persistence, but this



"More than 400 people donated their time to set up a total of 65 operating sites in just two days — simply for their love of ham radio," writes Caroline Baptist, KG7AAX. (Photography courtesy of Nodir Tursun-Zade, EY8MM)

WRTC 2014 Referee Charlie Wooten, NF4A, of Lynn Haven, Florida, poses with second-place winners Rastislav Hrnko, OM3BH, and Jozef Lang, OM3GI, during the trophy presentations.

From left, Irina Stieber, DL8DYL; Manfred Wolf, DJ5MW; Sandy Raeker, DL1QQ; and Stefan von Baltz, DL1IAO, show off their plaques at WRTC2014.

steady approach certainly paid off for the Gold medal team of Craig, N6MJ, and Chris Hurlbut, KL9A. After placing third at WRTC2010, Hurlbut says he and Craig "operated several more times and refined [their] strategy in the years between WRTCs."

Parts of their strategy included making sure each team member was strong on both modes and upgrading to a radio that excelled on SSB and CW. "With the antennas and sites all being equal, that leaves operator skill and hardware inside the tent as the only variables. Our [ICOM IC-7800] radios were a true 'no-compromise solution' to complete our setup," adds Hurlbut. "Calls were easy to pick out and it was never a challenge when the band was super crowded." Of the '7800, Craig adds, "It was a key element in our success bringing home the gold at WRTC."

The Secret to Success

Reading through the operators' personal histories definitely evokes nostalgia, but I can't help but be excited about the future of contesting when I witness diversity in the field and technology that is constantly evolving. Being a new YL interested in radiosport, Raeker and Stieber assured me that I can — and should — be active. "Don't let yourself be pushed off. It is okay to enjoy this great amateur radio hobby."

When asked, "What is the secret to contesting success?" Hurlbut said "the secret is that there *is no secret.* Get on and work guys as often as possible. Watch and learn from the guys who've been doing it a long time."

Final Thoughts

My last impression of WRTC is one of sheer enthusiasm for the amateur radio hobby. The camaraderie among hams is strong. WRTC2014 could not be the success that it was without the tireless efforts of volunteers. More than 400 people donated their time to set up a total of 65 operating sites in just two days — simply for their love of ham radio.

WRTC tournaments occur only every four years, giving contesters a handful of years between events to "hear it, work it, and log it" with their best scores. It is not uncommon for WRTC teams to play against the same operators during qualifying events. Eventually, radiosport turns repeat opponents into familiar voices and then lifelong friends you've never met in person.

With 59 competing teams from 29 qualifying regions and representing 38 countries, WRTC2014 united contesters from all over the globe. Not everyone can win the gold medal, but playing with the best contesters around and finally meeting your on-the-air friends face-to-face may be just be as good.

On the top tier, Dan Craig, N6MJ, left; and Chris Hurlbut, KL9A, take their bows as top winners at the 2014 World Radiosport Team Championship.

The Young Hams @ Friedrichshafen (Germany, That Is)

BY CAROLE PERRY, WB2MGP

In June of this year I was invited to conduct a forum called "Ham Radio and School Curriculum" at the world's second biggest ham radio convention. Destination: Friedrichshafen, Germany.

This fabulous event is sponsored by the Deutscher Amateur Radio Club (DARC) along with the popular Maker World lectures and activities.

There is such a heavy emphasis on attracting young people into amateur radio in Germany that the keynote speaker at the opening ceremonies of the 39th International Amateur Radio Exhibition was 12-year-old Kay Malfeld, DO7KAY, who passed his entry class license exam about one year ago.

This young man spoke eloquently about what makes him enthusiastic about ham radio. Interestingly, he said the attraction to the hobby *was not* the opportunity to speak with others having the same interests. He explained this could easily be done via the Internet using a smartphone, Skype, or Teamspeak.

Kau felt he was speaking for other young hams when he said the following things were what really mattered:

- Practical experience with technology
- Exciting projects, in particular those involving software and networking technology
- Getting together with other young people
- International understanding, meeting new people from other countries
- Participating in Field Days, emergency communications, and experimenting with main power independent station set-ups (in case the mobile phone network fails)

Kay called upon the local clubs to provide the volunteers to cooperate with local schools, and to support and motivate interested young people.

Several clubs could join forces in order to provide the budget and the personnel to provide equipment and parts for building projects. Kay suggested that young people would be interested in exciting projects like working on a high-altitude balloon or a microcontroller board, under the guidance and supervision of adults. He made a plea for the local hams and clubs to help get more young people on the air so he could communicate with them.

In his summary, Kay said, " ... Mobile phone switched on and handheld transceiver switched on, as well. The combination of amateur radio communications with smartphones and computers is an exciting approach with huge potential."

This 12-year-old feels people working in technology along with kids and teenagers is the right attitude in the 21st century.

A Portfolio: Doing My Part

In the PowerPoint presentation I gave at my forum, I spoke about "Here's How I Did It," describing how I taught "Introduction to Amateur Radio" successfully for 30 years at a Staten Island, New York intermediate school to 6th, 7th, and 8th graders.

*<wb2mgp@gmail.com>

In June, young people were well represented in the convention hall during the 39th International Amateur Radio Exhibition in Friedrichshafen, Germany — second largest ham convention in the world. (Photography courtesy of Joe Eisenberg, KØNEB)

Carole Perry, WB2MGP, this year got an eyewitness view of "Friedrichshafen," the world-renowned and youth-oriented amateur radio convention held annually in Germany. Literally translated, Messe Friedrichshafen means Fair Friedrichshafen.

I taught 11 classes twice a week and one class three times a week. It was not taught as a licensing class, but rather as a program, open to all students, to learn the basics of radio phenomena and to experience making contacts on the radio in our classroom. Through the years, with 450 students a term, hundreds of students got their FCC licenses and went on to join our local amateur radio clubs and get active in community events as volunteers.

I gave suggestions on how to keep the students interested and excited, for

The Learn to Solder hands-on exhibit was particularly interesting to many of the young people attending the convention.

Young people of all ages — and species — made an appearance at Friedrichshafen, as captured in this pose to CQ photographer Joe Eisenberg, KØNEB.

Set-up in the display areas at the annual convention in Germany is full of amateur radio eye candy, even before all the vendor covers are removed.

example, inviting hams with interesting careers — such as pilots, scientists, astronauts, missionaries, motorcycle police officers, entertainers, clowns, athletes, and so on — whom we had spoken with on the air, to visit our classroom.

Many of these speakers motivated and influenced career choices of my students. I encouraged the teachers in the audience to apply for International Space Station contacts. Speaking with astronauts was always a highlight of the term whenever we were fortunate enough to contact them either in space shuttles or at the Johnson Space Center amateur radio club station W5RRR.

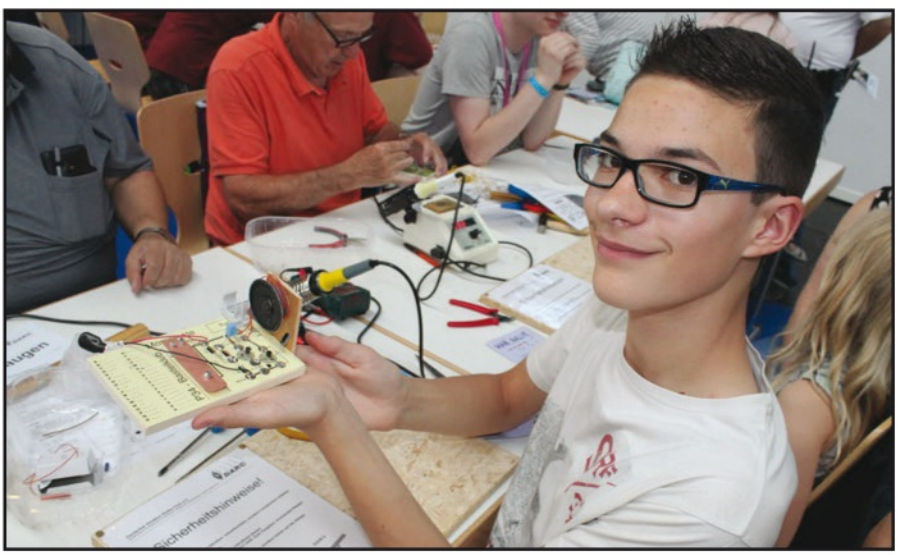
I proposed a plan to pair up young hams from both Germany and America. I am presently working with Annette Coenen, DL6SAK, to give three students from each country a free one-year digital subscription to *CQ Amateur Radio* and *CQ DL* magazines, and to arrange for them to meet on the air.

We are all very excited about the "possibilities" of this project. I am looking for corporate sponsorship to finance the project of sending a young presenter from my Dayton Youth Forum to speak at Friedrichshafen. I welcome any suggestions and support from hams who would like to get involved in this exciting project for young hams with me. Please contact me at <caroleperry@ix.netcom.com> if you are interested.

Overview from a Staten Islander

The 39th International Amateur Radio Exhibition was a *fabulous* experience for me. The gracious hospitality of the DARC members made this "elegant" ham radio convention the experience of a lifetime, with lots of potential for more youth activities.

– *Carole Perry, WB2MGP*



Old and young people alike came away from Friedrichshafen with smiles and a sense of accomplishment — this completed breadboard project as proof. In case you're wondering, on the paper in front of this young man, SICHERHEITSHINWEISE means Safety Instructions.

CQ columnist Carole Perry, WB2MGP, described to Friedrichshafen visitors how she taught Introduction to Amateur Radio successfully for 30 years at a Staten Island, New York intermediate school to 6th, 7th, and 8th graders.

CQ Reviews: KK7DS CHIRP Software

Chirpy, Chirpy, Cheep, Cheap Radio Programming

BY DAN SREBNICK,* K2DLS

I was looking for a way to share memory files between several different radios. RT Systems <http://www.rtsystemsinc.com> seems to specialize in this area and offer some polished products.

One of the requirements of the RT Systems software appears to be that you must have *its* programming cable. I'm sure that this is done to minimize support issues, but I wasn't ready to go buy a bunch of new programming cables right then.

As I looked out the window into the backyard, it was then that I heard the robin's call of *chirpy, chirpy, cheep, cheap.*

Are We Cheap or Are We Frugal?

Hams are sometimes said to be cheap. With thousands of dollars tied up in our shacks I doubt that this is actually true, but the culture of amateur radio supports the idea of looking for a workable way of doing things that is cost efficient. Let's face it, radio amateurs were the original makers and hackers well before there were Maker Faire's® and computers.

In that spirit, I present for your consideration, CHIRP — a free and open source way to program radios from a number of manufacturers. *Yes, it really is free.*

Meet CHIRP

The CHIRP project is led by Dan Smith, KK7DS, also known for the D-RATS D-Star messaging project. He and his team have assembled a treasure-trove of capabilities for programming amateur radio transceivers for a growing list of manufacturers and radios, **Table A**.

Aside from wide-ranging radio support, portability of files is possible through several means, including support for CSV (comma delimited spreadsheet files), ICOM's .icf, Yaesu's VX-5 and VX-7 Commander files, and CHIRP's own file format. Direct downloads from Radio Reference and RepeaterBook are also possible.

*<k2dls.rfbits@gmail.com>

Radios Supported by CHIRP

AnyTone
AT-5888UV
(*Also includes the Intek HR-2040 Also includes the Polmar DB-50M)*

Alinco
•DR-03T
•DR-06T
•DR135T
•DR235T
•DR435T
•DJ596T
•DJ175T

Baofeng
•F-11
•UV-3R
•UV-5R *and variants*
•UV-6
•UV-82/82L/82X
•UV-B5/B6
•BF-666S/777S/888S

Baojie
•BJ-UV55

ICOM
•IC-80AD
•IC-2820H
•ID-800H
•ID-880H
•IC-208H
•IC-2200H
•IC-91/92AD
•IC-V/U82
•ID-RPx000V/RP2x
•IC-2100H
•IC-2720H
•IC-T70
•IC-T7H
•IC-T8A
•IC-Q7A
•IC-W32A
•C-746
•IC-7200
•IC-7000
•ID-31A
•ID-51A

Intek
•KT-980HP *(in daily builds)*

Jetstream
•JT220M

Kenwood
•TH-D7A/G
•TH-D72
•TH-F6A
•TH-F7E
•TH-G71A
•TH-K2
•TK-7102/8102/7108/8108
•TM-271A
•TM-281A
•TM-D700
•TM-D710
•TM-G707
•TM-V7A
•TM-V71A

KYD
•NC-630A

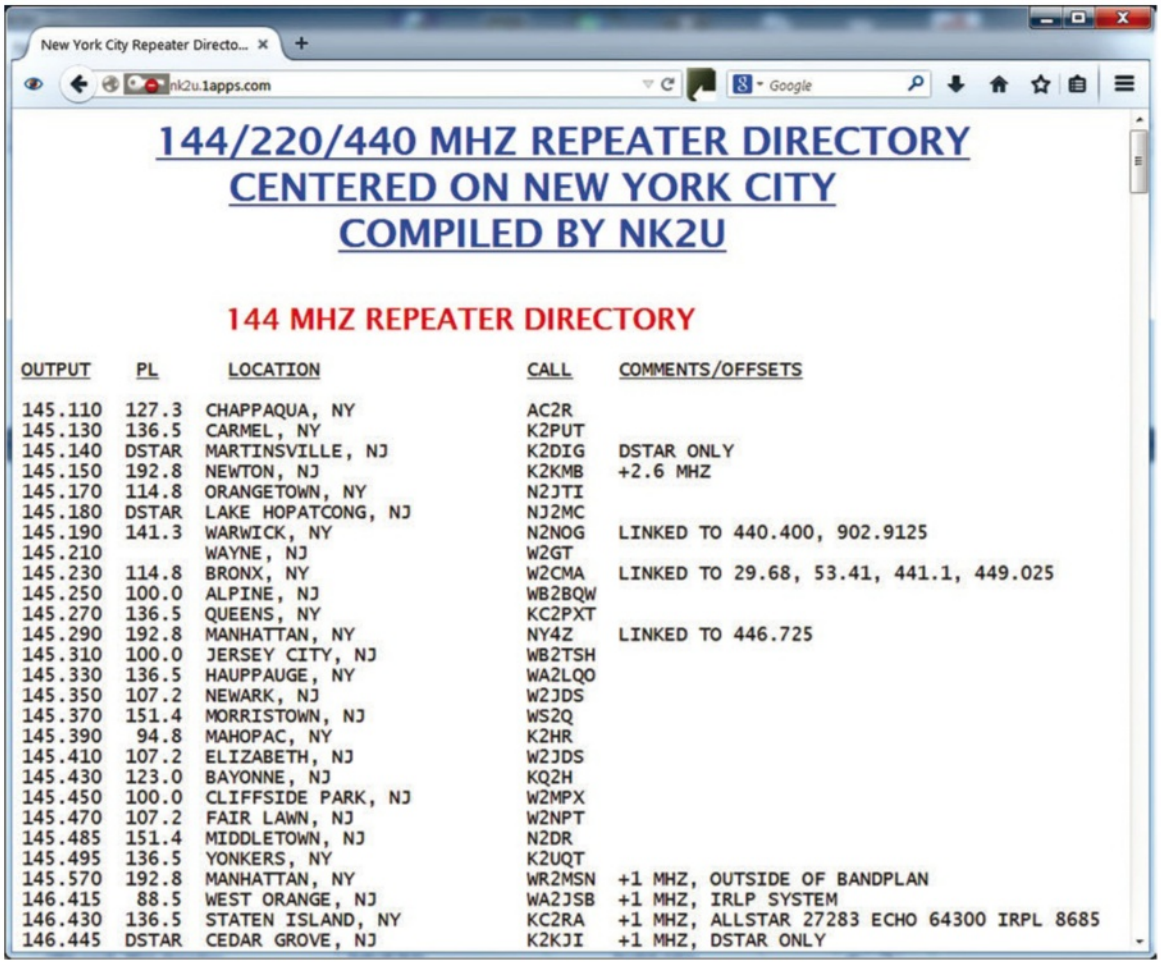
Puxing
•PX-2R (UHF)
•PX-777

TYT
•TH-UV3R
•TH-UVF1

Yaesu
•FT-60R
•FT-90R
•FT-817/ND
•FT-857/D
•FT-897
•FT-1802M
•FT-2800M
•FT-7800R/7900R
•FT-8800R
•FT-8900R
•FTM-350R
•VX-170 *(in daily builds)*
•VX-2R
•VX-3R
•VX-5R
•VX-6R
•VX-7R
•VX-8R

Wouxun
•KG-UVD1P/UV2D/UV3D
•KG-UV6D/UV6X

Table A. *Not all CHIRP features are supported for all radios.*



New York City Repeater Directo... ×

nk2u.1apps.com

Google

144/220/440 MHZ REPEATER DIRECTORY
CENTERED ON NEW YORK CITY
COMPILED BY NK2U

144 MHZ REPEATER DIRECTORY

OUTPUT	PL	LOCATION	CALL	COMMENTS/OFFSETS
145.110	127.3	CHAPPAQUA, NY	AC2R	
145.130	136.5	CARMEL, NY	K2PUT	
145.140	DSTAR	MARTINSVILLE, NJ	K2DIG	DSTAR ONLY
145.150	192.8	NEWTON, NJ	K2KMB	+2.6 MHZ
145.170	114.8	ORANGETOWN, NY	N2JTI	
145.180	DSTAR	LAKE HOPATCONG, NJ	NJ2MC	
145.190	141.3	WARWICK, NY	N2NOG	LINKED TO 440.400, 902.9125
145.210		WAYNE, NJ	W2GT	
145.230	114.8	BRONX, NY	W2CMA	LINKED TO 29.68, 53.41, 441.1, 449.025
145.250	100.0	ALPINE, NJ	WB2BQW	
145.270	136.5	QUEENS, NY	KC2PXT	
145.290	192.8	MANHATTAN, NY	NY4Z	LINKED TO 446.725
145.310	100.0	JERSEY CITY, NJ	WB2TSH	
145.330	136.5	HAUPPAUGE, NY	WA2LQO	
145.350	107.2	NEWARK, NJ	W2JDS	
145.370	151.4	MORRISTOWN, NJ	WS2Q	
145.390	94.8	MAHOPAC, NY	K2HR	
145.410	107.2	ELIZABETH, NJ	W2JDS	
145.430	123.0	BAYONNE, NJ	KQ2H	
145.450	100.0	CLIFFSIDE PARK, NJ	W2MPX	
145.470	107.2	FAIR LAWN, NJ	W2NPT	
145.485	151.4	MIDDLETOWN, NJ	N2DR	
145.495	136.5	YONKERS, NY	K2UQT	
145.570	192.8	MANHATTAN, NY	WR2MSN	+1 MHZ, OUTSIDE OF BANDPLAN
146.415	88.5	WEST ORANGE, NJ	WA2JSB	+1 MHZ, IRLP SYSTEM
146.430	136.5	STATEN ISLAND, NY	KC2RA	+1 MHZ, ALLSTAR 27283 ECHO 64300 IRPL 8685
146.445	DSTAR	CEDAR GROVE, NJ	K2KJI	+1 MHZ, DSTAR ONLY

Screenshot A. The repeater list used in our example is already in a nice column format, ready to cut and paste into a spreadsheet for further manipulation.

CHIRP is powerful and CHIRP is free as a bird. It is available online at <http://chirp.danplanet.com/projects/chirp/wiki/Home>.

One interesting option is a Linux-based Live CD that will run the software without further installation. Just boot and go.

How I Use CHIRP

There is a great New York City area repeater list that I like and contribute to. It is published by Roland Stiner, NK2U, and available online at <http://nk2u.1apps.com>.

I am just a little south of NYC, so I wanted to program my IC-2820H with the 2-meter/70-centimeter contents of the list. My first step was to cut and paste the appropriate columns from the NK2U list into a spreadsheet format.

Keeping up with the theme of using free software, I used the Libre Office Calc spreadsheet program. This is available for Windows, Linux, and Mac and is part of many Linux distributions. You can find more information online at <http://www.libreoffice.org>. Libre Office can read and write the file formats of that "other" well-known office suite and, especially for personal use, may be all that you need.

Screenshot A shows a snippet of the NYC Area Repeater Directory list. Note that there are five columns:

- Output
- PL
- Location
- Call
- Comments/Offsets

With the Libre Office spreadsheet program open, select the data from the repeater list and paste it into the spreadsheet. Use "Paste Special, Unformatted Text." This opens a window where the boundaries of the five columns previously described can be marked with a pointer click. Under Separator Options, select Fixed Width and uncheck Detect Special Numbers, **Screenshot B**.

Save the file as "NYC Repeaters" and use the Text CSV file format. Keep the spreadsheet window open.

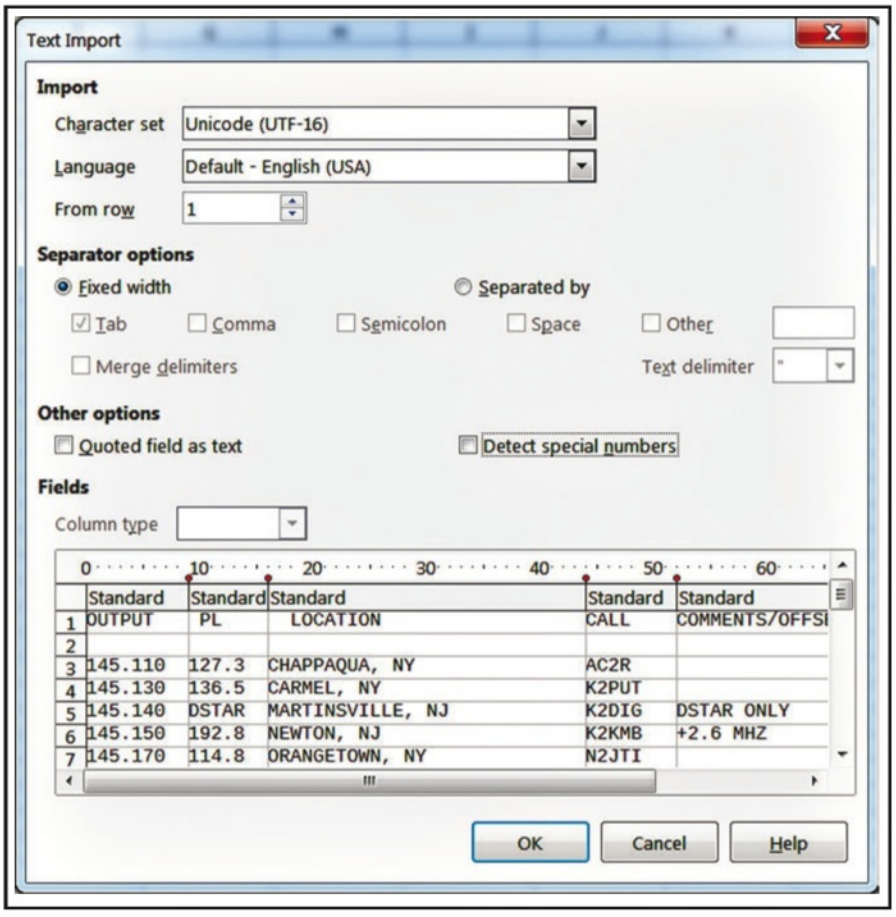
Radio Programming is No Longer for the Birds

Start CHIRP and Select File → New.

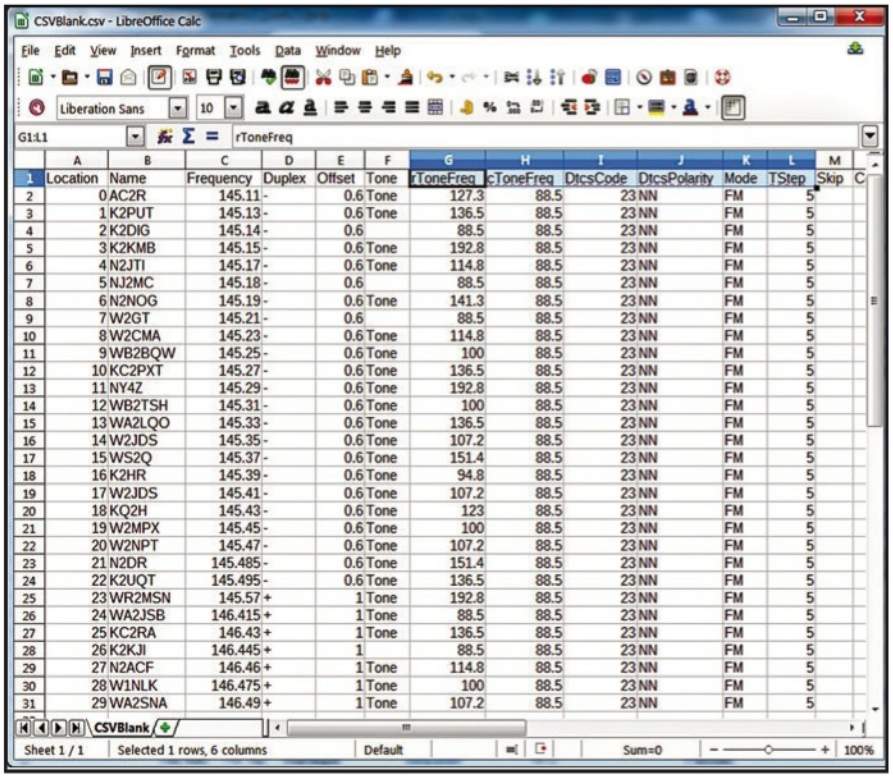
An (almost) empty template will be created, save one test entry, which can be deleted. Save that new template as a CSV file. I called mine CSVBlank. Now open CSVBlank using Libre Office Calc. There should be two spreadsheet windows open — one containing the data from the NK2U repeater list and the other is the blank temple created within CHIRP.

It's time for some old-fashioned selecting, cutting, and pasting. Copy the following columns from the NYC Repeaters webpage into CSVBlank:

- Output → Frequency
- PL → Tone
- Call → Name



Screenshot B. This is how the spreadsheet columns for the data copied from the website are defined.



Screenshot C. This is how I set up my CSVBlank file for initial import into CHIRP.

You'll have to do a little finessing of the worksheet now. In the Tone column, you should delete any text entries that are not PL Tones, such as D-STAR. In the LOC field, put the memory channel number that you wish to use for that entry. Set the repeater duplex as appropriate (+), (-), or blank for simplex and specify the proper repeater offset (usually 0.6 for 2 meters, 1.6 for 1.25 centimeters, 5 for 70 centimeters, or blank for simplex.

There must also be a valid value specified for rToneFreq (transmit tone), cToneFreq (receive tone), DtcsCode, DtcsPolarity, Mode and Tstep. These fields cannot seem to be left blank, even if unused. In that case stuff a default value such as "88.5" for the tone or "23" for the DTCS code, "NN" for Dtcs polarity and "5" for Tstep into the appropriate cells. Take a look at **Screenshot C** for a sample of my CSVBlank file.

If you're a spreadsheet power user, you understand how easy it is to set a default value for a cell and then copy it down a column. Spreadsheets can also automatically insert a sequence number, so you can auto number the memory locations.

If you're not a power user, it may take you a bit longer, but you'll figure out a way that works best for you. Take a look at the Calc help information for auto-fill. If you have a list that also contains CTCSS (transmit) tones or other data, you can cut and paste that data as appropriate. My example is just meant to provide some insight into how to get started with CHIRP.

Save the CSVBlank template. Next, initiate a download from your radio using CHIRP (Radio → Download from Radio or Alt-D). You'll need to know the COM port address and the type of radio that you're going to communicate with.

Once you have read the radio configuration, you can use the import function (File → Import) to bring in the memory channels that you defined in CSVBlank. Scroll through the configuration, and make certain that everything is to your liking.

On my IC-2820H radio, this is when I fill in the additional information needed for the D-STAR repeaters, which is not contained in the repeater list. Now you're ready to upload the configuration back to your radio (Radio → Upload to Radio or Alt-U). Last, save a copy of the file (File → Save As) under a name that means something to you.

Not Bad for Free Software!

With your frequency and memory information in CHIRP format, it is easy

to follow a similar process of importing your frequency list into a new configuration that will program any of the other supported radios, provided that the frequencies and features you are using are supported by that radio.

In general, you should:

- Read the radio configuration
- Save a copy of the existing configuration to disk (just to be safe)
- Import the memory list that you want to use
- Write the radio configuration
- Save the new configuration to disk
- There is a summary on how to program a radio with CHIRP available in the CHIRP Beginner's Guide at <http://chirp.danplanet.com/projects/chirp/wiki/Beginners_Guide>.

Support for Many Input Formats

The import function supports a wide variety of inputs. The dropdown for the import function includes the following file types and extensions:

- CHIRP Files: .chirp
- CHIRP Radio Images: .img
- CSV Files: .csv
- EVE Files (VX5): .eve
- ICF Files (ICOM): .icf
- Kenwood HMK Files: .hmk
- Kenwood ITM Files: .itm
- Travel Plus Files: .tpe
- VX5 Commander: .vx5
- VX6 Commander: .vx6
- VX7 Commander: .vx7

Opening a New World

CHIRP is truly a radio portability gateway. Dan Smith and the team have done a great service to amateur radio with this community-supported effort. There is a mailing list to support users of CHIRP and the developers will entertain requests for new radio support. New radio implementation usually requires that a developer "reverse engineer" the format of a memory file.

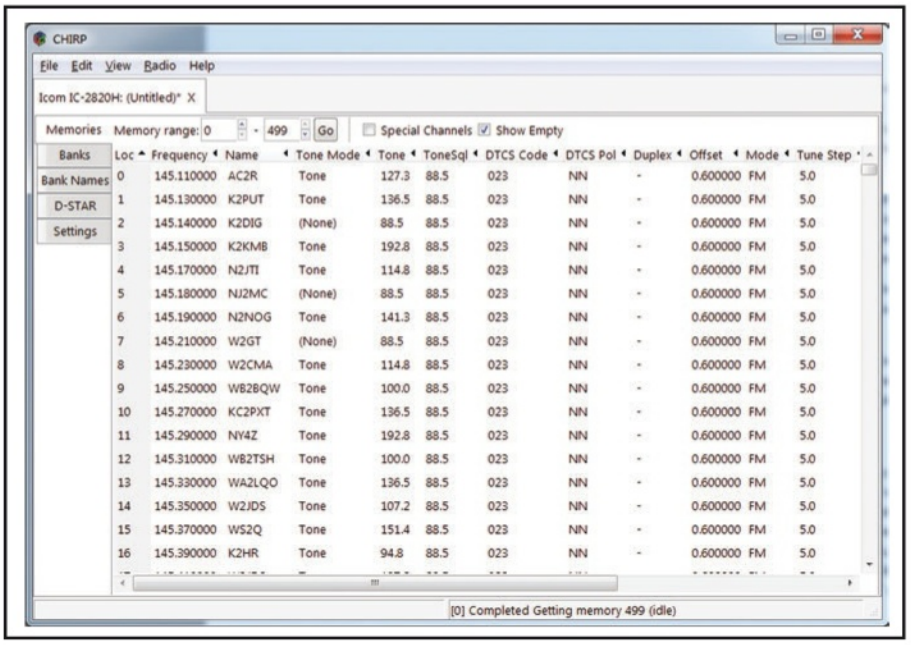
Another feature that I tried was a download from radioreference.com (Radio → Import from data source). I typed in my credentials and my ZIP code, and my Baofeng UV-82X was filled with interesting things to listen to. However, many of the frequencies downloaded into CHIRP were outside of the receive capabilities of the radio.

A nice improvement to CHIRP would be for the automated downloads to only select frequencies which that particular radio can receive.

On the plus side, I was able to program my ICOM IC-2820 for D-Star use from within CHIRP. No need to use the ICOM software for programming the radio for digital voice.

While the CHIRP software is free, donations are gladly accepted. Donations are used to support development efforts and to purchase hardware for the project where required.

Is there a free software that you find helpful to your radio hobby? Let me know and perhaps I'll cover it in a future "Radio and Computers" column.



Screenshot D. This is how the radio configuration looks when imported into CHIRP.

Make Your Own Slug-Tuned Coils — From Scratch!

BY RICHARD FISHER, *KI6SN

For a homebrewer there are few things more deflating than being all excited to build a circuit only to discover some of the parts needed are either no longer with us or extremely hard to find.

Parts obsolescence is becoming a greater threat to builders with each passing day. And if you *can* find the part, it's often priced sky high.

This was brought home recently when a receiver circuit called for a couple of shielded slug-tuned coils. They were common in the '80s, but the inductances needed in this design were nowhere to be found — in my parts collection or on the Internet.

The radio's design was just too enticing to put aside, so the mind went to work to find a workaround. The small shielded coils on hand would be nearly impossible to rewind. Have you ever looked inside one? They are mechanical marvels.

How crazy would it be to make a slug-tuned coil from scratch? The answer is: *not crazy at all,* **Photo A**.

This picture story will walk you through prototyping, design, and construction. *Let's get going!*

Photo B: What Slug Material to Use?

The first thought was to crush a common toroid core and use the remnants as the core material to make the slug. With the help of good friend Charlie Lofgren, W6JJZ, No. 2 powdered iron seemed the

* email <ki6sn@cq-amateur-radio.com>

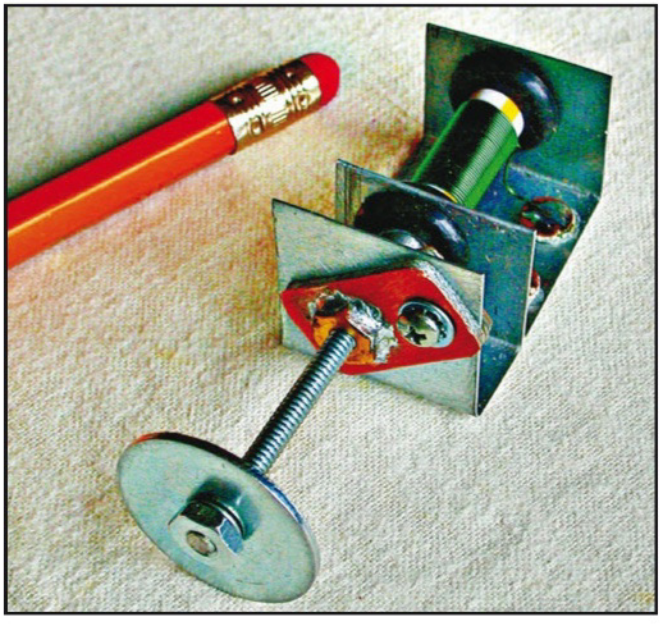


Photo A. *A pencil is used for comparison to give an idea of the size of the slug-tuned coil made from scratch for a 40-meter receiver project at KI6SN.*

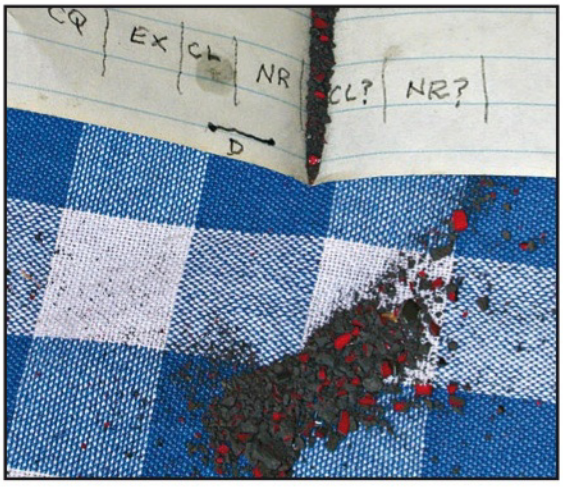


Photo B. *Two T68-2 toroids were hammered to smithereens to create the slug core. (See text)*

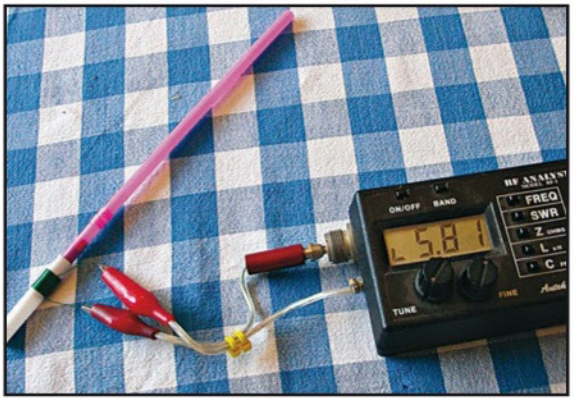


Photo C. *The first step was to prototype the concept.*

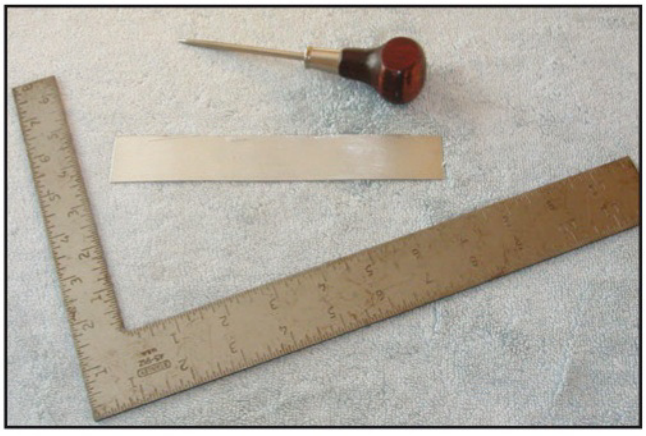


Photo D. *Here's where building the coil's housing begins.*

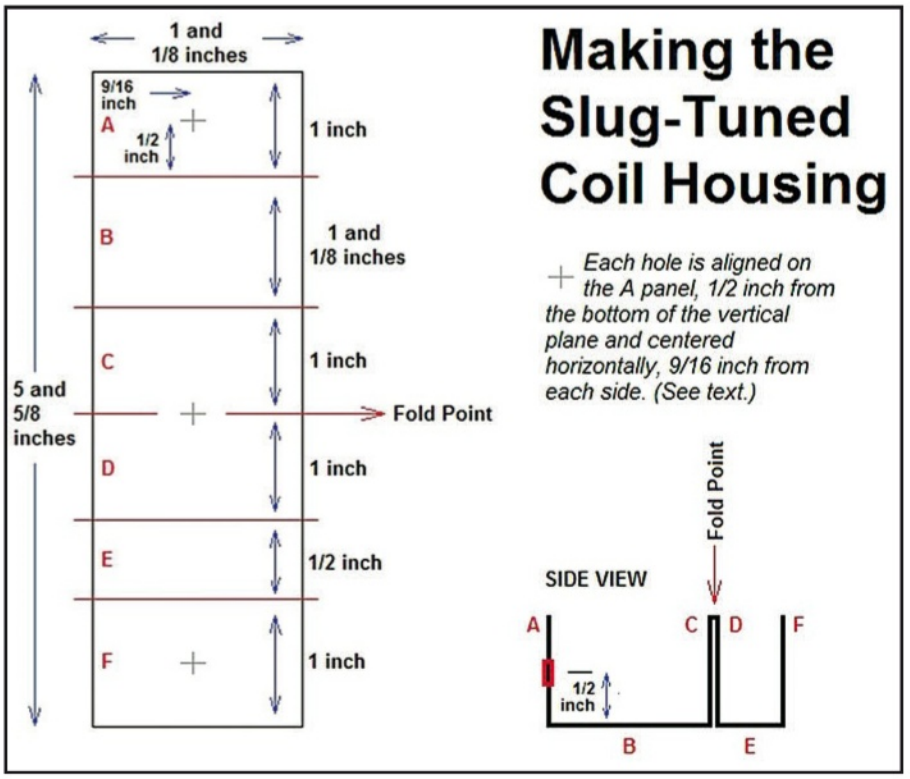


Figure 1. *This illustration shows the general layout of the slug-tuned coil's housing. Red lines are where lines will be etched in the thin aluminum to indicate where a bend will be made.*

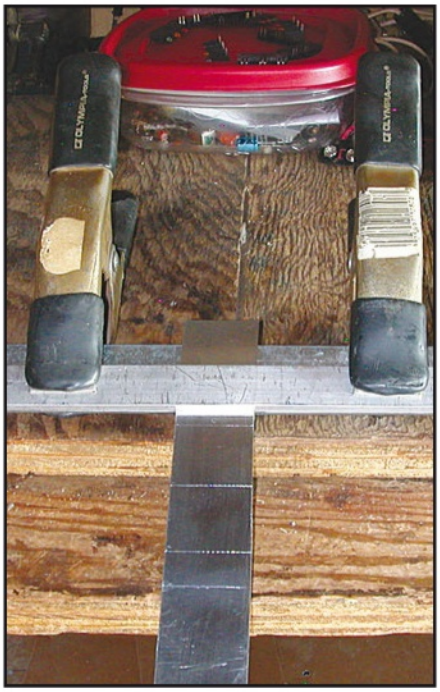


Photo E. *The "bending machine" is nothing more than flat pieces of aluminum stock firmly clamped to hold in place the metal to be bent.*

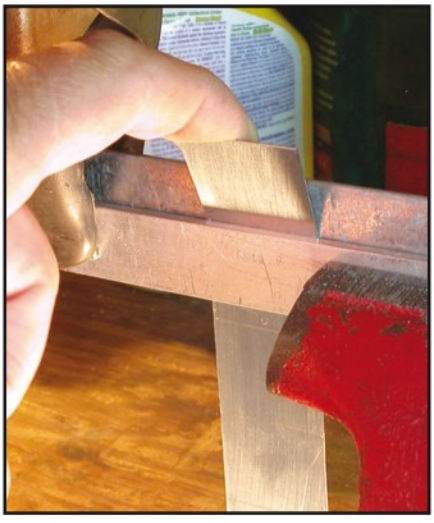


Photo F. *Once aligned and in place, the thin aluminum can be bent with a finger or two.*

right choice, as this receiver covers a part of the amateur radio high-frequency spectrum — 7 MHz, 40 meters. Two T68-2 red toroids were sacrificed for the greater good. A claw hammer smashed them to smithereens. *(**NOTE:** Please ignore the notes on the paper in **Photo B** that funneled the toroid pieces onto the dining room table. They're keyer prompts for the ARRL November Sweepstakes. – KI6SN.)*

Photo C: Cut and Try Prototyping

All sorts of questions arose about how to house the core material, how to pass the slug through the coil inductor and so on. Soda straws became the answer. The coil is wound on one from a recent lunch at McDonald's. A slightly smaller-diameter flexible straw from Target holds the core material that passes through the coil to change the inductance. *(**UPDATE:** Straws from Subway were the perfect size to hold the slug material, as well. That revelation prompted a trip for a foot-long sandwich, bag of chips, and a soda. These are the sacrifices homebrewers make to ply their trade. – KI6SN.)*

Two slug-tuned coils were required in the receiver circuit, each with an inductance of 5.8 μH (microhenrys). An online air-wound coil inductance calculator helped determine the number of turns needed to put us "in the ballpark," <http://bit.ly/10mpRqi>. In this case, type into the "d" field the McDonald's straw's diameter — 0.25 inch. Then take a guess at the number of turns and type that number into the "n" field. Now click "Calculate Inductance" and see what number shows up in the "l" field.

After several tries, 21 turns was about right. But it would be better to pad the numbers to place the 5.8 μH needed somewhere in the middle of the inductor's tuning range. In the end, 36 turns seemed about right. This gave a range of 8.3 μH with the slug fully inserted inside the coil, to 3.3 μH with the slug fully removed.

For the prototype and testing, erasers from No. 2 pencils were used as plugs to hold the crushed No. 2 core material in place. The small red pieces and powder were tamped and compacted in the flexible straw using a chopstick. *(**ASIDE:** This required a run for Chinese food. If you're getting the impression this is a gastronomically-driven project, you're right! – KI6SN.)*

Figure 1: Making the Housing

A piece of thin aluminum from The Home Depot was used to make the coil mounting and slug adjustment hardware. You can find 8- x 12-inch pieces and smaller for less than $1 in the roofing materials aisle. *(**CAUTION:** Wear safety glasses at all times when working with metal. Getting a tiny aluminum filing in your eye can seriously derail the project with a trip to the ER, or worse. – KI6SN.)*

Using a hacksaw cut a piece 1 and 1/8-inches wide and about 6-inches long, **Figure 1**. The red lines in the

Photo G. *Since the housing is made of one continuous length of aluminum, a "fold" is needed to make the center vertical plane.*

Photo H. *Tightly clamping the "fold" of panels C and D between the metal bars and a vise brings the two vertical planes into one.*

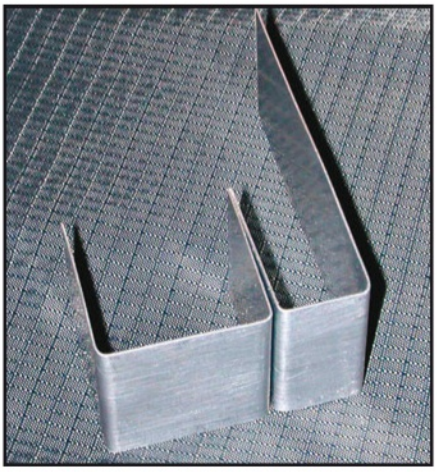


Photo I. *Voila! Here's what the housing for the second version built at KI6SN looked like.*

drawing show where scores are made in the metal, marking where bends will be made to produce the finished housing shown in **Photo A**. Using an awl and straight edge, lines are etched in the aluminum in five increments.

Photo E: Your Metal Shop 'Bending Machine'

With these types of projects, I'm often asked if there's some fancy metal-working shop behind them. Nope. The "bending machine" here consists of a couple pieces of flat aluminum stock clamped in a vise.

Line up the score lines — correlating to the red-line measurements in **Figure 1** — with the edges of the flat stock, clamp it, tighten it all in a vise and you're ready to bend.

Photo J. *Next in the process is drilling holes to mount the coil. Start on the back, panel A. You might want to use a hand drill for the smaller holes in place of a power drill.*

Photo K. *Your goal is to have each hole on the vertical panels nicely aligned for smooth and mechanically-stable slug adjustment.*

Photo F: Bend, Baby, Bend!

As our picture shows, it doesn't take much pressure to bend this thin aluminum. Just a finger or two will do. Start with **panel A**, the back plane of the housing. Make sure you've made a good 90-degree bend to form what will be the vertical section. It's shown in the **SIDE VIEW** of **Figure 1**.

Photo G: Executing 'The Fold'

Since we are dealing with one piece of metal, it's necessary to fold the aluminum to make the second vertical plane — **panels C and D** — as we make bends moving progressively toward the front of the housing. You'll be turning the thin aluminum in different orientations as you get to this point. Don't be discouraged if you can't quite visualize a step. Stop, take a minute to think about it and the bending scheme will come to you.

As you can see, it is not necessary to bring the **panel C and D** verticals tightly down on one another at this point. All you need is the general shape by completing their bending into a general configuration with your fingers.

Photo H: The Big Squeeze

OK, now put the U-shaped **C and D panels** shown in **Photo G** between the bending bars. In the vise, tighten them with all your might.

Photo I. Finishing Up Our 'Bender'

Making two more bends completes the general configuration of the housing, as shown in **Figure 1**. Note that the vertical front panel in this picture is much taller than that shown in **Photo A**. That's because in the second slug-tuned coil the front panel — **panel E in Figure 1** — was extended to leave the option of mounting the slug-tuned coil on the front panel of the receiver in mind.

Photo J: Drill, Baby, Drill!

Beginning with the back of the housing — **panel A in Figure 1** — drill mounting holes for the coil inductor. Start with a small drill bit and make the hole progressively larger. Grommets from RadioShack® were used as a

cushion between the sheet aluminum and the McDonald's straw <http://shack.net/YUBp2O>. The holes are drilled to accommodate mounting the grommets. The Mac straw fits through their centers with just the right amount of "snugness."

Photo K: Assuring Perfect Alignment

When the hole on **panel A** is the diameter of your awl or, say, a pencil, mark **panel C** by "sighting" the alignment point.

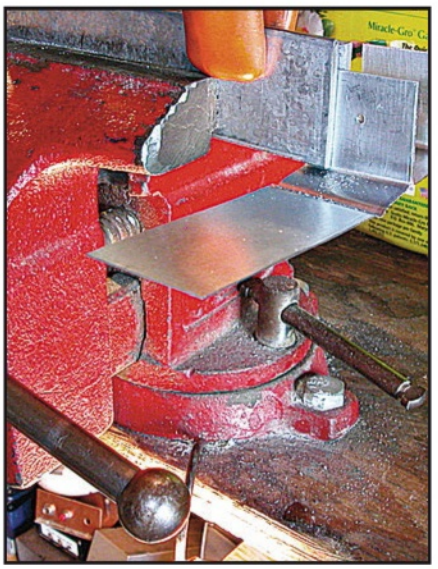


Photo L. *To drill the hole through panels C and D it is necessary to "unbend" panel A.*

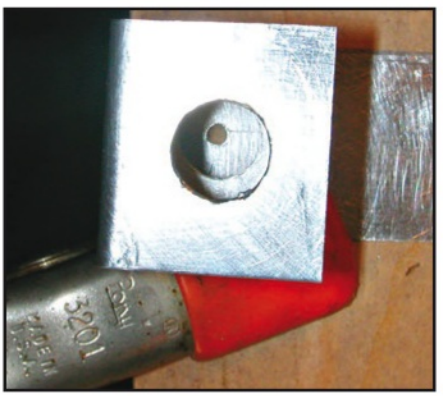


Photo M. *Once completed, sighting down the barrel of the metal housing should show the holes are closely — if not perfectly — aligned.*

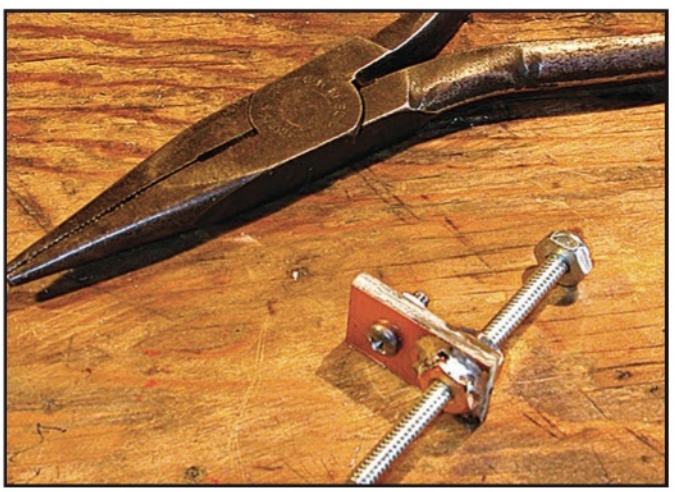


Photo N. *To assure mechanical stability, small pieces of PC board and brass nuts are aligned with the tuning staff — ultimately holding it securely in place.*

Photo O. *The tuning screw is self-tapped into part of a discarded potentiometer shaft. A wood doweling will work just as well.*

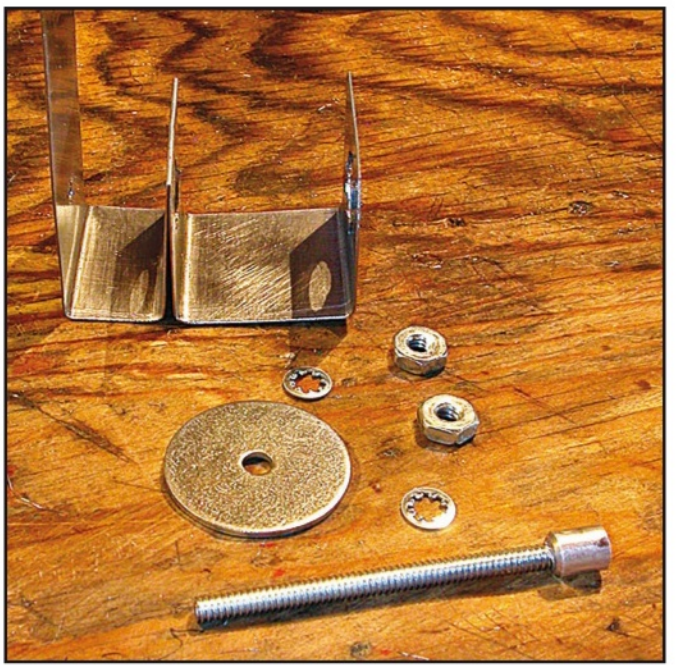


Photo P. *With the potentiometer shaft properly trimmed, all of the metal pieces are now in hand.*

Photo Q. *Prior to coil and slug assembly, here's what our li'l slugger looks like.*

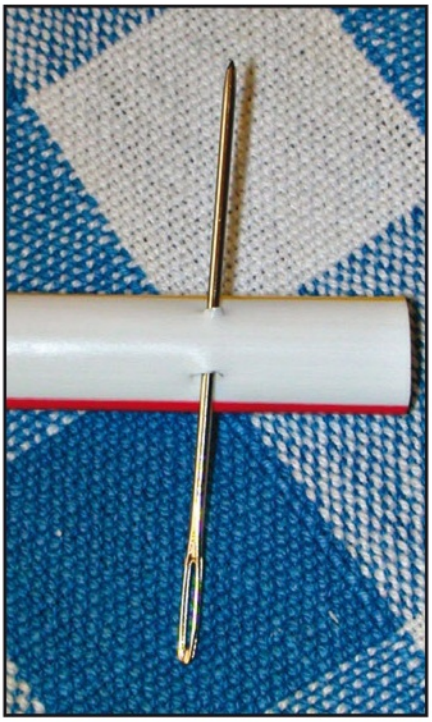


Photo R. *The first step in winding the coil is to make small holes in the McDonald's straw to secure the No. 26 wire.*

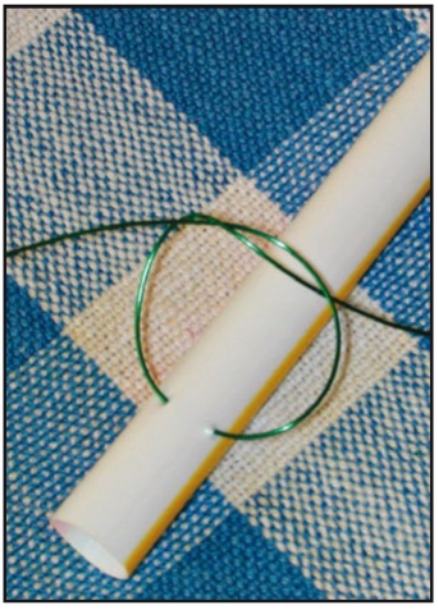


Photo S. *A simple overhand knot will secure the winding in place.*

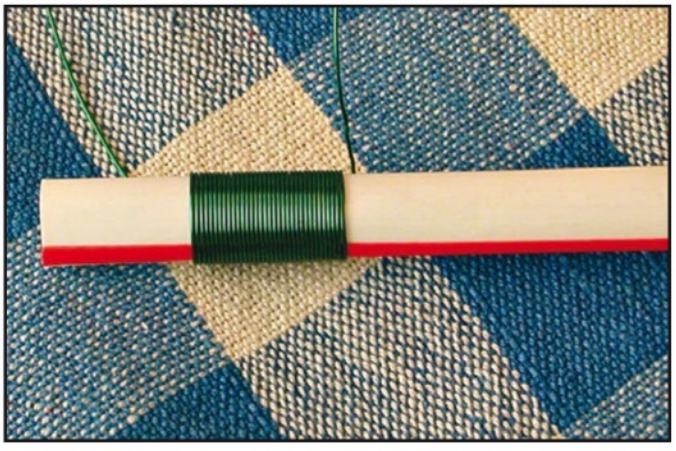


Photo T. *Here's what 36 turns looks like on the outer straw.*

Clamping the housing to the bench and adjusting the awl or pencil to perfectly vertical from all angles will assure that the back-panel hole aligns with the middle-panel hole — drilled through **panels C and D in Figure 1**. Note that **panel F** is bent out of the way to allow marking and drilling **panels C and D**. *No worries, though.* The metal has a way of "remembering" its previous position. Simply bend **panel F** back to its vertical position by hand — no bending bars needed.

Photo L: Work Slowly and Deliberately

This picture shows the beginning of the process of making the hole in **panels C and D** to mount the coil. Yes, **panel F** is still bent out of the way — necessarily. A hand drill was used to make the small holes, with the electric drill coming in when the diameters were enlarged. The unit is held firmly between the flat-stock bars and vise.

Photo M: Our Ducks, and Holes, in a Row

After making the proper diameters in **panels A and C/D** to hold the grommets, **panel F** is re-bent to vertical. Now use the same procedure described in **Photo K** to align the screw-hole needed for on **panel F.** When all is done, look through the finished housing to see the openings match up nicely. *Good work and congratulations! (**DON'T WORRY:** If your holes are a little out of perfect alignment, this structure is designed for a bit of wiggle room. – KI6SN.)*

Photo N: Let's Focus on the Li'l Slugger

As you can imagine, mechanical stability is often paramount for slug-tuned coils, especially those used in an RF oscillator. That's just the case in the receiver design being duplicated. So, we must assure the adjustable slug and coil are solidly in place in the housing.

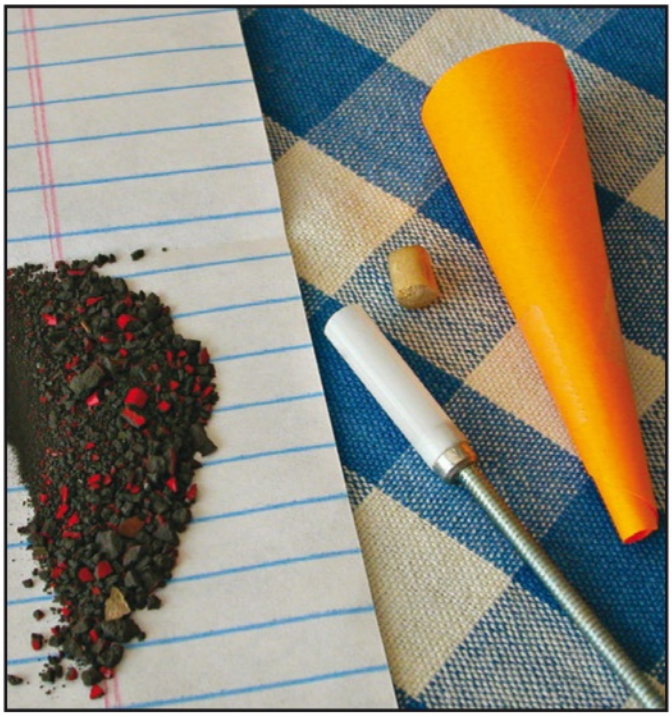


Photo U. *The pulverized T68-2 toroid material, Subway straw, metal adjustment staff, and small wood plug are readied to make the powdered-iron slug.*

No. 6-32 brass nuts are soldered to two small pieces of printed circuit (PC) board material to stabilize the metal screw that moves the slug through the center of the coil.

The PC pieces measure 1/2 by 7/8 inches and are bolted to the front — and backside of **panel F in Figure 1**. These two nuts keep the adjustment screw from wiggling. ***(NOTE:*** *A third nut [me] will turn the knob to vary inductance. But we digress ... – KI6SN.)*

Photo O: Time to Get *Even More* Screwy

To make a knob for the adjustment screw it was necessary to cut off the rounded head of a **2-inch long No. 6-32 zinc bolt** — found at The Home Depot. Before doing that, though, a small-diameter hole is drilled about 1/4-inch deep into a piece of cut-off shaft from a potentiometer. The bolt is self-tapped into the shaft as perfectly straight as you can make it.

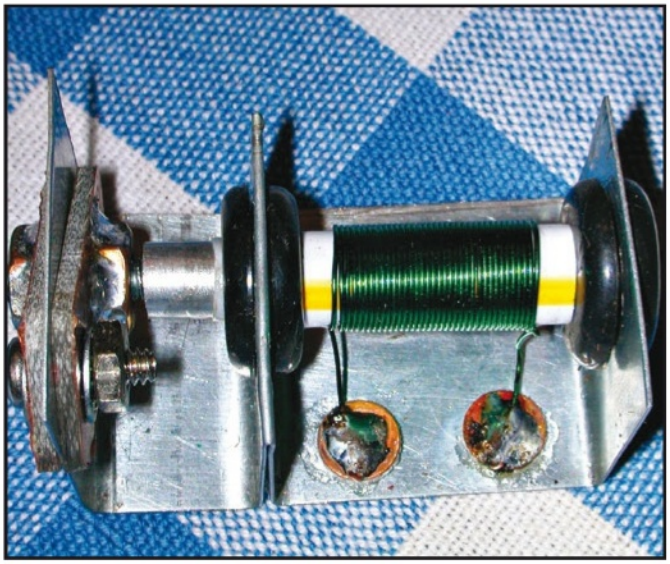


Photo V. *In the first version of KI6SN's slug-tuned coil, here's what things look like with the slug fully engaged. Two Manhattan-style PC board "dots" are the coil's solder points to the rest of the circuit <http://bit.ly/1vB8HB2>.*

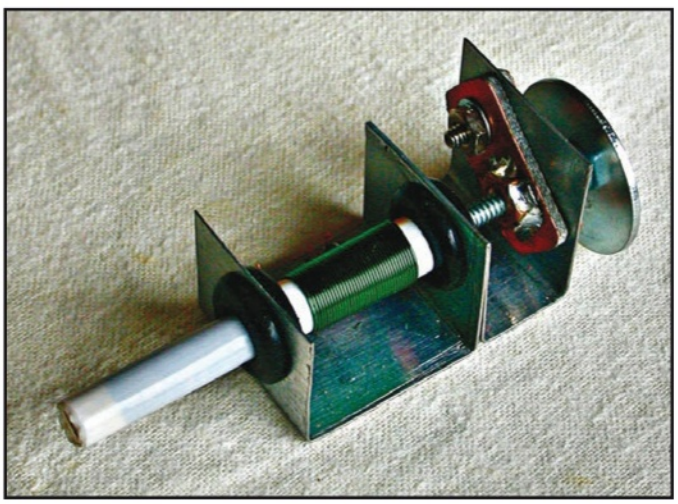


Photo W. *With the slug fully disengaged, the Subway straw, with slug, extends out the end of the McDonald's straw from panel A.*

Wood doweling will do just as well in place of the potentiometer shaft. Just be sure to glue it securely to the metal bolt.

Photo P: The Pieces are Coming Together!

By cutting off the excess potentiometer shaft to leave about 3/8 inch, the majority of the metal work is done. A washer, two nuts, and two lock-washers make the knob.

Photo Q: Testing the Mechanics

As you can see, the PC-stabilizing pieces have been bolted into place on the front — and backside of **panel F** and the screw shaft has been passed through **panel A** to the front of the slug-tuned coil housing. The grommets are in place, as well. At this point we want to assure the screw passes through the holes cleanly and that the washer-knob turns smoothly. *Eureka!*

Photos R, S and T: Back to McDonald's for a 'Coil to Go'

The procedure for winding the slug-tuned coil begins by piercing the Big Mac soda straw with a sewing needle, **Photo R**. This is where you begin winding with, in this case, No. 26 enameled wire. A simple overhand knot will keep the wire from pulling through the two holes, **Photo S**.

When you've reached the required number of turns (for our coil, 36) pierce the straw again with the sewing needle and tie-off the wire, **Photo T**.

Photo U: Slugging Right Along

Now that we know how long the coil is, the Subway straw can be glued to the screw assembly shaft and cut to assure the No. 2 core material fully "covers" the length of the coil. In other words, the screw assembly can adjust the slug to be beneath *every* turn of the wire winding.

At the same time, assure that when fully adjusted the other way — twisting the screw assembly *to the max* out the back of the coil — the slug is fully *disengaged* from the inductor.

A small piece of wood doweling is used to plug the back end of the slug, again from The Home Depot.

A Post-It® note rolled upon itself worked nicely as a mini-funnel to pour the pulverized No. 2 slug material into the Subway straw. The chopstick was once again called to duty to tamp and compact the core material before gluing the small dowel plug in place.

Photos V and W: Final Touches

Once everything is together, two small pieces of PC board material are glued to the housing as solder points connecting the slug-tuned coil to the rest of the circuit. **Photo V** is what the slug-tuned coil looks like when the slug is fully "in." **Photo W** is what it looks like when the slug if fully "out."

Parting Thoughts

This may seem like an awful lot of work to make a pretty simple inductor. But if in the end it "saves" a circuit you have your heart set on building, *so be it!* Know, too, you'll have the satisfaction of knowing you cleverly worked around a serious problem and *made it yourself.* Many builders will tell you that it "doesn't get any better than that!"

If you take a stab at making a slug-tuned coil from scratch, please let me know how it turns out. And send a picture. We'd be glad so share it with everyone aboard the *CQ* train. Write <ki6sn@cq-amateur-radio.com>.

BY RANDALL NOON, KCØCCR

The No-Deadline, Non-Competitive CW QSO 'Fun Award'

There are all kinds of awards a brass pounder can earn regardless of whether the operator is a CW rookie operating an Ameco plastic base, model K-1 key at 5 p.m., or a grizzled veteran smoking CW at 45 w.p.m. with a classic Vibroplex Blue Racer.

- CW contacts in all 50 states or all IARU zones
- CW DX contacts with at least 25, 50, or 100 different countries
- CW contacts with operators in each of the inhabited continents
- Contacts with all the Canadian provinces

For the very patient and very persistent, there are awards for making CW contacts in every county in the U.S. And then there are awards in various subcategories of these same categories, such as CW contacts on 40 meters in all 50 states, or CW contacts on 160 meters in 100 DX entities, and so on.

In short, there are an amazing variety of awards that recognize the skill, knowledge, patience, and sometimes even the perseverance of ham operators. I use the word "perseverance" with the thought in mind of operators:

- Who climb mountains carrying portable equipment to activate Summits On The Air
- Who perch atop a wooden platform on stilts built in the middle of the South China Sea to provide DX contacts from a reef that has barely enough room for two seagulls to huddle
- Who work as single-op contesters who swill enough coffee to give a battleship the shakes in a 48-hour CW contest.

Reasonable, Achievable Expectations — 180 Degrees Out of Phase

Here is a list that is just about the opposite of the preceding. It's a list of potential QSOs nearly any operator on HF can make, at any CW speed, usually at convenient times, at almost any output power level, and requires hardly any perseverance at all.

The list grew out of several conversations with operators who have confided in me the:

- Coolest CW QSO they ever made
- Most interesting CW QSO they ever made
- Neatest CW QSL that they ever received in response to the QSO
- Most fun QSO they ever made

The interesting part of this is that the coolest QSOs, most interesting QSOs, neatest QSLs, or the most fun CW QSOs were usually not made for a contest or competition. So, based upon this premise, I propose that *no award* be given on a *non-competitive basis* with *no deadline* of just plain fun or interesting QSOs that a CW operator should not miss, **Photo A**.

Morse Code columnist Randy Noon, KCØCCR, pounds brass during his turn as operator of W1AW on the station's 100th anniversary "road show."

All of the callsigns listed are just one HF hop away from most operators who might read this. There is no specific award awaiting any key pumper who might manage to complete QSOs with every callsign in the list, except perhaps some bragging rights, some nice stories to tell, and some interesting QSLs for your collection. So, without further ado, here is the list.

W1AW and W1ØØAW: On the Road, Again

First of all, having a QSO with a guest operator manning the "mother ship" station in Connecticut is fun, and then receiving a W1AW QSL card a bit later adds a bit of bragging rights to a ham's QSL collection. A QSO with someone at the HQ in Connecticut is usually a relaxed affair.

Lately, a portable W1AW station, using selected local operators in each state, has been activated on a rotating basis to celebrate the 100th anniversary of ARRL. While the portable W1AW QSOs are often short *wham-bam-thank-you-ma'am* contest-style contacts, it is still fun to have a QSO with those operators and to try to have W1AW/ (fill in the blank) QSOs in as many of the 50 states as possible. There is a competition aspect associated with the portable W1AW stations.

But, it is a real kick to operate under the W1AW or W1ØØAW banner when the "mother ship" portable station is operating at one of the regional hamfests or at Dayton.

When you send out a CQ followed by the W1AW or W1ØØAW callsign, there is no problem in get-

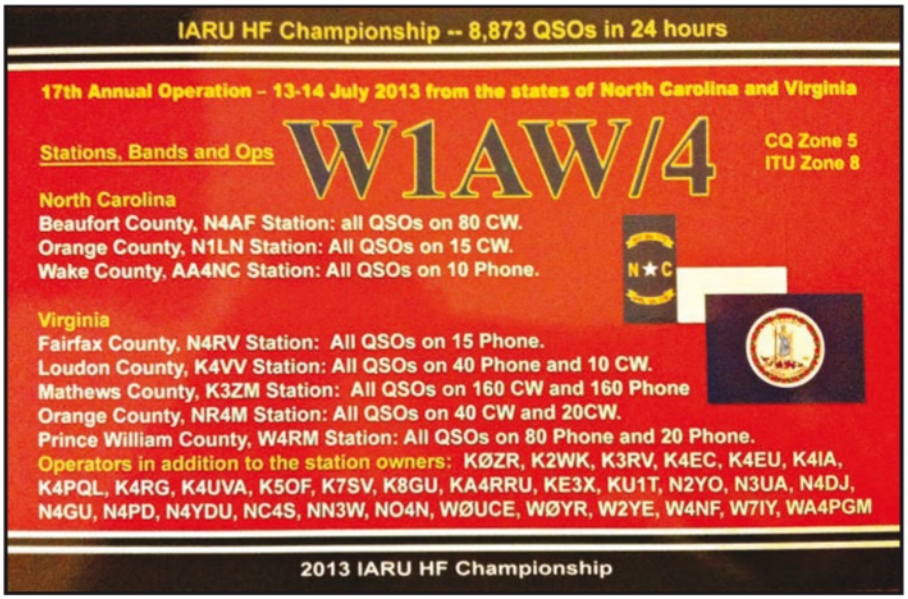
ting a response. Everyone wants to be on your dance card. And, they usually have on-site some of the finest ham equipment available for a person to use. I recommend the experience, **Photo B**.

W7ASC: Ops from the Arizona Science Center

The callsign for the amateur station located in the Center for Amateur Radio in the Arizona Science Center W7ASC. The center provides visitors with live demonstrations of amateur radio.

About 500,000 visitors pass through the center each year. The station, in Harkins Ham Shack, is staffed by amateur radio volunteers and supported by local clubs and a grant from the ARRL. It is open from 10 a.m. to 5 p.m. local time daily.

If you hear W7ASC's CQ, have some



This W1AW/4 QSL was sent out in conjunction with the 2013 IARU HF Championship competition.

For complete details W7ASC in the Harkins Ham Shack at the Center for Amateur Radio in the Arizona Science Center, visit <http://on.fb.me/1v0GL6Z>. For a news story about the station, visit <http://bit.ly/1rIdr6H>. (Internet screen grab)

This QSL showing the home call of the Straight Key Century Club (SKCC) confirms contact with W1ØØAW/8.

K3Y is a 1X1 callsign frequently used by the SKCC on special occasion.

fun with the kids visiting the science center at the other end and return the call and show off your CW stuff.

You might just inspire one of the visitors to take up ham radio to be like you. Wouldn't it be cool to meet on the air a person you inspired to take up ham radio due to a contact with W7ASC? **Photo C**.

K9SKC: Straight Key Century Club

This is the home office callsign for the Straight Key Century Club, SKCC, and is SKCC number ØØ if you happen to collect SKCC numbers.

The SKCC <http://www.skccgroup.com> encourages the use of manually-produced Morse code — straight keys, bugs, side-swipers and the like. It was founded in January 2006 and has attracted thousands of members. The club also often uses the special event callsign K3Y during sprints and club activities. Typically, the operator using K9SKC will chat with you if you wish with a nice QSL follow-up.

If you are an SKCC member, having a direct *tete-a-tete* with the home office will make belonging to the club a bit more personal. **Photos D and E**.

W1VCM: Vintage Communications Museum

This is the callsign for an operating ham station located in the Vintage Communications Museum, in West Springfield, Massachusetts. The station is a 1980s vintage CW and SSB rig and operates on all the 1980s era HF bands.

Mary Beaulieu, KB1WFI, checks out the log on ARRL Field Day from the W1VCM radio shack at the Vintage Communications Museum in West Springfield, Massachusetts.

Visiting amateurs who show their license can also operate the station as guest operators. Working this station is bit like a ham radio version of *Back to the Future.* Most likely, one end of the QSO is in the 21st Century, and the other is in the 20th. **Photo F**.

NU1AW: Club Call of the IARU

Although it doesn't operate all the time, NU1AW, the club call of the International Amateur Radio Union (IARU) is occasionally activated for special occasions.

For example, NU1AW is usually on the air to celebrate the IARU HF Championship each year. Due to the press of operators who think this is a DX call and want to add it to their log, contacts with NU1AW are often short, contest style affairs. However, they *do* send out a nice QSL card for your ham club to admire.

I made contact with NU1AW once when its operators were in the Caribbean, and then a second time when they were located not far from W1AW. **Photo G**.

NY3ED: Dive, Dive, Dive!

NY3ED originates in an honest-to-goodness World War II submarine — the U.S.S. Requin, moored near the Carnegie Science Center near downtown Pittsburgh, Pennsylvania. While other clubs go on DXpeditions, the U.S.S. Requin Amateur Radio Club goes on Subpeditions.

The ship was the Navy's first Radar Picket submarine and was completed near the end of WWII. The ham station operates out of the moored submarine in the old radio room much to the delight of Carnegie Science Center visitors and HF operators in the resulting pile-ups.

If there is no pile up, and often there is not because most operators are looking for DX callsigns, the volunteer operators will take the time and tell you about the submarine and its equipment. **Photos H and I**.

K6KPH: Commemorating a Century of Ship-to-Shore

Perhaps you have noticed that some of the Field Day CW Messages are also broadcast from K6KPH. For nearly 100

years the KPH station provided shore-to-ship Morse and RTTY communications from Point Reyes, California.

KPH broadcasted weather conditions, news, and personal messages to and from ships at sea. The station discontinued regular commercial operation in 1998.

The station is now being maintained by the Maritime Radio Historical Society and is occasionally on the air for special occasions, such as Field Day. On non-special occasions, operators and guest operators are sometimes on the amateur HF bands under the callsign K6KPH.

Its QSL is a neat looking "K6KPH Radiogram" card that looks like an old fashioned radiogram. Read about the history of the KPH station on the web at <http://www.radiomarine.org> and listen for the K6KPH callsign on the air. **Photo J**.

"Although it doesn't operate all the time," writes KCØCCR, "NU1AW, the club call of the International Amateur Radio Union, is occasionally activated for special occasions."

For a rare "subpedition" contact, keep your ears peeled for NY3ED, the amateur station aboard the U.S.S. Requin. (Courtesy of Wikimedia Commons)

KNØWCW: Morse Preservation in the USA

This is the rotating callsign for the FISTS USA Club. Members in good standing can operate under this callsign for 7 days in a calendar year.

If you are a FISTS member, there are over 17,000 of them now, this is FISTS number 10,000. Contacting this callsign is worth 5 points in one of the FISTS awards programs and a person receives a nice KNØWCW QSL card from FISTS HQ. The name of the club is derived from the term, "fists," which describes the CW style of a person when using a manual key.

In the same way that a person has a personal handwriting style that is recognizable, a person also has a Morse code style that is recognizable. Remember that when you work a FISTS member, you have worked a friend. Don't expect a bump and run sort of QSO here.

N3AQC: North American QRP CW Club

The club callsign for the North American QRP CW Club, or the NAQCC, N3AQC is the organization's flagship callsign. In addition this is also FISTS number 11,900 and NAQCC number 1,100.

It is another "home office" callsign of a CW club. There are more than 7,000 members throughout North America, in all 50 states, and in 100 countries. This call is often used when there are club activities going on — which is often — or when there are special club activities.

For example the call was used when NAQCC operated from the Museum of Radio and Technology in Huntington, West Virginia on February 8, 2014. By the way, the Museum of Radio and Technology also has a ham shack on display and sometimes operates under the callsign WV8MRT.

If you enjoy vintage radio equipment, the Museum of Radio and Technology, which is near where Ohio, West Virginia, and Kentucky come together, is certainly worth a visit. **Photo K**.

W7DK: Age and Beauty ... and History

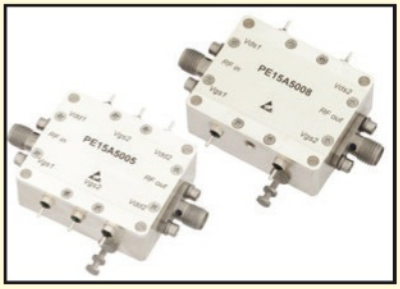
This call is for the oldest continuously-operating amateur radio club in the U.S. — the Radio Club of Tacoma, Washington.

A view from down below shows part of the control room aboard the Naval submarine Requin. (Courtesy of Wikimedia Commons)

For almost a century, KPH provided shore-to-ship Morse code and RTTY communications from Point Reyes, California. K6KPH keeps the station's legacy alive.

what's new

Pasternack Debuts New Line of High Power Linear RF Amplifiers



Pasternack Enterprises, Inc., has released eight new high power linear amplifiers that provide accurate signal amplification across a multitude of applications. These GaAs PHEMT MMIC-based amplifiers operate from 0.8 GHz to 9.5 GHz and can be used as high-power output amplifiers or driver amplifiers depending upon the system architecture.

The high-power RF amplifiers provide a choice of gain levels, frequency ranges, power outputs, and exhibit gain performance ranging from 19 to 32.5 dB. These amps also offer competitive gain flatness from ±0.5 dB to ±2 dB and third-order intercept levels (IP3) from 38.5 to 47 dBm.

The company's linear RF amplifiers are offered for various frequencies and are specially designed to be robust through features such as mounting holes in the body of the aluminum enclosure which assure a more effective heat dissipation path.

Built using GaAs PHEMP MMIC circuitry along with hybrid integration techniques, the amplifiers are fully matched internally for input and output at 50 ohms which eliminates the need for any sensitive external RF tuning components. All of the new amplifiers are rated for operation over a -55°C to 85°C temperature range.

Pasternack's new GaAs MMIC-based high power linear amplifiers are available now. For more information contact: Pasternack, 17802 Fitch, Irvine, CA 92614. Phone: (949) 267-9734. Fax: (949) 261-5086. Email: <shaun.gameroz@pasternack.com>. Website: <http://www.pasternack.com>.

It has been on the air since 1916, and, by the way, is also FISTS number 10,500 and Ten-Ten number 66811.

The club sponsors the *W7OS Doc Spike Antique Radio Museum* in conjunction with a large library of amateur radio publications. The club call is used on special occasions, and when there is no special occasion whatsoever. Its QSL card is a nice addition to any collection, **Photo L**.

W6RO: Signals Ahoy from the Queen Mary

The Associated Radio Amateurs of Long Beach uses W6RO from the radio room aboard the HMS Queen Mary, permanently docked in Long Beach, California.

If you make contact with a guest operator or a club operator, you can receive an oversized QSL card that provides a wealth of information about the ship.

If you work W6RO, be sure to write down the QSO number in the exchange. If the guest operator forgets to give you a number, request it. You will need this number to get a return QSL. If a licensed operator contacts the club ahead of time, he or she can also operate the ham station aboard the ship. If you're ever in Southern California, check out the instructions for becoming a W6RO guest operator at <http://bit.ly/1pE44iM>. **Photo M**.

K6JSS: QRP Amateur Radio Club International

Another "home office" callsign of a CW friendly club, K6JSS is the flagship of QRP Amateur Radio Club International, QRP ARCI.

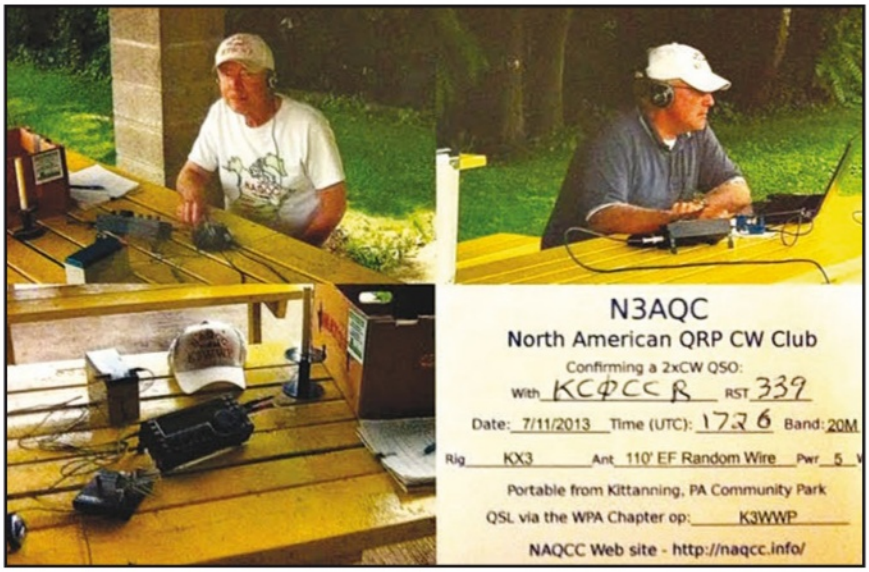
The organization has more than 15,000 members and focuses on QRP operation on both CW and voice modes. K6JSS is often used in connection with special club events and activities, but can also be heard on the air at other times.

If you have been to Dayton, these are the people who sponsor the *Four Days in May* events for QRP operators that run concurrent each year with the Hamvention®.

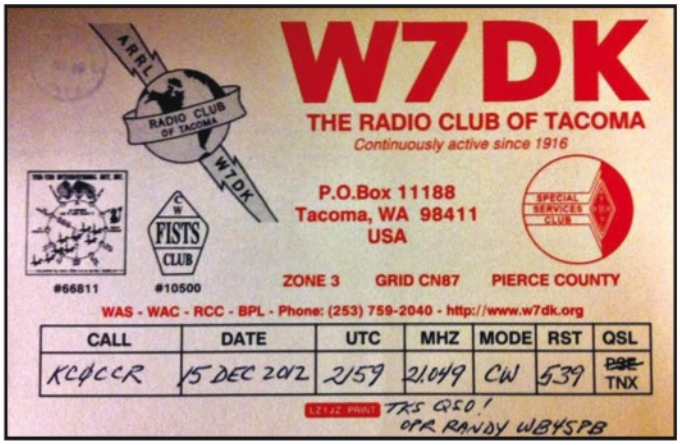
WA1WCC: Chatham Marconi Maritime Center

This is the callsign of the radio shack operated by the Chatham WCC Radio Club in the Chatham Marconi Maritime Center, in Chatham, Massachusetts.

The museum is housed in the original buildings that were built for Marconi for his wireless operations at Ryder's



N3ACQ is the club callsign of the popular North American QRP CW Club.



Work W7DK and you'll have made contact with the oldest continually-operating radio club in the United States — the Radio Club of Tacoma, Washington.

Cove. Volunteers operate the ham shack in the museum which is crammed with vintage equipment from Marconi's time and other radio eras.

In 1914 Marconi, constructed some of the buildings along with a 300,000-watt, spark-gap transmitter located nearby as part of his expanding wireless network to contact corresponding stations in Norway.

The original callsign was WCC, one of the premier maritime wireless stations from 1920 to 1993. Making a QSO with WA1WCC is like making a QSO with radio history.

VE3OSC: 'Oh, Canada,' from the Ontario Science Center

The amateur radio demonstration station at the Ontario Science Center in Toronto, Canada operates under VE3OSC.

The station has some great HF antennas and also welcomes guest operators. The radio shack is open from 10 a.m. to 2 p.m. (Ontario time). I was fortunate enough some time ago to make contact with the volunteer operator on duty and our QSO became a Morse Code demonstration for a group of students visiting the center. I had a great time at my end of the exchange, and I recall that the kids were enthralled at hearing live CW responses to their questions. **Photo N**.

KH6BB: Ham Radio from the Famous 'Mighty Mo'

KH6BB connects you to the radio room of the Battleship Missouri, where documents were signed ending World War II.

Today, the station is operated by the Battleship Missouri Amateur Radio Club, in Aiea, Hawaii. This was once the one most fearsome battleships in the world. Commissioned in 1944, the *Mighty Mo* fought at Iwo Jima and Okinawa, and her 16-inch guns could hurl 2,700-pound, armor-piercing shells 20 miles.

The ship shelled Japanese Islands near the mainland and also served in Korea. She was mothballed for a time afterward, but was reactivated in 1984 and served during Operation Desert Storm in 1991.

The Missouri was the last U.S. Iowa-class battleship to be completed and is now a museum in Pearl Harbor. This is another piece of American history that you can "talk" to on the air.

K2ZRO: Kopernik Observatory and Science Center

Located in Vestal, New York, the Kopernik Observatory and Science Center has a permanent ham station that is often open during public programs on Friday evenings. Guest operators are welcome if they email <k2zro@kopernik.org> ahead of time to confirm that the station will be open.

The callsign used by the science center belonged to Kazimierz Deskur, who built the observatory and heard some of the first signals from Sputnik, the first earth artificial satellite. Deskur was an early pioneer in ham radio satellites and developed the OSCARLocator, a great circle map-like device to aid in locating ham radio satellites.

K4NSC: Natural Science Center, Greensboro, North Carolina

K4NSC is the callsign of the Natural Science Center of Greensboro, North Carolina, operating from a live ham radio exhibit at the science center.

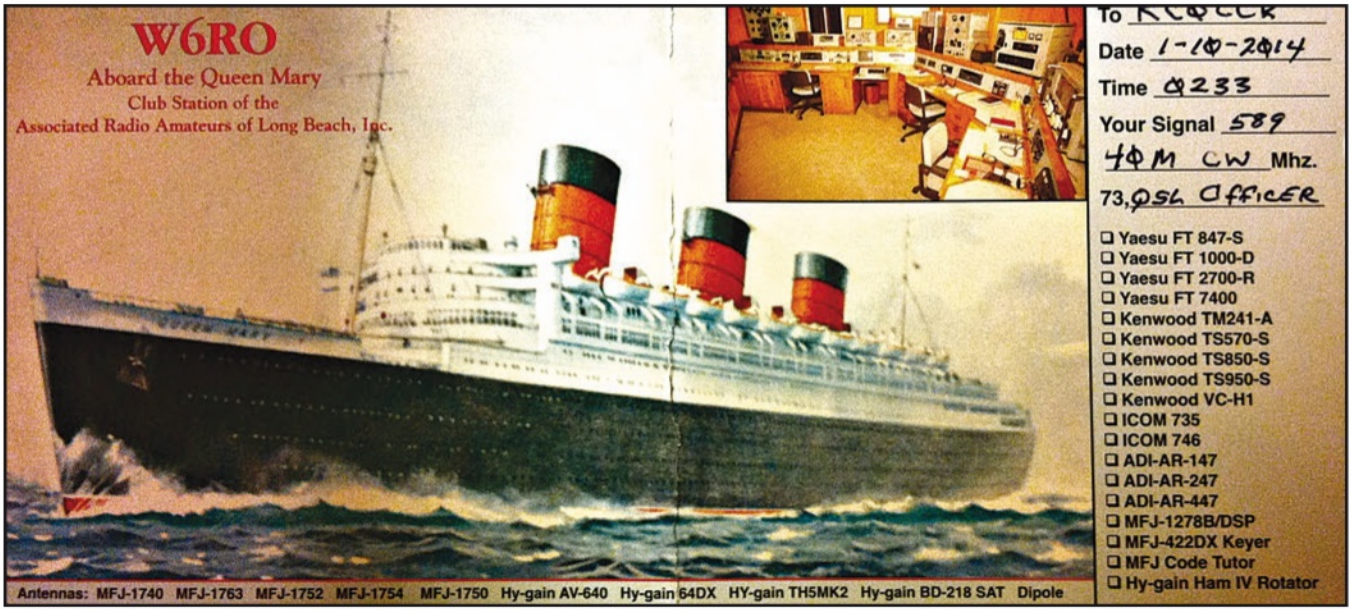
Created by Ryan Bradley as his Eagle Scout project and operated by local volunteer hams from the Piedmont Triad area, the station allows visitors to listen to a live ham station in action. A QSL from K4NSC shows the Natural Science Center logo and is a cool QSL card to show off.

4U1UN: United Nations Radio Club, a Rare Catch

This is the callsign of the rarest station on this list — the United Nations Radio Club, located in New York City.

The full name of the club is the United Nations Staff Recreation Council Radio Club. While it has been active in the past, the club has not actively been on the air for ages. Apparently, few UN employees or members have time to recreate with amateur radio.

There were no activities listed for the



W6RO, the amateur radio station aboard the Queen Mary, is often heard on the airwaves from Southern California from its berth in Long Beach, California.

what's new

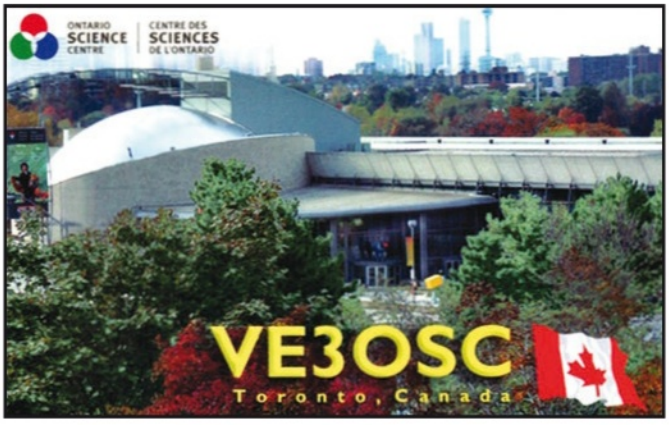
Millimeter Wave Right-Angle RF Adapters Up to 50 GHz Released by Fairview Microwave

Fairview Microwave Inc., has released an expanded family of high-frequency right angle adapters, commonly used in tight mechanical spaces where the bend radius of a coaxial cable would be exceeded.

These adapters allow 90 degree turns in spaces too small to accommodate the bending of most coaxial cables, which also reduces too much strain on the cable in certain applications. Last, right angle adapters provide more flexibility and efficiency when routing cables in a complex system. For example, cable lengths can be shortened with the use of right angle adapters.

Fairview Microwave's new high-frequency right angle RF adapters can be ordered in between-series and in-series configurations including 1.85 millimeter (50 GHz), 2.4 millimeter (50 GHz), 2.92 millimeter (40 GHz), 3.5 millimeter (34.5 GHz).

Additional right angle adapter options at Fairview include SMA, BNC, TNC, N, 7/16, 10-32, LC, SC, MHV, SHV, QMA, UHF, and mini-UHF. Several versions offer a reverse polarity option. VSWR of these RA adapters is as low as 1.25:1 depending on the chosen style. All high-frequency right angle adapters are constructed of passivated stainless steel bodies and coupling nuts with gold plated BeCu center contacts. For more information, contact: Fairview Microwave Inc., 1130 Junction Drive, #100, Allen, TX 75013 Phone: (800) 715-4396 or (972) 649-6678. Fax: (972) 649-6689. Email: <sales@fairviewmicrowave.com>. Website: <http://www.fairviewmicrowave.com>.



Live from the Ontario Science Center in Toronto, Canada, is VE3OSC, which rewards operators who work the station with a handsome QSL card.

club in 2013, and after a long absence the club's beacon is finally back in operation. You will find it listed in the IARU Beacon Project coordinated beacon program, at website: <http://bit.ly/1u96SdW>.

Getting a current QSL from 4U1UN might be harder than breaking the pile-up during the Spratly Island DXpedition.

Closing Thoughts ...

Most of the callsigns listed are associated with non-profit organizations. They can't afford to pay postage for thousands of return QSLs.

If you want one of their cool QSLs, be sure to check their website for instructions. Most require the courtesy of a SASE. Also, if you wish to be a guest operator, also check their website for instructions.

Some require advance notice that you are coming. Anyway, don't pass up these callsigns when you hear them on the bands.

See you on the brass-pounding portions of the HF bands! – KCØCCR

The Changing Face of Internet Radio

BY ROB DE SANTOS, *K8RKD

The Internet as a public service is not much past its 20th anniversary. It was not long after the Internet arrived that a few individuals put audio onto it. Streaming followed shortly thereafter, using products such as Real Audio. Very quickly, the folks at Microsoft and Apple joined in, MP3 was discovered, and away it went. Audio first and video later became the growth drivers of Internet usage.

In those early days, there were few streaming radio stations and given the widespread lack of broadband connections, quality and service were spotty at best. Even with higher speed connections, it wasn't until the advent of Wi-Fi that it took off. However, there were some inconveniences.

Listening to radio by the bedside with your computer or connecting your computer to your living room entertainment system were beyond what most users would tolerate. The invention and marketing of standalone Internet radios that didn't require them to be hooked to your personal computer solved the problem.

For a few years, the field was crowded. Quite a few brands came and went. There were quite a few "orphaned" products over the past decade. Every one of the radios needed a way to find the streams. The most common method was to access a remote server with a database of stations and their stream addresses. Maintaining the database proved no small task.

In effect, the database was a specialized search engine. The problem, of course, is that finding and indexing the many streams, removing duplicates, and keeping up the changes is no small task. Oh, and there isn't much revenue in it since you can't advertise and only your own products probably use it. Stream owners had a funny habit of changing the streams — *and still do* — and not telling anyone.

Like any computing device, there is hardware and software maintenance. In the case of standalone radios, the software is known as firmware.*

Nothing is stationary and as new streaming methods evolved, the existing products inevitably could not handle some of them. The user interface on many of the devices was difficult to use and unfriendly to non-technical users.

Every standalone product costs something to make and absent truly large volumes in sales — *millions of units* — it's difficult to get the cost down enough that ordinary people want to buy the product on top of the investment they already have in their personal computer.

Most of the radios ranged in price from $100 to $400 at a time when a standalone PC might only cost $500. The lack of standardization and commonality also confused buyers. This radio can work with some streams but a different set than the radio next to it. Many users found the process of connecting the radio to their Wi-Fi difficult and confusing. Sales for standalone devices never took off as proponents hoped.

In spite of all this, people used their PCs and their standalone devices and began to listen. From a few percentage points a decade ago, streaming now accounts for almost 20 percent of all audio consumption in the U.S., with the United Kingdom roughly similar, and the numbers continue to grow dramatically.

According to some analysts, streaming will pass conventional AM/FM radio listening in the U.S. within the next five years. The number of streams has also continued to explode. It's quite possible that 80 to 90 percent of the stations in countries such as the U.S., U.K., Canada, and Australia now provide at least one stream.

Now add:

- All of the standalone stations and "pureplays" — stations that exist only on streams
- The utility services such as streamed scanners, weather, and so on

As you can see, the number of streams has soared. A conservative estimate is more than 150,000 but no one really knows for sure.

What's changed to drive the growth? *The devices.* Instead of a dedicated standalone Internet radios, the device of a choice is that computer you carry around and use to talk and text. *Yes, it's the smartphone.* Just about anyone involved in the Internet radio business today will tell you that is where the growth and money is.

Smartphones have the advantage of being small, portable, and most are already conversant in Wi-Fi connectivity. They are replaced frequently — *often less than two years after purchase* — so obsolescence due to changing standards and hardware is not an issue. Smartphones don't require users to buy another item that they do not already own. Increasingly, the phones connect directly to automotive entertainment systems. Of course, a stream can tie up a device when it might be used for other purposes, so other issues may arise in the future.

Where is this all headed? It does seem as if portable devices will win the day, and for the near future, that means smartphones.

- Will the technology become part of the car? Most likely, at least in some form.
- Is the bedside radio dead? It would appear that for many, this is already true.
- The standalone Internet radio? It's not going away completely though it appears more and more to becoming just another part of home entertainment systems.

Do you listen to Internet radio? What devices do you use to do it? Send your feedback by email or postal mail via the magazine. Next month we'll tackle more trends in communications. – K8RKD

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Twitter: <@shuttleman58>

*Firmware is the software embedded into the device and it is not always able to be updated easily.

BY CARL LUETZELSCHWAB, *K9LA

W1AW/9 On 17 in the Morning: Studying the Long-Way Around

Over the years in these pages I've done analysis on:

- 10-meter long path — especially in the March 1999 and March 2012 columns
- 15-meter long path — January 2000 and March 2010
- 20-meter long path — October 2002

This month's column adds the 17-meter band to the long path discussions.

What brought this up was the ARRL Centennial stations — W1AW/x. From July 22 through July 29, stations in Indiana signed W1AW/9. My wife Vicky, AE9YL, and I participated in this effort, along with several locals coming over to help out.

From our Fort Wayne, Indiana QTH we had a great time, and were honored to use the W1AW call.

An Easy Strategy

Figuring out when to operate was fairly simple — pin down our available times and then check to see if anyone else had that time slot reserved. The 7-day period was broken up into 2-hour time slots throughout each day, and band and mode further broke up each time slot. *That's a lot of slots to fill!*

Since daytime maximum useable frequencies (MUFs) in the Northern Hemisphere are fewer during the summer months than the winter months, I figured that the higher bands (15, 12, and 10 meters) would be kind of *iffy* unless sporadic-E was present. Thus we decided to emphasize 17-meter phone in the 8 to 10 a.m. local time slot, specifically looking for Southeast Asia via long path.

Figure 1 summarizes the predictions from K9LA to Japan for July 2014 on 17 meters from 1200 UTC to 1400 UTC.

The third column in **Figure 1** is the predicted median MUF during July 2014. In other words, the frequency indicated for this K9LA to Japan long path should be open on at least half the days of the month of July. With 18.1 MHz (17 meters) being less than the median MUF, this 17-meter long path should be open on more than half the days of the month.

Indeed, the MUFday parameter (fourth column) says 17 meters should be open on 23 to 26 days

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UTC	Local	Median MUF	MUFday	Sig Pwr	Sig Str
1200	8:00 AM	21.8 MHz	0.76	-99 dBm	S4
1300	9:00 AM	23.3 MHz	0.85	-101 dBm	S3
1400	10:00 AM	23.0 MHz	0.84	-105 dBm	S3

Figure 1. VOACAP Predictions.

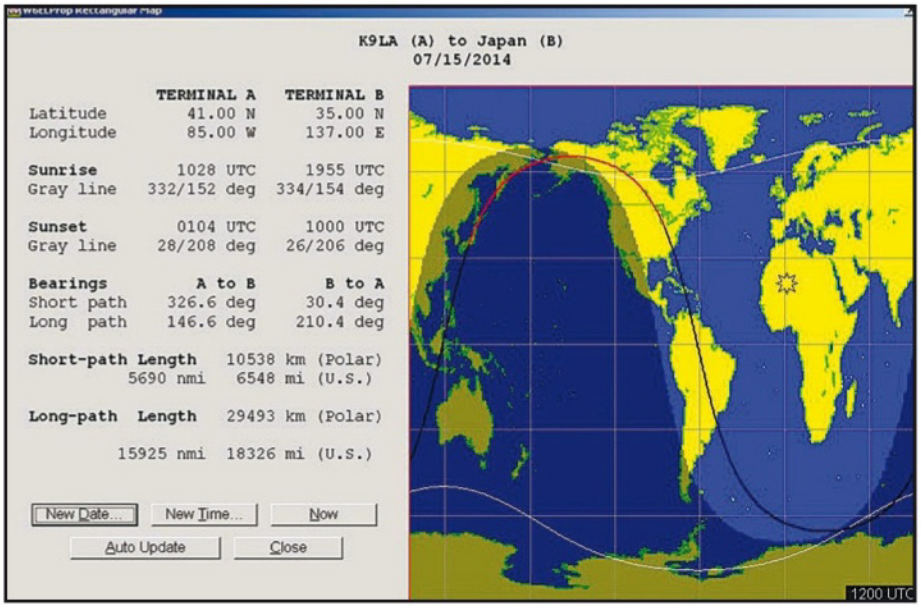

Figure 2. The Big Picture.

Optimum Working Frequencies (MHz) - For November 2014 - Flux = 127, Created by NW7US

UTC TO/FROM US WEST COAST	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CARIBBEAN	21	17	14	13	12	12	12	11	11	11	11	10	10	10	18	21	23	24	25	25	25	25	24	23
NORTHERN SOUTH AMERICA	30	27	21	18	17	16	16	15	15	14	14	14	14	14	23	28	31	32	34	34	34	34	33	32
CENTRAL SOUTH AMERICA	30	27	19	18	17	16	16	15	15	14	14	14	14	14	24	29	31	33	34	34	34	34	33	32
SOUTHERN SOUTH AMERICA	32	30	26	19	18	17	16	16	15	15	15	14	14	14	20	27	30	31	32	33	34	35	35	34
WESTERN EUROPE	10	10	10	10	10	9	9	9	9	10	10	10	9	9	11	15	17	16	15	14	11	11	10	10
EASTERN EUROPE	10	10	10	10	9	9	9	9	10	10	10	10	9	9	9	12	15	13	11	11	10	10	10	10
EASTERN NORTH AMERICA	23	20	15	14	14	13	13	13	12	12	12	12	12	12	20	23	25	27	27	28	28	27	27	25
CENTRAL NORTH AMERICA	14	13	10	8	8	8	7	7	7	7	7	7	6	6	6	11	13	14	15	15	15	15	15	14
WESTERN NORTH AMERICA	8	7	6	5	4	4	4	4	3	3	3	3	3	3	3	4	6	7	8	8	8	8	8	8
SOUTHERN NORTH AMERICA	23	21	18	14	13	13	12	12	11	11	11	11	11	11	15	20	23	24	25	26	26	26	26	25
HAWAII	22	22	21	19	16	12	11	11	10	10	10	10	9	9	9	9	9	17	20	21	22	22	23	23
NORTHERN AFRICA	10	10	10	10	10	10	10	10	10	10	10	10	10	9	13	16	18	19	18	15	12	12	11	11
CENTRAL AFRICA	13	12	11	11	11	10	10	10	10	10	10	10	9	9	12	16	17	18	18	15	15	14	13	13
SOUTH AFRICA	21	17	14	13	13	13	12	12	12	12	11	11	11	11	19	22	24	25	26	26	26	25	24	23
MIDDLE EAST	10	10	10	10	10	10	10	10	10	10	10	10	9	9	9	13	15	13	12	11	11	11	10	10
JAPAN	21	20	19	18	16	12	11	11	11	10	10	10	10	10	10	10	9	10	10	10	10	16	19	20
CENTRAL ASIA	21	20	19	18	16	12	11	11	11	10	10	10	10	10	10	10	10	12	12	12	12	12	19	21
INDIA	9	15	14	11	11	10	10	10	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9	9
THAILAND	20	19	19	17	15	12	11	11	11	10	10	10	10	10	10	10	9	13	13	13	12	12	12	16
AUSTRALIA	29	31	31	29	25	18	17	17	16	15	15	15	14	14	14	14	14	18	17	17	20	23	26	28
CHINA	18	19	18	17	14	11	11	11	10	10	10	10	10	10	10	10	9	10	10	10	10	10	10	16
SOUTH PACIFIC	32	33	31	29	23	18	17	17	16	15	15	15	14	14	14	14	18	18	21	24	26	28	30	31

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	23	16	15	15	14	13	13	13	12	12	12	12	12	22	25	27	29	29	30	30	30	29	28	26
NORTHERN SOUTH AMERICA	27	22	19	17	16	16	15	14	14	13	13	13	13	21	26	28	30	32	32	32	32	32	31	29
CENTRAL SOUTH AMERICA	27	20	19	18	17	16	16	15	15	14	14	14	14	26	29	30	32	33	34	35	35	34	33	31
SOUTHERN SOUTH AMERICA	31	27	22	20	19	18	17	16	16	15	15	15	14	22	26	28	30	31	33	33	34	35	35	33
WESTERN EUROPE	10	10	10	10	10	9	9	9	9	9	9	9	9	15	17	19	18	18	17	16	13	11	11	10
EASTERN EUROPE	10	9	9	9	9	9	9	9	10	10	10	9	9	12	14	14	14	13	12	10	10	10	10	10
EASTERN NORTH AMERICA	16	11	11	10	10	9	9	9	9	9	9	8	8	14	17	18	19	20	20	20	20	20	19	18
CENTRAL NORTH AMERICA	8	7	5	5	4	4	4	4	4	4	4	4	4	4	7	8	8	9	9	9	9	9	9	8
WESTERN NORTH AMERICA	14	13	11	8	8	8	7	7	7	7	7	7	7	6	6	12	13	14	15	15	15	15	15	15
SOUTHERN NORTH AMERICA	16	14	10	10	9	9	8	8	8	8	8	8	8	7	14	16	17	18	18	19	19	18	18	17
HAWAII	25	24	22	18	14	13	13	12	12	12	11	11	11	11	11	11	15	21	24	25	26	26	26	26
NORTHERN AFRICA	12	12	11	11	11	10	10	10	10	10	10	10	12	17	19	20	21	21	21	20	15	15	14	13
CENTRAL AFRICA	12	12	11	11	11	10	10	10	10	10	10	10	12	17	19	20	21	21	21	16	15	14	14	13
SOUTH AFRICA	21	18	17	16	16	15	15	14	14	14	14	14	21	27	30	32	33	34	34	34	33	30	28	25
MIDDLE EAST	10	10	10	10	10	10	10	10	10	10	10	10	9	15	17	19	19	16	12	12	11	11	11	10
JAPAN	19	18	16	12	12	11	11	10	10	10	10	10	10	10	10	9	10	10	10	10	10	16	18	20
CENTRAL ASIA	19	18	16	12	11	11	11	10	10	10	10	10	10	10	10	10	13	12	12	12	12	12	17	20
INDIA	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
THAILAND	18	17	14	11	11	11	10	10	10	10	10	10	10	10	9	13	13	13	13	12	12	12	12	12
AUSTRALIA	30	31	28	23	18	17	16	16	15	15	15	14	14	14	14	20	19	18	17	17	21	23	26	28
CHINA	17	16	14	11	11	11	10	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10	10	14
SOUTH PACIFIC	33	31	28	20	18	17	16	16	15	15	15	14	14	14	14	19	18	18	22	25	27	29	31	32

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	17	14	13	12	12	11	11	11	10	10	10	10	16	20	22	23	24	24	24	24	24	23	22	20
NORTHERN SOUTH AMERICA	23	20	19	17	16	15	14	14	13	13	12	12	17	21	24	26	28	29	29	29	29	28	27	26
CENTRAL SOUTH AMERICA	25	23	21	20	18	17	17	16	15	15	15	18	24	27	29	31	32	33	34	34	35	34	32	29
SOUTHERN SOUTH AMERICA	29	25	23	21	20	19	18	17	16	16	15	15	22	25	27	29	30	32	33	34	34	35	34	32
WESTERN EUROPE	10	10	9	9	9	9	9	9	9	9	9	14	17	19	19	19	19	19	18	16	14	11	11	10
EASTERN EUROPE	10	10	10	9	9	9	9	9	10	9	9	11	16	16	16	16	16	15	14	11	11	10	10	10
EASTERN NORTH AMERICA	6	5	5	5	4	4	4	4	4	4	4	4	6	8	9	9	10	10	10	10	10	9	9	8
CENTRAL NORTH AMERICA	17	12	11	11	10	10	10	9	9	9	9	9	9	15	18	19	20	21	21	21	21	21	20	19
WESTERN NORTH AMERICA	24	20	15	14	14	13	13	13	12	12	12	12	12	12	21	24	26	27	28	28	28	28	27	26
SOUTHERN NORTH AMERICA	18	13	12	11	11	11	10	10	10	10	10	9	9	16	19	21	22	23	23	23	23	23	22	21
HAWAII	25	21	16	15	14	14	13	13	12	12	12	12	12	12	12	12	17	24	26	28	29	28	28	26
NORTHERN AFRICA	13	13	12	12	12	12	12	12	12	12	12	21	24	26	27	28	28	27	25	22	16	15	14	14
CENTRAL AFRICA	13	13	13	12	12	12	12	12	12	12	12	21	24	26	27	28	28	26	23	17	16	15	14	14
SOUTH AFRICA	19	18	17	16	16	15	15	15	14	14	14	26	30	32	33	34	34	35	34	34	33	31	28	21
MIDDLE EAST	12	11	11	11	10	10	10	10	10	10	10	16	19	20	21	22	22	22	16	15	14	14	13	12
JAPAN	16	12	12	11	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	13	17	18
CENTRAL ASIA	15	12	11	11	11	10	10	10	10	10	10	10	9	14	13	13	13	12	12	12	12	12	12	18
INDIA	10	10	10	10	9	9	9	9	9	10	10	9	13	17	18	16	12	12	11	11	10	10	10	10
THAILAND	12	11	11	11	10	10	10	10	10	10	10	10	11	16	15	14	14	13	13	12	12	12	12	12
AUSTRALIA	30	26	19	18	17	16	16	15	15	14	14	14	14	14	22	21	19	18	17	18	21	24	26	28
CHINA	12	12	11	11	10	10	10	10	10	10	10	10	9	11	11	10	10	10	10	10	10	10	10	9
SOUTH PACIFIC	30	26	21	19	18	17	17	16	15	15	15	14	14	21	21	19	19	21	24	27	29	30	32	33

during the month depending on the time. That's pretty good odds that we'd have QSOs with Japanese stations and other Southeast Asia stations.

The signal powers in dBm (the fifth column) are translated into S-units assuming S9 equal -73 dBm and one S-unit is 5 dB. The resulting signal strengths (last column) are also median values. So the Southeast Asia stations won't be really strong, but they should be workable. For the record, I assumed 1,000 watts and an antenna on each end at a reasonable height with 14-dBi gain (about 6 dB over a dipole at the same height).

To round out our understanding of this path, **Figure 2** shows the big picture using the mapping feature from W6ELProp.

The long path is the black line, and it goes over the Caribbean, South America, almost touches Antarctica, comes up along the west coast of Australia, goes over the South China Sea and finally into Japan.

At 1200 UTC, my end of the path is past sunrise (about an hour and a half, in fact), assuring that the MUF is high enough. The other end is in darkness, but not too far past sunset — about two hours. Thankfully, recombination of electrons and positive ions at F_2 region altitudes is much slower than the ionization process. This means the MUF decreases very gradually after sunset.

Day	JA	YB
July 23	not on	not on
July 24	20	3
July 25	3	0
July 26	not on	not on
July 27	66	1
July 28	6	0
July 29	22	1

Figure 3. Daily Breakdown.

Tale of the Tape ... *err, Log*

So how'd we do as W1AW/9 in the 8 to 10 a.m. time slot on 17-meter phone with the antenna pointed southeast? *We did very well.*

We worked a total of 117 Japanese stations and four YB stations. Indeed, their signal strengths weren't spectacular, but they were very Q5 here.

We worked at least three Japanese stations on each of the days we were on. See **Figure 3** for the breakdown by day of the Japanese stations and Indonesian stations worked on 17 meters during the 8 to 10 a.m. time slot.

Note that we weren't on the first day (July 23) as we were coming back from the ARRL Centennial in Hartford, Connecticut. Also note that we didn't operate on 17 meters on July 26 – *I don't recall why.*

Conclusions: 1, 2, 3

The take-away from this month's column is three-fold.

First, 17 meters is somewhat immune from solar cycle variation — as is 20 meters.

Second, those on the East Coast and in the Midwest should look for long path to the southeast in the morning hours during the summer. Looking forward, that means check out the summer of 2015.

Third, the West Coast should have long path openings on 17 meters to Europe and the Middle East in the late evening hours during the summer.

Why Your Radio Club May Be Dying, and What You Can Do About It

BY CORY GB SICKLES, *WA3UVV

Let's start off with your *Happy Thought* for the day. From the moment we are born one thing is certain — we're going to die. Yes, every day you wake up, you're just one day closer to death. *Feeling inspired?*

Radio club membership is made up of people — just like *Soylent Green* <http://bit.ly/1Bw7AIK> — and some of the members you start with each year will not be there at the end of that year.

Coming to Grips with the 'Fear-of-Loss' Factor

That's a *cold, hard reality* and, other than encouraging healthier lifestyles, there isn't much you can do to stop it. Depending on the average age of your members, there's going to be *some* attrition, as friends become Silent Keys, or other facts of life.

You will lose members to job changes that result in a move outside of your area. Likewise, retirement to a different setting or taking an RV trip across the continent can also cost you some members. While some will retain their memberships, they won't be attending too many meetings and you'll lose their presence and warmth. It's an intangible, but it can have a negative effect, especially if they possess one of the more dynamic personalities in your group.

There are those who will lose interest in ham radio — at least for a time. Most will eventually return to the flock, but some will not. Likewise, there are others who will remain hams, but not members of your club. They may seek out a "better experience" with another organization or simply decide they don't need to be a member of any radio club.

While you can't do much about death and moving, you can about apathy.

From Personal Experience ...

I belong to the Gloucester County Amateur Radio Club <http://www.w2mmd.org> in Southern New Jersey (SNJ). We're near Philadelphia and are actually located below the Mason-Dixon line.

The GCARC is a steadily growing organization. It's an odd month that we don't welcome at least two new members. Currently, we're at 120+ on the roster, with average meeting attendance running in the low 40s. Our club newsletter is approximately 20 pages, each month. We have a lot of activities, interesting programs, and we're putting the finishing touches on a new clubhouse — in a countryside (low noise) setting.

Sounds great, right? Well, you should have seen it just a few years ago.

The Darker Ages for WA3UVV

Due to some extreme difficulties with my nearby *schadenfreude* neighbor <http://bit.ly/1fl1Wv1> and his delusional, but ongoing complaints of TVI, RFI, and pretty much any other kind of "I" he could think of he alleged I was causing, the joy of ham radio had been sucked dry.

*(**SEE:** "Lessons Learned in a Pitched TVI Battle," WorldRadio Online, March 2012. – WA3UVV).*

I had lots of equipment just collecting dust and had moved onto other interests. One day, I was

Imagine this: Scoring radio genius Edwin Howard Armstrong as guest speaker at your radio club's meeting. Impossible? Well, that's the case today. But back in 1922, EHA demonstrated his new invention — the superregenerative receiver — at a meeting of the Radio Club of America in Room 306, Havemeyer Hall, Columbia University in New York City. What imagination is your club showing in putting together interesting programs? (Courtesy of Wikimedia Commons)

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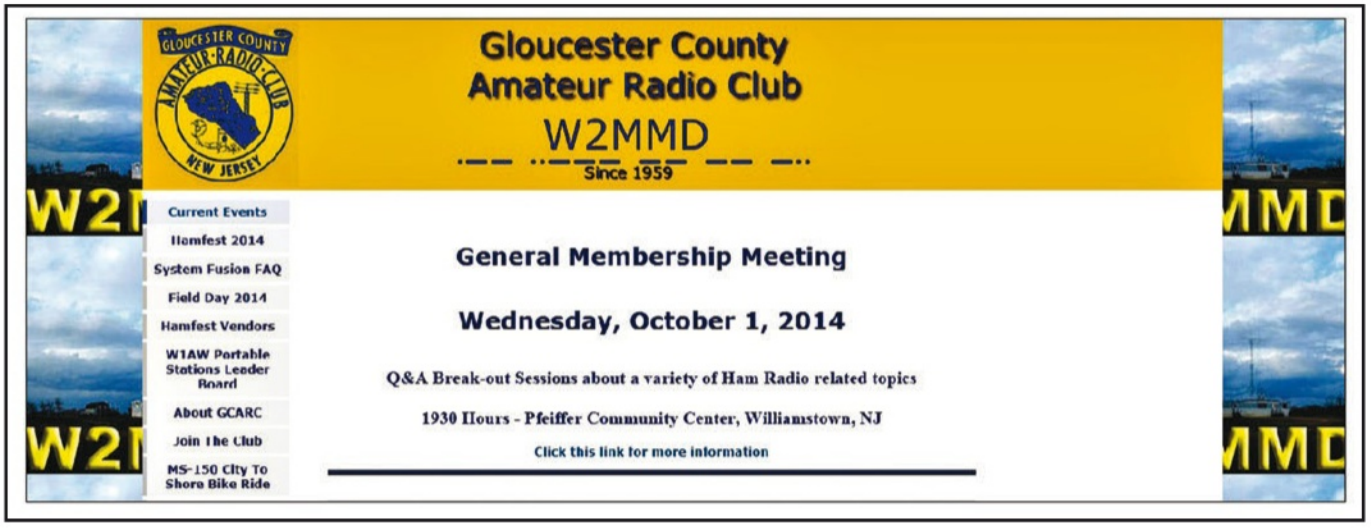


If your club isn't trumpeting meeting dates, activities, and an invitation to become a part of its community of radio amateurs, you're missing the proverbial boat. Check out the "entry points" of only a portion of the Gloucester County (New Jersey) ARC's Internet home page at <http://www.W2MMD.org>. (Internet screen grab)


operators are harder to knock out. That's why emergency preparedness is a major part of the club's charter.

With Stoll's help, the club got its new home base at the Richmond Field Station. What was once a disused shack is now filled with amateur radio equipment both old and new, and club members erected a 25-foot-high antenna tower that allows it to communicate with fellow ham enthusiasts thousands of miles away. On a typical day, the station picks up Morse code signals and voice broadcasts from as far off as Antarctica. Sommer says the club can use its space at the field station to do "outlandish stuff," such as setting up a large mirror that will allow members to bounce radio signals off the moon.

Amateur Radio Club members host a demonstration on campus in the late 1950s.

Much of the equipment was donated by Bay Area ham operators over the last few years, and the club has enough

Raising an amateur radio club's profile is a long-held element for successful growth. This picture of a University of California, Berkeley radio club public demonstration is a good example of the value of this time-honored practice. (Internet screen grab <http://bit.ly/1vr6E1o>)

inspired to get back into the swing of things. While he may have won the battle, I wasn't going to let *Mr. Schadenfreude* win the war.

Radio Club to the Rescue?

One of the first things I did was attend a radio club meeting — wanting to get reacquainted with some old friends. Many were there, many no longer were. Attendance was light and membership — once around 200, was in the 80s and declining. On one memorable evening, we didn't have enough members in attendance for a quorum, necessitating a phone call to a nearby member to come over so we could have a meeting.

After that, the club president approached a few of us to see if we could come up with a way to ensure it never happened again. It turns out that it doesn't take much to get moving in a positive direction again. Just a handful of people (sometimes, just one) can affect change. People like to associate with success. If others see that "something wonderful" is happening, they are more likely to become involved in a positive way.

... Yes!

Of course, there were those who wondered, "what all the fuss was about," since they didn't perceive any problem. Don't take this the wrong way, but those people are not immediately important. Make your changes with the ones who want change. Others will follow, in time.

Interesting programs were scheduled at every meeting, hospitality efforts were increased, the newsletter became fuller and many other changes began to take effect. It certainly didn't happen overnight, but slowly and deliberately, the club became interesting once again. More members were in attendance, more guests began to show up, and many of the club's leaders felt "inspired" once again.

In short, a positive groundswell of activity encouraged even more, bringing us to where we are today. All is not perfect, however. In the time that we picked up 40-some new members, we went through 100 name badges. While a few replaced those who were lost and a few others had to be tossed for engraving errors, what this meant is that we lost a significant number of members along the way.

Circumstances Beyond Our Control

Quite a few became Silent Keys — especially one year. Others moved out of the area. Still, it was obvious that even with growth, we were seeing a lot of "churn" on our roster from members who didn't renew. This is like trying to fill a sink with water while the drain is still open. It's something we're working on — trying to figure out what went wrong and how to correct it as we continue to move forward.

One "problem" which may explain some of the churn is that with a growing

Speaking of amateur radio club Web pages, the classier you make it, the better. The Internet is a fabulous and natural portal to attract new, young people to your club's meeting. The Purdue University ARC website — W9YB — serves as an excellent example <http://www.w9yb.org>. (Internet screen grab)

organization, there are a lot of new faces. It takes time to learn who these people are and *you* have to take deliberate action to engage them and keep their interest.

For that matter, the same goes for members you've had for a while, but perhaps haven't seen recently. A Health & Welfare committee chair is a focal point to making sure everyone is doing OK.

Proactive Outreach: Communication

How do you reach out to get new members or communicate with the ones you have? A club newsletter is a great communications tool — made better with an enthusiastic editor and a regular set of contributing writers.

In decades past, we used to mail our newsletter and worried about it being "too big," lest we need to use a second stamp. Today, we email copies to everyone, plus post a downloadable copy on our website. The savings in postage, paper, ink, and so on are incredible. Plus, we've gone from just black and white text and maybe one picture to color, lots of pictures, hyperlinks and more!

Make sure your website is interesting and keep it updated. There's nothing that says "go away" quite as effective-

Be sure to establish a Facebook page for communicating up-to-the-minute news to current members and to attract new people to your club. Visit: <https://www.facebook.com/W2MMD>

ly as visiting a new site that hasn't been updated in months (or years).

We also send out press releases each month — advertising the meeting as an "open house" and welcoming visitors. A brief summary of the upcoming program is included, along with a reference to refreshments and how interesting the growing hobby of amateur radio is.

Recently, we were able to add a running notice on our county's cable "bulletin board" and public access channel.

Tapping into Resources and Multiple Outlets

Each month you can access the "new hams and upgrades" list from <http://www.arrl.org> by section. Parse through the ones that are in your area and send them a letter or card inviting them to a meeting.

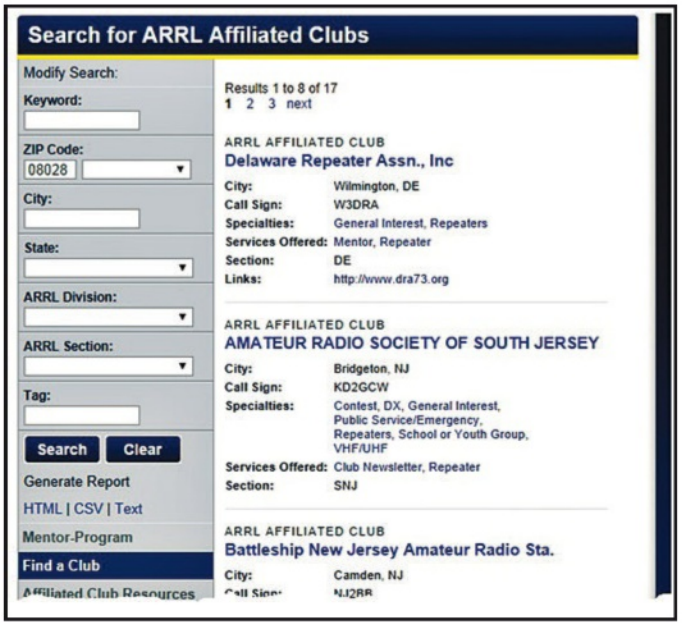
New hams are a natural source of members. Anyone who's upgraded recently is demonstrating a desire to have more fun with the hobby, so they're prime candidates, too.

Getting public service announcements (PSAs) on your local radio stations or TV channels is another way to reach out to your community. Radio is certainly easier and there are already some nicely-produced spots available from the ARRL.

You can "tag" them at the end with your specifics or just come up with an interesting script that times out to 30 or 60 seconds — giving a positive presentation on amateur radio and providing your club's (interesting) website with the "call to action," which in this case means "for more information ...," "to learn more ...," "discover the fascinating world of ...," and so on. You get the idea.

Social media is new to many, but if you want to reach younger prospects, this is the place to be. While lots of us have Facebook pages, not as many are using the service to promote our businesses or clubs.

It's easy to set up a page that promotes your group and allows members to share up-to-the-moment information on what's happening, with better frequency and immediacy than your newsletter. Ours <http://www.facebook.com/W2MMD> promotes the club as several members regularly add interesting content, with others posting items as opportunities arise.



In the Southern New Jersey 08028 ZIP Code, where WA3UVV lives, there are more than a dozen amateur radio clubs and organizations nearby, according to the ARRL website's "Search for Affiliated Clubs" function. (Internet screen grab <http://bit.ly/1vr8vDj>)

On the Web, Be Enthusiastic, Interesting, and Up-to-Date

Throughout the month, notices about meetings, new members inducted, contests, space weather events, exercises, public service opportunities, and more get posted, with com-

Knowing Your Radio Club's 'Minimum Critical Mass'

Any club's membership is dynamic. You will have "good" years and you will have "non-good" years. As long as your roster of active members is increasing, that's a positive indicator that all of you are doing something "right."

If your membership has been declining, there's always time to turn things around. However, there is a "critical mass" minimum, which requires immediate attention.

Unless your club is new, (as in the first full year of existence) if your membership is less than 20, you have a serious problem — perhaps a terminal one. *(**NOTE:** "Faux clubs," with just four members, so you can get a special call-sign — don't count. – WA3UVV)*

If your club has a President, Vice President, Recording Secretary, and Treasurer, that's four people who aren't part of the general membership. Factor in a couple of Directors and Trustees and you have even less. What about Committee Chairs? Yes, they're members, but they have specific responsibilities. Very quickly, this can leave you with less than 10. Now, what percentage of your roster attend meetings? I'm sure it's not 100 percent.

If you're hearing more crickets than hams at your radio club meeting, rest assured: You've hit "Minimum Critical Mass." Time for a change! (Courtesy of Altairisfar [Jeffrey Reed] via Wikimedia Commons)

That means the number of members who are not in leadership positions, that regularly attend meetings, are very few — perhaps less than a handful. It's going to be hard to keep them enthusiastic and motivated to stay members. It's doubly hard to get them to be "cheerleaders" and tell others about how much they enjoy membership and why someone else should join.

If you encounter an accident victim who's bleeding out, you don't just stand there and see how much longer they can bleed. Do something about it! If your membership is declining, you need to take action. And if your membership is declining to 20 or less, you need to take action — ***NOW!***

– Cory GB Sickles, WA3UVV

ments and the all-important "likes." It doesn't take much time to keep things fresh, but it is even more critical to do this, than it is with your website.

Remember that a posting, article or notice with a picture is logarithmically more interesting than without. Use humor to make the "boring" more interesting. Board meeting photos usually communicate more "bored meeting," so when posting new member approval notices, we've borrowed pictures from "Dr. Strangelove," "The Avengers," "Mad Men," and more — simply to make it memorable and bring back subscribers — if only to see what this month's picture will be.

Making the Most of Getting Together

Speaking of meetings, few people are going to consistently drive somewhere to simply sit through a run-of-the-mill evening of minutes, treasurer's report, committee reports, old business, and so on. *Snap it up.* If ARRL Field Day is still eight months away, you don't need to call on the Field Day chairperson to give a report. Just move it along with those people who have something interesting to say.

Some clubs dispense with reading the meeting minutes and certain reports, preferring to incorporate those into the newsletter. That saves time at the meeting. While business needs to be discussed and certain things addressed, make sure there's a positive payoff at the end — refreshments and an interesting program.

Coffee, soda (pop) and some decent pastries or donuts is enough. Once a year we also host a pizza party. A "Feed the Kitty" sign can, and will, keep the hospitality effort funded. If you want to hold a "50/50" raffle during this time, that's a small — but consistent — additional source of income for your club. Allow 10 minutes or so for this, as socializing is important.

Mr., Miss or Mrs. Speaker …

Now, onto the program. Invite members to speak about things they want to share. Ask for presenters from other radio clubs or groups outside the hobby. Maybe there's a radio astronomer nearby or cycling enthusiast.

Let your topics range from the simple (how to QSL, adjusting a straight key, selecting a microphone, tuning an antenna) to more esoteric or complex matters (SSB/CW satellite operations, moon bounce, PSK and other digital modes, advanced digital voice operation). Over time, your membership will let you know what it likes and doesn't like.

Solicit Feedback (In This Case, It's a Good Thing!)

Perhaps most importantly, ask your members what they want to get out of club membership and what they want to invest in moving the club forward. There are lots of ways to increase your ranks and make each meeting more interesting. Choose some that work for you and adjust them as circumstances allow.

Just a little effort and positive reinforcement makes all the difference between a club that has a vibrant, healthy pulse and one that's going "beeeeeeeeeeeeee."

trail-friendly radio

BY RICHARD FISHER, *KI6SN

Oh, So Knotty Tree-Hugging Backpack Radio

On a recent trail-friendly-radio day hike, Mother Nature and I had an interesting meeting of the minds. We were in a beautiful clearing surrounded by tall trees — perhaps 80 feet in height.

The heart races when imagining the antenna possibilities. The sky was a deep Southern California blue with a gentle breeze out of the west. *The perfect day.*

It was the perfect T-FR location, too, except for one thing: There was nothing to sit on or to place the radio on. No fallen trees or rocks to jigger into an operating position. I really didn't want to sit or lay flat on the ground, especially given the radio of the day: A Wilderness Radio NorCal-40A.

The '40A, with its built-in keyer, great receiver, 1 and 1/2-watt RF output, and low-current drain on receive, is a simple, nice performer on the trail. That's just what you'd expect from a transceiver designed in the 1990s by Elecraft co-founder Wayne Burdick, N6KR.

Ergonomically, though, it wasn't laid out for trail-friendly operation. Controls and jacks are on the front and back panels. On this day, without Mother Nature's resources to make an elevated "table" for the radio, it would be a literal and figurative pain in the neck to operate for any length of time.

Mother Nature and I teamed for a fun afternoon of 40-meter CW just the same. The hike back to the car was a quiet time for reflection. *"There's got to be a better way."*

*email <ki6sn@cq-amateur-radio.com>

Happy Trails to Me

The over-the-air digital TV channel "GRIT" features a lot of cowboy movies, and for whatever reason a scene from a black-and-white western came to mind. Here was the Ol' Prospector loading his faithful pack mule for a trip to a hidden mine in the foothills.

The ol' gal — *everybody was ol' in this movie* — would be carrying supplies for several days, if not weeks. The prospector used a fancy web of rope to fasten water, bedding, tools, and food to her.

It got me to thinking. Why not solve the T-FR operating position and the ergonomic incorrectness of the NorCal-40A by following the Ol' Prospector's lead?

Photo A. *A vintage black and white western movie was the inspiration for this rope cradle for tree-hugging trail-friendly radio.*

Photo B. *This knot was perfect for tightly cinching girth ropes around the 30-inch circumference of our "test tree."*

Photo C. *Find the mid-point of the 10-foot-long red rope and make a loop over the first girth rope.*

Photo D. *An uneven number of twists (in this case seven) allows the center twist to be separated to create the crossing point of the faux Diamond Hitch.*

Photo E. *The bulk of the remaining knot tying employs the Double Half Hitch — a nice, secure knot that can be slid for the cradle's adjustment along the girth lines. (**WATCH AND LISTEN:** How to tie it at <http://bit.ly/1vHdgb9>. – KI6SN>)*

A search online revealed the miner was probably using a Diamond Hitch <http://bit.ly/1rRM6xD> across the mule — a popular and reliable lash-up that has been around for more than 100 years.

At KI6SN, three nylon ropes were used to adapt the concept:

- 2 pieces, each 6-feet long
- 1 piece 10-feet long

Rope-ologists and knotty fundamentalists will tell you what's shown here is only Diamond Hitch *adjacent.* But it follows the lash-up's general concept and really does the job.

Gettin' Hitched, Partner

We start by placing one of the 6-foot long ropes around the girth of the tree. The "test tree" in the accompanying pictures is about 30 inches in circumference.

I'm not sure of the name of the knot shown in **Photo B**, but it's great for cinching ropes securely around things. Make the knot and pull the ends of the rope tight.

Now, take the 10-foot-long rope and loop it through the girth line at the red rope's midway point, **Photo C**. Then make an uneven number of twists. In the picture there are seven. Leave the loose ends dangling for the moment.

With the remaining 6-foot-long rope, make a second girth line, **Photo D**. Use the same cinching knot you did on the first girth line.

Pull one end of the red rope behind the lower girth line. Leave the other end of the rope dangling over the bottom girth line.

Now separate the twisted part of the rope in its middle. In this case, you'll see three twists above the separated loop and three twists below.

From here on, a series of Double Half-Hitch knots are used to make the faux Diamond Hitch "cradle." *(**WATCH AND LISTEN:** To how to tie a Double Half Hitch at <http://bit.ly/1vHdgb9>. Note that the "mighty oak" referred to in the video for our purposes are the top and bottom girth lines, **Photo E**. – KI6SN.)*

The Double Half Hitches on the bottom girth line are spread apart and the loose end of each side of the original 10-foot rope is pulled vertically through the top girth line. Secure them there with two more half hitches — one on the top left; the other on the top right, **Photo F**.

From here the loose end of each side is run through the center loop of the twisted portion, as shown. The bottom ends of this X are half-hitched to the bottom girth line, **Photo G**.

Radio As a Tree-Hugger

Before cinching everything snuggly, it's time to place our transceiver in the cradle, **Photo H**. Notice that a piece of flexible rubber has been placed between the top lid of the NorCal-40A and the bark. Unless you're some kind of masochist, you don't want to scratch up a radio. Be sure to add some layer of protection.

Now, assure you've got enough room to work the radio's controls. This may look awkward, but it's really not. All of the controls are easily accessible — especially when you're parked on one frequency rag chewing. Flying up and down the band in some wild contest is another thing.

Finally, we take the remaining loose ends of the 10-foot rope and secure them across the girth of the transceiver with a simple overhand knot, **Photo I**. *Done!*

Breaking Camp

This may look like a lot of work, but once you get the hang of it — *pun intended* — making a tree-hugging radio cradle takes only a couple of minutes. And it comes apart even more easily than it goes together. When you're ready to break camp, simply:

- Loosen the overhand knot you tied (it is the securing line across the bottom part of the transceiver)
- Remove the radio

Photo F. *From the Double Half Hitches on the bottom girth line, the loose ends of the red rope go vertically to the top girth line where they are secured with another set of Double Half Hitches. The loose end of one side is passed through the center loop of the twisted section. Make the same pass with the other loose end.*

Photo G. *After forming a cross-over X, tie the ends with a Double Half Hitch to the bottom girth line.*

Photo H. *Before sliding the Double Half-Hitch knots to tighten the lashing along the girth lines, position your radio in the cradle, with protective material between its surface and the bark, to allow free access to the controls. It may look cumbersome, but it's not.*

• Loosen the bottom 6-foot long girth rope and pull it through the four Double Half-Hitches, freeing it from the bottom of the faux Diamond Hitch

• Loosen the top girth line and pull it through the remaining center loop and two Double Half-Hitch knots

Now vigorously shake the 10-foot rope. If you tied things according to plan, you should have only a couple of overhand knots to untie.

Why Tree-Hugging Radio Makes Sense

On many day hikes I don't want to sit on terra firma to operate T-FR. I prefer to stand, tethered to my transceiver by the headphone and keyer paddle lines. With lengthened cables, it's possible to stroll at short distance around your operating area while in QSO. I know, I've done it.

Being able to operate the radio at, say, chest height in a trail-friendly configuration is quite a pleasure.

If the ground is wet or frozen, keeping your gear off of it is a plus. It's not a big deal to put an antenna-tuning unit in the cradle with the radio, as well. The gel-cell battery can sit on the ground.

If you're camping for an extended period, having your transceiver tree-bound is a valuable convenience. I can't tell you how many times I've stepped on my radio gear or gotten my feet tangled in an antenna or feed line. This cradle has a way of keeping things out of the way, and you won't have to watch your step — at least where your radio station is concerned.

For non-T-FR-designed radios, this is a great way to get your VFO tuning, RF gain, RIT, and keyer knobs onto a top surface. It makes access to the radio's back panel keyer paddle, power, and antenna jacks easy, as well.

Since you're tying the knots, make it at any height on the tree you'd like — high for stand-up operation; low for access from a chair or sitting on a rock or log. *It's your choice.*

Try It, You May Like It

As nutty as this might appear, give tree-hugging T-FR operation a try. You may get as hooked to it as I am. Please let me know about your experience by writing to <ki6sn@cq-amateurradio.com>. Meantime, happy trails, and see you next month! – *KI6SN*

Photo I. *The final step is to take the remaining red-rope ends and tie them with a simple overhand knot across the bottom part of the transceiver.*

AR6000 Professional Grade 40 kHz ~ 6 GHz Wide Range Receiver

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Continuous Coverage That Goes Far Beyond!

The AR6000 *delivers continuous tuning from 40 kilohertz to 6 gigahertz in a wide variety of modes for professional monitoring performance that's nothing short of amazing in terms of accuracy, sensitivity and speed. Standard modes include AM, FM, WFM, FM Stereo, USB, LSB and CW. An optional module can add the capability to receive APCO25 digital communications plus an optional I/Q output can be added to capture up to one megahertz of bandwidth onto a storage device for later listening or signal analysis.*

Designed for the monitoring or technical service professional, there are no interruptions in the AR6000's tuning range. With exceptional tuning accuracy and sensitivity throughout its tuning range, the AR6000 begins at the floor of the radio spectrum and continues up through microwave frequencies so it can be used for land-based or satellite communications. It works as a measuring receiver for those seeking a reliable frequency and signal strength standard. To support its broad spectrum, the AR6000 has two antenna ports, with the added capability of an optional remote antenna selector from the front panel of the receiver.

With its popular analog signal strength meter and large easy-to-read digital spectrum display, the AR6000 is destined to become the new choice of federal, state and local law enforcement agencies, the military, emergency managers, diplomatic service, lab technicians, news-gathering operations and security professionals.

Continuously amazing, the AR6000 professional grade receiver features:

- 40 kHz ~ 6 GHz coverage with no interruptions
- Multimode AM, FM, WFM, FM Stereo, USB, LSB and CW
- Tuning steps of 1 Hz up to 3.15 GHz; 2 Hz from 3.15 ~ 6 GHz
- Receiver is programmable and manageable through a USB computer interface
- Up to 2,000 alphanumeric memory channels
- Analog S-meter, large tuning dial, front panel power, volume & squelch controls
- Direct frequency input
- Fast Fourier Transform algorithms
- An SD memory card port can be used to store recorded audio
- Two selectable antenna input ports plus optional remote antenna selector

Add to the capabilities of the AR6000 with:

- Optional APCO-25 decoder
- Optional interface unit enables remote control via the internet
- Optional I/Q output port allows capture of up to 1 MHz onto a computer hard drive or external storage device

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BY CORY GB SICKLES, *WCQ2CS

But Seriously Folks ... Putting Together a Nice CB Station

Part I: Upgrading Your Power Supply

Last month in *Personal Communications* we revisited the subject of assembling a minimal "beer-budget" Citizens Band station as a way to inexpensively get on the air and to see if two-way communications is a hobby you might enjoy.

This month, let's take something of a "pendulum swing" to the other end — a more "serious" CB station.

Certainly, there's nothing wrong with a simple, used AM-only rig from the thrift store and wire antenna. But if CB is something you enjoy and you want to configure a station with improved performance, then you're going to want to make some upgrades. In upcoming columns, we're going to explore the elements of a full station. Hams that read this column may also want to follow along, as many of the ideas we'll cover are applicable to amateur radio HF stations, too.

Our upgraded station will include:

- A regulated 13.8-volt power supply
- Single Sideband (SSB) transceiver
- Professional microphone
- Basic test and measurement accessories
- Low-loss feed line and connectors
- Omnidirectional gain antenna
- Various station accessories
- "Glue" components and items that put it all together
- An ergonomic design for your "shack"
- Grounding and lightning protection

Ordering Your Priorities

The biggest performance enhancement is a good antenna. Having some gain — an antenna that will enhance your signal — will not only improve your transmitter's range, but also your receiver's ability to hear.

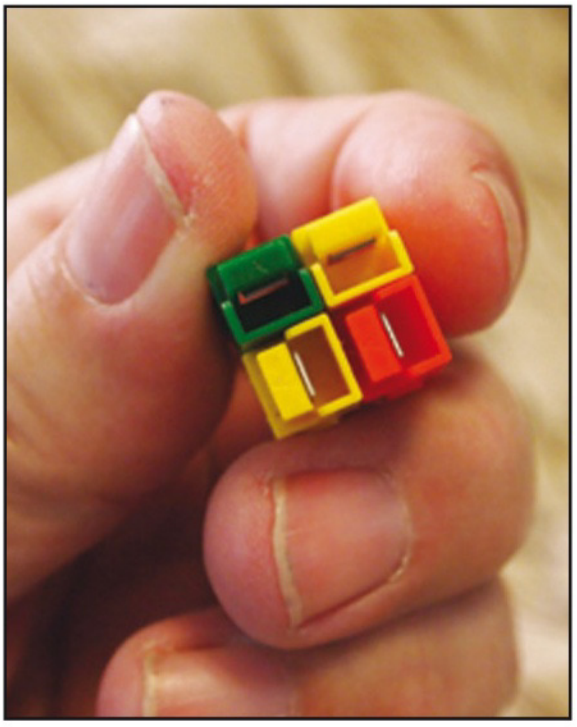
But I'm getting ahead of myself. Let's discuss power supplies first — the foundation of a clean signal.

'What a Revoltin' Development This Is ...'

No, we're not referring to the "revoltin' developments" Chester A. Riley talked about in the '50s TV comedy "The Life of Riley." Our "re-volting" is a good thing.

In our basic station, we used pretty much whatever power supply we could get our hands on — for the lowest price that met the minimal requirements of 12 volts at 2 amperes of current.

*<wa3uvv@gmail.com>



Color coding and plug placement can take the guesswork out of which way power supply cabling must be correctly connected to your CB rig.

That's OK for a simple, AM-only transceiver. But there's really no current to spare for anything else, and 12-volts doesn't give you as much output power as 13.8 volts — an industry standard voltage which these radios are designed for.

*(**MORE POWER:** The output difference between 12 and 14 volts may not seem titanic, but when you're dealing with a 5-watt power level, every improvement is significant. – WCQ2CS.)*

Brute Force vs. Switching: Let's Get Ready to Rumble

There are two basic types of DC power supplies — "brute force" and "switching." A brute force supply has a "big iron" approach, with a sizable transformer doing yeoman's work in the initial step-down of 117VAC at 60Hz from your wall socket (in North America) to something lower.

Then, there's typically a rectifier bridge, bringing the AC to a rippling DC. Next, a sizable electrolytic capacitor is employed to smooth out the ripples to a smooth line of electrons. After that, a regulator

circuit works to take the conditioned DC and output a constant (slightly lower) voltage of 13.8 volts to power the load (your transceiver).

By contrast, a switching power supply uses a more complex, high-frequency oscillator to "chop up" the incoming AC, then smoothes those pulses with an electrolytic capacitor or two and a possibly-variable regulator circuit to deliver the desired voltage and current at the output terminals.

Switchers, while populated with more components (and possible points of failure) are lighter, smaller and less expensive to produce because they don't require the big hunk of iron (transformer). Also, they're cheaper to ship, again owing to their weight and size.

An investment in good power connections, such as the popular Anderson Power Poles, can protect your radios and accessories from being "cross polarized." A crimping tool is the key to good connections.

In this picture, it is easy to see how things can get confused when it comes to powering your gear. The larger power supply has its B+ terminal (red) on the right and the negative on the left. The smaller supply has its B+ on the left and negative on the right. When fiddling around on the backside of a power unit, it's best not to assume anything about which binding post is which.

A downside of switchers is that the oscillators in them are prone to noise generation in the RF spectrum. While this is less of a problem at 27 MHz, hams with HF rigs wanting to use them on 80 (3.5 MHz) or 40 meters (7 MHz) have shied away from the technology. In recent years however, manufactures have taken steps to drastically attenuate, eliminate, or move the noise from the ham bands. This means that you can get a switching supply – with more current capability – for a lower cost than a brute-force version and not worry so much about introducing a buzz or other unwanted noise into your received signals.

So, Which Supply to Choose?

You certainly don't need a 75-ampere supply to power a CB rig. A supply that delivers a solid 4 amps is enough — even for SSB. However, there may be some additional items — now or in the future — that you want to attach.

If you have a mobile scanner or other gear that you'd like to run from just one source, then take their current drains into consideration before you purchase a new power supply. It will save you money (and space) in the long run. If your expansion needs are truly modest, then a supply rated for 10A peak and 7A continuous should be more than adequate, small, and readily affordable.

Additionally, you can choose a variable or fixed-voltage model. I suggest the latter, as it's all too easy to accidentally bump the control and raise the voltage well beyond what your expensive electronics wants to see. If you feel better knowing what the supply is delivering at any given moment, then one with meters (analog or digital) on the front panel could be just the ticket. Otherwise, choose a simpler model with only a power switch and LED indicator.

Making the Connection to Standardization

Another consideration is what sort of terminals or connectors are used on the power supply and how many it has. In all but the most simplistic setups, having a unit with multiple outputs is desirable.

The most common connectors are screw terminals, banana jacks, and Anderson Power Poles. You may be more familiar with the first two, but the latter has taken the ham radio community by storm — for good reason.

Power Poles created a standard that everyone can use. Additionally, the con-

A peg board at an area electronics store shows the wide variety and options available with the use of Anderson Power Poles.

nectors are keyed in such a way as to prevent accidental cross-polarization — which can turn a good day into a very bad day. Quite a number of amateur radio dealers carry these in stock and they are readily available online.

While Power Poles require an initial cash outlay in connectors and a crimping tool, they are truly an investment. Having a standardized connector scheme makes interchanging equipment faster and safer, plus allows you to add your transceiver to an existing power source, when you assist in an emergency or public service event.

Likewise, having a suitable power supply available for someone else to connect into increases your value in similar situations. There's a fully filled-in line of connectors, distribution blocks and more available, too.

If you're going to be setting up a good number of radios with Power Poles, then invest a little extra in a good crimping tool. If you're going to do just a few, then a less-expensive crimper is fine.

Even if your power supply doesn't have Power Poles "natively," you can make up or purchase a cable to run from the supply to a distribution block and fan out from there.

Quality power supplies are available from companies familiar to hams, such as Astron, Jetstream, and MFJ Enterprises — which also offer many of the station accessories we'll soon be covering. Downloading a copy of their catalogs may be a good idea for future reference.

The Shape of Things to Come

As we go through assembling a "serious" station, I'm going to be upgrading mine, as well. While I know what I want in the way of a new microphone and some other items, I haven't quite decided on a new SSB/AM rig.

So, if you have some suggestions or would like to share your experiences with the one you have, please let me know. My email inbox <wa3uvv@gmail.com> is always open.

A Flash of Inspiration

An author is always in search of good ideas. For me, they come from a variety of expected, and many times *unexpected* directions. "Getting Serious" came from a news story from a nearby TV broadcaster about a CBer whose station was struck by lightning.

In actuality, it was just probably a nearby hit — one that's survivable — if the station had been configured for lightning safety. In this case, it was not.

The Electro-Magnetic Pulse (EMP) was delivered to the antenna, passed down and damaged the feed line, then finally went into the person's home and fried the rig.

From the news story "tease," I felt bad for the guy. After all, those of us with a significant investment in our station don't want them to be damaged.

But once I watched the "package," *not so much.* The antenna installation was one of those things where he was asking for it: Poor radiator placement.

Thin coaxial feed line running amid a bunch of trees at about 5-feet above ground, passing directly (no lightning protection) into his mobile home, with no thought to grounding in sight.

For the *pièce de résistance,* the pulse didn't go straight into his transceiver. Rather, it passed through one of several amplifiers — I'm assuming — alleging — they were above the CB legal power limit — that showed up on camera. To top it all off, he was the president of his CB club. What a way — *or not* — to "set the bar" for others.

It comes back to bits of wisdom my grandfather taught me. "Everyone serves to be an example, even if it's a poor one." Also, "If you play in the street, you're going to get hit."

– Cory GB Sickles, WA3UVV/WCQ2CS

Can It Be? My Perfect 'Transistor Sister'

BY RYAN ARCHER, KCQ6KPH

It's kind of embarrassing. I think I might be in love with a girl who came to my prep school for a dance.

She goes to an all-girls school about 30 miles from here. Every other month either my school travels to hers, or hers comes to mine.

We danced a couple of times last year. Nothing close. The chaperones wouldn't allow that. But last year her freshman class came to ours for the "rave," as we jokingly call it. She came up to me right away. When she tapped me on the shoulder, my heart began beating like an electronic keyer at 60 wpm.

Collette is so pretty. She is French-Canadian and has such sparkling eyes. I think about her all the time. Is that what love is like?

The dance was themed a "sock hop." The DJ played ancient rock 'n' roll music from the 1950s and '60s. I don't think one kid there had heard a single song she spun from her two-turntable mixing board. That is, except when she cued-up a scratchy 45 rpm vinyl titled "Transistor Sister."

We were at the refreshment table and Collette grabbed me by the shoulders. *"Ohmygawd!* I *love* this song!" Without a word she pulled me to the dance floor. The next 2 minutes, 16 seconds were like a dream. *(**LISTEN:** <http://bit.ly/1oNb9hT>).* Hearing her say the word "love" sent me to a place in my brain I'd never been.

Pop, my great-grandpa, used to play "Transistor Sister" on an old Symphonics kiddie phonograph made of cardboard, believe it or not. He put it near the window. When Granny was hanging out laundry he'd turn the volume all the way and spin it loud enough for the whole county to hear. "Margaret, are you gettin' 'Boom Boom' Cannon?" he'd shout to her above Freddy Cannon and his band. "He's singing about *YOU.* You're my "Transistor Sister!"

After being silly — Collette and me dancing "The Twist" — she gently took my hand and we walked slowly to the folding chairs ringing the gymnasium's walls. I didn't want to let go.

"My grandmother used to dance cray-cray (crazily) to 'Transistor Sister' in the kitchen every time it came on K-EARTH," she said, before I could even ask how she knew about it. "Grandma was hilarious. It was on the radio all the time." *(**NOTE:** KRTH, 101.1 FM in Los Angeles, is the oldies giant in Southern California. – KI6SN)*

"Really?" I said, sitting on the edge of my chair, half-turned to Collette and leaning forward, perhaps too close. "My Pop used to work at a radio station and brought a copy of "Transistor Sister" home with him. I'll bet I've heard it a million times!"

"She's my transistor sister, with a radio on her arm," Collette sang *a capella,* just loud enough to be heard over the din of all the boys and girls talking.

"No one can resist her, 'cause she's loaded with a musical charm ..." I sang right back to her. She laughed genuinely and put her hand on my knee. I thought I was going to die.

***Photo A.** Power lines crossing the 91 Freeway east of Los Angeles were "the biggest radio antenna" Collette had ever seen.*

For the first time, we talked about keeping in touch. She gave me her email address. I gave her mine.

"I think radio is really interesting," Collette said. "I don't know too much about it, but I'd love to learn." There was that word "love" again. "Well, I'd love to teach you what I know about radio, which isn't nearly as much as my Pop."

Collette smiled. "That would be so cool."

In a panic, not knowing where to take the conversation from here, Collette came to the rescue. This is what I like so much about her. She always knows the right thing to do.

"Look at this," she said, holding the screen of her cell phone close to my face. "I took this from the bus on the trip over here," **Photo A**. "I think that's the biggest radio antenna I've ever seen."

Panic again. How do I put this so as not to make her feel like a dummy? "Collette, you're too funny," I said laughing. "I thought the very same thing the first time I saw those power lines beside the 91 Freeway."

"*Ohmygawd,* is that what those are?" she said, putting her right hand on her heart as she giggled, embarrassed.

"We both think the same way," I said, trying to make any connection possible to this dream girl. "It's almost like we have one brain between us!"

"So each of us has only half-a-brain?" she said without missing a beat. Collette is the funniest person in the world.

After the dance, I walked her to the bus and we shook hands goodbye. "Please write to me," I said to her desperately. "And *you* please write to me," she replied, touching my arm.

CQ's 6 Meter and Satellite WAZ Awards

(As of October 1, 2014)

By Floyd Gerald,* N5FG, CQ WAZ Award Manager

6 Meter Worked All Zones

Award Number	Callsign	Zones Needed
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	K0FF	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	G0LCS	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	NONE
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	K0AZ	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	16,17,18,19,21,22,23,24,26,28,29,34
67	W3TC	17,18,19,21,22,23,24,26,28,29,30,34
68	IK0PEA	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	JH0BBE	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	UX0FF	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
118	UT5JAJ	1,2,3,6,7,10,12,18,19,32
119	JE2WLD	2,5,7,9,18,34,40
120	JA1UAV	37,38,40
121	HA8IB	1,2,3,6,7,10,18,19,26,29,30,31,32

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 JUL 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	PA0AND	17 FEB 94	NONE
12	VE3NPC16	MAR 94	NONE
13	WB4MLE	31 MAR 94	NONE
14	OE3JIS	28 FEB 95	NONE
15	JA1BLC10	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	KC0TO	17 MAR 11	NONE
26	TI5RLI	10 JULY12	2,16,19,22,23,24,26,34
27	K7YCH	23 OCT 13	10, 19, 21, 26, 34, 36, 37, 38, 39
28	AH0U	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* 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>.

**P.O. Box 449, Wiggins, MS 39577-0449; e-mail: <n5fg@cq-amateur-radio.com>*

The Weirder Side of Wireless, and Beyond

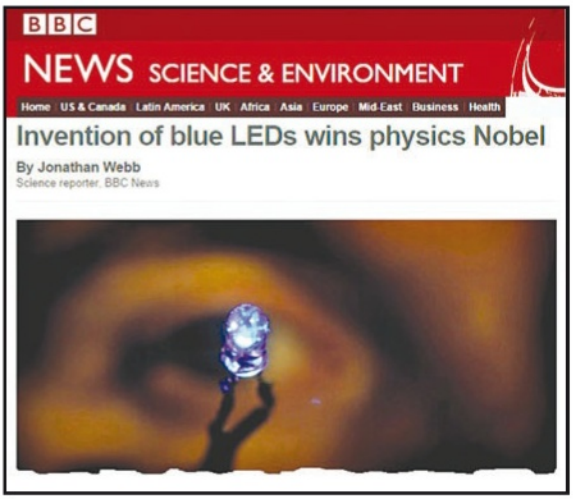


Photo A. *Professors Isamu Akasaki, Hiroshi Amano, and Shuji Nakamura have been awarded the 2014 Nobel Prize in Physics for their invention of the blue light-emitting diode (LED). (Internet screen grab <http://bbc.in/1uwnGfg>)*

One Heck of a Blue-Light Special

Professors Isamu Akasaki, Hiroshi Amano, and Shuji Nakamura are sharing 8 million Danish kronors — that's a tad over $1.2 million U.S. — after being awarded the 2014 Nobel Prize in Physics. Think of it: That kind of dough for inventing the blue LED. *Why didn't we think of that?*

Truth be known, it's a lot easier said than done.

The trio cracked the blue-light barrier in the early 1990s "by combining blue light with existing red and green LEDs, (enabling) a new generation of bright, energy-efficient white lamps," according to a report from the BBC, **Photo A**.

White LEDs "deliver white light to offices and households around the world. They use much less energy than both incandescent and fluorescent lamps."

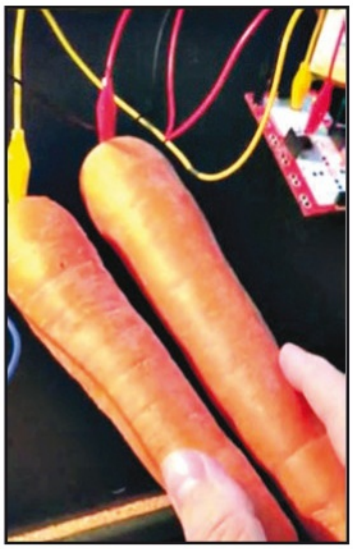
Next time you see a white or blue LED in your radio or smartphone, give a tip of the magnifying glasses to Hiroshi, Amano, and Nakamura — the best double-play combination since Tinker to Evers to Chance! *(**IN DEPTH:** Read the full story at <http://bbc.in/1uwnGfg>. – KI6SN)*

Adiós , Radio Exterior España

In a case of becoming "Unwired" in the most fundamental sense of the word, Radio Exterior España (REE) unplugged its shortwave operation last month. According to "David," writing on *The SWLing Post* blog, "REE will continue, though, and will be accessible through the Internet and also via satellite.

"Here in Spain they will also be available locally via the TDT/DVB-T system for regular TV broadcast — multiplexes, into which digital TV signals are combined, that are also used to carry digital audio data for 'radio' stations that therefore can broadcast using this system as well." For more details and links, visit *The SWLing Post* at <http://bit.ly/1vKJzWB>.

Photo B. *Michael Sanscom, GØPOT, opted for carrots instead of bananas to make a keyer paddle to activate Arduino boards to produce — pun intentional — lovely CW. His YouTube video is proof. (Internet screen grab <http://bit.ly/1uxvdui>)*



A Keyer Paddle to Improve Your Eyesight?

Honestly folks, we don't make this stuff up.

Michael Sanscom, GØPOT, (attach no significance to that callsign suffix) has made keyer paddles from a couple of carrots. He'd thought about using bananas, but *Daucus carota* won the day, **Photo B**.

A couple of Arduino programming boards helped the veggies to work. Michael's CW fist is quite remarkable given the *garden variety* paddles he's using.

"In 2014 my target is to get my ear and fist back up to speed with CW," he writes on his QRZ.com page, "so if you've just had a challenging QRS QSO with me on the key, I apologize."

*(**WATCH AND LISTEN:** At <http://bit.ly/1uxvdui>. – KI6SN)*

Pulp Non-Fiction

Visit the Paper Radio website, which appears to be anything but pulp fiction. Rampaging technology? You decide. Visit and prepare to be amazed <http://bit.ly/1pMqAqM>. (Internet screen grab)

BY KURT N. STERBA*

Well Said: From the Krusty Acres Mailbag

If you've read any of the interesting pieces Vernon R. Harris, W7GGM, has written for *CQ* you know he's a guy who thinks outside the box. In fact, his Aqueous 2-meter antenna is so off the wall, there *is no box. (**IN DEPTH:** September 2014 CQ Plus, page 118. – KI6SN)* The thing is, 'GGM is spot on. Salinated H_2O can make a fine radiator, and he proves it with the many contacts he's made on 144 MHz. The Krusty One would like to see him construct an antenna for, say, 40 meters using the same principles.

Anyhow, it came as no surprise when a letter from Mr. Harris arrived at Krusty Acres after October's *Aerials* on trees — not as antenna supports, but as antenna radiating elements. *(**READ:** "Vegetable Antennas," on page 154. **ALSO:** Access full government findings on the subject via a link on the "CQ Plus" landing page, <http://www.CQPlusDigital.blogspot.com>. – KI6SN.)*

'GGM writes: "I read the article in *CQ* magazine about using trees and plants as antennas and that you would like to hear comments from those who have had experiences in this area.

"I own a small research and development company, Bear Mountain Scientific <http://www.bearmountainscientific.com> and I have been doing experimental work in related areas since 1977. I can make *a few* comments, but some comments I cannot relate because *the data is classified.*

"Yes, trees and plants can be used as radiators. There are some restrictions and limitations and their performance changes as the trees and plants grow. If the trees and plants go through a dormant period, this will affect radiation performance, as well.

"My research is mostly related to using the RF signals to enhance the growth rates of the trees and plants. My systems are computer driven and programmed to maximize the growth rates by constantly monitoring the electronic performance of the trees and plants and altering the coded RF signals to accomplish this goal.

"The fact that the trees and plants can also radiate communications signals was an offshoot of the research.

"A sidebar of this research is that once the proper coded RF signal is established for a tree or plant, the coded RF signal can be electronically reversed or inverted and the tree or plant can be supplied with stimulus that will very effectively kill the tree or plant.

"This is probably most important if the tree or plant is replaced with cancer cell materials. This then becomes a method of growing cancer cells very rapidly or destroying the cancer cells quickly. Most of this research has stopped due to lack of funds.

"This is all I can relate to you without violating classified materials standards. I hope this is useful or at least interesting. Any other comments received by you would be of great interest to me. Please put my email address in your address book and keep me up to date."

Ben Franklin's Lightning Detector

Dear Kurt N. Sterba: Here is a cheap, primitive lightning detector invented by Ben Franklin. Suspend a metal bell by a wire connected to an ungrounded antenna next to a grounded bell. Enclose the whole contraption in glass or plastic to shield it from wind and place it outside your shack window.

Make sure the ground connection is heavy enough to take a lightning strike. It will make some electrical noise when the bells touch but there will be a lot more noise from the thunderstorm. Your eyes and ears are really the best lightning detectors because you can hear thunder several miles away and see lightning even farther.

I have had good results working DX on 20-meter phone with a vertical dipole suspended in a tree. From my QTH in Northern Kentucky I have worked Australia and South Africa on both long and short path using only 100 watts barefoot, as well as via short path all over the world.

I am located on a ridge and the terrain around here is hilly — enough to block or scatter my reflected ray in most directions for very low angles while the direct ray is unimpeded down to less than 1 degree elevation.

I use a W2DU balun at the center feed point and some split ferrite beads 49-feet down the feed line (about 3/4 wavelength) just before it connects to a surge protector on a ground rod, but it worked well even before I added the split beads.

Split beads avoid the hassle of making an isolator with its associated impedance bumps.

– Joe Stern, KI4QG,
Independence, Kentucky

Kurt welcomes questions of general interest from readers and will answer them in his kolumn. Write to him at: <CQPlusDigital@gmail.com>.

* c/o <CQPlusDigital@gmail.com>

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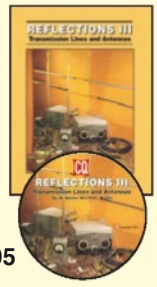

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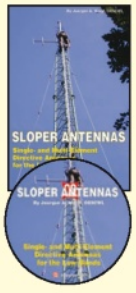

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