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COMMUNICATIONS & TECHNOLOGY

OCTOBER 2007

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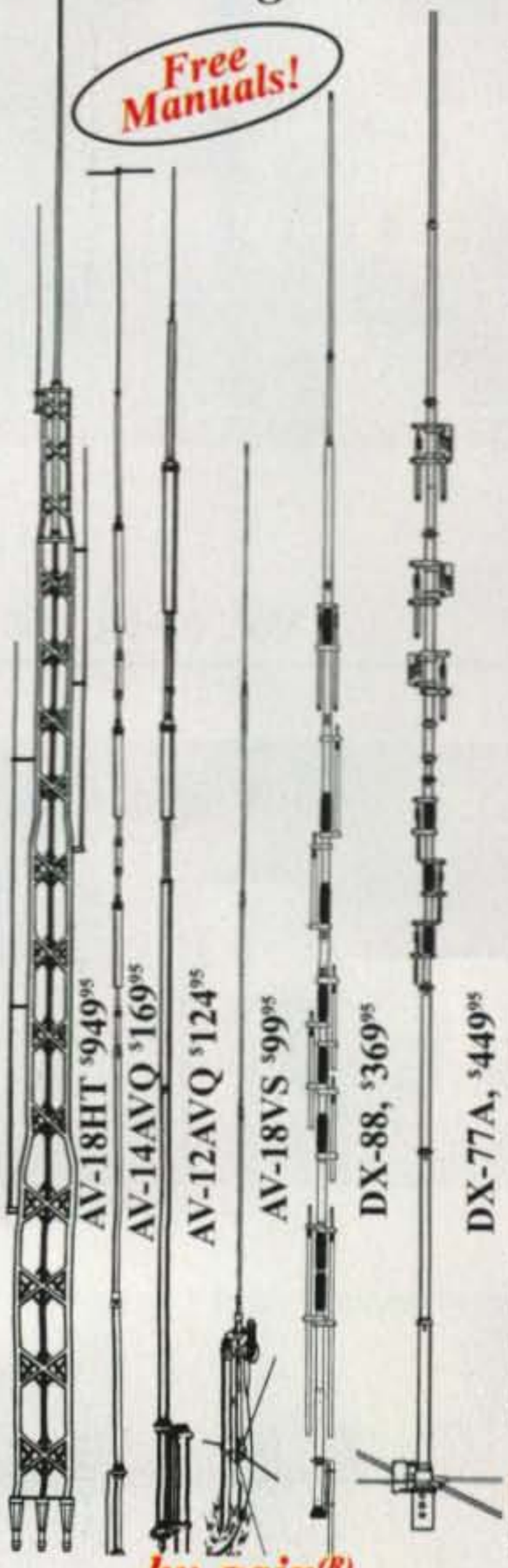

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Model #	Price	Bands	Max Power	Height	Weight	Wind Surv.	Rec. Mast
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AV-14AVQ	**$169.95**	**10,15,20,40**	**1500 W PEP**	**18 feet**	**9 pounds**	**80 MPH**	**1.5-1.625"**
AV-12AVQ	$124.95	10,15,20 M	1500 W PEP	13 feet	9 pounds	80 MPH	1.5-1.625"
AV-18VS	**$99.95**	**10 - 80 M**	**1500 W PEP**	**18 feet**	**4 pounds**	**80 MPH**	**1.5-1.625"**
DX-88	$369.95	10 - 40 M	1500 W PEP	25 feet	18 pounds	75 mph w/o guy	1.5-1.625"
DX-77A	**$449.95**	**10 - 80 M**	**1500 W PEP**	**29 feet**	**25 pounds**	**60 mph w/o guy**	**1.5-1.625"**

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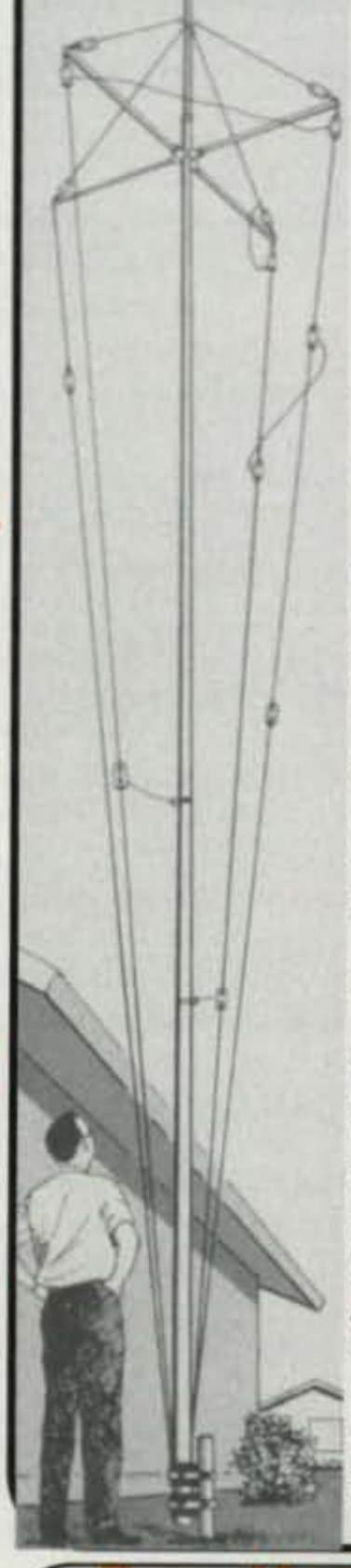

Standing a tall 39 feet with *full-size* elements and rated at 5 KW, the AV-18JR *Hy-gain HyTower-Jr.*™ is the world's *second best** performing vertical!

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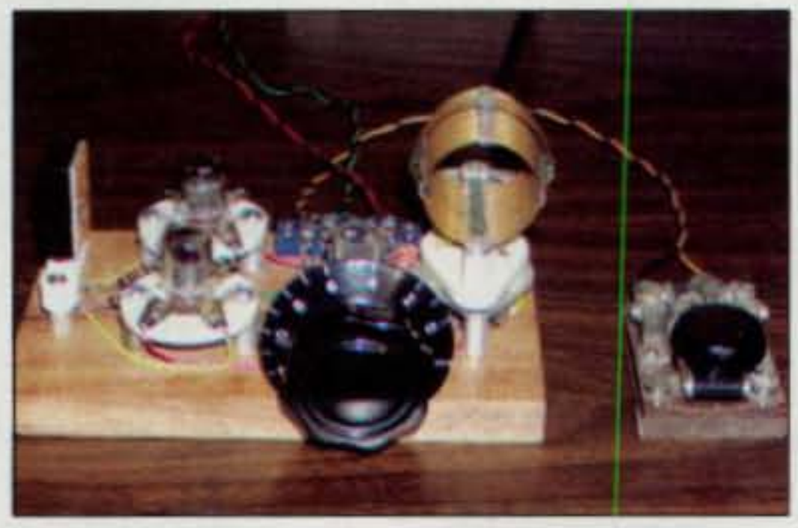

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ON THE COVER: Admiral Edmund P. Giambastiani, Jr., N4OC, makes his final official visit to Baghdad. He retired as Vice Chairman of the Joint Chiefs of Staff soon after our exclusive interview, which begins on page 13. (Defense Dept. photo by Air Force Tech. Sgt. Adam M. Stump; inset photo: Sputnik 1 launched the Space Age 50 years ago this month, photo courtesy NASA)

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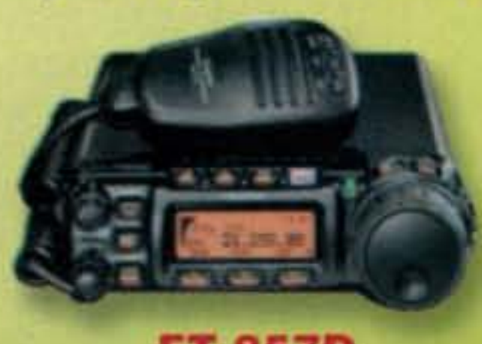

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ARRL Files Reply Brief in Federal BPL Case

On July 31, the ARRL filed a reply brief in a Federal appeals court in response to an FCC brief which aimed to rebut the ARRL's challenge to the Commission's Broadband over Power Line (BPL) rules, which were enacted in 2004. According to the *ARRL Letter,* the reply brief charges that the FCC was "engaging in misdirection—rebutting hyperbolic arguments ARRL never made, refusing to address the precedents ARRL cited, and attempting to rewrite the Orders as if they made factual rather than legal determinations." ARRL General Counsel Chris Imlay, W3KD, said that the reply brief focuses largely on the FCC's "unprecedented failure" to protect mobile stations from interference.

In a related story, on July 25 the ARRL filed an Informal Objection to the request by the Ambient Corporation for a renewal of the experimental authorization that permits it to run BPL anywhere in the United States. The League says Ambient's long-running system in Briarcliff Manor, New York, has been the cause of harmful interference since it started operating, something the FCC has done little to resolve. According to the League's objection, "there is nothing that has been filed by Ambient which could justify the continuation of experimental operation of this system rather than operation pursuant to the Commission's rules governing virtually all other BPL systems."

Meanwhile, some FCC commissioners still seem to be promoting BPL. Commissioner Jonathan Adelstein addressed the House Subcommittee on Telecommunications in late July on the need for "a national broadband strategy to ensure the ubiquitous deployment of affordable, high speed broadband infrastructure in this country." According to the *ARRL Letter,* he described BPL as "a technology deserving of 'increasing incentives for investment.'" ARRL Chief Executive Officer David Sumner, K1ZZ, faxed a response to the FCC Commissioner in which he expressed "great disappointment" with Adelstein's BPL remarks. Sumner referred to the ARRL's objections to BPL's "propensity to interfere with radio communications, a flaw that is not shared by other broadband delivery platforms," and said that BPL "has not earned a place in the much-needed national broadband strategy to benefit all Americans."

Hollingsworth: Ham Complaints Down

FCC amateur enforcement chief Riley Hollingsworth, K4ZDH, says the number of complaints about misbehavior on the ham bands has dropped off dramatically in recent months. The *ARRL Letter* reports that at the annual National Conference of Volunteer Examiner Coordinators in late July, Hollingsworth said he'd received only three ham-related complaints in the two and a half months since the Dayton Hamvention®, and said he was "very happy" that there has been a "slowdown" in the need for enforcement action on the ham bands.

Possible New Prefix for Bosnia-Herzegovina

The *ARRL Letter* reports that the International Telecommunications Union has approved a new callsign block, E7A to E7Z, for Bosnia and Herzegovina, to replace the currently used T9A to T9Z block. The changeover is expected to take place late this year.

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

ARRL Board Sets Growth Goals, Policy on Background Checks

In light of recent FCC actions such as the lifting of the Morse code testing requirement, the ARRL Board of Directors has set a goal of recruiting 30,000 new ham licensees in 2008. According to the *ARRL Letter,* "with approximately 6,000 licensees disappearing from the ranks of amateurs every year through attrition and non-renewal, the board recognized the importance of striving to create real growth in the Service." The *Letter* went on to say that the combination of the new licensing system and the coming upswing in the sunspot cycle will enable hams to bring in an increased number of new licensees and generally increase interest in ham radio.

The *Letter* also reports that the Board "took action on two pressing matters, background checks and emerging digital technologies," at its July meeting. The Board responded to an ongoing conflict with the American Red Cross over its background check requirement by approving a policy stating that "communications volunteers participating in ARRL-sponsored programs should not be required by served agencies to undergo background investigations of any kind," but also said that criminal background checks done by law enforcement are "generally acceptable." The new policy said it was "not reasonable" for an agency being assisted by ham volunteers to require them to "consent to credit checks, mode of living investigations or investigative consumer reports," and that Memoranda of Understanding between the League and organizations to which it was providing volunteer emergency communications services would have to ensure that such requirements would not be imposed.

The Board also asked frequency coordination groups to provide coordination for D-Star digital communications systems. Some repeater coordinators do not consider D-Star a repeater due to the nature of digital communications.

Educator Astronaut Barbara Morgan, KD5VNP Flies in Space

On August 8th, the space shuttle Endeavour lifted off with a crew including Mission Specialist Barbara Morgan, KD5VNP. Morgan is a teacher who was first selected for the Teacher in Space Project 22 years ago as the back-up for teacher Christa McAuliffe on the Space Shuttle Challenger. McAuliffe and seven other crew members died on January 28, 1986 when the Challenger exploded 73 seconds after takeoff.

"I'm really excited about going up and doing our jobs and doing them well," Morgan was quoted as saying in the *ARRL Letter.* "I'm excited about experiencing the whole spaceflight, seeing Earth from space for the very first time, and experiencing weightlessness and what that's all about. I am excited about seeing what it's like living and working on board the International Space Station." The Endeavor landed on August 21st at 12:32 PM EDT.

In other ISS news, an Amateur Radio on the International Space Station (ARISS) contact was made on August 4th between astronauts on the station and scouts at the 21st World Scout Jamboree, which was held in Chelmsford, England. According to the *Letter,* the Jamboree hosted about 40,000 scouts from around the world. Ten scouts were able to ask two questions each to astronaut Clay Anderson, KD5PLA, using special event station GB100J. The contacts were broadcast on the jamboree's radio station and were streamed on the station's website and on EchoLink, where it received 50 connections from 12 countries. Video and audio of the contacts are available at <http://www.g6lvb.com/GB100JISS.wmv>.

our readers say:

HF Antenna Building Primer

The following letter was addressed to "Beginner's Corner" Editor Wayne Yoshida, KH6WZ, with regard to his April 2007 column, "A Practical Primer on HF Antenna Building":

Wayne,

First of all, a nicely written article, very informative.

Here are a few comments that you might consider for the future:

1. When calculating the length of wire required for a dipole, be sure to include enough for terminations at the insulators. Probably 2 feet for every termination (8 feet total).

2. In your "Bill of Materials" section offer a balun as an alternate to the plain insulator. Since a typical dipole is balanced (equal lengths on either side), a balun (balanced to unbalanced) is used if you're using coax cable (unbalanced); ladder line (balanced) would be used with the insulator. If you use coax with just an insulator, the radiation pattern will be skewed and the antenna very difficult to match to the transmitter.

3. Also in the "Bill of Materials" section is mentioned a mast with no mention of what material it might be made from. I suggest either commercial steel or aluminum masting or 1 1/4-inch water pipe. In either case it will need to be guyed with non-conductive guying. Stay away from PVC; it's not rigid enough even if guyed.

4. Where you mention securing the ends of the antenna, you forgot that if one end is connected to a tree the tree will move (sometimes substantially) in a wind and that end of the antenna needs to have some means to "give." I suggest a line through a pulley with a large weight on the end of the line near the ground (I've used a plastic gallon jug filled with used wheel weights).

5. You didn't mention that the inverted-V, like any dipole, is directional, so the choice of which way the antenna should run will be dependent on what directions you want it to propagate.

6. Some of your math is wrong: 4.38 feet divided by 2 is 2.19 feet, not 1.19 feet.

7. In your "Electrocution Warning" sidebar you failed to mention that the ends of a typical dipole have a very high RF electrical voltage, sometimes as much as 50 to 100 volts, a potentially dangerous situation. Make sure that the ends of the dipole are well out of reach of people or animals, maybe as much as 10 feet off the ground.

Thanx & 73,
Tim Connor, KA2VEG, Syracuse, NY

KH6WZ replies:

Tim, thanks for your comments, and most all of them are "spot-on"! Yes, I forgot about tree sway, and the pulley and weighted bucket (with holes punched in it so it doesn't collect water) is the best way to accommodate this.

You are right about the "directionality," but sometimes one has to install an antenna within property boundaries, especially here on the typically smaller southern California lots.

Thanks and 73!

New Hams

Editor, *CQ*:

I *loved* your column about the "new" hams ("Zero Bias," May *CQ*). Our DX Club (the Magnolia DX Association) has been running classes here and we have a *large* number of *new* DXers—budding, I must admit, but willing to learn and very talented in other areas. I was also against the no-code but *quickly* saw the benefits to ham radio. Our average age of members dropped from 55 to almost 50 in three months. *And* some of the new folks climb towers, cooked at Field Day, ran the GOTA (Get On The Air) station at FD, and did a Kid's Day operation with their newly licensed kids. ...

So I admit I am a *believer* now.

Floyd Gerald, N5FG, Wiggins, MS

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FT-1802M

2 m Band
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50 W 10 m/6 m/2 m/70 cm*
Quad Band FM Mobile
FT-8900R
*70 cm 35 W

50 W 2 m/70 cm*
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2 m/70 cm Dual Band
FM Hand held (220 MHz: 1.5 W)
VX-6R

5 W Heavy Duty
2 m/70 cm Dual Band
FM Hand held
FT-60R

5 W Heavy Duty Submersible
2 m FM Mono Band Hand Helds
VX-120 VX-127
70 cm FM Mono Band Hand Helds
VX-170 VX-177

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CQ editorial

BY RICH MOSESON,* W2VU

Profound Impact

It is rare that a singular event has a direct, life-altering, impact on thousands or, broadly, even millions of people. But one such event occurred 50 years ago this month—the launch of Sputnik I by the Soviet Union on October 4, 1957.

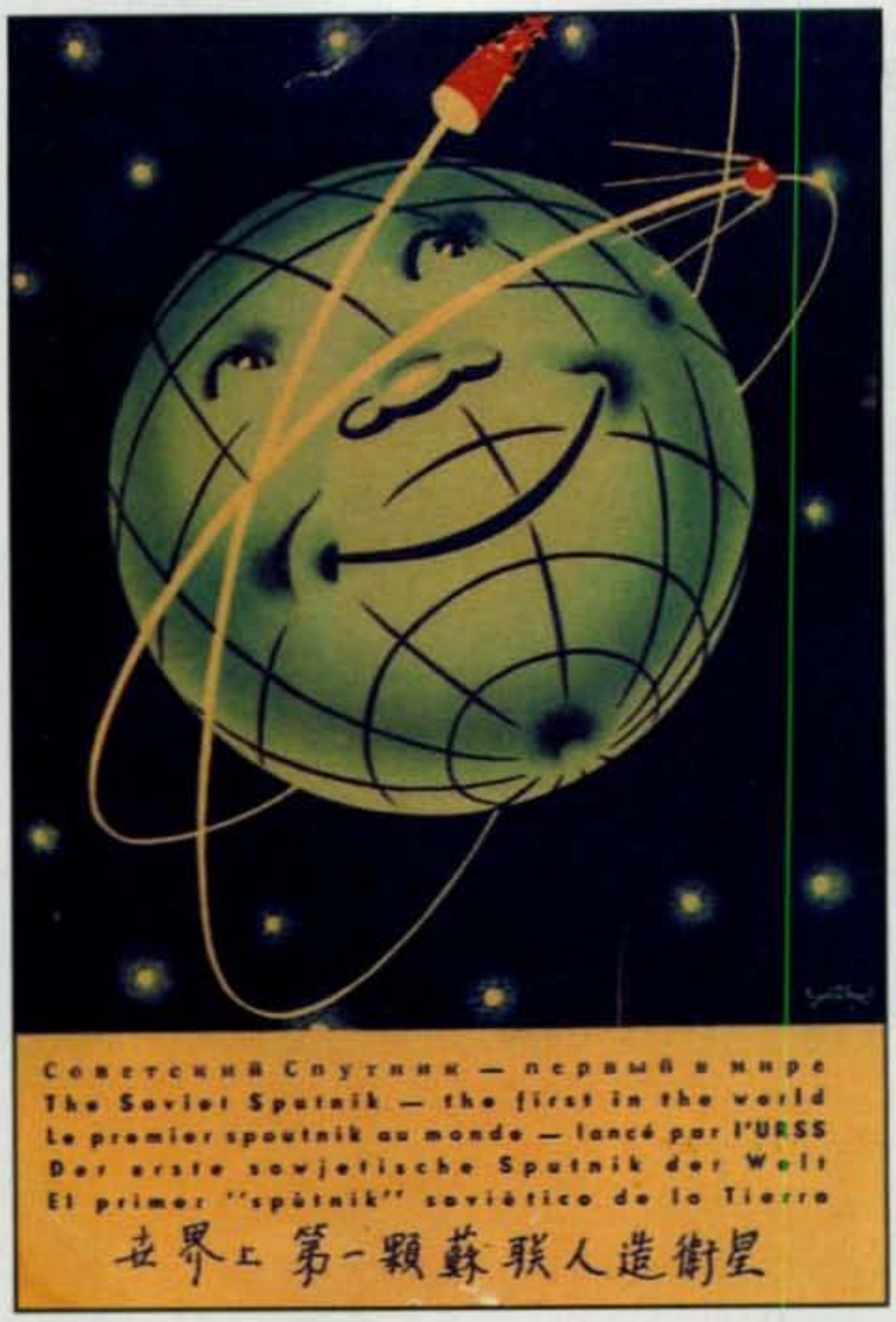
In the scientific arena, it was a triumph, marking the dawn of a new age of exploration. Man was no longer bound to planet Earth. From that starting point, we have gone on to send men to the moon, to remotely explore the solar system, and to use the vantage point of outer space to learn more about the Earth, the sun, and the rest of the universe. Today, our vast satellite network provides 24-hour worldwide communications and television, helps us predict the weather and find missing planes and people in the wilderness, and even allows us to know where we are and how fast we are going down here on the surface.

In the military and political arena, it was a disaster and a crisis for the United States. We were in the midst of the Cold War and there were fears that the Russians might use satellites to spy on us (imagine *that!*) or even launch a nuclear attack on us. We simply could not afford to fall further behind in either the arms race or the space race. Our government responded with a major push for improved math and science education in the schools, and ramped up an already active program to get us into the space business. Among its initiatives were the creation of NASA in the civilian sphere and, on the military side, the establishment of the Defense Advanced Research Projects Agency (DARPA), whose accomplishments—among others—include developing stealth technology, the Global Positioning System, and the Internet. Scattered everywhere in these agencies and in the nation's engineering schools were, and still are, hams.

Just how many hams, and just how great an impact ham radio and the launch of Sputnik have had on their careers, was not clear to me until the past few weeks. The only word that can do it justice is "profound." Our lead story in this issue is an interview with the recently retired Vice Chairman of the Joint Chiefs of Staff, Admiral Edmund P. Giambastiani, Jr., who is also N4OC. Ham radio, he tells us in this excerpt from our interview, has been important not only to him but to several of the people he worked with regularly at the top echelons of government.

> It has made a huge difference in my background over the years," Giambastiani explained. "One interesting thing—I work every day with the Deputy Secretary of Defense, Gordon England; he's the number two person in the Defense Department, and he was a ham in the 1950s. He let his license expire … but he had this same background. Also, the Director of DARPA, the Defense Advanced Research Projects Agency, is Anthony Tether. He's also a ham, and he's quite active. What you've got here are very senior people who have gotten a tremendous grounding in science and technology through ham radio.

In a subsequent interview (which we're planning to bring you next month), Dr. Tether, who's K2TGE, recalled the impact that the Sputnik launch had on the country and on his eventual career in defense and aerospace. That got us to thinking that there probably are a good handful of stories out there from other hams



One of the colorful QSL cards sent out by Radio Moscow in response to reception reports on signals from Sputnik 1 after its launch in October 1957. (Courtesy of Mike Adams, N3JW)

about their first-hand experiences listening to Sputnik's radio transmissions and their own career choices. We put out a request for feedback on a couple of e-mail lists and were promptly swamped with dozens and dozens of stories. We have the best of them on page 20. What was really amazing, though, was how widespread the effects of this one event in history were on "our" people, and not only those who ended up working directly in aerospace (there were many). For example, Mike Adams, N3JW, wrote that …

> A group of my schoolmates were similarly smitten at that time with the national emphasis on science that followed and the excitement of applying electronics to communications. Our collective goal was to work at the "Cape" or in some way be part of putting a man on the moon, first! We all continued through school together, did electronics-theme science fair projects together, "hammed" together, and helped one another with our stations. In fact, all but one of the group went on to electronics-related careers!

Greg Beat, W9GB, noted that while he was too young in 1957 "to understand or experience the Sputnik event first-hand … the American reaction shaped my elementary and high school curriculum and education…"

Long Memories

The other amazing thing in the responses we received was what good (but selective) memories so many of you have, even after 50 years. "I can remember it just like it was yesterday," commented Bob Smith, K4PHE, like so many of you recalling not only the experience

(Continued on page 114)

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

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Available Now with 12m and 10m Built-in!

HL-1.5KFX

HF/50MHz Linear Power Amplifier

Auto Band Set

This compact and lightweight 1kW desktop HF/50MHz linear power amplifier has a maximum input power of 1.75kW. Our solid-state broadband power amp technology makes it **the smallest and lightest self-contained amplifier in the industry**.

Typical output power is 1kW PEP/SSB on HF and 650W on 6m band with the drive power of 85-90W. Bands set automatically with the **built-in band decoder**. You can forget about the band setting when the amplifier is connected to your modern radio through **supplied band data cables *for ICOM* CI-V, DC voltage (ICOM, Yaesu), and RS-232C (Kenwood)**. Manual band setting selectable as well.

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Features

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- The amplifier's decoder changes bands automatically with most ICOM, Kenwood, Yaesu.
- The amp utilizes an advanced 16 bit MPU (microprocessor) to run the various high speed protection circuits such as overdrive, high antenna SWR, DC overvoltage, band miss-set etc.
- Built in power supply.
- AC (200/220/235/240V) and (100/110/115/120V) selectable.
- Equipped with a control cable connection socket, for the HC-1.5KAT, auto antenna tuner by Tokyo Hy-Power Labs.
- Two antenna ports selectable from front panel.
- Great for desktop or DXpedition!

Specifications

Frequency:
1.8 – 28MHz all amateur bands including WARC bands and 50MHz

Mode:
SSB, CW, RTTY

RF Drive:
85W typ. (100W max.)

Output Power:
HF 1kW PEP max.
50MHz 650W PEP max.

Matching Transceivers for Auto Band Decoder:
Most modern ICOM, Yaesu, Kenwood

Drain Voltage:
53V (when no RF drive)

Drain Current:
40A max.

Input Impedance:
50 OHM (unbalanced)

Output Impedance:
50 OHM (unbalanced)

Final Transistor:
SD2933 x 4 (MOS FET by ST micro)

Circuit:
Class AB parallel push-pull

Cooling Method:
Forced Air Cooling

MPU:
PIC 18F452 x 2

Multi-Meter:
Output Power – Pf 1Kw
Drain Voltage – Vd 60V
Drain Current – Id 50A

Input/Output Connectors:
UHF SO-239

AC Power:
AC 240V default (200/220/235) – 10 A max.
AC 120V (100/110/115) – 20 A max.

AC Consumption:
1.9kVA max. when TX

Dimension:
10.7 x 5.6 x 14.3 inches (WxHxD)/272 x 142 x 363 mm

Weight:
Approx. 20kgs. or 45.5lbs.

Accessories Included:
AC Power Cord
Band Decoder Cables included for Kenwood, ICOM and Yaesu
Spare Fuses and Plugs
User Manual

Optional Items:
Auto Antenna Tuner (HC-1.5KAT)
External Cooling Fan (HXT-1.5KF for high duty cycle RTTY)

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announcements

California QSO Party – CW/SSB, sponsored by the Northern California Contest Club, 1600Z Oct. 6 to 2159Z Oct. 7 on 160–2 meters. For more information go to <www.cqp.org> or e-mail to <info@cqp.org>.

Midwest VHF/UHF Society Frequency Measuring Test – Oct. 13, two transmission periods: 1830Z and 0130Z. Transmissions will be on 80, 40, and 30 meters from Dayton, Ohio under the callsign W8KSE. For details go to: <http://www.febco.com/time-freq/FMT>; for questions, comments, results e-mail: <fmt@mvus.org>.

The following Special Event stations are scheduled for late September and October:

W1NRG/60, from the 60th anniversary of the Meriden ARC, Wallingford, CT; 0000Z Oct. 26 to 2359Z Nov. 2 on SSB 3.860, 7.260, 14.260, 21.360, 28.360 MHz; CW 60 kHz above the band edge ±QRM. MARC members will also be signing /60 with their own callsigns. QSL to Meriden ARC, P.O. Box 583, Meriden, CT 06450. To get the free certificate you muct also work the club station, W1NRG/60. For details go to <www.meridenarc.org>.

K2S, commemorating Space Shuttle Mission STS-120 commanded by Col. Pamela Melroy; Honeoye, NY; Oct. 20 to Nov. 3 in the General segments of 80, 40, and 20 meters. For QSL send SASE to WB2GGM, 6009 Pine Haven Lane, Honeoye, NY 14471.

W4O, from Oliver Hardy Festival, Harlem, GA; 9 AM to 4 PM EDT Oct. 6 on 7.260, 14.260, 21.360, 146.52, ±10 kHz. For certificate send QSL and 8×10 SASE to CCARC – W4O, P.O. Box 800, Evans, GA 30809. <http://ccarc.hamradioman.com/html/ohf.html>

K6BSA, from Boy Scout Expo 2007, Beale Air Force Base, Woodland, CA; 1700–2300Z Sept. 29 on SSB 14.290 and 7.270 MHz, FM 147.00 MHz, plus IRLP 3895. For QSL send QSL and SASE to Bill Ragsdale, K6KN, P.O. Box 1500, Woodland, CA 95776. <http://yolobsa.editme.com/expo>

W8VP, from Peter's Creek "S" Bridge, near Cambridge, OH; Cambridge ARA; 1400–2100Z Oct. 20 on 7.225–7.240 MHz. For QSL send QSL and SASE to Cambridge Amateur Radio Assn., P.O. Box 1804, Cambridge, OH 43725. <http://www.w8vp.org>

W9JOZ, from Radioville, IN, "the town that never existed"; Starke County ARC; 1400–2000Z Oct. 6 *(no frequencies given)*. Send QSL and SASE to John Poindexter, W3ML, 204 South Main St., Knox, IN 46534.

The following hamfests, etc., are slated for late September, October, and early November (Thailand):

Sept. 28–29, **Ten-Tec Factory Tour & Hamfest**, Sevierville, TN. For details go to: <http://radio.tentec.com/Hamfest>

Sept. 29, **SEDCO III DX and Contest Conference**, Pigeon Forge, TN. For details go to: <http://www.sedco.homestead.com>.

Oct. 6, **HamEXPO**, Bell County Expo Center, Belton, TX. Contact Mike LeFan, WA5EQQ, e-mail: <mlefan@vvm.com>, phone 254-773, 3590; <http://www.beltonhamexpo.org>. (Talk-in 146.820, PL 123.0)

Oct. 7, **Nutmeg Hamfest & ARRL Connecticut State Convention**, Mountain Ridge Resort, Wallingford, CT. For details go to: <info@nutmeghamfest.com>. (Talk-in 147.36+; exams info at <vetest@nutmeghamfest.com> or call 203-631-1161)

Oct. 7, **Aksarben ARC Hamfest**, Millard American Legion Hall, Omaha, NE. For details contact: <kc0shz@yahoo.com>. (Exams)

Oct. 7, **Hall of Science ARC Hamfest & Electronics Bazaar**, NY Hall of Science, Flushing Meadows, Corona Park, Queens, NY. Contact Steve Greenbaum (evenings only) 718-898-5599 or e-mail: <WB2KDG@arrl.net>; <www.hosarc.org>. (Talk-in 444.200+, 136.5 PL, 146.52; exams 10 AM)

Oct. 12–13, **NEAR-Fest**, Deerfield (New Hampshire) Fairgrounds. For details go to: <www.near-fest.com>. (Talk-in K1JEK/RPT 146.700, –600 PL 88.5)

Oct. 13, **Hamfest Paris Texas**, Red River Valley Fairgrounds Coliseum, Paris, TX. Contact Richard Lenoir, KI5DX, 903-783-0968; <http://www.paristexasradio.com>. (Talk-in 147.040 PL 100.0+, exams)

Oct. 13, **Augusta Georgia ARCA Hamfest**, Evans Middle School, Evans, GA. Contact Dough Pugh, KE4JSJ, e-mail: <doug9945@yahoo.com>, phone 803-279-6725.

Oct. 13–14, **Melbourne, FL Hamfest & Florida State ARRL Convention**, Melbourne Auditorium, Melbourne, FL. Contact Jan Heise, K4QD, at <hamfest2007@pcars.org>; <http://www.pcars.org/>.

Oct. 14, **Maysville Hamfest**, Community Center, Maysville, NC. Contact K4BMH, phone 252-753-2895.

Oct. 20, **Al Brock Memorial Hamfest/Computer Show**, Rome American Legion Post 5, Rome, GA. Contact Grover Keith, KA5QFI, e-mail: <gfkeith@comcast.net>, phone 706-766-1118. (Talk-in 146.34/146.94 –88.5PL; exams)

Oct. 20, **Great Lakeshore Super Swap**, West Ottawa South Campus, Holland, MI. Holland ARC. (Talk-in 147.060, PL 94.8)

Oct. 21, **RF Hill ARC Hamfest**, Sellersville Firehouse, Sellersville, PA. Contact Charles Schmell, e-mail: <kb3cez@yahoo.com>, phone 215-538-7458; <www.rfhill.ampr.org>. (Talk-in 145.31–, PL 131.8; exams 10 AM to noon)

Oct. 27, **Hamfest Chattanooga**, Convention Center, Chattanooga, TN. Details e-mail: <k4zqx@arrl.net>, phone 423-875-8269; <http://www.hamfestchattanooga>. (Talk-in 146.790, 224.78; exams)

Oct. 28, **Long Island Hamfair & Electronics Show**, Levittown Hall, Hicksville, NY. Details: <http://www.limarc.org/fest.htm>. (Talk-in 146.85 [136.5 PL; exams 10 AM)

Nov. 8–11, **SEANET 35**, Southeast Asia's foremost and 35th annual amateur radio convention, Lampang, Thailand, plus Special Event station **HS35SEA** on Echolink and special QSLs for contacts. Details: <www.sabah.net.my/seanet/seanet_2007.htm>

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HAM-IV
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HAM IV and HAM V Rotator Specifications	
Wind Load capacity (inside tower)	15 square feet
Wind Load (w/mast adapter)	**7.5 square feet**
Turning Power	800 in.-lbs.
Brake Power	**5000 in.-lbs.**
Brake Construction	Electric Wedge
Bearing Assembly	**dual race/96 ball bearings**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
Shipping Weight	26 lbs.
Effective Moment (in tower)	**2800 ft.-lbs.**

TAILTWISTER SERIES II

T-2X
$699.95

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$1079.95
with DCU-1

For large medium antenna arrays up to 20 sq. ft. wind load. Available with *DCU-1 Pathfinder* digital control (T2XD) or standard analog control box (T2X) with *new* 5-second brake delay and *new* Test/Calibrate function. Low temperature grease, alloy ring gear, indicator potentiometer, ferrite beads on potentiometer wires, *new* weatherproof AMP connectors plus 8-pin plug at control box, triple bearing race with 138 ball bearings for large load bearing strength, electric locking steel wedge brake, North or South center of rotation scale on meter, low voltage control, $2^{1}/_{16}$ inch max. mast.

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

CD-45II

CD-45II
$389.95

For antenna arrays up to 8.5 sq. feet mounted inside tower or 5 sq. ft. with mast adapter. Low temperature grease good to -30 F degrees. *New* Test/Calibrate function. Bell rotator design gives total weather protection, dual 58 ball bearing race gives proven support. Die-cast ring gear, stamped steel gear drive, heavy duty, trouble free gear train, North center scale, lighted directional indicator, 8-pin plug/socket on control unit, snap-action control switches, low voltage control, safe operation, takes maximum mast size to $2^{1}/_{16}$ inches. MSLD light duty lower mast support included.

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

HAM-V

HAM-V
$999.95
with DCU-1

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

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MSLD, $39.95. Light duty mast support for CD-45II and AR-40.
TSP-1, $34.95. Lower spacer plate for HAM-IV and HAM-V.

AR-40

AR-40
$289.95

For compact antenna arrays and large FM/TV up to 3.0 square feet wind load area. Dual 12 ball bearing race. Automatic position sensor never needs resetting. Fully automatic control -- just dial and touch for any desired location. Solid state, low voltage control, safe and silent operation. $2^{1}/_{16}$ inch maximum mast size. MSLD light duty lower mast support included.

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

HDR-300A

HDR-300A
$1379.95

For ***king-sized*** antenna arrays up to 25 sq.ft. wind load area. Control cable connector, *new* hardened stainless steel output shaft, *new* North or South centered calibration, *new* ferrite beads on potentiometer wires reduce RF susceptibility, *new* longer output shaft keyway adds reliability. Heavy-duty self-centering steel clamp and hardware. Display accurate to 1°. Machined steel output.

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

Digital Automatic Controller

DCU-1
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Automatically controls T2X, HAM-IV, V rotators. 6 presets for favorite headings, 1° accuracy, 8-sec. brake delay, choice for center of rotation, crisp *plasma* display. Computer controlled with many logging/contest programs.

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Is ham radio still important for our nation's future? Is it still relevant to young people in today's digital world? "Yes" to both, says N4OC, who just retired as the number two man in America's military.

CQ Interviews:

Admiral Edmund P. Giambastiani, Jr., N4OC
(Recently Retired) Vice Chairman Joint Chiefs of Staff

BY RICH MOSESON,* W2VU

"My boss is a ham radio operator and he's interested in doing an interview with your magazine." That was the gist of a phone call I received one morning a few months ago. What made this call particularly interesting was that the caller on the other end was a Navy Captain and his boss was the nation's second highest-ranking military officer, the Vice Chairman of the Joint Chiefs of Staff. Admiral Edmund P. Giambastiani, Jr.—known to U.S. troops around the world simply as "Admiral G."—is also N4OC, a ham since 1962. As he wound down his 41-year military career (he retired on July 27, 2007, a week and a half after our interview), he wanted to talk with *CQ* about the role that amateur radio has played in his career and its importance for continuing to build young people's interest in science and technology.

Admiral Edmund P. Giambastiani, Jr., USN, seventh Vice Chairman of the Joint Chiefs of Staff, speaks at his retirement ceremony at the U.S. Naval Academy in late July. (Defense Dept. photo by U.S. Air Force Staff Sgt. D. Myles Cullen)

"Real Fundamentals" for Kids

"I think that what's important is that amateur radio in today's world can provide some real fundamentals for kids in terms of science and technology that they can't get from their computers and cell phones," said Giambastiani. "This country has always had innovators, experimenters. One of the great things about amateur radio is that it encourages that. That's what drew me to it."

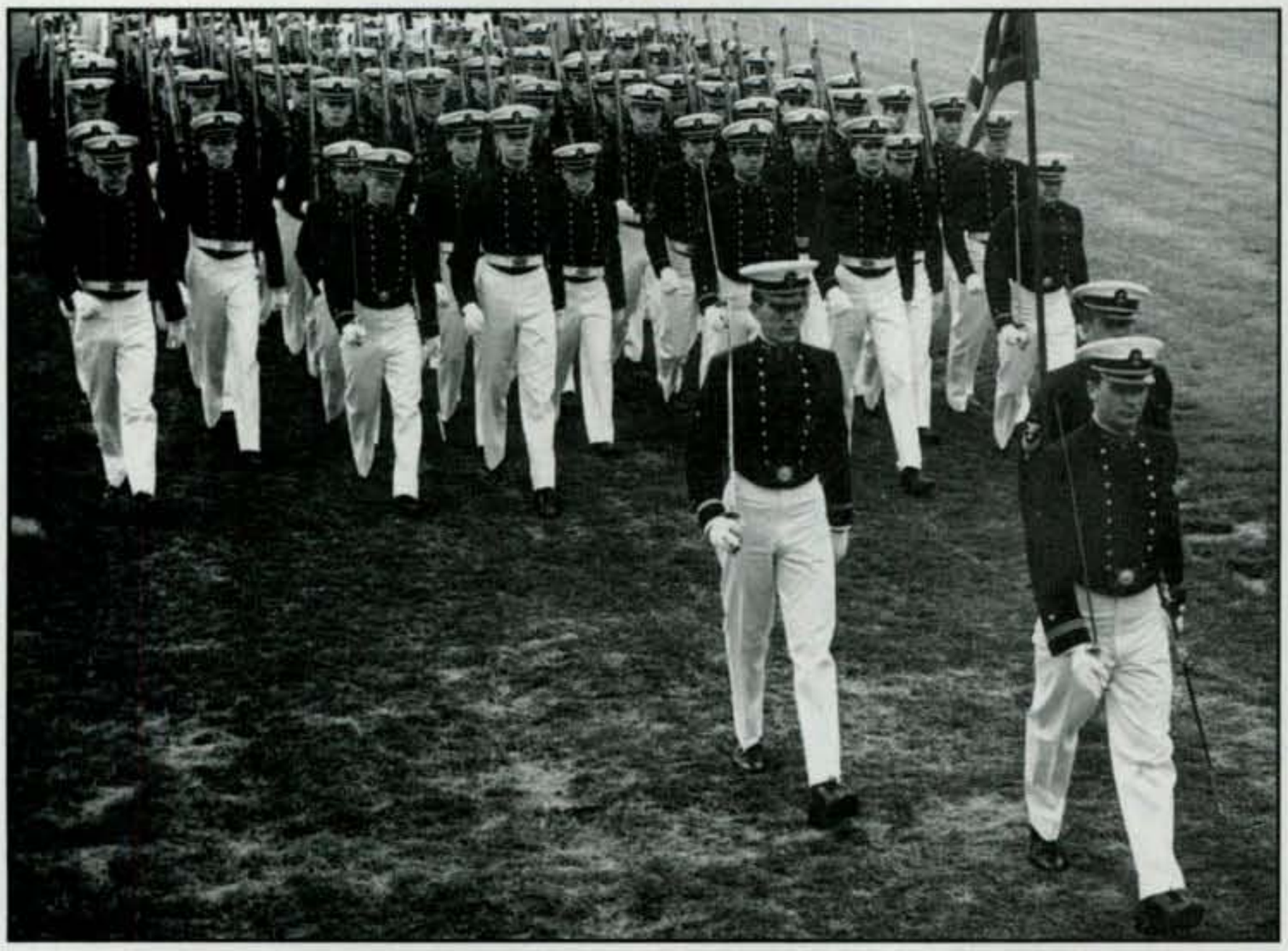
His experimenting in the early days came mostly in the form of homebrewing. "In my day," he explained, "building stuff was the big thing, mostly homebrew. Some Heathkits and the like, but mostly homebrew."

Giambastiani said his ham radio experience was invaluable in his career. "It helped me get into an engineering career. I started out in the Naval Academy in electrical engineering, then got involved with submarines. I've done a lot of engineering over the years, but also a lot of experimenting, and ham radio is what got me started on that path. It's been a fascinating hobby and it's given me a great background in the technical side of the way the world works."

Beneath the Surface

Innovation and experimentation have been central parts of Admiral Giambastiani's Navy career. According to his official biography, he graduated from the U.S. Naval Academy "with leadership distinction" in 1970, and his operational assignments "have included several in

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



Ed Giambastiani began his military career as a midshipman at the U.S. Naval Academy. In this photo, he is leading a parade at the academy in the late 1960s. (Defense Dept. photo)

Admiral Giambastiani and his wife, Cindy, participate in a ceremony last May at the North Africa American Cemetery in Tunisia. The cemetery is the final resting place for more than 2800 Americans killed in North Africa in World War II. (Defense Dept. photo by Air Force Tech. Sgt. Adam M. Stump)

which he was responsible for both demanding at-sea operations and the development of new technologies and experimental processes." He served aboard four submarines and commanded two of them, including Submarine NR-1, the Navy's only nuclear-powered deep-diving ocean engineering and research submarine. Giambastiani also led Submarine Development Squadron Twelve, which is both an operational submarine squadron patrolling the seas and the Navy's developmental "Warfare Center of Excellence for submarine doctrine and tactics." It is the oldest experimental unit of its kind in the U.S. military.

Giambastiani went on to hold a variety of high-level leadership positions in the Navy, including service as commander of the Atlantic submarine fleet, overall Director of Submarine Warfare for the Chief of Naval Operations, a deputy Chief of Naval Operations, and Senior Military Assistant to then-Secretary of Defense Donald Rumsfeld.

His most recent assignment, before becoming Vice Chairman of the Joint Chiefs in 2005, was as Commander of the United States Joint Forces Command and NATO's first Supreme Allied Commander in charge of "transformation." In this dual role, he was responsible for implementing many changes to both U.S. and NATO forces, including the introduction of new technology. He reorganized NATO's military structure into three major new commands—the Joint Warfare Centre, the Joint Force Training Centre, and the Joint Analysis and Lessons Learned Centre. Giambastiani was also heavily involved in developing the centerpiece of the "new NATO," the NATO Response Force.

As Vice Chairman of the Joint Chiefs of Staff, Giambastiani has been very much a hands-on leader, traveling almost up to the day of his retirement to meet with foreign leaders and with U.S. troops around the world. In the last few months before his retirement, Giambastiani visited Kosovo, Tunisia, Afghanistan and Iraq (one of his frequent travel destinations). The photos accompanying this article offer a glimpse at

A regular visitor to U.S. forces in Iraq, Admiral Giambastiani made his final visit as Joint Chiefs Vice Chairman this past June. (Defense Dept. photo by Air Force Tech. Sgt. Adam M. Stump)

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This compact 20 watt HF transceiver is ideal for the new ham on a budget or the experienced ham looking for an easy-to-use low power transceiver. Ten-Tec's reputation for quiet, dynamic receiver performance continues with the little gem of an HF rig. AM, FM, CW, SSB operation on 10-160 meters, general coverage from 500 kHz to 30 MHz on receive. PSK31 ready - plug it into your sound card without any dropping resistors in the TX line or a rig-to-computer interface and you're ready to operate. 35 built-in DSP receive filters.
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TEN-TEC

some of his "workday" activities, many of which included technology.

A Ham Since His Teens

Giambastiani told *CQ* he got his Novice license in 1962, at age 13 or 14, after being introduced to the hobby by his father and his uncle, both of whom were hams; he upgraded to General in 1963, Advanced in 1969, and Amateur Extra in 1976.

"That's when I took the call N4OC," he recalled. "It was a kind of unusual call back then . . . the 'N' calls were old Navy calls, and as a Navy man, I thought it would be cool to have an 'N' callsign." (This was during the first iteration of vanity callsigns, when unassigned 1×2 calls were made available to hams holding Extra Class licenses.)

Giambastiani's initial ham radio interest, along with experimenting, was contesting. "I got into it for experimenting, and for contesting, in a big way with some friends," he explained." I participated in my first CQ World-Wide DX

Admiral G.'s Retirement Ceremony: Pageantry and Morse Code

Admiral Giambastiani's retirement ceremony on July 27 at the U.S. Naval Academy in Annapolis, Maryland, reflected the tremendous respect he had earned during his four-decade military career. He was greeted with honor guards and pageantry, along with speeches from Vice President Dick Cheney, Defense Secretary Robert Gates, Joint Chiefs Chairman General Peter Pace, and Deputy Secretary of Defense Gordon England. Cheney called Giambastiani "a visionary and a strategic thinker of the first order."

England's speech was different from the others in that it reflected not only their close working relationship but close friendship as well. He made part of the speech with a colorful macaw parrot on his shoulder, a reference to an ongoing inside joke between them, and he closed with the following, which may be of particular interest to *CQ* readers:

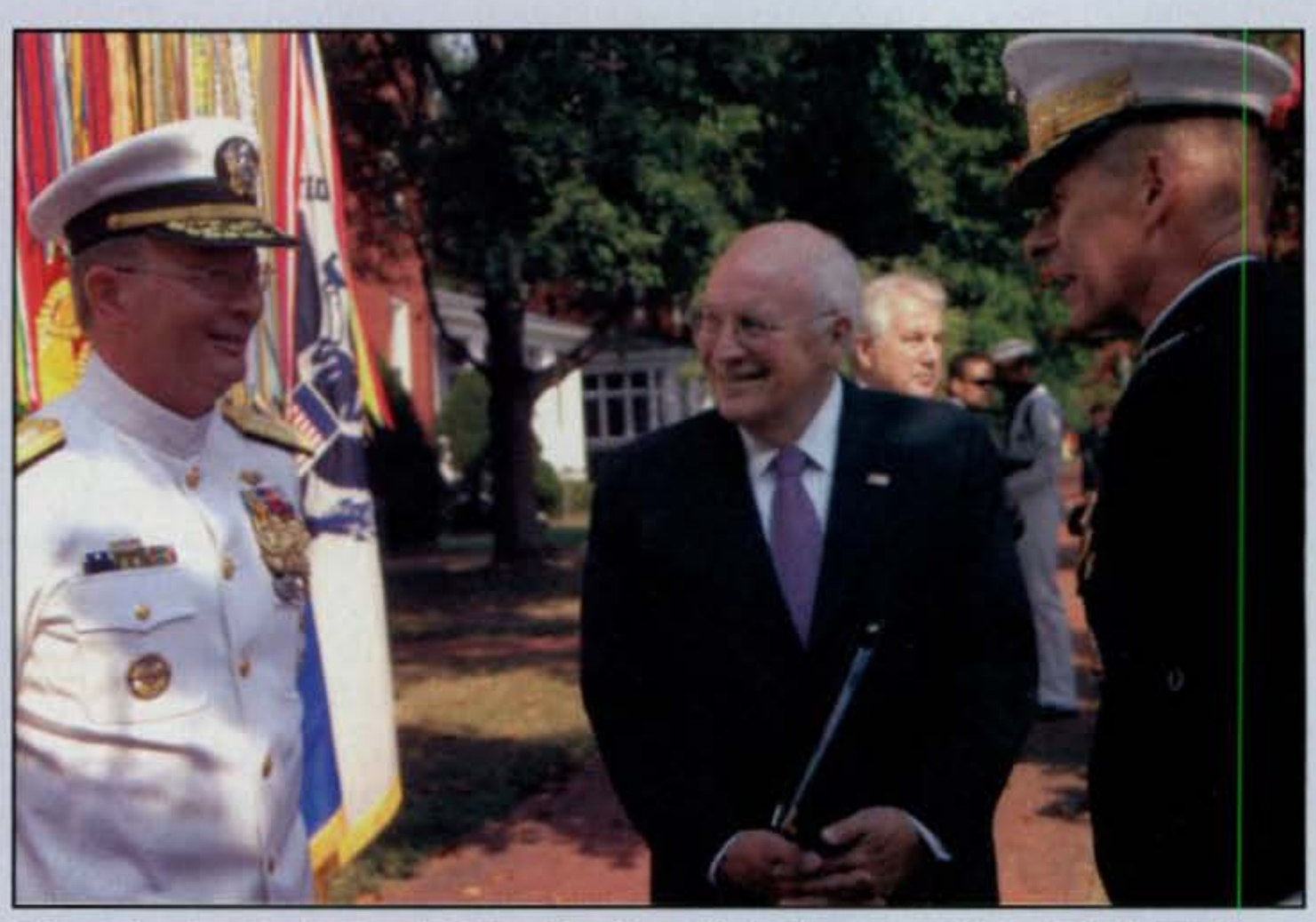
Adm. Giambastiani and Joint Chiefs of Staff Chairman Marine General Peter Pace (left) review the troops at the admiral's retirement ceremony. (Defense Dept. photo by Air Force Tech. Sgt. Adam M. Stump)

Now lastly, Ed . . . turns out Ed and I are both electrical engineers and amazingly, early in our careers, we both became ham radio operators. So Ed, in closing, I want to have a message for you. I took a key, it's a Navy key which I'll have for you later, used in the early 1960s when you were doing your ham radio operating, and I have recorded—because at that time you had to know Morse Code—so I have recorded a message for you, Ed. And here's the message *(He starts playing the recording of roughly 25 words-per-minute code)*. I know Ed can understand it, but in case everyone else can't, here's the message:

Good morning, Mr. and Mrs. America and all the ships at sea. Today we bid fair winds and calm seas to our dear friends Ed and Cindy Giambastiani as they complete four decades of patriotic service to America and the cause of freedom. It all began here, in the yard at the United States Naval Academy. Today, their fantastic voyage is not ending, only tacking onto a new course as they run with the wind in the years ahead. May God bless you, my friends and shipmates. It has been a profound honor to serve with you. Go Navy – Beat Army

God bless you, Ed. God bless you both, old friend...

Video of the entire retirement ceremony (it's over an hour long) may be found online at <http://www.defenselink.mil/home/features/2007/giambastiani/>.



Adm. Giambastiani talks with Vice President Dick Cheney and Joint Chiefs Chairman General Peter Pace before the admiral's retirement ceremony as Vice Chairman of the Joint Chiefs of Staff. (Defense Dept. photo by U.S. Air Force Tech Sgt. Adam M. Stump)

Always interested in the newest technology (he's a ham, after all), Adm. Giambastiani listens as U.S. Army Staff Sgt. Michael Behrens explains the latest developments in improvised explosive device (IED) detection and countermeasures during a June visit to Forward Operating Base Loyalty in Baghdad. (Defense Dept. photo by Air Force Tech. Sgt. Adam M. Stump)

At Iraq's Camp Speicher, Adm. Giambastiani asks Army Capt. John Davis a question about the Command Post of the Future. Innovation and technology have played central roles in Giambastiani's military career, and he credits ham radio with getting him started. (Defense Dept. photo by Air Force Tech. Sgt. Adam M. Stump)

Contest back in 1963 or '64 along with a bunch of friends and did it repeatedly through high school from the little town where I grew up . . . a little town in upstate New York called Canastota. It's about 20 miles east of Syracuse. I also had the opportunity to participate at K1ZM in one contest, the CQ World-Wide DX phone contest, and got to see what a multi-multi does. . . . it was quite impressive."

Amateur Radio and Young People

Admiral Giambastiani said he feels ham radio plays a very important role today for young people and for science and technology education. "Amateur radio will bring young people along," he said, because it offers learning combined with fun and excitement. "There is a renewed sense of getting young people into it," he noted. "(Amateur radio) allows young people to keep learning, keep educating themselves, and it puts science and technology right in front of you. It's important to keep the nation competitive."

Giambastiani also noted the public service aspect of ham radio, "helping provide communications in things like Katrina, Hurricane Andrew, and many other disasters." But his primary focus is on the grounding ham radio can provide for careers in science and technology.

"It has made a huge difference in my background over the years," Giambastiani explained. "One interesting thing—I work every day with the Deputy Secretary of Defense, Gordon England; he's the number two person in the Defense Department, and he was a ham in the 1950s. He let his license expire back when he was doing engineering work for Lockheed and General Dynamics, but he had this same background. Also, the Director of DARPA, the Defense Advanced Research Projects Agency, is Anthony Tether. He's also a ham, and he's quite active. What you've got here are very senior people who have gotten a tremendous grounding in science and technology through ham radio."

Finally, Giambastiani added, don't forget the excitement factor. "I have done a lot of submarine work, on the NR-1 research sub, and I've worked with Robert Ballard, who discovered (the wrecks of) the *Titanic*, the *Bismarck*, and the *Thresher*, and it's been very exciting. I've done a lot of exciting work in my career and the grounding for all that came out of this hobby in a pretty substantial way."

We at *CQ* wish Admiral G. well in his retirement and look forward to hearing N4OC on the air regularly in the not-too-distant future. ■

Additional Questions

CQ took the opportunity of talking with Adm. Giambastiani to ask a few general questions related to ham radio and the military.

CQ: Many ham frequencies—especially at UHF and above—are shared with the military. Generally that's worked out very well. How do you see the relationship currently and in the future?

Adm. Giambastiani: Regarding shared frequencies, it's important, number one, to make problems and interference well-known to the DoD (Department of Defense) community, and to work with them and through the WARCs, the World Radio Conferences. I learned first through hams that the WARCs were important, not only for hams to protect their frequencies but also for the military. These conferences used to be every eight or ten years, but now they are much more frequent and there are ongoing meetings in between them. You have to do your homework and be involved on a regular basis.

Regarding sharing between the military and amateurs, it's important to specify what you're doing and have good contacts with the DoD.

CQ: You mentioned the role of ham radio in public service communications. It seems that the military is being called on more often these days to help in disasters; that's been a traditional role for the National Guard, but regular military has been called on recently as well. A big buzzword in the civilian emergency response community is *interoperability*. Does the DoD have interoperability with civilian public safety systems?

Adm. Giambastiani: There is much more today than five or ten years ago, or even two to three years ago. Because of the proliferation of different systems in the public sector, we've outfitted about a dozen communications vans that allow you to bring in a military unit and synchronize communications between different agencies. We can go into a location where we're needed and talk with everybody. We've found that in order to assist, we have to be interoperable with the public sector.

It's important to note that the National Guard can do law enforcement, but the active military cannot, except if the President declares an emergency. I can't remember that happening since the Los Angeles riots (in 1992), when the Governor—it was Pete Wilson at the time—asked the President to federalize the National Guard and send in active duty troops.

CQ: In the early days of the U.S. presence in Iraq, some hams in the U.S. military and working with civilian contractors were able to get on the air with YI calls and helped Iraqis get active, too. In recent months, all ham radio activity there has been shut down. It's been reported that it was for security reasons, but that hasn't been clear. Are you familiar with that situation and if there's any way to help hams in Iraq get back on the air?

Adm. Giambastiani: I've been to Iraq regularly, most recently about three weeks ago. I have read about (ham radio being shut down), but I have to remind you that we have a sovereign government in Iraq. They set the rules. What they are doing with amateur radio is the result of decisions by their government. We can't tell them what to do. We can ask and see if anything can be done, but not much more.

CQ: Final question—Are you planning to be more active on ham radio after you retire?

Adm. Giambastiani: Yes. I've been in the military 41 years as of last month, and I'll be transitioning to some other sort of work. I do plan to be more active, I just don't know yet how much or how soon.

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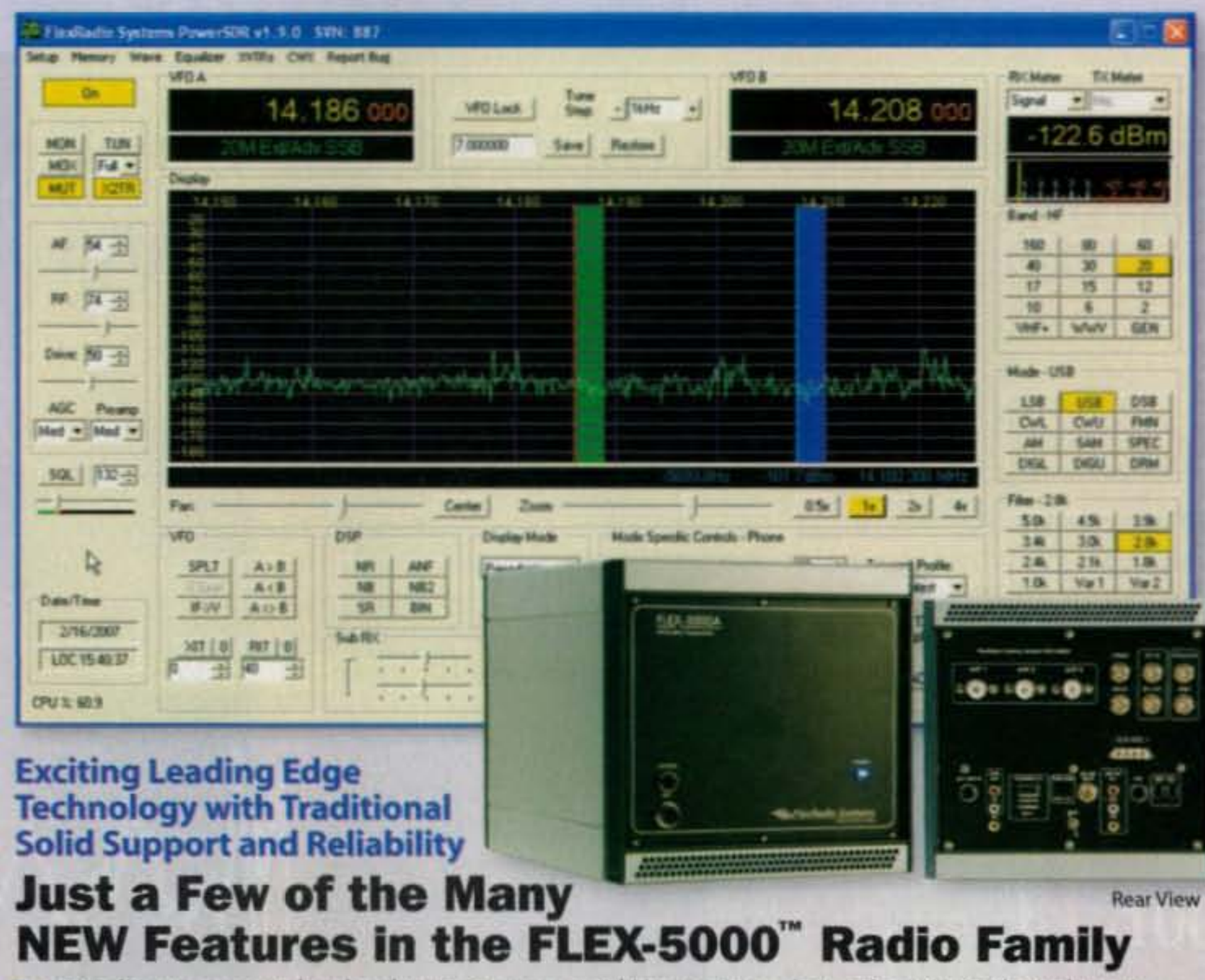
Mike, KM0T – I had always dreamed about a radio and interface like this; but never thought it would ever happen. I sometimes catch myself staring at the screen showing the microwave band frequencies thinking "Man this is awesome!" Seems every time I turn around, there is something new coming down the pipe to make the whole setup better.



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Rear View

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Where were YOU when the Space Age began? We recently sent out a request for first-person recollections of monitoring Sputnik and the effect that the Soviets' satellite launch had on people's careers. The response was overwhelming...

"A Few Simple Beeps"

Recollections of the Sputnik Launch 50 Years Later

BY CQ STAFF

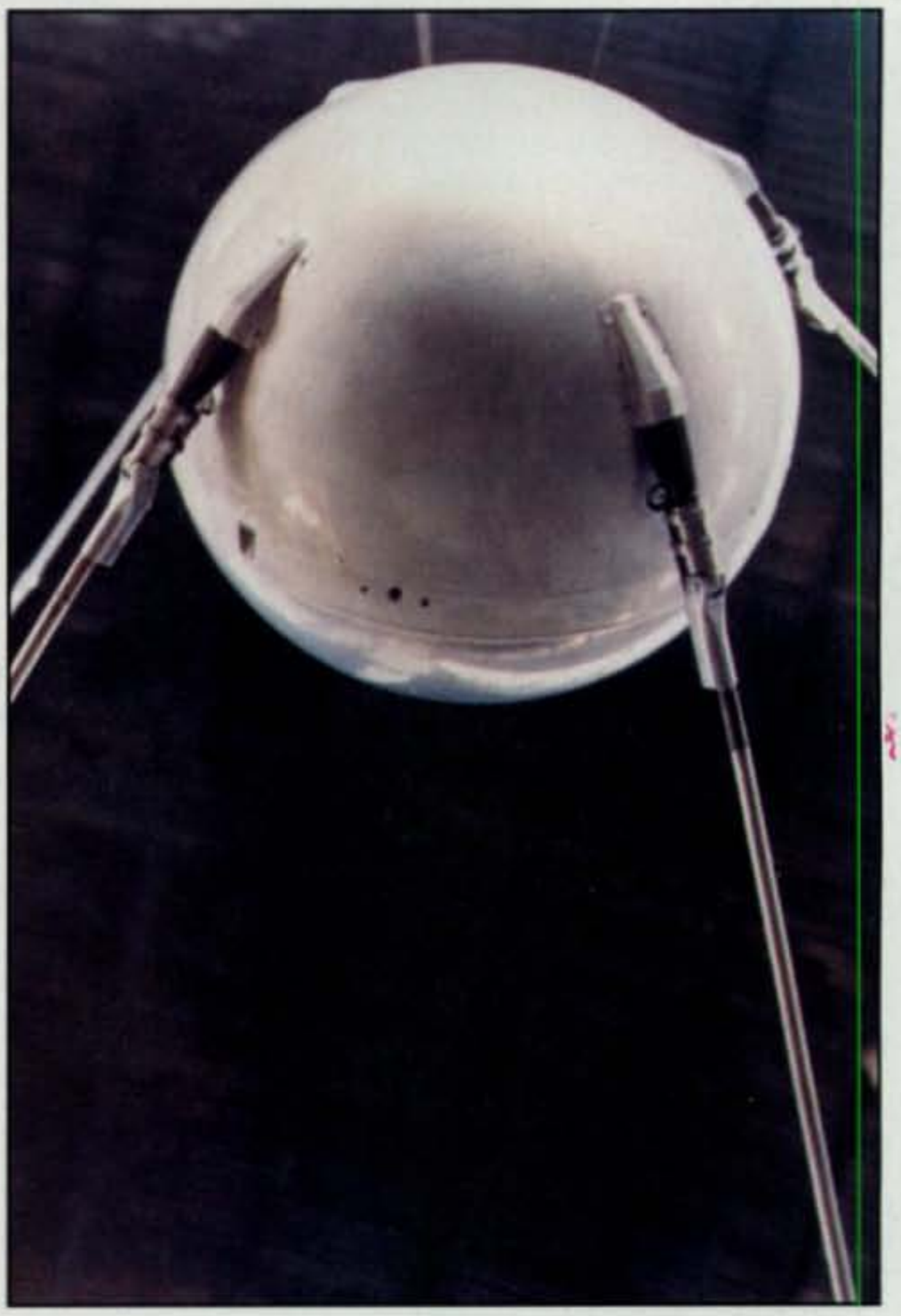
Fifty years ago this month, on October 4, 1957 to be specific, the world changed. The Soviet Union's successful launch of Sputnik I, the world's first artificial satellite, marked the beginning of the Space Age. The satellite transmitted beeps—just beeps (no Morse code, as some folks seem to recall, and no telemetry)—on 20.005 and 40.002 mc. (we've been reminded several times that this was before the term megahertz [MHz] came into use to more accurately describe a frequency in terms of megacycles per second). Hams scattered across the globe, many with HF receivers that easily tuned in 20 mc., were uniquely positioned to monitor these amazing signals from space. Indeed, virtually every community with a ham had a local listening post.

As we were preparing this issue, we put out a request on the CQ Newsletter e-mail list[1] and the AMSAT-BB mailing list[2] asking for first-hand recollections of tuning in those beeps and, perhaps more importantly, whether and how the launch of Sputnik influenced people's lives and careers.

The responses were overwhelming. Several people wrote that the launch led them directly to careers in aerospace; others said it was a contributing factor in their career choices. Virtually all said ham radio was their biggest influence. Here are a few samples, starting with the comment that inspired this article:

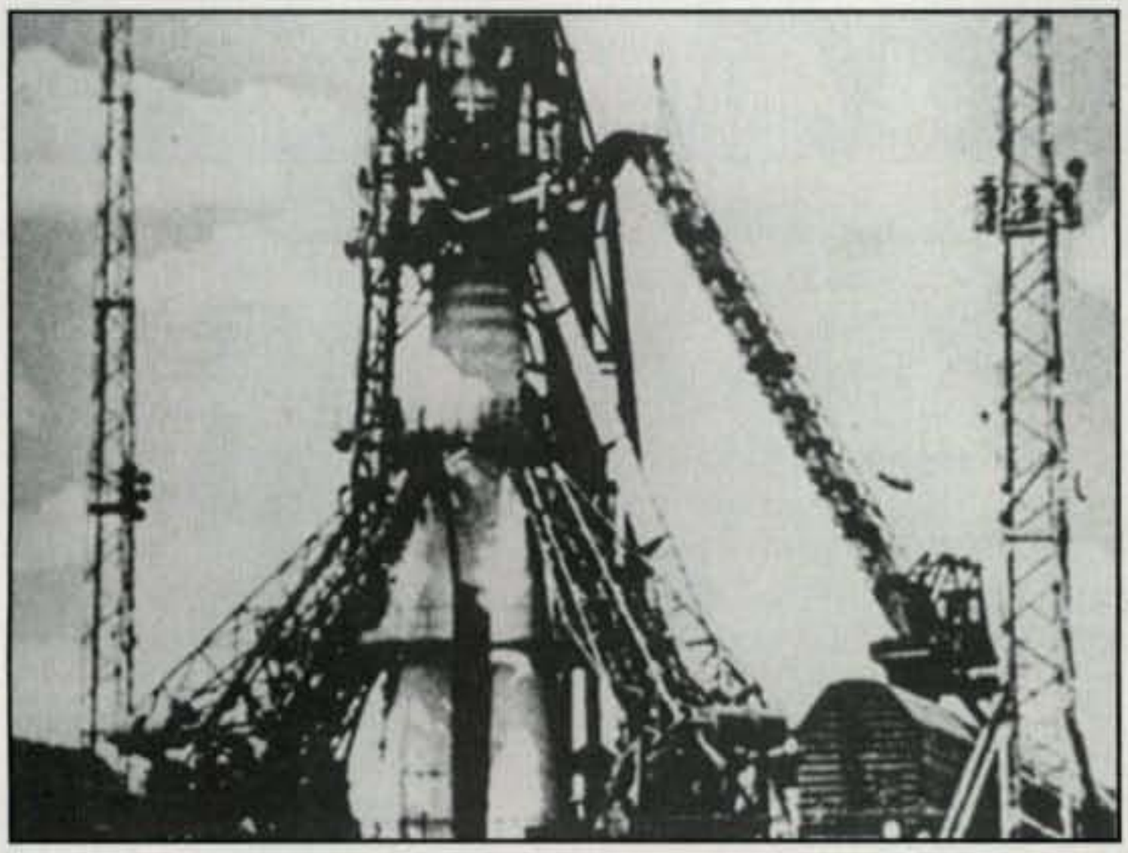
Dr. Tony Tether, K2TGE, Washington, DC: "Sputnik was launched on October 4, 1957. What a big shock that was for our country. The word went out for hams to listen when it passed overhead and to report on signals received. I did ... it was an experience I never would have had if I wasn't a ham and didn't have a receiver that could tune to 20 MHz to listen for beeps. That showed me a whole new area and sparked my interest in the military and in satellites ... It's true. Your experiences really define your future."

Tony Tether was a teenager in 1957. Today, he is the Director of DARPA, the Defense Advanced Research Projects Agency. *(Watch for a full interview with K2TGE in an upcoming issue of* CQ.*—ed.)* The Sputnik launch paved the way for many other aerospace careers as well.



Mockup of Sputnik-1, the first artificial satellite placed in Earth orbit. (Photos courtesy of NASA unless otherwise noted)

Hugh Clark , K6HFA, Fresno, CA: "I was a newly licensed 17-year-old with the call of K6HFA when I heard about the launch of Sputnik. Immediately I went about finding the beeping signal on my SX-25 (receiver). Wow! There it was from way up there! My buddy, K6HTM, Charley Bird, phoned me to say he found it, too. Our Elmer, Ralph Saroyan, W6JPU (SK), told us to meet him at the local TV studio for a live interview for the evening news. Another wow!!



The launch of Sputnik on October 4, 1957 marked the beginning of the Space Age.

"Six years later I was employed at the astronautics division of General Dynamics Corp. I was a member of the team developing the landing control radar for the lunar module that took the first astronauts to the moon and the giant step forward for mankind."

Grady E. McCright KD5ZGU, Cloudcroft, NM: "At 14 years of age, I was awed by the fact that man could cause an object to orbit the Earth at such a great altitude. I longed to understand the laws of physics that allowed this awesome event to occur. ...

"I subsequently obtained an engineering degree and joined NASA during the early days of the Apollo program. I retired in 1998 after more than 32 years of working to place humans in space. It was a wonderful and rewarding career to be able to work at something you love and contribute a small part to the making of history. Retirement allowed me the time to renew my interest in ham radio. I think my interest in science, electronics, space, and ham radio really took off on the day Sputnik I was launched."

Joseph Buch, N2JB, of Lewes, Delaware, said his experience monitoring Sputnik while an electrical engineering student at Purdue University left him with "an indelible yearning to be a part of what became the aerospace industry."

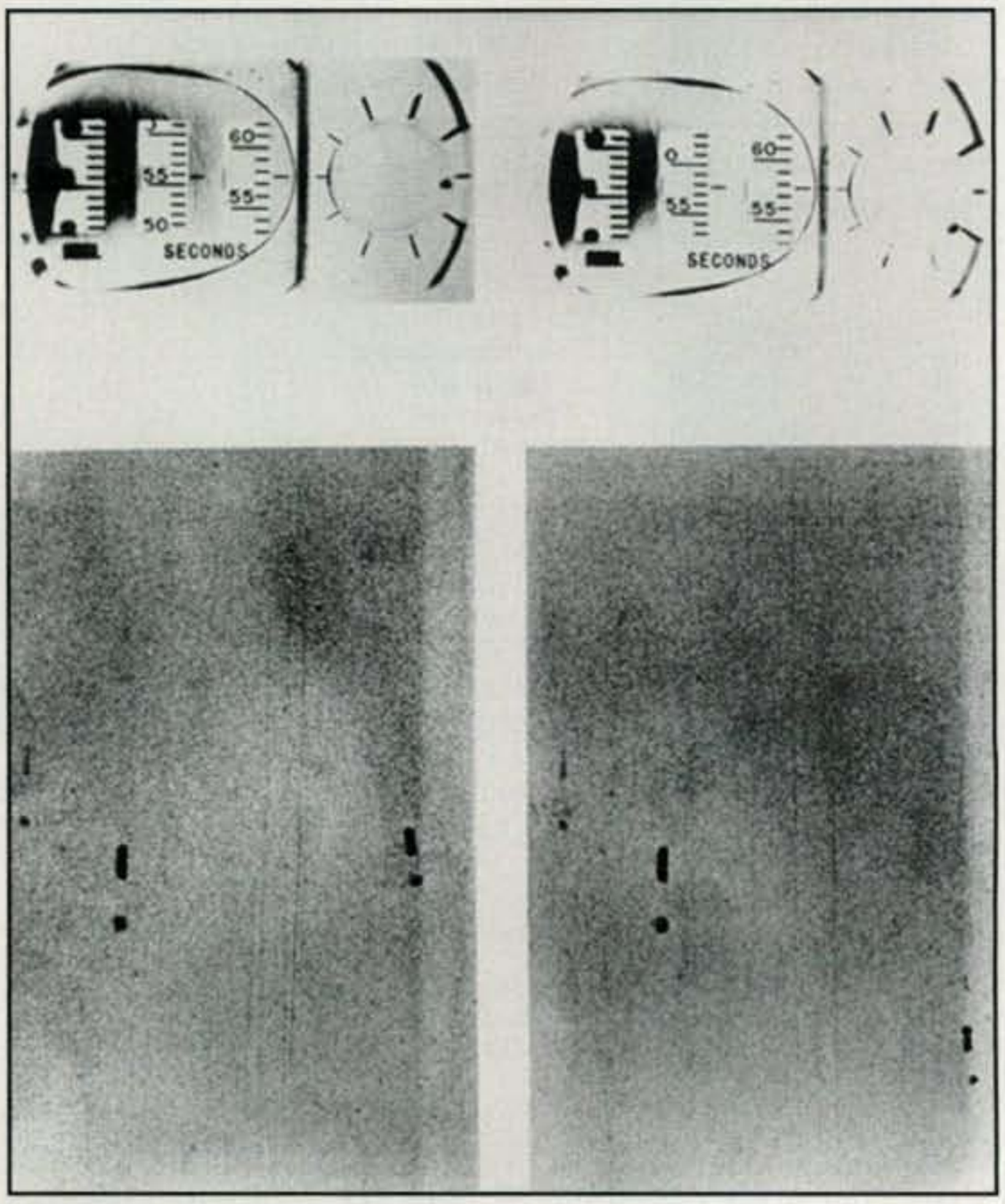
"By 1965 I had maneuvered my career into working for the space systems division of Hughes Aircraft Company. I became a test conductor for a Jet Propulsion Laboratory/ NASA program called 'Surveyor.' The object of the program was to soft-land on the moon and send back video and scientific information. All this was to evaluate the technology that would be used to safely land astronauts on the moon by 1970 as President Kennedy had challenged the country to do back in the early 1960s. All the Surveyors I worked on were successful. The moon was not made of green cheese nor, as many geologists had speculated, quicksand that would swallow up any lunar lander. The moon was a safe place for humans to land, as fellow Purdue graduate Neil Armstrong would confirm on July 20, 1969."

John Painter, W5LQS, of College Station, Texas, told us "Sputnik totally changed my life," redirecting his career goals from the military to NASA:

"When Sputnik was launched in 1957, I was a First Lieutenant navigator, waiting for an assignment to pilot training, and an anticipated subsequent 20-year Air Force career. My in-laws were visiting my wife and me in Florida. One evening we were sitting out in the back yard in lawn chairs, just lazily talking and watching the stars, which were bright that night. Suddenly, I spied a bright white light moving among the stars overhead to the east. There was no sound, and it was way too high for landing lights, so I knew I was looking at my first orbiting spacecraft, Sputnik. The whole nature of our conversation changed, turning to my plans for the future.

"I had recently seen the great Reduction In Force (RIF) of '57 force out of the service many fine reserve officers on active duty. Some of these were just a couple of years short of retirement, and all were World War II fliers. Their only apparent fault was that they had no college degree. Neither did I. Now that space had entered the picture, I figured that my lack of a college degree would also curtail my anticipated career. So, that night, because of Sputnik, I decided to exit active duty and use my Korean G.I. Bill to go get a college degree.

"Following four years of engineering school, I went in search of the excitement of space, (and found it at) the NASA Manned Spacecraft Center, better known as NASA-Houston. There I was fortunate enough to work as a trouble-shooter on the design of the Apollo Unified S-Band System, with which the astronauts would communicate, all the way to the moon and back. I also got to teach communications to the second and third astronaut candidate classes. Pretty heady stuff for a guy who was only 30 years old. Five years later, I persuaded NASA to send me to school, once again, this time for the Ph.D. Following that, I worked on air-ground multipath



The first U.S. photograph of Sputnik in orbit, taken October 17, 1957 at the Smithsonian Astrophysical Observatory in California. The rocket appears to the right in the photographs; its movement with relation to two stars, Pi Aurigae and Beta Aurigae, can be seen. The trailing exposures result from the special design of the camera to provide tracking information.

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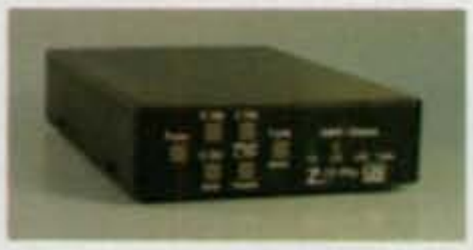

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RCA-14 is a breakout box for the accessory jacks on most popular transceivers. It comes with cables with the right DIN plugs, and all the outputs are RCA jacks. You simply plug the RCA-14 into your radio's accessory jacks, and all your ports are right there at your fingertips; just plug and play, one function or all of them, makes no difference.

The RCA-14 is compatible with: Icom 703, 706, 718, 746, 756, 7000 and 7800, Yaesu 817, 857, 897 and 840, Kenwood 480, 570, 2000 Ten Tec Orion and many more.

Suggested Price $59

Your Power Problems—Solved!

The Multi-DC 12 Volt DC Distribution Box

The Multi-DC can source up to three amps; each of the six outputs can provide up to .5 amps to your LDG accessories. The Multi-DC comes with an input cable, and six output cables, each 3 feet long.

Suggested Price $49

Baluns

RBA-4:1 Remote 4:1 Balun **$30**
RBA-1:1 Remote 1:1 Balun **$30**

propagation, with the shuttle in mind. Then, in '74, I decided to pass on what I had learned to Texas Aggie engineering students. I spent a happy 25 years (at Texas A&M), telling them space 'war stories.'

"So, if it hadn't been for Sputnik, I might not have had such a fulfilling career, and a lot of Aggies would not have heard about space from one who was there in the early days."

We also heard from several others who were on active military duty at the time, mostly serving as radiomen at various points around the world. They were, of course, immediately assigned to monitor the signals and report what they heard. Curiously, several of our correspondents reported that it was very boring duty—probably because they *had* to listen, while the same beeps were music to the ears of others who tuned in because they *wanted* to.

Bill Penhallegon, W4STX, Clearwater, FL: "Fifty years ago as a new amateur radio operator, I excitedly listened for the 20 MHz beep-beep beacon signal being sent by the Russian Sputnik I as it passed overhead. As part of the International Geophysical Year, a reception report was requested and that report resulted in my receiving a colorful QSL card with Russian printing on the backside. I was later able to have the printing translated. The backside reads: 'To a participant of the first in the world Soviet artificial Earth satellite surveillance program William Penhallegon. Thank you for the provided information. Your observations are of a significant value. We use them in the International Geophysical (Year) Program. We look forward to receiving further data from you.—USSR Committee on IGY (International Geophysical Year)'

"I'll never forget hearing those first satellite beacons from space."

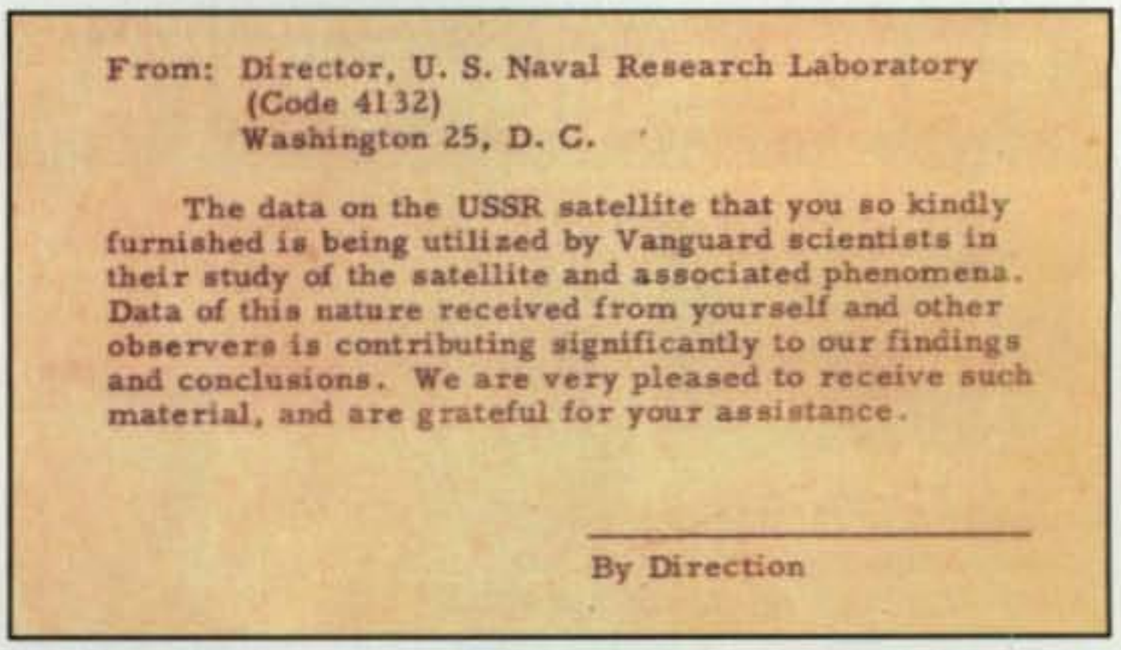
One ham in South Africa believes that he and his classmates may have been the very first people to hear those beeps:

Louis van Heerden, ZS1LVH, Claremont, South Africa: "I was (a student) in the Physics Dept. at Rhodes Univ. when the launch of Sputnik was announced. Prof. Gledhill turned on a receiver on the announced frequency and there it was. The first bleep bleep. The launch was over the North Pole, then over the Pacific and Antarctica, so I think we were possibly the first to hear that bleep. We did not see it on the first pass, but a day or so later, when it came over at sunset, we saw that tiny point of light moving overhead."

Several respondents pointed out that the launch marked the beginning of science fiction becoming science fact...

Hans van de Groenendaal, ZS6AKV, Garsfontein, South Africa: "In 1957, South Africa did not have television, but as a 17-year-old high school boy I was glued to the radio every night to listen to a radio serial called 'Mark Saxon–No Place to Hide,' a science fiction radio drama in which he and his Russian friend Sergei were exploring space travel and a mission to the moon. When the news came that the Russians had launched Sputnik, it fired my imagination and I immediately tuned our radio to 15 metres (to the disgust of the rest of the family), as I wanted to hear the beep beep from the satellite. I had to wait till the next day till it came over South Africa and I picked up a few beeps. My family thought I was nuts, spending so much time in front of the radio to listen to a few silly beeps. ...

"I studied telecommunication and for many years was involved in the technical field. In later years my passion for writing took me into the PR field, but still focusing on communication and electronics. I am still involved in Amateur Radio, and serve on the Council of the South African Radio League, President of SA AMSAT, and Executive Chairman of the South African Amateur Radio Development Trust. Just to think it all started with a few simple beeps!"



From: Director, U. S. Naval Research Laboratory
(Code 4132)
Washington 25, D. C.

The data on the USSR satellite that you so kindly furnished is being utilized by Vanguard scientists in their study of the satellite and associated phenomena. Data of this nature received from yourself and other observers is contributing significantly to our findings and conclusions. We are very pleased to receive such material, and are grateful for your assistance.

By Direction

Confirmation card received from the U.S. Naval Research Laboratory in response to reports submitted on reception of signals from Sputnik. (Courtesy of Vic Abell, W9RGB)

Jacqueline Gosselin, N3ZEL, Eighty Four, PA: "We lived in Venezuela in 1957. My dad worked for Iron Mines Company of Venezuela, an iron ore shipping and storage port for Bethlehem Steel. There were, at best of times, about 12 students in various grades in the school, and most of us were totally fascinated. Outer space!!! The first steps!!! All those '50s sci-fi movies were becoming reality. We kept scrapbooks and listened to the radio news reports as never before. It was a very exciting time.

"My father had been interested in radio from youth, and ... we always had shortwave radios and receivers in the house, listening every evening and into the late night, the radio glowing in the darkness. It wasn't until 1963 that my dad and I got our Novice licenses. Those were exciting times."

Many of you recalled watching and/or listening for the satellite with your parents...

Don DeJarnette, KS4Z, Northport AL: "I remember my parents loaded my sister and me into our '50' Mercury. We were headed to the latest movie at the Skyline Drive-In. I forgot the name of the movie but that doesn't matter. Everyone started getting out of their cars at the drive-in and pointing toward the sky. It was Sputnik orbiting overhead. Today we would not think anything of looking overhead and seeing an orbiting satellite. But in the '50s, this was something!! That first wondrous experience interested me in satellite communications."

Eddy Swynar, VE3CUI/VE3XZ, Newcastle, ON: "On a cool night back in 1957, I was a wide-eyed 5-year-old in the company of my parents and a host of neighbour friends. ...Kids and all were gathered outside at the side of the street. The adults were all excited about this Russian 'Sputnik' thing that was flying up in space, over our heads. ... At five years of age I could hardly have been expected to understand the ramifications of Sputnik, but I do believe the event somehow indelibly stamped in my mind an awareness of the importance and wonder of advanced technology ... especially that associated with space travel."

Mark Swartzell, AAØCX, Fargo, ND: "I still remember all the dads in the neighborhood gathering in the backyard on a chilly, clear North Dakota night. I was standing there among them —with one of them saying, 'look, there it is...' and see-

ing the bright blob of light move fast across the sky. And of course, it was 'Soviet,' and I remember realizing the USSR was 'our enemy' then, and feeling a chill down my back. (The memories of a little boy.)"

John Crossley, WZ2X, Frewsburg, NJ: "I remember Dad being really excited about something and hearing beeps coming from his Hallicrafters S-107 receiver. He excitedly told me that the 'Russians' had launched an 'artificial moon.' ... That we could actually hear it in our own home was amazing to me. Now that I look back, it was a great propaganda move by the Soviets to put it where the common man could hear it."

Some parents may have gotten a little *too* excited...

Bobby Brake, AI4FL, Warrior, AL: "I don't know how the launch of Sputnik affected your life, but I have a cousin named for it. He was born at the time of the launch and his parents named him Sputnik. For most of my life, I thought his name was just a nickname, because we always called him Sput for short. One day I asked my Aunt Betty what his real name was and she told me Sputnik, and that he was named for the launch. Anyway, Sput Burr may not remember the launch, but he will be remembered because of the launch!"

Of course, not everyone was excited by the launch. Some were worried about political and military implications, and others simply didn't believe it...

Roy Zukerman, AC6H, Fountain Valley, CA: "When Sputnik went up, I was a reporter for a local news service which had Santa Ana radio station KWIZ as one of its members. I was also somewhat of a science fiction nut with an announced desire to cover the first launching of a spaceship to the moon. The news director, who thought I was crazy, didn't use the Sputnik story for about 24 hours after it broke, because he firmly believed it was a hoax."

Rev. Wayne A. Dorsett, KB1NDS, Barre, VT: "I was just getting interested in electronics and had received a gift of a Knight-Kit Super Regenerative radio. I would go to bed each night listening to foreign broadcast stations, HCJB, Radio Moscow, and others with English programs. This particular night I had Radio Moscow on and the announcer came on with the announcement that Russia had just successfully launched an unmanned satellite—the first one ever placed by mankind in

space. It was called Sputnik. ... I got up and went into the kitchen where Mom and Dad were and told them. They told me it was just a propaganda move, it was impossible to do. Turn off the radio and go back to bed.

"The next morning I tried to bring up the subject again. My father put his foot down and told me to stop believing all the trash I heard on that toy of mine or he would pitch it out. Then he turned to Mom and said call the doctor today and schedule him for an appointment. He is beginning to have a hard time telling reality from fiction. He was not joking, either. ... My dad and grandfather both did not believe it for a long time."

And it wasn't just Americans who weren't sure what to believe...

Stew Gillmor, W1FK, Higganum, CT: "On Oct. 4, 1957, I was a sophomore EE major at Stanford University. ... Less than a year after Sputnik I, I was helping on an island in the Atlantic with secret research on the ionosphere using rockets shot into the F-layer ... and three years after Sputnik, I was doing research on the ionosphere for 14 months in Antarctica with the Soviets as their guest. So I guess I got tangled in Sputnik-type activities. While in the Antarctic, in April 1961, I was the first at our Soviet base Mirnyy to hear about Yuri Gagarin, the first cosmonaut. Radio reception was very bad that day, but when I told my Soviet colleagues that they had sent a man into space, they told me 'Nyet, it's just Soviet propaganda.'"

Newsmakers

Several hams reported that they briefly became hometown heroes, being interviewed by the local news media about their reception of the satellite signals. Past AMSAT Executive Vice President **Ray Soifer, W2RS**, recalled monitoring Sputnik while home sick from school, then reporting on it to *The New York Times,* which published a brief report the following day. **Roy Welch, WØSL**, recorded Sputnik's signals and was interviewed by a newspaper in Dallas, Texas (his recordings are posted on the AMSAT website at <http://www.amsat.org/amsat-new/satellites/sounds/index.php>. **Don Jackson, AE5K**, was a college student and chief engineer of a small AM broadcast station. He recorded the beeps and passed them along to the news department, which rebroadcast them. **Michael LeBoeuf, K5ML**, recalls feeding reports to a local radio station in his hometown of New Orleans, and that each time they were aired, the announcer would say something like, "That's from Mickey LeBoeuf, our satellite correspondent on Maple Street. He's keeping a close watch on Sputnik for us."

A Sinister Side as Well

Apparently, there *was* a need to keep a close watch on things, as **Hugh Paul, W6POK,** later learned while working for the University of Southern California:

"My office was in the former Hoffman Electronics building, a couple of blocks off the main campus of the university. The building had been the site of manufacturing for Hoffman TV and radio sets. In this building were documents from the defunct corporation that noted how Hoffman had been advised by federal authorities that Sputnik's key power source was from solar cells acquired from Hoffman Electronics. No, Hoffman did not sell the solar cells to Russia. However, Hoffman did manufacture small AM transistor radios that were powered by solar cells. The Russians had acquired hundreds, if not thousands, of these radios through various sources and stripped them of their solar cells, which in turn were utilized in Sputnik.

"In 1999, I was at Moscow University for a meeting with engineering staff regarding a new global satellite network dedicated to training of civil servants in developing countries. At one point I related the story of Hoffman Electronics and Sputnik. One engineer who had been involved with satellite development his entire career laughed and said indeed the story was true, telling me, 'We could not have done it at that time without the assistance of American industry.'"

Finally, we were reminded by several correspondents that the impact of the Sputnik launch extended far beyond individual career choices, both within our hobby and in the world at large:

Bill Ragsdale, K6KN, Woodland, CA: "It is a testimony to hams' energy that amateur radio had a satellite up within the next six years *(actually, it was just more than four years—ed.)*. I never dreamed at that time I would stand in my back yard and relay via our own satellite with an HT and hand-held Yagi."

Lee Jennings, ZL2AL, Napier, New Zealand: "Signals from outer space! Impossible but true. ... The experience was one of excitement and wonder and I knew it was the start of something big. I just didn't know how profoundly huge the achievement actually was. I often remember those few days of magic

(until the batteries ran out) every time I watch a launch of a rocket on TV. I never dreamed that Sputnik I would point the way to a man stepping out on the moon, worldwide 24 hour communications and the wonderful technology we human beings enjoy today. The world has become smaller because of that little football package we called Sputnik. Unfortunately it has become a more dangerous place, too."

Jeff Bush, WR2E, Tinton Falls, NJ: "I was merely four years old when Sputnik was launched, but still can recall standing out in the chilly night air with my father and grandfather waiting for the satellite to pass. Dad had a shortwave radio and tried to tune the satellite in, but as I recall we never heard a thing from it. What I did hear on that old radio probably made a very early mark on my little brain though, because from that time forward, I've always been fascinated with radio. Twelve years later, I became a ham, and have worked in electronics all my life. Thanks, Sputnik! (Oh yeah, Dad and Granddad, too!)"

Doug Westover, W6JD, Palo Alto, CA: "The weekend after Sputnik was launched, Owen Garriott (W5LFL), myself, and another Stanford University undergrad, all working at the Stanford Radioscience Laboratory, had an old Navy surplus equipment trailer hauled onto a very muddy (I ruined a pair of shoes) vacant lot on the campus. We erected a "turnstile" (crossed dipole) antenna, and installed a Collins 51J receiver and chart recorder. This allowed measuring the Faraday fading rate of HF signals launched from above the ionosphere, and hence the calculation of ionospheric electron content/density.

"At the time, Owen was a grad student working on his Ph.D. and I was an undergrad working part time for beer (?) money. Of course, Owen got his Ph.D. and went on to become an astronaut and "the first ham in space" on Skylab. I went on to a BS degree in math, spending most of my working life developing software for an experimental OTH (over-the-horizon) radar in California's Central Valley."

Notes

1. Information on subscribing to *CQ*'s free e-mail newsletter service can be found at <http://mailman.sunserver.com/mailman/listinfo/cq-l>.

2. Information on subscribing to AMSAT's "AMSAT-BB" e-mail bulletin board can be found at <http://amsat.org/mailman/listinfo/amsat-bb>.

BY JEFF REINHARDT,* AA6JR

The Message Coming from Space: *"beep . . . beep . . . beep"*

The Fabulous Fifties are often described as a "quiet time" when post-war America could take a deep breath and get on with life following the hard-won victories achieved in 1945. I disagree, asserting that baby booming, school building, TV buying, suburb exploding, tailfin driving, cold warring, hula-hooping, rock & rolling, interstate building, fighting polio, and any number of other activities made the 1950s a time of active transition, not just for America, but for the rest of the planet a well.

Add to this volatile mix a series of events captured under the umbrella of The International Geophysical Year (IGY), an extraordinary effort of exploration sanctioned by the International Council of Scientific Unions. Actually scheduled for 18 months, from July 1957 to December 1958, IGY provided the foundation for the world's best and brightest scientists to cooperatively study and report so much that was unknown about Earth and the heavens beyond. Of passing interest to amateur radio operators is that IGY was deliberately scheduled at a sunspot peak, or solar maximum, to facilitate studying the aurora. One of the crowning objectives and achievements of IGY was the goal of launching a man-made satellite to orbit the Earth.

As part of its participation in IGY, the U.S. committed resources to a satellite project named Vanguard. It was based on rocketry knowledge accumulated through the WW II era by German scientists, including Dr. Werner Von Braun, along with domestic talent and military support. America was still full of post-war hubris and convinced that the first artificial satellite to orbit the Earth would be a 3.5-pound satellite named Explorer I.

On October 4, 1957, the USSR sent a message to the rest of the world that essentially said, "Now there are two superpowers." On that day, the world changed dramatically and forever, as the 183-pound, basketball-size Sputnik I began to circle the Earth every 98 minutes, emitting radio "beeps" that confirmed its presence to the planet's population. It was the first sliver of dawn's light in an era to be known as "the space age."

At the time I was a boy, having recently attained the age of reason, trying to make sense of the news that gripped every adult I knew. The local barbershop, parlors, and social gatherings were abuzz with reactions—wonder . . . fear . . . disbelief. People questioned how or why our country could find itself trailing in this new "space race." Could they put a bomb on that thing? Are we safe? What does it mean? *"beep . . . beep . . . beep . . ."*

*5904 Lake Lindero Drive, Agoura Hills, CA 91301
e-mail: <aa6jr@cq-amateur-radio.com>

What did the beeps from Sputnik I look like*? CQ readers got a glimpse on the January 1958 cover, as recorded by students at the St. Joseph High School Radio Club in Cleveland, Ohio.*

The U.S. government reassured the populace that the Russian launch was not unexpected and that we too would soon have a satellite in orbit. However, launch-pad failures exploded onto black-and-white TV screens on the evening news until the U.S. successfully launched a different Explorer I, weighing just over 30 pounds, in January 1958. It wasn't until the Apollo landing in July 1969, though, that America could truly claim absolute leadership in space achievements.

The Chain Reaction

In June of this year we lost Don Herbert, aka "Mr. Wizard," who taught my young, curious mind many things, including the dynamics of a chain reaction. He used a glass box, the floor of which was covered with mouse traps. Atop each mouse trap was a ping-pong ball. To start the reaction, he dropped a single ping-pong ball through an opening in the top, triggering a single mouse trap, and in the next few seconds the box contained the chaos of ping-

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A rare look inside *Sputnik I reveals few (if any) of the Russian satellite's secrets. (Photo courtesy of NASA)*

pong balls traveling in every direction. In this case, Sputnik was the first ping-pong ball. The chain reaction has continued for 50 years and shows no signs of losing energy.

Cold War America responded to Sputnik with a call to teach math and science to baby-boom children. Vast sums of money were allocated to the space race. NASA was formed, taking space exploration away from three jealously competitive branches of the military. Projects Mercury, Gemini, and Apollo were created, along with many unmanned projects that had peaceful and military applications—sometimes both, such as a weather satellite capable of photographing every square foot of the globe. School children learned the names of the original seven astronauts in order of magnitude of their place in history.

I place the ability to orbit Sputnik akin to early man learning about fire: Both could be used for many purposes, positive and negative.

How many educations and career paths were altered by Sputnik? Would the results have been the same if the U.S. had been the first to place an object in orbit? What are the "spin-off" benefits of the space age? I know about the drink Tang, WD-40, and pressurized ball-point pens. What about silicon chips, routine satellite communications, and medical advancements?

The Almanac

I am a pack rat. Among the possessions that have survived my youth, my mom's house-cleaning blitzes, college, a few

moves (including one across the country), and a couple of impressive earthquakes is my barely readable *Information Please 1957 Almanac*. The frail, half-century old pages are yellow and losing their grip with the binding. The almanac provides an amazing snapshot of America in those days. It also contains a description of IGY, a report on rocketry, and speculation as to how man-made satellites may prove to become useful.

One of my favorite passages includes a table of orbital altitudes and a description of how high an orbit would be needed for a satellite to appear stationary above the Earth at an altitude of 22,300 miles: "The last one is given for curiosity's sake only since it would not be very useful." Of course, that's the region where today's communications satellites are pretty much "elbow to elbow" in what is now called *geosynchronous orbit*. The *Almanac* writer, Willy Ley, speculated that a permanent space station could be a reality within ten years (1967), but pretty much "nailed it" when he wrote:

> No iceberg could approach shipping lanes without being spotted. No hurricane could approach the shore as a surprise. No large scale movement of air masses could take place unnoticed. Every ship at sea could be watched, if necessary, and the position of airliners could be checked on request. Secret fleet movements or troop concentrations would be virtually impossible; the space station could engage in an open-sky inspection, which is faster and more thorough than anything that could be accomplished in any other manner.

Willy Ley didn't foresee unmanned satellites doing many of the tasks he described, but in those days man was seen as the primary conqueror of the unknown. Or did we as a society not have sufficient confidence in automated systems at the dawn of the robotics age? Nevertheless, the *zeitgeist* was the presence of man mastering the challenges of space exploration. It was also the fulfillment of dreams reaching back through prescient Jules Verne fiction and Buck Rogers movies that fed the youthful imaginations of the Great Depression generation that was at that time in adulthood.

Dreamers?

Were they just dreamers? Or were the imaginations ignited by Sputnik stimulated into creating much of today's reality? Homer H. Hickam, Jr. was one such dreamer, rising from the coal mine country of West Virginia to a distinguished career with NASA, which was chronicled in his memoirs, *Rocket Boys*. If you don't have time for the book, rent the movie based on it, "October Sky." In the epilogue he writes, "All of us rocket boys would go to college, something not likely in pre-Sputnik West Virginia." My son read the book while in middle school. This year he's a college senior studying mechanical engineering. Coincidence? Part of the chain reaction? Maybe.

Another gifted writer is Mike Pinder, who, as a member of the music group the Moody Blues, gave us these thoughts in the 1968 album "In Search of the Lost Chord":

We ride the waves
Distance is gone, will we find out?
How life began, will we find out?
Speeding through the universe
Thinking is the best way to travel

Also, as "icing on the cake," some of the instrumental accompaniment in the song is comprised of recorded beeps from Sputnik.

As a child of the '50s; as part of the Sputnik generation; as one who has derived learning, pleasure, and an elevation in my standing as a member of human race; as an extension of that historic October day I want to believe we are still at the dawn of the space age. After all, 50 years is practically nothing when compared to the history of wheeled transportation or sailing ships. My imagination feels free to take flight each time I look upward on a clear night and sometimes spot one of man's artificial moons making its way across the darkness. As a civilization, we can share the pride that comes with a moon landing, a manned space station, life-saving weather satellites, easy worldwide communications, GPS, and more.

What's the connection for you and me as radio amateurs? Stop for a moment to consider that without radio, most satellites are pretty useless.

"Beep . . . beep . . . beep." Those tones made their way through space, and back to Earth via radio, the ready messenger that told us on October 4, 1957 that there was something very different, some very special "Magic in the Sky."

73, Jeff, AA6JR

CQ World-Wide DX Contest All-Time Records

BY FREDERICK CAPOSSELA, K6SSS

These records represent the pinnacle of achievement by the true champions of contesting. We congratulate them on their success. Number groups after calls are: year of operation, total score, contacts, zones and countries. All-Band and Multi-Operator records include a band-by-band breakdown of the world leader in each category.

Phone Single Operator/Single Band WORLD RECORD HOLDERS

1.8	IG9/IV3TAN('96)	441,252	1,203	24	102
3.5	CN2R('06) (Opr. W7EJ)	1,091,694	2,409	33	126
7.0	CN2R('05) (Opr. W7EJ)	1,590,675	3,287	35	132
14	PYØFM('94) (Opr. PY5CC)	3,202,242	5,109	38	175
21	ZD8Z('94) (Opr. N6TJ)	3,481,925	5,535	36	179
28	HC8A('01) (Opr. N6KT)	3,916,600	6,957	39	161

Single Operator/All Band

AF	EA8BH('99) (Opr. N5TJ)	25,646,796	10,253	176	692
AS	A61AJ('04) (Opr. S53R)	15,272,745	7,204	173	622
EU	GIØKOW('99)	10,457,664	6,375	155	589
NA	8P1A('04) (Opr. W2SC)	16,250,784	9,254	158	568
O	KH7R('00) (Opr. CT1BOH)	11,894,730	7,473	170	392
SA	HC8A('99) (Opr. N6KT)	18,607,050	8,638	175	595
QRP	P40W('00) (Opr. W2GD)	5,097,780	3,599	127	381
LowPwr.	D44TD('02) (Opr. IV3TAN)	11,199,793	6,097	141	508
Asst.	9Y4ZC('03) (Opr. DL6FBL)	14,979,055	8,114	137	500

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	150	13	54
EA8BH	3.5	547	18	80
(Opr. N5TJ)	7.0	682	27	97
(1999)	14.0	2,655	39	158
25,646,796	21.0	2,071	39	148
	28.0	4,148	40	155
	Total	10,253	176	692

Multi-Operator/Single Xmtr.

AF	D44TC('01)	22,978,944	9,638	178	694
AS	P3A('03)	20,196,420	9,210	167	656
EU	IQ4A('90)	17,255,700	7,253	183	717
NA	VP2E('03)	25,299,296	11,617	182	720
O	KHØAA('02)	12,599,064	6,872	158	490
SA	PJ1B('93)	22,596,570	9,386	164	646

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	128	13	47
VP2E	3.5	414	24	88
(2003)	7.0	1,162	32	130
25,299,296	14.0	2,763	39	147
	21.0	2,990	39	151
	28.0	4,160	35	157
	Total	11,617	182	720

Multi-Operator/Two Xmtr.

AF	IH9P('03)	29,447,379	11,831	171	688
AS	RT9W ('04)	11,399,373	5,453	162	661
EU	IR4X('04)	18,385,620	8,626	185	754
NA	VP2E('04)	40,907,104	16,868	188	804
O	KHØAA('03)	14,109,480	7,589	172	488
SA	PJ2T('02)	28,415,835	12,916	161	628

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	216	17	62
VP2E	3.5	945	23	102
(2004)	7.0	2,346	34	145
40,907,104	14.0	3,794	40	172
	21.0	4,771	39	163
	28.0	4,796	35	160
	Total	16,868	188	804

Multi-Operator/Multi-Xmtr.

AF	CN8WW('00)	78,170,508	25,711	199	854
AS	A61AJ('02)	33,377,700	13,376	186	784
EU	M6T('99)	29,338,624	14,655	188	836
NA	VP2E('01)	44,332,785	19,214	185	760
O	KHØAM('90)	35,730,600	16,309	179	565
SA	PJ4B('99)	59,127,810	20,618	188	834

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	923	17	77
CN8WW	3.5	1,818	25	106
(2000)	7.0	3,545	37	138
78,170,508	14.0	6,737	40	177
	21.0	5,754	40	175
	28.0	6,934	40	181
	Total	25,711	199	854

CW Single Operator/Single Band
WORLD RECORD HOLDERS

1.8	VY2ZM('05) (Opr. K1ZM) 497,152	1,664	28	100
3.5	CN2R('05) (Opr. W7EJ) 1,206,128	2,743	33	121
7.0	CN2R('06) (Opr. W7EJ) 2,006,576	3,910	35	141
14	CN2KM('04) (Opr. SM2EKM) 2,023,740	3,899	38	142
21	ZD8Z('97) (Opr. N6TJ) 2,357,967	4,589	39	140
28	ZX5J('99) (Opr. N6TJ) 2,131,942	3,962	39	152

Single Operator/All Band

AF	EA8BH('00) (Opr. N5TJ) 18,010,765	7,555	183	634
AS	A45XR('03) 10,837,434	5,886	161	520
EU	CU2A('06) (Opr. OH2UA) 8,513,294	6,208	155	519
NA	KP3Z('03) (Opr. N5TJ) 11,440,230	6,675	174	536
O	KH7X('03) 7,673,314	5,256	170	347
SA	P4ØE('03) (Opr. CT1BOH) 15,943,070	7,828	169	546
QRP	P4ØW('99) (Opr. W2GD) 5,024,800	3,277	137	413
Low Pwr.	P4ØW('01) (Opr. W2GD) 10,198,792	5,723	151	475
Asst.	9Y4ZC('04) (Opr. DL6FBL) 14,581,665	6,576	169	596

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	197	17	60
EA8BH	3.5	541	20	82
(Opr. N5TJ)	7.0	1,091	33	95
(2000)	14.0	1,601	39	129
18,010,765	21.0	1,746	39	134
	28.0	2,375	35	133
	Total	7,555	183	634

Multi-Operator/Single Xmtr.

AF	3V5A('05) 14,026,738	7,137	163	564
AS	P3A('02) 19,470,528	8,432	176	702
EU	RU1A('00) 12,753,600	5,670	203	757
NA	8P9Z('99) 18,711,252	8,245	192	669
O	AH2R('04) 10,283,200	5,279	188	512
SA	PJ4A('06) 19,776,302	8,369	174	643

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	148	18	67
PJ4A	3.5	472	25	94
(2006)	7.0	3,060	33	133
19,776,302	14.0	1,822	39	150
	21.0	2,538	35	127
	28.0	329	24	72
	Total	8,369	174	643

Multi-Operator/Two Xmtr.

AF	EA8EW('06) 30,654,288	12,276	184	688
AS	A61AJ('02) 24,384,292	10,505	194	704
EU	RU1A('03) 16,533,164	8,314	209	749
NA	ZF1A('06) 15,349,499	8,968	164	573
O	AH2R('02) 11,311,266	6,390	171	482
SA	HC8N('04) 30,971,500	12,429	196	679

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	276	14	39
HC8N	3.5	1,114	28	94
(2004)	7.0	2,552	38	131
30,971,500	14.0	2,224	40	140
	21.0	2,493	39	143
	28.0	1,902	37	132
	Total	12,429	196	679

Multi-Operator/Multi-Xmtr.

AF	CN8WW('99) 70,713,270	23,068	219	843
AS	A61AJ('99) 38,789,751	15,812	213	788
EU	OH2U('99) 22,244,067	10,956	211	786
NA	6Y2A('98) 39,279,140	17,609	192	740
O	KHØAM('92) 23,951,385	11,253	190	527
SA	PJ4B('99) 47,516,600	17,889	208	757

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	1,694	24	100
CN8WW	3.5	3,248	35	121
(1999)	7.0	4,358	40	141
70,713,270	14.0	4,837	40	159
	21.0	4,319	40	161
	28.0	4,612	40	161
	Total	23,068	219	843

CQ World-Wide DX Contest All-Time U.S.A. Records BY FREDERICK CAPOSSELA, K6SSS

Tabulated below are the record-high scores achieved by U.S. contesters in the CQ World-Wide DX Contest. Number groups following calls and bands are: year of operation, total score, contacts, zones, and countries.

PHONE

Single Operator/Single Band

1.8	K1ZM('95)	55,420	215	15	70
3.5	K1ZM/2('96)	292,100	952	27	100
7.0	KC7EM('95)	409,446	1,083	34	95
14	K1OX('85) (Opr. KC1F)	1,131,328	2,176	36	140
21	KQ2M/1('99)	1,327,139	2,624	39	148
28	W4ZV('01)	1,464,255	2,654	40	155

Single Operator/All Band

Station	Band	QSOs	Zones	Countries
	1.8	21	8	15
K1AR	3.5	154	16	59
(1999)	7.0	231	29	84
7,898,499	14.0	1,145	38	142
	21.0	1,150	36	123
	28.0	1,393	33	128
	Total	4,094	160	551

QRP

KR2Q('00)	1,507,506	1,181	104	358

Low Power

K1ZM/2('00)	3,368,010	1,907	151	504

Assisted

KI1G('01)	8,053,315	3,768	168	617

Multi-Operator/Single Xmtr.

Station	Band	QSOs	Zones	Countries
	1.8	32	12	30
K1AR	3.5	197	18	76
(1990)	7.0	154	26	95
11,193,606	14.0	1,370	39	167
	21.0	1,167	38	165
	28.0	1,517	37	170
	Total	4,437	170	703

Multi-Operator/Two Xmtr.

Station	Band	QSOs	Zones	Countries
	1.8	56	14	40
K3LR	3.5	439	27	89
(2004)	7.0	830	33	122
18,382,950	14.0	2,024	40	169
	21.0	2,899	40	166
	28.0	1,390	33	145
	Total	7,638	187	731

Multi-Operator/Multi-Xmtr.

Station	Band	QSOs	Zones	Countries
	1.8	197	16	36
KC1XX	3.5	699	24	102
(1999)	7.0	746	31	119
25,963,386	14.0	2,711	40	185
	21.0	3,245	40	170
	28.0	2,596	36	170
	Total	10,194	187	782

CW

Single Operator/Single Band

1.8	K3BU/8('06)	151,970	527	26	104
3.5	W1MK('06)	530,264	1,390	32	104
7.0	K1ZM('90)	839,520	1,783	34	125
14	K2WK('98)	1,007,781	1,955	39	144
21	K2SS/1('00)	974,440	2,035	36	134
28	W4ZV('00)	965,874	1,984	37	137

Single Operator/All Band

Station	Band	QSOs	Zones	Countries
	1.8	104	14	40
K5ZD/1	3.5	384	19	73
(2000)	7.0	971	29	103
8,756,568	14.0	988	33	105
	21.0	848	33	104
	28.0	1,189	33	106
	Total	4,484	161	531

QRP

K3OO('00)	1,731,450	1,299	114	371

Low Power

K1TO/4('02)	4,141,188	2,276	140	526

Assisted

K3WW('00)	8,465,815	4,091	166	589

Multi-Operator/Single Xmtr.

Station	Band	QSOs	Zones	Countries
	1.8	49	13	46
K1AR	3.5	569	27	101
(1998)	7.0	1,384	35	136
12,063,114	14.0	991	38	151
	21.0	999	36	135
	28.0	1083	32	132
	Total	5,074	181	701

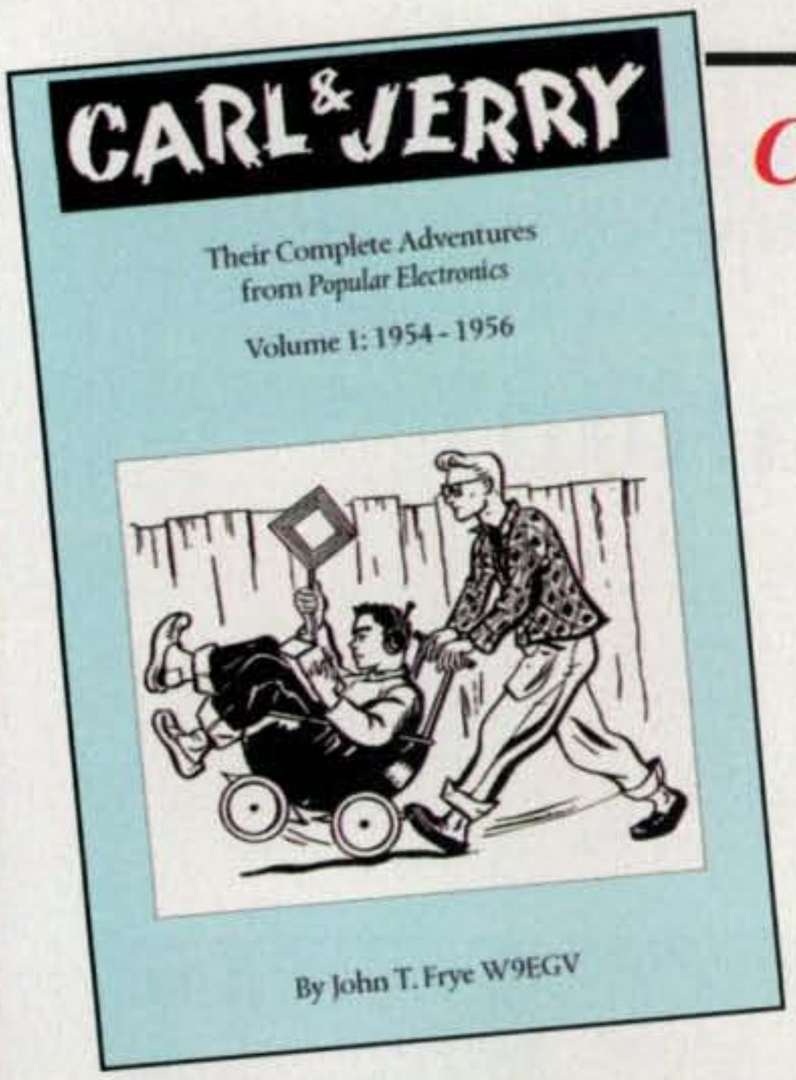
Multi-Operator/Two Xmtr.

Station	Band	QSOs	Zones	Countries
	1.8	79	18	56
K4JA	3.5	625	21	105
(2002)	7.0	1,480	36	133
14,084,994	14.0	911	38	146
	21.0	1,568	35	144
	28.0	1,085	34	137
	Total	5,748	182	721

Multi-Operator/Multi-Xmtr.

Station	Band	QSOs	Zones	Countries
	1.8	291	23	63
KC1XX	3.5	1,040	34	116
(1999)	7.0	2,119	40	138
24,602,524	14.0	2,155	40	155
	21.0	2,028	38	150
	28.0	1,947	38	148
	Total	9,580	213	770

Club Record: Yankee Clipper Contest Club ('99) 702,296,971
Team Contesting: Phone – Neiger's Tigers Team #1 ('99) 66,546,582
CW – Neiger's Tigers Team #1 ('03) 56,282,996



CQ Book Review:

They're Back! "Carl & Jerry – Their Complete Adventures from *Popular Electronics*"

Volume One: 1954–1956, by John T. Frye, W9EGV

REVIEWED BY GEORGE M. EWING,* WA8WTE

I discovered the Carl and Jerry stories in my high school library in the early 1960s, about the same time I got my Novice ticket, KN8ZSK. It was great fun; these kids in *Pop'tronics* were bright, funny, and played with ham gear and other electronics, just like a great many of my friends.

John Frye, W9EGV, wrote the stories of two chums experimenting with gadgets and having adventures for about 10 years in *Popular Electronics,* starting with the very first issue in 1954, and both the writing and the technology improved a great deal as he went along.

Jeff Duntemann, K7JPD, has done us all a tremendous favor by getting legal permission to reprint the complete adventures. Volume 1 of *Carl & Jerry – Their Complete Adventures* from *Popular Electronics,*[1] contains 27 stories from the very beginning, October 1954, through December 1956. Four more volumes are scheduled over the next year or so, finishing out the saga through 1964. Volume 2, covering 1957 and 58, was due out in March.

1954 through '56 are the very early years; transistor radios, solar cells, color TV, metal detectors, and all the rest were still brand new. By the time I discovered them a few years later, I could recognize Carl and Jerry as worthy journeymen in a long tradition of "chums adventures" for juveniles and young adults, going back to the days of Mark Twain's Tom Sawyer and Huck Finn or Booth Tarkington's Penrod and Sam, forward through the literary wagon train that included Tom Swift and his pulp successors, as well as the Hardy Boys, Dickie Dare, Rick Brandt, Jonny Quest, and a host of less famous brethren.

In laboriously putting together this collection, K7JPD has not only rescued the lads from the ravages of time (50 years is a long time for magazines to survive in attics, closets, and ham station junkboxes), he has also given us the original illustrations, which like the stories and the technology, also start out uneven in quality but steadily improve. They help convey the sense of fun and innocence, mixed with a playful thirst for technical knowledge.

Not a great deal is known about author W9EGV, but in these stories he projects a kind of warm nostalgia for kinder, simpler times, before our culture was swamped with sex, drugs, rock 'n 'roll, and reality TV. Even in the later stories, set on the fictional Parvoo University campus in the midst of the tumultuous 1960s, I get some of the same feeling I used to get from Archie Comics—warm nostalgia for the innocent Happy Days of the small town, Midwest teen malt shops of the 1940s and even earlier.

The volumes are highly recommended reading. For a more detailed analysis and critique of Frye's work, plus an index to all 119 original Carl and Jerry stories, read K7JPD's essay on the Copperwood Press website: <http://www.copperwood.com/carlandjerry.html>. To order the book, which sells for $15.95 plus shipping, check the Lulu.com publishing site at <http://www.lulu.com/content/516523>. Jeff Duntemann can be contacted by e-mail at <jeff@duntemann.com>.

FB, Jeff, & TNX—WA8WTE/4

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Note

1. Copperwood Press, Colorado Springs, CO (Jeff Duntemann, K7JPD, ed.); 207 pp., 6" × 9" Trade Paperback, $15.95, available from Lulu.com. Artwork courtesy of K7JPD.

A New Jersey radio club brings the world to a town summer camp each year, introducing kids—and their parents—to the magic of ham radio.

Take Your Ham (Station) to Camp

BY DAN MOSESON,* KC2OOM

It's impossible to go to a major gathering of hams without hearing some discussion of the importance of getting young people into the hobby and of possible methods for doing so. One New Jersey radio club has found an effective way to introduce ham radio to children and improve its standing in the community by making a positive impression on their parents. For one week every summer, The New Providence Amateur Radio Club (club call N2XJ) sets up a ham station at a town-run summer camp in Berkeley Heights, NJ and lets any interested camper get on the air.

Club member and Berkeley Heights resident Barry Cohen, K2JV, explained that this was the club's fourth summer running a ham station at the camp, which is held at a town park. Some of the campers "Snap! Grab it just like that," he said, as 8-year-old Caitlyn McGovern called CQ on 20 meters. "It's an exciting new hobby that the kids can experience," said Lena Bendush, Program Director at the Berkeley Heights Recreation Commission. "The kids love it," she said. "They love learning how to talk to somebody and how to actually use the equipment." It's very exciting when "they talk to an astronaut in a space ship and they talk to somebody in Utah."

Only a few kids seemed seriously interested, Cohen said, but the benefits for those kids are great. Those who have a natural affinity for radio tend to be the ones who are already interested in science, technology, or mathematics. They also gain geographic knowledge and improve communication skills. "We're exposing these kids to all sorts of technology stuff," Cohen said, but added that it's not just about technology. "These little kids learn somehow to communicate with an adult in more than monosyllables," he explained. "The most important thing that they're learning is to communicate with adults."

Eleven-year-old Edward Barrantes calls CQ while fellow camper Caitlyn McGovern and control operator Vince Lobosco, KC2IZK, look on. (W2VU photos)

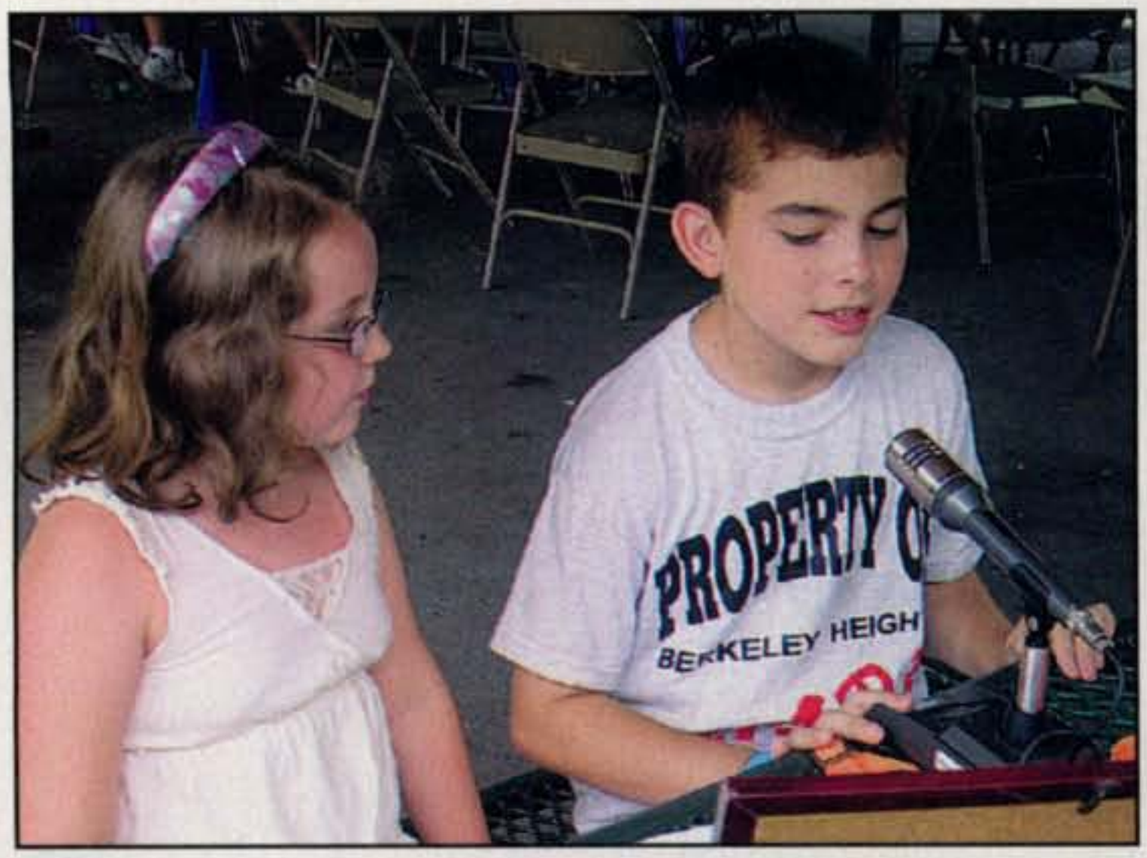
Cohen said he's careful not to push the idea of ham licenses to young children. They're "fundamentally too young," he believes, so licensing and the technical aspects of radio remain in the background.

When the kids call CQ, Cohen noted, people come out of the woodwork, even when band conditions aren't favorable. In fact, he said poor band conditions actually serve the young operators well, as clear, loud signals are the only ones getting through. Cohen said that some campers had made contacts in Spanish (although the Spanish language stations turned out to be two hams about 30 miles away, in Brooklyn, New York).

Eleven-year-old Edward Barrantes of Berkeley Heights, who started sixth grade in September, told *CQ* that this is the second year he's participated in ham radio at the camp. He's interested in some electronics and animals and wants to be a veterinarian. He said he first thought ham radio was cool because of the electronics and the fact that the club members let him get on the air when he went up to them. Edward's favorite thing about radio is talking to people and learning who they are, where they're from, and how many contacts they make per year. He had six contacts last summer and at least another four this year for a total of ten, including one in Montana. He says he doesn't want a license yet, but might get one when he's older.

Caitlyn McGovern, also of Berkeley Heights, is eight years old and now in third grade. She had been on the air for the first time the day before *CQ* spoke with her, but had already talked to hams in Ohio, Georgia, Virginia, and New Jersey. It took some effort to get her to give up the microphone to talk with us.

* *c/o CQ magazine*
e-mail: <link4100@hotmail.com>



Camper Caitlyn McGovern listens while Edward Barrantes makes a ham contact at the Berkeley Heights, NJ town summer camp.

A natural on the microphone, 8-year-old Caitlyn McGovern makes a contact over the New Providence Amateur Radio Club's station, N2XJ, set up at the Berkeley Heights summer camp.

"I saw someone do it," she said, "so I did it, and I liked it." She said that she wants to get a ham license and that her most interesting contact was with a ham in Georgia who told her about his three grandchildren who were involved in an acting camp.

Cohen noted that there are young people entering the hobby. He said the New Providence club has a member who is 13 or 14 years old, who got a license in fifth grade, and was the control operator for a recent emergency drill.

Cohen stressed the particular effectiveness of the program in exposing young girls to science and technology. He said he's had parents (of girls, never those of boys) say "this program is too intense for my daughter," implying that "little girls don't do this."

The other goal of the New Providence club's cooperation with the camp is to raise awareness of ham radio among adults and improve its own standing in the community. K2JV said he advocates the hobby and public-service aspects of ham radio to the campers' parents, taking the "original chat room" angle on one side and talking about hams' role as emergency responders on the other. He says he does this because "Parents vote! We want you to know that we as radio hams are doing something for your community."

Cohen also pointed out that volunteering at the camp has had additional benefits for his partner in running the station, Vince Lobosco, KC2IZK. He said Vince had only recently upgraded to General himself and had very little HF operating experience, so by helping the kids operate, he was helping himself become a more experienced operator as well.

Your Club Can Do It, Too

Cohen strongly recommends that radio clubs get involved with the recreation commissions and schools of their local towns. (He also suggests consulting someone who has done it before.[1])

Quoting the old adage that "all politics is local," Cohen said he thinks hams can get more done through local involvement than by appealing straight to Washington. His club has seen enormous benefits from becoming part of the Berkeley Heights Recreation Commission, something he said most clubs shy away from. Their partnership began by bringing ham radio to a local school and setting up a contact with the International Space Station, and now the town provides a free place to meet, free copier access, community recognition, and invitations to town council meetings. The club often gains members by encountering inactive hams (who become active again) at local events. The club also has a good relationship with local

emergency management; members shadow key police and Office of Emergency Management officials and stress the fact that they are expert communicators who maintain no permanent setups at public-safety facilities.

Bendush, the camp Program Director, told *CQ* that the camp itself is run for seven weeks every summer and integrates a wide range of different activities, ham radio among them (the hams are there for one week). This past summer, she said, there were 250 campers ranging from first graders to those about to enter seventh grade. The camp began about 20 years ago as a town-funded program but currently charges a fee for the summer. Bendush praised the New Providence club members for working there as a volunteers. She said the club has collaborated with the Recreation Commission in events ranging from the summer camp to after-school programs to a January event called Kids' Day, and has also provided communications for the town's Memorial Day parade. "All the men who are part of the ham radio club are wonderful people and very kid-friendly," Bendush said, and she recommends that other recreation departments contact local radio clubs. "It would be nice to have ham radio come to their camps or do an after-school program at one of their schools."

Ham summer camp coordinator Barry Cohen, K2JV, is interviewed by the author.

Are You a "True Ham"?

In closing, Cohen outlined his five-part definition of a true ham: a person who (1) has a license, (2) has ham equipment, (3) gets on air, (4) talks to strangers, and (5) supports the system by joining a club. The efforts of the New Providence Amateur Radio Club have provided some lucky New Jersey kids with access to qualifications 2 through 4 before they're even licensed, and make it much more likely that they'll pick up numbers 1 and 5 as well. The benefits are rather like those of growing up with a ham (as the writer has). The approach that works here seems to achieve "quality" rather than "quantity," attracting a few genuinely interested kids out of 50 or 60 campers who may give it a single shot every summer. This is not surprising, as surely not everyone is cut out to be a ham (or wants to be). However, this club has found a great way to capture the imaginations of those who are.

Note

1. K2JV says any club official interested in advice on establishing a relationship with town recreation officials is welcome to contact him via e-mail at <k2jv@arrl.net>.

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Two knob tuning (differential capacitor and *AirCore™* roller inductor) makes tuning foolproof and easier than ever. Gives minimum SWR at only one setting. Handles 3 KW PEP SSB amplifier input power (1.5 KW output). Gear-driven turns counter, lighted peak/average Cross-Needle SWR/Wattmeter, antenna switch, balun. 1.8 to 30 MHz. 10¾Wx4½Hx15 in.

MFJ-962D *compact* kW Tuner

MFJ-962D **$279.95**

A few more dollars steps you up to a KW tuner for an amp later. Handles 1.5 KW PEP SSB amplifier input power (800W output). Ideal for Ameritron's AL-811H! *AirCore™* roller inductor, gear-driven turns counter, pk/avg lighted Cross-Needle SWR/Wattmeter, antenna switch, balun, Lexan front, 1.8-30MHz. 10¾x4½x10⅞ in.

MFJ-969 300W *Roller Inductor* Tuner

MFJ-969 **$199.95**

Superb *AirCore™* Roller Inductor tuning. Covers *6 Meters* thru 160 Meters! 300 Watts PEP SSB. *Active* true peak reading lighted Cross-Needle SWR Wattmeter, *QRM-Free PreTune™*, antenna switch, dummy load, 4:1 balun, Lexan front panel. 3½Hx10½Wx9½D inches.

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Handles 300 Watts. Full 1.8 to 30 MHz coverage, custom inductor switch, 1000 Volt tuning capacitors, *full size* peak/average lighted Cross-Needle SWR/Wattmeter, 8 position antenna switch, dummy load, *QRM-Free PreTune™*, scratch proof Lexan front panel. 3½Hx10⅝Wx7D inches. **MFJ-948, $139.95.** Economy version of MFJ-949E, less dummy load, Lexan front panel.

MFJ-941E *super value* Tuner

***The** most for your money!*

MFJ-941E **$129.95**

Handles 300 Watts PEP, covers 1.8-30 MHz, *lighted* Cross-Needle SWR/Wattmeter, 8 position antenna switch, 4:1 balun, 1000 volt capacitors, Lexan front panel. Sleek 10½Wx2½Hx7D in.

MFJ-945E HF/6M *mobile* Tuner

MFJ-945E **$119.95**

Extends your mobile antenna bandwidth so you don't have to stop, go outside and adjust your antenna. Tiny 8x2x6 in. *Lighted* Cross-Needle SWR/Wattmeter. Lamp and bypass switches. Covers 1.8-30 MHz *and* 6 Meters. 300 Watts PEP. **MFJ-20, $6.95,** mobile mount.

MFJ-971 *portable/QRP* Tuner

MFJ-971 **$109.95**

Tunes coax, balanced lines, random wire 1.8-30 MHz. Cross-Needle Meter. SWR, 30/300 or 6 Watt QRP ranges. Matches popular MFJ transceivers. Tiny 6x6½x2½ in.

MFJ-901B *smallest* Versa Tuner

MFJ-901B **$89.95**

MFJ's smallest (5x2x6 in.) and most affordable wide range 200 Watt PEP Versa tuner. Covers 1.8 to 30 MHz. Great for matching solid state rigs to linear amps.

MFJ-902 *Tiny Travel* Tuner

MFJ-902 **$89.95**

Tiny 4½x2¼x3 inches, full 150 Watts, 80-10 Meters, has tuner bypass switch, for coax/random wire.

MFJ-904H, $139.95. Same but adds Cross-needle SWR/Wattmeter and 4:1 balun for balanced lines. 7¼x2¼x2¾ inches.

MFJ-16010 *random wire* Tuner

MFJ-16010 **$59.95**

Operate all bands anywhere with MFJ's reversible L-network. Turns random wire into powerful transmitting antenna. 1.8-30 MHz. 200 Watts PEP. Tiny 2x3x4 in.

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MFJ-906 has lighted Cross-Needle SWR/Wattmeter, bypass switch. Handles 100 W FM, 200W SSB. MFJ-906 **$89.95**

MFJ-903, $59.95, Like MFJ-906, less SWR/Wattmeter, bypass switch.

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MFJ-921 covers 2 Meters/220 MHz. **MFJ-924** covers 440 MHz. SWR/Wattmeter. 8x2½x3 in. MFJ-921/924 **$79.95**

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Eliminates RF hot spots, RF feedback, TVI/RFI, weak signals caused by poor RF grounding. Creates artificial RF ground or electrically places far away RF ground directly at rig. MFJ-931 **$99.95**

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What You've Told Us...

Our July survey asked about help for new hams and for hams starting in a new activity ... both received and given. First, we wanted to know how long you've been licensed. More than two-thirds of you (68%) have been hams for more than 25 years; followed by 13% at 15–25 years, 12% at 5–15 years, 6% one-to-five years, 2% less than one year, and 1% not currently licensed. Next, 59% of you reported getting help from a more experienced ham when you were first licensed in getting set up and on the air and in leaning proper operating techniques ... but that leaves four in ten who did *not* receive any help.

Curiously, the amount of available help increased as you got involved in new aspects of ham radio ... 64% of you said you sometimes received help starting out in a new activity, while 18% said you've always gotten help (that's 82% in all), and only 17% said you've never gotten help with something new.

Next, we asked how much *you've* helped others. Just over half of you (51%) have occasionally helped a new ham get a station on the air and/or learn proper operating techniques, while 20% do so frequently, 12% have helped out once and 15% have never helped anyone new. In addition, 56% of you have occasionally helped a ham learn a new activity, 28% do so frequently, and 14% have not done so at all. Just more than 1/3 of you (36%) feel there is more help available now than when you first got active, while another 1/3 (33%) says the level of available help is about the same; 16% feel there's less help available now than in the past, and 14% don't know.

Finally, we asked if you've made it known to your club or other group that you're willing to help new hams or those just starting a new activity. Just more than half (52%) said you had done so informally; 32% said no, but they'd help if asked; 7% have signed up in a formal mentor registry, 6% said they can't help because of physical limitations, and 3% say they're not interested.

This month's free subscription winner is Jack Jones, W3NTD, of Brynathyn, PA.

Reader Survey October 2007

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

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

We've been hearing a lot about increased Morse code (CW) activity since the code test requirement was dropped in Feburary. So this month, we'd like to ask about your experiences in that area.

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

1. Do you currently operate Morse code on the radio?
- Yes 34
- No 35

2. Has your level of on-air code activity changed since the code test requirement was dropped?
- Increased 36
- No change 37
- Decreased 38
- Not active on code 39

3. Has your perception of the general level of on-air code activity changed since the code test requirement has dropped?
- There seems to be more CW activity 40
- The level seems to be about the same 41
- There seems to be less CW activity 42
- Don't know 43

4. If you are relatively new to code operating on HF, which experience(s) most closely match(es) yours?
- I find plenty of people to contact at slow speeds 44
- I have trouble finding people to contact at slow speeds 45
- People I contact on code generally are patient with me 46
- People I contact on code generally are *not* patient with me 47
- I have gotten help and advice from other hams on CW operating 48
- I have *not* gotten help or advice from other hams on CW operating 49
- I am not a new CW operator 50
- I do not operate code 51

5. If you are an experienced code operator, have you ...
- Slowed down to accommodate newer, slower, code ops? 52
- Made special efforts to contact newer, slower, code ops? 53
- Offered help and advice to new code ops, either on or off the air? 54
- I am not an experienced code operator 55
- I do not operate code 56

6. Have you purchased a new code key in the past 12 months?
- Yes, hand key 57
- Yes, semiautomatic "bug" 58
- Yes, keyer paddles 59
- No 60

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

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Dual Band Dynamos for your pocket or your car!

DR-635T 2M/440MHZ Mobile/Base Transceiver

Dual Band Transceiver with Full Duplex Capability

Alinco's new DR-635T is an easy-to-use, high-quality transceiver for simplex and repeater operations on the VHF and UHF bands. With cross-band repeat, full duplex capability and a remote mountable control head, the DR-635T features newly designed RF circuitry that delivers increased resistance to interference from adjacent signals. Plus, a new protection circuit automatically lowers the power setting whenever the internal temperature rises. This protects the radio when used as a cross-band repeater. But, that's just the beginning:

- Large, 6 character alphanumeric display with freely and separately selectable three color display illumination in blue, violet or orange for TX/RX/stand-by
- TCXO that is stable to ±2.5 ppm
- Narrow FM mode
- Power supply voltage display
- Ignition key on/off feature & theft alarm feature
- CTCSS, DCS encode/decode and DTMF encode functions plus European Tone Bursts
- Multiple scan modes and extended receive capabilities including broadcast FM
- Backlit DTMF microphone allows direct frequency entry and more
- VHF: 50/20/5, UHF: 35/20/5 watt power output settings
- 200 Memory channels that can operate in splits of 80ch/VHF, 80ch/UHF and 40ch freely programmable with 1 call channel each for VHF and UHF operation
- Extended receive from 108.000 ~173.995MHz / 335.000 ~ 479.995MHz / 87.5 ~ 107.995MHz, transmits from 144.000 ~ 147.995MHz / 430.000 ~ 449.995MHz, plus reception on AM aircraft band and the ability to operate on MARS frequencies
- Can also operate with Alinco's optional EJ-50U digital data packet board that fits inside or the EJ-47U digital voice board

Thanks to Alinco, you can have a dual band dynamo in your pocket AND in your car!

DJ-C7T 2M/440MHZ "Pocket-size" HT

Hams are packing some serious radio power in their pockets with the DJ-C7T, the new dual band mini HT. Alinco led the way in breakthrough miniature electronics technology with its revolutionary "credit card" size transceivers. Now, the DJ-C7T offers a "pocket size" HT that's small in size but BIG in added memories and modes.

Check out the features of this "new generation" DJ-C7T

- Internal speaker with great audio!
- 200 Memories
- VFO, Memory and Scan modes
- 39 CTCSS tone squelch (encode+decode) settings
- Split function
- SMA antenna port
- As thin as 0.57in. and just 3.59 oz. total weight with antenna and battery
- Cloning feature
- Lithium-ion battery
- Wide-band receive; includes FM broadcast and AM aircraft bands
- Auto repeater setting

The DJ-C7T can fit in a pocket or purse, but it's a versatile dual band HT with an enhanced receiver. So, you can enjoy twice the operating fun in half the size.

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Compact and (relatively) lightweight, the SPE Expert 1K-FA amplifier is a no-tune, solid-state, legal-limit "smart" power amplifier designed with the contester in mind. AD5X puts it through its paces...

CQ Reviews:

SPE Expert 1K-FA Solid-State HF/50-MHz 1-KW Power Amplifier

BY PHIL SALAS,* AD5X

While vacuum-tube-based HF power amplifiers still dominate the amateur radio market, we are starting to see more and more new solid-state HF amplifiers becoming available. This is due to lower prices for high-power FETs (field-effect transistors), higher costs for high-voltage power-supply components and tubes, and the convenience of no-tune operation. A new solid-state amplifier introduced at Dayton this year is the Expert 1K-FA amplifier from SPE in Rome, Italy. Array Solutions (www.arraysolutions.com) is the exclusive U.S. distributor of this amplifier.

The Expert 1K-FA amplifier provides 1000 watts PEP/900 watts CW on 160–10 meters, and 700 watts PEP/CW on 6 meters. The amplifier is quite compact at just 11 inches wide, 6 inches high, and 13.5 inches deep and weighs about 45 pounds. Included within this amplifier package is a 120/240-VAC linear power supply. SPE chose a linear power supply with a highly efficient toroidal hypersil transformer to eliminate the possibility of switching tones. Photo A shows the attractive front panel with LCD screen, photo B is an inside view of the power supply (bottom) portion of the amplifier, and photo C shows the RF compartment with the internal RF shields removed.

The Expert 1K-FA can serve as the center of a fully coordinated contest station, as it includes a two-transceiver input control interface, a four-port antenna switch, and a high-power automatic antenna tuner that can separately manage antennas on each of the four antenna ports. Thus, any two transceivers can be connected to any one of four antennas. When the amplifier is off, transceiver 1 is connected to antenna 1, while antenna ports 2, 3, and 4 are grounded. The two transceiver control interfaces are 15-pin D-connectors that provide band-data interfaces to most transceivers. Even if your transceiver has no band-data output, the Expert 1K-FA senses the keyed transceiver's frequency and automatically selects that transceiver and the correct antenna.

There are also two separate ALC (automatic level control) and amplifier keying interfaces for the two transceiver inputs. The ALC interfaces are very well thought out. When you connect the ALC cables between the 1K-FA and your transceivers, the amplifier automatically controls the drive power from the selected radio necessary to give you the full amplifier output. Therefore, you can leave your transceivers set for maximum power all the time, and the 1K-FA will control the transceiver power levels from band to band with no operator adjustments necessary. Also, when the amplifier is placed in "Standby," you have full transceiver power available. However, what if you don't need the full 1-KW power? The 1K-FA has a "Power" switch on the front panel that lets you select between half power (approximately 500 watts) and full power. Again, the amplifier controls the ALC line as necessary to control the drive so there is nothing for you to do other than punch

Photo A– The SPE 1K-FA solid-state amplifier puts out 1000 watts on 160–10 meters and 700 watts on 6 meters.

**1517 Creekside Drive, Richardson, TX 75081*
e-mail: <ad5x@cq-amateur-radio.com>

Photo B– The bottom (power supply) portion of the amplifier. Look at that power transformer!

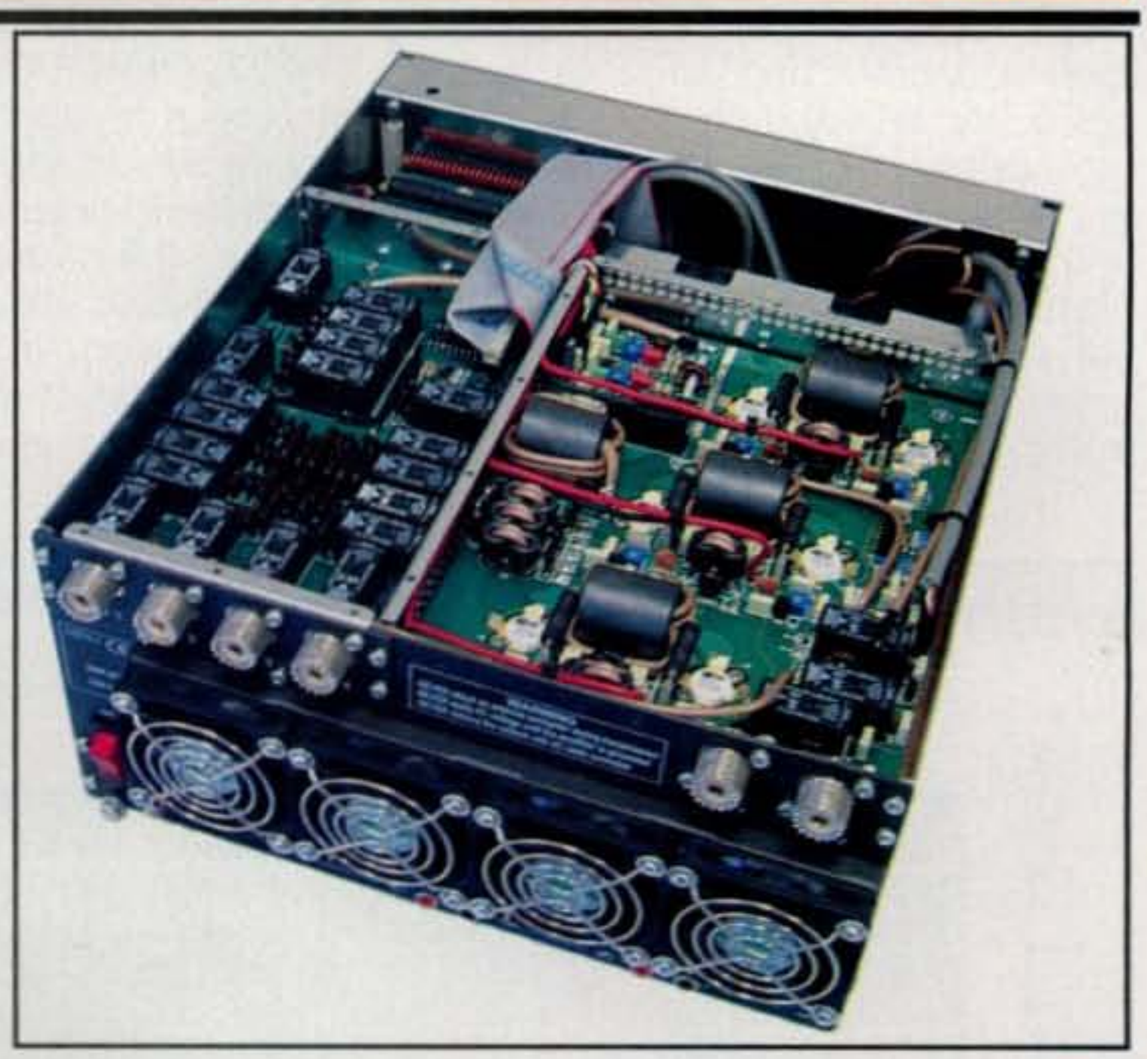

Photo C– RF section of the amplifier with the internal shields removed.

the "Power" button. Five-hundred watts is 7 dB more power (over an S-unit) than the typical 100-watt transceiver, which often is all it takes to make the difference in snagging that DX contact.

The 1K-FA also has a rear SO2R (Single-Operator 2-Radio[1]) connector for contesters. This is a receive-only port that permits you to listen on one transceiver while you are operating your main transceiver. If you hear a station you want to work on the secondary transceiver, you just start transmitting with this transceiver and the amplifier automatically switches to this transceiver and the correct antenna. I've found this convenient even outside of contests for mon-

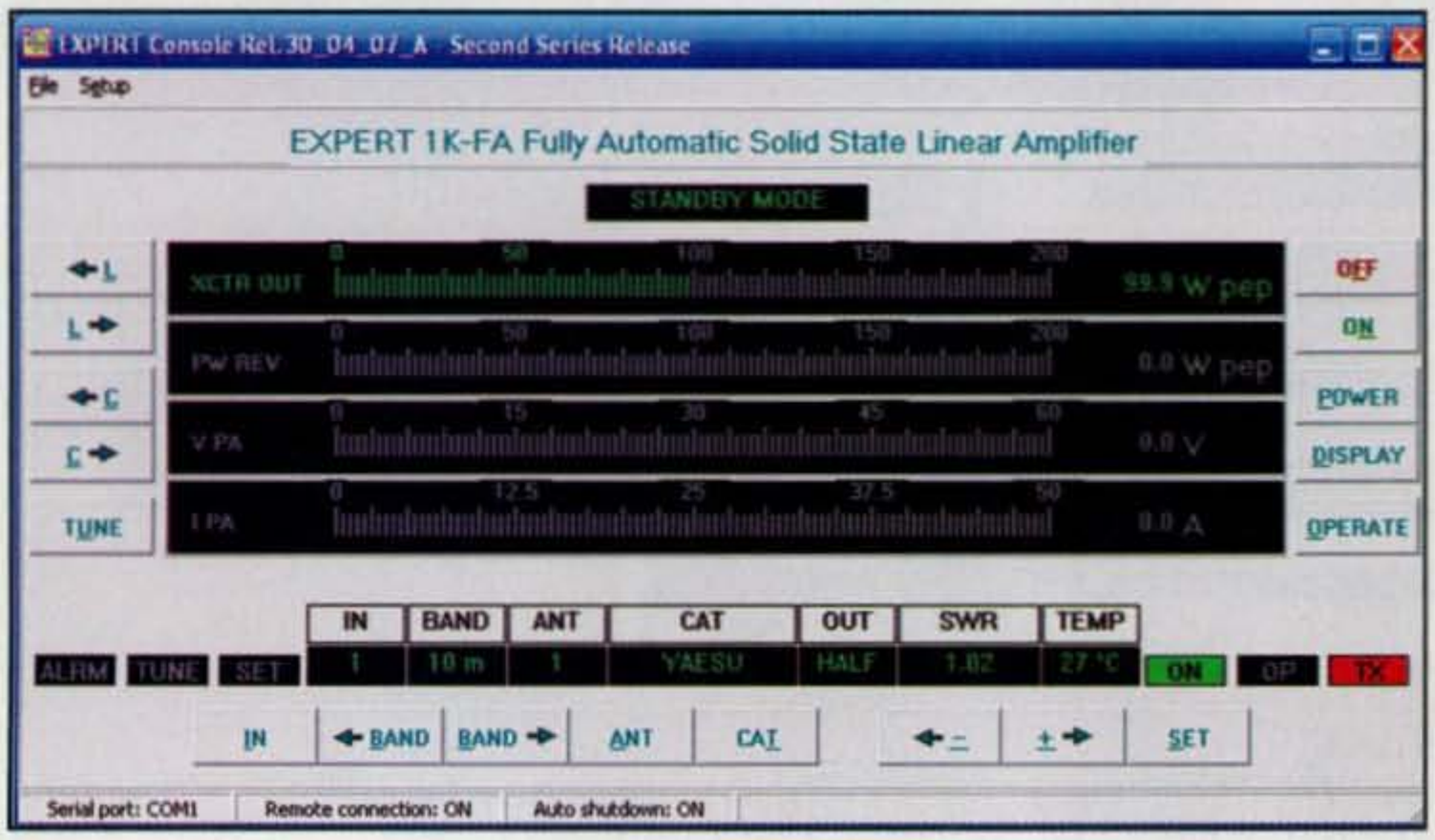

Photo D– Computer screen display when the amplifier is in standby.

itoring 6 meters with my ICOM IC-706MkIIG with a 6-meter loop on the SO2R connector, while operating HF with my Yaesu FT-1000 MkV. When something pops up on the 6-meter calling frequency, I just hit the PTT button on my 706 and the amplifier automatically selects that radio and my 6-meter beam. Pretty neat!

Full monitoring of the Expert 1K-FA is provided by the amplifier's LCD screen. From this screen you can accurately monitor amplifier FET drain voltage and current, exciter and amplifier output power and reflected power (with simultaneous bar-graph and digital readings), the selected transceiver and antenna, and an alarm log. The LCD screen provides menus for programming the amplifier for radio-specific interfaces and antenna selections as well. You can also interconnect the amplifier to a PC with a supplied RS-232 cable and display (in color) all amplifier parameters and control the 1K-FA from your computer. If your desktop computer does not have an RS-232 port, I found that a cheapie USB-to-serial converter works just fine. Photos D and E show the display indicating exciter power when the amplifier is in standby, and full amplifier output power, respectively.

Amplifier Protection

The Expert 1K-FA has a very extensive protection system. The parameters monitored and acted on by the amplifier are heatsink temperature, FET drain voltage, PA current, SWR, reflected power (which includes reflected harmonic power), input overdrive, and power combiner balance. Any fault condition provides an audible and visual alarm and puts the amplifier into the standby/bypassed condition. All alarms are also stored in an "Alarm History" buffer which can be called up on the amplifier's LCD display.

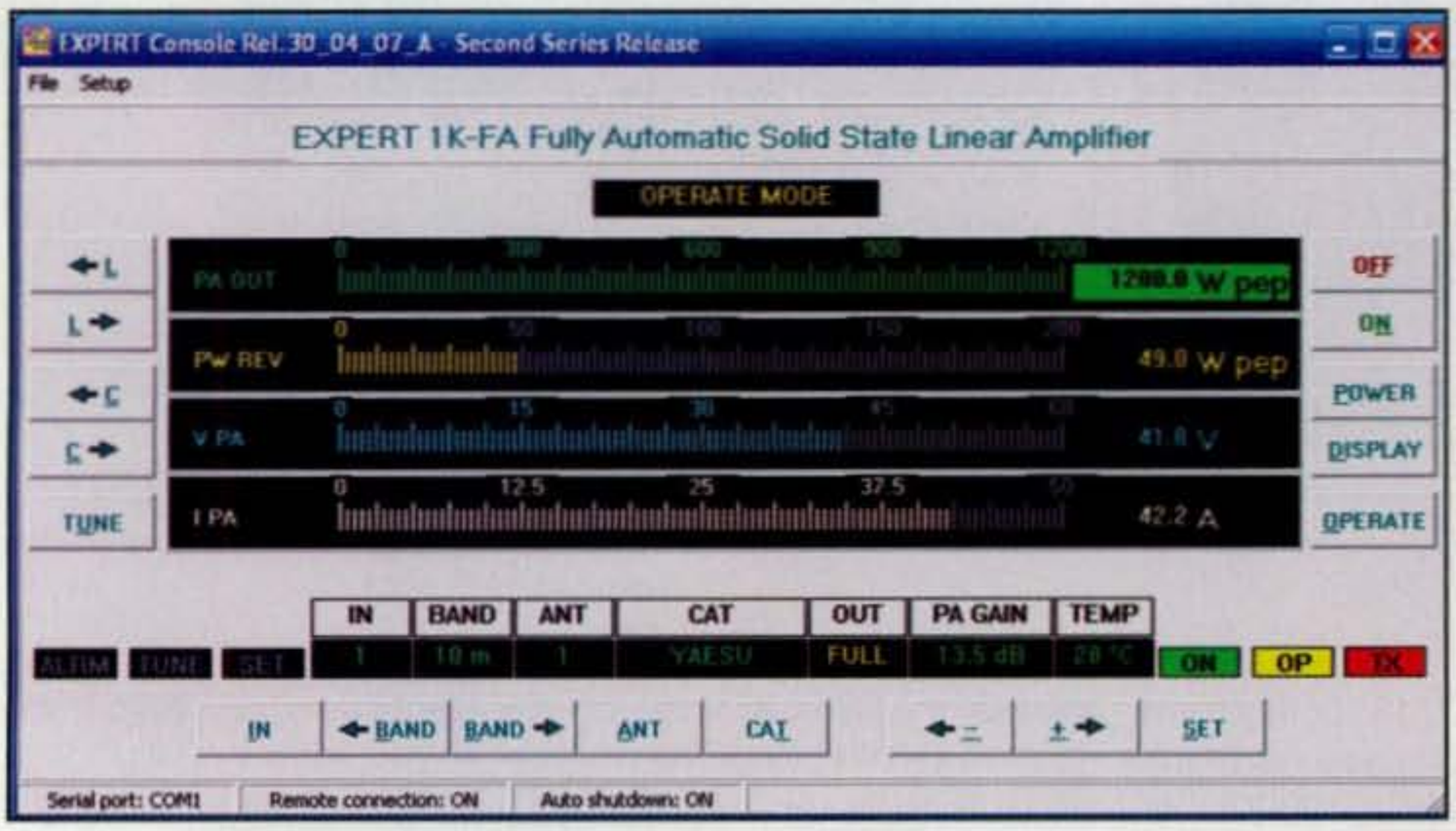

Photo E– Computer screen display when the amplifier is operating at full power output.

Connecting the Amplifier

The 1K-FA comes strapped for 240 VAC, so you first need to decide on whether or not to change this to 120 VAC. The amplifier will easily operate from 120 VAC in the half-power mode. I measured the 120-VAC AC current at 10.5 amps when operating at half-power. I also found that I could operate the amplifier at full power on 120 VAC, but I did have it connected to an AC branch that is separate from the AC circuit from which my two transceivers are powered. I measured the full-power 120-VAC current at 19 amps, so you really should run the amplifier from 240 VAC unless you have a separate 120-VAC 20-amp circuit available.

As discussed earlier, all the connectors for automatic interfacing with up to two transceivers and four antennas are provided on the rear of the amplifier, as can be seen in photo F. SPE provides two sets of RCA-type cables for ALC and amplifier keying, and two 15-pin D-connectors for making up transceiver interface cables. In my case I wanted to connect both my Yaesu MkV and my IC-706 transceivers to the amplifier. I purchased a 9-pin female D-connector from RadioShack for the Yaesu CAT end of the cable, and used one of the SPE-supplied 15-pin D-connectors for the amplifier side of the interface cable. For the IC-706MKIIG, I used an Ameritron ARB-704 transceiver/amplifier buffer which provides ALC and amplifier keying outputs from the transceiver's accessory socket. For the IC-706MkIIG band-data information, I made a CI-V cable using a 3.5-mm mono plug for the ICOM end, and the second SPE-supplied 15-pin D-connector for the amplifier end. Detailed instructions in the amplifier manual show how to make cables for virtually any transceiver.

Next I went into the 1K-FA setup menu and set the interfaces for the Yaesu and ICOM radios. I also set the default selected antennas for each radio and trained the internal auto-tuner for each antenna on the different bands.

Performance

My amplifier testing included measuring the amplifier power output into a legal-limit dummy load and checking the amplifier's internal power metering against an external Array Solutions

Photo F– Interfaces for transceivers and antennas are well-marked and self-explanatory. Note the SO2R connector.

PowerMaster digital wattmeter. I measured key-down, string of "dits," and PEP SSB power on both the 1K-FA internal power meter and the external PowerMaster. As you can see in Table I, the 1K-FA does a good job of meeting its typical power-output specifications. It is interesting to note that the PowerMaster typically reads 0.5–1 dB more power than the amplifier metering. The amplifier measures power at the input to the internal auto-tuner, and the PowerMaster measures power at the output of the auto-tuner. The internal auto-tuner is always in-line and cannot be bypassed. Therefore, these measurements seem to indicate the intrinsic loss of the auto-tuner.

On the Air

Most of my operating during the evaluation period was on 160, 80, 40, and 20 meters using my Yaesu MkV, and on 6 meters using the IC-706MkIIG. Operation is truly easy in that the amplifier automatically selects the keyed radio and the primary antenna previously chosen for that radio and band. You literally don't need to worry about which microphone or key you start using, or which antenna needs to be connected. Your pre-programmed radio-vs.-antenna is taken care of for you by the amplifier. Of course, you can manually change these combinations at any time. Finally, as a CW operator I really appreciated the smooth QSK (break-in keying) operation of the amplifier.

Conclusion

The SPE 1K-FA is definitely an amplifier to consider. With its multi-radio, multi-antenna, SO2R, and auto-tuner features, this amplifier is very easy to use— from normal rag-chewing to contesting and DXing. Introductory price is $3,975. For more information, including a downloadable user's manual, check the Array Solutions website at <http://www.arraysolutions.com>.

Note

1. Single-Operator 2-Radio (SO2R) is a popular entry category in some contests. It permits a single contester to operate on one band while monitoring for new score multipliers on another band on a second radio, and then to briefly switch to that second radio to make the contact for a new multiplier.

Band	Amp Key-Down	PM Key-Down	Amp "Dits"	PM "Dits"	Amp PEP	PM PEP
160m	1178	932	1118	970	975	1200
80m	1115	946	1033	980	1161	1044
40m	938	915	1018	930	1004	937
20m	850	740	950	810	1070	957
17m	1011	870	1100	1007	1200	1100
15m	1100	1025	1075	1000	1200	1062
12m	1031	936	950	950	1143	953
10m	1200	1025	1200	1115	1200	1100
6m	765	616	810	760	818	745

Table I– Amplifier power-output measurements, where Amp = internal amplifier meter reading; PM = external PowerMaster meter reading. See text for discussion of differences in readings, all of which are in watts.

Irwin Math's notes

BY IRWIN MATH,* WA2NDM

On (and outside of) the Soapbox

As regular readers of this column know, I have always tried to encourage people to not be afraid to experiment, since many of the amazing achievements of the past came from "ordinary" people, not just fancy, expensive research labs. Often non-technical people have a tendency to try to build equipment or develop systems that so-called "technically educated" people insist "can never work." This is why the Wright Brothers were able to fly a heavier-than-air machine and Igor Sikorsky was able to develop the helicopter. In addition (in the past), many discoveries that could have advanced technology more quickly went unnoticed by the so-called "experts." A good example is Thomas Edison's "Edison Effect."

In 1882, Edison actually built a working vacuum diode while trying to improve his incandescent lamp. He did this by sealing a metal plate inside the lamp, near the filament, to try to draw away "material" that was causing his lamp to darken prematurely. Furthermore, he even went as far as to demonstrate that current would only flow one way—from the filament (cathode) to the metal plate (anode)—but since this did not solve his particular lamp problem, he dismissed the results as "interesting but not very relevant." It took 22 more years until Ambrose Fleming "discovered" that the exact same vacuum diode (filament and plate) was a superior detector of electromagnetic radiation. Had Edison looked a bit more "outside the box," the electronic industry might have saved those 22 years!

I wonder how many of these scenarios exist today, if one simply tries to look outside of the box. We are familiar with the transistor, but did you know that in 1906 Greenleaf Whittier Pickard actually used silicon to fabricate diodes to detect radio waves? He also experimented with combining different minerals to form composite junctions that he felt might be able to further increase the sensitivity of his "detectors." One could only imagine what might have happened if he went a step or two further. Perhaps he might have come up with the transistor 40 years earlier, and before the vacuum tube to boot! Our electronic industry would certainly be quite different now. I'll bet that 50 to 100 years from now someone will realize that the common "gizmo" that has revolutionized communications could easily have been built in the early 21st century if someone only had the foresight to combine "x" with "y." The trick, of course, is to somehow determine what "x" and "y" are!

Today there are areas that the average experimenter can investigate. For example, the electromagnetic spectrum is well known from DC up to a couple of hundred GHz, but what type of propagation exists in the 500- to 1000-GHz range or, for that matter, beyond visible light in the tens to hundreds of THz? The spectrum does not just end at some fixed point, but goes on infinitely. Remember, in the early days of radio the frequencies from "300 meters and down" were considered worthless by the "educated," so they were given to the "simple" amateurs. After countless experiments, many of them quite unorthodox compared to the "normal techniques" of the day, worldwide communications on a few watts were suddenly possible in the previously considered "worthless region." Visible light (as we know it) is limited to line-of-sight transmission and can easily be blocked with simple opaque materials, but is this always true? It is known that x-rays and cosmic rays in the frequency range well beyond light can easily pass though solid objects. Are there propagation modes we have not yet found, and are there ways to modulate and detect these rays?

You may well ask, "How does one attempt to explore these exotic regions?" Unfortunately, I don't have an exact answer, but I do know that theoretically, all electronic pulses have harmonics that extend many multiples beyond their base frequencies. Can the "correct" harmonic be singled out? It is a fact that rudimentary spark coils (of the 1900s variety) have been used in the past to shock-excite resonant cavities well into the microwave region. Can they be used to drive something else for even higher frequencies?

While it is true that not much power results from such techniques, who knows how much is really needed for reliable communications at certain frequencies? At 10 meters a couple of watts will achieve worldwide communications (when the band is open), but a kilowatt at 1.8 MHz will not. A common incandescent lamp produces visible and infra-red light over a wide range of wavelengths (frequencies), so I am sure some tiny fraction of power exists at higher frequencies. How about uncoated fluorescent lamps, particularly the ultraviolet "black light" varieties? What other frequencies do they produce?

On the receiving end, common silicon photodiodes might only respond to wavelengths that go from about 1micron (300 THz) on the low end, but their response extends well into (and possibly beyond) the ultraviolet region on the high end. Are these somehow useful for detection of still higher frequencies? Certain crystals are commonly used as microwave mixers. Are there any that occur in nature that can used to beat one light frequency against another with a resulting sum and difference? Many minerals glow (fluoresce) in the presence of ultraviolet light. Can they somehow be used as detectors? Again, who really knows? Only by experimentation (and thinking well "outside of the box") can one possibly even hope to find out.

All of this is "preaching" is really intended to try to make you realize that there is a whole world of possibilities beyond the simple one or two I have mentioned. As amateur radio operators, you already are familiar with experimentation in conventional ways when "tinkering" with your station. Use your imagination, try to think "outside the box," and perhaps you will be rewarded with a unique technique or even an "earth shaking" discovery. Always remember that when the 22nd century historians write about the previous 100 years, there will be many people alive and well today who will have contributed to the state of the technology at that time. Maybe you can be one of them!

73, Irwin, WA2NDM

*c/o CQ magazine

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BY FREDERICK O. MAIA,* W5YI

FCC Denies Three Petitions to Change Station ID Rules

" . . . the requests are unnecessary, and do not warrant further consideration . . . " (FCC Order)

On July 9, 2007, the FCC denied and dismissed three Petitions for Rulemaking that would have changed the way stations in the Amateur Service identify themselves.

Two of the petitions requested that the time interval between required identification announcements be changed. A third petition filed by the Quarter Century Wireless Association wanted certain combinations of letters reserved for use by current or former members of the armed forces when identifying their amateur service stations.

The FCC ruled in a five-page Order that "Because the petitioners seek to amend the rules to permit activity that the current rules already permit, or do not present sufficient evidence to justify altering the current rules, we are dismissing all three petitions."

On Monday, October 30, 2006, the FCC accepted two Petitions for Rulemaking proposing amendments to Section 97.119 (Station Identification), assigned them file numbers RM-11346 and RM-11347, and requested preliminary public comments. The QCWA petition was never assigned a rulemaking number or put on *Public Notice*—a routine procedure when the FCC believes a proposal lacks merit.

The Section 97.119(a) Station Identification rule requires an amateur station to ". . . transmit its assigned call sign on its transmitting channel at the end of each communication, and at least every 10 minutes during a communication, for the purpose of clearly making the source of the transmissions from the station known to those receiving the transmissions."

RM-11346

RM-11346 was filed by Murray Green, K3BEQ (Extra Class of Cheverly, MD), nearly two years ago, on December 9, 2005. Green wanted the FCC to amend the station ID rules " . . . to require Amateur Radio station identification at the end of each communication and at least every thirty minutes." Green believes that identifying every 30 minutes " . . . would harmonize the Amateur Radio Service station identification requirement with that of other radio services and should not hinder the Commission's enforcement of Amateur Radio regulations." He feels the ten-minute requirement " . . . perhaps out of an abundance of caution" has resulted in an " . . . over-identification by Amateur Radio operators."

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FCC Decision

Green's petition received approximately 100 comments. The FCC said that the overwhelming majority believe that " . . . the current rule properly balances the burden of requiring the station to transmit its call sign with the convenience of those receiving the transmissions to determine the identity of the station making the transmission." The FCC noted that the station identification rules have "been in effect for over fifty years" and are "not burdensome. . . . We also agree that a thirty-minute interval would be too long, because interference and variations in propagation may not permit continuous reception of a specific station for thirty minutes."

RM-11347

RM-11347, filed by Glen Zook, K9STH (Extra Class of Richardson, TX), on May 19, 2006, wanted the ID rule amended so that it more closely resembled the old FCC Section §12.82(a) "Transmission of call signs" rule. Back in the 1950s the FCC's Amateur Radio Service rules were under Part 12 before being moved to Part 97.

Zook contends the current rule requiring station identification at the end of a communication or every ten minutes can result in unidentified communications if the initial exchange takes less than ten minutes. "If the call sign is not given during the first transmission, then the station has, by definition, made an 'unidentified' transmission that is contrary to the provisions of 97.119(a)," Zook said in his petition.

He said previous FCC rules used to require that radio amateurs identify their station at the beginning and end of each single transmission. Under his proposal, multiple short transmissions (less than three minutes total duration) would not need to make an ending ID. Station identification would still be required every ten minutes during longer contacts.

He also wanted language in the rule to require that the station call sign be preceded by the words "this is" or "from" on voice, and that the call sign be preceded by the prosign "de" when operating CW.

Zook said, "The suggested rewording of Section §97.119(a) represents a minor, but important, change in the regulations concerning the Amateur Radio Service."

FCC Decision

Zook had argued in his petition that the station identification requirement should be tightened because "too many amateur radio operators . . . do not identify during their first transmission. In fact, a considerable number of these operators never seem to get around to identifying even after ten minutes of operation and a 'fair' number never

seem to get around to giving their call sign at all."

The FCC agreed with most commenters who said that increasing the frequency of station identification as Zook proposed " . . . is unnecessary and would be burdensome," adding that it ". . .also could lead to congestion, such as during a contest when many amateur operators are trying to contact a distant station. Moreover, the petition does not demonstrate that so revising the station identification requirement would address the primary concern expressed by the petitioner—that many amateur radio operators do not identify their station timely or at all."

The FCC agreed with those who said "the problem of station operators not complying with the present rule is better addressed by enforcement of the present rule, rather than a rule change."

"Finally, we note that while the current rule does not require identification at the beginning of a communication, many amateur stations already routinely begin a transmission with their call sign."

The QCWA Proposal

The Quarter Century Wireless Association petition was filed on December 1, 2006. The QCWA asked that the Part 97 Rules be amended to "Provide for Recognition of Amateur Operators Who Have Served in the United States Military." They asked that AF, AA, NA, NM, and ACG be reserved for use by current or honorably discharged members of the United States Air Forces—Army, Navy, Marine Corps, and Coast Guard. ACG was selected for the Coast Guard rather than CG, because the rules do not permit a self-assigned indicator if it conflicts with any indicator specified in the FCC rules or with a prefix assigned to another country. (The ITU [International Telecommunication Union] country prefix CG is assigned to Canada.)

In support of this proposal, the QCWA noted that many amateur radio operators are serving or have served in the United States military, or became amateur radio operators during or following their military training in communications and electronics. The QCWA says that FCC-specified indicators would afford those individuals the option to advise others of their military service when they identify their amateur stations on the air.

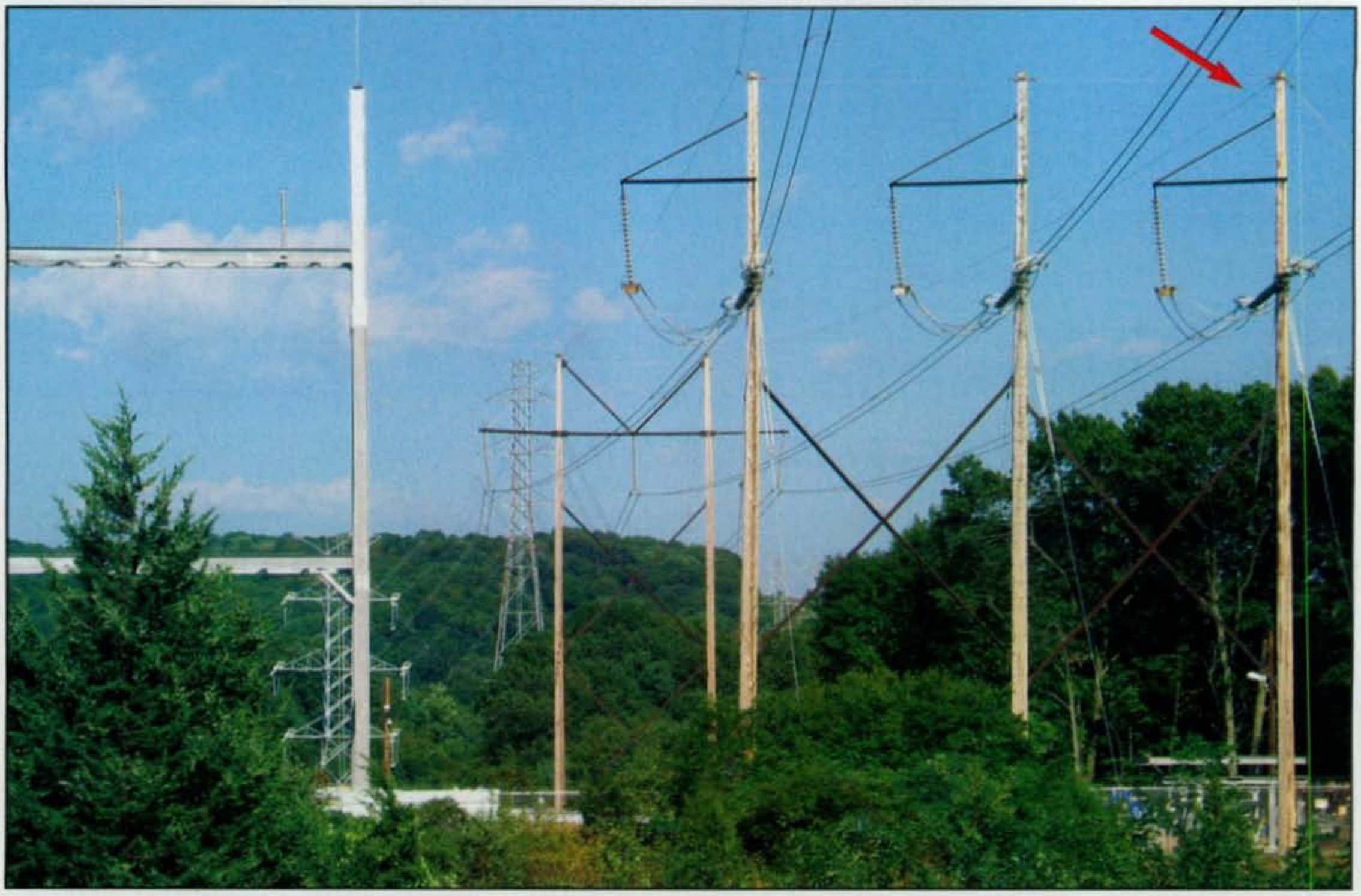
FCC Decision

The Commission said it was not persuaded that proposing the requested rule change is warranted. "Amateur radio operators who are current or honorably discharged members of the United States military already are permitted to identify their stations in the way QCWA suggests," the FCC noted.

Section 97.119(c) provides that "One or more indicators may be included with the call sign. Each indicator must be separated from the call sign by the slant mark (/) or by any suitable word that denotes the slant mark. If an indicator is self-assigned, it must be included before, after, or both before and after, the call sign. No self-assigned indicator may conflict with any other indicator specified by the FCC rules or with any prefix assigned to another country."

"Since the indicators QCWA suggests do not conflict, they may be included as an indicator with a presently assigned amateur station call sign," the FCC said. The Commission dismissed the QCWA Petition, concluding that a rule change is unnecessary.

73, Fred, W5YI



"My" pole in its original position, on the far right in this photo, holding up electric wires. (Photos by Rogene Gillmor)

This article brings to mind two well-worn sayings: "if it sounds too good to be true, it probably is," and TANSTAAFL, "there ain't no such thing as a free lunch." Herewith, W1FK's cautionary tale of the hazards, and costs, of a "free" utility pole mast.

Woodpeckers, XYLs, and Tall Wooden Antenna Masts

BY STEW GILLMOR,* W1FK

Fifty years ago I had a steel tower. I had been a ham (WØODE) for about two years when we moved from rural Grandview, Missouri to Kansas City during the summer before my junior year in high school. We traded 30 farm acres for a quarter-acre city lot. I pressed my dad for a tower, since we no longer had much space for horizontal wires. I got a used Rohn 35-foot tower and used 3-element beams for 10 and 20 meters. It was a lot of fun, and I hung a large plywood Santa Claus with a blinking red nose on the tower at Christmas.

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However, while away at college at Stanford University, I began working around really big antennas (a farm of rhombics, 50 huge log periodics in an array, and various big dishes, including the beginnings of Stanford's 150-foot dish). I stayed at Stanford during the summers, and so put up for sale back home my tower, antennas, and ham rig (NC-183 receiver and Leo Meyerson's 435-watt Globe King transmitter).

Many years later, living in rural Connecticut, I put up some switchable 700-foot Vee beams 60 feet high in a large maple tree down through my acres of woods. These worked fine for about ten years until storms and a hurricane brought down the wires.

Getting ready for retirement, a year or so ago I approached my XYL about a tower: "Gee, honey, you wouldn't see much of the tower out in our back field," I said innocently. One hundred feet of good, used Rohn 45 lay in a friend's back yard only two miles away. Another guy only four miles from me offered me for $2000 an unused commercial 140-foot steel tower, 5 feet apart at the base with legs of 2-inch solid steel. He naively had thought he could put it up on his ridge-line and lease it for cell-phone use (!) and now he was stuck with it. It needed about 30 yards of concrete for the base.

After serious consultation with my XYL, it seemed that the idea of an aluminum or steel tower plus guy wires would not provide the proper esthetic background for our garden and fields, so I dropped the plan. But what about a *wooden* pole? Stanford University had used dozens of wooden utility poles for numerous antenna sites. Maybe I could get a tall pole? I called around the local phone and power companies and was given the brush-off; for liability reasons they won't talk with anyone about disposing of used power poles to private individuals. All old poles, they told me, are contracted to environmental hazard companies, sawed into 4-foot lengths, and disposed of in hazardous-waste dumps.

However, I continued to inquire. Friends formerly in the field radio installation business pointed me to a large electrical contracting firm that does work with utility companies. Well, they said, they did the electrical work on tall poles, but they left the pole-setting and removal to another firm that specialized in such work throughout New England. A secret to my progress was getting key names to ask for—e.g., "Bob Helmsley told me to ask for Butch King." When I finally got Butch King on the phone, he said, "Yes, we have many new poles, but it costs an awful lot to buy a tall pole and a lot to have a six-man crew haul it 100 miles and install it. Still, *if* you happen to live in Haddam, Connecticut, we're taking down five tall poles there in a few weeks."

"But I *do* live in Haddam, Connecticut," I replied.

King said, "The poles in Haddam now actually belong to the ABC Electrical Company, but since they have to pay to have them hauled away and sawed up, they probably would give you a pole if I asked for you…"

Now it was back to the XYL. "Honey, the wooden pole would look just like the maples and oaks we have in the woods, except that it wouldn't have any leaves. I'll promise to put the pole behind the sassafras tree in back of the garden and you won't even see it. There won't be any guy wires."

Setting the climbing spikes. I put them in every 12 inches and kind of spiraled them up the pole, since it is too wide for anyone to climb straight up.

Time to Get the Permits

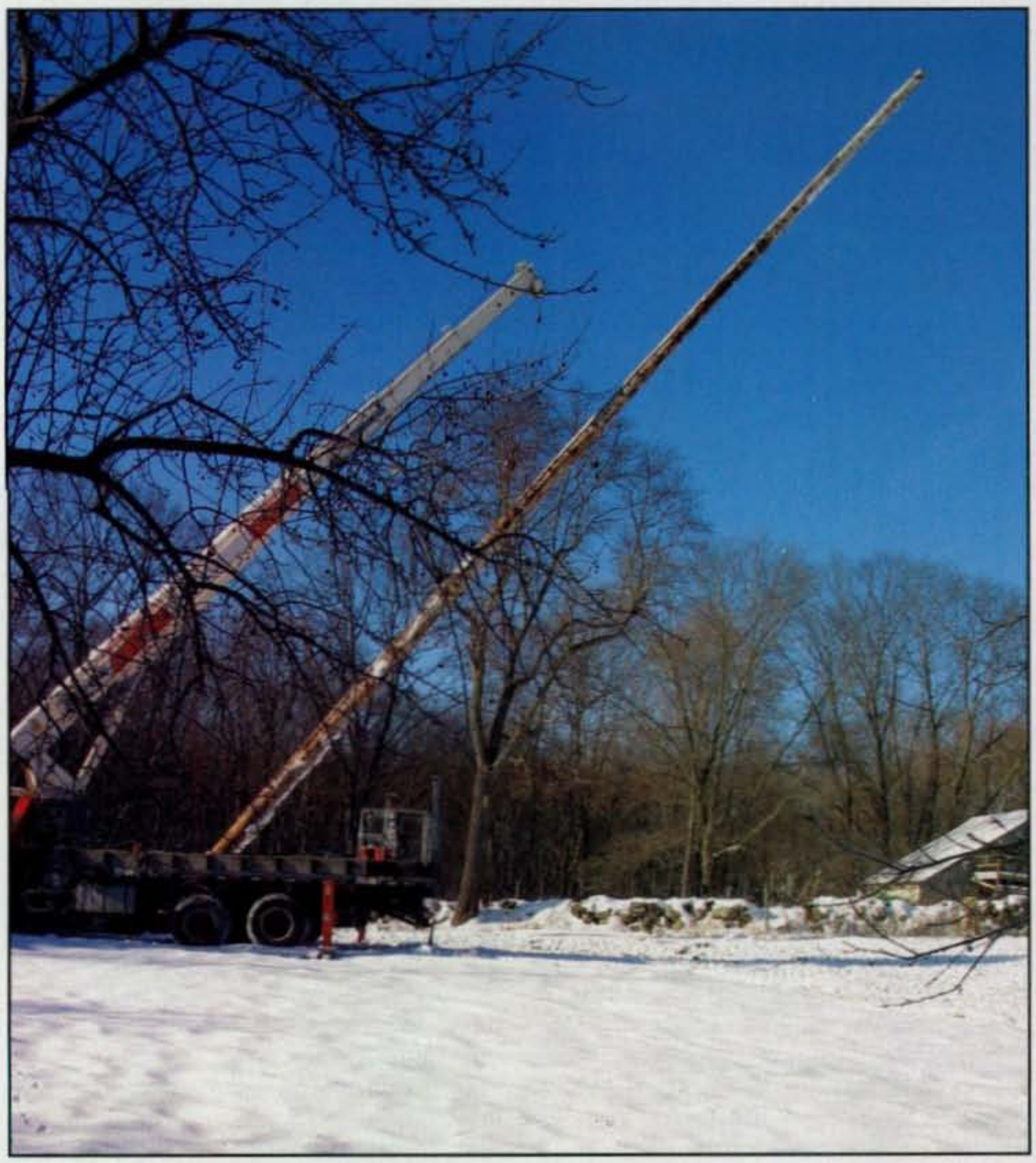
The pole-setting engineers told me that they were extremely busy moving their crews back and forth to Mississippi on an emergency basis after Hurricane Katrina and that their schedule in Connecticut would be off and on.

Next I had to look into permits. I needed to get permits and approvals from the town zoning and wetlands offices. Zoning wanted a detailed map showing the distance from the pole site to my property lines and distance to wetlands. My nearest neighbor or town road was more than 200 feet from the proposed site of the pole. The pole would be 90 feet from my barn and about 200 feet from my house. In the permit application, I asked for a 70- to 80-foot pole as erected. I next had to get a building permit, since the building inspector told me that I was erecting a *structure* and that any structure in the town more than 8 feet in height needed a building permit. I also needed to hire a registered Professional Engineer to certify that the pole was correctly installed.

The pole-setting engineers next advised me that the pole was a class 1 or class H1 western red-cedar pole 95 feet in length. Their rule of thumb for pole-setting depth is 10% of the pole length plus 2 feet. Therefore, this 95-foot pole would be placed about 11 or 12 feet deep. They told me they were probably going to saw off the pole at its base, and I expected to get a pole section of about 83 feet, which after burial would give me an above-ground segment of 72 feet. Poles are rated from small-size class 10 down to large class 1, then continue classified as very large "H" class poles. A class 1 or H1 pole is a *big* pole. For a 95- or 100-foot pole, the diameter would be 26 or 27 inches at the base and 9 inches at the top. The pole would be required to support a net horizontal pull of 1500 lbs. at the top.

As we got closer to a possible date for removing the pole and getting it to my field, I learned that one must also get a permit from the State Department of Transportation to move a tall pole along the highway. The permit was granted, for a specified three-day period. I also had to get approval of the State Police for the pole-setting engineers to move the pole and their equipment through our town at an adequate speed and with proper warning lights. We also had to "call before you dig" to ensure that we were not digging near gas, electric, or sewer lines, even though no such things exist in my rural

Pulling the crane out of the frozen mud. (See text for details.)



The crane (now out of the mud) lifts the 100-foot pole into position.

part of town. Since my property is near to but not within sight of the Connecticut River from the top of the proposed pole, I did *not* need to go before a river beautification board.

I would advise any ham to consult town and/or county and state officials about any needed permits before spending a single dollar. The ARRL can also advise you on publications concerning planning and obtaining permits for antenna towers and masts.

We considered three possible routes to allow the pole to go around corners and move up grades in my wooded, hilly rural setting. I received a surprise phone call one day, shortly before the planned move: "We've decided to pull the pole, instead of cutting it off at the base. Thus, you'll get a 95-foot pole instead of an 83-foot section." Then, just before moving the pole to my house, they told me that the pole was buried unusually deep and it was not a 95-foot but a 100-foot pole.

I didn't relish climbing a pole without steel-spike steps, so I called around to various sources and eventually came up with the climbing spikes. These are steel spikes 10 inches in length and 5/8 inch diameter. Old timers bragged that they drove these into poles while climbing the poles. Whether or not this was true, I planned to drill pilot holes and hammer the spikes into the pole while it was on the ground.

I ordered and spread about 60 yards of trap rock from the road into my swampy field to make it easier for the

The pole, now in place, is admired from a distance.

One of the woodpecker holes, halfway up the pole!

100-foot crane truck to get the pole across the field and to the site. The six-man crew and the pole with its two trailers arrived on a cold day (about 20° F) and soon the crane got stuck in my field. They left the pole, retreated, and said they would return in two days with a huge backhoe and bulldozer. The formerly buried portion of the pole was in beautiful shape, looking as if new, but there were two bends nearer the top, probably from its being loaded structurally with cross arms for so many years.

I drilled and drove 82 spikes into the pole. I had measured the vertical distances between steps on poles around town and found 14 inches a common distance. However, I placed the steps alternately 12 inches apart so that it would be easier for me to climb. I also realized that the pole was so big that nobody could climb it if the spikes were installed exactly halfway around the pole diameter. I began with the spikes halfway around the diameter at the top of the pole. This amounted to about 18 inches horizontal separation. I then continued the 18-inch horizontal separation down the pole. About 30 feet from the top of the pole, the steps begin to form a "vee," so that by the bottom 30 feet of the pole, the spikes are about 45 degrees apart.

Two days later the pole-setting engineers arrived again, towed the pole and the crane to the spot, and began to dig. At first they told me they would use a 36-inch auger to dig the hole, but in fact they used the big backhoe and bulldozer. At 11 1/2 feet down, they struck a ledge, dug around a little more, and got to 12 feet. The foreman said, "That's it. This pole isn't going to go anywhere sitting on this ledge."

"Pecker Patch"

Within three hours they were gone. I had a pole 88 feet to the top, complete with two decided bends and a large pileated woodpecker hole. *Woodpecker hole?* Yes, that was a new angle. Just before they delivered the pole, they told me that they had found a woodpecker hole and that I would have to patch it with "pecker patch." I went on-line and searched for articles about woodpecker damage to utility poles. It's a big subject. I located three firms that sell special epoxy mixes to repair woodpecker damage, as well as fiberglass sheets to wrap around poles.

There are 22 species of woodpecker in the United States and at least four species in New England. Three are 6 to 9 inches in length (hairy, downy, and red-bellied woodpeckers). The fourth, the pileated woodpecker, is up to 19 inches long with a 2-inch bill, and can chew and peck a loaf-of-bread size hole in a pole in a few hours! To fix this damage, you can cover the hole with cardboard or sheet metal; drill a 1- to 1 1/2-inch hole from above, angled downward, and use a funnel or special caulking gun to force an epoxy mix down into the woodpecker cavity. I chose an alternate method: Cover part of the hole with cardboard, fill part of the hole, then nail more cardboard over the opening and proceed upwards with the epoxy mix. I purchased the epoxy from the firm of Atlas Minerals and Chemicals and their product is Atlas Epoxy Pole Filler.[1] It cost me $80 plus an additional $45 shipping charge from Pennsylvania due to the 35-lb. weight of the silicate aggregate and because the stuff (resin, hardener, plus aggregate) must be shipped as hazardous materials. Not surprisingly, the OSHA safety warning booklets in the delivered package weighed almost as much as the product. Thus, $125 gave me enough epoxy and aggregate to fill one-third of a cubic foot.

During the winter, I had discovered a second, new pileated woodpecker hole. I climbed to the 58-foot level on the pole and examined the cavity. Pileated woodpeckers make deep *nesting* cavities about 4 by 6 inches at the opening by 8 inches deep and proceeding down perhaps 18 inches into the pole. Here they lay their eggs and raise the young. They also make *roosting* cavities about 4 by 6 by 8 inches. These are used only as resting places, and each pair makes at least two roosting cavities. I was puzzled. Why did the pole stand in an electrical substation site in my town for 35 years, receiving only one roosting cavity, and yet have a second within weeks after the pole was planted in my field?

More research, and I learned that pileated woodpeckers prefer a roosting tall tree set apart from the woods, and perhaps my tall pole, about 30–50 yards from my 60- to 70-foot tall maples and oaks, looked just right to them. Plus, cedar is their favorite wood.

N2XN, wisely wearing a hardhat, holds my harness rope as I start patching one of the woodpecker holes.

A bucket full of special epoxy was needed to patch the holes, but the woodpeckers came back and made new ones anyway!

On a warmish day in March, my XYL and ham friend N2XN carefully mixed the epoxy-aggregate compound and pulled it up to me at the 55- to 58-foot level. I wore a full body safety harness and used two 5000-lb. test lanyards to secure myself to the pole. I had climbed the pole a couple of times to get the "feel" of things, and we rehearsed our plan on the ground. Still, at that height, hanging from my harness with a bucket of oozing epoxy, shingle nails, a trowel, a hammer, pieces of cardboard, rubber gloves, safety glasses, duct tape, and plenty of curse words, I managed to fill holes number one and two in two sessions spread over three hours. I got better at the job after the first hole patch. If the epoxy mix isn't correct for a given temperature range, it doesn't set very fast, or else it sets rather quickly. It sets optimally in one to four hours at between 70° and 80° F. This product has to bond well with wood, not absorb water, and have sufficient tensile (1900 psi), compressive (8000 psi), and flexural strength (4000 psi).

They Don't Give Up Easily...

An hour after I finished the second hole and returned to the ground, I saw another pileated woodpecker on the pole at the exact same spot, pecking around the filled hole. The next day there was a third hole at about the same level! I had enough epoxy left to fill the third hole, but this problem was becoming serious. I filled some minor cracks and a couple of surface holes with other epoxy, using caulking tubes that I purchased at a local home supply store.

By the way, having woodpeckers does not necessarily mean your pole has bugs (which they dig out and eat). The pole may be sound as a dollar, no insects inside. The woodpeckers may simply use the pole to make roosting cavities and/or for mating "drumming" calls during the February to May mating and nesting season.

Lots of methods to repel woodpeckers have been tried by utility companies and agricultural research universities.[2] They have painted poles different colors. Pileated woodpeckers like painted poles. Researchers have coated poles in creosote and in copper preservative compounds. This doesn't bother the woodpeckers. Researchers have used noise cannons, and fake owls and hawks. The woodpeckers learn quickly not to worry. They have coated the poles in horrible sticky substances. This discourages the woodpeckers but also makes the poles impossible to climb by humans. Thin aluminum or sheet metal and wire "hardware cloth" have

been applied to the poles. Woodpeckers have penetrated the metal, including the hardware cloth.

The only really effective method of keeping pileated woodpeckers from poles is illegal. It is an offense to hurt or kill woodpeckers or remove woodpecker eggs from nests anywhere in the U.S. unless one has a permit from the U.S. Fish and Wildlife Service. One can scare woodpeckers with noise or use other devices such as described above, but there is no guaranteed remedy. Around the country utility companies spend millions and millions of dollars each year repairing woodpecker damage to wooden utility poles. Netting hanging down around the pole and very heavy-gauge hardware cloth might be successful remedies.

What was I going to do? I next purchased quarter-inch mesh, 19-gauge wire hardware cloth which I applied around the pole from about the 45- to the 67-foot level, hoping it might discourage the woodpeckers. In early June I again encountered a pileated pecking at the 75-foot level, several feet above my hardware cloth shield. I scared him off with blanks. Pileated woodpeckers can peck through 19-gauge wire mesh, but I am not sure I can physically install heavier gauge hardware cloth without using a cherry-picker truck. Perhaps if my property were not mostly woods, the pole would be less attractive. My initial worry about a tall wooden power pole was that it might rot at the ground line, which is a common fault. However, my pole is sound.

I have stainless marine pulleys at the top with 1700-pound test UV-protected ropes to haul wire antennas up and down. I will work on lightning protection improvement and on installing a 160-meter vertical and getting up some Vee beams. I have had a 270-foot dipole fixed on the pole since the day it was erected. It's a great view from the top, but the pole does sway in the wind, so climbers should not be afraid of heights. Putting up the Vee beams will require me to cut some trees from the routes of the wires. This might cause an XYL problem, but the conscientious ham will simply explain that the cleared paths are to make woodland nature paths....

In a similar vein, on the day of the pole installation the XYL immediately noted, "Honey, the pole is twice as high as the sassafras tree! The tree doesn't hide the pole." The ham's response, "Yes, dear, but the sassafras tree will continue to grow, whereas the pole won't get any taller."

Yes, the wooden pole was free, but I spent $1000 on trap rock, and $2500 for the pole setting engineers, $155 for assorted epoxy, $100 for hardware cloth, and about $100 for permits and $100 for the Professional Engineer. Let's see ... how much is that per QSO so far? And what about the woodpeckers next year?

Notes

1. <http://www.atlasmin.com/products>
2. For a good article with bibliography see Richard E. Harness and Eric L. Walters, "Knock on Wood: Woodpeckers and Utility Pole Damage," *IEEE Industry Applications Magazine,* March/April 2005, pp. 68–73. Also at <http://www.dartmouth.edu/~ewalters/harnesswalters2005.pdf>.

It's been several months since W1FK submitted this article. During that time, he's put up a 100-meter (300-foot) Vee-beam and a full-wave 80-meter dipole and is working on an array of switchable Vee-beams. He's also working on a matching network to join the open-wire feedline at the bottom of the pole to the 300-foot length of hardline coax running to his shack.

"The XYL doesn't like the idea of open wire lines running in the air all along her garden and the back yard," Stew reports, "so buried coax and coax hidden by the stone wall is my easiest solution."

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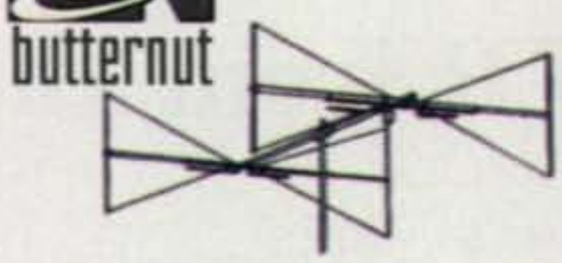

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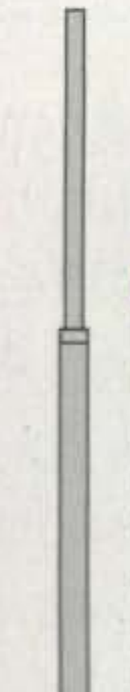

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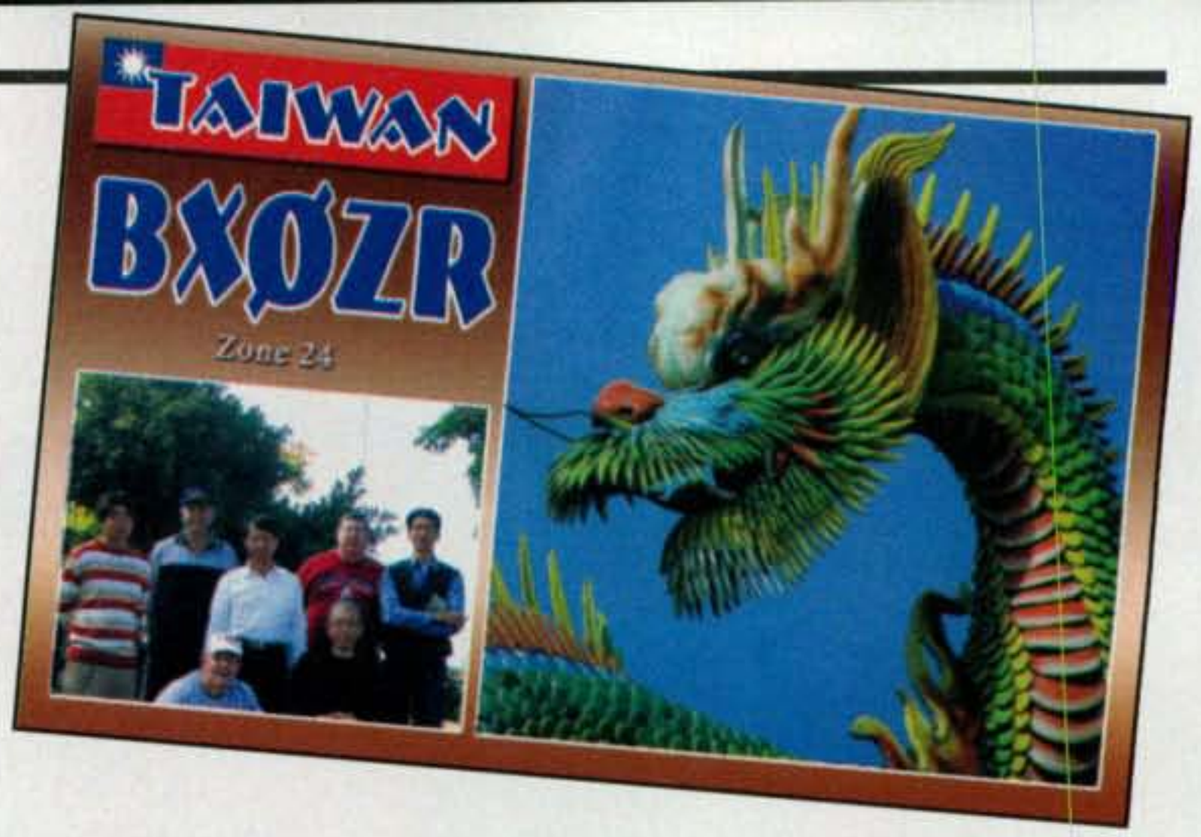
Taiwan is known as the "friendly island," but it hasn't been an easy place for DXers to contact on 80 or 160 meters. A group of low-band DXers took to the air in January to ease that situation, and their main obstacle was a "dragon."



The DXers and the Dragon

Operating BXØZR from Taiwan

BY RANDY SCHAAF,* W9ZR

As Northwest Airlines flight 69 lifted off the ground in Detroit bound for Taipei, Taiwan, I could not help but be a bit apprehensive about our DXpedition plans. Since our primary goal was long-haul DX contacts on the low-frequency bands (40, 80, and 160 meters), we had very demanding requirements for the location of our operation. For many months I had been in contact with Paul Pai, BV4FH, in an effort to find a location where we would have room for at least one tall vertical as well as multiple Beverage receiving antennas, each of which would need to be at least 500 feet long. In a densely populated country such as Taiwan, such a location is not easy to find. We hoped that the location Paul had found would meet our needs.

In April 2000 I was a member of the team that activated Pratas Island, BQ9P, and it was there where I first met Paul. In addition to being the lead organizer of all of the BQ9P operations, Paul is a very enthusiastic supporter of ham radio in Taiwan. This includes various IOTA (Islands On The Air) operations as well as special events within the country. At that time I mentioned to Paul that BV contacts on the low bands were few and far between, particularly with North and South America. He told me that the way to remedy the situation was to mount a DXpedition with low-band QSOs as the

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The BXØZR station and antenna farm. Overall, the antennas included an 80-foot tall Titanex vertical for 80- and 160-meter transmitting (not visible in this photo), two Beverages and a dipole for low-band receiving, 2-element vertical beams for 40 and 30 meters, a 3-element monobander for 20, and a Force 12 Yagi for 10, 12, 15, 17, and 20 meters. (Photos courtesy of the author)

The 80-foot high Titanex 80/160-meter vertical, surrounded by salt water, was a superb transmitting antenna.

goal and that he would be happy to assist. As low-band DXing has been my primary area of interest for many years, a seed had been planted.

Fast forward to 2006 and a chance QSO with Paul on 20 meters. I asked him if he remembered our earlier conversation and if he thought he could find a suitable QTH that would meet our special low-band requirements. He went to work on the project, and after many e-mail exchanges and telephone conversations he informed me that he had found a great location. In fact, he said, it was large enough for many antennas and multiple stations. The scope of the project thus was about to change.

In order to cover the low bands during all of the hours of darkness, at least two operators would be required. I contacted George Taft, W8UVZ, to see if he was interested, as he loves low-band DXing as well, and I was not surprised when he accepted. Steve Bolia, N8BJQ, was able to break away from his busy work schedule to become the third U.S. member of the team. Paul recruited Ko, BV6HJ, and Rex, BV6GU (now BX6AP), to round out our group. The trip was scheduled for January 2007.

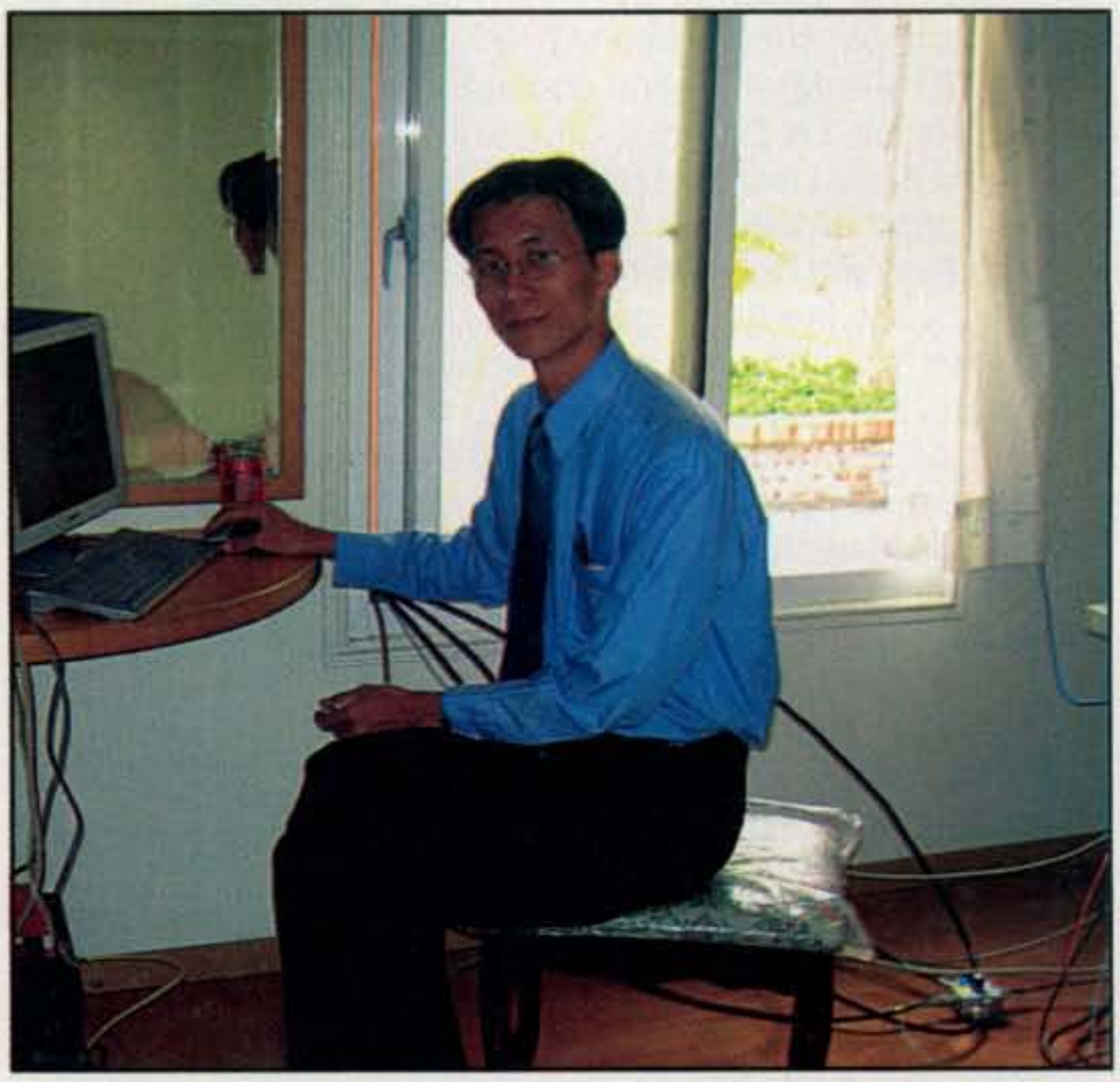
Our flight, while very long at just over 20 hours, was uneventful, and we arrived in Taipei on Saturday night, January 6th and sailed through customs. Paul had arranged for a large van to take us and our mountain of luggage to a hotel in Fen Yuan City, where his home is located. The next morning we had breakfast with Paul and his lovely wife Christine, and we then were on our way for the three-hour drive to our destination, Tainan, in southwestern Taiwan, is a city of over 250,000 people, famous for its ancient and elaborate

Paul, BV4FH, and Ko, BV6HJ, were fantastic hosts. This photo was taken at a banquet at the conclusion of the BXØZR operation.

Buddhist temples. It is located on the coast of the Taiwan Straits, the body of water that separates mainland China and Taiwan.

Our home for the next 14 days was to be the Shi Nan Chun Resort Fishing Village located just outside of Tainan. This resort is comprised of many large salt-water ponds and is just a stone's throw away from the sea coast. January is in the resort's slow season, and since they had very few visitors, the owner gave us permission to install antennas wherever we wanted. In addition, there was a separate building with four rooms that would be perfect for our needs—two for operating and two for sleeping. Paul's choice for our QTH was perfect!

That afternoon we were treated to an elaborate welcoming banquet by the local operators and some of their friends. The food was outstanding (mostly seafood, of course, being in a fishing village), although we were dragging a bit by the



Rex, BV6GU, our computer guru, installed a high-speed internet link at our rural location.

The author at the 80/160-meter station. The box of Dots candy was, we're certain, an essential part of the operation, perhaps to help make all the low-band QSOs a little sweeter!

George, W8UVZ, at work at the 80/160-meter station. A second station covered all of the higher bands from 40–10 meters. (You can tell these guys are low-band DXers; they didn't even take any pictures of the 40–10 meter station!—ed.)

end, especially after the combination of jet lag with a few mid-afternoon cocktails. However, once we got back to the fish farm and started to set up, the adrenaline kicked in and we immediately perked up. In fact, we went the next 36 hours with virtually no sleep. With the assistance of Ko, BV6HJ, and Rex, BV6GU, we installed a Sigma vertical for 80, a 2-element 40-meter beam, and a Force 12 beam for 10 through 20 meters. In addition, a 30/40-meter wire vertical was installed, along with a 600-foot Beverage receiving antenna. We had problems erecting the Titanex 80/160 vertical, so that project was postponed until the next day. Most of this antenna work was done in the dark! BV6HJ and his helpful friends installed all of these antennas with machine-like efficiency and precision. It was exciting just watching them make fast work of these projects. While they completed the antenna installation we began to set up our operating positions. We were on the air from January 7–21 as BXØZR.

The 80/160-meter station consisted of a Yaesu FT-1000D transceiver and a Dentron Clipperton L amplifier, while the other bands and modes were handled with an ICOM IC-756 Pro and another Dentron Clipperton L. We had bandpass filters, but they did not eliminate the station intermod problem, and we found it very difficult to run both stations simultaneously. We suspected a problem with the AC wiring in the building, but we were never able to track down the problem. As a result, for most of the operation only one station at a time was actually on the air.

As the days went by we improved our antenna situation and ended up with the following lineup for most of the operation:

80/160 meters: Titanex vertical, 80 feet tall
40 meters: 2-element beam, vertical
30 meters: 2-element beam, vertical
20 meters: 3-element monobander
10 through 20 meters: Force 12 Yagi
Three Beverages for receiving, each 600 feet long
160-meter dipole for receiving on 80 and 160 meters, 15 feet high

Hitting the Airwaves

It took us three tries to get the Titanex vertical installed, but when we did, it proved to be a killer transmit antenna on 80

Steve, N8BJQ, and George, W8UVZ, enjoying lunch. It's fish, of course! (Remember, the group was operating from the Shi Nan Chun Resort Fishing *Village.)*

and 160 meters. In fact, it was sometimes better than our receiving antennas. I am sure that it was frustrating to many callers to hear us so well and not be able to make a QSO. However, it must be remembered that the base of the vertical was only a few feet away from a perfect salt-water ground plane, and its high efficiency meant that we would be heard well. We had some power-line noise at our location, but we efficiently had installed Beverages that were reasonably quiet. We tried receive loops and pennants as well, but a low 160-meter dipole and Beverages were always superior. There were many days when we could hear signals right at

the noise level, but try as we might, we just could not pull out all of the callsigns.

There were pleasant surprises as well. For example, just after the Titanex was installed late on the second day of our operation, I sat down to a very quiet 160-meter band and called CQ, expecting to pull some weak signals out of the noise. I could not believe my ears when the band literally seemed to explode with hundreds of European signals! Over the next three hours more than 350 lucky stations made it into the log. Conditions were incredible and packet reports from Europe indicated that we were very loud. I thought that this was a great harbinger of things to come and was sure that we would have equal success to North America in the days ahead. However, the best laid plans...

Enter the Dragon

One of our greatest fears was that the military radar/jammer originating from mainland China would wipe out 160 meters for us. This has been a huge problem for Asian 160-meter DXers for a few years, and it seems to come and go unpredictably. This jammer, nicknamed "The Dragon," is extremely loud and hearing weak signals through it is impossible. Therefore, if it was transmitting, we were out of business on 160. It was also a problem on 40 meters, but it was much more intermittent there. Up until the time of our operation it had been a relatively minor problem for several weeks.

After two days of mediocre conditions on 160 and only sporadic interference from The Dragon, we still had not had much success to North America and had only worked a relatively few additional Europeans. Then it happened: The Dragon came on and was there continuously for the rest of our operation. While that was a huge disappointment for us and for those who had been trying to work us on 160, it did allow us to concentrate on 40 and 80 meters, where BV was also in demand. We had well over 2000 QSOs on 80 meters, with over 500 of those in North America, including lots of stations in the eastern half of the USA. Unfortunately, our total QSO count on 160 meters was just over 600, with only eight North American contacts, well below our expectations. Without The Dragon's interference, I am sure the 80/160 QSO totals would have been similar. We were very successful on RTTY and the WARC bands, with several thousand QSOs on those bands and modes. Steve, N8BJQ, handled most of that load and did a yeoman's job.

All too soon it was time to take down the antennas and prepare for the long journey back home.

Summary

We cannot say enough about the outstanding hospitality shown to us by our BV friends. They went out of their way at every turn to ensure that we had whatever we needed to make our operation a success. The logistics for an undertaking of this magnitude are considerable, and without their assistance it would not have been possible.

We would also like to thank the CTARL (Taiwan's national ham radio organization) and Kenny Lin, BV2EW, its president, for the kindness that was shown to us the last night we were in Taiwan. We were honored to be their guests at a fantastic CTARL banquet in Taipei. We now know why Taiwan is nicknamed "The Friendly Island"!

public service

BY BOB JOSUWEIT,* WA3PZO

Summer Kept Hams Busy

Summer has come and gone. While some of us were traveling to our favorite vacation spots, many events happened in the area of public service. This month we'll take a look at some of those events and see how they may influence how we provide public service when all else fails.

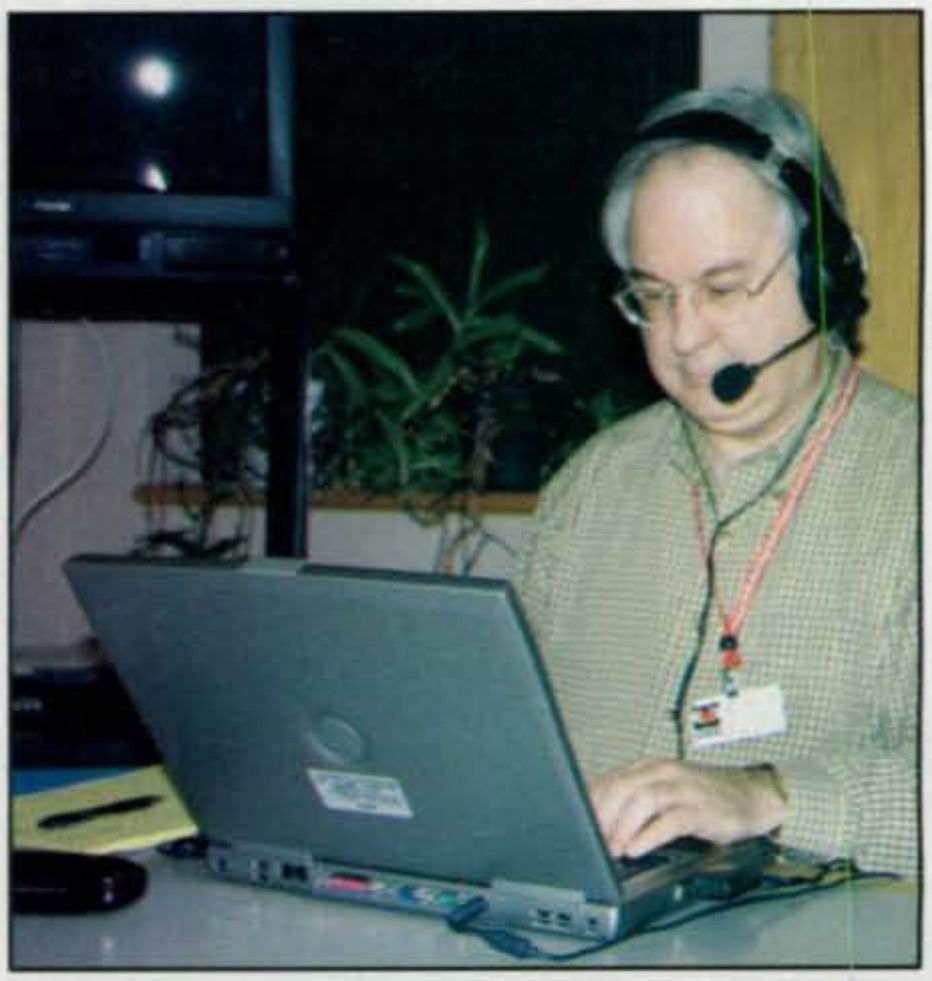
Red Cross Background Checks

For the past year we have been reporting on the Red Cross position requiring background checks for all volunteers and staff. The Red Cross is using a private company to conduct background checks. The consent form includes permission, without further consent from the volunteer, to conduct a consumer report and/or an investigative consumer report. The Federal Trade Commission and federal statutes define "investigative consumer reports" to include a mode-of-living check as well as certain credit checks. The Red Cross has been unwilling to accept background checks conducted by law enforcement agencies or others, since it would have to compare the methodologies of the company it is using with those of alternative background-check providers.

At the ARRL July Board of Directors meeting, Atlantic Division Director Bill Edgar, N3LLR, presented a report of the Ad Hoc Background Investigation Committee and explained the committee's recommendations for understanding and managing served agencies' requirements and the needs of amateur radio volunteers. The committee also decided that pursuing federally-recognized credentialing for amateur radio volunteers was critical to the ability of ARES (Amateur Radio Emergency Service) to function.

At the board meeting the directors recognized that "governmental agencies and public service agencies may need to verify identities of volunteers and establish that volunteers do not have a criminal background." The directors adopted the following resolution:

> Ideally, Amateur Radio emergency communications volunteers participating in ARRL-sponsored programs should not be required by served agencies to undergo background investigations of any kind. However, it is generally acceptable for a served agency to require these volunteers to undergo a criminal background check, preferably performed by a law-enforcement entity. It is not reasonable for a served agency to require these volunteers to consent to credit checks, mode of living investigations, or investigative consumer reports. In negotiating or renegotiating memoranda of understanding that commit the League to provide volunteer emergency communications support, the League must be assured that these volunteers will not be required by the partner organization to consent to credit investigations, mode of living investigations, or investigative consumer reports.



Dennis Dura, K2DCD, takes on an emergency management leadership role at the ARRL. (Photo courtesy of Lou Ruh, WX3I)

A board committee will continue to investigate "options for national identification and credentialing for ARES volunteers." As we go to press we're one month from the current Statement of Understanding between the ARRL and the American Red Cross expiring in mid-September. At this time it is unclear if the agreement will be renewed.

ARRL HQ Gets Prepared

The ARRL has hired Dennis Dura, K2DCD, as Emergency Preparedness and Response Manager. According to the League, Dura's major responsibilities will include the development and implementation of an organizational disaster response plan as well as a continuity operations plan, complete with supporting procedures and training. Integral to these plans are the recommendations of the National Emergency Response Planning Committee (NERPC) report.

The NERPC report said that a great deal of the ARRL's response to a Red Cross request for communications during the 2005 Gulf Coast hurricanes had to be improvised. It said that "needs were met, and improvisation is a valuable component of Amateur Radio's resource set, but the ARRL recognized that it is unsatisfactory for a national organization to rely on luck when preparedness is called for."

The NERPC said it is "extremely important that the ARRL have good working communications with national-level served agencies. Further, the

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

While needs were met, the ARRL recognized that it is unsatisfactory for a national organization to rely on luck when preparedness is called for in major disasters such as Katrina. (Photo courtesy of FEMA/ Marty Bahamonde)

ARRL should build additional relationships—with or without formal MOUs (Memoranda of Understanding)—with governmental agencies and charitable organizations active in disaster preparedness and relief work. This is important not only to facilitate effective operational cooperation when disasters happen, but also to maintain Amateur Radio's credibility as a peer among entities active in disaster preparedness."

The report said that ARRL management should assign a high priority to having persons on the staff whose outstanding qualifications in emergency communications and emergency management allow them not only to provide leadership and support for amateurs in the field, but also to interact as respected professionals with outside agencies and organizations. Dura will play an integral part in the management of the Amateur Radio Emergency Service (ARES) and in future negotiations with served agencies with whom the ARRL shares or creates Memoranda of Understanding.

"By instituting these base components for the organization, the emergency communications resources of Amateur Radio and the League will become truly disaster resilient on all fronts," Dura said. "Emergency communications cannot stand alone. As an organization, we must have disaster plans in place and know what we must do to continue operations when they are impacted. Without this, our support to the field will be lacking."

Dura is no stranger to disasters, with more than 26 years of experience in the emergency management field. He started as a volunteer coordinator in his home township's emergency management program and turned this experience and training into a consulting career, working on off-site emergency plans for nuclear power plants and the jurisdictions where they are sited around the country. At the same time, he joined the American Red Cross as a volunteer Disaster Consultant in New Jersey, leading to paid positions as Manager of Disaster Services in St. Louis, Director of Disaster Preparedness in Chicago, and a Disaster Preparedness Specialist in New Jersey.

After some years working in the non-governmental organization side of the field, he joined the New Jersey State Police, Office of Emergency Management. Dura progressed through the ranks in NJOEM and served in numerous positions such as Operations Officer and Hurricane Preparedness Officer. He was part of a group that developed the first Terrorism Plan for New Jersey prior to 9/11, specializing in mass care. As part of New Jersey's response to the 9/11 attack, he served on a specialized inter-governmental team to establish the Family Assistance Center at Liberty State Park.

Dura was also the Assistant State RACES Radio Officer and noted that emergency management officials in New Jersey are fully aware of amateur radio's potential. "We have proven our worth during (Hurricane) Floyd, the 9/11 attacks, numerous Delaware River floodings, Topoff III, SkyWarn, and other events too numerous to mention."

Another of Dura's duties at NJOEM was to serve as the SKYWARN Coordinator for the National Weather Service Philadelphia-Mount Holly (NJ) forecast office. In this role, he was able to obtain a grant to secure and install two National Oceanic and Atmospheric Administration All-Hazards Weather Radio transmitters for unserved areas of New Jersey. His work on this project resulted in the NWS Mark Trail Award in 2002. The award recognized the NJOEM for installing the two new NOAA Weather Radio transmitters which provide coverage for about 2-million residents. NJOEM also installed 3000 radio receivers in all school administration buildings.

Dura left NJOEM in 2003 to become the Deputy State Emergency Coordin-

ator for the New Jersey Department of Human Services. His focus included Community Emergency Response Teams, mass care, and business/continuity of operations.

More recently, he joined the VoIP (Voice over Internet Protocol) Hurricane Net as a net control operator in March 2006 and became the Assistant Director of Net Operations in May 2006. Dura's work with the VoIP Hurricane Net will continue in his new job at the ARRL.

Dura said he is excited to be working at ARRL Headquarters. "It is a tremendous opportunity to take my many years of emergency management experience and apply all of it to the ARRL. It wasn't a hard move [to the ARRL] at all—take the disaster experiences and meld them with a tremendous hobby…that ends up serving the nation and the world." Dura has already begun speaking at amateur radio conferences around the country.

Army MARS members provide a communication link between members of the Indiana National Guard and their children. (Photo courtesy of the Indiana National Guard)

Summer Camp

This past summer quite a few hams took time away from their own families to help keep children and parents in touch, as well as introduce Scouts to amateur radio. *(Also see "Take Your Ham [Station] to Camp" by KC2OOM elsewhere in this issue.—ed.)*

Many parents have gotten a letter from a child at camp. If you were passing the message via radio it might read something like: "Hello Muddah x hello Fadduh x Here I am at Camp Granada x Camp is very entertaining and they say we'll have some fun if it stops raining."

While the above message is based on Allan Sherman's 1963 pop hit spoofing life at a children's vacation camp, it does provide the basis for MARS and amateur radio operators to keep children in touch with their parents.

Youngsters of soldiers and airmen serving with the Indiana National Guard kept in contact with parents thanks to the Army MARS (Military Affiliate Radio System) Winlink Messaging System. MARS members provided real-life connections for some 200 boys and girls whose separation from family members had very special significance. One message went to a father in Iraq. Homesickness is often a camp experience problem, especially for children who have a parent in the service.

Capt. Jeff Hammer, N9NIC (MARS callsign AAR5WL), an Afghanistan veteran himself, set up his portable MARS station at the Indiana Guard's Family Program Youth Camp at Camp Atterbury, IN. He briefed each camper's family on sending a MARSgram. As in many summer programs, phone calls and e-mails were not allowed, yet the brief one-week stay allowed little time for exchanging letters. The MARSgram was Hammer's solution.

MARSgrams are free radio messages, like a telegram, that connect service personnel and their families and friends. Before e-mail and cell-phones, amateur radio operators in MARS handled hundreds of thousands of messages for troops in the Korean War, Vietnam, and the first Gulf War. The service is still available, although not frequently utilized.

Hammer said of his youth operation: "It succeeded beyond anybody's expectations. In less than a week the station processed over 240 messages. The messages are all kept private, of course," he said, "but I can say that there were many saying how exciting the camp was and also quite a few expressing fear of being away from their family for the first time."

Using a special form devised by Hammer, the children handed in their written messages, which he transmitted digitally from his Kenwood TS-2000 transceiver into a Buddipole Deluxe portable antenna system.

Four strategically located operators—three from Army MARS and one from Air Force MARS—received the messages and forwarded them by phone or e-mail. Most produced replies from home within an average of 24 hours. Assisting were Dave Lucas, K9MSG (AAR5HY) of Indianapolis; Malcolm Lunsford, W9MAL (AAV5MK) of Merrillville; Harold Bell (AFA1IL); and the State Army MARS Director, Troy Harrison, KC9E (AAA5IN) of Michigan City.

"One particular camper will remain in my mind for a long time," Hammer said. "It was her first year at camp and she was the youngest we allow—nine years old. The MARS station must have processed more than 20 messages for this young lady. The most remarkable was the last MARSgram she sent after being ready to give up on many occasions. She said she felt homesick "but I am sticking it out."

In, fact she "graduated" with honors as Most Improved Female Camper, he said. "As the campers grow up we hope that they will remember how volunteer emergency communicators are ready, willing, and able to support our military families here at home and around the world," Hammer concluded.

Scout Camp

Many Scout leaders are also ham radio operators, and Scout camp offers opportunities to introduce ham radio to the scouts as well as teach a Radio Merit Badge course. Stanton, Delaware, Boy

Scout Troop 30 ventured to Camp Ockanickon north of Philadelphia for a week in late July.

The troop also has a radio club, KB3NCC, made up of boys and adults. While they were in camp they stayed in touch on a 2-meter simplex frequency. At camp they met up with Radio Merit Badge instructor Eric Deutchman, WB2LMW. According to Troop Leader Steve Shearer, WB3LGC, "Eric spotted our HTs along with those of the leaders of Troop 23 from Bloomfield, New Jersey, and Radio Merit Badge schedules were established. I had planned on trying to get some interest in the Radio Merit Badge and I needed a trial run of the instruction modules before I ran it at Merit Badge College in 2008." Merit Badge College is a day or weekend where Scouts can earn several Merit Badges at one time.

Shearer explained, "I had downloaded from <http://k2gw.tripod.com/radiomeritbadgeday/id21.html> the student workbook and the power-point presentation. I brought copies of them, so I was ready. Starting after lunch on Tuesday, for an hour I had the gang from Troop 23 started on module one as they took notes in the student workbook I had handed out to each of the boys. I had nine great kids asking questions and filling in their work sheets. By Thursday afternoon, my son Andrew, KB3LUF, had joined the group to help with the 'make a contact' requirement and work on the badge, too. Andrew finished the workbook on Friday, but Troop 23 was finished that afternoon. I now know I will be able to finish the badge in the four hours I will have at Merit Badge College this winter."

All of the troops got together at the home of the camp ham radio station, KB3BOY. Shearer says he handed out more than 50 student workbooks to the Scouts. The boys took in all of the information as they filled in the answers in the workbook. Later, a few of the adults did get to talk with the World Jamboree station, GB100BI, at Brownsea Island in the UK for the 100th anniversary of Scouting.

"The week didn't happen the way I had 'planned.' Although I expected to make more contacts, I did make a few contacts with my Elecraft K2 (10 watts) and a simple wire antenna running off of a gel-cell battery with a 10W solar cell battery charger," said Shearer. "It was a good week for Scouting radio."

Getting the Word Out

This month we took a look at activity at the national level that will hopefully provide strong leadership as our role in emergency communications evolves. We also looked at other hams giving up a week's vacation to provide a service to children at camp.

At deadline we're monitoring the events involving the collapse of the Interstate 35W bridge in Minneapolis and the Utah coal mine disaster. News reports the bridge collapse caused a jam-up of the cellular-phone networks in the area. Many people could not get through on their cell phones. Cell-phone providers acknowledged that the call volume overwhelmed their networks, but took issue with the idea that they're not up to dealing with a crisis.

An AT&T spokesman said that the networks tend to get congested in a crisis. It doesn't mean anything is wrong with the network. Verizon said the congestion occurred because it was in the middle of rush hour. All agreed that the biggest tip is to understand the importance of text messaging, since it uses far fewer network resources.

Here's an opportunity for you and/or your club to go out into the community and teach people about alternate forms of telephone communications. You can teach them how to send a text message. Introduce them to FRS radios and ham radio. They'll be glad to learn about alternate ways of getting a message through.

This month I want to thank Bill Sexton, N1IN, Steve Shearer, WB3LGC, and the ARRL for supplying information for the column. Until next month...

73, Bob, WA3PZO

the weekender

BY PHIL SALAS,* AD5X

Packaging the Elecraft XG2 Receiver Test Oscillator

As you can tell from many of my weekender projects, I'm always looking for, or building, gadgets to use for testing radios. My two recent test equipment additions are the Elecraft XG2 Receiver Test Oscillator, and the Elecraft 2T-gen 2-Tone Test Oscillator. Both of these are popular, easy-to-build kits that provide you with some very useful test equipment for your home projects.

As supplied, these kits are meant to be used unpackaged—i.e., they consist of printed-circuit-board assemblies with the switches, controls, and connectors mounted directly on the PC boards. The kits even include rubber mounting feet that attach directly to the PC-board assemblies. This is okay for occasional use, but I like more rugged packaging for my units so I don't have to worry about damaging them. It turns out that with a little thought, packaging is not too difficult, and you will also wind up with more convenient-to-use pieces of test equipment! I'll discuss the two units separately. This month we'll look at the XG2 Receiver Test Oscillator.

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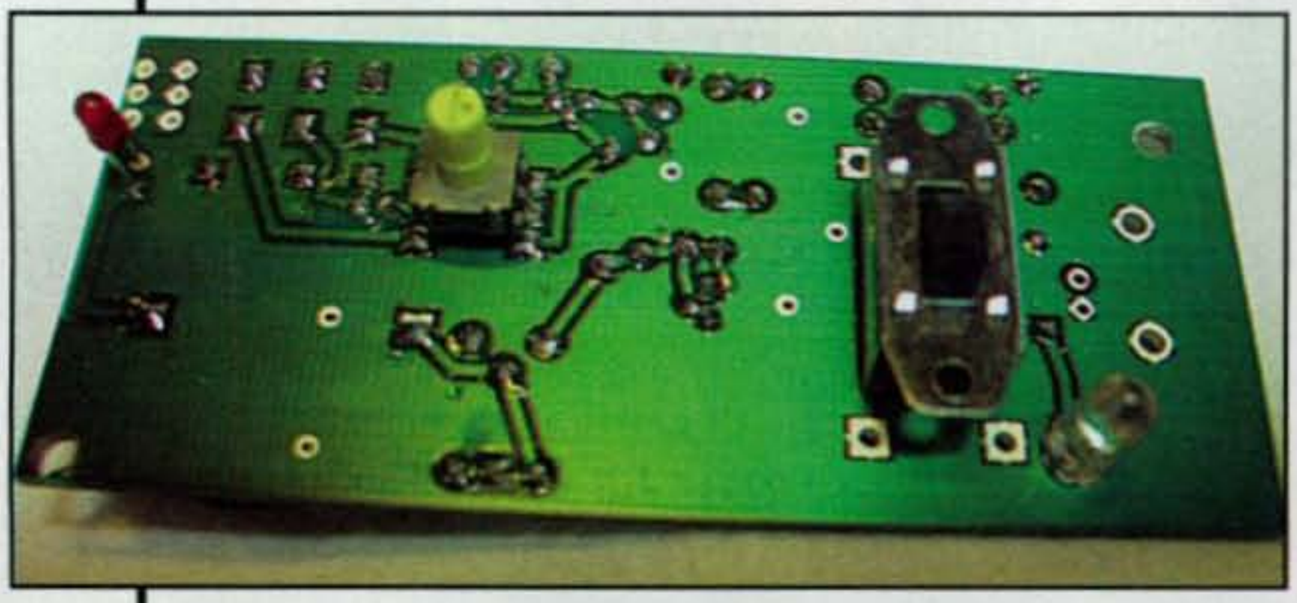

Photo A– The back-side-mounted component for the packaged XG2 Receiver Test Oscillator.

The Elecraft XG2 is a three-band receiver test oscillator that outputs accurate switch-selectable 50-µV (S9) and 1-µV (S3) crystal-controlled signals on 3.579 MHz (80 meters), 7.040 MHz (40 meters), and 14.060 MHz (20 meters). The PC-board-mounted controls include a small ON/OFF switch, a small three-position rotary switch, and a standard-size DPDT slide switch. For packaging, I wanted the entire unit to be mounted within a metal project box—plus I wanted easy access to all controls.

It turns out that this is not that difficult. Basically, you must mount the rotary switch, a new DPDT level-select switch, the power LED, and a new transmit-power warning LED on the backside of the PC board. You also will also use a chassis-mount BNC connector and miniature toggle switch mounted on the metal box.

The first thing to do is build the PC-board assembly *minus* the LEDs, switches, and RF connector. If you already have a built unit, you will need to remove the existing rotary switch, the DPDT level switch, the LEDs and RF output connector from the board. You can leave the ON/OFF switch in place, but place the switch in the OFF position. Now file the leads of the new DPDT slide switch called out in the parts list so that the switch contacts slide into the holes on the PC board. The original switch uses PC pins, but the new switch has solder-lug pins. Solder this switch flush to the back-side of the PC board. Next, solder the small rotary switch to the back side of the board, but elevate the switch above the PC board as much as possible. Finally, mount the power LED and the new, round transmit power alarm LED on the back side of the PC board such that the bases of the LEDs are 0.350 inch above the PC board. The last thing to do is drill two 1/8-inch diameter mounting holes on opposite corners of the PC board. When finished, you should have a back-side assembly that looks like photo A.

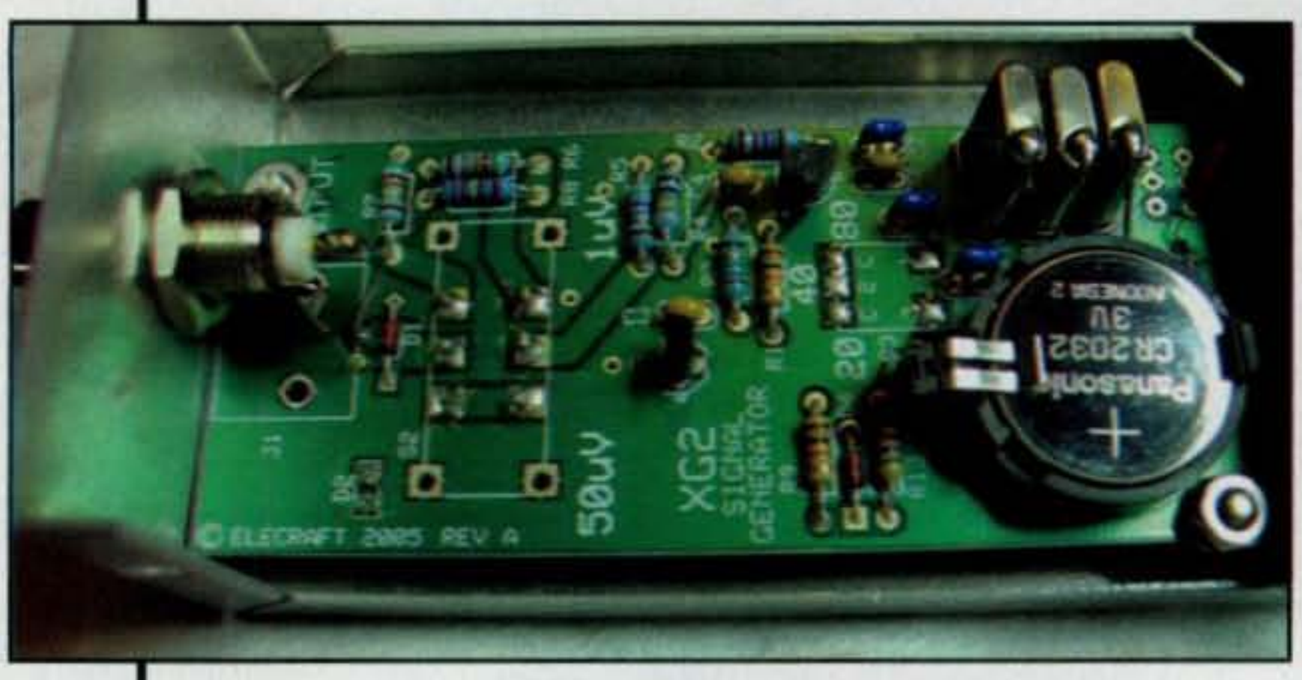

Photo B– Inside view of the packaged XG2. The new ON/OFF switch is a chassis-mounted toggle switch located in the upper right-hand corner.

Photo C– Control-side view of the packaged XG2. Isn't this more convenient to operate than the original PC assembly?

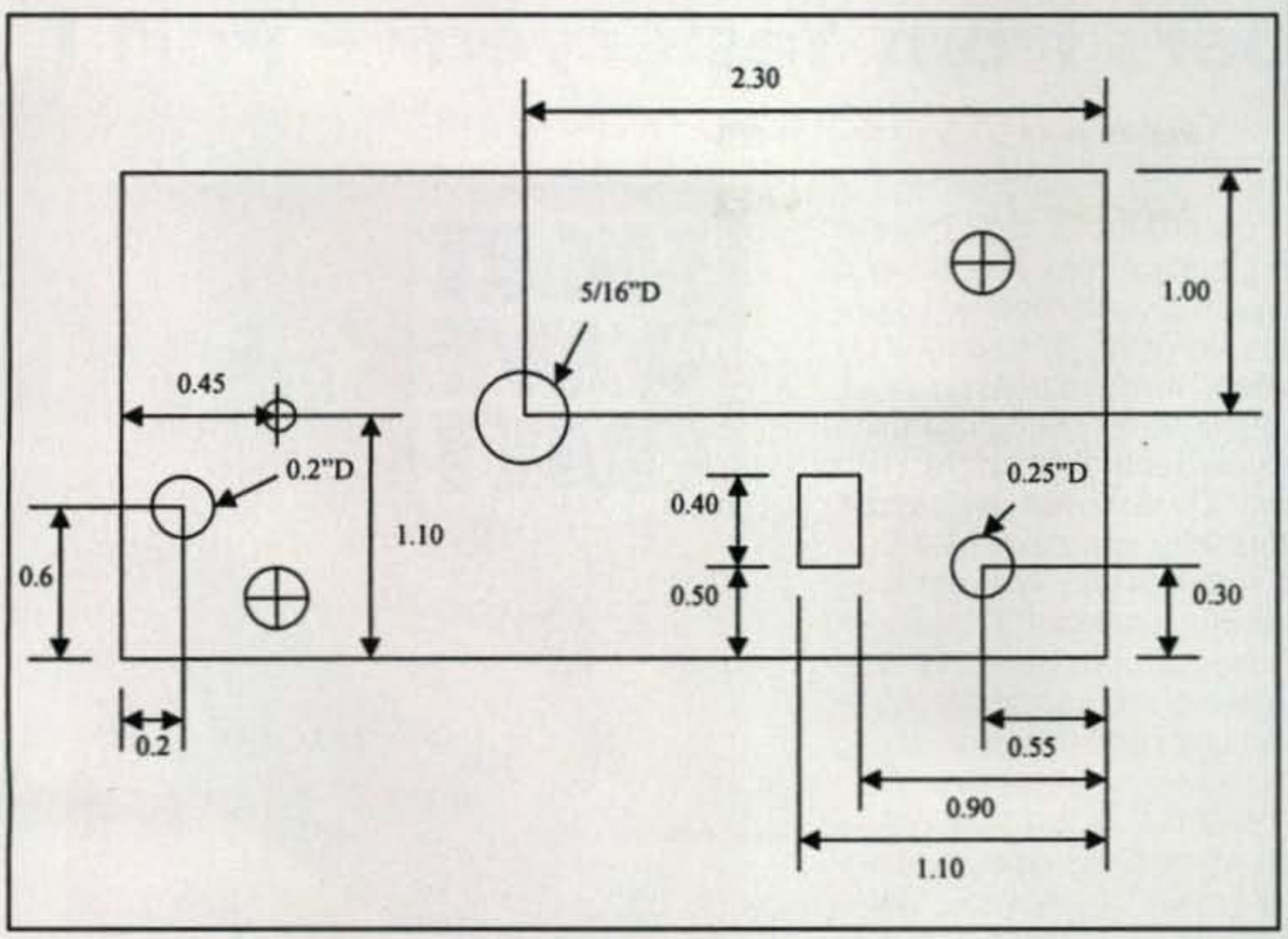

Fig. 1– Hole dimensioning.

Now comes the time-consuming part. You will need to carefully measure the positions of the DPDT slide switch, the LEDs, and the rotary switch so you can drill clearance holes for these in your metal box. You will also need to drill holes in the metal box for the PC-board mounting screws, the new ON/OFF toggle switch, and the BNC output connector. Fig. 1 shows the dimensions I used for my unit. I didn't show dimensions for the mounting screws, as this will vary based on where you drilled these two holes in your PC board.

Now solder wire leads to the ON/OFF switch position, and wire leads to the PC board for the new BNC output connector. Mount the 3/8-inch standoffs to the PC board with 1/4" × 4-40 hardware, and mount the PC-board assembly to the metal box as shown in photo B. The rotary switch, DPDT level switch, and LEDs should protrude through the metal box. Finally, drill out the knob so that the rotary-switch shaft fits. This shaft is about 0.15 inch in diameter, so a 3/16-inch drill bit is appropriate. Now you can attach the knob to the switch. Your final assembly should look like photo C. Incidentally, you'll notice that I called out a BNC cable and a BNC-to-UHF adapter in the parts list. This is just for convenience, in case you don't want to build your own interface cable.

There you have it. Couple this test oscillator with a step attenuator and you now have an extremely useful piece of test equipment for serious receiver testing.

As discussed earlier, next month we'll look at packaging the Elecraft 2-Tone Test Oscillator. I will also make two modifications to the 2T-gen to make it more convenient to use and less tricky to adjust the output level. Until then . . .

73, Phil, AD5X

QTY	Description	Source/Part Number	Price each
1	4" × 2.13" × 1.63" AL Box	Mouser 537-00-P	$6.26
1	BNC Chassis connector	Mouser 530-CP-1094-AST	$1.13
2	0.375" × 4-40 tapped spacer	Mouser 561-L4.375	$0.53
1	Ultra-bright Red LED	All Electronics LED-94	$0.55
1	Knob, 0.45"D, 1/8" shaft	All Electronics KNB-127	$0.75
2	SPDT Sub-Mini Toggle	All Electronics SMTS-4	$1.35
1	6-ft. BNC 50 ohm cable	All Electronics CBL-28	$3.25
1	BNC-F/UHF-M adapter	All Electronics BNC-UHF	$2.00

Table I– Parts list for Elecraft XG2 Receiver Test Oscillator packaging.

BY DAVE INGRAM,* K4TWJ

One-Tubers from Yesteryear – Part I

Ah, those marvelous little homebrew rigs of yesteryear . . . their warmth, their beauty, their real radio glamour! Yes, friends, and celebrating that fact we are proudly featuring more easy-brew one-tubers in both this and next month's columns. Up front I must emphasize these open-air delights are powered by enough genuine high voltage to rattle your teeth and jolt you into the next county (yeow!). *Do not even think about building one yourself unless you have plenty of experience working with classic vacuum-tube gear and fully exposed high voltages.* The urge is almost irresistible, I know, but tube rigs can be dangerous. Just enjoy the views and appreciate those pioneers who designed and used this gear during eras past.

Incidentally, if you have built a few mini rigs of the past, you probably know that finding authentic-era parts is the main stumbling block. Sometimes a bit of memory searching and detective work can uncover out-of-business radio repair stores and parts suppliers with leftover new-in-the-box items thoughtfully stored in old warehouses or garages. Think back to your school days (many of us are fairly close in age). Remember the stores in your area? Some may still be there, and neighbors may know the present-day owners. Using that approach, I found some beautiful #10 tubes in original boxes. Scrounging through hamfest fleamarkets can also prove fruitful (be sure to look under tables; not just on top of them), or you may find those scarce coil forms, domino capacitors, ceramic tube sockets, etc., at Antique Electronic Supply Company (www.tubesandmore.com). Just maintain diligence, stay with the hunt, and you will eventually find the needed goodies. Now let's turn our attention to this month's rigs!

A Masterpiece from 1936

Radio magazines from amateur radio's golden era are filled with articles on neat homebrew rigs, and the one style that almost always captures people's attention is a horizontally positioned, one-tube transmitter as shown in photos A and B and fig. 1. This work of art was brought to our attention by Jerry Fuller, W6JRY; it was featured on the cover of the July 1936 issue of *Short Wave Craft Magazine.*

Jerry recently built a perfect copy of the gem, and he reports it works great. Briefly described, this is a high-power oscillator using an 804 tube in a Tri Tet circuit, and it is capable of running up to 75 or 100 watts of input power. Now that's what we call hefty! The original article also discussed using this super-oscillator to drive an 830B tube amplifier to over 300 watts input! As described, the transmitter operates on 80 or 40 meters with an 80-meter crystal, or 40 and 20 meters with a 40-meter crystal. Moving taps on the filament and plate coils (and choosing a proper frequency crystal, naturally) establishes the band of operation. The transmitter draws a small-to-mild amount of grid current when operating above the 10- or 15-watt level, so using large, round-style Bliley crystals or holding down the power and using FT-243 cased crystals is heartily recommended. By the way, if a large 20-meter crystal is available, the transmitter can also be operated "straight through" (as a fundamental frequency oscillator) on 20 meters or as a frequency doubler on 10 meters.

Photo A– This month's star attraction, the magnificent 804 tube power oscillator transmitter, was also the cover star on Short Wave Craft magazine *for July 1936. Check out the colorful appointments: green knobs with red pointers, red-case meter, black baseboard, and snow-white insulators. Oh the glamour, the romance. Even Venus de Milo would forfeit both arms to hold this beauty. (Photo courtesy Jerry Fuller, W6JRY)*

This colossal fossil is built on a wood base board measuring 17 inches wide, 8 inches deep, and 1 inch thick and painted black for class. The left and right tuning capacitors and the plate coil form are mounted on stand-off insulators, and the tube's socket is mounted to a home-fabricated "L" bracket secured to the base with wood screws. Ground connections for the circuit, that is the (keyed) B-line and one side of the .001-mFd bypass capacitors (plus the 10-k grid resistor), connect to the metal "L" bracket. The other (glass) end of the tube is supported by a small wood block rounded out slightly at the top to make a cradle that allows for expansion of the glass envelope. A simple plate clip with a flexible braid-type lead to eliminate mechanical stress on the tube routes to the plate coil and tuning capacitor.

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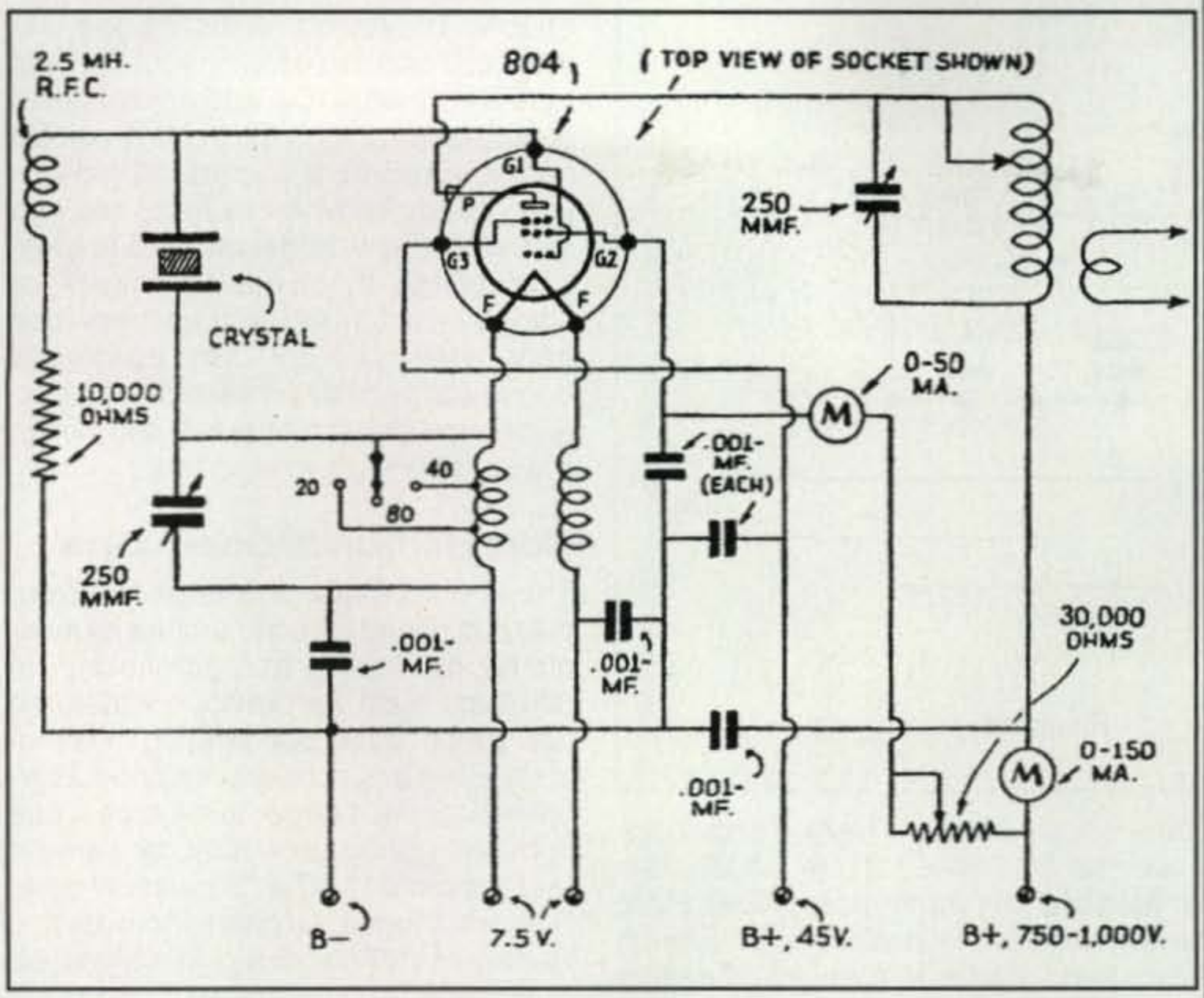

Fig. 1– Circuit diagram of the 804 tube transmitter. (Discussion in text.)

Looking closely at the transmitter's circuit diagram (fig. 1), the dual filament coils consist of two wires wound side-by-side on a 1.5- inch Bakelite™ coil form. The coils are 28 turns of #16 double-cotton-covered wire, which is now quite scarce. Modern plastic-insulated wire is a convenient substitute, although it lacks old-time glamour. One of the windings is tapped at the tenth and second turn from its filament end. Then the full winding is used for 80- or 40-meter operation with an 80-meter crystal, a third of the winding is used for 40- or 20-meter operation with a 40-meter crystal, and only a fraction of the winding is used for 20- or 10-meter operation with a 20-meter crystal. The filament coils, incidentally, are barely visible between the tube's base and the baseboard's back side in photo B.

The plate coil is wound on a famous National XR-10 form that is 2.5 inches in diameter and pre-grooved to yield perfectly spaced windings. The coil is 26 turns of #12 or #14 tinned copper wire (for 80 meters), with clip-on taps at 16 turns for 40 meters, 8 turns for 20 meters, and 2 turns for 10 meters. Exact tap positions are tweaked for maximum efficiency by finding the point where resonance occurs when using the highest

Photo B– The remarkable reproduction of the glamorous 804 horizontal-tube transmitter made by W6JRY. Look at that tube, that plate, that round Bliley crystal, those vintage knobs!

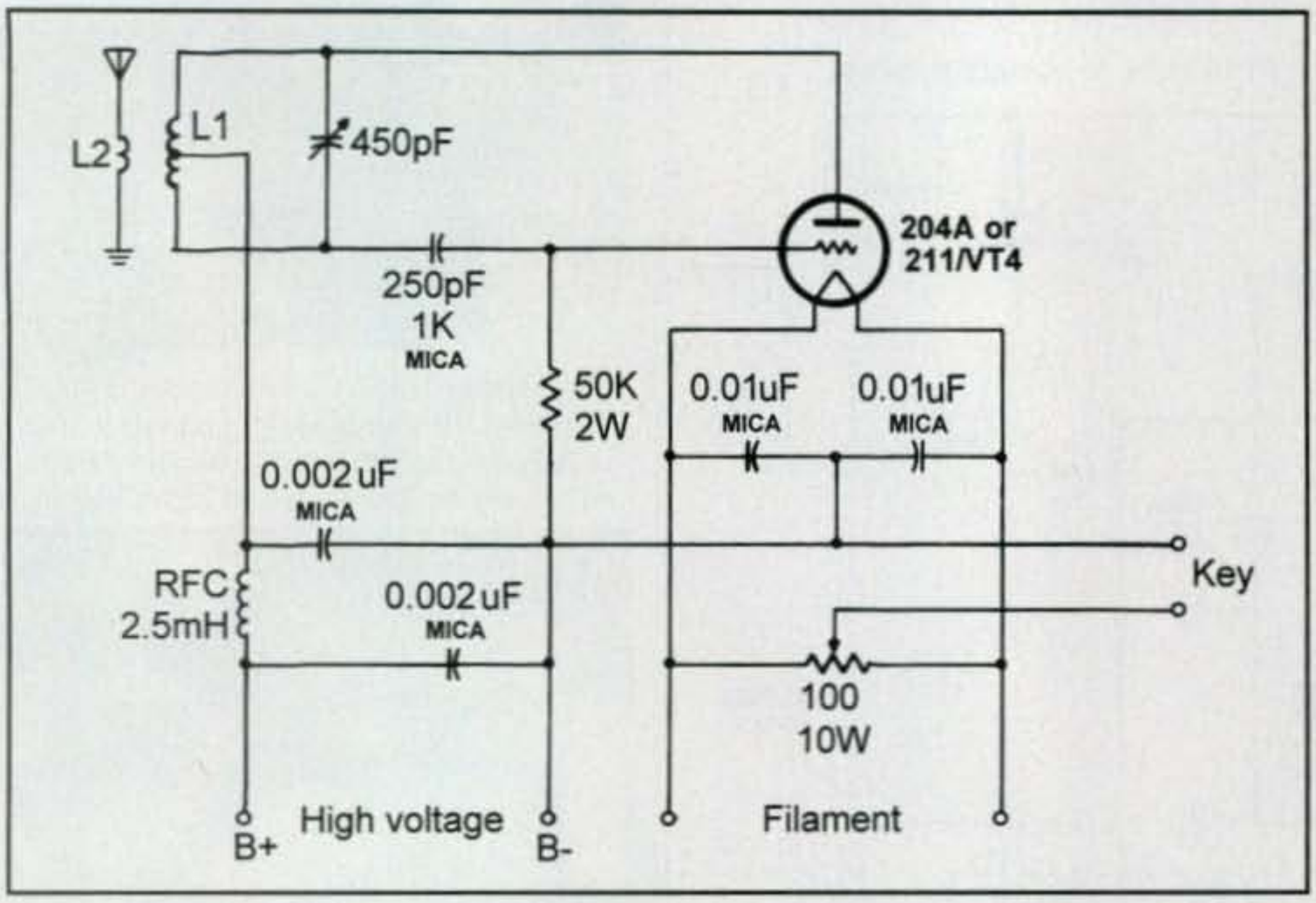

Fig. 2– And behind door number two we have . . . an alternate Hartley circuit diagram you can use with a big bottle tube such as the famous 211/VT-4 "50 watter" to make a cool-going look-alike of our featured 804 transmitter. (Note: Plate coil L1 is 1/4-inch copper tubing wound on a form to give 2 1/2 inch diameter. Stretch turns to give length of 4 1/2 inches. Tap at four turns. Coil is 12 turns for 80 meters or 8 turns for 40 meters. Antenna pickup coil L2 is 3T insulated wire 2 1/2 inches in diameter placed at the end of L1 or wound on form and positioned between adjacent turns of L1.)

amount of inductance and the lowest amount of capacitance. The antenna coupling coil is 2 turns of #12 or #14 insulated hookup wire wound over the plate coil and experimentally positioned for best output.

As previously mentioned, the 804 is a very hefty tube. It can stand up to 1200 volts at 90 ma on its plate, but due to its age, scarcity, and present-day cost, running it at 600 to 700 volts and 60 or 70 ma seems much more appropriate. When operating at this level and foregoing 10-meter operation, the 45-volt suppressor (G3) supply is not required. Filament needs are 7.5 volts at 3 amperes. You could key the transmitter directly in its B– lead authentic 1930s style (a cool fireworks show!), but one slip of the hand could zap you into the twilight zone. Using a large, enclosed relay here—or a plastic-case key such as the ones shown in photo C—is highly recommended. I prefer not to be more specific on keying, adjusting the filament coil's tuning capacitor for the best note with lowest "C," and adjusting the plate capacitor for a dip in plate current for two reasons. If you are an old pro, you already know these facts and you also know how to handle and respect high voltage. If you are a youngster or if you are unfamiliar with vacuum-tube gear, stay safe by only building a dummy copy of this masterpiece strictly for show (what a beauty!) and *never, never apply high voltage to it.*

What Did It Cost?

How does the cost of 1936 gear compare to modern, 2007 amateur radio gear? A short article written by well-known author of the time, Howard S. Pyle, and published in July 1936 *Short Wave Craft Magazine* (plus some additional research) gives us some good insight.

The $25 Station (1936): Invest $7.50 in parts to build a two-tube receiver or convert/add a BFO to an on-hand shortwave receiver. It could be upgraded later as funds permitted. Invest $15 in parts to build a transmitter, $1.50 for a hand key, $1.00 for 60 feet of wire for a random-wire antenna, and you were good to go.

The $42 Station (1936): Expand the above setup to a three- or four-tube receiver, maybe a higher power (CW) transmitter, and add a better transmit antenna plus a wave meter for checking frequencies and monitoring your transmitted CW. Big time radio!

The $100 Station (1936): Expand the above setup to include a higher power transmitter, a modulator, mic, and meters for the transmitter, and you were "In Like Flint."

In 1936, a dozen eggs cost 18 cents and a shiny new Pontiac Straight 8 (that's an in-line 8-cylinder engine) cost $615. Multiply a dozen eggs by 10, and we have today's cost of about $1.85. Multiply the Pontiac's cost by 30, and we have today's cost of a G5: $18,450. Next multiply a 1936 voice/AM station by 20 (midway between 10 and 30), and by Jove, we can purchase a nice Kenwood, Yaesu, ICOM, Alinco, Ten-Tec, etc., transceiver plus power supply, mic, key, multiband vertical, and one or two extras for two big ones. Even percentage-equalized, however, today's gear gives you ten times the capabilities for the cost. The times are good! Enjoy them to the max!

More Horizontal One-Tubers

The sheer beauty of a large, horizontally positioned tube transmitter is undeniable, but finding and purchasing an 804 tube such as previously featured can prove quite challenging. Fortunately there are a couple of good alternatives: using a larger 204A tube if one surfaces during your hunt, or using a famous old 211/VT4 "50 watter" tube. Both are triodes, so changing over to a Hartley or TNT circuit (fig. 2) and maybe routing the 211's plate lead under the base board for proper appearance will be necessary, but the finished transmitter will be a winner. Just follow the same physical layout used in the 804 transmitter, place it on a small shelf in your ham shack or office, and be prepared to tell visitors about it and amateur radio's proud history when vacuum tubes ruled the airwaves.

Big Juice for Little Bread

Dismayed at today's scarcity and staggering cost of high-voltage transformers? Consider salvaging the high-voltage switching-type power supply from a defunct microwave oven. People toss out used microwave ovens every day, and the power supplies in 90 percent of them are still in good condition. Even the power supply from the smallest microwave oven—a 500- or 600-watt unit—is fine for plate-supplying a (tube type) 100- or 200-watt transmitter, and the power supply from a 1000- or 1200-watt oven can set a medium-size linear amplifier romping. Just trace down the 120-volt AC input, bypass and discard the timer panel and power relay, add an extra AC fuse for safety, and you are ready for action at a fair price.

Possibly I should be more specific when describing power-supply conversion, but hopefully old pros will understand that every power supply is slightly different and you should adapt my "generic" description to your specific supply. Likewise, non-tube-savvy newcomers should consider my description

Photo C– Keying relays and/or other safety precautions/devices definitely have their benefits when using vacuum-tube transmitters, but somehow they lack the genuine thrill (and danger!) of using an authentic era key. As a happy medium, you might consider using an enclosed-mechanism key like the ones shown here, but only if you are well-trained in working with high voltage. The vintage keys are (left to right) a Russian pumper, U.S. Army J5A, and British Bathtub key. Modern-style enclosed-mechanism keys are available from <www.MorseX.com>.

too general and ignore it. Getting shocked without justifiable cause is not the way to have fun! Maybe we should smooth that over with some humor:

Several hams were discussing the high cost of classic tube gear. One interjected, "Well, every time I am down in the dumps, I get another power supply for my tube rig." The ham beside him responded with "So that's where you are getting those ugly things!"

Canteen Can Receiver

Wrapping up this month's column is yet another treat from Jerry Fuller,

Photo D– Many of us have all pondered the old ship-in-a-bottle mystery. Now contemplate this shortwave receiver in a military canteen. Squeezing all the parts—including a 12SK7 tube—through the canteen's little mouth was tricky, but the completed receiver copies 40-meter signals quite well. (Photo courtesy of owner Jerry, W6JRY)

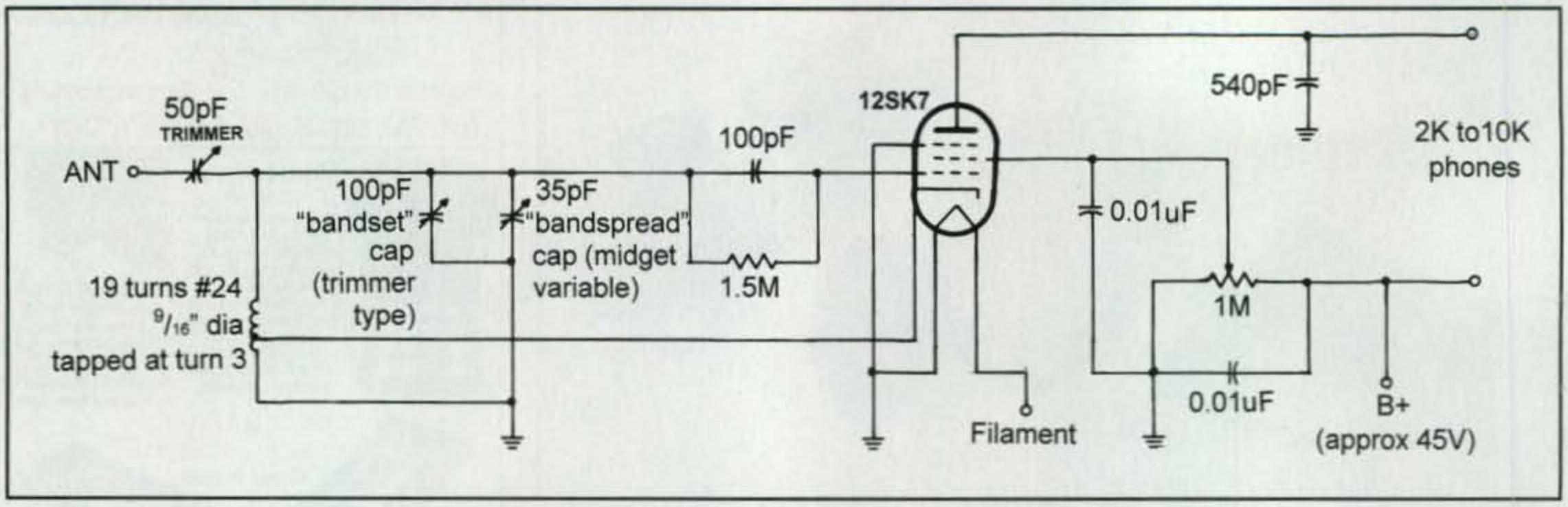

Fig. 3– Circuit diagram of the 12SK7 canteen radio. (Discussion in text.)

Looking Ahead in CQ

Here are some of the stories we're working on for upcoming issues of *CQ*:

- CQ Interviews: DARPA Director Dr. Tony Tether, K2TGE, by W2VU
- More Sputnik Recollections, by *CQ* readers
- "Spice Up Your QSOs - Part 2," by KZ1Z

Do you have a ham radio story to tell? See our writers' guidelines on the *CQ* website at http://www.cq-amateur-radio.com/guide.html

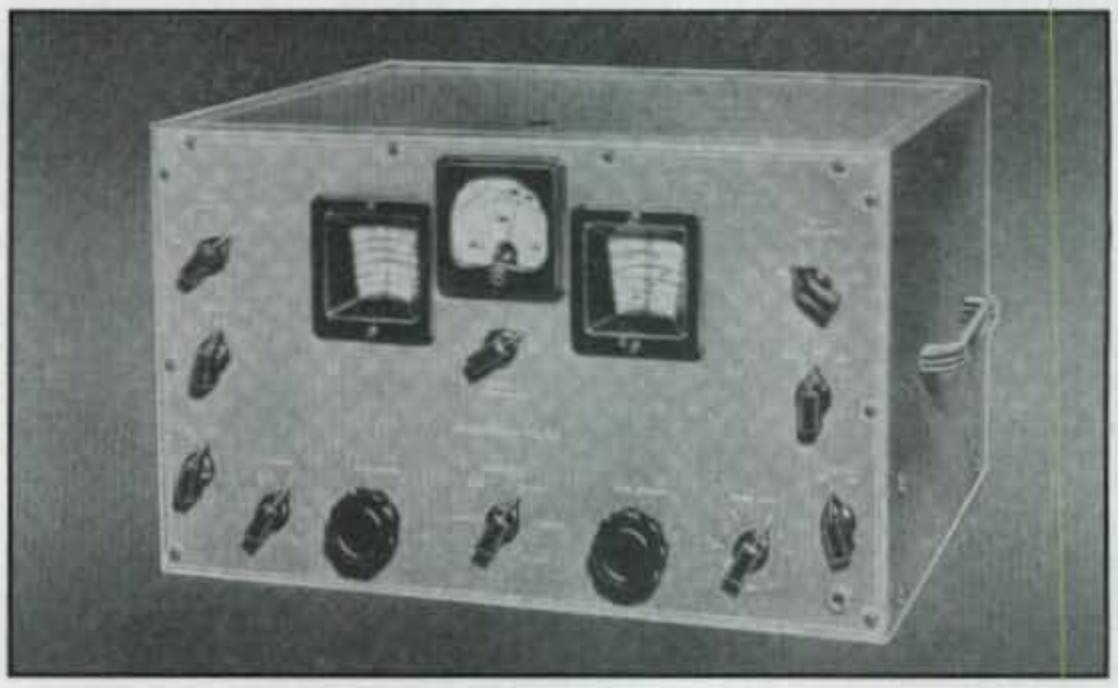

Photo E– Many classic-design receivers from eras past strike us as ideal mates for our featured horizontal 804 tube transmitter, but the real radio look of Hammarlund's HQ120X with those big window dials and large S-meter would capture anyone's attention. The 12-tube superhet covers 54 kc to 31 mc, has crystal filter, six steps of selectivity, and sold for $168. Don't open that top cover!

W6JRY— the Canteen Radio shown in photo D and fig. 3. Prisoners of war often built stealthy receivers like this to tune the shortwave bands and stay abreast of activities in the outside world. It uses a popular 12SK7 tube, the earphones are classic high-impedance types (2 k to 10 k), and the input coil is 19 turns of #24 enameled wire wound on a 9/16-inch diameter form and tapped at 3 turns from the "ground end." Using this coil and adjusting the 100-pFd "Bandset" trimmer capacitor to its mid range, the "Bandspread" capacitor (a small 2 to 35 pFd variable) tunes from approximately 6.8 to 8.5 MHz.

Bear in mind that this is not an exact science, so frequency coverage can vary. The circuit's 1-meg potentiometer sets regeneration, so this little treat can also be used to quickly check activity on 40 meters CW. It may not be the most elaborate receiver we have featured, but we must admit it is the perfect way to show off that quiet little 12SK7 sitting on your workbench shelf. Every vintage tube is happier in a socket!

Conclusion

That winds down the views for this time friends and fans, but more homebrew mini rigs are lined up for featuring in Part II next month: push-pull 6L6s, a compactron transmitter, and my own special concoction, "Tuberlee"—a little doll. Stay tuned, stay active, keep on hamming, and build, build, build!

73, Dave, K4TWJ

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digital connection

BY DON ROTOLO,* N2IRZ

Vocoding: Creating Digital Voice

How do we put the digital into digital voice? As digital voice continues to become more popular, I thought we should take a closer look at how it works. Thus, this time we'll swing way over to the technical side and learn quite a bit (pun intended) about encoding a human voice into a digital data stream, a process known as voice encoding, or vocoding.

In the beginning, there was a voice. We used the electronic waveforms that represented that voice to first change the amplitude, and then the frequency, phase, and other characteristics of a radio signal as a means of transmitting that voice over great distances without the burden of running wires. The advent of voice communications over radio was a major driving force in scientific awakening in our culture, the icing on the technological revolution that began in the mid 19th century.

However, radio couldn't replace (or even compete economically with) the telephone, despite the tremendous expense of building and maintaining a wired network and its associated equipment. Ma Bell could add more twisted pairs, or multiplex thousands of voice signals onto a single cable, but radio spectrum was essentially a finite resource.

What does this have to do with digital voice? The short answer is spectrum—or using it more efficiently, to be more precise. The telephone company still has to deliver about 3 kHz of amplitude- and phase-controlled passband through its system and is not concerned as much about spectrum, since it is not limited to using it only once. The phone company can just add another wire, and all of its spectrum is empty and available again. Radio, in order to avoid interference (when *nobody* communicates) can only use a given slice of spectrum once.

However, if we implement ways to fit a pound of flour into a half-pound bag, more communications can happen. Digital voice is that magical "flour compressor" that can make it fit. Now let's take a look at how we manage to smoosh all that voice into a smaller space.

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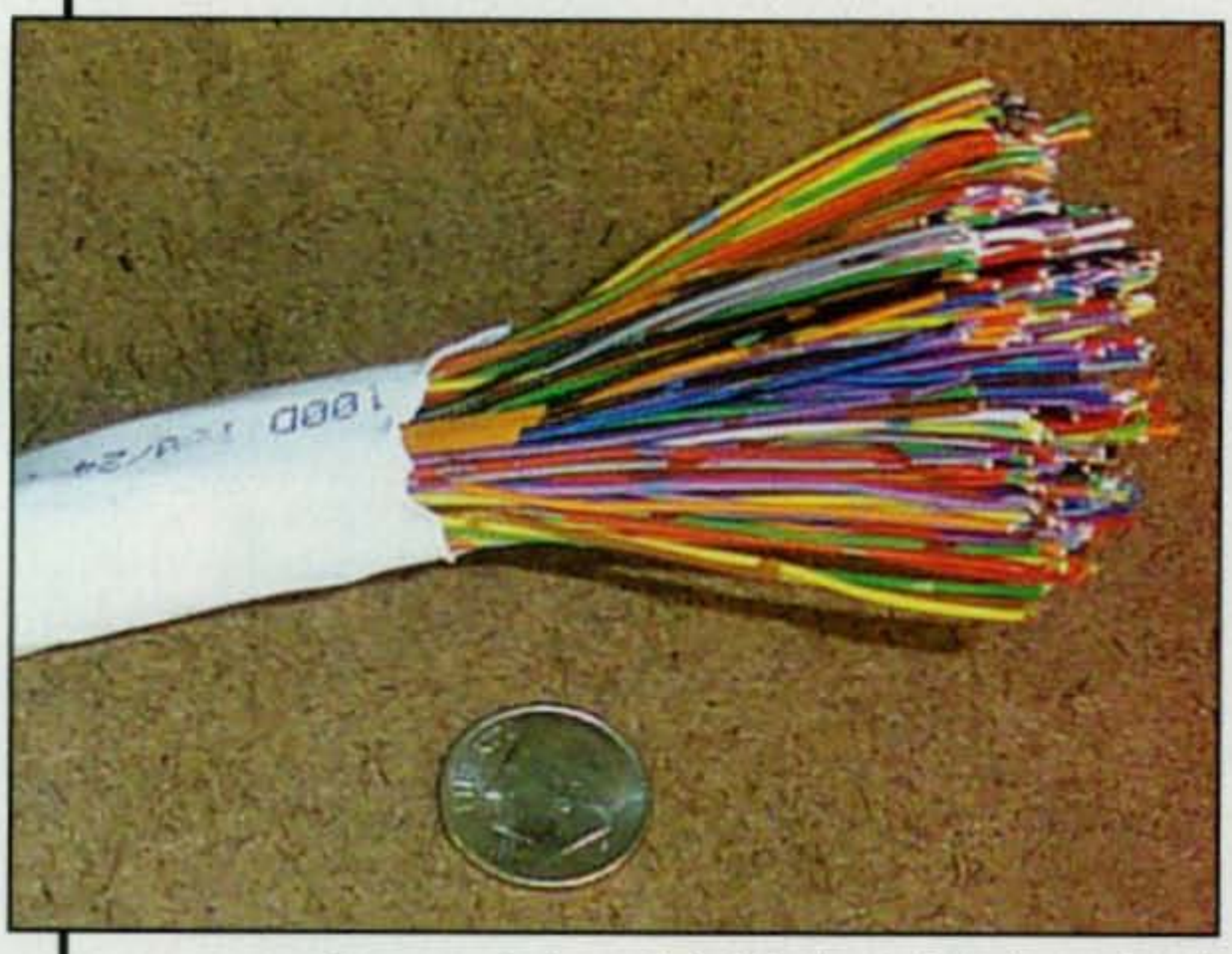

A somewhat small twisted-pair telephone trunk cable with only 50 pairs. The phone company can increase the available bandwidth by adding more wires, while radio users have to work a lot harder to increase spectrum usage efficiency. The dime is to show the scale.

Analog Signal to Data Stream

First, let's step sideways a moment and review how an analog signal is converted into a data stream. First, we take a sample of the voltage of the analog signal and convert that voltage into a number. When it's time to take the next sample, we measure the voltage again, and continue this until we want to stop. How often we take a voltage sample—known as the *sampling rate*, measured in samples per second—depends on the highest frequency we want to capture. A basic principle of analog-to-digital conversion is that you generally need to have a sample rate greater than twice the highest frequency that exists in the signal you are sampling. Google "Nyquist" if you want to learn more about that, including some exceptions. That means a toll-quality telephone signal, with a bandwidth of about 3 kHz, needs about 6 kiloSamples per second (kS/s) as a sampling rate.

The other critical sampling parameter is the number of sample bits, or *bit depth*. For example, we can represent 1024 different voltages with 10 bits, which may or may not yield the desired level of fidelity when converted back to analog. If we generate 10 bits for each sample, at 6000 samples per second, we end up with a data stream of 60,000 bits per second. This amount of data requires far more bandwidth to transmit than the original analog signal, even allowing for data compression and other techniques.

The conclusion is that just digitizing the analog signal waveform actually increases the necessary bandwidth, contributing to spectrum inefficiency, which is exactly the wrong way to go.

Project 25

Then how can we even think of using digital voice on the radio? Like the shady businessman who keeps two sets of books, we use some sneaky tricks. Instead of just digitizing a waveform, we can recognize that the human voice has some very predictable characteristics, and we can exploit those characteristics to dramatically reduce the digitized bandwidth while maintaining that "human voice" sound. One commercially popular digital voice system, called Project 25 (P25), uses a vocoder that implements one such exploitative trick, and that is what I will explain in the rest of the column.

A brief explanation of P25: Radio users from various emergency services and commercial and manufacturing sectors recognized a need for a

digital voice communications standard and created Project 25 (http://www.project25.org) to develop and define these standards. It is an open standard (like AX.25 or D-Star), meaning anyone can use it to build a compliant radio or system. It has become arguably the most popular standard for digital voice in the land mobile radio sector, although several other available systems are highly competitive. Amateur radio can learn a lot from the work put into the standards, since most of the lessons are equally applicable to HF channels as they are to VHF, UHF, and above.

It should go without saying that interoperability is one good reason for amateur radio to get involved with standards such as P25. Another really cool thing is that our software-defined radios can—if someone clever programs the mode—also operate with P25 and other digital voice signals. More on that later.

Vocoders

A few years ago, I wrote about Digital Radio Mondial (DRM) and how it was able to fit a near-FM-quality music signal into a 4.5-kHz shortwave channel, using a nifty trick that fools the ear into hearing more than is really there. The energy in a music signal is concentrated below 3 kHz, with only a very small portion of the overall energy content appearing above that frequency. What DRM does is digitize the lower frequencies with good fidelity, and digitize the high frequencies only in terms of the amount of energy in a certain frequency band. These energies are then recreated synthetically at the receiving end. For example, a cymbal crash is characterized as a noise burst in one or more frequency bands, requiring only a few bytes to fully communicate. The receiver synthesizes and recreates approximations of those noise bursts, and the human ear can hardly tell the difference, with a significant savings in required bandwidth. A slightly different encoding scheme is used for voice-only broadcasts with similar results.

Well, voice encoders (vocoders) that claim good fidelity at low bandwidth are as plentiful as used antenna cable, but a certain class of vocoders, known as Multi-Band Excitation (MBE), seems to be head and shoulders above the rest when it comes to delivering on its claims. It should be no surprise that the P25 system has chosen one of these types of vocoders as the standard for all digital voice.

A company called Digital Voice Systems, Inc. (DVSI) has built upon research on voice encoding and MBE that was originally conducted several years ago at the Massachusetts Institute of Technology (MIT), coming up with what is now a family of MBE vocoders. P25 has chosen the Improved Multi-Band Excitation (IMBE) vocoder as its standard, since in testing it significantly outperformed all other vocoder technologies available at the time, even those using a data rate several times higher. Since then, Advanced MBE (AMBE) and AMBE2+ chips have been developed by DVSI, and they are even more efficient than their predecessors.

IMBE is available only as software, while AMBE is available only as integrated circuits. DVSI also sells AMBE chips assembled into evaluation boards or assembled OEM systems. DVSI's technology is a trade secret, but anyone can buy the hardware or license the software.

According to the DVSI website, the IMBE vocoder works by first splitting the voice signal into several frequency bands. It then looks at each band to characterize the audio energy it sees there. Human speech has two major sound components, *voiced* and *unvoiced.* Voiced energy is periodic in nature, containing tones or frequencies, while unvoiced energy is like noise. To better understand this concept, say the word "wash" out loud. The first part of the sound is voiced at a relatively constant frequency, changing in its harmonic content, while the "sh" ending is unvoiced and essentially a burst of noise. The word "hot" has different kinds of unvoiced sounds at the beginning and end (mixed in with some voiced sounds), but they are still noise-like in nature.

Okay, so we take these narrow bands of frequency, and classify the amount of energy from voiced and unvoiced sounds, along with some information about the tone and harmonics of the voiced energy and the dynamics of the unvoiced energy. Rather than digitize the actual analog voice signal, we assign a value to the parameters of

each frequency band and send that instead at a raw data rate of 3.6 kb/s. We then use several compression and error-correction techniques (such as Reed-Solomon, Golay, and Hamming codes) to help handle any radio channel fade, noise, or multipath, with an end result of a 7.2-kb/s data stream. (The P25 standard adds data on top of that for control and other purposes, for a 9600-baud on-air data rate).

At the receiver end, we recreate the 3.6-kb/s data stream as best we can using the error-correction information, and then use a bank of harmonic oscillators and noise generators to reproduce the voice signal. You really need to hear it to believe just how good it sounds, and for that DVSI has several speech samples you can hear on its website (http://www.dvsinc.com/).

One downside to the IMBE and AMBE vocoders is that since they are highly optimized for voice, they are poor at reproducing sounds such as DTMF tones. They also are not very good with music, but again, that's not their purpose. If you want music, the Digital Radio Mondial standard (anywhere but the ham bands!) may be a better choice. (For an adaptation of the DRM standard for amateur HF SSB use, visit <http://n1su.com/windrm>.)

The ARD9000 MK2 Digital Voice Modem from AOR uses the AMBE vocoder and FEC, allowing any SSB radio to operate robust digital voice, while occupying no more bandwidth than an analog SSB signal.

What about our software defined radios (SDRs)? Can we use them to operate with P25 radios, for example? The short answer is no—not easily and not yet. The "not easily" part has more to do with the non-voice information that the P25 system uses to direct calls and manage the overall communications *system* that is P25. Since the standard is open and widely available, it's not a problem for someone to build a controller, or write computer software, to allow a software defined radio to communicate in "P25-speak." We just need to find someone who has the skill and interest in doing it. That's the "not yet" part: I don't think it is a matter of *if* someone will do it, just *when*.

Note that to *build* a P25-compliant radio using an SDR is not a small task. Instead, it is a major project requiring thousands of man-hours, along with considerable financial investment (for the IMBE vocoder, for example)—definitely not for the average "Joe Ham." On the other hand, developing such a system has real commercial possibilities. I have not been able to find anything like it in the commercial sector, so here's a market ripe for the picking (just remember me when you make your first million dollars!).

Conclusion

This time we learned something about how digital voice works, and why it's not enough to just buy an analog-to-digital converter and connect it to a radio. There are some very clever techniques we can (and do) use to optimize the digitization of a human voice for radio transmission, and in so doing we can use other digital techniques such as forward error correction (FEC) to greatly increase the reliability and range of our signals – all while occupying less bandwidth than ever before.

Our friends at AOR (http://www.aorusa.com) use the AMBE vocoder in their ARD9800 and ARD9000 MK2 Digital Voice Modems, which I have been writing about for years. I also saw thecompany's ARD25 Multimode Data Receiver at Dayton a few months ago, which allows one to decode Project 25 signals. In other words, amateurs also have equipment available that takes advantage of these technologies.

Again, amateur radio is right around the cutting edge in communications technology. We have SDRs with outstanding capabilities that can be bought for a tiny fraction of what the commercial world has available. We have the capability of developing better and more efficient technologies, if we choose. While some areas of study are not as advanced as in the commercial world, we're not doing too badly, either.

Today's amateur radio experimenter is as likely to use a keyboard as a soldering iron for experiments, and as a digital enthusiast, I can only cheer and encourage you to get involved and have some fun. Until next time . . .

73, Don, N2IRZ

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SS-18	15	18	1⅛ x 6 x 9	3.6
SS-25	20	25	2⅞ x 7 x 9⅝	4.2
SS-30	25	30	3¼ x 7 x 9⅝	5.0

MODEL SS-25M

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SS-25M*	20	25	2⅞ x 7 x 9⅝	4.2
SS-30M*	25	30	3¼ x 7 x 9⅝	5.0

MODEL SRM-30

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SRM-25	20	25	3½ x 19 x 9⅝	6.5
SRM-30	25	30	3½ x 19 x 9⅝	7.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M	20	25	3½ x 19 x 9⅝	6.5
SRM-30M	25	30	3½ x 19 x 9⅝	7.0

MODEL SRM-30M-2

2 ea SWITCHING POWER SUPPLIES ON ONE RACK PANEL

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25-2	20	25	3½ x 19 x 9⅝	10.5
SRM-30-2	25	30	3½ x 19 x 9⅝	11.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M-2	20	25	3½ x 19 x 9⅝	10.5
SRM-30M-2	25	30	3½ x 19 x 9⅝	11.0

MODEL SS-12SM/GTX

MODEL SS-10EFJ-98

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SS-10V, SS-12V, SS-18V

*ICS – Intermittent Communication Service

beginner's corner

BY WAYNE YOSHIDA,* KH6WZ

Repeaters and Beyond! Interfacing Radios to the Internet

I was talking to a new ham at the Field Day site earlier this year, and he asked me some basic questions about operating the radio and procedures for repeater operation. His brand-new, dual-band (2 meter and 70 cm) handie-talkie was still shiny and without a scratch. He told me he was getting a little bored with just talking on the repeater.

There is a lot you can do with a VHF-FM rig, either mobile or portable, like the HT my new friend purchased. One of the more interesting and exciting things to do with a VHF/UHF-FM radio is to interface your ham radio set to the internet, and join the many people all over the world getting connected with the ham radio version of voice over the internet, or VoIP (Voice over Internet Protocol).

Yes, that is correct. It is possible for you to talk to someone on the other side of the world with a little VHF/UHF-FM HT or mobile rig. There are several systems that allow you to do this. Among them are D-Star, Echolink, IRLP (Internet Radio Linking Project), WinLink2000, and WIRES™ (Wide-Coverage Internet Repeater Enhancement System). The "References" section at the end of this column includes links to more information. Take a look at the system websites to get a more complete view of what is out there.

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e-mail: <kh6wz@cq-amateur-radio.com>

Repeaters with internet-link capability are controlled with TouchTone® commands. My microphone requires the PTT switch to be held to transmit tones, the main reason why this is dangerous to do while driving.

To begin, you need to find out where the nearest "node" is located in your area to see what additional equipment, if any, is needed. In most cases, these Internet "gateway stations" are on UHF repeater systems. Take a look at the *ARRL Repeater Directory* or the system websites to see where all this action is taking place and join a group. If you already belong to a ham club, find out if the club repeater has a VoIP link. Making a ham-radio-to-internet connection usually requires club membership to gain access to the linking system. Remember, someone has to pay for all the technology invested in the repeater, and usually some of the funds come from club membership dues. Make sure you are a member in good standing (and pay the dues) before you play with the system.

A Ham Radio E-Mail System for Everyone

One of the more interesting ham radio-internet connection services that deserves special mention is the Winlink system, which includes an e-mail feature as well as position/location reporting using GPS (Global Positioning System). This system is especially useful for travelers such as boaters and recreational vehicle owners. Using Winlink, users can send and receive e-mail with attachments, report their location in latitude and longitude with GPS accuracy, and get weather bulletins and send emergency messages. In addition, non-ham operators, such as friends and relatives, can send messages from the internet to the traveling ham radio operator. Take a look at the Winlink system website for more details.

An IRLP Overview

Canadian amateur radio operator Dave Cameron, VE7LTD, created the hardware and Linux-based software to enable a reliable and robust interface between a ham radio station and the World Wide Web. The system is called the Internet Radio Linking Project (IRLP). Previous systems used the Windows® operating system with voice-operated transmit (VOX) techniques and were generally not secure against non-ham access. Dave's system overcame these shortcomings and is now one of the most popular and most-used forms of ham radio VoIP, with over 1000 repeater nodes in service today all over the world.

Because IRLP is linked to the internet, the system provides instant global communications capabilities to any licensed ham with VHF (or UHF) FM equipment. When I first tried it, my immediate reaction was "Wow, this is so neat. This is like working DX (making long-distance contacts) on the HF bands, and I can use an HT to do it!"

From Antigua to the Virgin Islands, and many countries in between, IRLP nodes are active and waiting for anyone to connect and use them.

In addition to individual repeater system nodes, there are IRLP "reflectors" and "super reflectors." An IRLP reflector is a Linux server that allows multiple repeater nodes to be connected together at the same time. This increases the coverage area and creates more "room" to talk to more people at the same time. Think of these nodes as your "gateway" to a "global party line" that allows groups of people in a variety of different places to talk to each other.

The IRLP system is also catching on in Canada as a public service tool. CANWARN, a group of Canadian ham operator volunteers, uses the IRLP system in addition to "normal repeater systems" to report severe-weather information. In addition, both IRLP and Echolink have been used during hurricanes to link local repeater communications in affected areas back to the National Hurricane Center in Miami.

OK, So How Do I Use It?

As far as station equipment goes, you need a rig capable of operating in the UHF range, either hand-held or mobile, and capable of transmitting TouchTone® (generically, DTMF, or dual-tone, multi-frequency) signals. The tone pad is usually on the front panel for HTs, or on the microphone for mobile rigs.

Make sure that you are able to "hit" the repeater system with a strong and clear signal. Nothing is more irritating to the people listening to the frequency than a marginal or noisy signal being transmitted all over the world! Make sure your station setup is as optimized as possible to provide clear communications through the system.

Be careful when driving and pushing the TouchTone buttons on your rig. A friend of mine is able to do this TouchTone control while mobile, but I do not recommend this practice. Some radios have a "dialing memory" function, and this may enable safe repeater control while mobile. However, always remember, *safety comes first!*

Operating a radio to connect with one of these internet-linked systems is pretty easy. You use TouchTone signals to issue commands from your radio to the host repeater. This is similar to a common repeater system function called "autopatch," in which the repeater system is connected to a telephone line, and you are able to make telephone calls via your ham rig, to the repeater, and then the normal telephone system.

Most internet-linked systems use the continuous-tone-coded squelch system (CTCSS), or "sub-audible tones" in addition to DTMF codes, to control access. CTCSS is also known as "PL." This PL is a radio function (sometimes an extra-cost option) that transmits a tone that most humans cannot hear. However, the repeater can recognize this tone and allows transmitted audio (your voice) to go through the repeater system. There are 38 different CTCSS tones from which the repeater owner can choose. This is very similar to the remote control on a garage-door opener transmitter. The garage "clicker" is a transmitter equipped with some sort of "code" that allows your unit to open your garage door, but not your neighbor's. (Of course, if both of you program the garage door with the same "combination," you are able to open his door, and vice-versa. If each garage-opener system in the neighborhood has a unique code, only the compatible controller will open each door.)

An IRLP Example

Let's take a look at a specific example of connecting via IRLP. Basically, you command the repeater to enable the IRLP function, dial the node number in the location you want to use, let the system connect, and start a conversation. When you are finished using the system, you enter another set of tones to "hang up" the connection. I would like to thank Tim Sawyer, WD6AWP, for information on his node in Huntington Beach, California.

Here are some important guidelines he created to protect the system, the system owner, and the users from getting into trouble. For example, Tim has established some operating rules for repeater members and guests:

Operation

1. Never say any code or TouchTone sequence over the air.
2. Be aware of delays. Key up for half a second, and then talk or send the TouchTone.
3. If you leave, turn off the node or ask some else to shut it down for you. Do not leave the node connected for hours on end and unattended.
4. No phone patches.

Guest Policy

1. Any IRLP user belonging to another node may contact his/her home node.
2. Only home node contacts are allowed.
3. Any RACES or repeater member may bring up the home node for guests.
4. Monitor QSO and close node when done.

5. *Do not* give codes to any guest operators.

In addition, here are two important hints for successful "connections" using IRLP:

First, while talking, slow down and pause between transmissions to allow other stations to break in if necessary. Remember, when an internet link is in progress, there could be hundreds of people all over the globe on the frequency. Also, keep transmissions short, since there may be many people on frequency waiting for a turn to talk.

Second, when transmitting, click and hold the push-to-talk switch and wait for several seconds (five seconds should be more than enough) before talking into the microphone. This helps your voice "catch up" with the delays along both the radio (repeater) systems and the internet connection. If you ignore this hint, the beginning of your transmission will be cut off, and no one will hear the first part of what you said.

Bear in mind that these are general guidelines, and the individual systems may have different operating procedures. Always check with the host repeater system to make sure you are following its rules.

Getting Connected

Switch to the repeater using the proper PL tone to access your IRLP-equipped repeater.

Identify first: "This is KC6D bringing up the node." Enter the three-digit code to enable the IRLP link, and then un-key the microphone. The repeater will say "IRLP" to confirm that the IRLP function is enabled.

Enter the four-digit node ID you wish to use. For example, to connect to Tim's node, enter 3170. The far-away node will respond with a connect message, something like "Welcome to the WD6AWP IRLP node in Huntington Beach, California." A list of active nodes can be found on the Internet Radio Linking Project website: <http://www.irlp.net>.

Now any chatter on the repeater will be transmitted to the connected node. Listen for a few moments before transmitting. Remember, when you are connected to the far-away node, you have the ability to "eavesdrop" on any conversations taking place. It is just like arriving at a cocktail party and listening to another group's conversation. Therefore, use courtesy, listen to the stations talking, and then, when there is a pause, identify with your callsign to announce your presence on the link.

The stations that were using the frequency first may either greet you and let you participate in the conversation, or they may ignore you to politely let you know that they are busy and do not want to talk to you. Remember, you are essentially "barging in" on someone else's conversation. Thus, mind your manners. If you are allowed to join the conversation, make your comments short.

If you do not hear any other stations talking after a few minutes, you can initiate a conversation. Usually you can simply say something like "This is KC6D looking for contacts via IRLP." In some systems you can call CQ, the general ham inquiry for a conversation (QSO) like this: "CQ, calling CQ, this is Kilo Charlie Six Delta in Huntington Beach, California looking for a contact via IRLP." You then may have a nice, casual radio contact. Generally speaking, you can talk about anything you want, as long as it is legal. In other words, this is like making a contact on ham radio, but using the Internet instead of a radio frequency band.

The best and most interesting aspect of an IRLP connection is the number of nodes available not just in your own city, but all over the world. For example, Don Karon, KC6D, uses IRLP during his morning commute to the office. He usually looks for contacts in other countries.

Signing Off

When you are finished using the node, shut down the link by announcing your callsign, and let others know you are about to control the link like this: "This is KC6D closing down the node." Then issue the command to disconnect the link by entering the proper two-digit disconnect command. The node will respond with a disconnect message of some sort. Next enter the three-digit code to turn off the IRLP function on the repeater.

I still remember the first time I used the IRLP node on Tim's repeater. I parked my car on the roof of a parking structure at the office in the early afternoon and took out my 2-watt HT. I looked at my list of IRLP nodes, selected something in the UK, and gave a call. It was amazing to talk to someone with a "genuine" British accent that afternoon on my lunch break, and with a tiny HT!

73, Wayne, KH6WZ

References

More information on internet-linked systems can be found at the following websites:

CANWARN: <http://emoares.org/canwarn.shtml> and <http://www.on.ec.gc.ca/canwarn/home-e.html>

D-Star: <http://www.d-starusers.org> and/or <http://www.k5tit.org>

Echolink: <http://www.echolink.org>

IRLP (Internet Radio Linking Project): <http://www.irlp.net>, <http://www.kwarc.org/irlp>, and <http://www.eham.net/newham/irlp>

A listing of active (connected) IRLP nodes can be found at: <http://status.irlp.net>

WinLink2000, an electronic text messaging service. Recently won accolades for Hurricane Katrina disaster recovery communications (see the May 2006 issue of *CQ*): <http://www.winlink.org>

WIRES-II, WIRES™ (Wide-Coverage Internet Repeater Enhancement System): <http://c11gkixw.securesites.net/en/wiresinfo-en>

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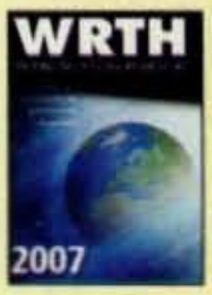

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BY DAVE INGRAM,* K4TWJ

Fun and Affordable QRP Gear

We've heard rumors that some amateurs read this column with high interest but are still somewhat hesitant to give QRP a go. I must say that just reading about QRP cannot compare to the thrill and exhilaration of using it on the air. Try it and I'm sure you will agree! The greatest obstacle you will face is not QRP's ability to reach out with low power, but your own thought that you can't reach out with low power. Positive thinking makes a big difference, especially when you help it along the way by eliminating guesswork and not relying on blind luck. How? Be sure your antenna system is in top shape. If you are unsure, either replace it or repair it if it is too expensive to replace it. Use a single unbroken/unspliced length of low-loss coax cable for feedline. Prune its length as necessary to acquire a near 1:1 SWR and weatherproof and seal all connections. Now start honing your CW operating skills, too.

Coming Up to (QRP) Speed

If you feel you are not up to par, strive to double your CW copying speed, then learn to copy calls and signal reports at double that speed. Learn (through practice, practice, practice) how to sense the exact frequency on which the other station is listening, precisely when he/she is listening, and his/her receiver's bandwidth. Then meet those requirements with 100-percent accuracy. Use full CW break-in operation. The ability to listen in between your transmitted dots and dashes is equivalent to a 10-dB advantage. Finally, understand some operators are not the best listeners. You can call them using 5 watts, 100 watts, even 300 watts and not wrangle a QSO (a bit of on-frequency monitoring usually reveals the facts). Avoid such continuous calling traps—at least at first, when you need all the positive encouragement possible. Tune to another station. Rest assured, for each QSO you miss there will be two good ones to take its place. That's the mindset that promotes success! Once in the game, you surely will want to join some of the popular QRP clubs, so check out our list in fig. 1.

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

QRP Gear

Now let's turn our attention to QRP gear, starting with a quick answer to that familiar old question of what's special about QRP equipment. A big attraction of QRP is the ability to operate portable with small battery-powered gear. You can reduce the power of a regular 100-watt transceiver to 5 watts output for at-home QRP use, but it is hard to squeeze it in a knapsack for traveling, heavy to carry, and often draws 6 to 10 amps (at 13 volts DC) to produce 5 watts output. Dedicated QRP transceivers are small and light enough to carry without strain almost anywhere, and they typically draw less than two amps to produce 5 watts output. That is a noticeable difference when operating from a campsite, the beach, or in a kayak for several days!

MFJ QRP Revisited

In an effort to help newcomers get started in QRP, we have included mini-reviews and revisits with several commercially produced QRP rigs in previous columns—the FT-817, IC-703, Oak Hills kits, Ten-Tec's kits, Elecraft's "K" series, and more. We also featured MFJ's QRP transceivers a few years ago, so it is now time to revisit these "oldies but goodies." Three varieties of transceivers are included in this lineup: the "90s," the "94s," and the "Cubs."

MFJ's "90s" series (photo A) are 5-watt CW monoband transceivers made for 80, 40, 30, 20, 17, or 15 meters. They are VFO controlled with RIT, CW sidetone, semi break-in operation, and a sharp 500-Hz filter. These transceivers have a proven track record of being beaten around and used with makeshift antennas while continuing to work quite reliably. The rigs are also battery-friendly, typically drawing 1.2 amps (at 13 volts) to pump out a solid 5-watt signal.

I have used an MFJ-9020, '9040, and '9030 on several occasions and always found them to be good performers at a fair-and-square price. They can even be powered with a big MFJ "wall adapter" DC supply, and make a handy backup/travel rig.

Club	Website	Assoc. Mag. or Newsletter
QRP Club International	www.qrparci.org	QRP Quarterly
Colorado QRP Club (CQC)	www.cqc.org	The Low Down
American QRP Club	www.amqrp.org	—
Knightlites QRP Club	www.knightlites.org	—
Michigan QRP Club	http://www.qsl.net/miqrpclub/	The Five Watter
North American QRP Club (NAQCC)	www.arm-tek.net	On-Line
New England QRP Club	http://newenglandqrp.org	—
Flying Pigs QRP Club	www.fpqrp.com	—
G-QRP Club (of the UK)	www.gqrp.com	Sprat
New Jersey QRP Club	www.NJQRP.com	—

Fig. 1– New to QRP? Feeling lost in the crowd? Check out these QRP clubs for good "getcha going" information. Membership in some is free, some charge dues, and all are a blast!

MFJ's "94" series (photo B) are 12-watt SSB monoband transceivers made for 75, 40, 20, 10, or 6 meters. They, too, are VFO controlled with a sensitive receiver and stout-hearted transmitter. Special features include an S-meter, speech compressor, 8-pole 2.3-kHz crystal filter, and built-in speaker. Nice!

For hold-in-your-hand (or carry in your pocket) QRP, MFJ's "Cub" transceiver is a good choice (photo C). This 2-watt transceiver is available as a half-assembled kit (or as a fully wired and tested version) for 80, 40, 30, 20, 17, or 15 meters.

Photo A– MFJ's "90s" series of 5-watt CW monoband transceivers are well-known for their easy operation and stout-hearted reliability. The transceivers feature a sensitive receiver with sharp 500-Hz IF filter, rugged power-output transistor, semi break-in operation, and measure 2.5" × 6" × 6.5". More (Details in text.)

Photo B– MFJ's "94" series of 12-watt SSB monoband transceivers are also easy to operate gems with a good receiver, conservatively rated transmitter, SSB speech compressor, S-meter, built-in speaker, and more. These energy-efficient rigs are perfect for in-field QRP SSB pursuits.

Photo C– Thinking about handheld QRP? MFJ's monoband "Cub" CW transceiver kit is available in 80-, 40-, 30-, 20-, 17-, and 15-meter versions. The little rig pumps out a clean 2-watt signal (4 watts with optional transistor) and measure only 1.5" × 4" × 4.5". It is a toss-'n-go mini rig you can use and enjoy without serious "high-cost rig" concerns.

You install approximately 50 parts, wind two toroids, and perform a simple VOM-related alignment to complete the kit—usually a two- or three-hour process. The Cub features a sensitive superhet receiver with crystal filter, VXO control, and full break-in operation, and its power-amplifier transistor can be upgraded to produce approximately 4 watts output. I have a 20-meter Cub I have used on and off for several years—even mobile—and I have contacted over 20 countries with it. The little critter is a romper.

Finally, MFJ also produces a Vectronics kit monoband receiver, QRP transmitter, and a kit QRP transceiver worthy of consideration. They are simple and easy-to-assemble, work well and can be fitted in your own housing or their optional cases. I have also built these receiver and transmitter kits, and enjoy using them from time to time. They too are a good deal for their price. For information on the full line of MFJ QRP gear, check out <www.mfjenterprises.com>.

One-Tube 1-DER Kit

Now for our regular QRPers: Would you like to add a fun spin with a pleasant touch of nostalgia to your usual QRP activities? Does the idea of building a unique, one-tube mini-rig powered by a double handful of 9-volt batteries sound appealing? Well, friends, check out the slick-looking 40 -meter 1-DER QRP mini-kit available from Dwight Morrison, KG4HSY, of <www.glowbugkits.com> and shown in photos D, E, and F and fig. 2.

The 1-DER is what I call a modern-day rushbox. It is powered by one D cell and ten 9-volt batteries which you install internally. It pumps out an approximate 200-mw signal on 40 meters, putting it in the QRPp power class with the famous Tuna Tin II transmitter. At the 1-DER's heart is a 3A5 miniature tube and a six-pole double-throw switch that changes functions of the tube's dual sections during transmit and receive. On receive, one section of the tube functions as a regenerative detector, while the second section serves as an audio amplifier and produces good output to an old-style, crystal-type earphone. A neon bulb in a relaxation oscillator configuration generates a CW sidetone when transmitting. On transmit, one section of the same 3A5 tube functions as a crystal oscillator, while the second section serves as an RF amplifier. The receiver is tunable up or down from the transmit frequency approximately 25 kHz.

Photo D– Meet the 1-DER 40, a unique one-tube mini-transceiver kit for 40 meters produced by Dwight Morrison, KG4HSY, of <www.glowbugkits.com>. The little gem sports a regenerative receiver and 200-mw output transmitter, and is supplied with all the bits including tube, crystal earphone, and an attractive wraparound case. (Photo courtesy of KG4HSY)

Photo E– Interior view of the 1-DER shows how everything installs on the rig's single circuit board for "can't miss" assembly. A large D cell powers the tube filament and keying relay; ten 9-volt batteries for plate power attach directly to clips on the board. Look closely and you will notice all the front-panel controls and sockets also mount directly on the PC board and slip through the panel holes. (Photo courtesy of KG4HSY)

Since new QRPers may not have worked with vacuum-tube gear, a number of safety features are included in the 1-DER. Notice, for example, how a 1.5-volt relay is used for keying the high voltage, and all the 9-volt batteries' connections face down and plug into sockets on the PC board. Getting shocked by this mini rig is still possible, but you have to work at it!

Would you like a quick tour of the 1-DER circuitry? Look at fig. 3 and notice SW2a connects the 3A5 tube's left grid (pin 3) to the input coil and tuning capacitor on receive. Trace the wire from pin 2, through SW2e on receive, and you can see how its output routes through L2, RFC1, SW2d, and into the right side's grid (pin 5). Audio then travels from the right plate (pin 6) through SW2f, through C18, and to the earphones, with level limiting added by D2 and D3, plus the CW sidetone is added by T1 connecting to C18. Now trace the transmit path, beginning with SW2c connecting the crystal to pin 3/the left grid. Output from pin 2, the left plate, then travels through SW2e and C12 to SW2d. It is then applied to pin 5, the right grid, RF amplifier output at pin 6, and the right plate routes through SW2f and SW2b to the output coil and harmonic filter and on to the antenna.

Now wasn't that a fun tour? More details on the 1-DER Kit are available at the previously mentioned website. Questions? You can e-mail Dwight at <chdwimorri@aol.com>.

955's Go Push-Pull

Our recent revisit with the ever-popular 955 Acorn-tube transmitter and a mating two-tube/955 receiver generated substantial interest in the little gems—so much, in fact that Jerry Fuller, W6JRY, stepped up to share details of his smart looking 955 Push-Pull transmitter (photo G and fig. 3). The circuit Jerry used came from a 1936 *Radio Handbook,* and it pumps out close to 1 watt on 40 meters. He assembled the transmitter on a wood board with screws and spacers supporting the ceramic tube sockets, crystal socket, and five-pin

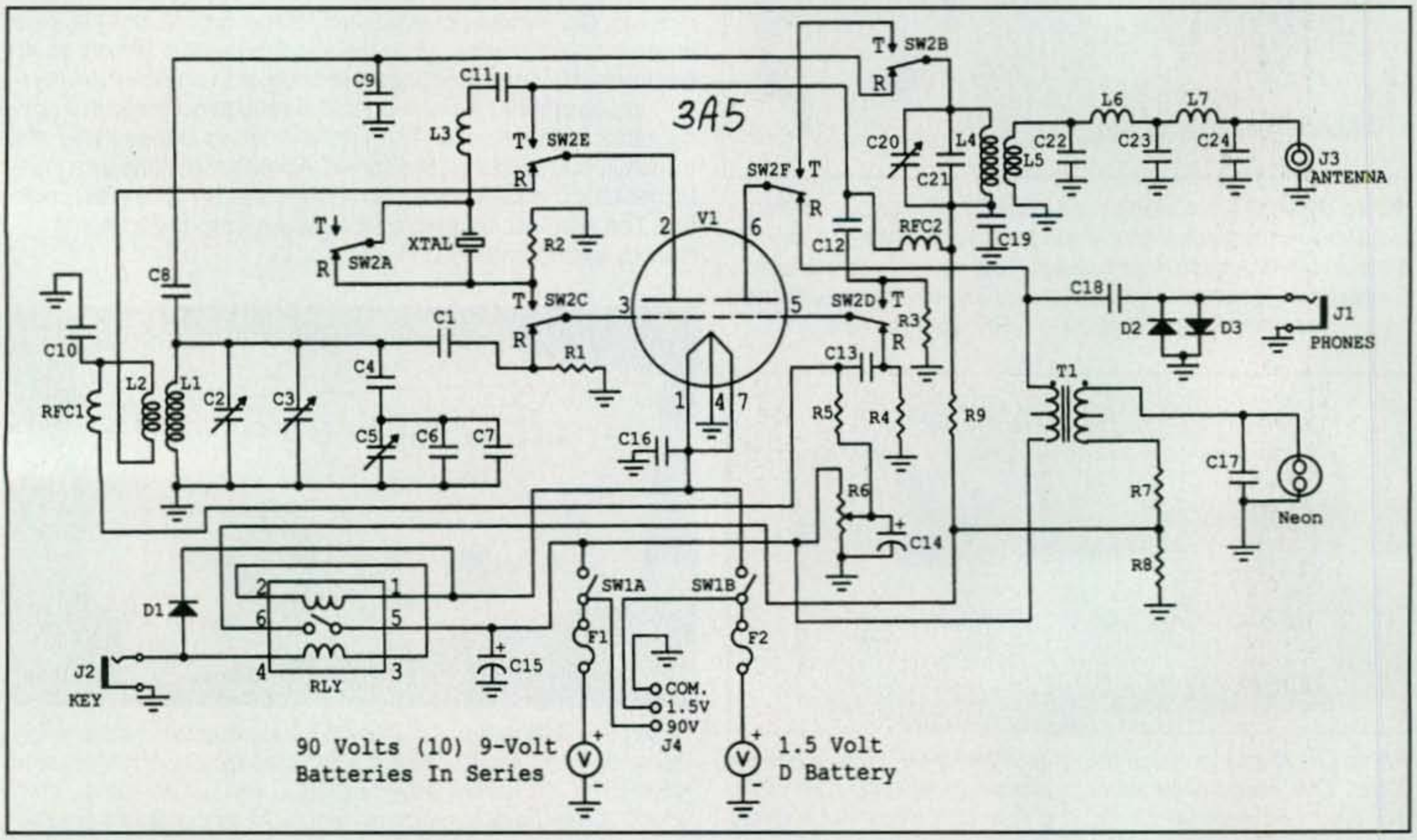


Fig. 2– Circuit diagram of the 1-DER mini-transceiver kit. As discussed in the text, a single 3A5 tube performs two functions on receive, two functions on transmit, or four functions overall. It is a super "rushbox"!

Photo F– The rear panel of the 1-DER is super clean with only an SO-239 antenna socket showing. That's all it needs, because the rig is completely battery powered, and earphone and key sockets are on the front panel. (Photo courtesy of KG4HSY)

Photo G– Dazzling and delightful describe this trim little push-pull 955 transmitter built by Jerry Fuller, W6JRY. The mini rig is powered by a double handful of 9-volt batteries wired in series and pumps out close to 1 watt of power on 40 meters. Truly QRP at its nostalgic best! (Photo courtesy of W6JRY)

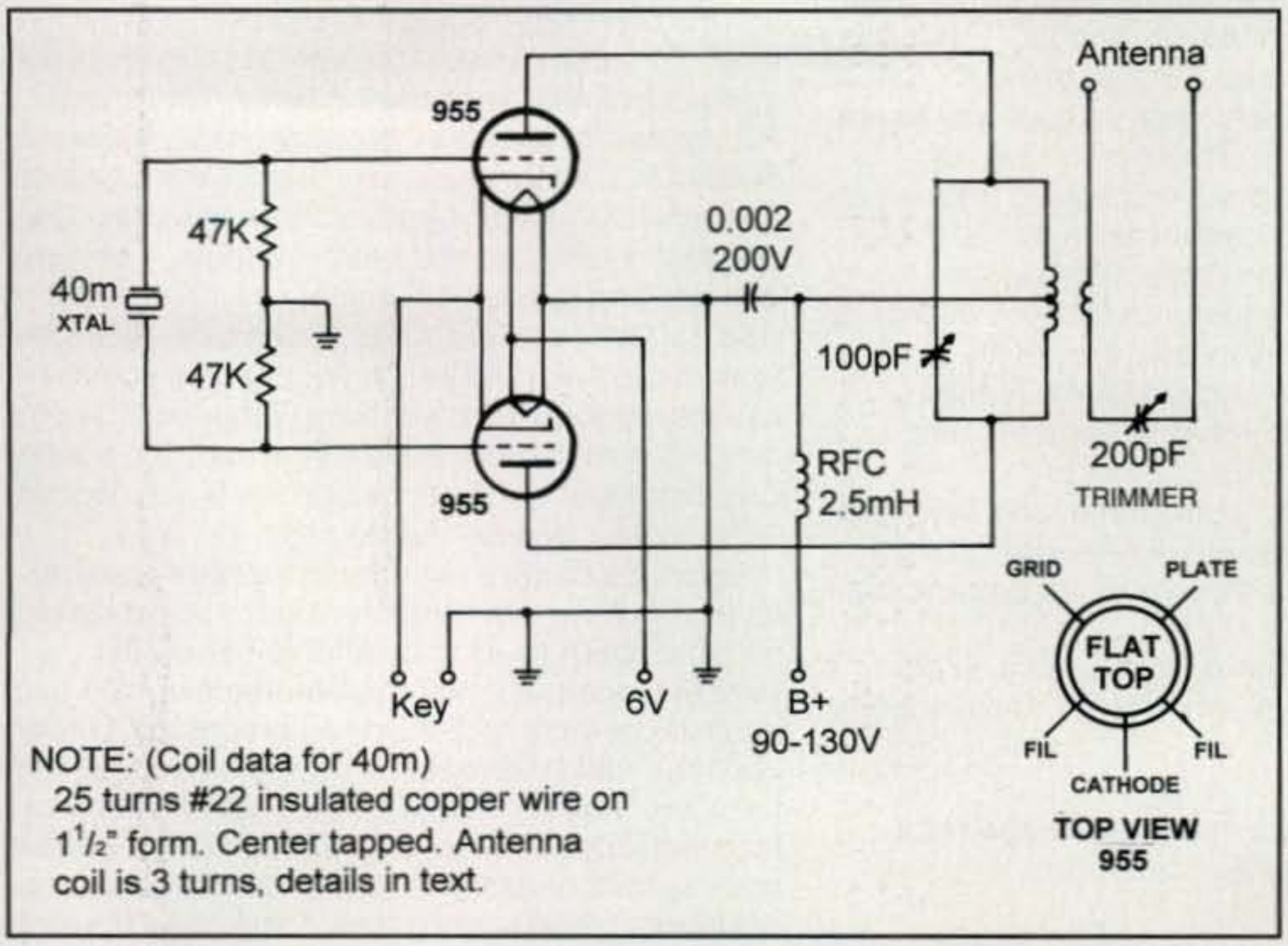


Fig. 3– Circuit diagram of the W6JRY push-pull 955 transmitter. Output impedance is 50–70 ohms and matches a dipole or a vertical. (Discussion in text.)

socket for the B&W coil. A blue screw terminal strip is used for power and key connections, and a Hammarlund midget variable capacitor fitted with an authentic 1930s/'40s style knob handles plate tuning.

B&W plate coils are now scarce as hen's teeth, but you can make your own equivalent by winding 25 turns of #20 or #22 insulated wire on a 1.25-inch diameter form approximately 3 inches long/tall. Carefully scrape insulation from a fraction of the coil's 12th/center turn for connecting B+ voltage and wind a three-turn antenna pickup coil over the center of the plate coil.

Tune-up and operation is relatively straightforward (tune the plate capacitor for a dip in plate current, and then tweak the antenna padder to load lighter or heavier, as required). When fully loaded/tuned, plate current will be 15 to 20 ma with a plate voltage of 135 volts obtained from fifteen 9-volt batteries wired in series. Jerry took this battery power to the next level by first purchasing the little critters at 2-for-$1 at a local Dollar Store. Then he dissected an old 45-volt Eveready™ battery, scanned its sides and wrappers, built a wood frame, and made a holder plus clip to accept five of the Dollar Store batteries. He did this three times, and then wired the three retros in series to produce 135 volts. The interesting news here is Jerry now has exact-size copy of the Eveready™ covers/wraparounds plus a complete group of "how to do it" pictures available for other homebrewers. You can contact him via e-mail at <jefuller@juno.com>.

That winds down the views for this month, friends, but rest assured details on more cool gear and easy-brew projects are lined up for next time. Meanwhile, enjoy some good QRP QSOs on the air every day and revel in the fact the operator rather than the rig makes the biggest difference in communications abilities.

73, Dave, K4TWJ

what's new

BY ANTHONY A. LUSCRE,* K8ZT

K3 Transceiver, Compact Keypad, Multimode Rig Controller, and more

This month's column takes a look at a new, highly anticipated HF/50-MHz transceiver and a compact controller keypad for the popular Yaesu FT-817/857/897 family of radios. We also take a peek at a new version of a popular all-in-one multimode radio controller and some antenna products that are handy for portable operations, plus a source for custom enclosures and even something to free up rusted hardware. We also debut a new feature in column called "The Amateur Radio Website of the Month."

New K3 Transceiver from Elecraft

The buzz began late this spring with the announcement of Elecraft's new transceiver at the International DX Convention in Visalia, California. Delivery of the first production run of the K3 (photo A) is scheduled for late August, so hopefully as you read this the first units should be on the air.

The K3 offers three ground-breaking features for hams desiring a high-performance transceiver:

• The modular design of the K3 allows the buyer to customize the rig's features to meet his or her current needs and still have the ability later to upgrade the rig by adding additional features.

• It is offered both factory-assembled and as a modular, no-soldering kit.

• It is designed for both home and field use, weighing just 8 pounds with dimensions of only 4"H × 10"W × 10"D and a receive-mode current drain of less than 1 amp.

Elecraft's state-of-the-art K3 transceiver offers a unique combination of ultra-high performance and affordability. Models start at under $2000 for the 100-watt assembled model or under $1400 for the user-assembled 10-watt (upgradeable) version. The rig is comparable in both features and performance to transceivers list priced at up to six times its cost.

The K3 features a high-dynamic-range, down-conversion analog architecture. This allows Elecraft to provide roofing filters with bandwidths as narrow as 200 Hz. The K3 is an all-mode transceiver covering all HF ham bands plus 6 meters. The addition of an optional general-coverage module allows continuous receive from 0.5 to 30 MHz.

Both the main receiver and the optional high-performance sub-receiver feature two 32-bit digital signal processors, providing true software-defined features. To handle future signal-processing tasks and operating modes, expansion memory and one-click PC firmware updating are provided. Software-defined features include full control over any operating situation, with 8-band receive and transmit EQ, stereo speaker/sound-card outputs, binaural effects, and advanced noise reduction. Built-in PSK31, CW, and RTTY decode/encode allows the operator to enjoy the excitement of data communications modes with or without a computer. The rig's rich I/O complement includes an isolated sound-card interface, front/rear mic/phone jacks, dedicated serial I/O, and band data.

Options include a high-performance sub-receiver, built-in automatic antenna tuner with two antenna jacks, both fixed and variable-bandwidth crystal filters, general-coverage filter module, 100-watt internal power amplifier stage (to upgrade 10-watt version), hand microphone or boom headset, digital voice recorder, TXCO, and a transverter interface with RX antenna jack. All options are offered both as factory-assembled and as a modular, no-soldering user-assembled kit. Either way, K3 owners can start with a basic version of the transceiver, at lower cost, and then easily add modules later. To ensure identical performance of both pre-built units and modular kits, modules are 100% assembled and tested at the factory. Builders can learn the radio theory behind each of the modules during assembly and acquire skills that will enable them to easily add future modules or upgrades.

For complete details, an extensive FAQ section, and online ordering visit <www.elecraft.com> or phone 831-662-8345.

*5441 Park Vista Court, Stow, OH 44224-1663
e-mail: <k8zt@cq-amateur-radio.com>

Photo A– Elecraft's new high-performance K3 transceiver. This photo, from the Elecraft website, is of a beta unit. Final layout of controls may vary slightly from production model. (Photo courtesy of Elecraft)

Radio Mate Compact Keypad from bhi Ltd.

The bhi Radio Mate compact keypad for the Yaesu FT-817, FT-857, and FT-897 (photo B) is a robust, compact remote keypad that enables many of the common functions of these radios to be used more easily. The keypad provides a number of fast and

Photo B– bhi Ltd.'s Radio Mate keypad provides large, easily accessible control of the Yaesu FT-817/857/897 series of radios. (Photo courtesy of bhi Ltd.)

effective shortcuts, including easy band change, direct modulation mode selection, one-touch memory function (20 memory locations for frequency and mode; press to recall, press and hold to store), simple and intelligent direct frequency input, swap VFO A/B, VFO A=B, and split VFO selection, and tune function enabling up to a 10-second carrier for tuning an antenna tuner.

The Radio Mate requires no external power and connects to the DIN-8 ACC socket/CAT interface of the radios. An LED indicates the present mode of the Radio Mate with red for the memory mode, green for the direct frequency entry mode, and yellow for the modulation mode. An ON/OFF switch is located on the side of the unit, and the keypad dimensions are approximately 6" × 4" × 1". The product is distributed in the USA by W4RT Electronics; visit <www.w4rt.com> for more information or to order.

*micro*HAM's *micro*KEYER-II

*micro*KEYER-II™ is *micro*HAM's most powerful all-in-one multimode rig controller (photo C). Featuring a built-in sound card and USB interface, the *micro*KEYER-II can interface with any Windows®-based logging or control program to run any FSK, AFSK, CW, SSB, AM, or FM mode. *micro*KEYER-II includes a rig control interface (CAT/CI-V) with interfaces for all radios, a powerful CW memory keyer based on the K1EL WinKey, and a buffer/sequencer for power amplifier and LNA keying.

Audio features include dual-channel audio for dual receive and SO2V support with dual-receiver radios; a completely redesigned microphone interface, allowing the use of almost any microphone with any radio; continuously adjustable microphone gain with separate adjustments for each microphone,; automatic, intelligent switching between microphones; and support for VoIP, Echolink, or Skype operation.

CW features include integrated, high-level paddle debouncer/interface, visual indication of keyer speed, optional "paddle only" side tone, display of transmitted characters, CW integrated contest serial number, and support for PS/2 keyboard or numeric keypad for memory recall.

Digital and FSK features include low-noise/high-gain audio chain with independently controlled line amplifiers for unbeatable weak-signal decoding; automatic sound-card line-input select for digital modes; transmitted data display (FSK-RTTY only); and customizable, two-line LCD display.

Other features include a proprietary serial port that simulates antenna tuner/ control protocols and SteppIR antennas. The *micro*KEYER-II uses the same DB37 cable sets as the original *micro*KEYER.

Estimated price is $450, which includes one DB37 cable set. For more info visit <www.microHAM-USA.com>.

K3IWK Custom Enclosures

Are you looking for a custom enclosure or chassis for a ham project? Charles Byers, K3IWK, can help. His Byers Chassis Kits Company produces custom enclosures, boxes, panels, chassis, antennas, and brackets in aluminum or brass. The company's focus is on R&D, OEM, and hobbyist users and small quantities with no setup charges are available. For details visit <http://home.flash.net/~k3iwk>.

MFJ mini-Dipole Mount and Telescoping Masts

MFJ Enterprises can get you on your favorite HF band quickly, easily, and inexpensively with its new MFJ-347 Mobile "HF Stick" mini-Dipole Mount (photo D). With the mini-Dipole Mount you can assemble a lightweight, balanced dipole using two HF mobile whip antennas. The MFJ-347 is manufactured with super-heavy-duty solid aluminum. Add two HF Stick antennas, which then become isolated dipole elements. Simply attach your coax (with a coiled-up section to isolate the antenna from the feedline) to the mount's coax connector and attach the other end to your radio. Now you have a lightweight dipole for the band of choice, and the mount can be attached to a mast up to $1^{1}/_{4}$-inch OD. The dipole can be rotated to null QRM/noise and to focus your signal. You can rotate by hand (the "arm strong" method) or use a lightweight TV antenna rotor.

Photo C– micro*HAM's* micro*KEYER-II front/back views showing many of the features of this powerful all-in-one radio controller. (Photo courtesy of* micro*HAM)*

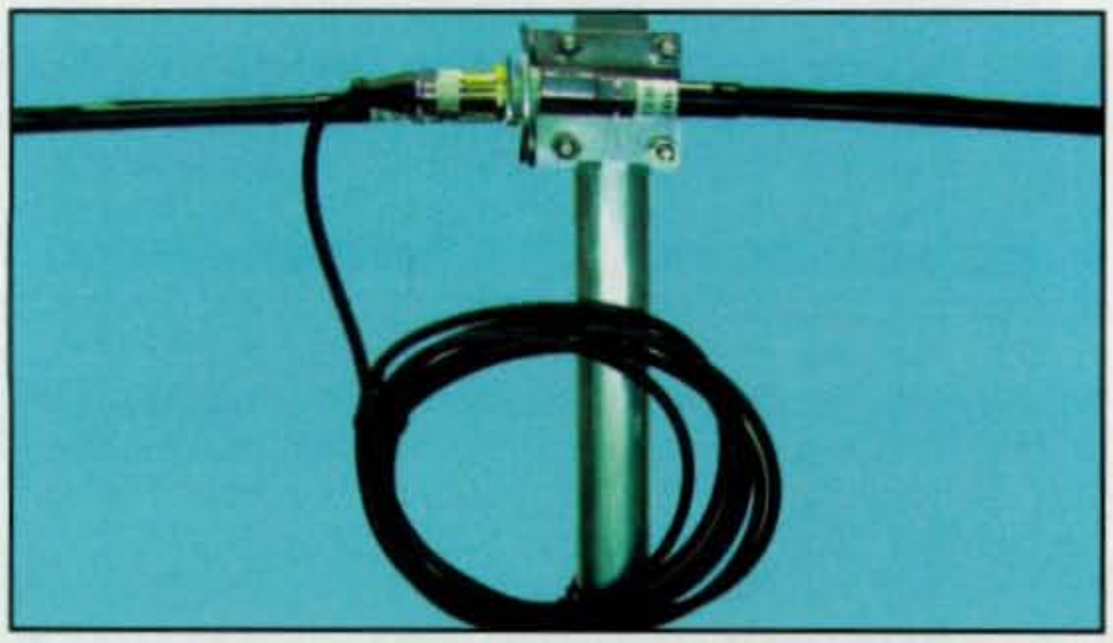


Photo D– The MFJ-347 Mobile "HF Stick" mini-Dipole Mount shown configured with two HF Stick antennas to make a rotatable dipole. Kit with mount and HF sticks is available as the MFJ-22XX in one of seven band choices (coax and mast are not included). (Photo courtesy of MFJ)

The MFJ-347 mount is available for $19.95, or you can order a complete kit with one mount and two HF Stick antennas for the band of your choice for $49.95. Available are the MFJ-2275 for 75 meters; MFJ-2240 for 40 meters; MFJ-2220 for 20 meters; MFJ-2217 for 17 meters; MFJ-2215 for 15 meters; MFJ-2210 for 10 meters; and MFJ-2206 for 6 meters.

Also, if you are looking for a sturdy, highly portable mast for your new rotatable dipole or other antenna project, MFJ is offering a series of new Super Strong Telescoping Masts. They are manufactured of .125-inch thick-wall fiberglass tubing. Each has a 2-inch OD bottom section and a 3/4-inch OD top section. These tough masts support real weight, including small Yagis, verticals, loops, full-size dipoles, G5RVs, and other antennas. For a variety of lengths and clamp styles look for the MFJ 1906/1908/H series. For more information or to order visit <www.mfjenterprises.com>.

PB B'laster to Free Up Rusted Hardware

Although not necessarily a ham radio related product, anyone who has struggled with rusted, corroded antenna and tower hardware might find the following of great interest. PB B'laster (Part #16-PB) is an all-purpose penetrating catalyst that can also be used as a lubricant and rust inhibitor. PB B'laster's capillary action allows it to squeeze into the tightest cavities and attack rust from all angles. PB's surfactant works on parts even when they're wet, and it displaces moisture. PB has been producing B'laster for nearly 50 years, and one of the company's mottos is "When nothing else works, it's PB that finally gets the job done." For more information go to <www.blasterproducts.com>.

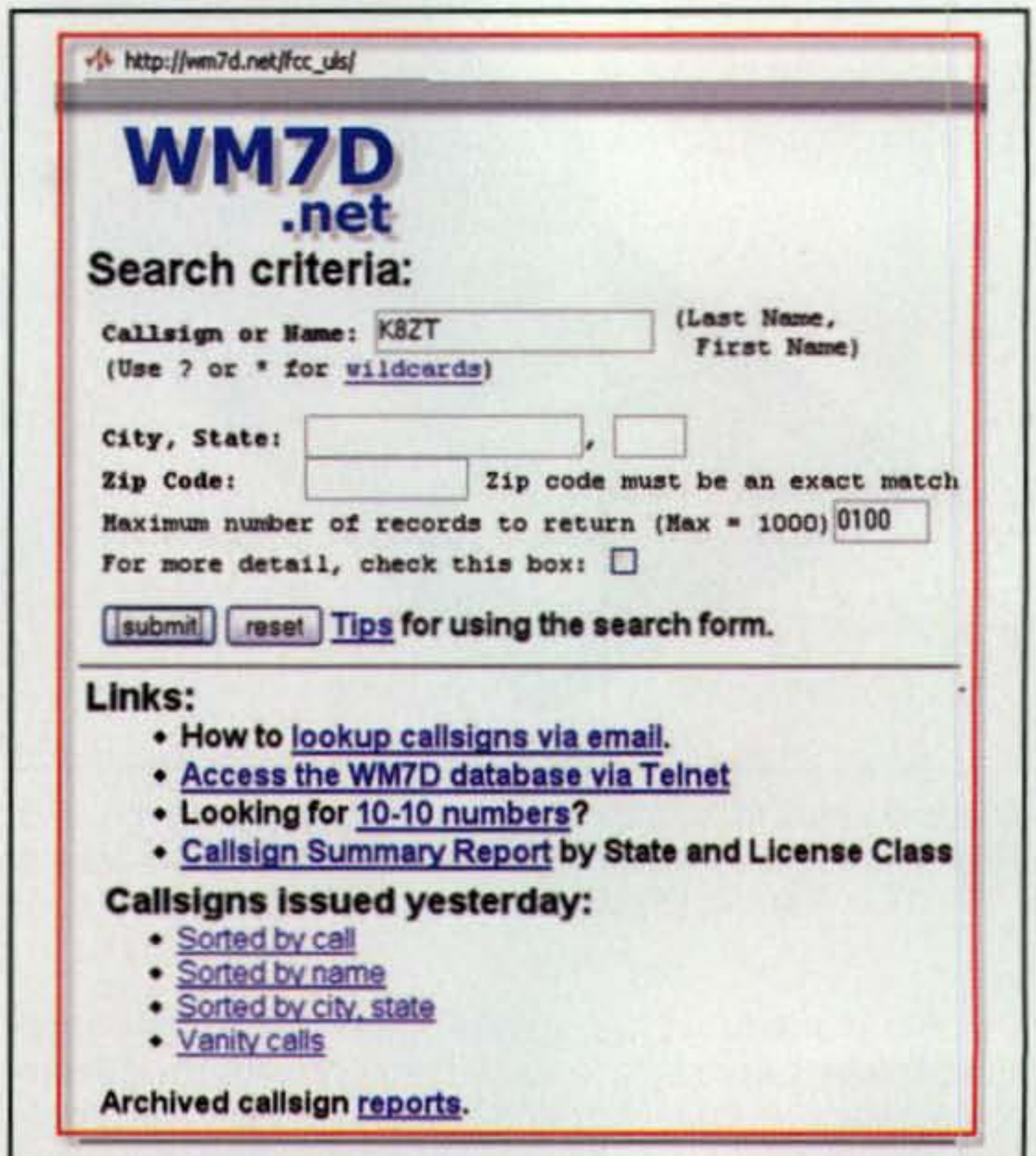


Fig. 1– Screen shot of this month's Amateur Radio Website of the Month. Notice the clean, uncluttered appearance and ability to use wildcards in some of the searches. (Photo courtesy of Mark Downing, WM7D)

The Amateur Radio Website of the Month

This month's site is produced by Mark Downing, WM7D. Mark's site, found at <http://wm7d.net/fcc_uls> (fig. 1), provides a number of very useful ways to search FCC amateur radio callsign information. The lookup process is very fast and supports searching on a number of items (call, name, address, etc.) and use of wildcards in the search. With nearly 20-million ham radio callsign lookups since its creation, the site has served a lot of users! Give it a try. You may even be the lucky 20-millionth searcher and win a prize being offered by Mark.

Wrap-up

That's all for this month. Thanks for the feedback e-mails from last month's column, and remember, I welcome your input, questions, and/or comments. Please feel free to use my e-mail or snail-mail address on the first page of this column. Until next month . . .

73, Anthony, K8ZT

Note: *Listings in "What's New" are not product reviews and do not constitute a product endorsement by CQ or the column editor. Information in this column is primarily provided by manufacturers/vendors and has not necessarily been independently verified. The purpose of this column is to inform readers about new products in the marketplace. We encourage you to do additional research on products of interest to you.*

BY JOE LYNCH,* N6CL

50 Years After the Sputnik Launch

It was 50 years ago this month, on October 4, 1957, when the former Soviet Union surprised the world with the launch of Sputnik 1. This 186-lb. satellite traveled in orbit about every 96 minutes, all the while emitting a "beep, beep, beep" signal. Politically, the launch represented a triumph for the Soviet Union in both the space race and potentially the arms race. With the satellite flying over the United States, came the fear of an orbital launch of a nuclear weapon attack on the U.S.

The U.S. responded to the launch of Sputnik 1 in several different ways. One was by launching Explorer 1 on January 31, 1958. However, even the U.S.'s first launch was overshadowed by the Soviet Union's launch of Sputnik 2, an 1100-lb. satellite that carried a dog as its passenger.

It would not be until the U.S. mission to the moon that this country would overtake the Soviet Union in space exploration with its successful landing of astronauts on the moon's surface by way of Apollo 11 on July 20, 1969.

VHF Plus Calendar

Oct. 3	Last Quarter Moon and 432 MHz Fall Sprint
Oct. 7	Good EME conditions
Oct. 8–9	*Draconids* Meteor Shower double peak
Oct. 11	New Moon
Oct. 13	Moon Apogee and the Microwave Fall Sprint
Oct. 14	Very Poor EME conditions
Oct. 18–20	The 2007 Microwave Update
Oct. 19	First Quarter Moon
Oct. 20–21	The 50 MHz Fall Sprint
Oct. 21	*Orionids* Meteor Shower peak; Moderate EME conditions
Oct. 26	Full Moon and Moon Perigee
Oct. 27–28	The ARRL 50 MHz to 1296 MHz EME Contest
Oct. 28	Moderate EME conditions

—EME conditions courtesy W5LUU.

SuitSat 2 Possible Launch

One way that the astronauts aboard the International Space Station could celebrate the 50th anniversary of Sputnik 1 might be by launching SuitSat 2 this month. As of last October, plans were being formulated to launch another surplus Russian space suit. For more information on the progress toward launching SuitSat 2, please see: <http://www.suitsat.org/>.

C6AQO 6-meter Operation from the Southern Bahamas

The following is from Randy Hargenrader, K4QO/C6AQO:

As part of a repeat visit to operate an IOTA (Islands On The Air) contest station from Crooked Island in the southern Bahamas during July, we learned to watch for the 6-meter openings that seemed to occur occasionally during this trip. This year we were especially prepared for a 6-meter opening on the Sunday morning after the IOTA contest ended, since this has happened to us before. After the IOTA contest closed at 8 A.M. local, we turned our attention to the 6-meter station near the window (photo A). We noticed a murmur of voices on the band, suspecting some sort of opening. One quick QSO with a stateside station and the subsequent spot and we were in the thick of a pileup that went on for hours!

It is really something to be on that end of a pileup! It is an amazing wall of voices to deal with and it quickly becomes a feeding frenzy for both sides! For our part, we want to answer everyone as quickly as possible in case the propagation decides to leave. And of course, we are a new country and grid for many of the stations. With a QSO rate up around 120 an hour, it became a mind-numbing activity after about 45 minutes of operating. All three operators took a shift at the microphone and gladly passed the microphone on to the next operator in the rotation! Pete, W2GJ/C6APR, Ed, K3IXD/C6AXD, and I stayed busy for more than five hours. The East Coast stations were very strong, and at one point we realized that we were probably missing some "DX" farther into the States. It was obvious that we needed to modify how we were operating the pileup.

I have to say that the crowd was quite orderly and followed instructions to stand by while we gave each area a chance. Six meters seems to be the other "Gentleman's Band"! After 493 QSOs we had tallied up 113 grids! A VUCC award is within reach simply from that one operation. Fifty of the grids are confirmed already!

The station was quite modest with the Magic Band showing us how magic it can be. The rig was a barefoot

Photo A– Pete, W2GJ/C6APR, hard at work at the 6-meter position on Crooked Island in the southern Bahamas. (Photo courtesy of Randy, K4QO/C6AQO)

e-mail: <n6cl@sbcglobal.net>

ICOM IC-7000 at 100 watts to a Par Electronics Moxon at 20 feet. In the picture (photo B) you can see the Moxon attached to a painter's pole that was duct taped to a little scraggly palm tree just outside the operating bungalow. We weren't sure if this tree had special powers, but the arrangement turned out to be quite successful! I am looking forward to seeing if the magic returns one more time next July. For now, we are dealing with the massive amount of QSL cards that follow this kind of operation. We had cards waiting for us before we got back to the U.S., and it will be a pleasure to confirm the grid and country to all who request it.

Photo B– The 6-meter antenna set up in the "magic" palm tree on Crooked Island. (Photo courtesy of K4QO/C6AQO)

Huge 6- and 2-meter Sporadic-*E* Openings

There was a huge sporadic-*E* opening on July 29, 2007. **Dave Bernhardt, N7DB** (CN85), posted the following on the VHF reflector:

I am not sure how the rest of the country would rate this day, but in the Pacific Northwest, this would have to be the best opening on 6 meters this season.

I have been collecting the propagation maps and as much posting data as I could from this day, so this should be a decent report of how the *day* went. I did say *day,* as this opening lasted over 8 hours. My best guess as to how this day came about would be the result of the solar wind gusts from a recent coronal hole. Although the solar wind was elevated, I did detect gusts which in turn caused the geomagnetic field to go into and out of active condition. From the CANOPUS data the field could be seen to go into and out of minor active condition and then into a quiet condition through the day. Just enough to agitate the ionosphere in the process. This may explain what happened today.

When I got up this morning and checked my online data sources, one peculiar thing I noticed was 6-meter activity in NA but *none* in Europe. Usually there is quite a bit of EU activity followed by NA later in the day. I did not get any signs of (sporadic-)*E* on 10 meters until just before 1500 UTC, when there were a couple of double-hop beacons being heard.

Around the bottom of the hour I noticed an accented station on .125. This was XE2YW, DL82, peaking 5/5. The next station logged was KØSBV, DM42, at 1556 UTC running 5/2. XE2YW was still in by the top of the hour (1600 UTC). Then the band swung out to the SE: KD4ESV, 5/5 EL87, at 1617 UTC, followed by W2GFF, 599 EM60, at 1642 UTC. Heard W5ZF/m at 1647, but no contact. Fresno, CA could be heard at 1706, but attention was directed to the double-hop stations. During the 1700 UTC half hour: KB4CRT, EL89(20/S9 BTW); W4VDH EM52; KG4RWO, EL96; and CO2OJ, EL83 at the bottom of the hour. I noted at 1632 UTC that it was hard to find a clear frequency to call on; yes, there were that many stations on. Activity was above 50.200 today. Another note indicated that there were so many beacons on, I gave up trying to sort them out at 1703 UTC. The remaining half hour logged: NCØB, DN70 (super 30/S9 signal); N5BO, EM60; KJ6M, CM87 nr SFO; and K5UIC, EM32.

All areas of the Pacific Northwest were engaged in the double hop up to this point. Although C6 was on, I am not aware of anyone working that area in the morning.

As we approached mid-day, I figured the band would die out. CO2OJ was still 5/2 here at 1814 UTC. Heard W7GJ 5/5 at 1825 UTC.

The band never really died out. WB5UDI, DM79 5/5, at 1850 UTC. During the 1900 UTC hour I worked AJ4F, 539 EL29; N5BLZ, 20/S9 EM20; W5GCX, 5/5 EL29; and WB2IVN, 5/9 DN60.

During the 2000 UTC hour: KD5USV, 20/S9 DN43; KD4POJ, 5/9+ DN98 (FYI, Dwayne just got back from OX); KI6CG/7, 5/9 DN28; NØUY, 599 EN18; and W7YM, 30/S9 DN57. I should note that a number of local stations were watching 144.200 here, but nothing noted on 2 meters here this afternoon. I did catch that Steve, VE7SL, posted K7CA on 2 meters at 2033 UTC. I noted again that there were too many beacons to sort out at 2048 UTC.

The 2100 UTC hour went like this: KØIA, 40/S9 (okay, nearly pinned S-meter) DN32; KI6CG/7, 5/9+ DN28; and VE5ESL, 5/9+ DO72. I heard Ed, KØGUV, at 2103 UTC, but no contact. W9DR, EL86, was heard 5/7 at 2108 UTC. Another one I tried for was K4RX for a number of minutes, but no contact.

The 2200 UTC hour recorded: W5AJX, 529 EL29; heard W6OUU, DM22, at 2213 UTC. Now this should be short enough for the MUF (maximum usable frequency) to get pretty close to 2 meters, but still zip in the PDX area. VE6AO, DO20; WA5TLP, 5/7 DN88; W6OAL, DM79; and VE5SWL, 559 DN79. Another interesting QSO I heard during the hour was W7KNT/m working XE2YW and hearing both ends of the QSO (2202 UTC). Finally we have the 2300 UTC hour: VE5TLW, 5/9 DO70; KEØUI, 5/9+ DM78; and AJ4FD, 419 EL29.

I really thought there might be something into the northeast, as it seemed a northern tier path was opening. MN was as far in that direction to develop as far as I know. The propagation path on the double hop was pretty much to FL and points south. I was also surprised that KL7 did not get in on any of this. VE7FG/b was the closest in that direction that I can tell.

The intensity of signals would lead one to believe the MUF was close to 2 meters. Nothing to show for the effort, though.

This was the end of July? Sure could not tell it by the amount of propagation we saw today. The length of the opening and the intensity of signals, including the double-hop signals, were quite unusual. I did note the large area of 2-meter sporadic-*E* in the eastern part of the country today. I did save a number of propagation maps through the day for archive use from both NA 6 meters and 2 meters. The intensity of signals from FL was like what we hear during *F2*, for those who were not around then. The strong ionization probably helped signal levels for the double hop.

This report is certainly not comprehensive of today's events, but will give you a feel of how conditions looked from the Pacific Northwest. As I write at 0221 UTC, there are still signals popping in on 50.125 MHz.

Robert Brown, KR7O, wrote: "From 2101 UTC until at least 2120 UTC there was a path from central/northern CA to VE6. At 2102 UTC I logged VE6EGN DO23. He was worked approximately 15 minutes later by KJ6KO (CM98), KC6ZWT (CM98), and NA6XX (CM97). I didn't hear any other VE6 stations or

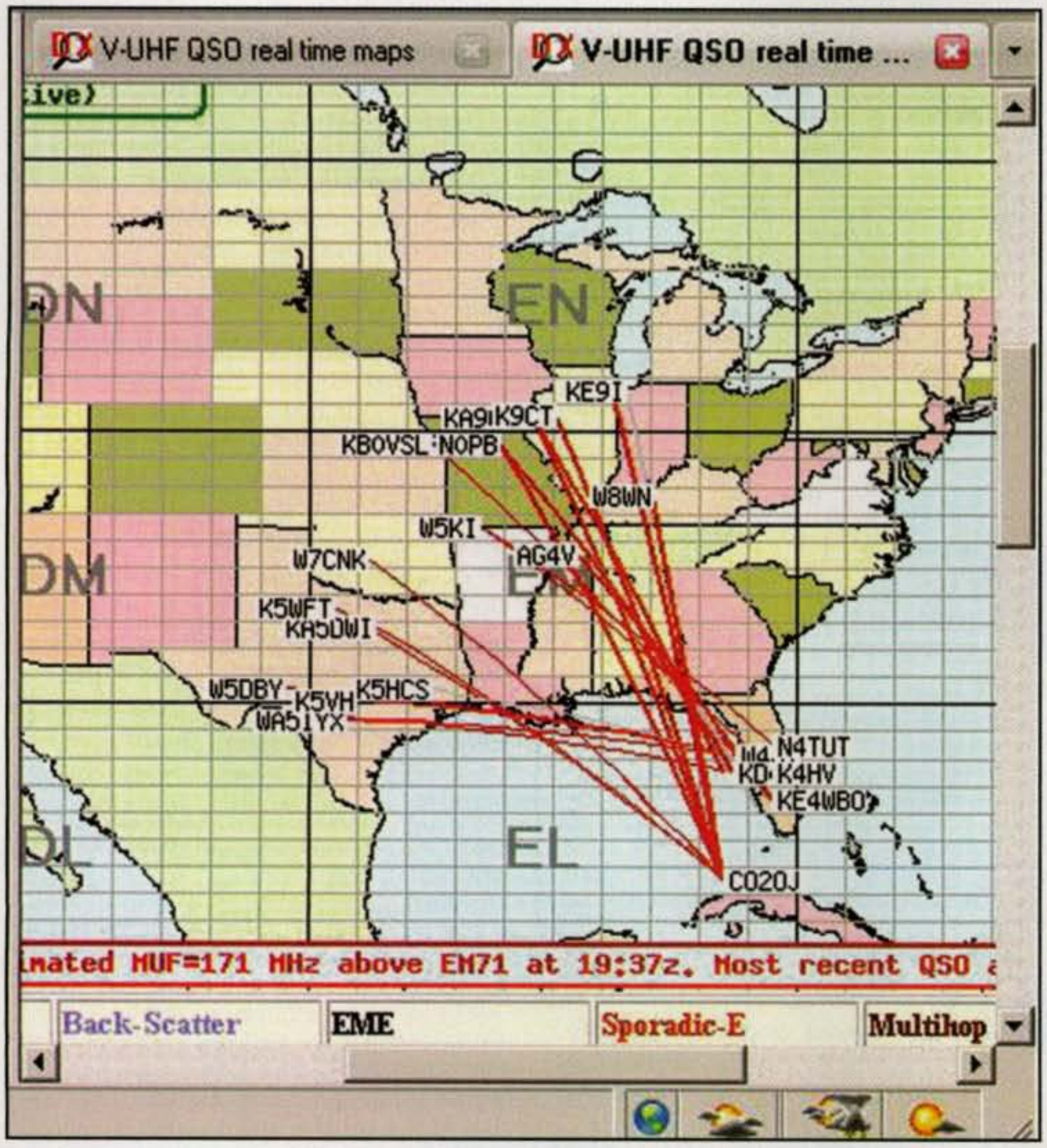


Fig. 1– Screen shot showing some of the Cuba and Florida to the Southwest and Midwest U.S. paths during the July 29, 2007 two-meter sporadic-E opening. (Image courtesy Shelby, W8WN)

beacons on, but I had some PL noise at the time, so I might have missed some weaker stations. Unfortunately, there are not many VE6s on 2 meters. During this period 6 meters appeared mostly dead (except for a couple of weak MT stations). At approximately 2125 UTC 6 meters was wide open again to WA, ID, MT, VE6."

Ed Rodriguez, WP4O, wrote: "Here is a list of the contacts I made from about 1845 UTC to 2100 UTC: W5DBY/M, DM90; N8PW; WB5ZDP, EM13; KA9AFT, EN40; AG9R, EN40; NØPB, EM39; AG4V, EM55; WØFK, EM48; K9IJ, EN52; WØKKK, EM19; K5SM, EM03; and NØAFT, EN48. I heard WD9BGA/B, NØLL/B, and N2BJ, EN61. Well, this is a partial list, Great opening! I was running a Yaesu FT-736R and Tokyo Hy Power HL350V close to 400 watts out and an 8-element quad up about 15 feet from south Tampa on the Bay EL 87."

Meanwhile, on 2 meters, what began as a regional sporadic-*E* opening around 1530 UTC on July 29, 2007 turned into an international opening that lasted about seven hours. Figs. 1 and 2, furnished by Shelby Ennis, W8WN, show the plots of several of the contacts during the opening. What follows are some of the reports sent to me and the VHF reflector:

John Geiger, AA5JG (EM04), wrote: "As luck would have it, I took down the 10-element 2-meter beam on Friday to replace it with a dual-band Yagi so I could get back on the satellites, and figured that reducing antenna size would lead to a big 2-meter opening this weekend. I heard the first 2-meter *E*-skip around 1745 UTC in the form of KG4RWO in EL96, but I couldn't get him. I then had to leave to take my 4-year-old daughter to the water park (some things are more important than VHF DXing—I can't believe I just wrote that!) and spent some of that time wondering about my antenna decision. Got back home three

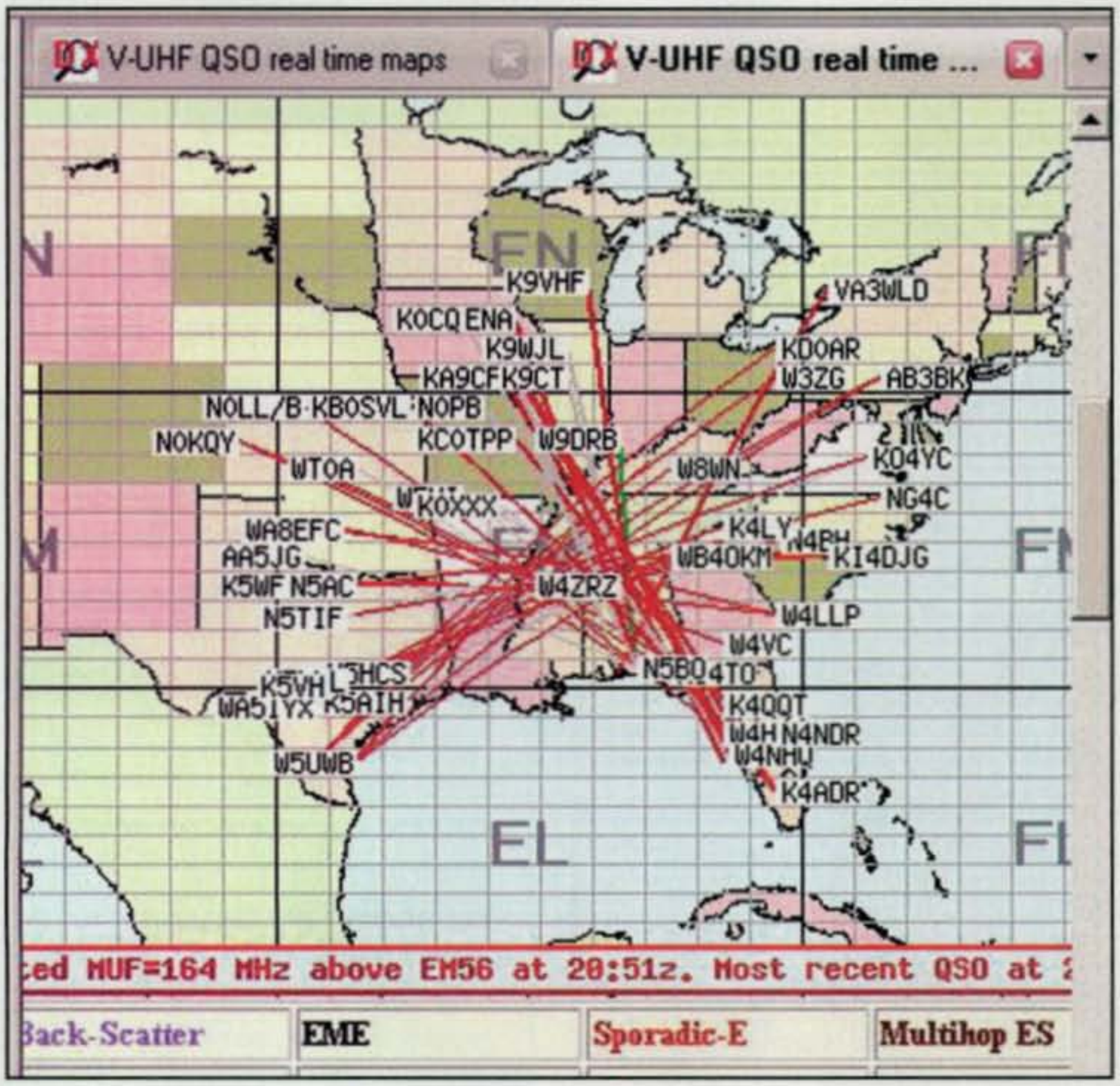


Fig. 2– Screen shot of some of the Southeast, Southwest, and Midwest QSOs during the July 29 two-meter sporadic-E opening. (Image courtesy of W8WN)

hours later to find 2 meters still open—what an opening! I managed six QSOs in three states, with three new grids. I think I missed the best of the opening, but it was still fun. I am running 50 watts from a Yaesu FT-100D to a Cushcraft A270-10S (5 elements on 2 meters) at around 25 feet."

Gene Gabry, N9TF (EN52), wrote: "I only heard two stations up here in EN52xg: K4CVL in EL87, and I initiated the contact with only 5 watts! Still had the TS-2000 turned down to 5 watts from CQ WW VHF Contest. He got my call with 5 watts, but then I turned up power to 100 watts due to fading. A few minutes later, I heard and worked K4QXX, also in EL87. He was S9 to 10 over for several minutes. I heard an occasional burst from CO2OJ, but never long enough to try. FL is a new state for me on 2 meters. Yahoo! Working conditions: TS-2000 and 13B2 at 44 feet."

John Butrovich, W5UWB (EL17ax), wrote: "I just got home from the CSVHFS conference and found 2 meters open with sporadic-*E*. From 2007 UTC until 2204 UTC I worked 41 stations in 22 grids. I actually made 45 contacts, with four duplicates. The grids worked were: FM 05, 06, 07, 08, 09, 16, 17, 18, and 19; EM 74, 77, 78, 84, 85, 86, 89, 91, 94, 95, 96, and 98; and FN10. My best DX was KDØAR, EN91ql, at 1336 miles. I tried 222 with a few gents but no go."

Sam Whitley, K5SW (EM25), wrote: "Thanks to Pat Dyer, WA5IYX's post on the 144 MHz logger at 1727 UTC, I turned the antenna toward FL. At 1731 I heard and worked KE4WBO (EL96) to start it off. The last signal worked/heard was KC4MKD (EM92), GA, at 2213 UTC. That was a solid 5 hours of sporadic-*E* conditions. Midway through the opening to FL, GA, and Cuba there was an opening to DN13 and DN32 in Idaho. I would work an ID station, and then off the back of the beam work another FL station. I know of no double-hop contacts made. I tried 222 MHz with a FL and a GA station with no luck. The APRS map gave good clues as to areas open, especially when the propagation to ID was shown as a possibility."

Perseids "No Big Deal"

The following from Shelby Ennis, W8WN, pretty much summarizes this year's performance of the *Perseids* meteor shower:

On radio (communications only, not using forward or back scatter to check rates), everybody felt that it was a poor shower. Oh, there were the occasional very long burns. However, they seemed few and far between, even during the time of the expected peak. While it's impossible to tell for sure, I think the several contacts I made were done primarily with just the tiny underdense pings from background sporadics as much as with shower meteors this year! There was lots of activity, so lots of high-speed meteor scat-

Photo C– Bob McGwier, N4HY (left), accepts the 2007 Central States VHF Society Chambers Award from Kent Britain, WA5VJB, the awards chairman. (N6CL photo)

ter contacts were made and a number of new stations were on in North America. Even so, not a lot of the old-style long *Perseid* over-dense burns that we used to have.

Current Meteor Showers

The *Draconids* is predicted to peak somewhere around 2030 UTC on October 8, then again around 0910 UTC on October 9. The *Orionids* is predicted to peak on October 21.

For more information on the above meteor shower predictions see Tomas Hood, NW7US's "Propagation" column elsewhere in this issue. Also visit the International Meteor Organization's website: <http://www.imo.net/calendar/2007/>.

Current Contests

The **432 MHz Fall Sprint** is October 3 from 7 PM to 11 PM local time. The **Microwave (902 MHz and above) Fall Sprint** is October 13 from 6 AM to 12 PM local time. Please note the time change from last year. The **ARRL 50 MHz to 1296 MHz EME Contest** is October 27–28. The **50 MHz Fall Sprint** is 2300 UTC October 20 to 0300 UTC October 21.

For ARRL contest rules, see the issue of *QST* prior to the month of the contest or the League's URL: <http://www.arrl.org>. For Fall Sprint contest rules, see the Southeast VHF Society URL: <http://www.svhfs.org>.

Current Conferences and Conventions

The 2007 **Microwave Update** conference is to be hosted by the Packrats and will be held October 18–20 in Philadelphia, Pennsylvania at the Inn at Valley Forge. For further information, check the Microwave Update website: <http://www.microwaveupdate.org>.

The 2007 **AMSAT-NA Space Symposium and Annual Meeting** will be October 25–28, in Pittsburgh, Pennsylvania at the Pittsburgh Airport Marriott Hotel. For details, see the AMSAT URL: <http://www.amsat.org/amsat-new/symposium/2007/index.php>.

CSVHFS Awards Announced

During each annual conference of the Central States VHF Society two prestigious awards are given to amateur radio operators active on the VHF-plus frequencies. These are the Wilson and Chambers awards.

The Wilson Award honors the memory of long-time society member Melvin S. Wilson, W2BOC. It is given for outstanding and continuing service to the society or to VHF/UHF in general. This year's recipient is Tommy Henderson, WD5AGO, for his many years of service to the society, which includes serving on two conference planning committees, as well as conducting the pre-amp noise-figure measurements for many years during the annual conferences.

The Chambers Award honors John Chamber, W6NLZ, for his many contributions to VHF, most notably his work with Ralph "Tommy" Thomas, KH6UK, proving the existence of the West Coast to Hawaii duct. The recipient of the award is one who has demonstrated excellent technical accomplishments worthy of recognition. This year's recipient is Bob McGwier, N4HY (photo C).

And Finally . . .

The lead story in this column is the 50th anniversary of the launch of Sputnik 1 on October 4, 1957. One of the many "consequences" of the launch was a huge spike in enrollment of students in college engineering programs across the country. Demand was so high among aerospace companies that it was said that all you needed was a degree and a pulse.

Now, 50 years later, nearly all of those engineers have retired or will be retiring within the next few years. Unfortunately, lately there has not been a similar spectacular development such as the surprise launch of the Sputnik satellite to inspire such a surge in new enrollees in engineering programs. As a result, we are experiencing a huge "brain drain" on our space research as well as in our military.

Fortunately, there is a grass-roots development of programs taking place. It is found in classrooms across the country. In the August 2007 column we featured one such program, which is located at Auburn University (AU) in Alabama. Run by AU graduate student Luther Richardson, KI4AOJ, its thrust is to develop new scientists and engineers to replace those retirees. For more about this program, please see Richardson's article "Creating a Few Scientists and Engineers with Amateur Radio," which appears in the Summer 2007 issue of *CQ VHF* magazine.

If you have a story to tell concerning how you are going about encouraging more students to go into the field of science and engineering, please let me know so that we can give it appropriate publicity here in this column and/or in a future issue of *CQ VHF* magazine.

Until next month...

73 de Joe, N6CL

awards

BY TED MELINOSKY,* K1BV

Portugal's National Amateur Radio Society Awards

It's time to remind everyone that when an award specifies sending a GCR list, GCR stands for General Certification Rule. In this case the sponsor is willing to accept a statement from two witnesses that they have seen the cards you've listed and certify that the list is correct. Many award sponsors follow this rule and don't want you to send the cards.

This is being written in July, a few days after I returned from a 19-day trip. E-mails from USA-CA completers or near-completers filled my in-box. The November column should list some very happy people who finally "got 'em all!"

REP Rede dos Emissores Portugueses Awards Series

This month's column features the awards issued by the Rede Dos Emissores Portugueses, the national amateur radio society of Portugal. Portugal's long history of seafaring and exploring provides the background for two of the certificates, honoring Vasco da Gama and Bartolomeu Dias. The Dias certificate provides a great visual of the progress of Portuguese explorers as they kept pushing down the coast of Africa, until in 1488, Dias became the first European to round the Cape of Good Hope (which he called the "Cape of Storms"). This opened the road to India and great trading wealth for Portugal.

General Requirements: SWL OK. Apply to: REP - Rede dos Emissories Portugueses, Award/Contest Manager, Rua D. Pedro V, 7-4°, 1250-092 Lisboa, Portugal. The fee for each award is 5 Euros, $US5, or 5 IRCs. Endorsements are free for SASE, or $US1, or 1 IRC with self-addressed envelope. Read the rules carefully for other charges that may apply for plaques, etc. Internet: <http://www.rep.pt/>

Diploma CTDX 100. Submit proof of contact/heard from 100 different countries on the ARRL DXCC list on or after November 15, 1945.

Modes: Phone, CW, Mixed, RTTY, SSTV, and Satellite.

Bands: 10, 12, 15, 17, 20, 30, 40, and 80 meters.

Single band: 6, 10, 40, 80, 160 meters and satellite.

5 Bands: For working/hearing a minimum of 100 countries on 10, 15, 20, 40, and 80 meters.

Honor Roll: Contact at least 300 different countries.

Submit log and actual cards (or photocopy of an approved ARRL DXCC award listing proving your country count). Application forms are available from REP for SAE/IRC. The award is free to members of REP. If cards are sent, you must provide the necessary amount to cover the registered postal return fees for the QSL cards.

The basic award is for 100 countries. Endorsement stamps are available for each 25 additional countries up to 300. Endorsements thereafter are given for each 5 additional countries.

Diploma Vasco da Gama. This award is sponsored by the Portuguese National Radio Association to honor the Portuguese discoveries during the 15th century, especially the discovery of the sea route to India by navigator Vasco da Gama. Contact different countries along the route of the explorer since November 15, 1945. SWL OK. Earn at least

*12 Wells Woods Rd., Columbia, CT 06237
e-mail: <k1bv@cq-amateur-radio.com>

USA-CA Honor Roll

1000

S51DX.....1734

The total number of counties for credit for the United States of America Counties Award is 3077. The basic award fee for subscribers is $6.00. For nonsubscribers it is $12.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for $2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated June 1, 2000. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 12 Wells Woods Road, Columbia, CT 06237 USA. DX stations must include extra postage for airmail reply.

The Rede Dos Emissores Portugueses's CTDX 100 award is issued for contacting/hearing 100 different countries on the ARRL DXCC list.

CT	Portugal	3	TR	Gabon	5
CU	Azores	4	TN	Congo	8
CT3	Madeira	4	9Q	Zaire	8
CN	Morocco	4	D2	Angola	6
EA8	Canary Isl.	4	ZD7	St. Helena	5
SØ	West Sahara	8	ZD8	Ascension	5
5T	Mauritania	5	V5	Namibia	5
D4	Cape Verde	6	ZS	South Africa	4
6W	Senegal	5	C9	Mozambique	6
C5	The Gambia	5	FR/J	Juan de Nova, Europa	10
J5	Guinea-Bissau	6	5R	Madagascar	8
3X	Guinea	5	FH	Mayotte	5
9L	Sierra Leone	5	D6	Comoros	8
EL	Liberia	4	5H	Tanzania	5
TU	Ivory Coast	5	5Z	Kenya	5
9G	Ghana	5	T5	Somalia	8
VU7	Laccadive	10	VU	India	5
AP	Pakistan	5	EP	Iran	8
A4	Oman	5	7O	Yemen	10
5V	Togo	5	TY	Benin	5
5N	Nigeria	4	TJ	Cameroon	5
3C	Equatorial G.	8	S9	Sao Tome	6
3CØ	Annonbon	10			

(Total available points = 265)

Table I– Point values for the Diploma Vasco da Gama.

The Vasco da Gama award honors the discovery of the sea route to India by this Portuguese navigator. Contact different countries along the route of the explorer to earn the award.

The Bartolomeu Dias Award commemorates Dias's arrival at the Cape of Good Hope in 1488. Contact CT and ZS stations.

25 points, which must include one contact with Portugal (CT) and one with India (VU). Point values are shown below. It is available for SSB, CW or Mixed. 5 different classes as follows:

Class I—75 points, Golden Sextant
Class II—100 points, Golden Compass
Class III—125 points, Golden Anchor
Class IV—150 points, Golden Astrolabe
Class V—200 points, Golden Helm Wheel

See Table I for point values.

Also available is an Honor Roll for those earning 250 or more points. Contacts may be submitted by copies

Rory Porter, WYØA
USA-CA All Counties #1150, March 9, 2007

My earliest recollection of ham radio is around 1960 at about the age of five in midwestern Kansas. I remember my father sitting by the radio he assembled himself and calling into the night "CQ CQ CQ . . . this is WØEVF, W Zero Easy Victor Fox." Most of the time it seemed like he was just listening to static, but every now and then, like magic, someone would answer his call and the conversation would begin. I also recall him taking me to a ham radio gathering, most likely a Field Day, at a lake nearby. At the time he had a '57 Ford station wagon and a trailer that had a tower on it that he would raise to the vertical position and then crank up to its full height, which came in handy at the lake.

When not in use, my dad kept his trailer/tower in a lot next to our house. In the plains area of Kansas, we usually consider it a calm day when the wind is only blowing 30 to 40 mph. However, one one particularly windy night the mobile tower blew over onto its side, leaving one of the wheels in a horizontal position about six feet above the ground. My younger brother, who holds the call NØUTK, and I found this exposed wheel made a quite fine carousel, as we would take turns climbing up on it and spinning ourselves around and around. It didn't take very long for my brother to lose his grip and fall off, which necessitated a quick visit to a local hospital and several stitches in his lip. Amazingly, the next day the tower/trailer disappeared and was never seen again.

In 1973, shortly after I graduated from high school and not having a strong desire to attend college at the time, I enlisted in the United States Marine Corps. After going through a battery of tests in boot camp, it was determined that I had a propensity for recognizing patterns of dots and dashes when listening to them. Upon completion of boot camp, it was off to Pensacola, Florida to a Naval Communications School, where I was taught Morse code and radio theory. After graduation, I spent the next three years of my enlistment in places such as Adak, Alaska and Misawa, Japan, where I applied my skills as a radio direction finding operator.

When my enlistment ended, I returned to Kansas and never gave Morse code or radios much of a thought until March 1989. At the time, I was working for Boeing as a programmer, a job I continue to do today, only now for Sprint AeroSystems, Inc. I ventured out to the shop to check on one of my programs that was running on a machine, and I noticed the operator was reading a study manual to pass a test so he could get an amateur radio Technician license. Bob, who eventually obtained the call NØKEU, convinced me I should study as well and take the test with him. Since I already knew CW, I just had to do a little book studying and I was ready to go.

When the big day came for the test, I passed a couple of written tests and the 13-wpm code test to obtain the callsign KBØDZJ. Bob already had an antenna made and a small radio, a Uniden HR-2510 which would allow him to listen to the 10-meter band. When our licenses arrived in the mail, he invited me out to his place one morning (we both were working the second shift at the time) to see what we could hear. It wasn't long before the band came up and it seemed like the whole world was coming in. I made my first contact with a station on the Ivory Coast of Africa. I was officially "hooked," and off I went to purchase an HR-2510, construct my own cubical quad, and mount it on top of a telephone pole I erected in the back yard using an old TV rotator to turn it.

It didn't take long for me to do a little studying to pass the test for the General license which would allow me to talk on the other bands. I went to a hamfest in a town close by and bought a Drake TR-4 that a fellow was selling out of the trunk of his car. I hurried home and constructed several dipoles that would resonate on the various bands and I was up and running.

Since I worked the second shift, I did lots of late-night listening on 40 meters and soon discovered the HHH net operating on 7.235 MHz with Jim, WB6FNI (now W7FIT), acting as net control. After a few months of checking in nightly, I managed to work all the states on the net and received WAS certificate #371, a certificate that holds a place of honor on my wall now, as it was my first amateur radio achievement. It was at this time when several pieces of radio gear started showing up at my door, such as a receiver so I could work "split" via the postal system from my dad, now W9LXI, the callsign he still holds. Dad, if you're reading this, I love you and thanks for everything you've done for me.

One day while tuning through the 20-meter band, I happened onto those crazy guys who didn't use phonetics on 14.336 MHz making contacts with mobiles in various counties as they went about their travels. I thought to myself, this is kind of cool, and made about 200 contacts, which I logged, also thinking it's probably darn near impossible to talk to somebody in every county.

Since I was mostly into chasing DX at the time, it didn't take long before I forgot all about county hunting. This was the latter part of 1989. In December of the same year, and after brushing up on CW, I took the Advanced and Extra Class written tests and the 20-wpm code proficiency test and passed. In January 1990 I was granted the call WYØA.

Fast forward to September 2004. While I was at home recuperating from an automobile accident, I decided to see what I could hear on 20 meters. I stumbled across 14.336 MHz, and lo and behold, there were those crazy county hunters still doing what they love so much—chasing counties. Jim, KZ2P, acting as net control, was beckoning

Rory Porter, WYØA, USA-CA All Counties #1150.

any mobiles that might be within hearing range, which was basically the whole country it seemed, to put out their counties. It wasn't long before a mobile came back to his call and the signal reports started.

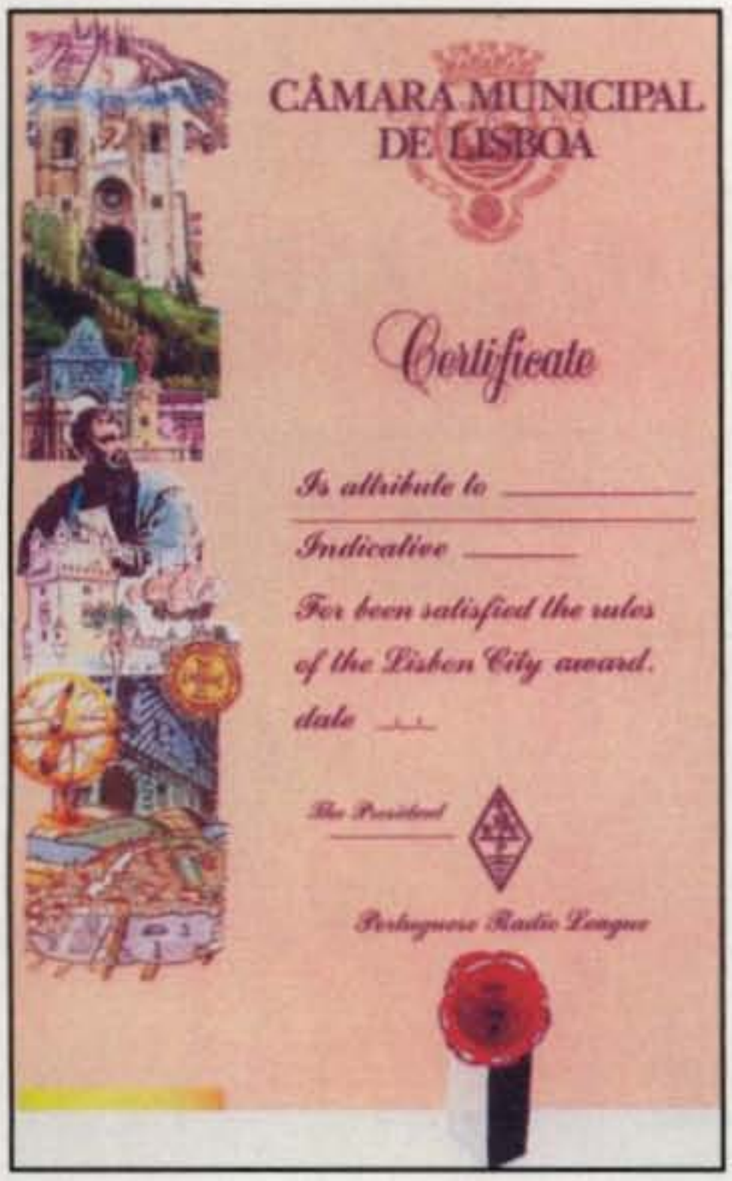
Before the day was over, I had logged over 50 counties and was enjoying myself to no end. This prompted me to get out the old log books and search for the mobiles I had made contact with back in 1989. I did manage to get several of those counties confirmed, but sadly enough, several of those mobile operators had become Silent Keys. One of the operators, KB7QO, who had given me reports from several counties in Montana, wrote me a letter stating that he was in his 80s now and having some health issues that prevented him from mobiling anymore. He said my MRCs were the first he had seen in several years and he also expected they would be the last.

I officially now consider myself a county hunter, and with help of a good friend of mine, Dick, KØOY, we installed an ICOM 706MKIIG in my commute vehicle, a 1994 Ford Aspire, which I use daily to commute 30 miles to and from work. Along with the radio, we attached a High Sierra 1800 Pro screwdriver antenna to the rear of it.

My first contact as a mobile was with Larry, N2OCW, while he was putting out counties in West Virginia. The counties continued to pile up, and on May 7, 2006, at 1619 UTC with the help of Dan, KM9X, acting as net control on 7.238 MHz, Larry WØQE, took the time away from the county hunter CW contest that was going on to come to SSB and give me a contact from the county line of Cloud and Mitchell in Kansas for what is known by county hunters as "the whole ball of wax."

It didn't take long before I had all the MRCs in hand, but it seemed a little anticlimactic to send my contact sheet and the required cards that the USA-CA Custodian had requested, so I decided to hang on to them for a while until a nice round number came up. On March 9, 2007 I was awarded USA-CA All Counties #1150.

73, Rory, WYØA



Contact ten stations in Lisbon (seven if CT1REP is a contact) for the Lisbon City Award. The award can be earned for HF or VHF.

of cards or GCR list. The award is free for members of REP and costs 1000 Portuguese escudos for non-members residing in Portugal. Cost for the Honor Roll plaque is 35 Euros for Portugal and Europe and 40 Euros for all others.

Bartolomeu Dias Award. Sponsored by REP and the SARL, this award is to honor Dias's arrival at the Cape of Good Hope in 1488. Contacts after 1 January 1, 1988 count for the award. Portuguese stations need 20 CT and 5 ZS stations; South Africans need 5 CT and 20 ZS; all others need 5 of each. SWL okay.

Lisbon City Award. Contact 10 stations in Lisbon after June 1, 1988. SWL okay. Only 7 are needed if CT1REP, the IARU representative, is contacted. The award can be earned for HF or VHF.

Worked All Michigan Counties Award

Michigan has recently been added to the growing list of states that provide a certificate for working all of their counties. The award is sponsored by the Michigan Upper Peninsula Net.

Work all 83 Michigan counties on or after January 1, 1964. All bands 160 through 2 meters, all modes, okay, except no repeater or digipeater contacts and no cross-mode contacts. Contacts may be made from multiple locations within the same state for U.S. applicants or country for foreign applicants. GCR list must list station worked, date, time, frequency, mode, and county. Electronic QSLs are acceptable as long as you possess a printed copy. USA-CA holders may submit their award number and the call(s) that were used to earn the award. They do not have to fill out the rest of the application. Fee is $US5 for US applicants, check or money order. For foreign applicants the fee is $US7, money order only. An official application form is required and can be found on the group's website (http://www.michupnet.com/wamcawrd.html) as a PDF file.

We're always interested in hearing from clubs, special interest groups, or individuals who sponsor an award. Please contact me at the e-mail address shown on the first page of this column.

73, Ted, K1BV

Contact the 83 counties of Michigan to earn the Worked All Michigan Counties Award from the Upper Peninsula Net.

dx

BY CARL SMITH,* N4AA

Contest DXpeditions plus Youth in DXing – W6EMB

Twice I tried to label this column "September" and my dumb computer told me there was already a file by that name. Then I realized that my computer is smarter than I am. This column is for the *October* issue. Thus, I'm embaarrassed but thankful that at least the computer knows what I'm supposed to be saying.

It was a hot summer for many of us, with high humidity as well. It is really hard to work outside under those conditions, especially for those of us who are not youngsters and have medical conditions to consider. Many of those antenna projects had been postponed, temporarily at least, until the weather moderates a bit, which should be about now in many parts of the country. Then we can get things such as antennas ready for the contest season. Speaking of that, the CQ WW DX Contests, ARRL Sweepstakes, etc., are right around the corner. Lots of announcements of planned operations are showing up for the CQ WW weekends, and I'm sure there will be more. It's always fun to pick up a few new ones for the band/mode blanks in our award-tracking software/paperwork.

Roger, G3SXW, has announced that the VooDoo Contest Group will again be active from Africa. This time they will be in Guinea with a 3X callsign. The group always goes somewhere for the CQ WW DX CW Contest weekend, and they'll be on for several days before and a few days after the contest as well. Something that has been showing up in a lot of DXpeditions is the EME mode. Roger says that AA7A and KC7V will be trying that mode for several days from Guinea.

Emily, W6EMB, presenting the Youth Forum at the Knoxville Hamfest. See her story in this month's column. (Photo courtesy of David, K4PZT)

Emily Bishop, W6EMB

My good friend Lynn, W4NL, is president of the East Tennessee DX Association. He has been trying to find some way to reach young people with the story of ham radio. A young lady, along with her Dad, have been making quite an impression on the members of the ETDXA and a lot of others (see her picture in this column and on last month's cover).

Another friend of mine and Lynn's, David Bower, K4PZT, was the chairman of the recent Knoxville Hamfest and Electronics Exposition and ARRL Tennessee State Convention. He gives us a little background on this young lady:

Emily Bishop, W6EMB, conducted the Youth Forum. When she first inquired about giving the presentation, I expected an older person. I was soon to learn that she is only 12 years of age and already has an Extra class license. I was also pleasantly surprised to learn that she really likes chasing DX on HF with countries contacted including Japan, Africa,

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>

CQ DX Awards Program

SSB

2501 ..... IWØHOU
2502 ..... EA4DAT
2503 ..... EA4BHK

CW

1081 ..... IKØTRV
1082 ..... EA4OA

SSB Endorsements

330 ..... K9OW/337
330 ..... K3UA/336
330 ..... K7HG/331
330 ..... K7LC/331
310 ..... EA3ALV/313
200 ..... EA4BHK/205
100 ..... EA4DAT/151

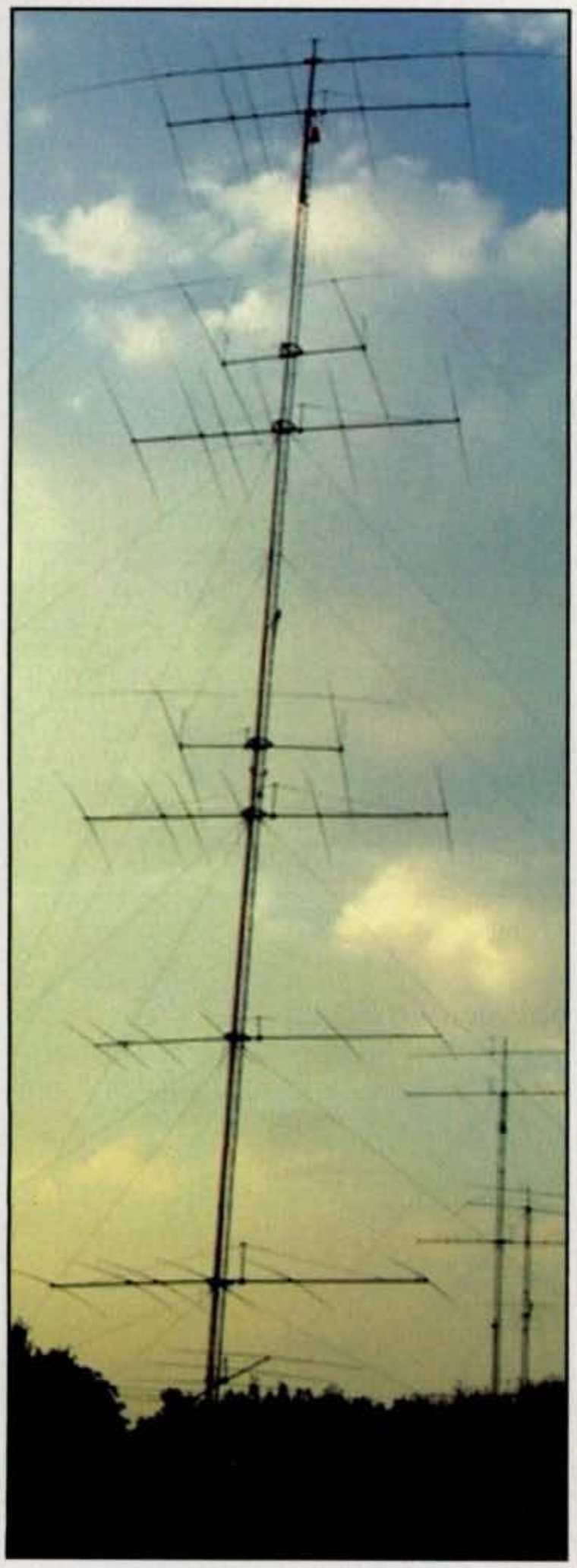
CW Endorsements

330 ..... K3UA/336
330 ..... K9OW/335
150 ..... IKØTRV/188

RTTY Endorsements

330 ..... K3UA/332

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 337 active countries. Please make all checks payable to the award manager.



Tim Duffy, K3LR, sent along a picture of his new tower. He said, "There are nine antennas with seven rotors. The M²/W6ANR/Tornado dipole on 80 for the second station is now at 240 ft. (the old tower was at 180 ft.). The 6/6/6/6 OWAs (optimized wideband antennas) on 20 are at 230/170/110/50 ft. (added a fourth 6-element OWA Yagi at 230 ft.; over 21 dB gain). The 2/2 on 40 meters (Moxons) for second station are at 185/120 ft. (converted the new XM240 Cushcrafts to W6NL design). The 6/6 M² on 15 meters for the second station is at 80/40 ft. fixed SE (same as before). Credit for the design of the 20-meter antennas goes to WA3FET, and credit for the 40-meter Moxon designs goes to W6NL." Folks, that's a lot of aluminum! For more photos of the K3LR super-station, go to <http://www.k3lr.com/>. (Photo courtesy of Tim, K3LR)

The WPX Program

CW

3185.....DM3FZN 3186.....DL5CL

CW: 1100 IV3DYS. 2600 K9UQN.
SSB: 2800 KF7RU.
Mixed: 1000 K6TV. 1100 WBØWAO. 1500 JA9AVU.

160, 80, 40, 20, 15, 10 meters: DM3FZN

Asia: DM3FZN
Europe: DM3FZN
N. America: DM3FZN, K6TV
S. America: DM3FZN

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, WB6ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBF, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, DKØPM, SV1EOS, UAØFAI, N4GG, UA4RZ, 7K3QPL, EW1CQ., UA4LY, RZ3DX, UA3AIO.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR2QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, KBØG, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, WX3N, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, DJ1YH, KUØA, VR2UW, UAØFZ, DJ3JSW, OE6CLD, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, CT4NH, EA7TV, LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ, DKØPM, SV1EOS, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if airmail desired) to "CQ WPX Awards," P.O. Box 355, New Carlisle, OH 45344 USA. Note: WPX will not accept prefixes/calls which have been confirmed by computer-generated electronic means. *Please Note: The price of the 160 meter bar for the Award of Excellence is $6.50.

Russia, Sweden, Germany, France, England, Mexico, Scotland, Italy, and others. And, as she proudly pointed out, "Oh yeah, Alaska, too."

Like many young people, Emily is fascinated with computers and digital technology, and it shows, for she has acquired a love for PSK-31 and MT-63. Recently, on July 28, she was alive with enthusiasm after she worked a ham in Africa on 20 meters using PSK-31. To become fluent with the technology, she took an Army MARS course and learned how to build macros and other techniques for navigating the technology. Emily is an active member of the ARRL and holds an appointment as the Tennessee Section Assistant Section Manager for Youth. Her Youth Forum presentation at the June 9 Knoxville Hamfest drew an attendance of 25, including three ARRL officials, and she followed up with another talk to the East Tennessee DX Association on July 16 with a crowd of 30 spell-bound DXers and contesters in attendance. She is also scheduled to participate in Youth Activities at the ARRL National Convention in Huntsville, Alabama in August.

But wait, that's not all. . . . Emily is also a member of the YLRL, an auxiliary member of Army MARS, and a member of the Cleveland (Tennessee) Amateur Radio Club plus the East Tennessee DX Association.

Emily first acquired an interest in amateur radio at the age of 8 while observing her father Mike, NM9B, talking on the radio to a person in a distant land. As she relates, "I don't remember where," but said that she thought it was "neat that you could talk to someone with a radio and antenna." Emily didn't wait long to get involved and was soon licensed (at 8 years of age) on September 20, 2003, passed the Morse code examination on

The CQ DX Field Award Program

Mixed

89.....K6TV

SSB

52.....YB2VTO 53.....K6TV

CW

51.....K6TV 52.....HB9DAX

Endorsements

Mixed

175.....K6AU/182 QRPp.....K6TV
100.....K6TV/115

SSB

175.....W4ABW 100.....K6TV/109

CW

150.....K6TV/167 QRPp.....K6TV
100.....K2AU/134 QRPp.....HB9DAX
100.....HB9DAX/104

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5 Band WAZ

As of August 1, 2007, 735 stations have attained the 200 zone level and 1559 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:
UAØFDX KØIEA

The top contenders for 5 Band WAZ (zones needed, 80 or 40 meters):

N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
W2YY, 199 (26)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40m)
IK1AOD, 199 (1)
DF3CB, 199 (1)
GM3YOR, 199 (31)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W3NO, 199 (26)
HB9DDZ, 199 (31)
RU3FM, 199 (1)
N3UN, 199 (18)
OH2VZ, 199 (31)
W1JZ, 199 (24)
W1FZ, 199 (26)
SM7BIP, 199 (31)
SP5DVP, 199 (31 on 40)
N4NX, 199 (26)
N4MM, 199 (26)
EA7GF, 199 (1)
N6HR/7, 199 (37)
JA5IU, 199 (2)
NØIJ, 199 (21)
RU3DX, 199 (6)
N4XR, 199 (27)
WØPGI, 199 (26)
HA5AGS, 199 (1)
EA8AYV, 199 (27)
VE3XN, 199 (26)
YU7GMN, 199 (10)
K7LJ, 199 (37)
RA6AX, 199 (6 on 10m)
RX4HZ, 199 (13 on 80m)
KG9N, 199 (18)
EA5BCX, 198 (27, 39)
G3KDB, 198 (1, 12)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
K4CN, 198 (23, 26)
G3KMQ, 198 (1, 27)
N2QT, 198 (23, 24)
OK1DWC, 198 (6, 31)
W4UM, 198 (18, 23)
US7MM,198 (2, 6)
K2TK, 198 (23, 24)
K3JGJ, 198 (24, 26)
W4DC, 198 (24, 26)
F5NBU, 198 (19, 31)
OE2LCM, 198 (1, 31)
HA1RW, 198 (1, 31)
WK3N, 198 (23, 24)
W9XY, 198 (22, 26)
KZ2I, 198 (24, 26)
W7VJ, 198 (34, 37)
WØCP, 198 (18, 40)
K9MIE (18, 21)

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

WC5N (152 zones)
SV3AQR (165 zones)
H44MS (193 zones)
RX4HZ (199 zones)
UT4MF (157 zones)

5 Band WAZ updates:

KG9N (199 zones)
K7LAY (188 zones)
N5ID (179 zones)
IV3MUC (197 zones)
K7BG (200 zones)
WS1L (160 zones)

****Please note: Cost of the 5 Band WAZ Plaque is $100 ($120 if airmail shipping is requested).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

The WAZ Program

15 Meter SSB

636 ..... SV3AQR

20 Meter SSB

1164 ..... SP7ITB 1165 ..... DL1DUO

17 Meter CW

66 ..... S57J

30 Meter CW

79 ..... S57J

160 Meters

247 ..... JH4UYB (39 zones) 248 ..... RX4HZ (35 zones).

All Band WAZ

Mixed

8465 ..... W6SU 8467 ..... UR1MI
8466 ..... UT4MF

SSB

5041 ..... YCØIEM 5042 ..... K2TV

CW

517 ..... K2TV 519 ..... VE3NEA
518 ..... DK9PZ 520 ..... K4ELV

RTTY

173 ..... DK5WJ 174 ..... I5RED

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for all *CQ* awards is $6.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $12.00 for nonsubscribers. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

Tom Dixon, VP6TD/ZL2HGR, with his "Wahoo" catch. He is a New Zealand government employee, on duty there until about Sept ember1, 2007. He used 100 watts to a G5RV and operated from the highest part of the island, called "Taro Ground." Tom was active almost daily from 0000–0400Z on SSB, RTTY and PSK-31, mostly on 17 and 20 meters. QSL via ZL2HGR. (Photo courtesy of Rick, NE8Z)

January 15, 2005 at the age of 9, and followed up by passing the General and Extra on September 17, 2005. Regarding on-the-air operation, Emily does "not like to rag-chew that much" but, as she says, if she does "hear a foreign station come across the airways . . . now that gets me excited."

She has her own ham station with an ICOM IC-706MKIIG and Kenwood TS-570 transceivers. For antennas, she has a fan dipole for 40, 80, and 160 meters and a Mosley TA-33 beam for the higher bands. For voice operation, she uses a Heil boom microphone. It's not just about operation, either. She has her own ideas

THE WPX HONOR ROLL

The WPX Honor Roll is based on the current confirmed prefixes which are submitted by separate application in strict conformance with the CQ Master Prefix list. Scores are based on the current prefix total, regardless of an operator's all-time count. Honor Roll must be updated annually by addition to, or confirmation of, present total. If no up-date, files will be made inactive.

MIXED

5489 9A2AA	3956 VE3XN	3569 KF2O	3089 W9OP	2637 OZ1ACB	2202 N8BJQ	1705 W2EZ	1269 K5WAF
4843 W1CU	3948 I2PJA	3566 KØDEQ	3011 W2WC	2457 JN3SAC	2024 AE5B	1683 KX1A	1016 RA1AOB
4839 W2FXA	3760 N9AF	3393 WB2YQH	2996 9A4W	2441 W6OUL	1947 KØKG	1662 SV1DPI	979 KM6HB
4419 EA2IA	3749 I2MQP	3331 IK2ILH	2873 W2ME	2415 K5UR	1891 VE9FX	1643 N1KC	825 KL7FAP
4275 N4NO	3703 I2UIY	3282 YU7BCD	2815 W9IL	2242 I2EAY	1826 W7CB	1556 W2OO	742 K5IC
4145 YU1AB	3646 S53EO	3227 K9BG	2704 K2XF	2239 VE6BF	1741 AB5C	1288 K6UXO	648 KWØH

SSB

4710 IØZV	3445 EA2IA	2857 4X6DK	2326 CX6BZ	2076 K2XF	1744 KQ8D	1480 AB5C	1289 AE9DX	978 EA7HY
4266 VE1YX	3349 N4NO	2711 LU8ESU	2209 IK2QPR	2051 K5UR	1729 W6OUL	1464 VE7SMP	1258 N1KC	951 KU4BP
3932 I2PJA	3155 I2UIY	2672 KF7RU	2209 I3ZSX	1935 SV1EOS	1718 W3LL	1458 JN3SAC	1232 AG4W	843 VE6BF
3900 F6DZU	3142 CT1AHU	2595 EA1JG	2196 W2WC	1855 K3IXD	1693 DL8AAV	1412 I2EAY	1145 EA3EQT	729 K7SAM
3606 OZ5EV	3108 I4CSP	2557 IN3QCI	2178 NQ3A	1827 AE5B	1688 KI7AO	1386 IK4HPU	1042 IZØBNR	637 K5WAF
3544 I2MQP	2972 OE2EGL	2431 G4UOL	2093 W9IL	1795 W2FKF	1623 VE9FX	1381 N8BJQ	1031 IK8OZP	
3532 9A2NA	2970 KF2O	2419 YU7BCD	2085 N6FX	1776 SV3AQR	1611 W2ME	1371 IK2DZN	995 KX1A	

CW

4618 K9QVB	3316 EA2IA	2526 I7PXV	2251 N6FX	2089 K2XF	1804 EA7AAW	1334 RUØLL	1042 VE1YX
4574 WA2HZR	3078 9A2NA	2526 KA7T	2236 OZ5UR	2081 W9IL	1804 I2EAY	1267 K6UXO	1030 AA5JG
3864 N4NO	2688 I2UIY	2476 W2WC	2148 IK3GER	1967 I2MQP	1783 N8BJQ	1202 WA2VQV	915 N1KC
3685 VE7DP	2636 KF2O	2474 YU7BCD	2120 JN3SAC	1955 K5UR	1432 AC5K	1131 KX1A	824 VE9FX
3360 LZ1XL	2632 W2ME	2465 EA7AZA	2093 VE6BF	1895 W6OUL	1402 WO3Z	1053 K5WAF	608 IK2SGV

about things to get involved with and has constructed several HF dipoles. Her favorite DX band is 20 meters for both SSB and digital. Her goals include WAS and DXCC. Emily's career plans, still a few years in the future, are focused on either journalism or broadcasting.

Now I'm sure there are other young folks out there who might be interested in ham radio if they are just exposed to it. I urge everyone to look around and see if/where/how you might get a youngster involved. The Morse code used to be a stumbling block for some, but that requirement is gone now, so it might be easier to talk ham radio to the kids. They just might find the code fascinating, too.

The school year is is full swing now, so this would be a great time to try to see if you and/or your club can become involved in a school ham radio program. The ARRL has a lot of material available to help you get started. We all started somewhere and many of us were teenagers *way back when.* Can we give something back to the hobby?

Tom, LA4LN, spent a few weeks in Alaska. This picture shows the "scene of action" out of the hotel window. The Yaesu FT-817 was using the fully automatic Elecraft T1 antenna tuner (middle left) hooked up to his Bobtail-Curtain's antenna wire. The manually operated Miracle Antenna tuner (far left) was used in some rare high-impedance antenna cases, when the Elecraft tuner wouldn't obtain a match. The Palm Radio Mini Paddle shines in the front. A fishing vessel is seen on the fiord in front of the glacier-laden mountains in the background under the light Arctic night sky. (Photo courtesy of Tom, LA4LN)

DXpeditions

Sigi, DL7DF, and his team should be on the air by the time you read this, continuing until October 9 from Burundi as 9UØA.

Ulli, DL2AH, is in the Pacific and should be on the air from Niue (ZK2) until October 12, and then will go to Chatham (ZL8) for the last half of the month. He is also planning to operate from Norfolk Island (VK9N) at the end of this trip.

CQ DX Field Award Honor Roll

The CQ DX Field Award Honor Roll recognizes those DXers who have submitted proof of confirmation with 175 or more grid fields. Honor Roll lisiting is automatic upon approval of an application for 175 or more grid fields. To remain on the CQ DX Field Award Honor Roll, annual updates are required. Updates must be accompanied by an SASE if confirmation is desired. The fee for endorsement stickers is $1.00 each plus SASE. Please make all checks payable to the Award Manager, Billy F. Williams. Mail all updates to P.O. Box 9673, Jacksonville, FL 32208.

Mixed

K2TQC 258	N4MM 198	N4NX 182
HAØDU 228	W4UM 196	K2AU 182
VE3XN 217	VE3ZZ 191	KØCA 181
W1CU 215	HA9PP 190	K1NU 180
KØDEQ 210	BA4DW 188	K8OOK 180
N8PR 208	OK1AOV 187	W5ODD 177
HA1RW 206	9A5CY 187	NØFW 176
KF8UN 205	F6HMJ 182	ON4CAS 175
JN3SAC 199	K2SHZ 182	

SSB

W1CU 200	W4ABW 184	NØFW 176
VE7SMP 190	N4MM 180	DL3DXX 175
KØDEQ 184	W4UM 178	

CW

W1CU 205	JN3SAC 193	N4MM 178
DL3DXX 203	W4UM 188	KØCA 175
KØDEQ 201	OK2PO 184	

For 2008, we are looking forward to a couple of "good ones" in the Pacific area. Ducie, VP6DX, is scheduled to be active for 19 days in February. The Northern California DX Foundation (NCDXF) has come forward with financial support of $20,000 for VP6DX. This is a substantial amount, but they need more. If you wish to support them, go to the website <http://www.vp6dx.com> for more details.

In March a group is going to Clipperton Island (FO/C). The team's website is <http://www.clipperton2008.com>. Clipperton is still relatively high on the Most Wanted list, at #35 worldwide and even higher in Europe at #24.

QSL Information

9K2HE via DJ9ZB
9K9A via NI5DX
9L1DIR via EA4URE
9L1YT via K4YT
9M0C via G3SWH
9M2MT via 9M2MT
9M6PWT via G3SWH
9M8BT via NI5DX
9M8FH via NI5DX
9M8LL via NI5DX
9M8YL via NI5DX
9Q5MO via PIRATE
9Q5YT via K4YT
9U9Z via DJ9ZB
9VØA via VK4AAR
9VØYC via K9EL
9V1DX via VK4AAR
9V1RH via 9V1RH
9Y4/AC4LN via UA4WHX
A22YT via K4YT
A25/DL1YFF via DL1YFF
A25VB via UA4WHX
A35AS via DJ9ZB
A35CE via DJ9ZB
A35VB via UA4WHX
A41KJ via NI5DX
A41MX via A41MX
A6XN via DJ9ZB
A71AA via DJ9ZB
A71AM via DJ9ZB
A71AU via DJ9ZB
A92GQ via NI5DX
A92WHD via A92GR
A9XAC via K4YT
AC4LN via UA4WHX
AC4LN/6Y5 via UA4WHX
AC4LN/HH2 via UA4WHX
AC4LN/HR1 via UA4WHX
AC4LN/HR2 via UA4WHX
AC4LN/J3 via UA4WHX
AC4LN/TI2 via UA4WHX
AD5YS via G3SWH
AH1A via K1ER
AH8/JH1ORL via DJ9ZB
AM3GI via EA4URE
AM4BA via EA4URE
AM4NET via EA4URE
AM4URE via EA4URE
AM7AL via EA4URE
AM7NET via EA4URE
AN4URE via EA4URE
AO4URE via EA4URE
AY7X via WD9EWK
AY8XW via WD9EWK

(The table of QSL Managers is courtesy of John Shelton, K1XN, editor of "The Go List," 106 Dogwood Dr., Paris, TN 38242; phone 731-641-4354; e-mail: <golist@golist.net>.)

NCDXF DVD by 9V1YC

I mentioned the NCDXF providing the Ducie DXpedition with $20,000. James Brooks, 9V1YC, who has created videos of many, many DXpeditions, produced a DVD for the NCDXF. This video highlights the many accomplishments of foundation, including education, the sponsorship of DXpeditions, the NCDXF/IARU international Beacon network, and support for WRTC (World Radiosport Team Championship). The DVD runs for ten minutes and does an excellent job of telling the story of NCDXF from its creation in 1972 to the present. If you have not seen this DVD, get a copy and show it to your friends, DX club, or even your local radio club. The NCDXF has something for everyone, not just DXers—for example, it has a scholarship program. The Beacon Network is a technical marvel, allowing you to check propagation to virtually any area of the world in just a few minutes. I urge you to get this DVD; it's well worth it. Go to the NCDXF website, <http://www.ncdxf.org>, and check it out.

By now the W9DXCC and SEDCO conventions are history. I'll have more on both of these events next month. Until that time, enjoy the chase and Have Fun!

73, Carl, N4AA

contesting

BY JOHN DORR,* K1AR

It Seems that Contesters Live Everywhere – Except Near Me!

October's Contest Tip

Do you do a good job of labeling key items in your contest shack? The opportunities range from presets on your amplifier to antenna choices in your switching arrangement. The last thing you need is unnecessary confusion when you're tired during a marathon contest event. Take a few minutes and apply or refresh labels on everything that makes sense in your operating position. A good test is to have someone sit at your station and try to figure out your layout on his or her own. If the person can pass the exam without your assistance, you have accomplished the mission and made your job easier during the heat of battle.

There are literally hundreds of contest clubs around the world, and with tens of thousands of active contest operators, it would seem that no matter where you live, there should be a group of contesters who hang out right in your own back yard, right? Well, the actual demographics are quite different indeed.

It is true that if you live near a big U.S. city such as Boston, Philadelphia, Washington, or San Francisco, you will find contesters everywhere. Large clubs abound near these cities and bring a huge amount of experience and resources to their fellow contesters. However, if you're like many contesters, your reality is quite different. You probably live in a rural area where you're lucky to find a few hams nearby of any genre, much less those who are passionate about contest operating.

For example, my friend Pat Barkey, N9RV, recently relocated to Bonner, Montana from his fine contest location in Indiana. While the scenery at the new QTH is nice and the new job is great, he commented that his local contest universe is non-existent. Living in a new QTH without antennas in the air (after all, it's only been a few months) has forced Pat to drive nearly three hours to find a "local" contester with enough hardware to make a competitive contest score. In sharp contrast, my local town of Windham, New Hampshire sports at least four stations with 40-meter beams in the air, and that's in a town with a population of only 12,000 people. At one point, there were three stations in my town that had the ability to make the top 10 in the Single Op/All Band category of the CQ WW DX Contest!

Try Rolling Your Own

The reality is that if you live in one of contesting's elite neighborhoods, there is no excuse for being unable to find the necessary resources to get involved and benefit from the proximity of your peers. The question is, "What do I do if I live in metro Topeka, Kansas?"

As it turns out, there is hope for you. If you truly live in the middle of nowhere, it's going to be difficult to find neighbors, much less active contesters. For many of us, that's a compromise worth taking when considering the quality of life and other factors. The reality is that, for the most part, hams are everywhere—even in small towns. Remember that there are still a few million hams around the world, and they don't all live in New York and London.

You may find that the best way to enjoy the benefits of contesters living near you is to create new ones! Consider some of the following tips as a starting point:

- **Find the locals:** Begin by researching the names/calls of hams who live near your QTH. Pick

"You may find that the best way to enjoy the benefits of contesters living near you is to create new ones!"

Calendar of Events

All year	**CQ DX Marathon**
Sept. 22–23	Scandinavian SSB Activity Contest
Sept. 22–23	CIS DX Contest
Sept. 29–30	**CQ WW RTTY DX Contest**
Sept. 29–30	ARRL EME Contest
Sept. 29–30	Texas QSO Party
Sept. 30	UBA CW Contest
Oct. 2–3	YLRL CW Anniversary Party
Oct. 6–7	California QSO Party
Oct. 6–7	Oceania SSB Contest
Oct. 7	RSGB 21/28 MHz Contest
Oct. 9–11	YLRL SSB Anniversary Contest
Oct. 13–14	Makrothen RTTY Contest
Oct. 13–14	Oceania CW Contest
Oct. 13–14	Pennsylvania QSO Party
Oct. 14	UBA SSB Contest
Oct. 14	North American RTTY Sprint
Oct. 15–19	ARRL School Club Roundup
Oct. 20–21	JARTS WW RTTY Contest
Oct. 20–21	ARCI Fall QSO Party
Oct. 20–21	Worked All Germany Contest
Oct. 20–21	W/VE Islands QSO Party
Oct. 21–22	Illinois QSO Party
Oct. 27–28	**CQ WW DX SSB Contest**
Oct. 27–28	ARRL EME Contest
Nov. 24–25	**CQ WW DX CW Contest**

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a reasonable driving radius and do some digging on the internet. Not only will you possibly discover contesters living near you whom you didn't know about, you'll also have a pool of individuals who can be the basis for future contesters.

• **Local clubs:** Many areas, while missing the traditional wide-area contest club such as the YCCC (Yankee Clipper Contest Club) or PVRC (Potomac Valley Radio Club), have local radio clubs. Pick one and get involved. Most local clubs welcome new members who are predisposed to on-the-air activities such as contesting and DXing. You'll be amazed at how quickly they will want to learn more about your interests. Also, the next thing you know, new contesters will begin to sprout right in front of your eyes.

• **You can be a writer, too:** Along the same lines as the tip above, consider writing an article about contesting (or dare I propose a local club contest column?) for your club's newsletter. There is a local club in my area that has a YCCC member doing exactly that with terrific results.

• **Field Day and other operating events:** Don't underestimate the power of on-the-air events to attract the locals towards contest operating. Recall that many of us began our contesting careers by operating in the field as a kid. The average ham is not opposed to contesting as much as lacking in experience and the knowledge of how to get started. Lead these people in the techniques and fun and they may follow you.

• **Be a good host:** Invite the locals to your station and host low-key contest operations. Remember, this is a process of investment, which means you probably won't win the first time. Indeed, you may never win. However, you're developing a group of local people who will provide that camaraderie and support you so eagerly desire, while growing our overall ranks along the way. It's a win-win proposition for sure!

• **Not all aspects of contesting are created equal:** In other words, not everyone you try to recruit is going to be the next hot-shot on-the-air superstar. Just like with mainstream contesting, there are those who prefer to "run the guys" and others who specialize in station/antenna design and implementation. It's all part of the mix and should be part of yours as well, as you create that rallying point called contesting to motivate your local resources towards your goal.

Other Resources

As hard as it is to believe, you may be in a situation where you simply don't have an extra 100 hours per week to devote to this effort. While it's difficult to imagine that the pressures of work, family, and competing interests could interfere with the mission of attracting local contesters, we know all too well the realities of life.

Fortunately, in today's cyber-age, there is help for anyone with a computer, keyboard, and an internet connection. Here are just a few suggestions:

• Draw upon the resources of existing contest clubs. Most will allow you to subscribe to their newsletters. They all have websites filled with information for contesters. Many have archived presentations and other information that is just perfect for you! You certainly don't have to reinvent the wheel.

• Check out the online resources at <www.contesting.com>. It's the best place on the internet to find information about contesting, including links to other resources. Beyond this particular website, I found over 500 other online sites that focus on contesting simply by entering "ham radio contesting" into Google. You will spend a long time digging into internet-based information before you run out of useful data and tips.

• Reach out to other contesters. Ask your peers for ideas and suggestions. You may want to catch up with other geographically challenged contesters and learn what techniques they have used to grow their local ranks.

Future Goals

It's important to keep all of this in perspective. Indeed, success is not measured by numbers—at least in the early stages of your plan. If you're able to recruit a few locals into the ranks of contesting, you've already accomplished a great deal. The key is to ensure that your interest in contesting is infectious. Also, the desire to recruit and encourage local hams cannot be a "flash in the pan." You have to be committed to the exercise for the long-term, with the ultimate goal of spreading out the tasks among others.

At the risk of being accused of living in the New England contest bubble, I realize that there simply may be some geographic areas that cannot support contest activity. There may not even be enough resources for ham radio overall. If that's the case, you need to adjust your goals. Travel likely will be your best bet, converging on fellow contesters versus the benefits of them coming to and living near you.

Final Comments

This month was dedicated to our contest friends who live in remote areas without the benefit of contesting resources. If you're fortunate, as I am, to live within a few miles of hundreds of contesters, be thankful. I have enormous respect for contesters who "get it done" without the benefit of the resources that many of us take for granted. To those who recruit one or two new hams into the ranks of contesting, a hearty round of applause. You have done well! See you in the next contest!

73, John, K1AR

propagation

BY TOMAS HOOD,* NW7US

Predicted Conditions for CQ WW DX SSB Contest 2007

A Quick Look at Current Cycle 23 Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, July 2007: 10
Twelve-month smoothed, January 2007: 20

10.7 cm Flux
Observed Monthly, July 2007: 72
Twelve-month smoothed, January 2007: 78

***Ap* Index**
Observed Monthly, July 2007: 7
Twelve-month smoothed, January 2007: 8

HF radio enthusiasts celebrate the arrival of the winter DX season. From October through November 2007 we will see a steady improvement on the DX bands. During the CQ WW DX Contests we should experience fairly good success.

The 2007 CQ WW DX SSB Contest will start at 0000 UTC, Saturday, October 27, and run through 2400 UTC Sunday, October 28. Looking at the 27-day rotation of the sun, and taking into consideration the current solar activity at the time this column is being written (mid August), propagation may be very poor on the first day of the contest, but should improve somewhat by day two.

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 September 29 and 30, since this would be one rotational period before the SSB contest weekend. There is better than a 90-percent chance that conditions observed on those days will recur during the October contest weekend.

See the "Last-Minute Forecast" for expected day-to-day conditions for the entire month of October. An updated day-to-day forecast for the SSB contest weekend will appear as a bulletin at the beginning of next month's column. The November issue should reach most subscribers before the SSB contest begins. You can also see an up-to-the-day "Last-Minute Forecast" on my propagation resource center at <http://prop.hfradio.org/>.

Table I shows the observed sunspot count during previous CQ WW DX Contest periods since 1996, and what's predicted for the 2007 contest. Contest conditions could be somewhat like those of last year, but perhaps slightly improved. Low- to middle-latitude propagation paths should be poor to fair on the lower frequencies, while it might be a struggle to find propagation on the higher HF frequencies. It is expected that the bands will have a lot of fluctuation in performance, although the lower frequency bands will be much quieter than in the past few years.

Even if you are not a dedicated contester, you should give the CQ WW a try. If you are working toward DXCC or other awards, this is the contest of choice, especially during more active solar years. Sure, conditions may not be as hot as during the years of the solar cycle maximum, but with the improvement in propagation on the lower HF bands, such as 40 meters, there's a lot of opportunity to make a good score.

Try out propagation modeling and forecasting software programs to see how those programs model the contest conditions based on parameters such as your antennas, geographical location, power levels, and operating times. You can work out a plan using tools such as the Animated Coverage Maps found in ACE-HF Pro, or the ACE-HF Pro's band-opening charts for the various propagation paths you wish to target to get those extra contest points.

VHF Conditions

Sporadic-*E* activity is very rare during October in the northern temperate zone (where much of the U.S. is located). While the contest weekend looks

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e-mail: <nw7us@hfradio.org>

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for October 2007

	Expected Signal Quality			
Propagation Index.....	(4)	(3)	(2)	(1)
Above Normal: 2-3, 6-9, 12-18 20-21, 23-26, 29-30	A	A	B	C
High Normal: 4-5, 10-11, 19 22, 27, 31	A	B	C	C-D
Low Normal: 1, 28	B	C-B	C-D	D-E
Below Normal: None	C	C-D	D-E	E
Disturbed: None	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 2 will be fair to poor (C-D) on Oct. 1st and 28th, good (B) on the 2nd and 3rd, fair (C) on the 4th and 5th, 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.

	1996	'97	'98	'99	2000	'01	'02	'03	'04	'05	'06	'07
Oct.	9	32	71	108	115	114	91	58	36	26	10	15*
Nov.	10	35	73	111	113	116	85	57	35	25	22	16*

**Predicted values expected during the 2007 contest.*

Table I– Smoothed sunspot numbers recorded during CQ World-Wide DX Contests since 1996 (Oct. SSB, Nov. CW).

like a quiet period, there are a few days forecast with high geomagnetic activity and possible radio storms. It is also possible to have a few aurora-mode (*Au*) propagation events during October. Remember that digital modes and CW are the best way to go with aurora, particularly on 144 MHz through 432 MHz, as the voice modes become extremely distorted and unrecognizable due to the effects of the aurora. The best times to check for VHF aurora openings are when conditions are expected to be Below Normal or Disturbed, as shown in the "Last-Minute Forecast" at the beginning of this column.

There is some possibility of extended tropospheric conditions during October because of the changing weather patterns. Two meters is the best band to watch for this.

October does have the *Draconids* meteor shower, active between October 7 and 11. The shower could reach a very high hourly rate of meteor activity. As with the *Leonids,* the best time to check for radio propagation is from about midnight onward until dawn.

The *Draconids* is primarily a periodic shower that twice has produced spectacular, brief meteor storms in the last century (1933 and 1946). In 1999 a wholly unexpected minor outburst was witnessed in the Far East. *Draconid* meteors are exceptionally slow moving, a characteristic that helps separate genuine shower meteors. This shower could produce meteor-scatter-mode (*Ms*) propagation openings on VHF and UHF.

The *Orionids,* active from October 2 through the early part of November, is expected to peak on October 21 and has an expected visual rate of 20 meteors per hour. This shower could also provide a few strong ionized trails, making strong, stable, and lengthy meteor-shower propagation possible.

Current Solar Cycle Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 71.6 for July 2007. The 12-month smoothed 10.7-cm flux centered on January 2007 is 76.0. The predicted smoothed 10.7-cm solar flux for October 2007 is 78, give or take about 17 points.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for July 2007 is 10, down from June's 12. The lowest daily sunspot value recorded was zero (0), on July 20 through July 27. The highest daily sunspot count was 27 on July 14. The 12-month running smoothed sunspot number centered on January 2007 is 12. A smoothed sunspot count of 18, give or take about 12 points, is expected for October 2007.

The observed monthly mean planetary *A*-index (*Ap*) for July 2007 is 7. The 12-month smoothed *Ap*-index centered on January 2007 is 8.4. Expect the overall geomagnetic activity to vary greatly between quiet to active during most days in October. Refer to the "Last-Minute Forecast" for the outlook on conditions during October.

I invite you to visit my online propagation resource at <http://propagation.hfradio.org/>, where you can get the latest space data, forecasts, and more, all in an organized manner. If you have a cell phone with internet capabilities, try <http://wap.hfradio.org/>.

Drop me an e-mail or send me a letter if you have questions or topics you would like to see me explore in this column.I'd also like to hear any feedback you might have on what I have written. Until next month . . .

73, de Tomas, NW7US

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zero bias *from page 8*

but the equipment used to listen for those signals. There were Hammarlunds and Hallicrafters and Nationals and Heathkits, recalled by model number, as well as the antennas connected to those rigs. On the other hand, some of you weren't too clear on the frequencies Sputnik used, whether its signals were just plain beeps or Morse code (they were beeps), or exactly when this all happened (one writer recalled watching Sputnik fly overhead on hot summer nights, then going inside to listen for its signals; the satellite was launched in October and its batteries died before springtime). This means that there is something special—something magical—about those metal boxes we use for this thing we call ham radio. Whether they were full of tubes and wires as they were in the '50s or full of chips and circuit boards as they are today, there is something special that ingrains our radios into our long-term memories much more clearly than many other events and activities of the same timeframe. Should make an interesting study for some of you psychologists and sociologists out there.

Returning to Sputnik, I was left wondering whether there is any similar event today that will have the same far-reaching impact on today's generation of young people, and whether ham radio will continue to have a role in drawing them into careers in science and technology. N4OC—"Admiral G," as he was known by the troops—thinks it will. It is up to all of us to make sure of that.

—73, Rich, W2VU

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