45241

Amateur Radio

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

COMMUNICATIONS & TECHNOLOGY

OCTOBER 2004

1945 Our 60th Year 2004

CQ

Secrets of Top DXers, p. 11

- Two Exotic DXpeditions, pgs. 18, 32
- More Long-Delayed Echoes, p. 36
- *CQ* Reviews: West Mountain Radio RIGblaster Pro, p. 44

On the Cover: Tom Rauch, W8JI, specializes in "top-band" DX from his OTH in Barnesville,

U.S. $4.99 / Canada $6.99

10>

0 09128 45241 8

THE RAD[illegible]

DYNAMIC DIGITAL DUO

TH-D7A(G) / TM-D700A

Throughout the years, Kenwood has engineered many significant feature and hardware advancements that earned us the nickname "Pacesetter in Amateur Radio". Kenwood continues to show this leadership in advanced design and technology with the TH-D7A(G) handheld and the TM-D700A mobile dual-banders. Not only do our radios perform all the functions of any other radio, but you can also explore the exciting digital world of APRS™, which has become the fastest growing and most dynamic part of the hobby. Most Disaster Communication organizations use APRS™. Identifying someone's location with APRS™ can save a life.

The TH-D7A(G) and the TM-D700A are the only radios ever produced that have both built-in TNC and APRS™ operating software, allowing you to send and receive exact GPS positions. You can even send text messages over 144.390 MHz, an international APRS™ frequency. Position reports and two-way messaging can also be achieved over the Internet, across the country or around the world. Street level mapping can also be employed using a PC, palm device or GPS. And yes, the TM-D700A is great for receiving satellite packet!

Venture into the future of Ham radio today and experience Kenwood's "Dynamic Digital Duo". They may just be the excitement and enjoyment you have been waiting for!

KENWOOD
COMMUNICATIONS

KENWOOD U.S.A. CORPORATION
Communications Division
Division Headquarters
3975 Johns Creek Court, Suwanee, GA 30024-1265
Customer Support/Distribution
P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745
Customer Support: (310) 639-4200 Fax: (310) 537-8235

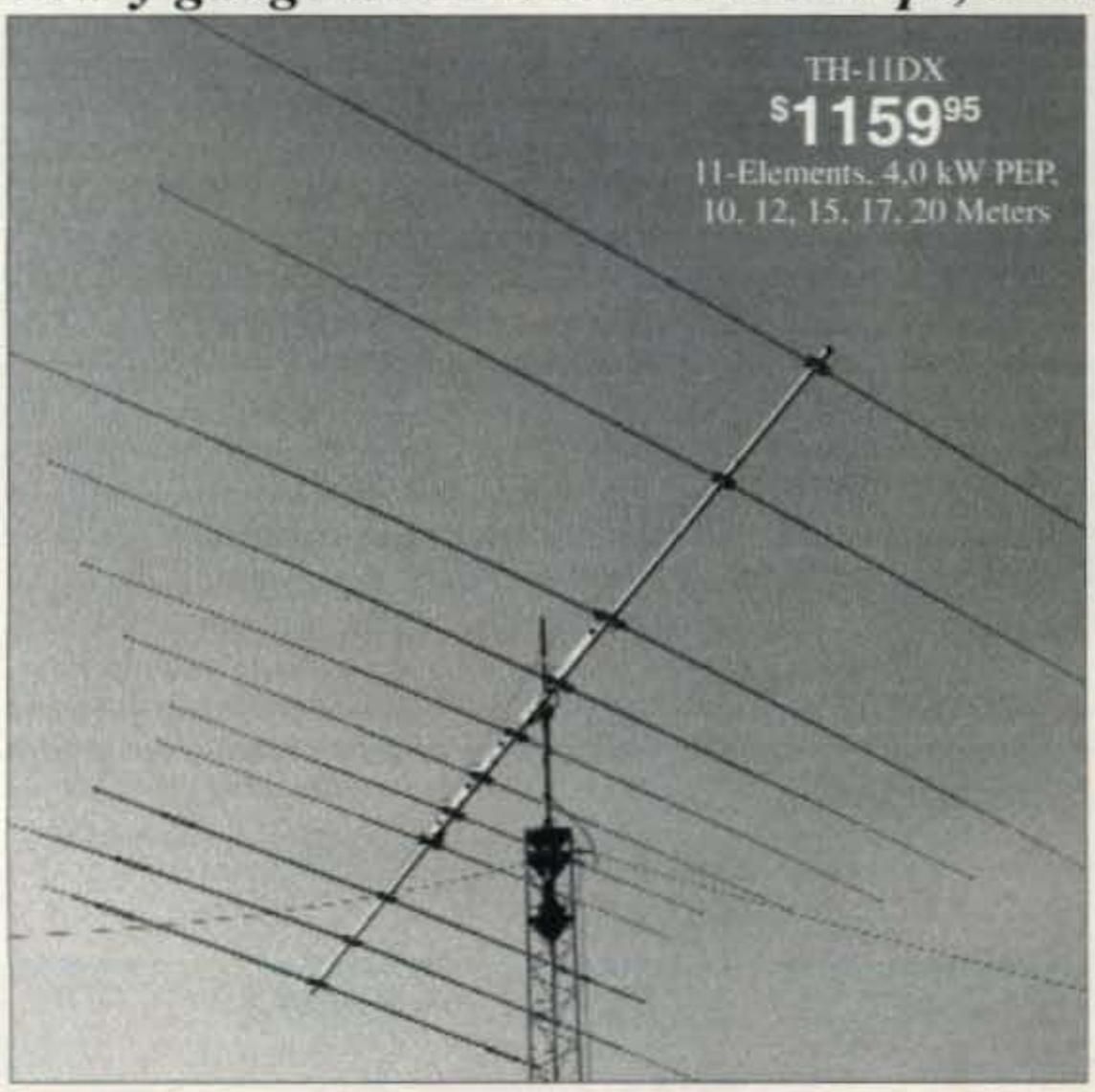
INTERNET
Kenwood Website
http://www.kenwood.net
Kenwood Information
*ftp://ftp.kenwood.net

#113003

JQA-1205 091-A
ISO9001 Registered
Communications Equipment Division
Kenwood Corporation
ISO9001 certification

hy-gain® HF BEAMS...

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



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

The choice of top DXers.

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

Handles 2000 Watts continuous, 4000 Watts PEP.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

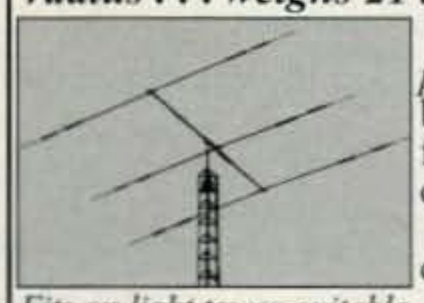
BetaMATCH™ provides DC ground to eliminate static. Includes BN-86 balun. Easily assembled.

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

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

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

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



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

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

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

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

Model No.	No. of elements	avg Gain	dBd avg F/B	dB MaxPwr	watts PEP Bands	Covered Wind	sq.ft. area Wind (eqv)	Survival Boom	(feet) Longest	Elem. (ft) Turning	radius(ft) Weight	(lbs.) Mast dia	O.D.(in.) Recom.	Rotator Retail
TH-11DX	11	*For Gain and F/B ratio--See...* • www.hy-gain.com • Hy-Gain catalog • Call toll-free 800-973-6572		4000	10,12,15,17,20	12.5	100	24	37	22	88	1.9-2.5	T2X	$1159.95
TH-7DX	**7**			**1500**	**10, 15, 20**	**9.4**	**100**	**24**	**31**	**20**	**75**	**1.5-2.5**	**HAM-IV**	**$869.95**
TH-5MK2	5			1500	10, 15, 20	7.4	100	19	31.5	18.42	57	1.5-2.5	HAM-IV	$759.95
TH-3MK4	**3**			**1500**	**10, 15, 20**	**4.6**	**95**	**14**	**27.42**	**15.33**	**35**	**1.9-2.5**	**CD-45II**	**$469.95**
TH-3JRS	3			600	10, 15, 20	3.35	80	12	27.25	14.75	21	1.25-2.0	CD-45II	$359.95
TH-2MK3	**2**			**1500**	**10, 15, 20**	**3.25**	**80**	**6**	**27.3**	**14.25**	**20**	**1.9-2.5**	**CD-45II**	**$369.95**
EXP-14	4			1500	10,15,20 (QK-710 30/40)	7.5	100	14	31.5	17.25	45	1.9-2.5	HAM IV	$599.95

Tooled Manufacturing . . . Highest Quality Materials

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

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

3. Thick-wall *swaged* aluminum tubing

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

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

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

Durable precision injection molded parts.

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

Free Hy-Gain Catalog

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

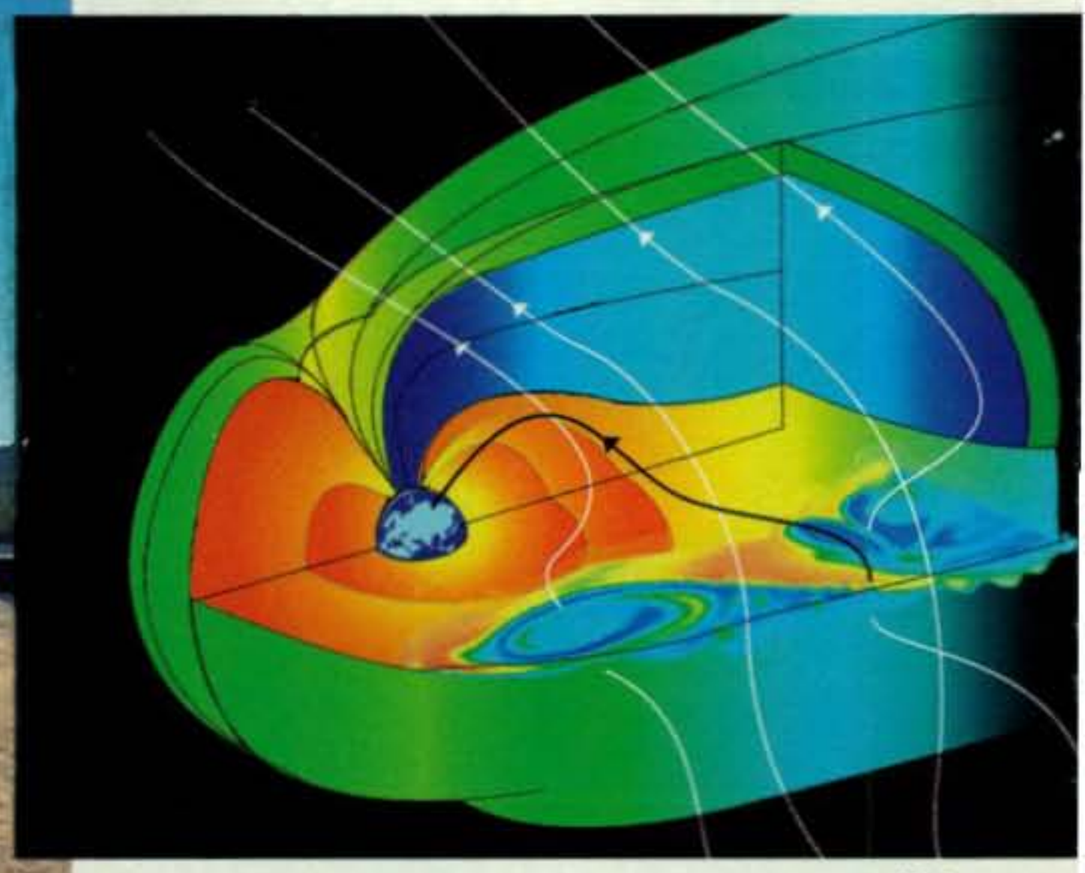
hy-gain®

Antennas, Rotators & Towers
308 Industrial Park Road, Starkville, MS 39759 USA
Toll-free Customer Sales Hotline: 800-973-6572
• **TECH:** 662-323-9538 • **FAX:** 662-323-6551
http://www.hy-gain.com

CQ contents

OCTOBER 2004

p. 32

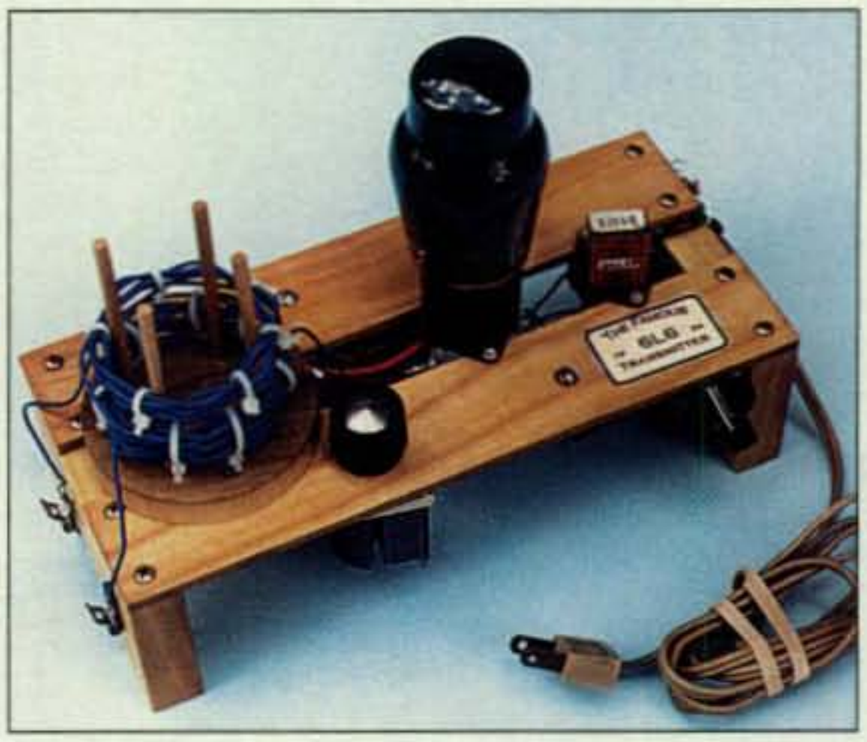


p. 104

features

Vol. 60 No. 10

p. 11



p. 54

departments

Performance Superiority

HF/VHF/UHF Multi-Mode Transceiver

TS-2000

The Kenwood TS-2000 with IF-Stage DSP outperforms all the competition in its class. The RC-2000 Mobile Controller can make the TS-2000 or TS-B2000 an unsurpassable mobile HF rig when installed in the car. The ARCP-2000 Radio Control Program will allow you to have full operation right on your PC. Add the 1.2 GHz module and you'll have the widest frequency range Amateur transceiver available today! Download the 10-page color brochure and Operator's Manual from www.kenwood.net ...Compare and we are sure you will require TS-2000 Performance Superiority in your shack.

Compact Mobile Controller

ARCP-2000
PC Radio Control Program

With the TH-D7A(G) you can achieve TS-2000 HF operation in the palm of your hand using the Kenwood SkyCommand II system. Great application for Disaster and Emergency Communications use in the classroom or even at your desk.

TH-D7A(G)
SkyCommand

KENWOOD
Amateur Radio Products Group

KENWOOD U.S.A. CORPORATION
Communications Division
Division Headquarters
3975 Johns Creek Court, Suwanee, GA 30024-1255
Customer Support/Distribution
P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745
Customer Support: (310) 639-4200 Fax: (310) 537-8235

INTERNET
Kenwood News & Products
http://www.kenwood.net
#090204

JQA-1205 091-A
ISO9001 Registered

Ham Radio Plays Vital Role in Charley Aftermath

When the Category 4 Hurricane Charley slammed into the western coast of Florida on August 13th, much of the area lost power and telecommunications were disrupted or disabled. According to the *ARRL Letter,* amateur radio operators stepped into the breach once again, providing reliable emergency communications in affected areas. "The only reliable communication we have here is amateur radio," said ARRL West Central Florida Section Manager Dave Armbrust, AE4MR, one of the many ham volunteers stationed at the Charlotte County command center. The November issue of *CQ* will contain full coverage of the aid radio amateurs provided in the wake of the hurricane.

ARRL to Participate in National Preparedness Month

The Department of Homeland Security has designated September 9, 2004 as the start of "National Preparedness Month." According to the ARRL, this event, along with the League's Amateur Radio Awareness Day (September 18th), provides excellent opportunities for radio amateurs to showcase their service to the nation. The League encouraged clubs to set up demonstrations at public places and events.

FCC: No Pre-Disaster Emergency Declarations

The Federal Communications Commission has issued a document intended to clarify the rules governing emergency communications by hams and the process by which the Amateur Service may request an emergency communication declaration (ECD). In the past, radio amateurs have requested ECDs in advance of disasters such as hurricanes. The new document states that ham radio emergency communications before an event are already authorized by FCC rules and do not require an ECD. The document states that "ECDs may only be issued after a disaster disrupts normal communication systems in a geographic area subject to FCC regulation," and that a declaration may be requested only by an emergency management official or by a ham at the request of such an official. Copies of the complete document are available on the ARRL website at <http://www.arrl.org/FandES/field/emcom-declarations.html>.

A Ham In Charge of Ham Radio Again

For the first time in several years, the part of the Federal Communications Commission that governs amateur radio is headed by a licensed amateur. According to the FCC, Michael Wilhelm, WS6BR, has been made Chief of the Wireless Telecommunications Bureau's Public Safety and Critical Infrastructure Division. Wilhelm replaces former chief D'wana R. Terry, who was promoted to Chief of Staff and Associate Chief of the Wireless Telecommunications Bureau.

Changes Proposed for Canadian Amateur Licensing Rules

The Radio Amateurs of Canada (RAC) has formally asked Industry Canada (IC) to remove the Morse code test requirement for ham operation below 30 MHz in Canada. IC is Canada's equivalent to the FCC in the U.S. RAC's petition still wants the code test to be available for those who want to have a code certification printed on their licenses, and also wants to set an 80-percent score on the Basic exam as the minimum for under-30-MHz operating privileges. More information is available at the RAC's website, <http://www.rac.ca/downloads/morserec.pdf>.

ARRL Hosts First "Big Project" Teachers' Seminar

This past August, according to the *ARRL Letter,* the first ARRL Education and Technology Program (ETP) Teachers Institute was held at the League's headquarters in Newington, Connecticut. Nine teachers from around the country attended the program, which was intended to familiarize them with techniques for teaching about electronics and wireless technology. Project Coordinator Mark Spencer, WA8SME, said that the lessons on wireless technology "re-engaged teachers, took some of the mystery out of wireless technology, and showed participants that they can teach the subject and teach it better." Spencer added, "There were many 'aha!' moments throughout the week—'so that's how it works' —or just plain 'wow!'"

Astronaut to Kids: Lots of Books, No Fried Chicken

NASA Astronaut Mike Fincke, KE5AIT, says he's read about 30 books so far during his off-duty time aboard the International Space Station, and that what he really wants but can't get is ... fried chicken! In a series of recent ham radio contacts with children at schools and museums around the United States, the *ARRL Letter* reports that Fincke told one group he spends most of his free time reading. "We work really hard every day," he said, "and I don't have any TV up here—or the internet—so I read books, and it's really great." Speaking to another group of kids, Fincke said he'd recently developed a craving for fried chicken, adding, "I don't know why, because I don't eat it very often on the planet." Fincke's radio chats with the groups were part of the ARISS (Amateur Radio on the International Space Station) program, a joint effort of NASA, AMSAT and the ARRL.

News report by Dan Moseson

Young Ham of the Year Presentation

CQ Editor Rich Moseson, W2VU, presents a selection of CQ publications to 2004 Newsline Young Ham of the Year Andrea Hartlage, KG4IUM. The 15-year-old from Georgia was recognized for her contributions to encouraging other young people to get involved in amateur radio. CQ and Vertex Standard (Yaesu) are corporate sponsors of the award.

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.

hy-gain® ROTATORS

. . . the first choice of hams around the world!

HAM-IV

HAM-IV
$559.95

The most popular rotator in the world! For medium communications arrays up to 15 square feet wind load area. *New* 5-second brake delay! *New* Test/Calibrate function. *New* low temperature grease permits normal operation down to -30 degrees F. *New* alloy ring gear gives extra strength up to 100,000 PSI for maximum readability. *New* indicator potentiometer. *New* ferrite beads reduce RF susceptibility. *New* Cinch plug plus 8-pin plug at control box. Dual 98 ball bearing race for load bearing strength and electric locking steel wedge brake prevents wind induced antenna movement. North or South center of rotation scale on meter, low voltage control, max mast size of 2 1/16 inches.

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

HAM-V

HAM-V
$949.95
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!*

ROTATOR OPTIONS

MSHD, $99.95. Heavy duty mast support for T2X, HAM-IV and HAM-V.
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.

TAILTWISTER SERIES II

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.

T-2X
$649.95

T-2XD
$1029.95
with DCU-1

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

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 (in lbs.)	350
Brake Power (in lbs.)	**450**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/12 ball bearings**
Mounting Hardware	Clamp plate/steel bolts
Control Cable Conductors	**5**
Shipping Weight (lbs.)	14
Effective Moment (in tower)	**300 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 (in lbs.)	600
Brake Power (in lbs.)	**800**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/48 ball brings**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
Shipping Weight (lbs.)	22
Effective Moment (in tower)	**1200 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 (in lbs.)	5000
Brake Power (in lbs.)	**7500**
Brake Construction	solenoid operated locking
Bearing Assembly	**bronze sleeve w/rollers**
Mounting Hardware	stainless steel bolts
Control Cable Conductors	**7**
Shipping Weight (lbs.)	61
Effective Moment (in tower)	**5000 ft/lbs.**

Digital Automatic Controller

DCU-1
$649.95

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

AR-35 Rotator/Controller

AR-35
$69.95

For UHF, VHF, 6-Meter, TV/FM antennas. Includes automatic controller, rotator, mounting clamps, mounting hardware. 110 VAC. One Year Warranty.

RBD-5
$29.95

NEW! Automatic Rotator Brake Delay

Provides automatic 5-second brake delay -- insures your rotator is fully stopped before brake is engaged. Prevents accidentally engaging brake while rotator is moving. Use with HAM II, III, IV, V, T2Xs. Easy-to-install. Includes pre-assembled PCB, hardware.

http://www.hy-gain.com
Nearest Dealer, Free catalog, To Order . . .
800-973-6572
Voice: 662-323-9538 **Fax:** 662-323-6551

hy-gain®

Antennas, Rotators & Towers
308 Industrial Park Road,Starkville, MS 39759, USA

a CQ editorial

zero bias – CQ

BY RICH MOSESON,* W2VU

An Ongoing Conversation

At the Huntsville Hamfest in mid-August, I was standing at the *CQ* booth when a ham walked by and complimented us on the magazine, adding, "I'm not part of the magazine. I'm just a reader." My response was, "Then you *are* part of the magazine—the most important part." After all, if it wasn't for you, our readers, there would be no magazine. We don't publish *CQ* for ourselves, we publish it for *you*. And in our case, we rely on you as more than just passive consumers of information.

Some magazines are like one-way streets, passing information from "authorities" on high to the masses below. Unlike those magazines, though, our readers are often as knowledgeable as our writers, and *CQ* is more about sharing information among peers than of those who "know" instructing those who don't. The success of this magazine has always been based on the willingness of those readers who have specialized knowledge or unique experiences to share them with other readers. In turn, those writers often learn something mew themselves from those same readers.

One of my long-standing goals as this magazine's editor is to make sure that *CQ* is always a two-way street—an ongoing conversation—between writers, editors and readers—kind of a roundtable QSO. That conversation should be in print when possible, but also on a one-to-one basis. That's the main reason that I love going to hamfests—to have a chance to meet so many of you, to chat about what you do and don't like about *CQ*, or to hear your ideas of what we ought to cover (to which I generally respond, "Great idea! Start writing!").

Mystery Writing

One of the enduring mysteries of writing a column like this on a regular basis is that you never know when something you write will really connect with people. For example, last month's "day at the beach" editorial brought out more comments than I've received over the last several months combined. I'd like to share a few of those with you:

Jon, WB8YJF, wrote:

I just read your story about going to Ocracoke Island. Beautiful place isn't it?! I have been going down there since 1996 for vacation and for the IOTA contest & we love it there! I met the only active local ham about 6 years ago when he answered my CQ. The next thing I knew he showed up at our rental with a QSL card. We sat and chewed the fat for a while & he filled me in on all kinds of interesting facts about Ocracoke. He lived there all his life and sadly passed away 2 years ago. His QTH is now a craft/antique store. This year on our way back to Hatteras at the end of our stay, the person in the car directly behind me was another ham! He noticed my ham plate and disassembled TA-33-Mini on top of the truck and we struck up a conversation. He was from Virginia and took his 2M rig to Ocracoke for some possible activity. Sadly, we had terrible condx. that week and he only made a few Q's; myself about 400 or so (HF). Small world, isn't it? Hope to see you down there some day!

Not only has Jon shared a similar experience, but he was able to shed light on my question regarding resident hams (or lack of hams) on the island.

John, W3MTP, wrote about his vacation to Ocean City, Maryland, with his Yaesu FT-817 and Arrow II VHF/UHF portable beam antenna. His goal was to work into a repeater that would let him check in with friends at his home QTH in northeastern Pennsylvania. When one of those friends told him late one night that the 2-meter band was "open a little" in Pennsylvania, he decided to try his luck on 2-meter SSB, flipped the radio to the calling frequency of 144.200 MHz and called CQ. No response the first two tries, but the third time was a charm, as John picks it up...

A call came back, "NA2P, name is Peter, do you copy?" I said I did and told Peter I was in Ocean City, Maryland on an FT-817 with battery power and an Arrow antenna on the 18th floor of a condo. The reply was, "You are coming over to New York just fine on 5 watts." ... I only made that one contact on 2 meters SSB that vacation, but I will always remember it! I will be taking my FT-817 on my next vacation, too.

I also heard from ARRL President Jim Haynie, W5JBP, who wrote:

Rich, I enjoyed your editorial and your comments about the lady knowing about ham radio. As you know, I travel a lot for the ARRL. I make it a point to wear a League shirt with the logo and my call. It has become a game of sorts, in that every trip, someone at the airport and on the plane mentions my call and that either they, or someone they know, are a ham.

Once I was getting off the plane at DFW (Dallas-Fort Worth Airport) and two guys came up to me and introduced themselves as just getting their licenses. It turns out they were astronauts going from Huntsville, Alabama to Houston.

Another time, I had just boarded in Atlanta, and a guy was in my assigned seat. Before I could say anything, he said, "I guess you are going to give me some QRM about being in your seat." Turns out he was a ham as well. You just never know...

I also learned from a reader that we weren't quite as wrong as we thought we were in correcting our correction on the whole watts for ohms debacle a few months back. Dale, K4EQ, wrote:

I got a good chuckle out of your "Oops Oops" in the September *CQ* (p. 79). Actually, your mistake wasn't as far off as you may think. Our lower case "w" is also the Greek character for Omega, only lower case. The symbol we use for ohms is an upper case Greek Omega. So, you can retract at least one oops. Hi!

So let's see, that would be a retraction of a clarification of a correction to a correction to a really stupid error... Nah, I think we'll let this thing finally fade away.

On Target

Finally, in response to last month's editorial and my comments on archery and kids, my wife directed me to the web page of our local archery club (http://bwjoad.njarchery.org/info.shtml) and its explanation of the National Archery Association's youth program:

The NAA's JOAD (Junior Olympic Archery Development) program promotes the sport of archery with young people. It stresses getting a bow in hand quickly (instead of boring the kid with lectures), yet doing so safely, and focuses on the positive aspects of the sport. The USA's last Olympic Gold Medal archer started out as a JOAD archer. While the Olympic effort IS important, it is far more important that archery be a fun and positive experience so that the young archer will continue to enjoy the sport throughout life.

Got that? Let me repeat: *"It stresses getting a bow in hand quickly (instead of boring the kid with lectures) ..."* Note also that the NAA has a youth development program that is put into practice by archery clubs all over the country. ARRL has its "Big Project" in schools, which we strongly support, but there needs to be more. There needs to be an ARRL youth development program that can be put into practice by amateur radio clubs all over the country ... without boring lectures. Jim?

Final note, on the same topic and bringing us back to Huntsville: I had the honor once again of helping present the Newsline Young Ham of the Year award at the Huntsville Hamfest and spending some time with the winner and her family. This year's winner is a delightful young woman named Andrea Hartlage, KG4IUM. One of Andrea's many accomplishments has been adapting well-known games to help kids learn what they need to know for their ham licenses. Making learning fun. Quite a concept. I expect we'll all be hearing more in the future from Andrea ... and I'm looking forward to it. *73, W2VU*

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

Heard it. Worked it. Logged it!

Baker Howland. Clipperton. Kingman Reef. Boise. No matter where you are or where you want to be, let the power of 32 Bit IF-DSP show you how to pull signals out of the dirt that old analog rigs can't. Icom's PRO series makes the difference between a successful QSO and a lost opportunity. Don't miss out, visit your authorized Icom dealer and rediscover the fun & excitement of amateur radio.

• 32 Bit Floating Point IF DSP & 24 Bit AD/DA Converter • Selectable Digital IF Filter Shapes For SSB & CW • Improved 3rd Order Intercept Point • All Mode • CW Memory Keyer • VOX • Auto Antenna Tuner • AGC Loop Management • Auto & Manual Notch • Digital Twin Passband Tuning • Built-in RTTY Demodulator & Decoder • And More

IC-746PRO ADDITIONAL FEATURES LCD Display • 9600 Baud Packet Capable • Digital Meter • RX Audio Equalizer • SWR Analyzer • Sweeping Scope • And much more

IC-756PROII ADDITIONAL FEATURES 5" TFT Color Display • Separate RX Only Antenna Jack • Transverter I/O Port • Live Band Scope • Digital & Analog Meter • Dual Receive • Digital Voice Recorder • And much more

AMATEUR | AVIONIC | LAND MOBILE | MARINE | RECEIVER | WWW.ICOMAMERICA.COM

ICOM

announcements

Old Mans International Sideband Society – According to Dennis, VE7IPU, this society is alive and well and has a web page, <www.omiss.net>. They is also a Worked All States and awards net on many bands.

• The following Special Event stations are scheduled for October:

W2LI, from the Tri-County Radio Assn. Platinum Jubilee, 70th Anniversary, Celebration, Westfield, NJ; 1200Z Oct. 9 to 2200Z Oct. 10 on 14.260, 28.260, 449.975 MHz. For QSL, send QSL and SASE to W2LI/AA2ZJ, 77 Persinf Ave., Iselin, NJ 08830.

N4J, from Thomas Jefferson's summer home, Forest, VA; 1400–2200Z Oct. 9 on 7.265, 14.265, 21.365, 28.365 MHz. For QSL, send QSL and SASE to Ed Narwid, 1799 Otterhill Rd., Bedford, VA 24523.

K5PAL, from Hot Pepper Festival, Palestine, TX; Palestine/Anderson County ARC; 1300–2200Z Oct. 23 on 7.263 and 14.260 MHz. For certificate, send QSL and SASE to K5PAL Special Event, c/o David Carnathan, N5XPC, 504 Micheaux, Palestine, TX 75801 (www.pacarc.org).

W6CX, from Pacificon (see below)/Boy Scout Jamboree on the Air; Oct. 16–17 on 14.290, 21.360, 28.390, and activity on Echolink. For certificate send QSL and SASE to Mount Diablo ARC, P.O. Box 23222, Pleasant Hill, CA 94523 (http://www.pacificon.org).

K8CY, from Ashtabula County Covered Bridge Festival, Jefferson, OH; Ashtabula County ARC; 1400Z Oct. 8 to 2100Z Oct. 9 on 28.460, 21.360, 14.260 MHz. For certificate, send QSL and #10 SASE to ACARC, 722 Lyndon Ave., Ashtabula, OH 44004.

NØCWP, from Anamosa, Iowa Pumpkinfest; Jones County ARC; 1300–1700Z Oct. 2 on 14.260 ±QRM. For certificate/QSL, send QSL and SASE to Jim McClintock, NØCWP, 301 Vine St., Morley, IA 52312.

• The following hamfests, etc., are slated for October:

Oct. 2, **Jacksonville (FL) Free Hamfest**, Jax Raceways, Jacksonville, FL. Contact Billy Williams, N4UF, P.O. Box 9673, Jacksonville, FL 32208; e-mail: <n4uf@nofars.org>; <www.nofars.org/hamfest.html>.

Oct. 2, **Lancaster County (PA) Tailgate Fest**, West Earl Community Park, Brownstown, PA. Contact Dave, W3CWE, 717-872-6578; e-mail: <w3cwe@comcast.net>; <www.qsl.net/rrra>. (Talk-in 147.015+ PL 118.8)

Oct. 2, **Ham Expo**, Bell County Expo Center, Belton, TX. Contact Mike LeFan, WA5EQQ, 254-773-3590 (10 AM to 9 PM Central, Mon.–Sat.); e-mail: <expo@tarc.org>; <www.tarc.org>. (Talk-in 146.820–, PL 123.0; exams 1 PM)

Oct. 8–10, **Amateur Radio Lighthouse Society Convention**, Clarion Hotel, Kill Devil Hills, the Outer Banks, NC. Contact Lee Graves, WA7OBH, 4341 Southeast Satinleaf Place, Stuart, FL 34997; <http://arlhs.com/convention2004/registration.pdf>

Oct. 9, **Northwest Ohio ARC Hamfest**, at Fair Radio Sales, Lima, OH. Contact Gary Clements, KCØJDT, 419-227-6573; e-mail: <kc0jdt@fairradio.com> or <NWOARC@nicsweb.com>. (Talk-in 146.670; exams 10:30 AM)

Oct. 10, **Hall of Science ARC Hamfest**, NY Hall of Science parking lot, Flushing Meadow Corona Park, Queens, NY. Contact Stephen Greenbaum, WB2KDG, 718-898-5599; e-mail: <wb2kdg@arrl.net>; <www.qsl.net/hosarc>. (Talk-in 444.200, PL 136.5, 146.52 simplex; exams 10 AM, info contact Lenny Menna, W2LJM, 718-835-1548, e-mail: <w2ljm@verizon.net>)

Oct. 10, **Nutmeg Hamfest & ARRL Connecticut State Convention**, Mountainside Resort, Wallingford, CT. Information, e-mail: <info@nutmeghamfest.com>; <www.nutmeghamfest.com>. (Exams, info contact Joel, N1JEO, 203-235-6932, e-mail: <vetest@nutmeghamfest.com>)

Oct. 15–17, **Pacificon 2004**, San Ramon Marriott, San Ramon, CA. Information, go to: <http://www.pacificon.org>. (Exams Saturday)

Oct. 17, **RF Hill ARC Hamfest**, Sellersville Firehouse, Sellersville, PA. Contact Cathy Soete, 215-723-7294; e-mail: <wa3ylq@comcast.net>; <www.rfhill.ampr.org>. (Talk-in 145.31–, PL 131.8; exams 10 AM to noon)

Oct. 17, **MIT Fleamarket**, Albany & Main Streets, Cambridge, MA. For information, call 617-253-3776 (9–5 Mon.–Fri.). (Talk-in 146.52, 449.725/444.725, PL 114.8)

Oct. 30, **Southwest Missouri ARC Hamfest**, Teamsters Local 245 Meeting Hall, Springfield, MO. Contact Roger Grable, 417-890-7036; e-mail: <reg@axs.net>; <www.smarc.org>. (Talk-in WØPM repeater, 145.19 negative offset; exams)

Oct. 30, **Tri-City ARC Auction**, Senior Citizens Center, Waterford Municipal Complex, Waterford, CT. Contact Darryl DelGrosso, WA1DD, 860-443-7799; e-mail: <DDelgrosso@aol.com>.

Oct. 31, **Utica Shelby Emergency Communications Assn. Hamfest/Swap**, American-Polish Century Club, Sterling Heights, MI. Contact Scott Madison, WN1B, 248-628-4756 e-mail: <wn1b@k8uo.com>; or Floyd Soo, W8RO, 248-431-7769, e-mail: <w8ro@k8uo.com>. (Exams)

Oct. 31, **Massillon ARC Hamfest & Auction**, Stark County Fairgrounds, Canton, OH. Contact (for tables) Terry Russ, N8ATZ, 330-837-3091; e-mail: <hamfest@marcradio.org>; <http://www.marcradio.org>.

A publication of

CQ Communications, Inc.
25 Newbridge Road
Hicksville, NY 11801 USA.

Offices: 25 Newbridge Rd., Hicksville, NY 11801, Telephone 516-681-2922; Fax 516-681-2926. E-mail: cq@cq-amateur-radio.com. Web site: www.cq-amateur-radio.com. CQ (ISSN 0007-893X) is published monthly by CQ Communications, Inc. Periodical postage paid at Hicksville, NY 11801 and additional offices. Subscription prices (all in U.S. dollars): Domestic-one year $31.95, two years $57.95, three years $83.95; Canada/Mexico-one year $44.95, two years $83.95, three years $122.95; Foreign Air Post-one year $56.95, two years $107.95, three years $158.95. U.S. Government Agencies: Subscriptions to CQ are available to agencies of the United States government including military services, only on a cash with order basis. Requests for quotations, bids, contracts, etc., will be refused and will not be returned or processed.

Printed in the U.S.A.
Postmaster: Please send change of address to:
CQ Amateur Radio, 25 Newbridge Rd., Hicksville, NY 11801

AMERITRON *True Legal Limit*™ Tuner

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

Call your dealer for your best price!

AMERITRON ATR-30

$599

Suggested Retail

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

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

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

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

Super High Current Roller Inductor

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

A gear driven turns counter and crank knob gives you precise inductance control.

Two 500 pf Tuning Capacitors

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

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

Super Balun, 6 position Antenna Switch

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

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

Read *true* Peak Power

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

Roomy Cabinet maintains High-Q

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

AMERITRON ATR-20 Antenna Tuner

ATR-20, $459. Handles a full 1.2 kW SSB and 600 Watts CW. It's designed to safely handle the full SSB power of Ameritron's AL-811/811H/80B, ALS-500M/600 and other 1.2 kW SSB amplifiers.Has vernier reduction drives.

Ameritron has the best selection of *True Legal Limit*™ HF Amplifiers

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

Ameritron's *most powerful* Amp

with Eimac® 3CX1500/8877 ceramic tube

AL-1500

$3045

Suggested Retail

TrueLegalLimit™

Ameritron's *most powerful* amplifier uses the herculean *Eimac®* 3CX1500/8877 ceramic tube. It's so powerful that 65 Watts drive gives you the full output power -- and it's just loafing because the power supply is capable of 2500 Watts PEP. All HF bands, all modes. 77 lbs., 17Wx10Hx18½D inches.

Ameritron's *toughest* Amp

with Eimac® 3CX1200A7 tube

AL-1200

$2645

Suggested Retail

TrueLegalLimit™

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

Ameritron's *classic* Amp

with 2 graphite plate Amperex® 3-500G tubes

AL-82

$2645

Suggested Retail

TrueLegalLimit™

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

Desktop Kilowatt

with Amperex® 3-500G tube

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

AMERITRON *no tune* Solid State Amplifiers

500 Watt Mobile Amp

ALS-500M, $799. 500 Watts PEP/400W CW output, 1.5-22 MHz, instant bandswitching, no tuning, no warm-up. SWR, load fault, thermal overload protected. On/off/bypass switch. Remote on/off control. DC current meter. Extremely quiet, fan off until needed. 13.8 VDC. 9Wx3½Hx15D in.

600 Watt FET Amp

ALS-600, $1299. *No tuning, no fuss, no worries -- just turn on and operate.* 600 Watts PEP/500W CW, 1.5-22 MHz, instant bandswitching, SWR protected, extremely quiet, lighted peak reading Cross-Needle SWR/Wattmeter, front panel ALC control, operate/standby switch. 120 or 220 VAC. Inrush current protected. 9½Wx6Hx12D in.

Flat Mobile SWR/Wattmeter

AWM-35, $159.95. 1⅜ inch thick, flat mounts on dashboard. Remote sensor, 25 ft. thin cable. True peak reading. Cross-needle, lighted. 1.5 kW, 1.8-30 MHz. *High-SWR* LED.

Call your dealer for your best price!

Free Catalog: 800-713-3550

AMERITRON®

. . . the world's high power leader!

116 Willow Road, Starkville, MS 39759

TECH (662) 323-8211 • **FAX** (662) 323-6551

8 a.m. - 4:30 p.m. CST Monday - Friday

For power amplifier components call (662) 323-8211

http://www.ameritron.com

Prices and specifications subject to change without notice. ©2004 Ameritron.

Ameritron . . . the world's high power leader!

If you're new to the sport of DXing (or even if you're not), you may wonder how the most successful DXers snag those rare stations and make their way to the top of the various honor rolls. W1HEO, an accomplished DXer and DXpeditioner himself, took the direct approach. He shares his results here....

Secrets of Top DXers

BY D. E. (DEE) LOGAN,* W1HEO

What does it take to rocket to the very top of the DX heap? Are high power, taller towers, bigger beams, and mega-stations the keys? Or is it simply developing sharp operating skills, squeezing the most out of your station, and having a bit of luck? Are there tricks of the DXer's trade? Is it passion, competitiveness, addiction, grit, or determination that drives people on?

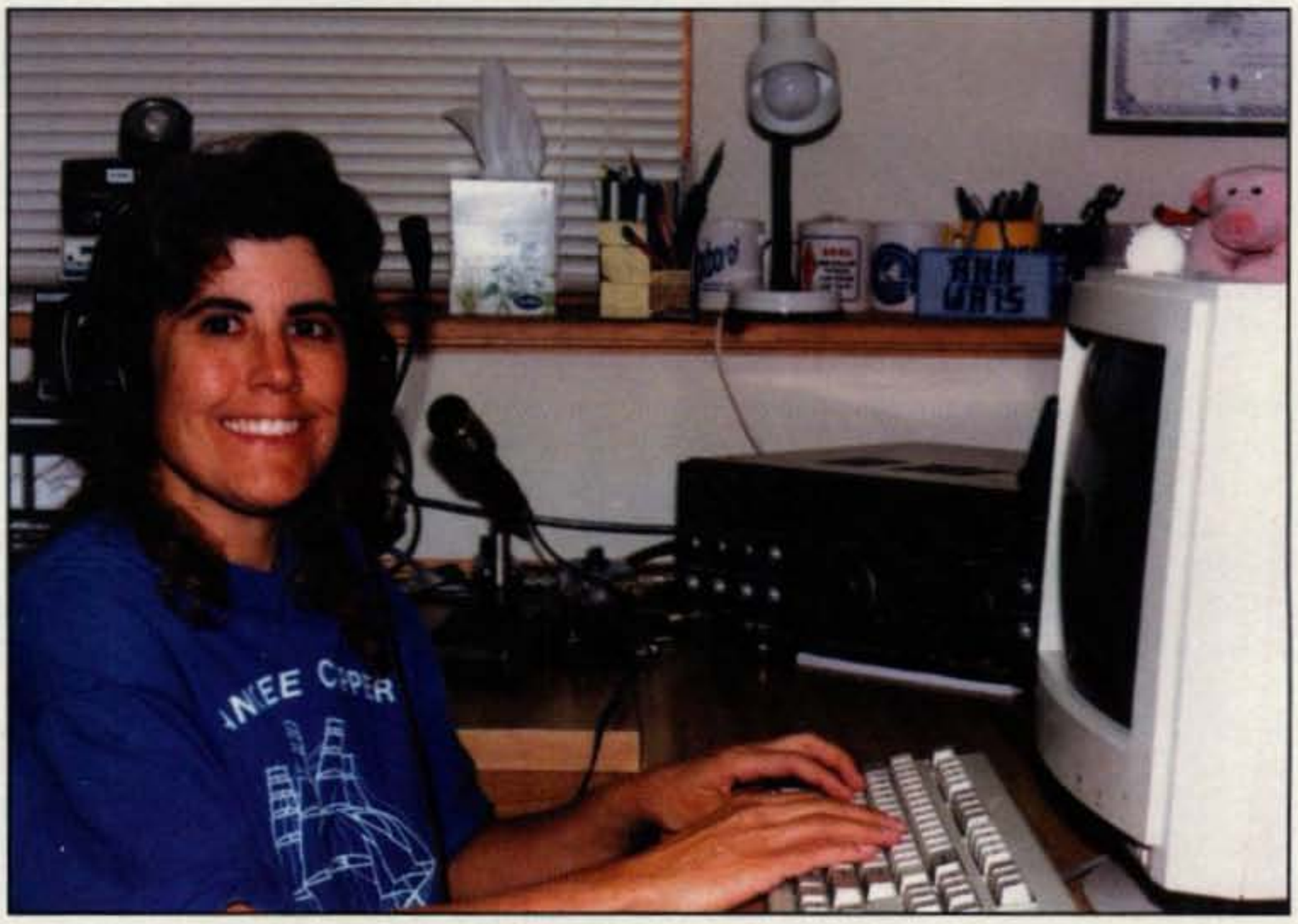
I was curious. During the past 30 years of DXing I often wondered how some operators managed to work every DX entity, qualify for 5-Band Worked All Zones, or crack 300 countries on 160 meters. Few mortals achieve this level of success.

Thus, I did some research. I asked 100 of the leading DX operators to share some of their secrets. A survey was sent to radio amateurs listed on the CQ DX Honor Roll, DXCC Honor Roll, and Worked All Zones programs, plus a few other leading DXpeditioners. Over 40% responded, which is a very good rate of return. Their comments were boiled down by category and are presented here, along with a number of quotes, for your enlightenment.

Success Factors

What do our outstanding DXers consider to be the main factors needed to reach the top? You immediately might think of 100-foot towers and big amplifiers. Surprise! Persistence and desire lead the list. As Roger Corey, W1AX, puts it, "The main factors are desire, dedication, and a cooperative family. Sure, good equipment is necessary, but you don't have to have a killer station. I've never had more than a tribander at 40 feet."

*9901 Cypress Circle, Mentor, OH 44060-7221
e-mail: <delogan@ameritech.net>



Ann Santos, WA1S, a member of the DXers' survey, has worked all but three of the DXCC entities, is a frequent DXpeditioner, and volunteers as a sorter for the QSL bureau and DXCC card checker. (WA1S photo)

Ben Stevenson, W2BXA, licensed since 1929, adds, "Persistence over the years, changing with the times, and a genuine interest in the hobby must have helped me."

Operating skills, an adequate station, and patience are also noted by many. Ann Santos, WA1S, mentions these, adding, "The big antennas are a help, along with a good radio, but are not really necessary if you have patience. Most of my DX contacts have been with an inverted Vee or TH7DXX and with from 100 to 200 watts." Other important success factors are knowledge of propagation, experience, time, and longevity. "Listen!" adds Elwood Johns, W7QK.

Of course, there's also luck. John Munroe, W7KCN, recalls hearing what sounded like Monk Apollo, SV2ASP/A, on 20 CW, but knew he didn't work CW. "So I began to wonder . . . but I jumped in and got him. Turned out he was a German technician there for a day working on antennas and got permission to operate. What a stroke of luck!"

The Mark of a Good DXer

"Good DXers," says Bob Allphin, K4UEE, "are skilled at both CW and SSB, understand the dynamics of pileups, time their calls, and have decent stations." Wayne Carroll, W4MPY, also mentions patience and consideration for others. The latter is a sign of class among the best operators. Karl Renz, K4YT, comments, "Work the station once for a new one and don't fight pileups just to add another operator. This

Scott Ginsburg, K1OS, is among the top DXers who consider the packet cluster the number one real-time tool for spotting rare DX. (K1OS photo)

takes away a chance for a new ham to get a new country."

W1AX agrees: "A good DXer has the patience to work the DX on both modes and on at least two bands (for insurance), but never twice on the same band," he says.

Nick Cominos, W9UM, is among the many who emphasize listening more than transmitting. Adds Jay Slough, K4ZLE, "The number one skill of a good DXer is a good set of ears and the discipline to listen, listen, listen."

Station Equipment and Features

Ask our top DXers what's needed to be competitive and the number one response is, predictably, the antenna. "Antennas, BIG antennas," says Glenn Johnson, WØGJ. "High antennas for low-angle DXing," adds Tom Taormina, K5RC. "An antenna farm," smiles Klaus Urbantke, VE7KDU. The drive to improve an antenna system is often noted as a factor in achieving higher country counts. Scott Ginsburg, K1OA, recalls that when he installed a 10-element log periodic on a 24-foot boom, "The difference in what I was able to hear was remarkable. It was as if the whole world had come alive in my shack."

Next to the antenna, a good selective receiver is mentioned by many, including Steve Hanzlik, K2CDJ. "Learn the proper settings for various conditions," he suggests. "Experiment with AGC and RF gain settings. A wider CW filter is appropriate for trolling across the bands."

Having a high-power amplifier is considered important by Charles Zuttermeister, N6TNX, and several others in my survey. Denny DuGal, WG6P, puts it this way: "An amplifier and good antenna are paramount. The key here is (being) competitive. You may get through going QRP, but you are not competitive." However, Louis Arnold, K9ALP, who has used a Collins KWM-2/75-S3 combination for years, differs. "A good basic station is all that is important," in his opinion.

Other tools mentioned include spotting networks, a low-noise QTH, and "good ears." Terry Wassell, K3JT, has developed an appreciation for full break-in CW, claiming that "It adds the equivalent of 6 dB in making successful QSOs."

Finding the Rare DX

Three techniques for locating DX were listed by a majority of our survey team: listening, reading DX news bulletins, and checking the DX packet clusters. Some other approaches were using the "buddy system," setting schedules, and reading radio magazines (*Whew!—ed.*). Making a schedule with a DX station is an option, and with an e-mail connection, is done simply. However, not all operators in rare spots are receptive to requests for a schedule, feeling that they're already smothered by too many calls when they get on the air. In my experience, the success rate on asking for skeds has been under 50%.

"Finding DX in the old days was a matter of lots of listening, talking with other DXers, and reading what was available," recalls W1AX. "Now it's all that and packet, too." However, use packet wisely. K4ZLE points out that DX clusters help, but "a good operator uses those spots as part of the intelligence gathering process, not as a final analysis." W9UM acknowledges the value of various research tools, but affirms that "Nothing beats hunting and searching." Tony Gullickson, W6WI, encourages us to "Get out there, spend some time, spin the dial; you never know who will show up for a one-to-one QSO."

Success in Pile-ups

Nothing tests the skill, patience, knowledge, and luck of a DXer more than pile-ups. The bedlam of massive crowds of screaming operators sometimes drives hams out of the shack in utter frustration. For those who persist, though, success can follow the struggle. The one effective technique frequently mentioned by the survey group is to listen and study the operating pattern of the DX station before transmitting.

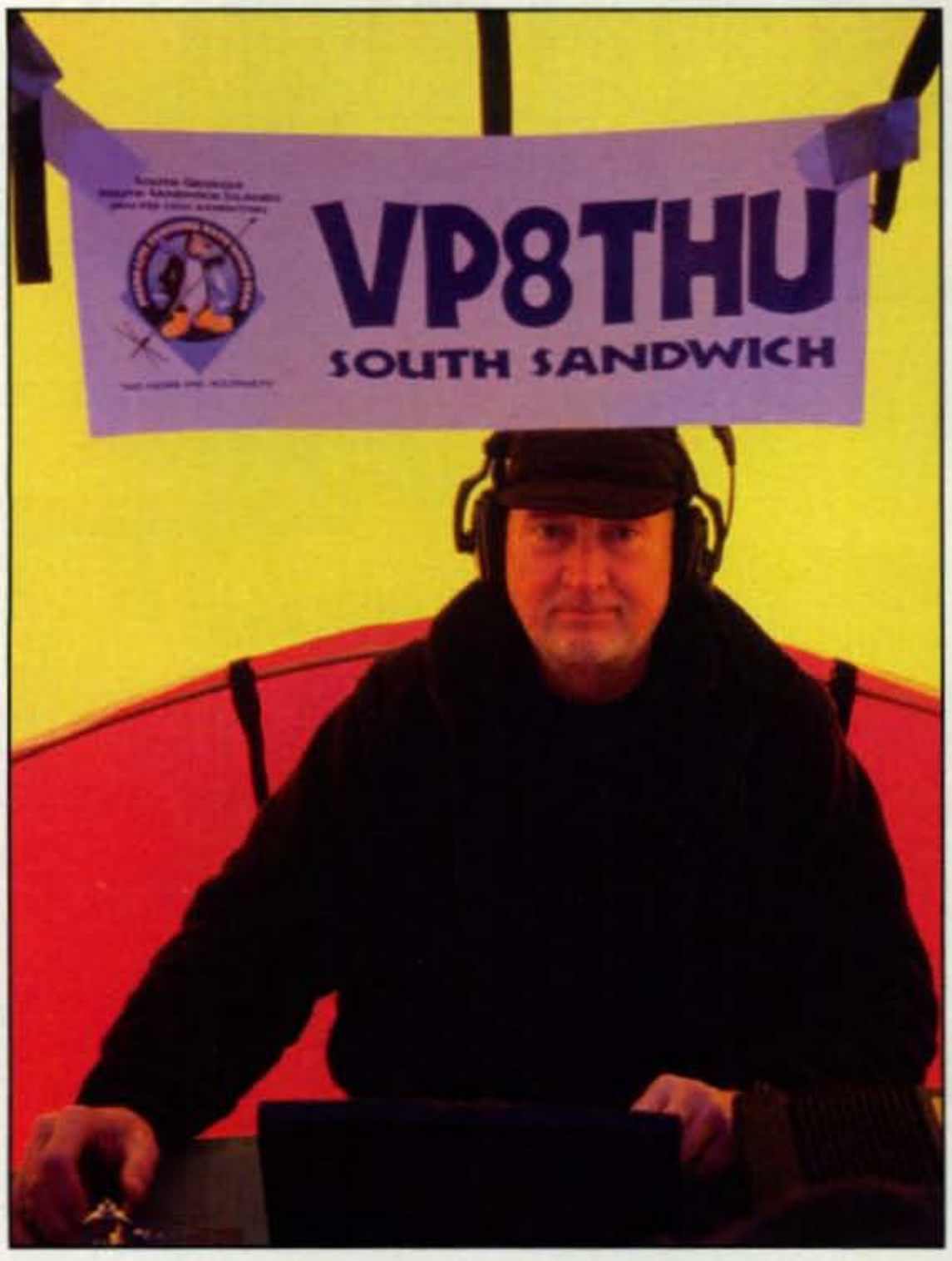
"First and foremost, listen a bit," suggests K1OA. "Where's the DX listening? Look for clues on the cluster. If there's no definite pattern, my favorite strategy is to listen for a quiet spot in the pile-up and call there." Al Rousseau, W1FJ, agrees. "Find the pattern and attack it," he says, but he doesn't recommend staying on one frequency.

O. B. Corning, W4SD, says, "Do what the DX station says to do. Try to stay one step ahead of him." Time your calls, adds K2CDJ: "Time it so the previous QSO is finished; if on phone, say your complete call clearly and slowly; if on CW, send your complete call with correct spacing and speed similar to the DX station."

DXer Success Factors

1. Persistence and desire (46%)
2. Operating skills (36%)
3. Good antennas (31%)
4. Listening (31%)
5. Patience (21%)
6. Adequate station (18%)
7. Read newsletters (8%)
8. Operate CW (8%)
9. Time (5%)
10. Know propagation (5%)
11. Good receiver (5%)
12. Luck (5%)
13. Experience (2%)
14. Longevity (2%)
15. Location (2%)

Table I– This is a listing of different DX success factors offered by the respondents to my survey, listed in descending order of importance. The number in parentheses is the percentage of those responding to each factor.



Bob Allphin, K4UEE, is among leading DXers who "give something back" by joining DXpeditions. He's shown here on South Sandwich Island, one of 38 DXCC entities from which he has operated. (K4UEE photo)

Other pile-up tips mentioned are to tailend the stations being worked (if the DX allows it), be persistent, be patient, and be aware of propagation. As K2CDJ explains, know if you're at the propagation peak, and if so, make your call. If not, and the peak is ahead, waiting may improve your chances. However, he adds, "Your success will partially be determined by how well the DX station manages the pile-up, not how big it is."

Favorite DXing Antennas

Antennas are considered more important than power by W2BXA and many on the survey panel. Which types of antennas are favored by our DXers for HF, 80 and 160 meters? Obviously, high gain is the goal, because Yagis and quads are the overwhelming favorites for the higher HF bands. Monobanders are preferred, but several stations with tribanders do quite well. Hank Kiernan, KF2O, is among the majority opting for a Yagi up as high as possible. Austin Regal, N4WW, is a case in point. "Equipment number one is towers with beams at 70 to 130 feet in height," he states.

Very few respondents listed inverted Vees for the higher bands, but they are an option if you have either budget or real-estate limitations. "I'd love to have better and higher antennas, but I have a small lot, so I use an inverted Vee up only about 40 feet," sighs Phil Koch, K3UA.

Meeting the challenge of adequate DX antennas for 80 and 160 meters revealed a variety of options from the polled hams. "Yagis are good for low bands, but pricey," comments Darryl Brown, N7FU. For 80 meters, the most frequently mentioned types were the four-square, vertical, inverted Vee, and dipole. Phased arrays are the favorite of Duncan Carman, W7JEN. Other types listed were the sloper, doublet, bobtail curtain, and Carolina Windom. On 160 meters the vertical leads the list, followed by the inverted "L," sloper, and delta loop.

"Everyone is limited to some degree by the real estate you own and can use," says John Burgio, W2JB, "especially on the low bands. Always feed your LF wire antennas with open-wire tuned line; you get much more flexibility on these bands with appropriate tuners and phasing, and so on."

Lessons from the Logs

All top DXers have memories of contacts that are truly amazing as well as unforgettable. I received so many of these that space is inadequate to share them all. Here are a few that also teach us something of the DXing game:

WA1S: "It was sunset when I heard SØ5X running Europeans on 80 meter CW. I called several times, but he was working nothing but Europe. I thought, 'fat chance I'll break this pile-up,' so I'll transmit higher up the band and hope he'll tune away from the bee's nest. After 15 minutes I worked him." *Moral: Be patient.*

W7KCN: "A51/JH1AJT was on the air from Bhutan without any prior announcements. By chance I was tuning the band and stumbled across him. I worked him and then called all the locals. At that time A5 was exceedingly rare and good old Zorro even called 'West Coast only.'" *Moral: Listen, listen, listen.*

K3UA: "VU4ATR and 3Y1VC were worked by studying the pile-up. I was in and out fast. Others took days to get through with much better antennas." *Moral: Study DX operators' patterns before making your call.*

W9UM: "It was 1979 and the first Spratly DXpedition, and I couldn't work them the first or second day. The third and last day I spent hours in the attempt. Then they announced there would be only ten more contacts. Then only five more. I was the last one." *Moral: Never give up.*

K6YRA: "SU2MT on 75 meter phone [was memorable]. It took 13 years for zone 34 and 5BWAZ on SSB." Ditto for N7FU. *Moral: Be persistent; DXing is a marathon, not a sprint.*

K2CDJ: "In 1997 I had a successful 160-meter QSO with VKØIR, Heard Island . . . only because just minutes before I had finished installing a temporary Beverage [antenna] to help overcome very bad local line noise." *Moral: Antennas are important.*

N8LJ: "P5 North Korea. He was on 10-meter sideband, 55 with QSB, working split. I didn't hear any stations he was working. My gut feeling told me to stay parked on his upper listening frequency and let him find me. It worked!" *Moral: Instinct sometimes works.*

Getting that DX QSL

Working that rare DX station is just the first hurdle. Getting the QSL can be a challenge in itself. True, the new ARRL "Logbook Of the World" promises some relief, but how many DX stations will use it remains to be seen. Besides, many still enjoy holding that rare QSL as a form of security, and it also looks mighty pretty on the wall of the shack.

Many suggestions for boosting the QSL rates of return from DX stations have been listed in the past, so there's no need to repeat them here. Our survey participants offered some comments on the subject, however.

Get "Back to Basics" with YAESU's New FM Dual Band Mobile
One-Touch Operation / Wide Receiver Coverage Included

High Power Output
(50 W VHF/40 W UHF)

Wide Receiver Coverage
including AM Aircraft Reception,
NOAA Weather Alert Broadcasting* *USA Version

Five One-Touch "Hyper Memory"
Transceiver Configuration Keys

Over 1000 Memory Channels
with Alpha-Numeric Labels,
Twenty Memory Groups

WiRES™ Internet Linking Compatibility

144/430MHz
DUAL BAND

ACTUAL SIZE
*Simulated LCD display

YAESU FM Mobile Series

QUAD BAND
DUAL RECEIVE

29/50/144/430MHz
QUAD BAND

FT-8900R
29/50/144/430 MHz FM QUAD BAND TRANSCEIVER

DUAL BAND
DUAL RECEIVE

144/430MHz
DUAL BAND

FT-8800R
144/430 MHz FM DUAL BAND TRANSCEIVER

DUAL BAND

FT-7800R
144/430 MHz DUAL BAND
FM TRANSCEIVER

YAESU
Choice of the World's top DX'ers

Vertex Standard
US Headquarters
10900 Walker Street
Cypress, CA 90630 (714)827-7600

For the latest Yaesu news, visit us on the Internet:
http://www.vxstdusa.com

REAL PERFORMANCE, REALLY PORTABLE

The World's Best Selling HF Portable, For Good Reasons!

60 m Band Included

NEW

Actual Size

FT-817ND: Exclusive Features Among HF Portables

SMALLEST HF PORTABLE

It's the smallest HF/VHF/UHF transceiver in the market: 5.3" x 1.5" x 6.5". Compare this and its incredibly light weight (2.6 lb.) to other bulky "portable" rigs that are really large mobiles in disguise!

LONG LIFE Ni-MH BATTERY PACK INCLUDED

The FT-817ND is fully operational using the supplied internal Ni-MH Battery Pack and Charger—no need to use an external extra-cost battery!

For emergency work, an optional Alkaline Battery Tray allows operation using "AA" cells!

OUTPUT POWER: 5 WATTS

You may select up to five Watts of transmit power, using the supplied internal battery!

HF/VHF/UHF ALL MODES

With HF, VHF, and UHF capability, the FT-817ND brings you worldwide HF DX, local FM repeaters, mountaintop portable VHF DX, FM satellites, and easy capability for working astronauts on the International Space Station!

ULTRA COMPACT
ALL MODE PORTABLE TRANSCEIVER

FT-817ND

HF/50/144/430 MHz
5 Watts Power Output (AM: 1.5 W Carrier)

YAESU
Choice of the World's top DX-ers

Vertex Standard
US Headquarters
10900 Walker Street
Cypress, CA 90630 (714)827-7600

For the latest Yaesu news, visit us on the Internet:
http://www.vxstdusa.com

Tom Taormina, K5RC, recalls working ZA1A while mobile in Texas, because operator Martti Laine, OH2BH, recognized his voice in the pile-up. (K5RC photo)

"Getting a DX QSL is a matter of common sense," says W1AX. "You want to make it as easy as possible for the DX to reply to your card." N4WW still uses U.S. dollars and an SAE for good results. "I sometimes get mint stamps if the dollar doesn't work," he adds. WA1S sends a dollar or more "depending upon how rare the country is. For major DXpeditions a donation is another way of saying thanks for being there!"

Some other tips: Put the IRC (International Reply Coupon—you'll need two for airmail postage) or green stamps (U.S. dollars) inside the self-addressed return envelope, or SAE (Bob Peterson, W7UT); never put a call-sign on the envelope for either the DX station or yourself (W6WI); be sure that you have an accurate QSL route (K1OA); and send your QSL promptly after a QSO (K4UEE).

I strongly agree that delay in sending your card may destroy your chance of a reply. I operated with the re-issued call VK9LM on Lord Howe Island in 1999 and was surprised to receive QSL requests for contacts made years earlier by a previous holder of the same call who was by then a Silent Key.

While the ARRL QSL Bureau was seldom mentioned in our survey replies, it remains a very cost-effective option for those who aren't in a hurry. Try to remember that many volunteers give up their time to operate the bureaus, and an appreciative "Thank You" would be a nice touch. I've sent holiday cards to our sorter with gift certificates for a fast-food restaurant, and also remember our mail carrier, who is, after all, the final important link in the QSL chain.

Advice for Reaching the Top

What do our sage veterans say are the keys to making it to the top of the DXers' heap? The number one requirement is persistence, mentioned by Claude Richie, W9TKV, and others. Comments Mark Michel, W9OP, "They must have the desire to achieve what they're shooting for." Next is lots of listening. "Be patient and listen," suggests Larry Lehmann, KCØDA. Staying informed about the DX scene is also important. "Don't miss out on important DXpeditions," cautions K3JT. "I missed Bouvet and regret it." Adds John Wondergem, K5KR, "Don't run hot and cold; you'll miss some rare ones."

Operating skill is an important requirement. "A skilled operator can snag far more DX from a very modest station than many can with a top-of-the-line setup," says K2CDJ. "Some power will help," adds George Zeller, W8WM, "but know what you're doing first." Good instructions in that area are provided by several works on DXing, such as book *The Complete DXer* by Bob Locker, W9KNI, plus the CQ video "Getting Started in DXing," both available from the CQ book store.

An adequate station is considered a necessity by many of our experts, although there is disagreement over the "bigger is better" philosophy. Having good antennas is a common theme throughout most of our survey responses, as is understanding propagation.

As an important footnote, ethics and "giving something back" to the DX world are stressed by a couple of our pros. "Use legal power, follow ethical operating practices, don't police pile-ups, follow instructions, and never lose enthusiasm," urges K5RC. Adds WA1S, "What I really enjoy most is going on DXpeditions and giving out a new country. Many times I've received notes thanking me for being the DX station and giving out a new country."

"Have plenty of time to devote [to DXing]," says Ed Soltwedel, K6PZ, because it's a key factor in working them all. This is frequently beyond the control of DXers. An optimistic note on this point is sounded by VE7KDU: "Time is on your side. Eventually every DXCC country on the list will show up. Just be ready when the new country is QRV." Of course, this assumes longevity, as sagely mentioned by K6YRA. Support of an understanding family is mentioned by Larry Amodeo, W2AX, who says, "Don't get married, but if you do, find someone who is very receptive to your passion."

Since stress is often a by-product of the competitive nature of DX chasing, we're reminded by K9ALP to "Have fun. Enjoy yourself!"

The Other Side of the Pile-up

The comments in this survey have reflected the views of operators who are primarily chasing the DX. How about the views of rare DX station operators and DXpeditioners? While beyond the scope of this survey, here are some comments from world-famous DXpeditioner, contester, and new-country pioneer Martti Laine, OH2BH:

"Yes, it takes 'two to tango,' and no DXer can be successful without an efficient 'take in' at the production end," he points out. "You may want to emphasize the fact that one needs to rely on DXpeditioners' skills and strategy for the most part. Thus, there is only a limited amount that can be done at the home base." Martti says that his philosophy at the production end of the circuit is covered in his book *Where Do We Go Next?* and N7NG's pile-up operating tips available from INDEXA (see "Sources & Resources").

As Martti and countless other DXpeditioners know, putting the rare ones on the air is a very expensive undertaking. Future major operations will be even costlier, and therefore will require even more financial support *from* DXers. Certainly organizations such as the Northern California DX Foundation and

the International DX Association (INDEXA), which have long been effective in raising funds, will be leading this effort. However, additional support from individual DXers waiting at home will be needed as well. As many of our experienced DXers have mentioned, helping with donations, no matter the size, is the right thing to do. There's no such thing as a free DX lunch, nor is the Tooth Fairy leaving cash under the DXpeditioner's pillow. The best operator with the biggest station will never make it to the top without rare ones to work.

Summary

This survey has been an enjoyable project. Perhaps there are few surprises in our report. Listening to the experienced voices of many fellow DX operators has been a pleasure. Their stories are inspirational. Many of their contacts have led to lasting international friendships growing out of QSOs that went well beyond the signal reports. I hope that their comments have been of interest, and that you, too, will someday work your way to the top of the Honor Roll. In the words of Ralph Waldo Emerson, "The reward of a thing well done is to have done it." I trust that someday you will have done it, as well. ■

Sources & Resources

QSLing: Send a crisp, new dollar bill (green stamp) with your QSL to DX stations, or use an International Reply Coupon (IRC), available from many post offices ($1.75). If yours doesn't carry them, ask your Postmaster about ordering some. The IRC is a way to prepay for postage for QSLs mailed from another country without sending currency through the mail. You'll need to enclose two for airmail postage. Details on IRCs are available at <http://www.upu.int/irc>. Mint foreign stamps are another option. Check ads in radio magazines.

A chapter on QSLing is included in the book *The Complete DXer*, by Bob Locher, W9KNI, available from the CQ Book Store.

Operating tips: In addition to the Locher book, more detailed information on DX operations is contained in "DXing Basics," by Wayne Mills, N7NG, available for $5.00 from the International DX Association (INDEXA), P.O. Box 607, Rock Hill, SC 29731.

Newsletters: Information on DX activity, QSL managers, DXpeditions, and more is available in various newsletters. *QRZ DX*, published by *CQ*'s DX Editor, Carl Smith, N4AA, provides weekly updates. Contact: DX Publishing, P.O. Box DX, Leicester, NC 28748; telephone 1-877-397-8254, e-mail: <N4AA@dxpub.com>; <www.dxpub.com>.

One of the things for which contesters are always grateful (in addition to good band conditions!) are the DXpeditions organized especially for a test. The Florida DXpedition Group did just that for the CQ WW DX SSB Contest last fall. In spite of the third largest solar flare ever recorded, they made lots of contesters happy and had fun!

5J0X
The CQ WW from San Andres

BY CLARENCE J. KEROUS,* W9AAZ

For many, preparing for a contest means checking out the station just a day or two prior to the start of the test. For members of the Florida DXpedition Group (FDXPG), preparation for the 2003 CQ World-Wide DX SSB Contest began in January 2003 at our regular meeting. We wanted to be on from a really sought-after location. Bill Gallier, W4WX, FDXPG President and our DXpedition leader, suggested we try San Andres island in the far western Caribbean sea. San Andres is not on the air all that often, and we all agreed it would be an ideal location if we could secure licenses, transportation, and lodging.

The Planning

Bill, W4WX, found a website for the Red Crab Villa (www.a1vacations.com/Redcrab/0/) on San Luis beach, San Andres. After e-mailing the owner and inquiring about prices and permission to erect antennas, we reserved all four apartments for eight days in October 2003 for the CQ WW SSB.

The next challenge was licensing. Bill e-mailed the Liga Colombia Radio Aficionados (LCRA) in Bogota, Colombia and inquired about securing licenses for operating on San Andres island, which is Colombian territory. Ms. Maria Theresa Rodriguez of the LCRA advised Bill to send her photocopies of our licenses, a copy of the picture page of our passports, and a color photo of each operator and she would begin processing our application. As licensed U.S. hams in Colombia, we could use HKØ either before or after our calls for up to 60 days. What we really wanted, though, was a special call for the contest. We put in a request for 5JØJ and 5JØX in early February 2003.

The 5JØX Team San Andres. All of the ops were also able to sign HKØ/home call while on San Andres. Left to right: front row—Clarence, W9AAZ, and Larry, W1LR; back row—Cory, N1WON; Jan, K4QD; Bob, KR4DA; William, N2WB; and Bill, W4WX.

The last obstacle in getting the San Andres operation into high gear was transportation. Bill searched the internet and found a flight out of Miami International Airport to El Dorado International in Bogota with a connecting flight to San Andres at a reasonable price.

With these plans in motion, the team started to firm up, with seven members of the FDXPG signing on for the operation: Bill, W4WX; Clarence, W9AAZ, FDXPG VP/Secretary; Larry, W1LR; William, N2WB, Treasurer; Jan, K4QD; Bob, KR4DA; and Cory, N1WON.

After several months of silence from the LCRA, Bill, W4WX, again contacted Maria Theresa. She advised that all was in order for issuance of the special call 5JØJ. She said the license would be issued around the end of August and would be mailed to Bill. We were overjoyed.

William, N2WB, got a website for our contest effort up and running. We solicited support from various ham radio manufacturers and received a commitment from Heil Sound for four Pro-Plus headsets plus four foot switches and Kenwood

**1104 Buggy Whip Trail, Middleburg, FL 32068*
e-mail: <kx8nlaf@bellsouth.net>
5JØX website: <www.geocities.com/hk02003/>

The Red Crab Villa, home of the 5JØX team. The accommodations were great!

adapters for the headsets. Acom generously supplied us with an Acom 1000 1-KW amplifiers. William had an additional Acom amp, which we also planned to take along. ELLI QSLs in the Czech Republic said it would supply us with 10,000 QSL cards after the contest. We also received many monetary donations from the DX community. Without the support of so many people, the trip to San Andres would have never gotten off the ground.

After Labor Day, Bill, W4WX, secured airline tickets for the group. We would fly Avianca out of Miami to Bogota and then fly Soc. Aero De Medellin to San Andres.

It was now almost the middle of September and the license had not yet arrived. Daily Bill frantically e-mailed Maria Theresa. He tried to call the LCRA on the phone, but he knew little Spanish and kept getting transferred and gave up in complete frustration. He then contacted a Colombian ham who was working in Houston, Texas. Roberto Rey, HK3CW, agreed to help try to speed things up. After a few phone calls he advised us that the license had been approved but had not yet been issued.

It was now the first week in October. Finally, the president of the LCRA, Senor Ignacio Barraquer, HK3CC, arranged to have the license issued. Bill received it on October 10, only nine days before we were to leave! We were issued 5JØX rather than 5JØJ. At this stage of the game we couldn't have cared less!

Twenty days before our scheduled departure Avianca Airlines decided to cancel the flight from Miami to Bogota. We rebooked on American Airlines. The only fly in the ointment was an additional cost of $322 per person. Ouch! If it had not been for the generous donations we received, the DXpedition would have crashed and burned right there! To all of those who made donations, thank you again from all of us on team San Andres 2003!

We're Off!

On Sunday afternoon, October 19, Bill and I rented a 15-passenger van to take the seven of us and all our luggage to Miami International Airport. We had 14 checked bags as well as 7 carry-ons. At the time there was a major security alert all over the country. After we got our boarding passes, the Transportation Safety Administration proceeded to open and check every one of our bags, both checked and carry-on! It took what seemed like an eternity, but finally we and all of our luggage were cleared. We then boarded AA flight 913 to Bogota. Upon our arrival in Bogota, we had to present the list of equipment and our intentions for the trip written in Spanish by Roberto, HK3CW, to the customs officer. We then were allowed to proceed without any further delay and board our flight to San Andres.

As we approached San Andres, the captain announced we were flying over the south end of the island and would then circle to the north toward the landing strip at the airport. We really got a good look at the island, which is about 10 miles long and 3 to 4 miles wide. With a bump we touched down at 4:35 PM, right on time.

We proceeded outside, where we were met by Pedro and his lovely wife Adrianna, who manage the Red Crab Villa, where we would be staying for the next eight days. Luckily Pedro had a full-size Ford F-150 pickup truck, which we quickly filled with all our luggage and gear. We hailed two cabs and proceeded in a caravan to San Luis beach. The "Magnificent Seven" unloaded the luggage and stowed it in the four apartments. We had two on the ground floor and two on the top floor. They were really fabulous accommodations.

Getting Down to Business

We then got down to serious business. We unpacked and set up four complete operating positions. We placed two setups in each of the ground-floor apartments. Each consisted of a Kenwood TS-570 HF transceiver; a laptop running CT for logging and also for use for RTTY, PSK-31, Hellschreiber, etc.; and a Rigblaster to interface the transceivers with the computers. In between the two rigs in each apartment was an Acom 1000 1-KW amplifier to be used alternately by each rig.

By now it was starting to get dark. As one group assembled the four stations, outside another group put together two Sigma 5 HF vertical antennas. One was placed in a bucket of sand by the far end of the pool. The other was lashed to the second-floor balcony railing with duct tape. Coax was then run from the two rigs to the Sigma 5's. As it was now totally dark, we planned to erect all the other antennas the next morning.

The two stations and the verticals were all set up. I had the honor of making the very first QSO from San Andres. I got on 14.195 MHz SSB and called "QRZed from the 2003 San Andres Island DXpedition. This is HKØ/W9AAZ." I instantly got a call from W4AWP, Don, in Green Cove Springs, Florida, which is about 10 miles from my home QTH in Middleburg. Don was kind enough to call my wife and let her know we had arrived safely and to have her call all the other guys' wives. Talk about luck—getting someone back home on the very first call! After that I turned over the rig to Cory, HKØ/N1WON. He got an instant pile-up going.

The next morning it was time to put up the rest of the antennas. Cory put up a 6-meter delta loop in a tall palm tree in the front yard. Jan, HKØ/K4QD, and William HKØ/N2WB, put up Jan's homebrew 30/40-meter vertical also in the front yard. We then assembled a Mosley TA-33 Jr. for 10/15/20 meters and put it on a push-up pole about 20 feet high out in the field next to the apartments. On the other end of the second-floor balcony we assembled a ZX Mini-Beam for 10/15/20 meters and secured it to the balcony railing with more duct tape. Back out in the field we put up a low-band vertical for 80 and 160

meters. We then spread radials on the ground around it. Jan then strung up a 40-meter delta loop in the rear of the apartments. By then it was afternoon and the temperature was almost 100 degrees, so we went back to the Red Crab, kicked off our sandals, and jumped into the pool with our shorts and T-shirts still on!

Next we got down to the task at hand—working pile-ups! All four stations quickly were manned and hundreds of stations were logged by all on SSB, CW, RTTY, and PSK-31. We noticed that band conditions were not good at all. Then that evening we were watching CNN on the satellite TV and learned that there had been a major solar flare, which was disrupting communications worldwide. It was the third largest flare ever recorded.

In spite of very poor band conditions, we made lots of contacts, all with the U.S., Canada, and South America. We could not work into Europe. We could work EA8, Portugal, and Spain, but that's as far as we could get. It's as if a brick wall had been erected. This continued for several days. If the bands were flat, we jumped in the pool or went sightseeing. San Andres is indeed paradise!

I stayed up late at night and got on 160 meters. I had one of the Acom amps tuned for smoke with 1 KW out to the low-band 160/80-meter vertical. I called CQ time after time and finally got a reply. The noise level was really bad. I could barely copy anyone, and they were all right down in the noise. After two hours of trying I had only made 41 QSOs on 160. Then some thunderstorms began moving in and the static crashes started to pin the S-meter, so I finally gave up. It was very disappointing, as Top band from the Caribbean is usually much better!

The Contest

Soon Friday afternoon rolled around and it was time to prepare for CQ WW SSB 2003. We moved the two Acom amplifiers together to use them with the two run stations. We would be in the High Power Multi-Two category. All the antenna coax was run into the apartment to the two contest stations. The other two rigs would still be available for use on the WARC bands if anyone cared to use them during their off time. We checked and rechecked all the gear and antennas. We set up two laptops with CT for logging and linked them up with a null modem cable.

We all would be on the air according to a schedule drawn up by Bill, HKØ/W4WX. We would work two hours on and four hours off, then on again for two hours, then four off and two on, and then 6 hours off. This schedule gave all of us ample time to get some rest.

Finally everything was ready as the clock ticked down the last seconds before the start of the CQ WW. Bob, HKØ/ KR4DA, and Jan, HKØ/K4QD, were the first hapless victims to sit in the hot seats and begin the contest!

Bob and Jan starting calling "CQ Contest from Five Japan Zero X-ray" and the QSOs started to flow into the two laptops. Then the unthinkable happened: The computers refused to talk to one another. We could not figure out what to do. In desperation we shut down both of them and rebooted. Thankfully, they then started working. After a false start out of the gate we were at last off and running.

My first shift was not until 0400Z, so I slept for a while. All too soon it was time for my tour of duty in the hot seat of the #1 run station. I quickly slipped on the Heil Pro-set Plus headset, stomped down on the foot switch, and called "CQ Contest from 5JØX." The din from the pile-up was almost deafening! I logged QSOs as fast as I could talk and type. Twenty meters was *hot*! It was like that for my entire two-hour shift. In the back of my mind I kept wondering why I was not working hardly anyone outside the U.S. I hoped things would improve by my next shift and some DX would start showing up.

In what only seemed like a few minutes my two-hour shift was over and I was relieved by Larry, HKØ/W1LR. I rested and was back at 1000Z on the #2 run station. I was now on 40 meters working split and on my frequency. I logged a ton of stateside, Caribbean, and South American stations, but alas, *no* Europe at all. Conditions were really terrible due to the solar flare.

My shift soon ended and I then had 6 long hours off. When I returned at 1800Z, I was on the #1 run station, and Bill, HKØ/W4WX, was on #2. I was on 10 meters and Bill was on 15. Finally I was working some EU stations, but there were no big EU pile-ups like there usually would be at that time of day. It was pretty much the same for Bill on the #2 station. We had to really work for each contact. Conditions were very poor! My next shift was with William as my partner. It was the same old story—slim pickings, no big pile-ups, just steady QSOs that we had to call several times.

By now it was early Sunday morning and Bill and I were on together at 0800Z. It was really the pits. It was without a doubt the worst contest shift I had ever experienced, and this was after nine years of doing the CQ WW from a DX location. The bands were almost flat out dead. Bill tried 160, 80, and 40 with little results. In 2 hours he made a total of 10 contacts! I was on 20 and was only making a contact every few minutes by calling until I was hoarse! Bill and I were both glad when this graveyard shift was over. On Sunday after sunrise the bands came back to life

The author, Clarence, W9AAZ (in the foreground), and Jan, K4QD, working "the Deserving" from San Andres.

Bill, W4WX (in front), and Bob, KR4DA, working the pile-ups during the contest.

Seeking to Achieve the Ultimate...

Ultra-Quiet 400 MHz High-Resolution DDS
1st IF 40 MHz / 3 kHz Roofing Filter Implementation
Quiet Triple Conversion Receiver Architecture
Variable RF filter (VRF) and " μ " Tuning Narrow RF Filter
IF WIDTH / SHIFT, IF NOTCH,Filter Shaping Contour Control,
Super Multi-function 30 kHz/32-bit Floating Point IF DSP
Completely Independent Dual Receive system

*1 Installed in "D" version
*2 Option on "Contest" version

The radio: FT DX 9000

Delivery: December, 2004

FT DX 9000D **200 W Version HF/50 MHz**
Large TFT Display, Built-in Memory Board, Main and Sub Receiver VRF, Full Dual RX,
"μ" Tuning (3 modules) Installed, Internal Switching Power Supply

Future Production Model: **FT DX 9000MP** **400 W Version HF/50 MHz**
Dual Analog Meter Sets, LCD Display, Memory Card Installed, Main and Sub Receiver VRF, Full Dual RX,
Switching External Power Supply/Twin Speaker Enclosure.

FT DX 9000 Contest **200 W Version HF/50 MHz**
Dual Meters + LCD, VRF Installed in Main Receiver, Extra Key and Headphone Jacks,
Internal Switching Power Supply

For the latest Yaesu news, visit us on the Internet:
http://www.vxstdusa.com

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details. This device has not been approved by the FCC. This device may not be sold or leased, or offered for sale or lease, until FCC approval has been obtained.

The radio... YAESU
Choice of the World's top DX'ers

Now available: FT DX 9000 Technical Supplement. Please call (714) 827-7600, Ext 2272.
Vertex Standard, US Headquarters, 10900 Walker Street, Cypress, CA 90630

San Andres—and Getting There

San Andres is definitely a "paradise lost." It is difficult to get to, as there are no direct flights in or out. We all took some personal risk getting there, as we had to go through Bogota. If you are thinking about going to San Andres, please get on the internet and go to the US Department of State website and click on the travel warnings for Colombia. The State Department warns U.S. citizens against travel to Colombia. Terrorist activities and criminal violence affect all parts of the country. The State Department website advises that the U.S. government's ability to help U.S. citizens is limited. The El Dorado airport has many soldiers and police walking around. Also when you land or take off you cannot help but notice the sand-bagged machine-gun nests and soldiers in them that surround the airport.

San Andres was much safer, or so it seemed. The Red Crab Villa is surrounded by a high concrete wall, and the only way in is through a heavy, locked iron gate. We had no security problems, but if you decide to go, be advised that the possibility does exist.

William, N2WB (left), and Cory, N1WON, sightseeing in downtown San Andres.

somewhat. At last the other ops started to work some EU stations. They even got a few JAs and VKs in the log.

My last tour of the contest was the final two hours of the CQWW with Bill as my partner once again. I was on 15, and Bill was on 10 and then 20 meters. We started to log some real DX contacts, including C5Z and A61AJ, and Bill snagged an A45 station in Oman. Finally the clock on CT rolled over to 0000Z and the CQWW SSB 2003 was history. Bill quickly saved the logs from both stations to floppies. Later after we returned home Bill massaged the logs and removed the bad calls. We ended up with 5308 Qs (see Table I), which was very disappointing. The solar flare had taken a real toll on us. However, we took some small comfort in the knowledge that we were not the only operation hit by the flare. We had had a lot of other Caribbean contest stations all asking us repeatedly if we could hear Europe. Contesters live and die by the solar flux index and the *A*- and *K*-indices.

Post-Contest

After the contest was over we cooked steaks out on the grill. I then had had enough and called it a night. Diehards William and Jan got back on the air. Cory got on 6 meters and made a few contacts. Cory and Bill worked over 60 stations total on 6 meters. None were from the U.S.; all were Caribbean and South American contacts. Cory even worked CEØ, Easter Island on 6.

On Monday morning after the CQ WW I got up at around 6 AM and stumbled into the radio room to find Jan working a nice pile-up on 30 meters CW. I then got on 40 CW and had a nice pile-up going in short order. Around 8AM we enjoyed a leisurely breakfast and everyone pretty much did want they wanted. Bill and Bob, HKØ/KR4DA, got on RTTY and made a lot of contacts. Later Larry, HKØ/W1LR, got on 20-meter PSK-31 and worked a bunch of stations. Late in the afternoon I got on 14.080 MHz and called CQ using Hellschreiber. I got a fast reply from KA4RAB, Julio, in Hialeah, Florida. I then worked several more stations using Hell. These might well have been the first-ever Hell contacts from San Andres. Bill and I were fortunate enough to work two ops back home—Jake, K5WTA, and Greg KG4IAL.

We would be leaving the tropical paradise of San Andres on Tuesday afternoon. On Monday afternoon we took down the low-band vertical. We left all the other antennas up until Tuesday so that anyone who wanted to could operate. Finally, on Tuesday morning all the other antennas came down, and we packed up our stations and prepared to leave the island.

During our eight-day stay on San Andres we made a grand total of around 12,000 QSOs with very bad band conditions. Hopefully we were in your log!

From the CQ WW SSB 2003 San Andres team, thanks for working us. See you in the pile-ups from somewhere for the 2004 contest!

Acknowledgements

The seven members of the 2003 San Andres CQ WW SSB Contest DXpedition would again like to thank all of our supporters. Without you, the 5JØX operation would not have happened. A special thanks to Acom and Heil Sound. The amp and the headsets all performed flawlessly. Also a special thanks to ELLI for supplying the 5JØX QSL cards.

We would like to extend a very special thank you to Mr. Roberto Rey, HK3CW. Without his assistance we would have never gotten the special call to use during the contest. To you Rob, *muchas gracias colega!* Even though you were not with us, as far as we are concerned you were part of the team!

We would also like to thank a very special lady, Karen Adamitis, WB9YBL, of Good Buy Travel and Cruises in Orland Park, Illinois. She went the extra mile in arranging our air transport not once, but twice, after Avianca cancelled the flight out of Miami. Thank you, Karen!

A special thanks to Ron, N4GFO, who worked us daily and passed messages to our wives and families. ■

5JØX CQ WW SSB 2003 Totals

Band	QSOs	QSO Pts.	Average Pts./QSO	Zones	Countries
160	45	98	2.18	6	18
80	69	160	2.32	14	29
40	474	996	2.10	14	49
20	1370	2852	2.08	19	61
15	1516	3212	2.12	21	67
10	1834	4088	2.23	22	72
Totals	**5308**	**11,406**	**2.15**	**9**	**296**

Score: 4,471,152 points

Table I– Breakdown of the claimed contest score of 5JØX.

MFJ Dummy Load/Wattmeter

1.5 kW Dry Dummy Load has built-in precision, true peak-reading SWR/Wattmeter switchable to external antenna!

World's most versatile 1.5 kW dummy load has a *built-in* true peak reading SWR/Wattmeter that you can switch and use independently!

MFJ-267
$149.95

You'll find tons of uses!

Tune up your transceiver, linear amplifier or antenna tuner into a safe 50 Ohm dummy load at *full power*. Then instantly switch to your antenna and monitor SWR, forward and reflected power.

Use for testing/tuning transmitters, transceivers, amplifiers, antenna tuners, baluns, transformers, filters, matching networks, coax, stubs, transmission lines and antennas.

The 50-Ohm dry dummy load works DC to 60 MHz. SWR is below 1.3:1 at 30 MHz. Can handle 100 Watts for ten minutes or 1500 Watts for ten seconds. Comes with power derating curve.

Extra-large three-inch lighted Cross-Needle meter reads SWR (1:1 to 8:1), forward and reflected power *simultaneously*.

Reads *true peak* PEP or average power on 300/3000 Watts forward and 60/600 Watts reflected power ranges 1.8-54 MHz.

High accuracy comes from a carefully designed directional coupler, an accurate active-peak reading circuit and a precision d'Arsonval meter movement.

RF tight perforated aluminum cabinet. 4½Wx3½Hx10½D inches. Uses 12 VDC or 120 VAC with MFJ-1312D, $14.95.

Find Power Line Noise Fast!

MFJ-852
$99.95

Walk or drive around with this *handheld power line noise meter* to search out leaky insulators, loose hardware and corroded ground lines quickly. Track noise source right down to the pole, transformer or insulator. Sensitive .3 uV, 135 MHz superhet AM receiver has 70 dB range noise field-strength meter. Telescopic, direction-finding dipole is optimized and balun-isolated to give sharp, clearly defined null. Plug in headphones or tape recorder.

Field Strength Meters

MFJ-802
$39.95

Shows radiated antenna relative field strength. Determine radiation pattern. **MFJ-802** has huge 3 inch meter. Telescoping dipole reduces influence of surrounding objects and is more reliable, repeatable than monopole. Sensitivity control. Jack for remote sensor, MFJ-802R, $24.95.

MFJ-801
$19.95

MFJ-801 has 1¾ inch meter, sensitivity control, 20 inch extended telescoping monopole antenna.

81 dB Step Attenuator

MFJ-762
$69.95

81 dB Attenuator in 1 dB steps. 50 Ohms. Usable to 500 MHz. 250 milliwatt maximum input. BNC connectors. Shielded stages. Connect between receiver and antenna and use S-meter as a precision calibrated field strength meter. Prevent receiver blocking, cross-modulation. Determine gain/loss, ideal for fox hunting. Evaluate linearity. Isolate circuits. Extend range of sensitive equipment. Measure input/output level differences.

MFJ Frequency Counters

MFJ-886
$119.95

MFJ-886 covers 1 MHz to 3 GHz with 300 MHz direct count, 0.1 Hz resolution. 4 gate times. 10-digit high-contrast 3/4 inch LCD display. Lock display button. Bargraph shows RF field strength. Includes rechargeable Ni-Cad batteries, charger, telescopic antenna. Black anodized aluminum. 2¾x2¼x1¼ in.

MFJ-888
$184.95

MFJ-888, like MFJ-886, but covers *10 Hz*-3 GHz. Measures frequency/period, has 50/1M Ohm input, auto hold, LED backlight, beeper. 2¾x4¼x1¼ in.

MFJ Wireless Weather Station . . . $59.95!

MFJ-192
$59.95
New!

Display *Remote Sensor*

You're ragchewing with a G3 in England . . . *"Temperature outside is a cool 53 degrees with falling barometric pressure -- looks like a rainstorm may be coming. Humidity here is 73%."* . . . while noticing it's 1900 hours GMT.

This informative MFJ Wireless Weather Station receives and displays outside temperatures from up to 3 remotes every 30 seconds up to 100 feet away.

You'll get barometric pressure trends, weather forecasting, severe storm detection with visual and audible alarms -- great for severe weather nets.

You can read inside and outside F/C degrees, relative humidity, forecast icons, pressure trend, hour, minutes, seconds, day, date and month *simultaneously*.

Has upper/lower temperature limit alarms, backlight. Read time in two zones -- local and GMT or other -- in 12/24 hour format.

Display (4x7x1") uses 2 AA, remote (2¼x3½x1") uses 2 AAA batteries, not included. *Includes one remote*, extra **MFJ-192S** remotes are $19.95 each.

MFJ CW Reader/Keyer

MFJ-464
$179.95

(Keyboard, paddle not included.)

Plug MFJ's CW Reader with *built-in* Keyer into your transceiver's phone jack and key jack. Now you're ready to compete with the world's best hi-speed CW operators -- and *they won't even know you just passed the code test!* Sends and reads 5-99 WPM. Automatic speed tracking. Large 2-line LCD shows send/receive messages. Use paddle or computer keyboard. Easy menu operation. Front panel speed, volume controls. 4 message memories, type ahead buffer, read again buffer, adjustable weight/sidetone, speaker. RFI proof.

MFJ Atomic Wrist Watch

MFJ-186RC
$29.95

Receives atomic time signal WWVB and sets your watch automatically -- always accurate to milliseconds. Select 12/24 hour format and pacific, mountain, central, eastern time zones. Displays hour, minutes, seconds, day and date. Displays year, month and day in calendar mode. Alarm, stopwatch functions. Brilliant blue backlight. Water-resistant.

25-1300 MHz Discone Antenna

MFJ-1868
$59.95

Ultra wide-band antenna receives 25-1300 MHz. Perfect for scanners. Transmit 50-1300 MHz. Handles 200 Watts. Ideal for 6/2/1¼ Meters, 70/33/23 CM ham bands. Excellent for testing various transmitters on single coax. SO-239, 50 feet coax, stainless steel elements.

Free MFJ Catalog
and Nearest Dealer . . . 800-647-1800

http://www.mfjenterprises.com

• 1 Year *No Matter What*™ warranty • 30 day money back guarantee (less s/h) on orders direct from MFJ

MFJ ENTERPRISES, INC.
300 Industrial Pk Rd, Starkville, MS 39759 **PH:** (662) 323-5869
Tech Help: (662) 323-0549
FAX:(662)323-6551 8-4:30 CST, Mon.-Fri. ***Add shipping.***

MFJ . . . the world leader in ham radio accessories!

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	IG9T('95) (Opr. IV3TAN)	816,959	1,938	33	110
7.0	IG9GSF('97) (Opr. IT9GSF)	1,249,236	2517	35	137
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	JY9NX('01) (Opr. JM1CAX)	10, 785,336	6,290	143	475
EU	GIØKOW('99)	10,457,664	6,375	155	589
NA	KP3Z('02) (Opr. N5TJ)	15,655,517	8,656	165	592
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	RK9CWW ('02)	8,235,462	4,437	144	573
EU	RW2F('02)	14,163,303	8,072	189	742
NA	V26B('02)	18,756,933	11,124	156	585
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	457	11	66
IH9P	3.5	1,024	21	88
(2003)	7.0	1,290	28	107
29,447,379	14.0	2,265	37	139
	21.0	3,491	38	144
	28.0	3,304	36	144
	Total	11,831	171	688

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	VP2KC('79)	37,770,012	17,767	175	677
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	C4A('99) (Opr. 9A3A)	261,489	969	21	80
3.5	EA8EA('96) (Opr. OH2KI)	1,175,550	2,672	36	114
7.0	EA8EA('03) (Opr. OH2MM)	1,877,050	3,660	38	137
14	P4ØV('91) (Opr. N7NG)	1,883,700	3,521	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	CT8T('03) (Opr. OH1NOA)	7,613,600	5,969	142	478
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.	CT9M('02) (Opr. DL2CC)	11,225,452	5,181	159	605

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	TS7N('00)	13,140,050	6,348	156	614
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('01)	9,283,872	4961	170	522
SA	HC8N('95)	14,302,820	7,252	162	503

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	264	13	61
P3A	3.5	1,121	27	98
(1999)	7.0	1,535	35	121
19,243,476	14.0	1,825	39	136
	21.0	1,782	39	136
	28.0	1,761	38	139
	Total	8,288	191	691

Multi-Operator/Two Xmtr.

AF	CT9L('03)	24,874,181	10,942	175	636
AS	A61AJ('02)	24,384,292	10,505	194	704
EU	RU1A('03)	16,533,164	8,314	209	749
NA	VE3EJ('03)	14,545,882	7,457	184	622
O	AH2R('02)	11,311,266	6,390	171	482
SA	PJ2T('03)	24,843,554	11,083	187	615

WORLD RECORD

Station	Band	QSOs	Zones	Countries
	1.8	273	13	59
CT9L	3.5	720	22	93
(2003)	7.0	2,928	35	119
24,874,181	14.0	2,398	36	129
	21.0	2,754	36	126
	28.0	2,010	33	110
	Total	10,942	175	636

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

STANDARD OF COMPARISON

800-833-7373
www.tentec.com

For 35 years, Ten-Tec has been the development pioneer in amateur radio. Our long tradition of 'firsts' continues into the 21st century with the Orion, Jupiter and our other transceivers plus a superb line of accessories. Come and see for yourself why more and more amateurs are choosing us over the competition.

ORION
$3,300
The New Standard in HF Performance!

MADE IN USA

This sophisticated HF transceiver uses a combination of selectable I-F roofing filters and DSP filtering to deliver unparalleled performance. ORION features dual 32-bit Analog Devices SHARC DSP's, high dynamic range and third order intercept numbers at very close signal spacing, two completely independent receivers, 3 antenna connectors, programmable AGC, Panoramic Stereo receive, real-time spectrum scope, 590 built-in DSP bandwidth filters, DSP noise reduction and voice and CW keyers. Flash-ROM upgradeable; download the latest version of the radio at any time from our website. The serious weak signal DXer and contester has all the tools necessary to hear and work the weak ones, even in the presence of the loudest signals. No other transceiver can top it!

JUPITER
$1,269
Awesome Audio—Superb RX Performance

MADE IN USA

ORION'S little brother is JUPITER, and it shares some of the same DSP receiver circuitry used in the ORION. JUPITER is the standard for great sounding audio on the HF bands. 18 selectable SSB transmit bandwidths to a maximum of 3.9 kHz deliver the finest sounding audio in amateur radio. Connect your favorite microphone and listen to the compliments roll in. On the receive side, 90 dB of dynamic range, 34 built-in receive filters, DSP noise reduction and DSP auto notch allow the operator maximum flexibility for suppression of offending QRM. Like Orion, Jupiter is Flash-ROM upgradeable; download the latest version of the radio at any time from our website. Jupiter owners everywhere were ready for 60 meters the day the band opened!

Looking for a compact, low power rig with great receiver performance? ARGONAUT V at $795 fits the bill. Call us or see our website for more information

TEN-TEC

1185 Dolly Parton Parkway • Sevierville, TN 37862
Sales Dept: 800-833-7373 • Sales Dept: sales@tentec.com • Service Dept: service@tentec.com
Monday - Friday 8:00 - 5:30 EST • *We accept VISA, Mastercard, Discover, and American Express*
Office: (865) 453-7172 • FAX: (865) 428-4483 • Repair Dept.: (865) 428-0364 (8 - 5 EST)
Shipping is additional. TN residents add 9.5% TN sales tax.

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	64	12	33
K4JA	3.5	498	21	93
(2003)	7.0	540	31	117
12,327,066	14.0	911	39	142
	21.0	1,780	37	145
	28.0	1,583	34	142
	Total	5,376	174	672

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	K1ZM('95)	142,358	470	23	83
3.5	W1MK('00)	417,240	1,273	26	96
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

Oops...

Motion to Table...

A couple of editing errors slipped by us in Table II of our September "Antennas" column (page 57). First of all, the word, "Diameter" should be on top of the far right column. Second, the information on the length of the driven elements is in fig. 2, not fig. 3 (there is no fig. 3). Finally, in the caption, if you want to use 1/4-inch rod instead of 1/8-inch rod for the directors and reflectors, you should shorten D1 from 12.0" (not 10.0") to 11.75". Hopefully, most of you were able to figure this out without our help. *Muchas gracias* to *CQ* Spain Editor Xavier Paradell, EA3ALV, for the catches.

Also, the dates for the SSB weekend of the 2004 CQ World-Wide DX Contest (Rules, p. 88, Sept. issue) are 0000 UTC October 30 through 2400 UTC October 31, a full 48 hours.

Correspondence on "Phoenix"

The following letter was addressed to "Phoenix" author Dan Metzger, K8JWR:

Hi Dan,

Thank you for a great article. Are you going to build on this, so to speak? Voice? SSB? I saw some interesting stuff on the web were you can make a tuna can QRP rig plus miscellaneous pieces of ancillary gear such as test equipment. Your article, however, takes this approach to a new level by directing people to a virtually no-cost source. Well done.

Larry Sebring, N6PFF
McKinleyville, CA

Finding CQ on Newsstands

Editor, *CQ:*

I don't know how it is anywhere else, but in our town all the radio and electronics magazines have disappeared off the newsstands. This has been going on for a while, and now there are no radio mags of any kind available to the general public. I have been trying to find out why and all I seem to get is the runaround and ridiculous answers! I'm not exaggerating. A few years ago, I had the chance to look in a couple of libraries in schools I attended when I was a boy, and all the ham radio and other electronic books that were there are gone. In fact, nothing in the 621 section remains. When I asked why, I was given the runaround and looked at as if I had lobsters sticking out of my ears! I have been ridiculed by a lot of people and most family members for being a ham. When my mother decided to become a ham, members of her social group gave her what for. My sisters gave her the same! She never did get to get on the air.

This kind of behavior has me perplexed and annoyed, but I have stuck with it for 39 years and have enjoyed the hobby very much. It is responsible for my being an honor graduate at the U.S. Army Radio Repair School at Ft. Gordon, Georgia. I have met a lot of good friends and I have learned a lot of things over the years. It makes me sad to see all the bad things that are happening to amateur radio. I think that every radio amateur had better become proactive in promoting the hobby, especially to the younger folks and to the public at large. If this had been done a long time ago we wouldn't be having quite so many problems now. I'll stop here for now.

Robert M. Jordan, WA7LKF
Walla Walla, WA

W2VU responds:

Robert, Every newsstand owner makes his/her own decisions on which magazines to carry. With so many magazines competing for space today, it is hard for a specialized magazine such as *CQ* to "earn its keep" on newsstands, especially smaller ones. Generally, if enough people ask for a magazine—and then buy it regularly—the newsstand owner will carry it. It's pure economics. Meanwhile, the best way to assure yourself of getting a copy of *CQ* each month is by subscribing.

Many libraries today (especially school libraries) are faced with very tight budgets and focus their available funds on materials that will serve the greatest number of readers. Having no books on electronics, though, is very shortsighted. In some places, radio clubs purchase ham radio books and/or magazine subscriptions for their local libraries. Also, individuals may donate books. They don't even have to be new. Whenever I get a new *ARRL Handbook* or similar "perennial" text, I donate the one I'm replacing to my local library. It sure beats throwing it out.

And as far as attitudes toward ham radio go, I haven't seen the type of behavior you have, but I agree 100% that each and every one of us must be proactive in educating the public about the ongoing value and importance of amateur radio and promoting it to potential newcomers.

Taking Offense

Editor, *CQ:*

I read with interest your editorial on page 6 of the June 2004 issue ("Down on the [Re] Farm"). While I agree in principle with your editorial, I need to comment on the way you describe those who disagree with you.

Using terms like "stupid" and "ridiculous" to describe those who would disagree with you is counter-productive to your attempt to persuade others to your viewpoint. Using phrases like " . . . being tradition-bound not to do anything the simple way when there's a more complicated and confusing method available . . . " simply won't win over anyone to your side.

You seem to be a thoughtful individual, deeply concerned about the future of amateur radio. I'm sure you know that, disagreements aside, those in the ARRL and FCC are also thoughtful and concerned individuals. You are in a unique position as a writer for a major amateur radio magazine to affect the way those organizations operate. I feel that you would serve your readers better in placing our concerns before those organizations if you would not lower yourself to insults directed towards them. They are much more apt to respond in a positive way to your comments if they don't feel like they are being attacked.

Thanks for your consideration of my comments.

Tom Daugherty, KF9NF
Greenwood, IN

W2VU responds:

Tom, I'm sorry you were offended by these characterizations. Please keep in mind that I was not referring to any people or even organizations as "stupid" or "ridiculous." I wouldn't do that. However, I did use those terms to describe certain actions taken by various people or organizations. We all can (and do) sometimes say or do stupid or ridiculous things without being stupid or ridiculous people. Also, please keep in mind also that I wasn't disagreeing with any of the proposals put forth by either the ARRL or the FCC, just taking issue in one case with terminology and in the other with the logic behind an otherwise pretty decent proposal.

The success of Allied radar jamming in World War II was due in large part to a group of "smart hams" recruited to work in Harvard's Radio Research Laboratory, or RRL. Their contributions are chronicled by Stew Gillmor, W1FK, in his new book, Fred Terman at Stanford,† *from which this article is excerpted.*

Fred Terman

Ham Radio and WW II Radar Countermeasures

BY C. STEWART GILLMOR,* W1FK

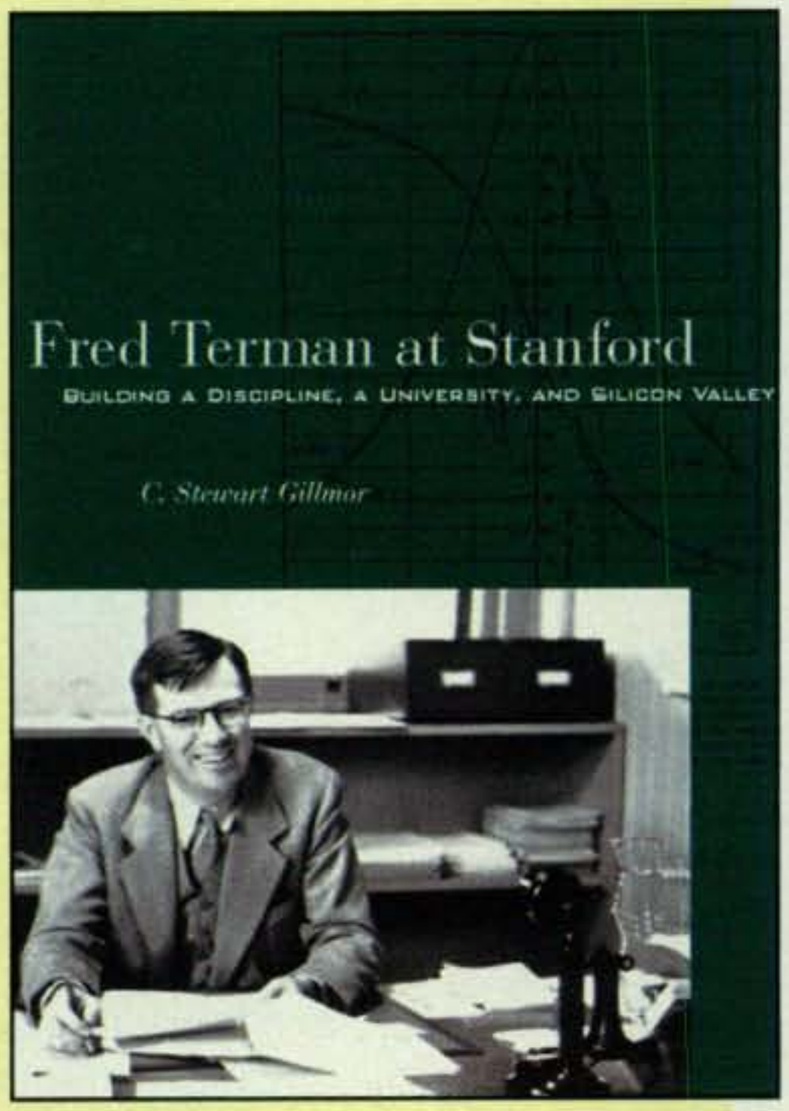
In the days preceding World War II, the U.S. government established the Office of Scientific Research and Development (OSRD), headed by electrical engineer Vannevar Bush, President of the Carnegie Institution of Washington and former Dean of Engineering and Vice-President of MIT. The OSRD and a subsidiary organization, the National Defense Research Committee (NDRC), were to enlist and utilize the nation's scientists and engineers in defense research. The two most important wartime efforts overseen by the OSRD were the nuclear weapons research of the Manhattan Project and the radar work done at the Radiation Laboratory (nicknamed Rad Lab) at MIT.

Rad Lab leaders directed teams in antenna design, microwave frequency devices, circuits, broadband pulse technique, and other new approaches to high frequency electronics, such as the high power cavity magnetron, invented in England, and the klystron, invented at Stanford University in California. Lloyd Berkner, Navy radio and ionosphere expert and radio engineer on Admiral Byrd's First Antarctic Expedition (1928–1930), knew that if effective radars were to be developed, then radar-*countermeasures* also needed to be studied in depth. A small effort to design a wide band search receiver for radar countermeasures began in early 1941 at the MIT Rad Lab under physicist (and future Nobel prize winner) Luis Alvarez and two or three assistants. In December 1941, less than three weeks after the attack on Pearl Harbor, Berkner, Rad Lab Director Lee DuBridge, and Admiral Julius Furer proposed that a radar countermeasures division immediately be organized and that Fred Terman be named the Director.

Who was Fred Terman?

First of all, Fred had been ham radio operator 6FT, then 6AE, then 6XH. He built his first crystal set in 1913 at the age of thirteen and within a year or two was on the air with a spark set, working stations all over the West Coast and the mid-West.

As a youth in Palo Alto, California, Fred Terman was surrounded by the exciting new inventions of radio. As a young man, Fred Terman befriended the slightly younger Herbert Hoover, Jr., (son of future President Herbert Hoover), and Jack Franklin, son of noted Stanford chemist E. C. Franklin. Terman, Hoover, and Franklin made their first spark contacts to each other's houses in their Stanford campus neighborhood. Hoover and Franklin also went on to careers in electronics and instrumentation. In the mid-1920s, Fred Terman established the Stanford Amateur Radio Club (now W6YX).



Stew Gillmor's just-published book, Fred Terman at Stanford, *from which this article is excerpted.*

Ham radio was the initial spark to Terman's future career as educator, inventor, and administrator. He was the son of the prominent Stanford psychologist (and IQ test designer) Lewis Terman. Fred earned his BA degree in chemistry (1920), continued for an engineer's advanced degree (1922) in high-voltage electricity with Stanford's Harris J. Ryan, and then went east to the best technical institution in the country, MIT, for a doctorate, where he became

†*This material is taken from C. Stewart Gillmor's book* Fred Terman at Stanford: Building a Discipline, a University, and Silicon Valley, *which has just been published by Stanford University Press, ISBN 0804749140. See<http://www.sup.org>.*

**e-mail: <sgillmor@wesleyan.edu>*

Small, but ready for Xtra operating fun.

Xtremely "mini" HT delivers "BIG" performance!

DJ-C7T 2m+440 "Pocket-size" HT

Pocket some radio power with the DJ-C7T, the Xciting new dual band mini HT from Alinco. After leading the way in breakthrough miniature electronics technology with its revolutionary "credit card" size transceivers, Alinco creates a new kind of "pocket size" HT that's small in size but BIG in added memories and modes. BIG radio audio quality, too!

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

- Redesigned internal speaker delivers AMAZING audio quality
- SMA antenna port
- 200 Memories
- VFO, Memory and Scan modes
- 39 CTCSS tone squelch (encode+decode) settings
- Tone burst function (1,000, 1450, 1750 and 2100Hz)
- Split function
- Cloning feature
- Lithium-ion battery
- TX range 144 ~ 147.995, 420 ~ 449.995
- Wide-band receive 88.1 ~ 107.995, 108 ~ 173.995, 380 ~ 511.995 includes FM broadcast and AM aircraft bands
- Auto repeater setting

The DJ-C7T is so small, it can fit in a pocket, yet it's a versatile dual-band HT with an enhanced receiver. So, you can enjoy twice the operating fun in half the size. Thanks to Alinco, now you can take a transceiver almost anywhere.

Xciting Xccessories for the DJ-C7T

Included with your HT, you'll find:

- Lithium ion battery pack EBP-58N (3.7V 600mAh)
- AC battery charger (6.0V 0.5A)
- Helical Antenna
- Antenna Cap

Add to the fun with these Xcessories:

EMS-60 Speaker microphone
EME-24 Earphone microphone
EME-18 Earphone
EDH-32 Cigarette lighter cable
ESC-38 Soft case

Actual Size

www.ALINCO.com

Distributed in North America by Ham Distribution, Inc., 15 South Trade Center Pkwy, #B5, Conroe, Texas, 77385. Phone: 936-271-3366. Fax: 936-271-3398. email: USRep@Alinco.com.

Fred Terman at his spark station 6FT at his home on Stanford campus in 1917, when he was 16 or 17 years old. (Courtesy Stanford University Archives and Stanford News Service)

Vannevar Bush's first doctoral student (1922–1924). Fred returned to Palo Alto to teach at Stanford, survived a very serious bout of tuberculosis and a case of appendicitis, and rose by 1937 to head the Stanford Electrical Engineering Department. Along the way, he published four textbooks. His first, on transmission lines, was co-authored in 1926, only two years after receiving his doctorate. His next, *Radio Engineering*, became a McGraw-Hill publishing classic and went through four editions from 1932 until 1955. In 1943, Terman released his *Radio Engineer's Handbook*, which sold 300,000 copies during the war years alone. Both these books became radio engineers' "Bibles." Terman received 30 patents for radio work done before 1941. As an engineering professor, he directed more graduate student theses than anyone else at the university. His undergraduate and graduate students included Edward Ginzton, later head of the Stanford Linear Accelerator and President of Varian electronics; Joseph Pettit, later Engineering Dean at Stanford, and then President of Georgia Tech; and, most famous of all, William Hewlett and David Packard, founders of Hewlett-Packard (as a youth, David Packard also was an avid ham operator in Colorado).

Due to his outstanding organizational work with the Institute of Radio Engineers (IRE), Terman was elected President of the IRE for 1940–1941. By 1941, he was the best-known radio engineer in the country and was at the center of a network of contacts with radio engineers through his textbooks and his activity in engineering affairs.

Luis Alvarez later described Terman as "the most distinguished academic radio engineer" in the country. Like U.S. Navy adviser Lloyd Berkner, Terman was an expert on the ionosphere. He began ionospheric experiments at Stanford in 1937, in connection with physicist Norris Bradbury's theoretical work. Soon after, Terman was asked by the National Bureau of Standards to construct and operate a more elaborate ionospheric sounder at Stanford. Thus Fred Terman not only knew radio, he knew the techniques of ionospheric pulse sounding equipment, soon to be taken over by radar. It was for all these reasons that Terman was selected to head the Radio Research Lab for radar countermeasures. When Terman first arrived back east in Cambridge, Massachusetts, he asked Lloyd Berkner, and the Rad Lab manager, physicist Wheeler Loomis, "What do we need to do? What sorts of apparatus should we develop?" Each replied, "That's what we hired YOU for."

The Radio Research Laboratory (RRL) began within the walls of the Rad Lab but would very soon move to Harvard, under an NDRC contract. The RRL grew from six employees in early 1942 to more than 800 by mid-1943, including 225 science and engineering professionals. The RRL was more secret than the Rad Lab. That is, from the first it was explained that RRL staff had to have access to any and all work being done at the Rad Lab so that they could develop countermeasures, but the knowledge flow was to be a one-way street. Things eventually were not so strict in practice. In the first months, however, after each RRL staff meeting, guards would gather up all written notes taken at the meeting and destroy them!

Hams and the RRL

What did this countermeasures work at RRL have to do with radio hams? Quite a bit. Not only Vannevar Bush, but also top Bell Labs executive Ralph Bown, recommended to Terman that the RRL staff include a "sprinkling—10 to 20 percent—of smart hams." And hams Terman got! More than 100 of the RRL's mostly young technical staff were hams. Hams were extremely valuable to RRL, since many of them had extensive experience in radio transmitter, receiver, and antenna design at a time when such knowledge was uncommon in many university circles. This very talented group of hams included, as of 1945, Howard Chinn; John N. Dyer, W1BJD, W1GD, W1CCZ [author's note: In the 1970s, I used to chat with Chinn, Dyer, and others on an 80-meter SSB net]; John D. Kraus, W8JK; R. S. Norton, W1AZZ; Joseph M. Pettit, W6HDB; Don K. Reynolds, W6MRL; Stan Kaisel, W9QBE; O. G. "Mike" Villard, Jr., W1DMV; and Ed A. Yunker, W7EZL. Soon after the war, Villard would publish in *QST* his groundbreaking work on meteor scatter and details of his "Select-O-Ject" filter circuit and single sideband inventions. Other RRL hams went on to distinguished careers in universities and in industry, working at companies such as Airborne Instrument Laboratories, IBM, General Radio, Hewlett-Packard, and others.

How exactly did ham radio knowledge help in countermeasures? Here's an example: Consider the little jamming transmitters known as "Carpets" (more than 7000 units were produced of the APT-2 "Carpet" jammer alone). In the beginning (early 1942), RRL staffers had to use door-knob and other VHF tubes run at the top of their useful frequency ranges to coax out a half watt of power at 440 MHz. Shortages of quality mica for capacitors due to German submarines' sinking of ore-ships coming from South America meant that

Fred Terman at his desk as head of the Stanford University Electrical Engineering Department, c. 1938. (Courtesy Oswald G. Villard, Jr., ex-W6QYT, now a Silent Key)

Ham Operators at Fred Terman's RRL during WW II

Adams, M. B. W4EGL
Albrecht, H. W. ex-W9CRZ
Anderson, R. E. W9VZT
Anger, H. O. W6OZP
Artman, R. G. W9KYY
Ayer, H. C. W1IIP
Baldwin, C. P. W1EPF
Barnard, R. C. W7EWO
Barnes, F. R. ex-W8KXH, W9YGO
Barnes, R. B. ex-W5BTX, W6EFX, W6DRI, W6DQ
Barrett, E. W8PHF
Beraducci, S. W2IWB
Bisby, J. F. ex-W6NCO
Boynton, W. H. W1AYI
Bridgeford, G. R. W7GRV
Brooks, E. D., Jr. W1TL
Campbell, J. P. W7DYQ
Carles, R. C. W1NR
Christensen, J. W. W6EZD
Clark, J. L. W2HTV
Clark, L. G. W9LAG
Cohn, S. B. W1JPV
Collins, R. W5TA
Cooke, L. S. W1NLU, ex-8BQN ex-9BQN
Crispell, H. L. W6TZV
Cullum, A. E. W5CS
Davis, K. W8WAC
Dowell, M. R. W9LGN
Duffy, D. P. W9VKU
Dyer, J. N. ex-W1BJD, W1GD, W1CCZ
Eames, A. L. W1KFE
Early, H. C. W8ING
Eggers, C. W1MMY
Eldredge, J. H. W9WVG
Ellis, A. R. W7FCA
Erickson, R. J. W1FPR
Evans, G. E. W1JJB
Gibson, P. M. W1HRF
Grant, L. E. W1AQD AHC, EUT
Hagen, G. D. ex-W7EFX
Harring, D. ex-W9FMM
Harris, D. B. W9BTJ
Haskell, M. W. W1VV
Hok, G. SM3ZQ
Hunt, J. M. W1CCL
Jacobs, G. B. W8REM
Johnson, R. A. W8NUX
Kaisel, S. W9QBE
Kamphoefner, F. J. W6OOC
Kell, R. ex-W9UXR
King, R. C. W2KJX
Kinsman, R. C. W1JPL
Kraus, J. D. W8JK
Lawlor, W. J. W1ITP
Lee, C. F. W1UX
Loebel, L. W9UMP
MacKechnie, H. K. W1ADP
MacQuivey, D. R. W7BAL
McCouch, G. P. W3GGS
McGuigan, W. D. W9ZOP
McSheehy, W. H. W1KPZ
Monroe, R. B. W2UN
Moran, J. M. W2IVI
Morehouse, G. W9JRV
Moyer, R. C. W1ANY
Newcomb, L. A. W3GMD
Norton, R. S. W1AZZ
O'Brien, R. S. W6OEU
Oliphant, C. W. W1MSC
Pearson, P. A. W7DOX
Pendergrast, C. F. ex-W1AFF
Pettit, J. M. W6HDB
Phillips, A. B. W1IQG
Plotts, E. L. W1NVV
Powers, E. W1BFG
Preston, G. D. W1UL
Raburn, L. E. W9KWE
Rakestraw, D. L. W3FOR
Reynolds, D. K. W6MRL
Rhiger, R .R. W7CNV
Riemitis, C. F. no call (Operator's License)
Robbiano, P. P. W6PKM
Ross, C. C. W5RK
Schuech, D. R. W6LIC
Silliman, R. M. W9VO
Smith, E. C. ex-W8AFC
Stephenson, J. G. W1DGC
Sturges, D. W1GP
Sullivan, J. C. W1EXU
Sutherlen, G. R. W2IAA, W6DUF, W6NIT, HZ1AA
Terman, F. E. ex-W6FT, W6AE, W6XH
Towle, M. L. W1DEG
Turner, A. T. W1AHB
Vermillion, R. K. W4JM
Villard, O. G., Jr. W1DMV
Ward, D. no call (Operator's License)
Webster, R. R. W6VCY
Whitby, O. VE2PH
Wilhoit, D. J. W7APL
Wilson, V. P. W1JWG
Yunker, E. A. W7EZL
Zeidler, H. M. W1NVC

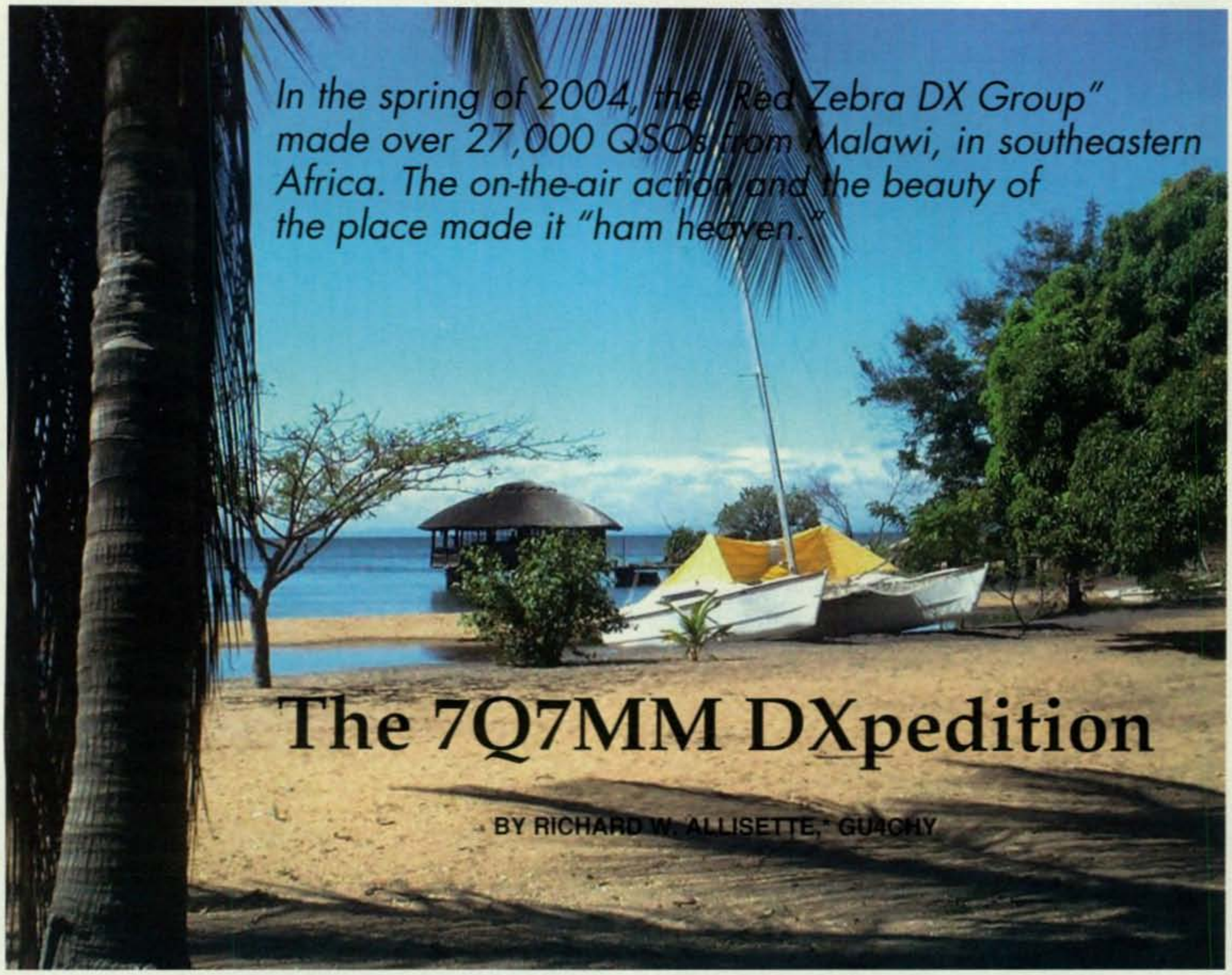
high-voltage caps were hard to get and were unreliable. So the hams went to the advantages of push-pull circuitry, in which two tubes were used to amplify both the positive and negative phases of the input signal. One advantage was that high voltage caps needed to sustain only one half the voltage drop of a parallel design. Through frantic, heavy-overtime research, they got the Carpet jammers to put out five watts within the year. By late 1944, with new tubes, they got the improved jammers up to 15 watts output at 440 MHz.

RRL put 150 different devices into production before the end of the war. Of course, Bell Labs and some other outfits within the NDRC also worked on countermeasures and radio communications, and many researchers at Johns Hopkins and at the National Bureau of Standards developed radar-actuated proximity fuzes.

Radio and its related technologies made up a big part of Allied research during the war. RRL-developed units protected strategic bombers against radar controlled anti-aircraft fire, defended the Normandy landings and other invasions, were widely used on shipboard to detect and jam enemy radar, and were used in several theatres of the war to detect enemy radar from airplanes. Allied aircraft used a combination of jamming transmitters and aluminum foil dipoles—called "chaff" or "Window"—to blind enemy radar-controlled gunfire. By late 1944, each Allied heavy bomber carried at least two jammers and enough aluminum chaff bundles to produce false echoes of 700 to 1000 airplanes. More than half of Germany's electronic research from late 1943 onward was devoted to saving their radar system from countermeasure efforts. Post-war analysis suggests that RRL efforts may have saved 800 Allied bombers and their crews. B-17 and B-24 "Ferret" bombers loaded with numerous search receivers and B-29 "Porcupine" and PB4Y2 aircraft each loaded with up to fifteen jammers were used to scout out enemy air defenses and to protect other Allied planes. By the end of the war, all U.S. Navy vessels carried at least three countermeasure units developed by RRL.

In addition to technical publications after the war, 46 RRL staff made a total of 606 wartime invention disclosures regarding patent application and passed these on to the U.S. Navy. Among those with the highest number of disclosures were the Ohio State antenna expert and engineer John D. Kraus (W8JK) and Stanford electronic specialist William R. Rambo.

In the last decade or so, books, movies, and numerous television programs have revealed much about the workings of Allied technology in World War II. However, little notice has been taken of the critical role played by talented ham radio operators and their leader, Fred Terman, at the Radio Research Laboratory. Hopefully, this article, and the book from which it is excerpted, will help set the record straight. ■



The 7Q7MM DXpedition

BY RICHARD W. ALLISETTE,* GU4CHY

Operating from Malawi is a little like running a never-ending pile-up. It gets under your skin. Combine the setting with the contacts, and you really have ham heaven.

The 7Q7MM operation ran from 18 April to 1 May 2004 and made more than 27,000 QSOs on all nine HF bands. Operators were Steve, G4JVG, and Mark, G4AXX, on SSB; Rich, M5RIC, on SSB and RTTY; and Steve, G4EDG, and myself, GU4CHY, on CW. Our QTH, Red Zebra Lodge on the southern shore of Lake Malawi, proved to be ideal. The antenna farm ended just feet from the water's edge with a clear, uninterrupted take-off to the north, and little to interrupt signals to the west and east.

Antennas

High transport costs meant that we would be limited to operating with whatever we could carry on the flight from London to Malawi. Antennas were a Cushcraft A3S tri-bander for 20/15/10 metres, two phased verticals for 40 metres, and sloping dipoles for the WARC bands. G4EDG had used slopers in an "L" pattern with great success on previous DXpeditions, and we adopted the same approach. Using fishing poles, half the dipole is mounted vertically; the bottom half is mounted horizontally at just over head height (to avoid decapitating passersby!). The bottom half gives the dipole some directivity, and so we pointed ours as close to due north as we were able. These L dipoles worked fantastically well, and I vowed to put up one for 30 metres upon my return home.

For 80 and 160 metres we simply took along some wire and a radial coupling block and searched for a high support. Bamboos grow tall in Malawi, and our local antenna erectors (most often the barman and gardener at Red Zebra Lodge) hacked down a 13-metre bamboo, and we strapped a 9-metre fishing pole to it. A quarter-wave L on 160 was soon up and running. By bringing the end of the L to the bottom of the bamboo and joining it to the vertical element, we had a quarter-wave vertical on 80. This 160/80-metre antenna had a ground mat of 20 radials. A 160-metre long Beverage receiving antenna was laid out along a handy north-facing pontoon, with the end of the antenna dangling in the water. Due to the high levels of QRN in Malawi, the Beverage proved to be indispensable, and I doubt if more than half a dozen Top-band QSOs would have been made if we had used the transmitting antenna for receiving.

7Q7DX, a Spanish DXpedition two years earlier, had operated from Red Zebra Lodge and left behind a two-element HB9CV beam. This had succumbed to the weather, but it was taken down and re-hashed into a 10-metre Yagi, enabling us to operate on 15 and 10 metres at the same time—obviously not possible with a tri-bander.

DXpeditions become a whole lot easier if you have a local "man on the ground." To our man on the ground, Cato, LA9PF/7Q7PF, we owe a huge debt of gratitude. Not only did Cato

*e-mail: <rallisette@cwgsy.net>

organize all our licenses and make a 400-km round trip to deliver them in person upon our arrival, he also "volunteered" to climb a 30-ft. high water tower, which became the support for our Cushcraft A3S.

Radios and Other Equipment

We needed rigs we could hand carry onto the aircraft. We approached Kenwood UK, who readily agreed to loan us two transceivers—the new TS480HX, a 200-watt portable transceiver designed for DXpeditioning, and the TS2000. Unfortunately, the TS2000 proved to be too heavy for the flight and had to be replaced by G4EDG's Yaesu FT100D. Amplifiers were an Acom 1000, which, with its packing case, took up an entire person's luggage allowance, and a Loudenboomer (a British-made 400-watt amplifier), which was light enough to hand carry on the flight.

Stuart Grant, our host at the Red Zebra Lodge, also had an Alinco DX70, which he uses for local non-ham communication across the lake. This was pressed into service as a third station (albeit barefoot) whenever an operator was free and three bands were open.

Stuart and Esther Grant were quite marvellous. There cannot be many hoteliers who when asked how best to get coaxial cable into the shack reply, "Don't worry; we'll knock a hole through the wall and patch it up later!" Thankfully, such drastic action wasn't needed, but the thought was there.

Logging was on laptops using CT in DXpedition mode with Writelog for our RTTY contacts.

The Pile-ups

Conditions during the first week were outstanding, although they trailed off during the latter half of the expedition. The pile-ups were immense, particularly on 40 and 20 metres. Steve, G4EDG, a veteran of DXpeditions to Mellish Reef and Chatham Island, among many others, reckoned that on one day the 20-metre pile-up was as large as any he had ever experienced. With a semi-rare GU callsign, I am well used to many stations calling at once, but I had never heard such deep pile-ups from home, even in a contest.

Strangely, different bands seemed to generate different types of pile-up behaviour. Ten metres appeared to be the "gentleman's band," with stations standing by when asked. In comparison, 40 metres, particularly when the band was open to Europe, was a "zoo," with people calling non-stop apparently without ever listening. The good operators worked out where you were listening, called once and that was it, QSO in the bag, even when their signals were relatively weak. Despite the "hooligans," however, the pile-ups were one big adrenalin rush.

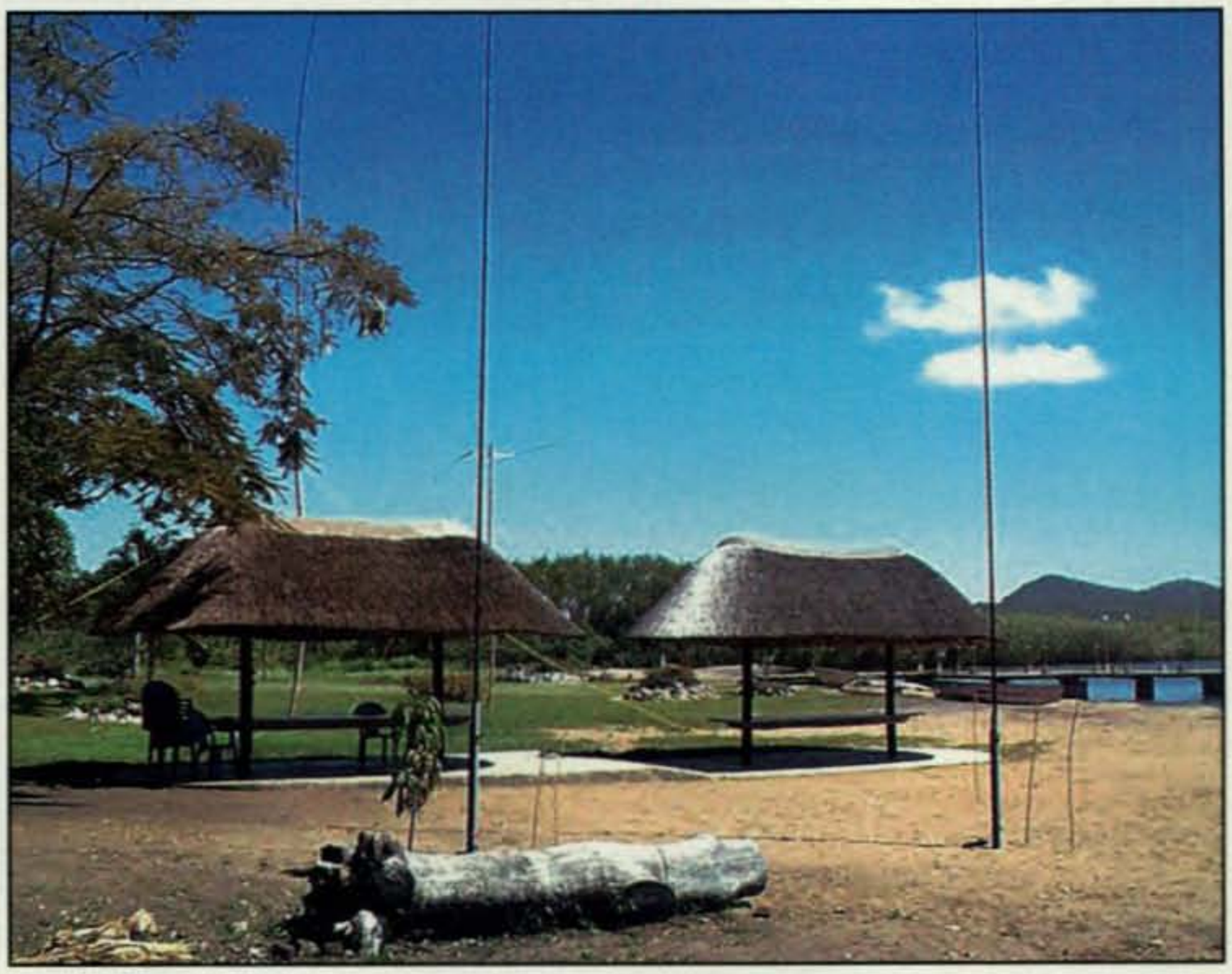
The Red Zebra DX Group (left to right): Steve, G4EDG; Dick, GU4CHY; Rich, M5RIC; Steve, G4JVG; and Mark, G4AXX.

There was one memorable day early on in the DXpedition when we ran a three-per-minute pile-up on 10 metres for a solid 12 hours, eight on CW and four on SSB. Late in the day an ON station called and asked, "What magic are you running?" We had been the only station he heard on 10 all day, and yet we had been audible at his end for the entire 12 hours. We were also called by 8Q7QQ (Peter, HB9QQ), who said that he could not hear any of the European stations we were working. The delights of north/south propagation!

Band Conditions

We decided that we would alternate 80 and 160 metres from night to night. Changing over the antenna in pitch darkness was not recommended, as there were too many obstacles for it (and the operator!) to become entan-

Assembling the 10-metre Yagi. In the background (behind the building) is the water tower, which became the support for the Cushcraft A3S.



The 40-metre phased array, with the 10-metre two-element Yagi and "Bamboo Titanex" in the background.

gled in. Even with the Beverage, QRN on 160 was horrendous, with signals climbing out of the noise for only a few seconds at a time. The band demanded great patience. Thankfully, Steve, G4EDG, is a confirmed QRP aficionado, and he was able to sift through the noise night after night, managing a total of 268 QSOs in 38 countries on the band. Conditions to North America were poor, and just three of the deserving made it into the log: VE1ZZ, W8JI, and W4ZV. The only way that Malawi is going to become readily QRV on 160 is for a resident ham to put up decent antennas (transmitting and receiving) for that band and operate when QRN conditions allow.

I particularly enjoyed using the 40-metre phased verticals. JA started to come through a good half hour before our sunset, with signal strengths peaking at well over S9 around two hours later. To the USA, signals started at around 0200 UTC and peaked at Malawi sunrise, around 0400 UTC. What I found

Steve, G4EDG, operating the first pile-up, CW on 30 metres. Left to right: Prof. Cato de Savigney, LA9PF/7Q7PF; two security guards; Rich, M5RIC; Steve, G4EDG (sitting); and Dick, GU4CHY.

Left to right: Rich, M5RIC, operating RTTY (Station 1); Steve on SSB (Station 2); and Dick, GU4CHY, and Steve, G4EDG, discussing the CW pile-ups (Station 3).

interesting is that the band would open from east to west coast USA all at once, rather than gradually working its way west, as is more normal from Europe. It stayed open until virtually two hours after sunrise, with signals from California peaking well over S9. In particular, Rusty, W6OAT, was a huge signal.

During the second week of operation it became very windy, and the 30-metre L succumbed to the elements on several occasions. This curtailed operation on this band on a couple of nights.

Electricity is very much a luxury in Malawi, and power outages are a daily occurrence. Our apologies to those with whom we were in QSO when they occurred. Stuart had a standby generator available, but it took five minutes or so to get it up and running, and then we were only able to run barefoot until mains power returned.

The best band turned out to be 15 metres, where we made more than a quarter of all our QSOs, including 690 on RTTY. Rich, M5RIC, did try an entry into the Polish RTTY contest, but the pile-ups were so intense that a high run rate was impossible. RTTY was much more successful outside the contest.

Summary

Despite being one of the poorest nations on Earth, Malawi people appear to be friendly and content. I met none of the "them and us" attitude that I have encountered in other parts of the continent. Wherever we went, people both young and old smiled and waved. There is a naive simplicity about the people of Malawi that is both enchanting and humbling. Western civilization has given us many things, but at the expense of our innocence.

So positive was the attitude of Stuart and Esther Grant toward our DXpedition and amateur radio in general that we decided to leave several pieces of equipment behind. The Cushcraft A3S was taken down, but left in its ski bag for storage at the lodge. We also left behind all of our coaxial cable (enough for up to six antennas), guy ropes, and so on. Stuart still has his Alinco DX70 and both 20- and 40-amp PSUs. You could operate a small holiday expedition from Red Zebra Lodge without taking anything more than a logbook. However, serious contesters or DXpeditioners will want to take amplifiers and more complex transceivers. We had no problems with transport, and the Kenyan Airlines staff did not bat an eyelash when we turned up with a ski bag to travel to a country where the temperature rarely drops below 20°C. They obviously had seen the movie about the Jamaican bob-sled team!

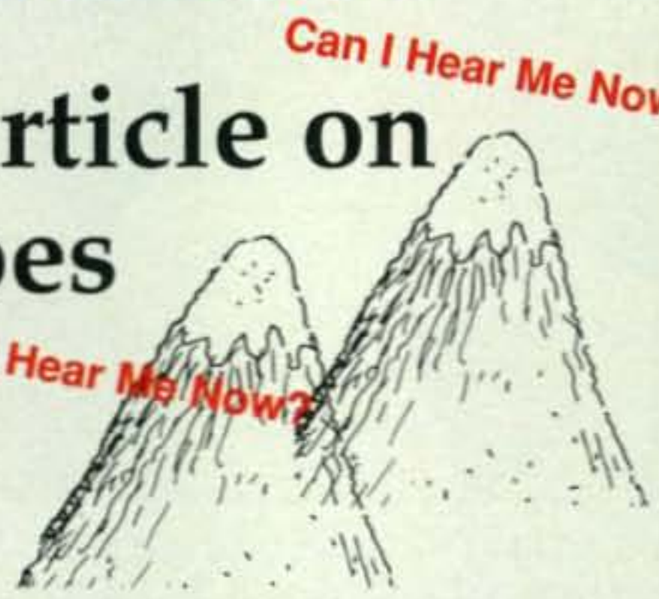
To find out more about renting Red Zebra Lodge, contact Steve, G4JVG, at <g4jvg@ntl.world> or Mark, G4AXX, at <g4axx@ntl.world>. The DXpedition website, <www.malawi.digital-crocus.com>, also has more details and photographs of the expedition.

Our thanks to Roger, G3LQP, for volunteering to handle the QSL cards, and to our many sponsors, corporate and individual. Most of all, thanks to the people of Malawi. We're itching to go back. As I said earlier, Malawi and pile-ups get under your skin. ■

It seems that W6BNB's experiences with long-delayed echoes (LDEs) are far from unique. His June article on the subject generated quite a bit of response, which he shares here.

No Delay on These Echoes

Responses to W6BNB's Article on Long-Delayed Echoes



BY BOB SHRADER,* W6BNB

The recent article about long-delayed echoes, or LDEs (June 2004 *CQ*), has brought many interesting e-mail, telephone, and mailed responses from other amateurs concerning their experiences. The first came long before the June *CQ* came out. It was from one of the editors of the Spanish *CQ* magazine in Spain (and in Spanish!). He had received a pre-copy of the American June *CQ* and sent me a copy of an article about LDEs he had published in Spanish back in 1999. It explained that the Earth has what we know as the Kennely-Heaviside layers in the ionosphere high above its surface. The possibility of signals bouncing from top to bottom surfaces in this area and eventually coming back down to Earth was pondered. Most of the other responses were in English, thankfully. Here are a few of them. (A little editing was done on some to shorten them a bit.)

From Tim, KG8ES: "While we were in college, my brother Scott, WQ8B, was the producer of a local cable television show. For one episode he decided to feature ham radio, so he interviewed me for the show and then taped me while I was working a CW QSO on 80 meters. Several days later, after the show was compiled, Scott provided me with a videotape of the completed and edited program. I sat down and watched it, and when I was finished, I decided to go up to my ham shack and go on the air. Just as I was headed up to the shack, a friend stopped by, and I offered the tape for my friend to watch. My VCR at the time was on the first floor of a two-story house and my ham shack was on the second floor. While my friend watched the tape downstairs, I fired up my rig, which was still on the exact frequency of my last QSO (the QSO my brother videotaped). As my rig's volume came up, I immediately heard a CW signal on the frequency and was shocked to hear my own call being sent. I copied the code, and found that it was the QSO from the show. Later we were able to determine that when the show was being played on the VCR downstairs, I would get perfectly normal-sounding S9 CW signals on the rig upstairs, but only on the exact frequency of the original QSO. Why this would occur, especially after editing, copying, etc., is a mystery to me."

From Jerry, W7LO: "I wonder if you read the article from back in the 1960s about the government being able to capture portions of radio broadcasts from Edward R. Murrow that were trapped in an *E*-layer for some 8 or 10 years?"

From Rita, WB8FBG: "Back in 1969, when I was a Novice, I had just such an experience. I was calling CQ on 15 meters and had sent the 'K' when I heard a nice clear signal of 'FBG K' come back to me. WOW, what an experience! It was so nice hearing my own fist. I flew out to the porch to tell the OM and he told me what had happened. Then, a month or so later, there was an article in *QST* about LDEs. It would seem that very weak signals can go around the Earth *many* times before hitting the spot where they originated—depending on the reflection angle. Something like 35 hops can equal 7 times around, and could possibly take 17–30 minutes, depending on how high the signals had to go before reflecting back down (this was at a 70-degree reflection angle). You must take into account the ups and downs in the ionosphere when figuring distance—not just the circumference of the Earth."

From Andrew, WD9IYT: "Saw your article in *CQ* on LDEs, and if you'll accept some speculation, I'll make a go at what might be happening. Think of two layers of the atmosphere (ionosphere?) that, together, form a kind of duct for EM (electromagnetic) energy. If the duct stretches around the world (either pole-to-pole or otherwise), the propagation time is set by the distance (which is fixed) multiplied by the number of times the signal is reflected inside the duct. If the two layers aren't a fixed distance apart, then the time delay caused by the signal reflecting from one 'side' of the duct to the other will cause the time needed for transit to vary. By the same token, if the spacing isn't just right, then the resulting reflected signal might not even come back to the sender . . . or it might take a very long time for the number of reflections to match back to the original sending point, which could account for your friend's much-delayed net call-up. Why does he have the effect so much stronger than you? Maybe he's located in a place where there's a 'leak' in the duct, or the added altitude allows him to tap into the signals in the duct. To be honest, I couldn't guess. More study might be in order on that question."

From Ron, K5YNR: "Your article in the June *CQ* magazine is very interesting. I recall reading articles and discussions on LDEs in ham magazines years ago. I wrote an article for *CQ* several months ago on resonance. My current interest is in the two properties of permeability (magnetic) and permittivity

*e-mail: <w6bnb@aol.com>

(electrostatic) that determine the velocity of propagation of all EM (electromagnetic) radiation, including radio signals. I wrote an article called 'The Neglected Properties of Space' for *Extraordinary Science* magazine. Because these properties determine the velocity of EM propagation, I wonder if they are getting into the LDE act? Most people assume that the values (mu and epsilon) and velocity are constant throughout space, but there may be things that temporarily alter them, causing a reduction in the velocity."

From Keith, W7DXX: "May I pass on a story of an experience with LDEs? You may recall some LDE stories from the late '50s. I experienced one episode. I was playing around on 7045. I could not afford a VFO, but surplus FT-243 crystals on 7040 were readily available. All one had to do was take a little Ajax cleanser and carefully grind the crystal up in frequency. (This was when you could pick up crystals in your hands and grind them!) Anyway, I was trying out the full break-in I had built when I noticed that if I sent a dot I would hear a return dot on the same frequency. What was different was the delay factor. Sometimes the return dot would be immediate and sometimes it could take a few seconds. I obviously thought someone was playing with me at 2 o'clock in the morning. This went on for 20 to 30 minutes with the variable delay dots. I'd even send a series of dots with different spacing. Whoever was playing with me was very clever in matching my transmissions! I forgot about the whole thing because it was obviously just some guy playing with me.

"A year and a half later my folks were transferred to England. We had no reciprocal agreement at that time, so I bootlegged on 40 CW. A neighbor up the street took me under his wing. He knew I was a pirate and took pity. One night the LDE subject came up. The conversation was the type you'd expect around a campfire as a Boy Scout—you know, taking it all in while feeling spooky at the same time. He told me the story of a pal of his who worked at Jodrel Bank. This pal had also had a couple of experiences with LDEs. He did something different, though. He plotted the variable delayed CW returns on a graph. When he looked at them, he said, 'Hummm, looks like a bunch of stars to me.' I am told that after several months of playing with his 'sky chart' theory, he was able to find an exact match, but the vantage point was 32 light-years away. Alien probe describing its view of the heavens to transmit its origin to any inter-

ested party, or just an over-active imagination?" Interesting, though."

From Steve, VE7SL: "I found your recent *CQ* article to be most interesting, as I have had indirect experience with a similar phenomenon. In the early '90s, my good friend and 'Elmer,' Tommy, VE7BLF, told me of a disturbing phenomenon that he encountered one evening while operating 160-meter CW (100 watts and top-loaded vertical). He was tuning the band around 2200 local time (in December) and heard a very weak and watery signal, somewhat unstable in frequency, calling CQ. Chills went up his spine when the CQer signed his call—VE7BLF! As he sat in stunned silence for a few moments, the signal started up again. This time the signal was responding to an apparent answering station, as Tommy recognized his usual operating preamble. Tommy recognized the call of the station that was being responded to as a QSO that he had had the previous night, about 22 hours earlier! The third transmission detailed the interesting weather report that Tommy had sent the previous evening. No other signals were heard, and eventually his phantom LDE signal faded away. Tommy had no idea what to make of his observations, but a few nights later he had a similar experience, although this time the LDE was only 30 minutes later. I should mention that the LDEs were always heard on the same frequency as the initial QSO.

"Tommy went on that winter to experience several more of these phantom transmissions, and actually began noting in detail the exact times of his CQs and subsequent QSOs and would listen for them the next night. Although most of them (about 10 as I recall) were delayed about 22–24 hours, the longest was noted as 72 hours. He made tape recordings of several of the LDEs (of which I believe I may have a copy) and listening to them, even a few years later, sent chills up our spines. The signals were weak, Doppler shifted, and very eerie-sounding. It was obvious to the two of us (who are both very experienced CW VHF aurora and meteor-scatter operators) that the signals had gone through a torturous journey on their way back to us. The LDEs were heard only in the winter months and only on and off during the next two seasons on 160. At the time Tommy wrote to Bill Orr, W6SAT, about the signals, but received no response, and the matter quietly sat on the shelf for a few years.

"About five years ago I read a posting somewhere on the web of a similar phenomenon that had been traced back to a neighbor's VCR, producing spurious signals on playback. We had thought of that possibility at the time, but we did not investigate any further. This certainly sounds like a possibility, but I have no idea why the 'spurious playback' signals would be spotted only on the transmission frequency!"

From Craig, K4IV: "Read your article with interest. It has happened to me several different times. Here is what I remember. From 1962 through 1967, when I was K9JLR in east-central Illinois, I used a Collins 75S1 receiver and 32S1 receiver. My antenna was a Hy-Gain tri-bander up about 40 feet. I operated mostly CW, full break-in with a tube TR switch so I could hear signals between my code characters. The first time, I kept hearing this station under my signal and soon realized it was repeating my sending, which got my attention. I started to try to trick the fellow who was copying my sending, but I soon realized it was my own signal I was hearing. The delay started out only one or two characters behind, but one night I could send my complete call and hear it several seconds after I had completed sending it. The delay was 2 to 10 seconds. All encounters were after dark, at approximately 10 to 11 PM local time. I believe it was spring or fall, as the weather was mild. I remember three different times for sure, but there may have been more. I do believe they were all in the same year. I left the area in 1967 and never had it happen again. But I also never spent that kind of time tuning dead bands looking for that rare DX station."

From Jerry, KG6KGP: "Enjoyed speaking with you on the telephone regarding my consistent LDE on 80 meters. The signal is incredibly strong today, using 100 watts. For some reason, if I run the 1 kW amp today, the signal comes back with a lot of QSB!

"Some time back, I was aligning the SSB filter on my K2 and listening on another radio. Once I had it set, I started a QSO on 80 meters and was making further adjustments. I didn't notice it at first, but I started hearing the last 5 seconds or so of my voice transmissions at approximately S5. Thinking that someone was recording my voice and playing it back, I commented to the person I was speaking with, but he couldn't hear it. We thought this was strange, since on 80 meters you can generally hear everyone in the local area. Over the last few weeks, I have come to determine that there is something strange going on, and that it could be LDEs. It is happening with two trans-

ceivers: the K2 and a Yaesu FT-897D. When I key the mic and speak quickly, saying for instance, 'Test' and quickly release the PTT, I hear my signal after about 1.52 seconds of delay. This is considerably shorter than the 5 seconds of rebroadcast noted above. If I send CW, the letter 'K' for example, I will get a 'dah-di-dah' back with the first 'dah' slightly shortened. If I send a string of dots at 12 wpm, I will get back at most three dots. So if I send one dot, I get none, two I get one, three I get two, four and higher I get three. I can only assume that the first dot is triggering a transponder on 80 meters and the other dots are lost due to the transponder starting to repeat while I am still sending.

"The reflected signal also increases with power output. It is about S5 with 100 watts and about S8 or so when I run 1 kW. It is not a person recording me, since I quickly tuned around the band and even switched sidebands several times. The returning signal is always exactly on frequency. It does not happen on other bands that I am aware of, but spreads the entire 80 meter band. It doesn't happen all the time, but lately I noticed it consistently during the day.

"Since writing this, it is now consistently heard throughout the day. The delay varies between 1.52 and 2.02 seconds on the latest recordings. The longer delay today allows me to hear a longer return, with today's echo being about 6 dots at 12 wpm. It can't be long-path propagation, since 1.52 seconds works out to 282,000 miles. My antenna is pointed at a cell tower. I also have large LORAN towers and other sea navigation towers about a mile from me. I had heard once that the LORAN signal was generated at one location and then sent up to the tower for transmission. Could this be acting as the transponder? If so, why is the echo delay varying?"

From Jim, W6YOB: "Bob, I just finished reading your very interesting article in the June *CQ* concerning LDEs. I've been experiencing a very short echo on 75 meters (3906 kHz) around 1800 PDT or later—roughly coinciding with sunset. None of the others on the net that meets at 1830 PDT on that frequency can hear the echo. If I say a short sound or word, I can hear it come back in its entirety. For example the word 'NOW' will play back clearly and completely, but at a signal strength less than S1. This has been going on for three or four weeks. I wish I had the instrumentation to measure the delay with some accuracy. Thought I'd let you know."

From Makoto "Mac" Obara, TZ6JA: "Via Aerogramme and the Japanese DX

magazine *Five Nine*, I read your article about LDEs. I contributed to *Five Nine* recently regarding LDEs experienced by more than a dozen Japanese radio amateurs. These are mostly on 1.8 and 3.5 MHz CW during the night with delays of 50 minutes up to 82 hours. They are from well-known low-banders over 30 years. LDE is neither hoax nor mystery, but a natural phenomenon called 'exospheric propagation.' Contact <ja7ao@jarl.com> to hear tape-recorded LDEs of 3.5 MHz CW with a 2110 JST transmission and its 2200 JST echo reception on 2/24/98, recorded by JA7SN."

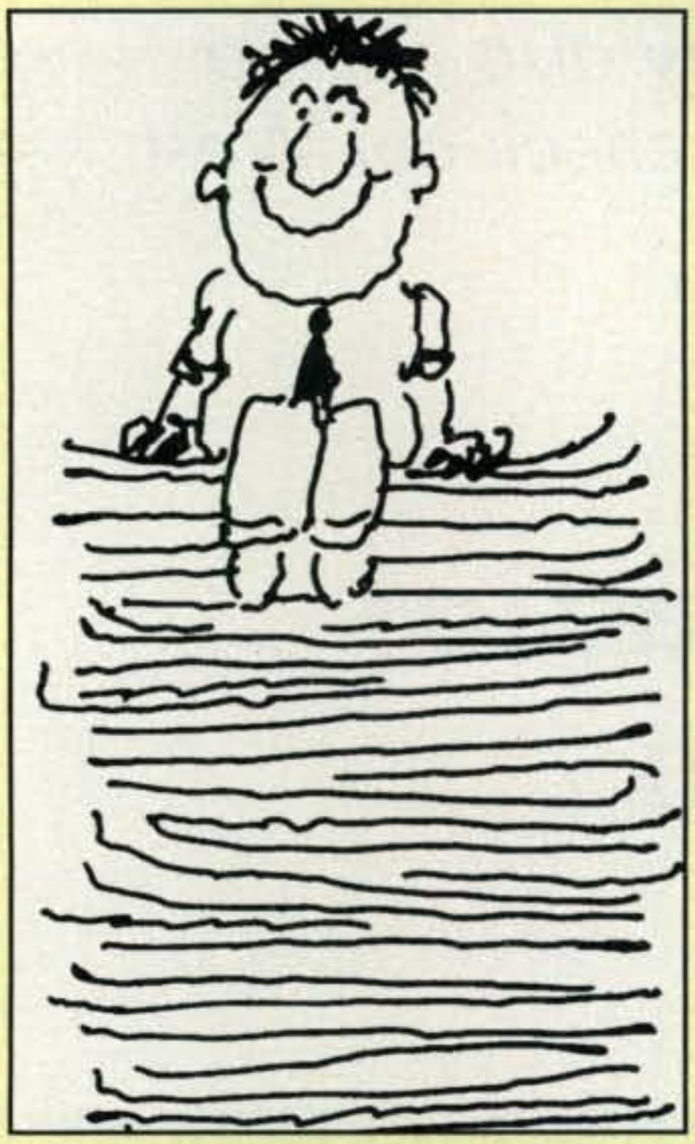
W6BNB notes: Mac also sent me a copy of his four articles in *Five Nine* magazine in Japanese. These apparently tell of the solar wind crushing the heaviside layers by a "bow shock" on the sun's side of the Earth. Above our north and south poles there is a polar cusp that forms two "plasma mantles" or "magnetopause" layers that are swept up and back, away from the Earth and sun, apparently joining at a very long distance in the shadow of the Earth. RF signals working their way into these areas might travel this path and return to Earth after some long time period. [W6WYW and I wondered about such a possibility.] There are other radiation layers both toward and away from the sun that are at lesser distances above the Earth's surface. RF signals that are able to make their way into these layers might return at shorter times. Since there are five such belts, it would seem that they could be responsible for many shorter LDEs.

From Richard Weil, KWØU: "In 1927, Jorgen Hals, a Norwegian engineer, heard echoes of signals transmitted by a Dutch station. The delays were between 3 and 10 seconds. By the early 1970s amateurs had observed LDEs hundreds of times. Some signals were almost instantaneously repeated, while others were delayed by as much as 5 minutes. Both single and multiple echoes had been heard. The effect seemed to occur at all latitudes, in all seasons, by voice, by code, and on frequencies up to 1296 MHz. In 1977, a 2-hour echo opening in Seattle allowed amateurs to carefully conduct and tape record a series of multi-frequency and tone experiments. What lent credence to the reporting was the unequal pattern in which LDEs were recorded on different bands. In 97 published reports, LDEs were of a second or less, and 60% occurred on 80 meters."

Back to W6BNB...

After reading all of the above reports, it would seem that LDEs are fairly common events if one were to try to listen for them at the right time of the day and year and on the right frequency. Dark hours during spring, fall, and winter seem to be most desirable. That is when I have had my best luck with them. In addition, it appears from virtually all the reports that the LDEs are heard only on the frequency on which the original signal was transmitted.

Once again, I'd like to hear from you. Did any of you hear any LDEs over the summer? If so, at what local times and on what bands? (On 6/17/04 at 2140 PDT on 3600 kHz, I heard short LDEs (SDEs?) that were fading on short transmitted dots. This was not heard earlier or later in the day.) The type of equipment used and power output would also be of interest, as would S-meter guesses. Does rotary beam directivity of sending vs. receiving have anything to do with what is heard? (So far, all of my 14 and 21 MHz+ SDEs have occurred only with my beam pointing south, never north!) I'd be most interested in the differences in timings of the LDEs. The longer times are the hardest to believe! Good hunting! ■



What You've Told Us...

Our August survey asked for your views on various aspects of the Volunteer Examiner (VE) system for administering FCC amateur license exams. We first asked about your personal experience with the VE system and the earlier method of taking tests before an FCC examiner–71% of the readers who responded have taken exams given by VEs, while 64% have been tested by FCC examiners. Clearly, many of you have had experience with both systems. In addition, 41% of you are certified VEs, and of that group, a majority (59%) have participated in a test session as an examiner within the past six months.

Overall, 80% of you believe that the VE system has been good for amateur radio over the 20 years it's been in operation, while 7% say it's been bad, 8% say neither good nor bad, and 3% don't know or have no opinion. Three-fifths of you (61%) believe the ability to get licenses issued within hours of taking a test will be good for ham radio, while 17% don't think it will be either good or bad, and 10% each don't like the idea or have no opinion.

A majority of you (55%) feel there is at least a small problem with abuse of the system by VEs and test candidates, but only 5% feel it's a major problem. Not quite half of you (42%) think the VE Coordinators (VECs) do enough to police their teams and catch discrepancies. However, 58% of you feel the FCC is doing a good job on enforcement when discrepancies are found.

This month's free subscription winner is D. Czerniak, KE9OI, of Wheatfield, Indiana.

Reader Survey October 2004

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 an incentive, we'll pick one respondent each month and give that person a complimentary one-year subscription (or subscription extension) to *CQ*.

This month, as we start the fall contesting season on HF, we want to ask about contesting–BUT–we want to hear from *non-contesters* as well as contesters.

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

1. Do you consider yourself a contester?
   - Yes 1
   - No 2
2. When a contest in which you are *not* competing is on the air, do you (circle all that apply)…
   - … move to a band without contest activity? 3
   - … switch to a mode without contest activity? 4
   - … try to make contact with contest operators in places you need to work for various awards? 5
   - … paint the garage or do other off-air activities? 6
   - … QRM as many contesters as possible? 7
   - … try to defend "your" frequency from being taken over by contesters? .. 8
   - … spend the weekend on the internet, griping about the contest? 9
3. Which statement best describes your feelings about ham radio contests? (Please pick only one)
   - They're fun and I enjoy operating in them 10
   - They're OK and I enjoy dabbling in them 11
   - They're OK for some people but not for me 12
   - They get in the way of other on-air activities, such as nets, general DXing and ragchewing 13
   - They are the scourge of the airwaves and ought to be banned 14
   - Contests? What are contests? 15
4. What (if anything) do you see as the main values of contesting? (Circle all that apply)
   - Sharpening operator skills 16
   - Keeping equipment and station in top shape 17
   - Providing a ham radio outlet for competitive spirit 18
   - They're fun 19
   - They help improve propagation 20
   - They help keep band occupancy high 21
   - They're good for scaring away newcomers 22
   - They're useless 23
   - They're worse than useless because they interfere with important activities (meaning whatever it is that I like to do) 24
   - Other (positive things about contests) 25
   - Other (negative things about contests) 26
   - No opinion 27
5. *CQ*'s coverage of contesting is…
   - … too much 28
   - … just right 29
   - … too little 30
   - … don't care 31

Thank you for your responses. We'll be back to pick your brain again in January. Meanwhile, it's off to Cancun!

If you have a radio that "does it all," you may also need a sound-card interface that "does it all." If so, check out West Mountain Radio's RIGblaster Pro.

CQ Reviews:

West Mountain Radio RIGblaster Pro

BY DON ROTOLO,* N2IRZ

If you are like me, using a single radio to support virtually every aspect of your radio operations, then you need a RIGblaster Pro. The only radio I presently have connected is my ICOM IC-706 MKIIG, and since I operate SSB, VHF-FM, CW, and (of course) the digital modes, it was getting to be quite a hassle to reconfigure all the cables whenever I wanted to change modes. With the RIGblaster Pro, you only have to set everything up one more time, and that's it—forever. However, I'm getting ahead of myself.

I recently had the opportunity to play with a RIGblaster Pro from West Mountain Radio (photo 1), and it was an absolutely wonderful experience. When I grow up, this is the kind of equipment I want to use all the time. I just wish I didn't have to give it back. Sigh...

Our fearless editor, Rich Moseson, W2VU, gave me a call a few weeks ago, asking if I wanted to write a review. It seems he didn't have the time to set up and use this little piece of equipment, and being the Digital guy and all, maybe I could put it to good use? That's like asking me if I wanted the winning lottery ticket. Rich even volunteered to drop it off at my house! That was a Saturday at 4 PM.

By 6 PM I was deep under the computer desk, plugging in wires everywhere. Since I haven't done an equipment review in a long time, I decided I should read the manual first. Now that's not normal operating mode for me, but the manual was so friendly, I figured what the heck.

Photo 1– The front panel of the RIGblaster Pro has only three controls ... but that's all it needs.

Read the Manual!

Before I discuss my experiences with the RIGblaster Pro itself, I have to rave about the manual. This is absolutely one of the best manuals I have ever used. While it's a bit long (over 35 pages), the basics are covered in eight simple steps, with the rest of the manual devoted to addressing virtually every possible configuration variant, problem, and issue that might arise.

While I'd normally be the first one to toss the manual and bushwhack my way through the setup, I found that following the eight steps was a very systematic approach, which verified functionality of the current setup before moving forward to the next. That approach immediately pointed out an error I had made in a connection, probably saving a lot of frustration and troubleshooting later. (In my haste to get everything connected, I put different labels on the ends of a single cable, routing audio out back to the microphone...)

That brings us to my only possible complaint about the RIGblaster Pro: It has a lot of cables to be connected. This task is greatly eased by the excellent set of labels West Mountain Radio provides (photo 2), making it highly fool-resistant. Those labels, along with the knowledge that I'd only have to do it once, really helped get me through it. By 8 o'clock that evening I had been on the air on sideband, FM, PSK31, and some CW, both with my straight key and with the computer sending, without moving a single cable.

Of course, all the cables—for virtually every eventuality—were supplied. Just about the only thing you'd have to buy separately would be a non-standard microphone connector, if your radio needs one.

No More Fumbling

The best part, though, was actually using the appropriately named RIGblaster Pro. It was like getting my license all over again. The joy of being able to switch modes with barely any effort at all was like sweet wine. I spent way too much time operating the rest of the week, just because I could. No more crawling behind the computer, fumbling with connectors, and having my body

**Digital Editor, CQ, P.O. Box 114, Park Ridge, NJ 07656*
e-mail: <n2irz@cq-amateur-radio.com>

RIGblaster: RIG: SPKR. OUT	RIGblaster: RIG: SPKR. OUT
RIGblaster: AUDIO IN	RIGblaster: AUDIO IN
RIGblaster: LINE OUT	RIGblaster: LINE OUT
RIGblaster: LINE IN	RIGblaster: LINE IN
RIGblaster: COM: SPKR. OUT	RIGblaster: COM: SPKR. OUT
RIGblaster: MIC OUT	RIGblaster: MIC OUT
RIGblaster: FSK OUT	RIGblaster: FSK OUT
RIGblaster: CW OUT	RIGblaster: CW OUT
RIGblaster: CTL. IN/OUT	RIGblaster: CTL. IN/OUT

RADIO: SPEAKER IN	RADIO: SPEAKER IN
RADIO: AUDIO OUT	RADIO: AUDIO OUT
COMPUTER: LINE IN	COMPUTER: LINE IN
COMPUTER: LINE OUT	COMPUTER: LINE OUT
COMPUTER: SPEAKER IN	COMPUTER: SPEAKER IN
COMPUTER: MIC IN	COMPUTER: MIC IN
RADIO: FSK KEYING IN	RADIO: FSK KEYING IN
RADIO: CW KEY IN	RADIO: CW KEY IN
RADIO: CTL. IN/OUT	RADIO: CTL. IN/OUT

HANDY COLOR CODED CABLE TAGS FOR YOUR RIGBLASTER PRO INSTALLATION

Cut out with scissors, remove the adhesive back, fold around the wire like a flag near the plug so that the backs stick together. Note that they are in color coded pairs with appropriate markings on each end.

PLEASE USE THEM! A few minutes spent putting them on will save you time and frustration dealing with mixed up connections.

Photo 2– There are lots of cables to hook up, but this set of excellent labels provided with the RIGblaster Pro makes the job much easier. ←

remind me of my age! Just pick a mode, maybe flick a switch, start some software, and go. What a pleasure! After using a home-brew sound-card interface, and literally having to disconnect everything to operate with my straight key, having the RIGblaster Pro made it fun to operate again.

The hardware itself is nice. The case isn't so large that it consumed valuable space, and not so small that it doesn't stay still. Everything is very well made, very ruggedly built. Optical isolators are used throughout to prevent rig or computer damage if something happens. I was a little disappointed that the documentation did not include a schematic, but I realize that most hams wouldn't need one anyway. I had to open the case—not just to set some jumpers, but because I always open things up before I apply power—and found a well-made but uncrowded PC board nearly filling the housing (photo 3).

The front and rear panels seem a little bit busy, but that only reflects the "do-it-all" nature of the Pro (photos 1 and 4). Everything is clearly labeled, and functionality is fairly intuitive. I can't say much more about the hardware than that, since all that really matters with a sound-card interface device is the audio quality. Any distortion or hum, and your signal suffers. While I don't have any test equipment to check audio distortion, on-the-air reports were all excellent, and I never had a problem.

If you're thinking that it's expensive (about $250 retail), you need to consider all of the station accessories it makes obso-

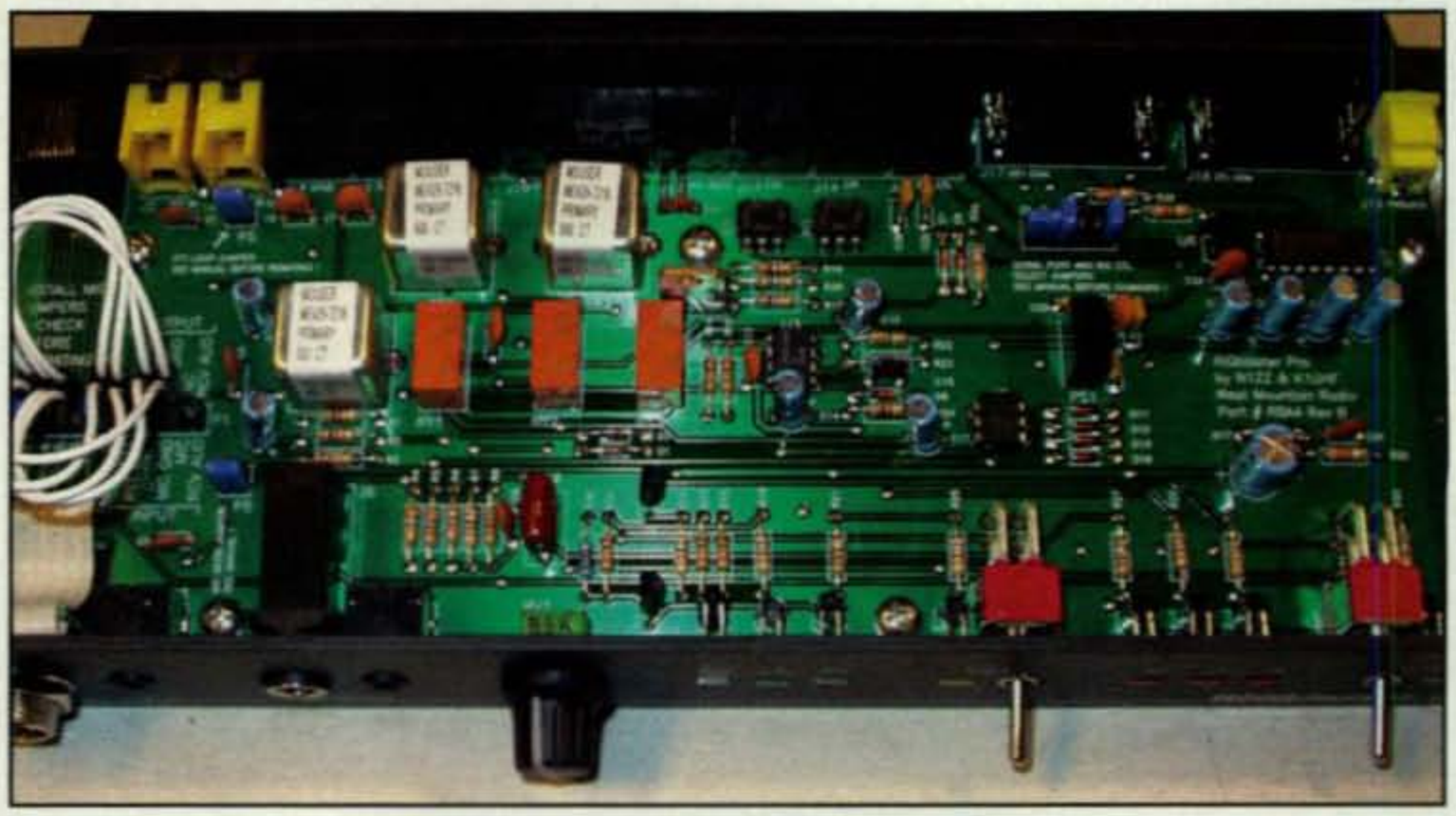


Photo 3– The Pro's circuit board is neat and uncluttered.

lete. For example, your computer and sound card can be used as a contest keyer, for both voice and CW. An audio processor for transmit speech processing and a computer-based DSP (digital signal processing) receive audio filter are almost trivial. There's also a built-in rig-control interface for most radios, using the same serial port that controls PTT and CW keying. Add to that all of the regular sound-card interface features, the freedom of never moving a cable again, the flexibility to accommodate virtually any radio, either existing or in the future, and virtually anything that can possibly be done with a computer and a radio, even if it's not yet invented.

All of the expected features of a sound-card interface are there, along with some very advanced COM-port-control and audio-switching capabilities. While the RIGblaster is not designed to do audio processing itself, you can use your PC sound card for this function just by loading your favorite equalizer or compression software and flicking a switch. I have my computer set up to send CW and manage PTT for digital and keyer modes, all with a single COM port, and I have the ability to send FSK and even control my IC-706 by computer if I so desire, without needing ICOM's external CI-V computer interface or an extra COM port.

Just for the sake of completeness, I called West Mountain Radio (anonymously) to see what kind of support I could expect, and I was pleasantly surprised. The fellow on the phone really knew what he was talking about, and had I really had the problem I described to him, his advice would have fixed it. The one-year warranty covers everything you'd expect. Since the software on the supplied CD isn't West Mountain Radio's, you are appropriately directed to the appropriate software author for help.

While not everyone needs the level of flexibility and functionality that has been built into this top-of-the-line RIGblaster, you won't be disappointed with it either. If you have a few rigs, and need a simpler sound-card interface, one of the other RIGblaster products might be enough to serve your needs. However, if you need to make your transceiver do everything, all the time, then this is the box for you.

For more information on the RIGblaster Pro ($249.99 list), contact West Mountain Radio on the web at <http://www.westmountainradio.com>; write to them at 18 Sheehan Ave., Norwalk, CT 06854; or call them at 203-853-8080 (fax is 203-299-0232). ■

Photo 4– The rear panel of the RIGblaster pro is busy but clearly labeled.

Quality Choices, Order Today!

VX-150 Designed to perform under the most difficult conditions. (right) This 2M 5W HT provides exceptional receiver performance with clean, clear transmit. Built to withstand outdoor use, the 150 is also outfitted with commercial-grade speaker and Omni-Glow™ keypad. 4.3"h x 2.3"w x 1"d, 11.5 oz **$119.99**

VX-2R Smallest HT dualband! (left) This 1.5/1W dualband (144/440MHz) handheld offers VHF, UHF, shortwave, marine and aircraft bands, or WIRES™ linking. The 2R's wide band receive includes the AM broadcast band, continuous HF shortwave, VHF/UHF up to 729MHz, plus 800-960MHz (cell blocked). It also includes over one thousand memories (20 groups), CTCSS/DCS encode/decode and auto repeater shift. 1.9"w x 3.2"h x 0.9"d **$179.99**

VX-5R/VX-5RS Setting water resistance standards. (mid-left) Offering 5W (4.5W on 430MHz), the 5R/5RS cover 50/144/430MHz while providing short to microwave reception. Great for outdoors with optional barometric pressure unit. Black or silver. 2.3"w x 3.4"h x 1.1"d, 8.9 oz **$219.99**

VX-7R/VX-7RB The first submersible amateur HTs. (mid-right) Water protected, the 50/144/430MHz, 5W 7R/7RB are rated for 3', 30-minute submersions. Magnesium bodies make them ideal for outdoors. Include dual/wide-band rx, status strobe, and WIRES™ key. Silver or black. 2.4"w x 3.5"h x 1.1"d, 9.2 oz **$309.99**

YAESU

FT-7800R Get "back to basics." This FM, 144/430MHz mobile boasts 50 and 40 Watts output and 1000 memories. It also offers one-touch hyper memories, full-featured CTCSS/DCS, WIRES™ internet linking and wide receiver coverage. The 7800R has a large LCD and NOAA weather alert. 5.5"w x 1.6"h x 6.6"d, 2.2 lbs **$255.99**

FT-817ND Self-contained, battery-powered, multi-mode portable. The 5W 817ND is designed for operation on HF, plus 6M, 2M, and 70cm. Whether you perfer SSB, CW, AM, FM, Packet, or SSB-based digital modes, it is ready to join you on your next hiking, camping, or search-and-rescue adventure. Includes 1400mAh NiMH battery and charger. 5.3"w x 1.5"h x 6.5"d, 2.6 lbs... **$619.99**

FT-2800M Cool and quiet 65W operation. The most rugged 2M transceiver ever provides 65/25/10/5W with an extensive 221 memories, alphanumerics and CTCSS/DCS. The 2800M also features NOAA with weather alert, WIRES™ access, SmartSearch™, and excellent receive performance. With a bullet-proof front end and direct keypad entry, it's a dream come true. 6.3"w x 2"h x 7.3"d, 4 lbs..... **$154.99**

FT-8900R Leading the way in FM mobile design. The 29/50/144/440MHz 8900R has no peer among mobiles. This quad bander offers leading edge features like VHF/UHF full duplex, cross band repeat, independent operation on two bands, and six "Hyper Memory" keys to store configurations. The 8900R also provides 50W (35 on 440MHz), access to internet linking systems, over 800 memories, CTCSS/DCS, and built-in duplexer. 5.5"w x 1.6"h x 6.6"d, 2.2 lbs..... **$419.99**

FT-8800R Easy operation, ultimate dualband. This 144/430MHz 50/35W mobile offers simultaneous monitoring of one band while operating the other. Besides extended receive, the 8800R provides 1000 memories, cross band repeat, versatile scan and CTCSS/DCS. Looks similar to the FT-8900R above. 5.5"w x 1.6"h x 6.6"d, 2.2 lbs **$359.99**

FT-897D All-in-one portable base. The all-mode, multi-band 897D features high output 100W (HF/6M), 50W (2M), 20W (70cm), rugged construction, 200 memories, TCXO and optional internal supply and external antenna tuner. 7.87"w x 3.15"h x 10.3"d, 8.6 lbs ... **$879.99**

FT-1000MP MK V Improving the 1000 series Elite-Class. Building on the success of the 1000 series, the HF, all-mode, 200W Mark V offers Class-A PA (75W) operation, interlocked digital bandwidth tracking system and a variable RF front-end filter. 16"w x 5.3"h x 13.7"d, 31 lbs..... **$2049.99**

MK V FIELD Reach the HF Summit! The technology of the 1000D and Mark V in a 100W, self-contained design. This HF all-mode features Class-A (25W) PA operation, interlocked digital bandwidth tracking and a variable RF front-end filter along with an auto antenna tuner and internal switching supply. 16"w x 5.3"h x 13.7"d, 33 lbs **$1739.99**

FT-840 Performance forward. Blending high performance digital frequency techniques with operating convenience, the 840 is a base station that beginners and seasoned operators will appreciate. In addtion to 100W on 160-10M, it adds a choice of 2 optional remote auto antenna tuners. 9.4"w x 3.7"h x 9.6"d, 12 lbs **$579.99**

FT-847 Masterpiece of high-tech design! Ready for action on SSB, CW, HSCW, AM, FM, Packet, SSTV, and RTTY, the 847 expands operating horizons to 6M, 2M and 70cm, featuring DSP and full-duplex satellite. Advanced DSP. 10.2"w x 3.4"h x 10.6"d, 14.4 lbs **$1399.99**

FT-857D The world's smallest HF/VHF/UHF multimode. The 100W (HF/6M), 50W (2M), 20W (70cm) 857D provides wide frequency coverage, outstanding receive, and convenient remote-head use (optional). Includes 200 memories, ease of access to features, advanced DX features, and CW operating flexibility. The 857D model now offers a built-in DSP. 6.1"w x 2"h x 9.2"d, 4.6 lbs **$769.99**

Prices subject to change without notice.

AES®
AMATEUR ELECTRONIC SUPPLY

5710 W. Good Hope Rd.
Milwaukee, WI 53223
414-358-0333
1-800-558-0411

621 Commonwealth Ave.
Orlando, FL 32803
407-894-3238
1-800-327-1917

28940 Euclid Ave.
Cleveland, OH 44092
440-585-7388
1-800-321-3594

4640 South Polaris Ave.
Las Vegas, NV 89103
702-647-3114
1-800-634-6227

1-800-558-0411 **www.aesham.com**

If you like PSK-31 and you like to monitor radio activity while doing other things in your shack, some new software and your PC soundcard can let you monitor PSK-31 traffic ... without looking at your computer monitor!

Speech Synthesis Added to PSK-31

BY ED SACK,* W3NRG

Radio amateurs are well known for their keen interest in combining several technologies to provide new features for the hobby. One such combination is the use of computer speech synthesis to monitor PSK-31 traffic. Thanks to the availability of an inexpensive speech-synthesis program and freeware written by amateur N7YG, it is now possible to *listen* to the text of a PSK-31 stream rather than watching the text develop on the computer screen.

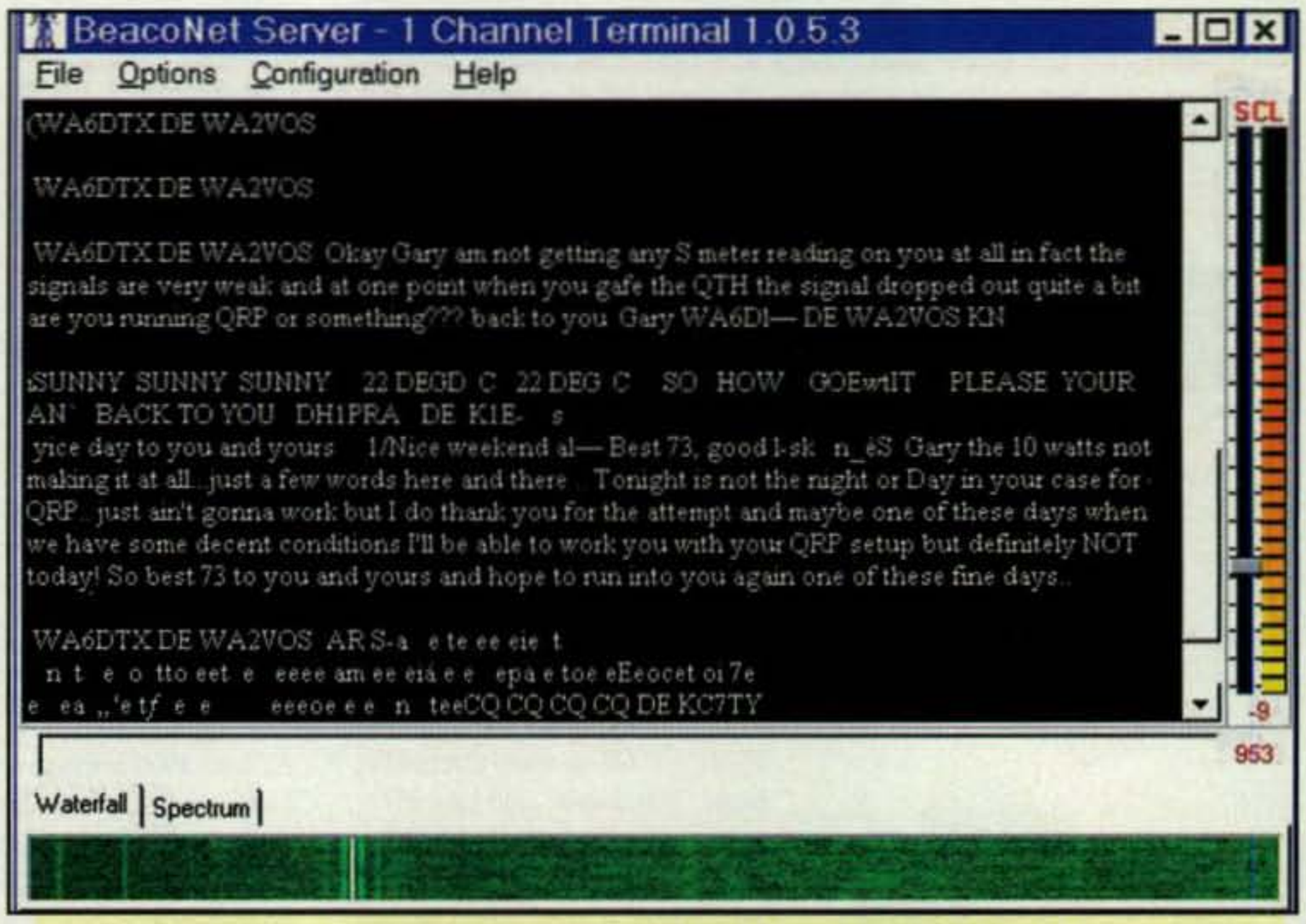


Fig. 1– Typical BeaconServer 1 (BS1) 14.070-MHz PSK-31 computer screen as text is being received and "read" in voice via CoolSpeech speech synthesis software.

Why?

The first question one asks is "Why would you want to do this?" A few minutes of "lurking" around 14.070 MHz USB with a PSK-31 transceiver/computer setup shows the growing popularity of this mode of operation. Literally dozens of QSOs are under way at most times of the day in a tiny slice of 20-meter bandwidth because of the transmission efficiency of this mode. Further, most of these QSOs are taking place at power levels between 5 and 20 watts and with simple antennas that make possible amateur radio activity in otherwise impossible situations.

However, monitoring the PSK-31 activity in the normal manner requires attention to the computer screen as the text is translated from the PSK-31 "warble" by the computer soundcard using one of the many computer programs developed for that purpose. A PSK-31 "lurker," such as the author, may want to be doing other things around the shack (or office) while keeping track of what is going on across the band. Using speech synthesis to translate the PSK text stream to audio solves that problem.

As a bit of background, Jeff Steinkamp, N7YG, has written very fine software[1] for use by the BEACONet[2] community. His coder/decoder programs, BeaconServer1(BS1), BeaconServer3 (BS3). and MSPSK, along with his Mailer program, are in use by many who participate in the BEACONet Project, as well as others in the amateur fraternity. BEACONet is a digital-based propagation alert system (see Note 2 for details).

I had been experimenting with an inexpensive commercial speech synthesis package called CoolSpeech™.[3] As it comes from the vendor, this program will read in one of several voices any computer text that you highlight followed by the "copy" command. The application works well with PSK traffic but has the inconvenience of requiring that the user stop whatever else he is doing from time to time to perform the highlight and copy functions at the computer keyboard.

I contacted N7YG and asked if he could write a program to link the CoolSpeech program with his BS1 PSK decoder so as to provide hands-off con-

**1780 Avenida del Mundo, #404, Coronado, CA 92118*
e-mail: <esack@pacbell.net>

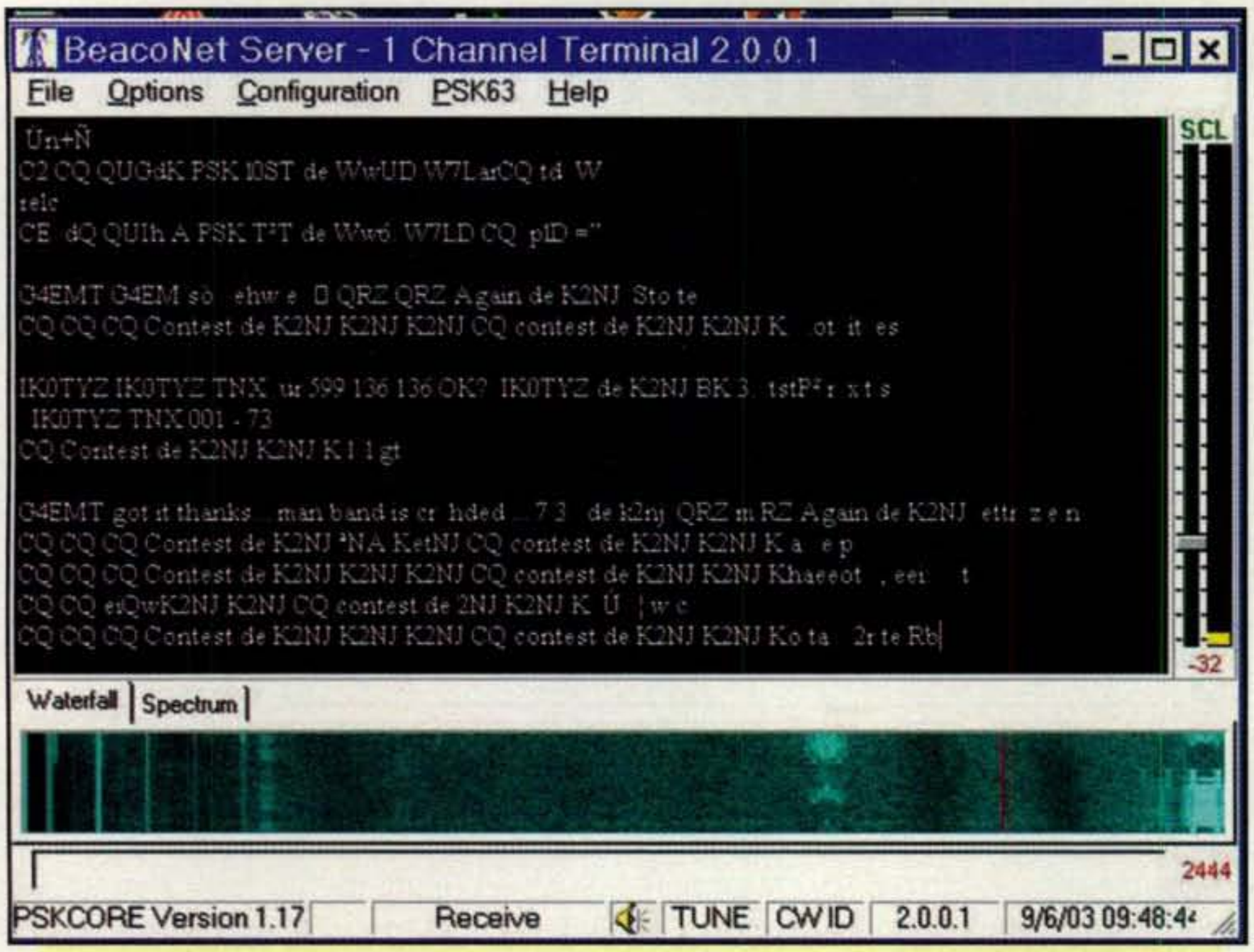


Fig. 2– This is a PSK-63 screen during a contest. Again, CoolSpeech and N7YG's BS1 program are working together to read the text aloud.

tinuous scanning and monitoring of band activity. Within no more than a day or so, on his website Jeff had a revision of his program with just that feature built in. In addition, he provided a read file which offered suggestions as to how to use the program in several different computer configurations—one computer/one soundcard, one computer/two soundcards or two computers linked by an Ethernet connection.[4]

I downloaded and installed the newly revised software onto a computer with a Windows® 98, second edition operating system. The CoolSpeech program also works with other Microsoft operating systems, as does Jeff's decoder software. I opted for the "one computer/one soundcard" installation, which is the "default" condition for the software. In this mode, the user is acting as a "lurker"—listening only—inasmuch as the output from the computer sound card is going to the speaker as a voice signal rather than PSK-31 audio tones providing modulation signals to the transceiver's mic input.

Listening to Text

Within minutes I was listening to PSK QSO traffic on 14.070 MHz. Jeff's BS1 program may be set to scan over the conventional PSK audio spectrum so if one signal goes away, the software automatically searches for another one. This provides the opportunity for truly "hands off" monitoring of what is going on across the band. Fig. 1 shows a typical PSK-31 screen where the text is being read through the computer speaker using the N7YG program. Fig. 2 shows a typical PSK-63 screen on a contest day as the text was being read by the program.

As with any other amateur application, there are some things that one must get used to. If the PSK typist is slow, the speech will be slow. Also, the CoolSpeech algorithm has not been tailored to "ham lingo."

As with any other amateur application, there are some things that one must get used to. If the PSK typist is slow, the speech will be slow. Also, the CoolSpeech algorithm has not been tailored to "ham lingo." On the other hand, just as one gets used to listening through QRM in other modes, one soon learns to listen through the "artifacts" that occur in this application.

As a side benefit, the CoolSpeech application can be set to access "web news" at various times of the day. Market information, world news, and news bulletins are "spoken" automatically, again while the listener is busy doing other tasks. *(This comes via an internet connection, of course, not over your ham rig.—ed.)*

Will the CoolSpeech application work with PSK-31 programs other than N7YG's BS1? As already noted, CoolSpeech will accept a copy and paste from any text file. Hence, one can manually copy text from any PSK-31 screen and paste it into the CoolSpeech application. However, as far as I know, the link that N7YG has written between his BS1 PSK-31 program and CoolSpeech is the only software that transfers the text concurrently without manual intervention.

For me, as someone who got interested in computer speech synthesis and recognition many years ago, and who is fascinated by the QRP applications of PSK, this combination of technologies is "pure fun." Hopefully others will be equally motivated by this article to apply and enhance the application of speech synthesis in ham radio. ■

Huh? What's PSK-63?

PSK-63 is a very fast PSK mode for RTTY contesting. It occupies twice the bandwidth of a PSK-31 signal, but transmits characters at roughly twice the speed of PSK-31. It's also gaining popularity among users of the BEACONet program because it permits longer "preambles" before the "payload" containing the beacon identification information is sent. This gives recording software a longer string of data to capture, without taking up more transmission time.

For more information on PSK-63, check out <http://www.qsl.net/kh6ty/psk63>.

Notes

1. <http://home.earthlink.net/~n7yg/>

2. "BEACONet" by Ev Tupis, W2EV, *QST,* May 2001, p. 38. The BEACONet project provides for beacons in various parts of the world where unattended beacon transmission is permitted, in order to provide information and early alerts on point-to-point propagation conditions. The program employs the AX.25 (packet), PSK-31, and PSK-63 transmission modes. For more information on this project see <http:// www.go.to/BEACONet>.

3. <http://www.ByteCool.com>

4. For more information on the three modes that are available, see the "CoolSpeech Read" file that comes with the BS1 application available from N7YG as indicated in Note 1.

math's notes

BY IRWIN MATH,* WA2NDM

Another Visit to the Past

When we reminisced about the "vintage" Kenwood TS-530S transceiver we purchased last year (see the January 2004 column), we received lots of mail from older amateurs who also share our feelings about vacuum-tube equipment and who still enjoy using much of it. In that column we also suggested that newcomers, particularly those on a budget, consider the great values that can be had in the used equipment market, purchasing high-quality equipment at a small fraction of its original cost. As a sort of follow-up, this month we will look at a fairly simple way to "update" such equipment (as well as possibly extend its life) by "modernizing" the power supply. Before we start, however, please bear in mind that *high and possibly lethal voltages are present in many vacuum-tube power supplies, and the utmost care is required when working with them.* It therefore is a very good idea to have a fused outlet strip and a way to reduce the input line voltage when testing. Such a method will be described at the end of this column.

As you might be aware, most vacuum-tube equipment employed rectifier tubes of the 5U4, 5Y3, 5Z3, 6X4, etc., variety. These were used to convert AC from a power transformer to high voltages in the range of 150 to 600 volts at currents ranging from 50 to 350 milliamperes, depending on the requirements of the particular type of equipment. These rectifier tubes usually required a filament voltage of 5 to 6 volts at 2 to 3 amperes and dropped anywhere from 20 to 60 volts between cathode and plate (anode). All of this resulted in lots of heat being generated. This not only stressed the tubes, but heated up all of the nearby components as well. If you ever got burned by accidentally touching an operating 5U4GB, you know exactly what I mean. Some of this equipment even got so hot that auxiliary blowers were included to help control the internal temperature.

By replacing these rectifier tubes with silicon diodes, we can significantly reduce the heat in such equipment. This will not only allow adjacent components to operate cooler, it will also eliminate the added stress on the power transformer, since the rectifier's filament supply will be no longer required. In addition, since the solid-state components are only added to the power supply, the rest of the vacuum-tube circuitry is untouched.

Fig. 1 is a schematic diagram of a typical power supply providing 350 volts at about 250 milliamperes, such as might be found in a small 75-watt transmitter. The power transformer has a 650 Vrms high-voltage secondary (or as it used to be called, "325-0-325" volts), a 5-volt filament winding (at 3 amperes), and a third output winding for the rest of the filaments (usually 6.3 volts). As you can see, the circuit is a common full-wave rectifier with the 5U4 doing all of the work. Dissipation in the circuit consists of about 50 volts dropped across the tube (50V × 0.25A = 12.5 watts) and 15 watts for the filaments (5V × 3A = 15 watts). Peak voltage between the plates and cathode of the tube is 910 volts (650 × 1.41). To provide a solid-state replacement for such a tube therefore would require a rectifier diode that could handle 250 milliamperes as well as withstand a reverse voltage of at least 950 volts. Fortunately, the very inexpensive 1N4000 series is ideal.

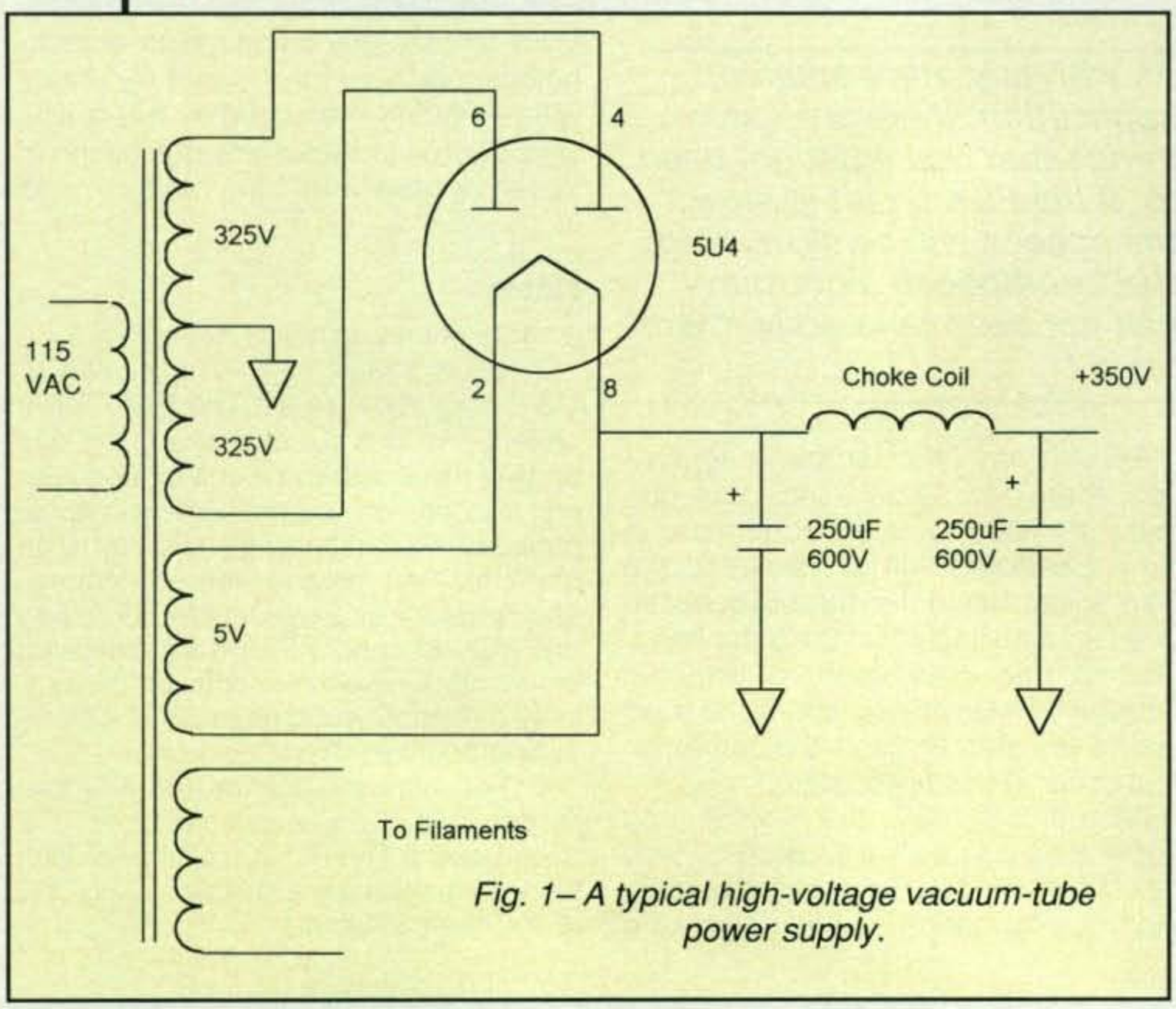


Fig. 1– A typical high-voltage vacuum-tube power supply.

Fig. 2 is a schematic of the revised power supply. The diode we have chosen is the 1N4007, which has a peak reverse voltage rating of 1000 volts. If this particular diode is not available, you can always use two or more lower breakdown voltage diodes in series, as long as the total reverse breakdown of the string exceeds 1000 volts. If you do choose to connect diodes in series, it is a good idea to parallel each diode with a resistor of high-value, such as 47K or 100K, to assure an even distribution of reverse voltage as shown in fig. 3.

The voltage drop across a typical vacuum-tube rectifier is, as we have mentioned, anywhere from 20 to 60 volts. The 5U4 in our example will drop about 45 volts. Silicon diodes, on the other hand, will only drop 1 volt or less. As a result, the DC output voltage from the modified supply will be higher. If the voltage rating of the filter capacitors is high enough and the rest of the circuit can handle 50 to 60 volts more B+, then all is fine. You will even gain a bit of output power as well. If not, you will have

*c/o CQ magazine

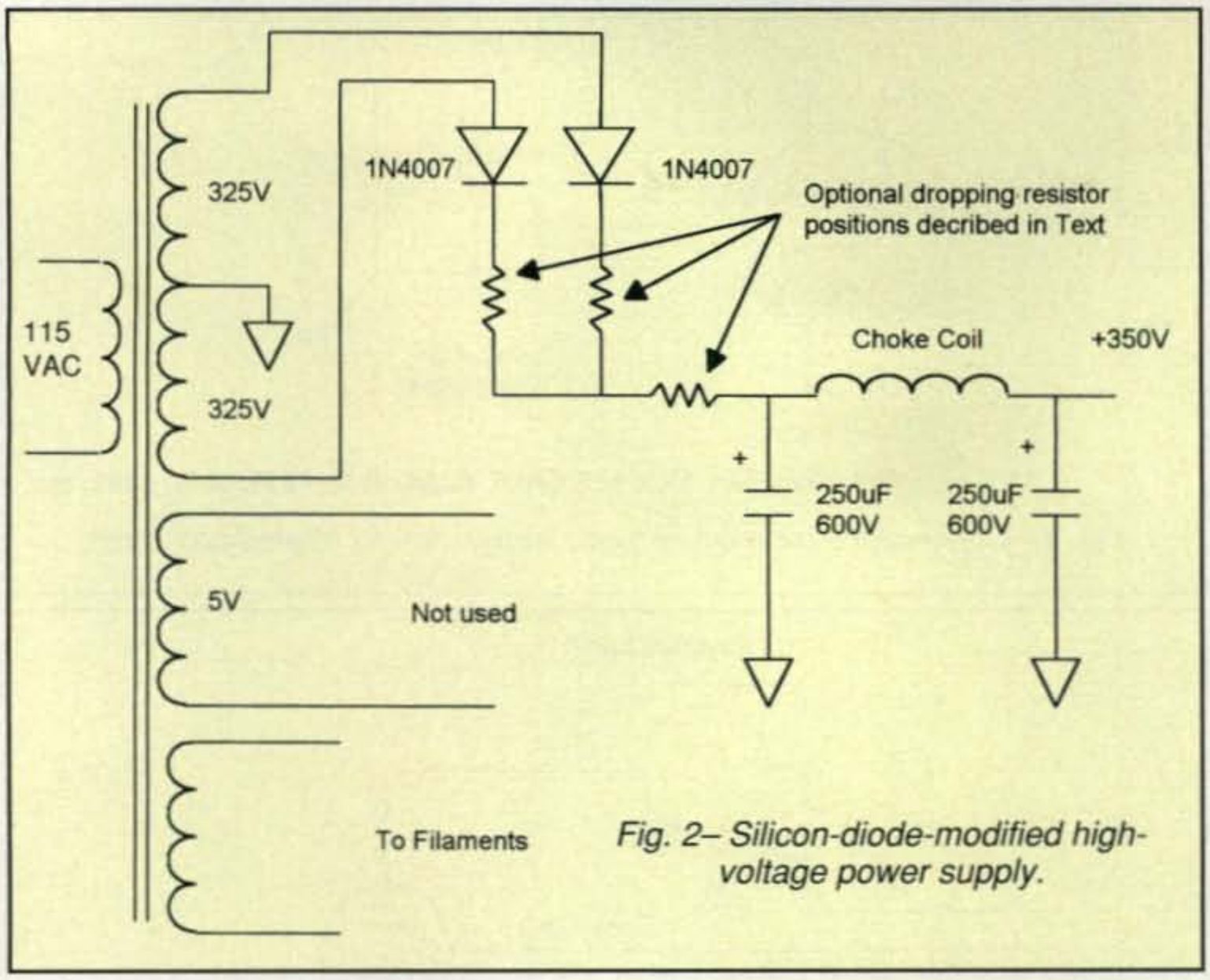


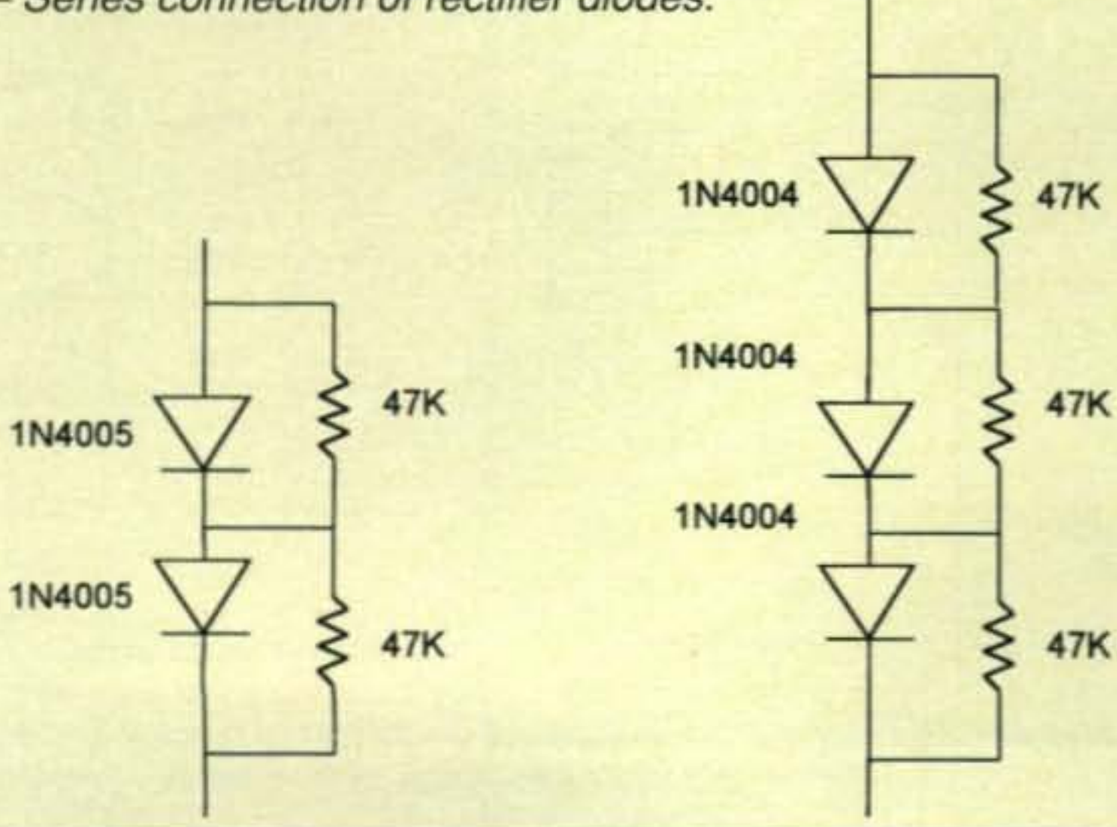
Fig. 2– Silicon-diode-modified high-voltage power supply.

to provide a means to lower the DC to the original value. This is most easily accomplished with a resistor. Fig. 2 also shows where you would add the resistor.

Choosing the resistor will require a simple calculation. In our example, we need to drop 45 volts at a current of 250 milliamperes. Using Ohm's Law, we find that we need a value of 180 ohms (45/0.25 = 180). Furthermore, the resistor will be dissipating 11.2 watts (45 × 0.25 = 11.2), so a 25-watt resistor will be needed (conservatively). As an alternative, you can use two 180-ohm resistors (at 15 watts each) in series with each diode string (also shown in fig. 2) if the 25-watt variety is hard to find. Power resistors such as these used to be commonly available and can still be bought for a nominal cost from many surplus sources if needed. They are even available from the major distributors (such as Mouser Electronics), but you will pay around $2 to $3 (for new ones) from these sources. If you do need to use dropping resistors, the heat you save from the tubes will now be generated by the resistors. However, these devices are much more suited for heat dissipation and can be mounted somewhere "in the clear," and you will still save the filament power.

The example given above is based on replacing a 5U4 with silicon diodes. This tube has a filament (or heater) which also serves as the cathode. Other tubes

Fig. 3– Series connection of rectifier diodes.



in this category include the 5T4, 5V3, 5W4, 5Y3, 5X4, 5Z3, 5Z4, etc. Fig. 4 shows the connections for rectifier tubes that use a separate, indirectly heated cathode. If the rectifier tube you are replacing is not listed here, you will have to consult a tube manual for the proper configuration.

Caution: High Voltage!

As mentioned at the beginning of this column, the voltages encountered in vacuum-tube power supplies are high and can be dangerous, so the utmost care must be taken to prevent serious accidents. A method of reducing the output voltage during testing is therefore a good idea, and if you have a variable transformer (such as a "Variac"), be sure to use it to gradually increase the voltage to your modified supply the first time you turn it on. If you are not so lucky, simply wire a common lamp socket in series with the AC power plug of your modified supply as shown in fig. 5. Now obtain a series of incandescent lamps with different wattage ratings, and starting with the lowest wattage lamp, interchange lamps one at a time. This will enable you to gradually increase the output voltage while you check for shorts, wrong connections, etc. While the exact input voltage with such an arrangement is a function of the current the device draws, at least you will not have to deal with full line voltage immediately.

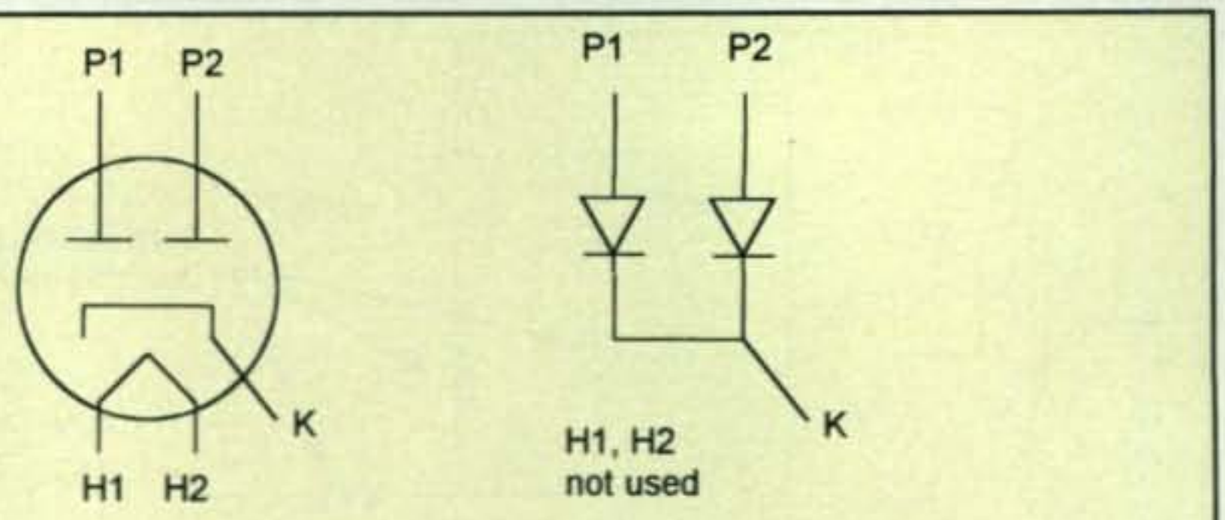


Fig. 4– Connections for rectifier tubes with indirectly heated cathodes.

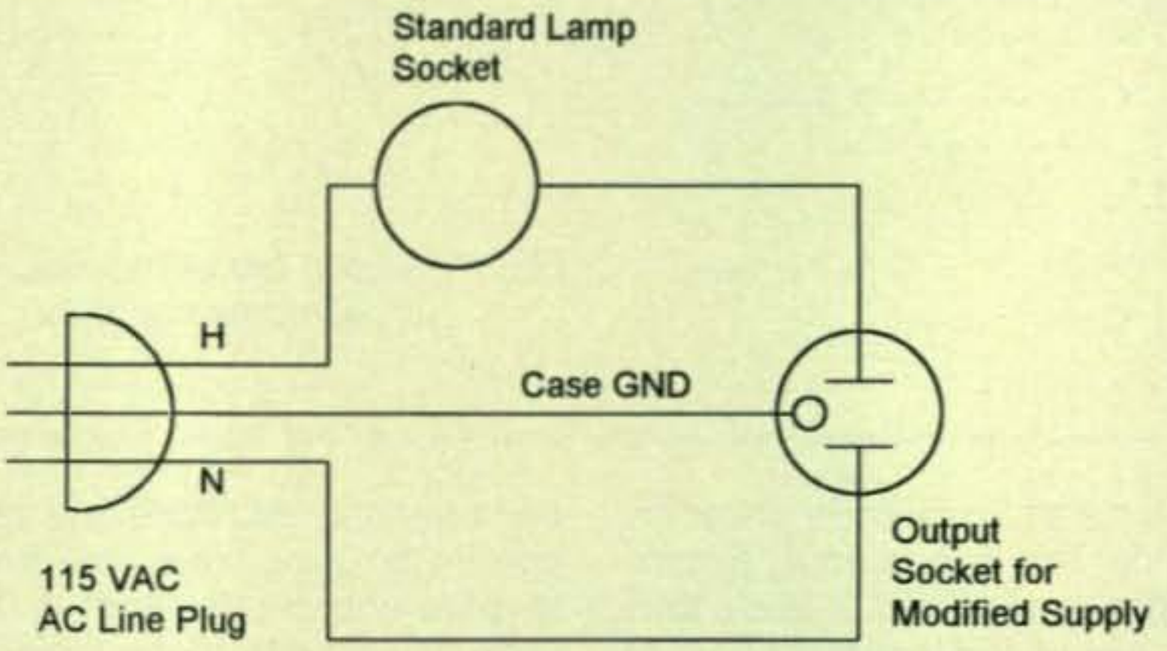


Fig. 5– Simple voltage reducer for testing purposes.

While not exactly "rocket science," updating the power supply of vintage vacuum-tube-based equipment will serve to reduce the strain on the power transformer, reduce heat produced in the cabinet, and almost always extend the life of the equipment to a significant degree. 73, Irwin, WA2NDM

Correction to Logic Circuits without ICs

Two errors crept into the September column. Unfortunately, I was a little too quick in "cutting and pasting," so here are the corrected schematics. I apologize for any inconvenience this may have caused. Thanks to all of those readers who caught the errors, and especially Ralph, K1RD, who was the first to point them out. Apparently, people out there actually do read this type of article and find it interesting! —*73, Irwin, WA2NDM*

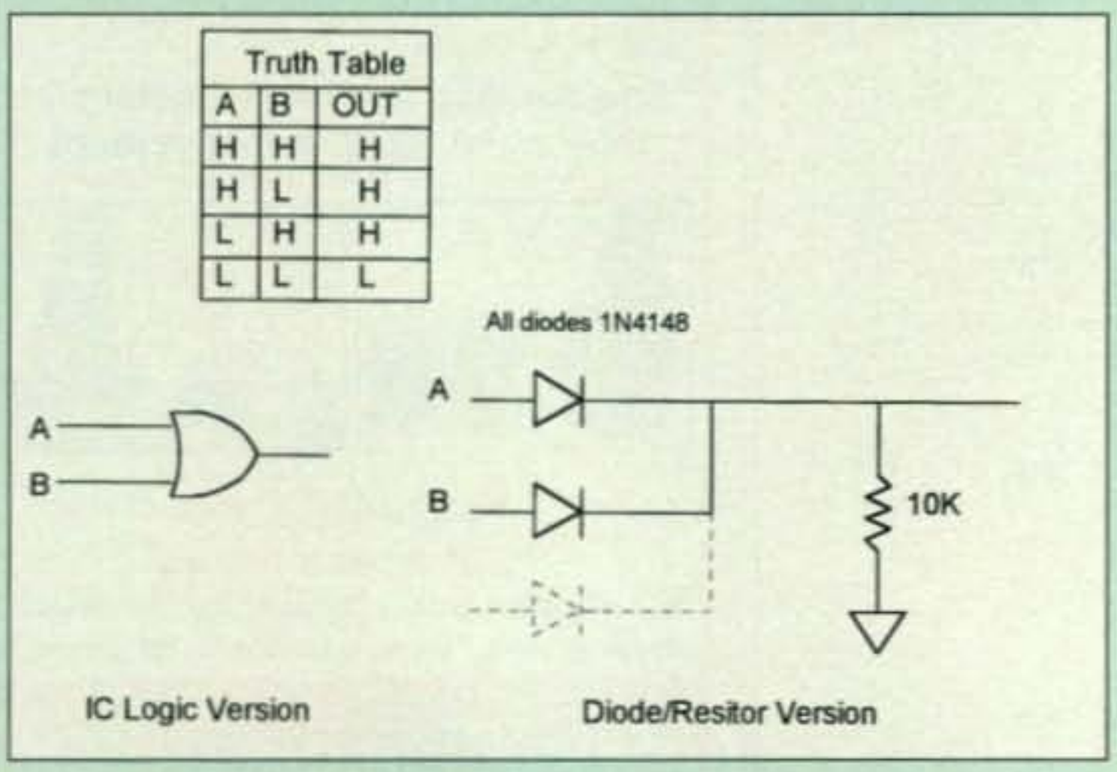


Fig. 4– The OR function. In this revised version the diodes are reversed from the original.

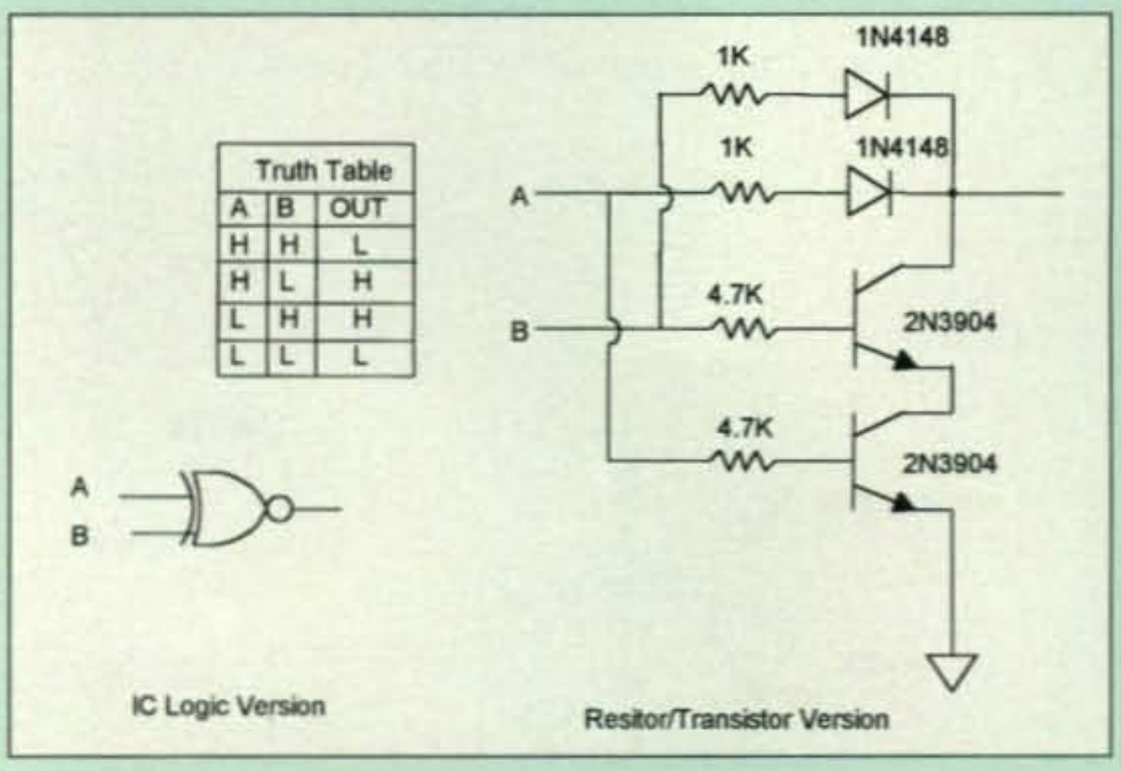


Figure 5– Simple voltage reducer for testing purposes. In this version the "other half" of the circuit I omitted has been restored.

MFJ *Switching* Power Supplies

Power your HF transceiver, 2 meter/440 MHz mobile/base and accessories with these new 25 or 45 Amp MFJ MightyLite™ Switching Power Supplies!

No RF hash . . . Super lightweight . . . Super small . . . Volt/Amp Meters . . .

MFJ's new adjustable voltage switching power supplies do it all! Power your HF or 2M/440 MHz radio and accessories.

MFJ's *MightyLites*™ are so light and small you can carry them in the palm of your hand! Take them with you anywhere.

No more picking up and hauling around heavy, bulky supplies that can give you a painful backache, pulled muscle or hernia.

MFJ's 25 Amp *MightyLite*™ weighs just 3.7 lbs. -- that's *5 times lighter* than an equivalent conventional power supply. MFJ's 45 Amp is even more dramatic -- *8 times lighter* and weighs just 5.5 pounds!

No RF hash!

These babies are clean . . . Your buddies won't hear *any* RF hash on your signal! *None* in your receiver either!

Some competing switching power supplies generate objectionable RF hash in your transmitted and received signal.

These super clean MFJ *MightyLites*™ meet all FCC Class B regulations.

Low Ripple . . . Highly Regulated

Less than 35 mV peak-to-peak ripple under 25 or 45 amp full load. Load regulation is better than 1.5% under full load.

Fully Protected

You won't burn up our power supplies!

No RF Hash!

MFJ-4225MV
25 Amp
$149.95
plus s&h

MFJ-4245MV
45 Amp
$199.95
plus s&h

No RF Hash!

They are fully protected with Over Voltage and Over Current protection circuits.

Worldwide Versatility

MFJ *MightyLites*™ can be used anywhere in the world! They have switchable AC input voltage and work from 85 to 135 VAC or 170 to 260 VAC. Replaceable fuse.

***MightyLites*™ . . . Mighty Features**

Front-panel control lets you vary output from 9 to 15 Volts DC.

Front-panel has easy access five-way binding posts for heavy duty use and cigarette lighter socket for mobile accessories. MFJ-4245MV has two sets of quick-connects on the rear for accessories.

Brightly illuminated 3 inch meters let you monitor load voltage and current.

A whisper quiet internal fan efficiently cools your power supply for long life.

Two models to choose from . . .

MFJ-4225MV, $149.95. 25 Amps maximum or 22 Amps continuous. Weighs 3.7 pounds. Measures 5¾Wx4½Hx6D in.

MFJ-4245MV, $199.95. 45 Amps maximum or 40 Amps continuous. Weighs 5.5 pounds. Measures 7½Wx4¾Hx9D in.

***NEW!* 25 Amp *MightyLite*™**

Super light, super compact switching power supply delivers 25 Amps maximum/ 22 Amps continuous at 13.8 Volts DC. Low ripple, highly regulated. ***No RF Hash!*** Five-way binding posts for high current. Quick connects for accessories. Over voltage/current protection. 110 or 220 VAC operation. Meets FCC Class B regs. 3.5 lbs. 5½Wx2½Hx10¼D in.

MFJ-4125
25 Amp
$109.95
plus s&h

MFJ 35/30 Amp Adjustable Regulated DC Power Supply

Massive 19.2 pound transformer . . . No RF hash . . . Adjustable 1 to 14 VDC . . .

MFJ-4035MV
$149.95
plus s&h

MFJ's heavy duty conventional power supply is excellent for powering HF or 2 Meter/440 MHz transceiver/accessories.

A massive 19.2 pound transformer makes this power supply super heavy duty! It delivers 35 amps maximum and 30 amps continuous without even flexing its muscles. Plugs into any 110 VAC wall outlet.

It's highly regulated with load regulation better than 1%. Ripple voltage is less than 30 mV. *No RF hash* -- it's super clean!

Fully protected -- has over voltage protection, fold back short circuit protection and over-temperature protection.

You get front panel adjustable voltage from 1 to 14 VDC with a convenient detent set at 13.8 VDC. A pair of front-panel meters let you monitor voltage and current.

Three sets of output terminals include a pair of heavy duty five-way binding posts for HF/VHF radios, two pairs of quick-connects for accessories and a covered cigarette lighter socket for mobile accessories.

A front-panel fuse holder makes fuse replacement easy. Whisper quiet fan speed increases as load current increases -- keeps components cool. 9½Wx6Hx9¾D inches.

MFJ *High Current* Multiple DC Power Outlets

Power two HF/VHF transceivers and six or more accessories from your 12 VDC power supply

MFJ-1118
$74.95
plus s&h

MFJ-1116
$49.95
plus s&h

MFJ-1112
$34.95
plus s&h

New!
MFJ-1117
$54.95

MFJ-1118, $74.95. This is MFJ's most versatile and highest current *Deluxe Multiple DC Power Outlet*. Lets you power two HF and/or VHF transceivers and six or more accessories from your transceiver's main 12 VDC supply.

Two pairs of super heavy duty 30 amp 5-way binding posts connect your transceivers. Each pair is fused and RF bypassed. Handles 35 Amps total.Six pairs of heavy duty, RF bypassed 5-way binding posts let you power your accessories. They handle 15 Amps total, are protected by a master fuse and have an ON/OFF switch with "ON" LED indicator.

Built-in 0-25 VDC voltmeter. Six feet super heavy duty eight gauge color-coded cable with ring tongue terminals. Binding posts are spaced for standard dual banana plugs. Heavy duty aluminum construction. 12½x2¾x2½ in.

MFJ-1116, $49.95. Similar to MFJ-1118. No 30 amp posts. Has "ON" LED and 0-25 VDC voltmeter. 15 amps total.

MFJ-1112, $34.95. Similar to MFJ-1116. No on/off switch, LED, meter, fuse.

NEW! MFJ-1117, $54.95. For powering four HF /VHF radios (two at 35 Amps each and two at 35 Amps combined) simultaneously. Tiny 8x2x3 inches.

Free MFJ Catalog

Nearest Dealer . . . 800-647-1800

http://www.mfjenterprises.com

• 1 Year *No Matter What*™ warranty • 30 day money back guarantee (less s/h) on orders direct from MFJ

MFJ ENTERPRISES, INC.
Box 494, Miss. State, MS 39762
(662) 323-5869; 8-4:30 CST, Mon.-Fri.
FAX: (662) 323-6551; **Add s/h**
Tech Help: (662) 323-0549

All are protected by MFJ's famous No Matter What™ one year limited warranty.

world of ideas

BY DAVE INGRAM,* K4TWJ

6L6 Resurrection – 2004 Style

Fire up the soldering iron, clear off the workbench, and say hallelujah, dear friends and fans of real glow-in-the-dark radio fun. This month's column is for you! It spotlights a new millennium version of that popular wood-framed 6L6 transmitter of the 1950s, and it is a marvelous little gem (photo A). Just look at that soft-contoured glass envelope tube, that smooth-finish frame, that classy little coil form . . . what a showpiece!

There is more here than meets the eye, too. Unlike those "homebrewed from stray parts" versions of yesteryear that were crystal controlled on a single frequency and used a larger-than-rig power supply, this retro version is fancy. It sports a built-in power supply, a crystal VXO (variable crystal oscillator) circuit for frequency agility, and your choice of a transmit-spot function or a transmitter-tracking beat oscillator function for transceiver-type operation with a similar-era receiver. Yes, you read that right. When used with an older or basic-model shortwave receiver set to its AM mode, shifting the transmitter's (lightly radiating) VXO frequency also shifts the receiver's frequency so the two track together. Furthermore, these features (and more) have been included while holding overall cost to a minimum, a formidable challenge as "tube related" parts continue to become scarce and rise in price. As an additional "go for it" aid, I am also putting together custom parts packs for this transmitter. Now that's what I call bringing a poor-boy's classic back to life in style!

Overview

As you can see in the accompanying photos and figures, our romantic retro is a basic power-oscillator-type transmitter modified to the max. It covers 40, 30, or 80 meters (or 160 meters if you double the 80-meter coil's size) and runs approximately 14 watts input and 5 watts output. Higher power and greater efficiency are possible, but my objective was obtaining an extra-clean output signal plus using a small-as-possible power supply. A 5-watt rig is small, fun to build, and fairly inexpensive, and its signal is not strong enough to seriously offend critics yet is still powerful enough for DXing. In fact, I even contacted the 3B9C DXpedition to Rodriguez Island (highlighted in the March issue of *CQ*) with it while dinking with coil and capacitor values on 30 meters. What a blast!

Circuit Notes

Our first assembled version of this 6L6 rig used the classic tri-tet circuit. It worked well on 40 meters, but proved rather finicky on 30 meters (which is a really superb band for low-power work). I rewired the transmitter as a conventional crystal oscillator, and it perked away beautifully on both bands. The same Lorenz (or basket-weave-type) coils, VXO circuit, beat-frequency scheme, and power supply were used with both circuits, so feel free to use the circuit you like best. The VXO circuit consists of a small 10-µHy molded inductor (item number 542 78F100 from Mouser Electronics, 1-800-346-6873

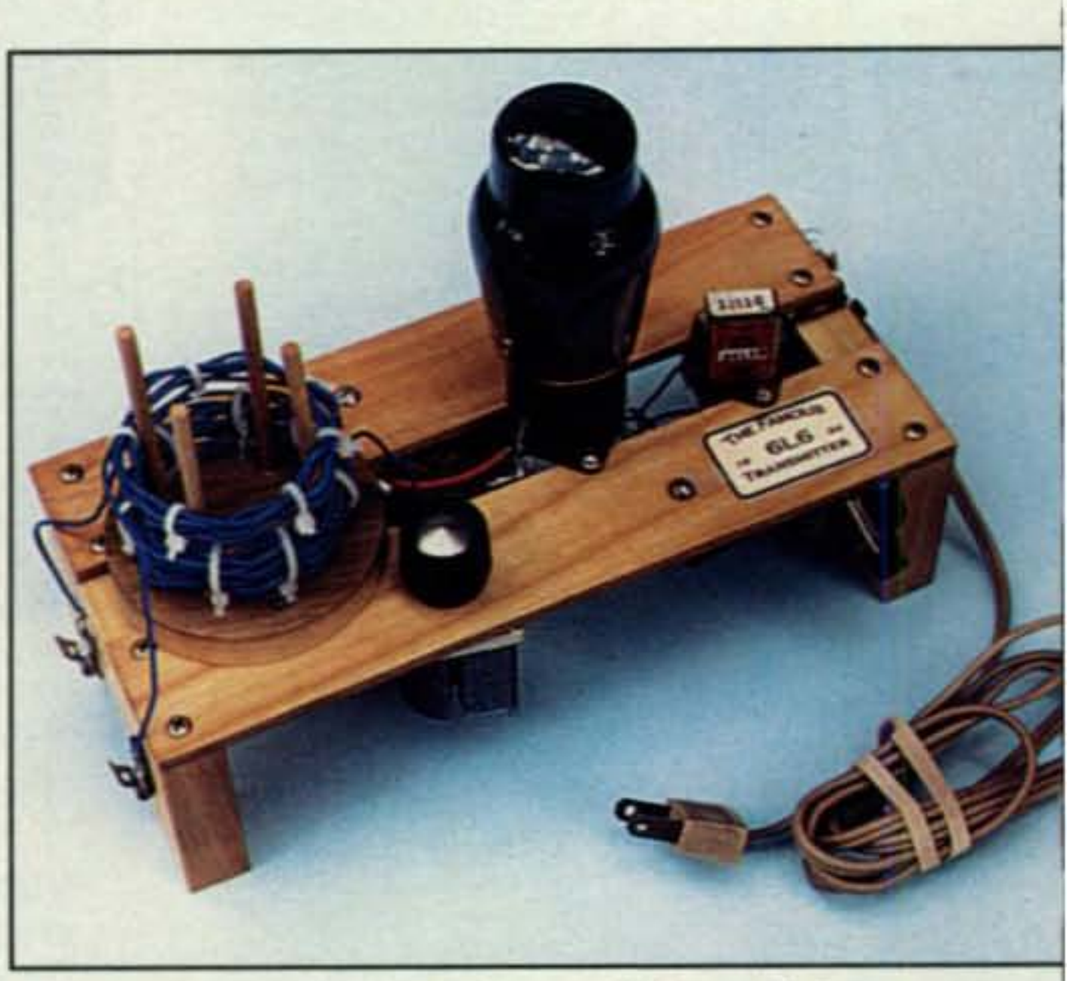


Photo A– That famous little wood-frame 6L6 transmitter of the 1950s returns with all its glamour, and this one has some big-time upgrades for 2004. It sports a built-in AC power supply, VXO frequency control, transmitter-tracking beat-frequency function for transceiver-type operation with a mated receiver, and more. Parts packs to quickly assemble your own are available from K4TWJ (see box).

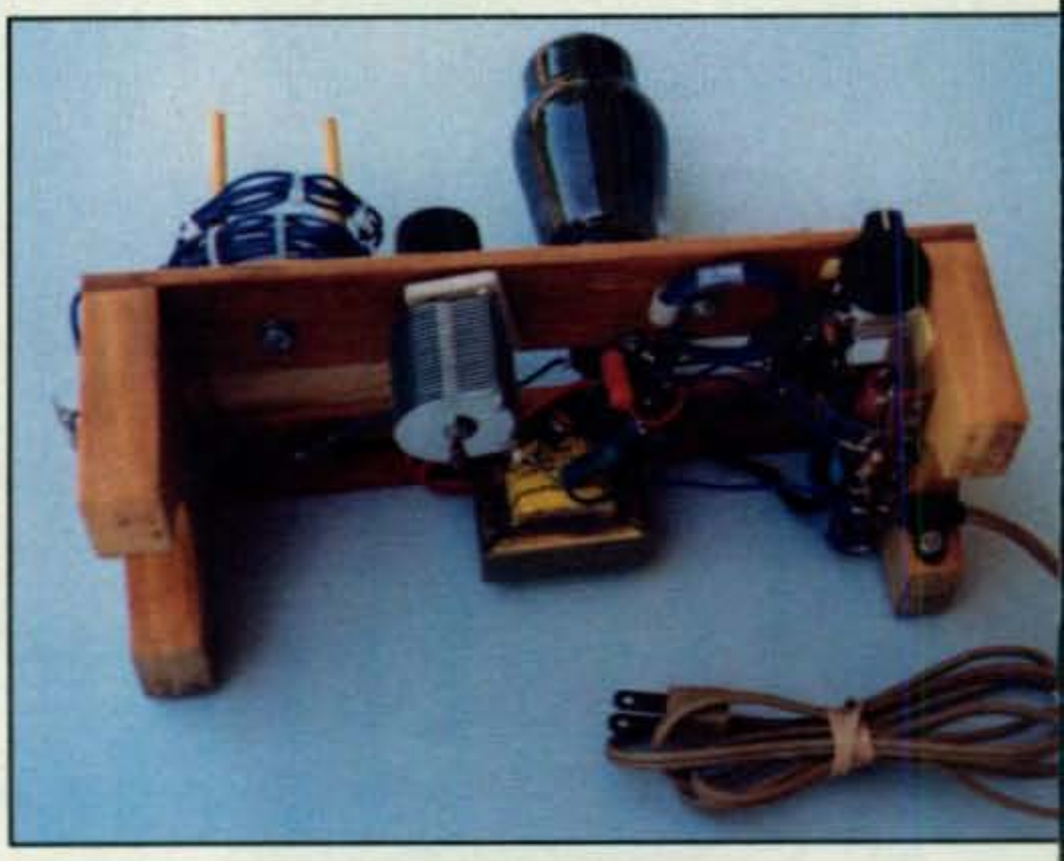


Photo B– Under-frame view of little 6L6 retro rig. This prototype is our test jig for checking various parts and circuit mods, so neatness is not its forte, but it works great. Power supply is tucked in right rear corner, VXO is in upper right, and filament transformer is in middle rear. Plate tuning capacitor (from MFJ) is in middle front.

*4941 Scenic View Drive, Birmingham, AL 35210
e-mail: <k4twj@cq-amateur-radio.com>

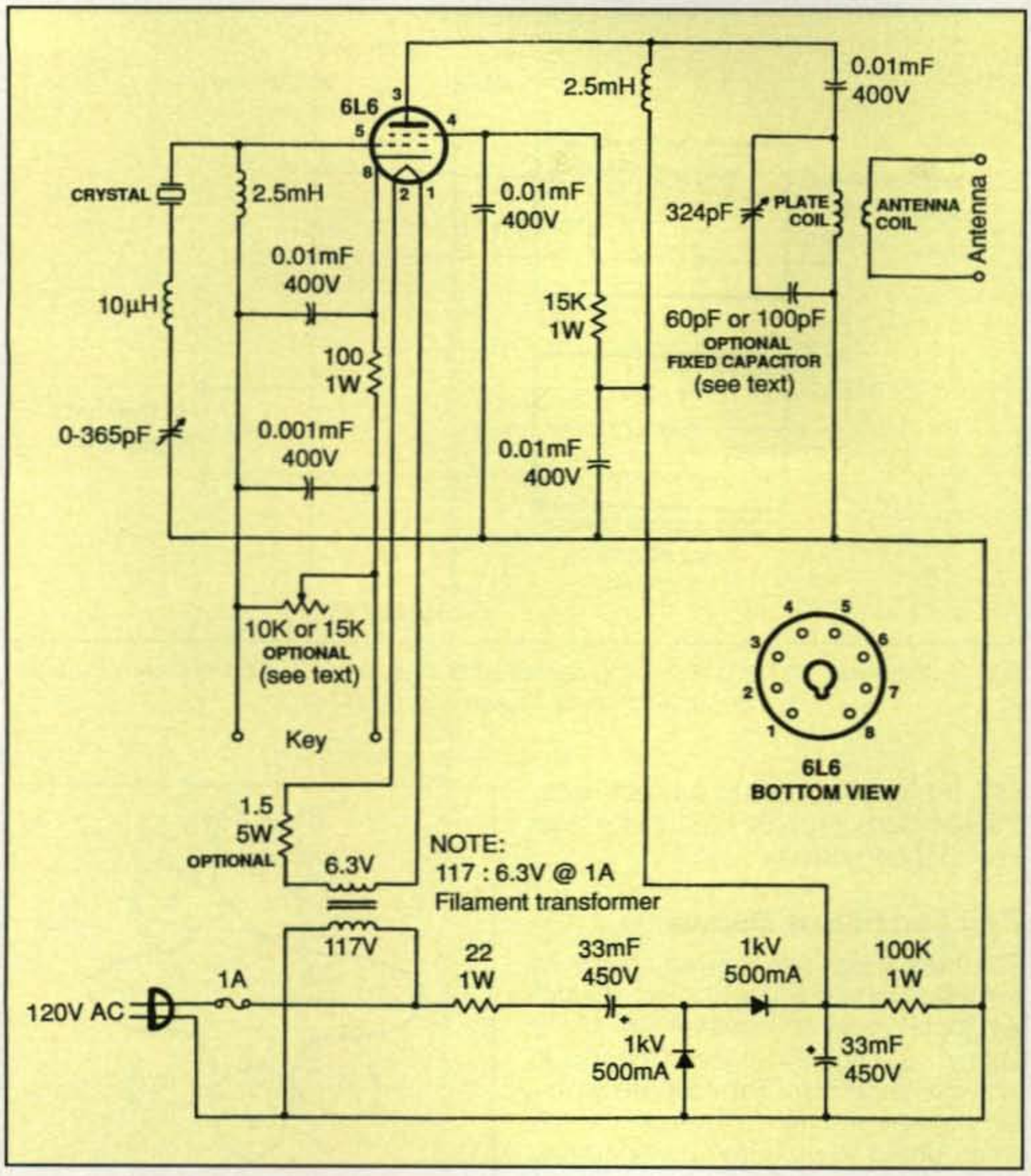
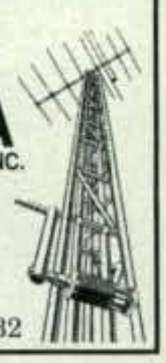


Fig. 1– Circuit diagram of our 2004-version 6L6 transmitter with power supply, VXO, and beat-frequency additions. All capacitors are 400 volt (or higher) rating—tubular style preferred, polyester film-type disc acceptable (except for electrolytics in power supply).

or <www.mouser.com>) and a small 365-pF trimmer capacitor (such as item number C-V365 from Antique Electronic Supply, 480-820-5411 or <www.tubesandmore.com>). The combo shifts the transmitter's frequency 2 or 3 kHz on 40 meters and 6 or 7 kHz on 30 meters, depending on the crystal. Generally speaking, classic FT-243 type crystals look the most authentic (every 6L6 rig needs one just for "class") but shift the least, while modern "HC," or can-type, crystals shift the most. I have some HC crystals, and Brian Carling (117 Sterling Pine St., Sanford, FL 32773, or <www.af4k.com>) has some FT-243 crystals.

This rig's power supply is a basic voltage doubler comprised of two diodes, two fairly large-value filter capacitors, and two resistors. Output is approximately 310 volts no load and 280 volts keydown, which is pleasantly conservative for a sweet little 6L6. The tube's filament is powered from a small 6-volt, 1-amp transformer. I selected this low-current transformer (and also added a 1.5-ohm, 5-watt resistor in series with its secondary winding) for filament inrush current protection. In my opinion, original "new old stock" tubes need TLC, and expensive new tubes benefit from a little help for the longest possible life.

The two most expensive components in this transmitter are the 6L6 tube and its plate tuning capacitor. Fortunately (and hopefully!), most amateurs have one (or both!) of these items in their proverbial junk box or can bargain for them at a hamfest flea market. If not, suitable 324-pF tuning capacitors are available from MFJ Enterprises (item number 282-2006; telephone 1-800-



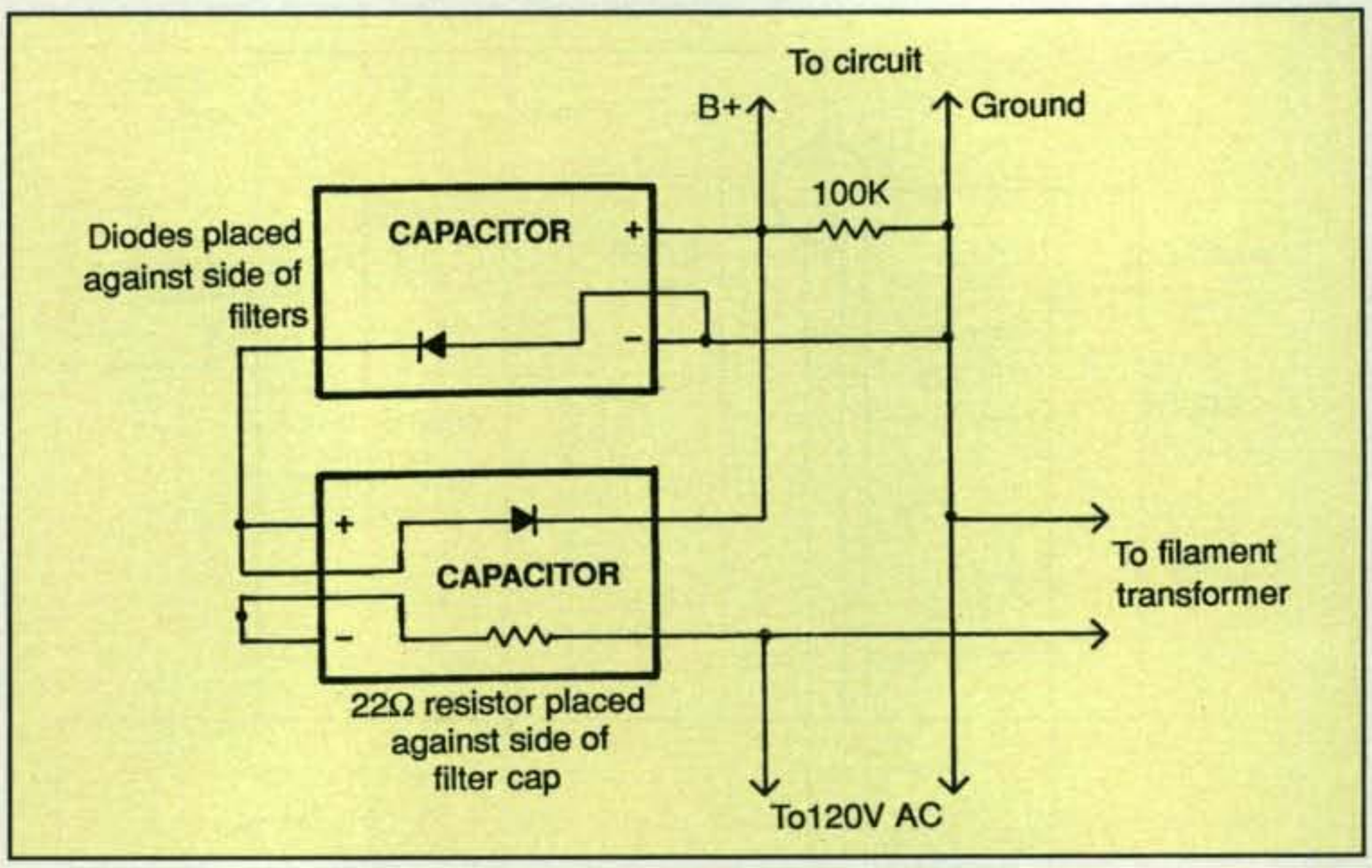


Fig. 2– General space-conserving layout of diodes and PC-board-mounted filter capacitors used in power supply.

647-1800), and 6L6s are available from ESRC1 Corp. (407-826-5808 or e-mail <esrc1@aol.com>).

Coil and Frame Details

The transmitter's plate and antenna coils are made by weaving #18 solid, insulated "hookup wire" between seven "8 penny" nails equally spaced around a 2-inch diameter circle. The nails are driven all the way through a 1/4- or 1/2-inch wood board to produce a winding jig. Wind one end of the wire once around the first nail, and then weave it between adjacent nails as shown in fig. 3. With seven nails, weave alternate "over and under" with each turn. When the winding is completed, secure the coil with heavy string at its seven crossover points, and then remove it from the winding jig and mount it on the transmitter's coil support form. The form is simply three or four 1/8-inch wood dowels positioned to mate with coil openings and glued to the wood frame. The coils are 20 turns/plate and

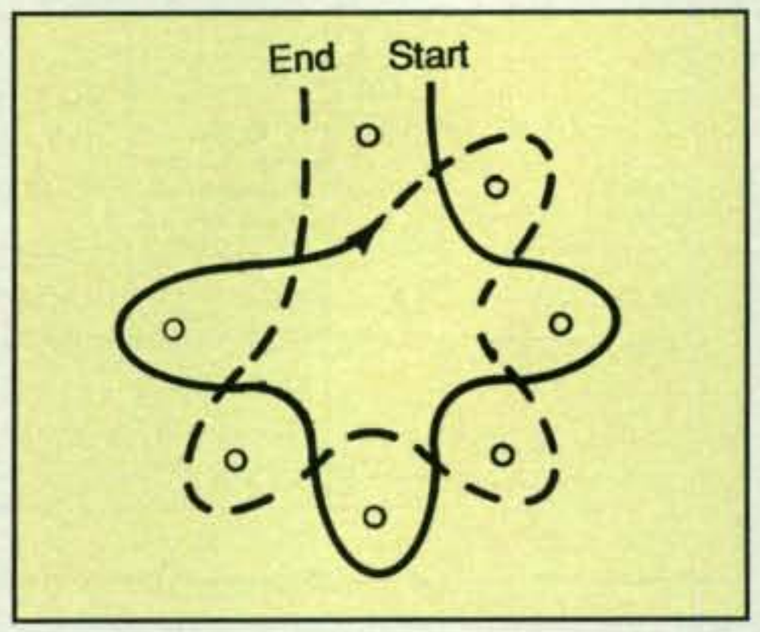


Fig. 3– Outline for winding the basket-weave coils for this transmitter. (Discussion in text.)

14 turns/antenna for 80 meters, 13 turns/plate and 6 turns/antenna for 40 meters, and 11 turns/plate and 6 turns/antenna for 30 meters. The tri-tet's cathode coil is 5 turns (of the same wire) wound with a 1 1/4 inch diameter.

The wood frame consists of two 10" × 1 3/4" wood slats 1/4-inch thick and two 4 1/2" × 2 1/2" × 3/4" thick end pieces. The slats are positioned approximately 1 1/16 inch apart—just enough to permit mounting the two tube sockets between them. The coil support form is three or four (your choice) 1/8-inch wood dowels glued to the slats (mine includes a round 3 1/2-diameter wood base for extra "flash"; it was made by Walk Bullerwell, KE4YJQ). Coat the wood with Minwax® in a tint of your preference for maximum glamour. The tube socket should be positioned so its pin 3 (the plate pin) faces the coil and pin 5 (the control-grid pin) faces the crystal socket to avoid

The Safety Angle

Some critics may raise an eyebrow at this transmitter's use of a transformerless 300-volt power supply (and an isolation transformer can always be added if desired). I chose "reverse isolation," however, by using link-coupled output and a plastic-case-enclosed key/bug. Using this approach, the only way to get fried—err . . . shocked—is by putting your fingers in or under the wood frame when the rig is plugged into an AC outlet. *Keep your hands clear of circuit wires when the transmitter is plugged into an AC outlet and unplug it when it's not in operation, ere ye get zapped!*

Magic Tuning Wand

Bargraphs, LCD panels, and analog meters are good tuning aids, but nothing beats the genuine old-time glitz and glamour of tuning a transmitter by the (RF-ionized) light from a neon lamp. Here a 4-watt, 4-inch-long neon tube obtained at Wal-Mart is simply placed beside the plate coil and the tuning capacitor is adjusted for maximum brightness at keydown. The neon does not reduce output or increase SWR. It can be left in place during QSOs, and it produces a cool light show reflecting off the tube, coil, and wall in a dim room.

overlapping wires. The VXO tuning capacitor mounts with double-sided tape to the frame's right front corner. The power supply/filter capacitors mount in the rear area, and the filament transformer mounts near the middle.

Tuning and Operation

After assembly, double-check your work for errors (and the key to success here is looking for something wrong rather than something right). Next connect a key, SWR/wattmeter, and antenna, and connect the transmitter's AC plug. After the tube has warmed up for three or four minutes, briefly close the key and tune the plate capacitor for the highest output consistent with the cleanest signal (as monitored on a communications-grade receiver without an antenna connected to it). No signal heard? Measure current across the key. Zero ma indicates an open circuit—probably an omitted wire or connection. A current of 60 or 70 ma is around normal. Still no luck?

Parts Packs

The 1950s were a glamorous era in amateur radio, and I want to help every amateur to experience or relive that memorable time. Thus, I am putting together parts packs containing most of the 6L6 retro rig's components except for the "big items," such as the tube, plate tuning capacitor, and knobs (which you probably have on-hand). Parts packs (less previously mentioned items) are $39.95 plus $5.75 postage. Order directly from Dave Ingram, K4TWJ, 4941 Scenic View Dr., Birmingham, AL 35210. Specify desired crystal frequency: 7.040, 10.106, or 14.060 MHz. Partial packs are also available. Telephone Dave at 205-951-0162 for details. I plan to move in early 2005, so if you read this after December 2004, check the latest issue of *CQ* for my new address.

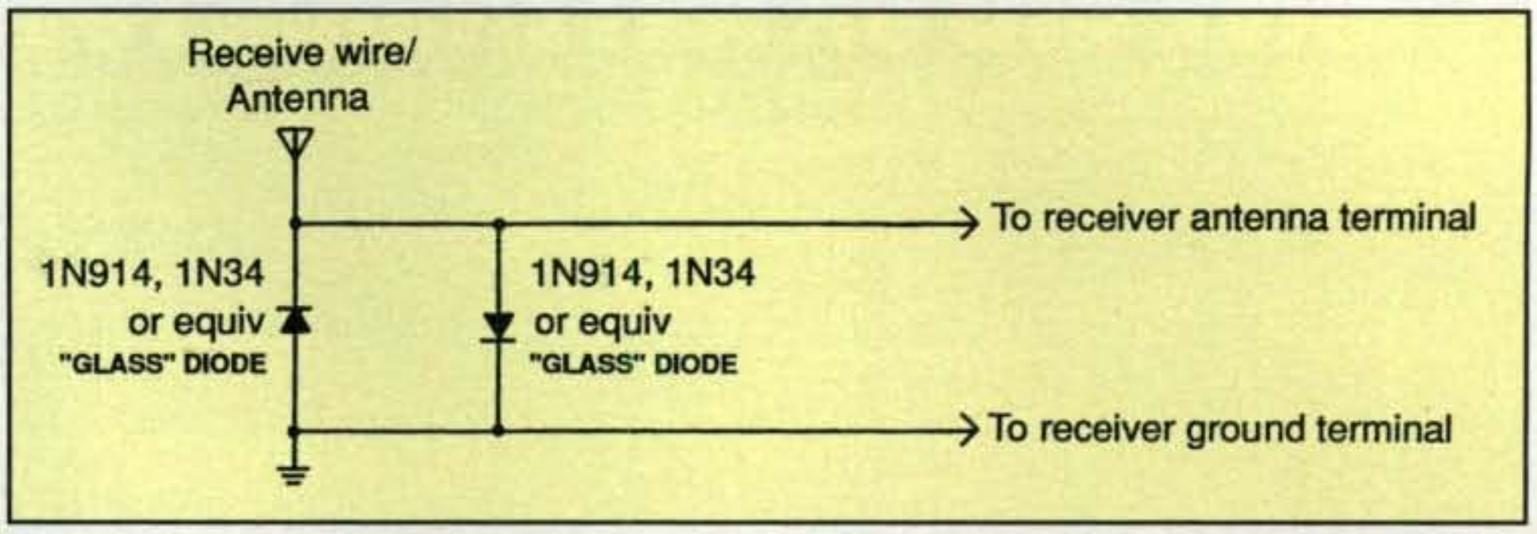


Fig. 4– Outline of "back-to-back"-connected diodes for receiver RF input protection as discussed in text.

Reposition the antenna coil higher above the plate coil, as overcoupling may be inhibiting oscillation. Still no luck? Add or subtract two turns on the plate coil. Are you using a makeshift tuning capacitor, probably of unknown capacitance? If you suspect it is too large, consider adding a fixed capacitor of 60 or 100 pF in series with it to reduce total capacitance. *Be sure the rig's AC cord is unplugged and filter capacitors are discharged before dinking with its circuitry.* High voltage is dangerous!

Finished? Now concentrate on the beat-frequency mod. First connect a 10K- or 15K-ohm potentiometer in parallel with the key terminals. Then while listening to the transmitter's frequency on your receiver, adjust the potentiometer for a very weak signal. Next, and while listening to incoming signals close to your transmit frequency, switch the receiver to AM mode and tune them in using the transmitter's VXO. Readjust the potentiometer as necessary to produce a good incoming signal vs. beat frequency mix, and then measure its value and replace it with a fixed-value resistor. The AM bandwidth of most receivers is between 4 and 6 kHz, which is also the VXO's range, so receiver retuning is not necessary.

Remember to use separate transmit and receive antennas and protect the receiver from overloading during transmit. I use two IN914 diodes (IN34s are also acceptable) connected "back to back," as shown in fig. 4, to limit/clamp RF input at 0.3 volt. You may prefer to fully disconnect or switch off the receive antenna when transmitting (yes, the VXO/beat oscillator's signal is well below 0.3 volts so it slips by the diodes, but the full transmit signal is clamped by the diodes). As an alternative, you may elect to use your receiver's BFO for separate rather than slaved tuning. In that case, just add a switch to the resistor across the key and use it for transmit frequency spotting—a "zero" switch.

Now lean back and congratulate yourself on completing a homebrew project of the best kind. Connect a monoband dipole or delta loop (to minimize radiation of harmonics), and hit your band of choice with a real RF-pumping ham rig! I will be listening for you on 30 meters week nights.

73, Dave, K4TWJ

SAVE BIG ON ANTENNAS, TOWERS & CABLE

TELESCOPING ALUMINUM TUBING

DRAWN 6063-T832

.375	$.70/ft	1.250"	$1.55/ft
.500"	$.80/ft	1.375"	$1.75/ft
.625"	$.90/ft	1.500"	$1.95/ft
.750"	$1.00/ft	1.625"	$2.25/ft
.875"	$1.10/ft	1.750"	$2.50/ft
1.000"	$1.20/ft	1.875"	$2.75/ft
1.125"	$1.35/ft	2.000"	$3.00/ft
		2.125"	$3.50/ft

IN 6' OR 12' LENGTHS. 6' LENGTHS SHIP UPS. CALL FOR 3/16" AND 1/4" ROD, BAR STOCK, AND EXTRUDED TUBING.

CUSHCRAFT ANTENNAS

13B2/A148-10S	$159/89
A270-6S/A270-10S	$79/99
A3S/A4S	$439/549
A50-3S/5S/6S	$99/169/269
A6270-13S	$199
AR2/ARX2B	$55/69
AR270/AR270B	$89/99
R6000/R8	$309/459
X7/X740	$649/269
XM240	$679

CALL FOR MORE CUSHCRAFT ITEMS.

FORCE 12–MULTIBAND

C3	10/12/15/17/20m, 7 el	$659
C3E	10/12/15/17/20m, 8 el	$699
C3S	10/12/15/17/20m, 6 el	$579
C3SS	10/12/15/17/20m, 6 el	$599
C4	10/12/15/17/20/40m, 8 el	$799
C4S	10/12/15/17/20/40m, 7 el	$719
C4SXL	10/12/15/17/20/40m, 8 el	$1019
C4XL	10/12/15/17/20/40m, 9 el	$1189
C19XR	10/15/20m, 11 el	$999
C31XR	10/15/20m, 14 el	$1389

CALL FOR MORE FORCE 12 ANTENNAS.

TRYLON "TITAN" TOWERS

SELF-SUPPORTING STEEL TOWERS

T200-64	64', 15 square feet	$1209
T200-72	72', 15 square feet	$1429
T200-80	80', 15 square feet	$1649
T200-88	88', 15 square feet	$1949
T200-96	96', 15 square feet	$2249
T300-88	88', 22 square feet	$2189
T400-80	80', 34 square feet	$2089
T500-72	72', 45 square feet	$1979
T600-64	64', 60 square feet	$1869

MANY MORE TRYLON TOWERS IN STOCK.

BENCHER / BUTTERNUT

Skyhawk, Triband Beam	$1129
HF2V, 2 Band Vertical	$249
HF5B, 5 Band Minibeam	$359
HF6VX, 6 Band Vertical	$339
HF9VX, 9 Band Vertical	$369
A1712, 12/17m Kit	$54
CPK, Counterpoise Kit	$129
RMKII, Roof Mount Kit	$159
STRII, Roof Radial Kit	$125
TBR160S, 160m Kit	$139

CALL FOR MORE BENCHER/BUTTERNUT.

M2 VHF/UHF ANTENNAS

144–148 MHZ

2M4/2M7/2M9	$95/109/129
2M12/2M5WL	$165/209
2M5-440XP, 2m/70cm	$179

420–450 MHz

440-470-5W/420-450-11	$139/95
432-9WL/432-13WLA	$179/239
440-18/440-21ATV	$129/149

SATELLITE ANTENNAS

2MCP14/2MCP22	$169/239
436CP30/436CP42UG	$239/279

ROHN TOWER

25G/45G/55G	$99/209/259
25AG2/3/4	$119/119/129
45AG2/4	$229/249
AS25G/AS455G	$49/109
BPC25G/45G/55G	$89/119/129
BPL25G/45G/55G	$99/129/149
GA25GD/45/55	$79/109/139
GAR30/GAS604	$39/29
SB25G/45/55	$49/109/129
TB3/TB4	$99/119

PLEASE CALL FOR MORE ROHN PRICES.

US TOWER

MA40/MA550	$1039/1599
MA770/MA850	$2619/4049
TMM433SS/HD	$1379/1669
TMM541SS	$1799
TX438/TX455	$1289/1789
TX472/TX489MDPL	$2929/7649
HDX538/HDX555	$1539/2679
HDX572MDPL	$6999

PLEASE CALL FOR HELP SELECTING A US TOWER FOR YOUR NEEDS. SHIPPED FACTORY DIRECT TO SAVE YOU MONEY!

COMET ANTENNAS

GP15, 6m/2m/70cm Vertical	$159
GP6, 2m/70cm Vertical	$149
GP9, 2m/70cm Vertical	$189
B10NMO, 2m/70cm Mobile	$39
SB14, 6m/2m/70cm Mobile	$59
SBB224NMO,2m/220/70cm	$69
SBB2NMO, 2m/70cm Mobile	$39
SBB5NMO, 2m/70cm Mobile	$55
SBB7NMO, 2m/70cm Mobile	$69
UHV4/UHV6	$109/149

MORE COMET ITEMS IN STOCK—CALL.

M2 ANTENNAS

50–54 MHZ

6M5X/6M7JHV	$209/269
6M2WLC/6M9KHW	$459/499

10/12/15/17/20M MONO

10M4DX, 4 Element 10m	$399
12M4DX, 4 Element 12m	$399
15M4DX, 4 Element 15m	$449
17M3DX, 3 Element 17m	$399
20M4DX, 4 Element 20m	$529

MORE M2 IN STOCK–PLEASE CALL.

GLEN MARTIN ENGINEERING

HAZER ELEVATORS FOR 25G

H2, Aluminum Hazer, 12 sq ft	$359
H3, Aluminum Hazer, 8 sq ft	$269
H4, HD Steel Hazer, 16 sq ft	$339

ALUMINUM ROOF TOWERS

RT424, 4 Foot, 6 sq ft	$159
RT832, 8 Foot, 8 sq ft	$239
RT936, 9 Foot, 18 sq ft	$389
RT1832, 17 Foot, 12 sq ft	$519
RT2632, 26 Foot, 9 sq ft	$869

UNIVERSAL ALUMINUM TOWERS

4-40'/50'/60'	$539/769/1089
7-50'/60'/70'	$979/1429/1869
9-40'/50'/60'	$759/1089/1529
12-30'/40'	$579/899
15-40'/50'	$1019/1449
23-30'/40'	$899/1339
35-40'	$1569

BOLD IN PART NUMBER SHOWS WIND LOAD CAPACITY. PLEASE CALL FOR MORE UNIVERSAL MODELS. SHIPPED DIRECT TO YOU TO SAVE YOU MONEY.

DIAMOND ANTENNAS

D130J/DPGH62	$79/139
F22A/F23A	$89/119
NR72BNMO/NR73BNMO	$39/54
NR770HBNMO/NR770RA	$55/49
X200A, 2m/70cm Vertical	$129
X500HNA/X700HNA	$229/369
X510MA/510NA	$189/189
X50A/V2000A	$99/149
CR627B/SG2000HD	$99/79
SG7500NMO/SG7900A	$75/112

MORE DIAMOND ANTENNAS IN STOCK.

MFJ

259B, Antenna Analyzer	$219
269, Antenna Analyzer	$299
941E, Antenna Tuner	$109
945E, Antenna Tuner	$99
949E, Antenna Tuner	$139
969, Antenna Tuner	$169
986, Antenna Tuner	$289
989C, Antenna Tuner	$309
1798, 80–2m Vertical	$249
1796, 40/20/15/10/6/2m Vert	$199

BIG MFJ INVENTORY— PLEASE CALL.

COAX CABLE

RG-213/U, (#8267 Equiv.)	$.36/ft
RG-8X, Mini RG-8 Foam	$.19/ft
RG-213/U Jumpers	Please Call
RG-8X Jumpers	Please Call

CALL FOR MORE COAX/CONNECTORS.

TIMES MICROWAVE LMR® COAX

LMR-400	$.59/ft
LMR-400 Ultraflex	$.89/ft
LMR-600	$1.19/ft
LMR600 Ultraflex	$1.95/ft

TOWER HARDWARE

3/8"EE / EJ Turnbuckle	$11/12
1/2"x9"EE / EJ Turnbuckle	$18/19
1/2"x12"EE / EJ Turnbuckle	$21/22
3/16" / 1/4" Big Grips	$5/6

PLEASE CALL FOR MORE HARDWARE.

HIGH CARBON STEEL MASTS

5 FT x .12" / 5 FT x .18"	$35/59
10 FT x .18" / 11 FT x .12"	$129/80
16 FT x .18" / 14 FT x .12"	$179/109
19 FT x .12" / 21 FT x .18"	$129/235
22 FT x .25" / 24 FT x .25"	$349/379

GAP ANTENNAS

Challenger DX	$289
Challenger Counterpoise	$29
Challenger Guy Kit	$19
Eagle DX	$299
Eagle Guy Kit	$29
Titan DX	$329
Titan Guy Kit	$29
Voyager DX	$409
Voyager Counterpoise	$49
Voyager Guy Kit	$45

PLEASE CALL FOR DELIVERY INFO.

LAKEVIEW HAMSTICKS

9106	6m	9115	15m	9130	30m
9110	10m	9117	17m	9140	40m
9112	12m	9120	20m	9175	75m

All handle 600W, 7' approximate length, 2:1 typical VSWR .$24.95

HUSTLER ANTENNAS

4BTV/5BTV/6BTV	$129/169/199
G6-270R, 2m/70cm Vertical	$169
G6-144B/G7-144B	$109/179

HUSTLER RESONATORS IN STOCK.

ANTENNA ROTATORS

M2 OR-2800P	$1249
Yaesu G-450A	$249
Yaesu G-800SA/DXA	$329/409
Yaesu G-1000DXA	$499
Yaesu G-2800SDX	$1089
Yaesu G-550/G-5500	$299/599

ROTATOR CABLE

R62 (#18)	$.32/ft.
R81/82	$.25/ft./.39/ft.
R84	$.85/ft

PHILLYSTRAN GUY CABLE

HPTG1200I	$.45/ft
HPTG2100I	$.59/ft
PLP2738 Big Grip (2100)	$6.00
HPTG4000I	$.89/ft
PLP2739 Big Grip (4000)	$8.50
HPTG6700I	$1.29/ft
PLP2755 Big Grip (6700)	$12.00
HPTG11200	$1.89/ft
PLP2758 Big Grip (11200)	$18.00

PLEASE CALL FOR HELP SELECTING THE PHILLYSTRAN SIZE FOR YOUR PROJECT.

WEEKDAY HOURS:
9 AM–5 PM CST

SATURDAY HOURS:
9 AM–12 NOON CST

CREDIT CARDS:
M/C, VISA, DISCOVER

TEXAS TOWERS

A Division of Texas RF Distributors, Inc. • 1108 Summit Avenue, Suite #4 • Plano, TX 75074

(800) 272-3467

LOCAL CALLS:
(972) 422-7306

EMAIL ADDRESS:
sales@texastowers.com

INTERNET ADDRESS:
www.texastowers.com

GREAT US TOWER CRANK-UP DEALS!

TX SERIES CRANK-UP TOWERS

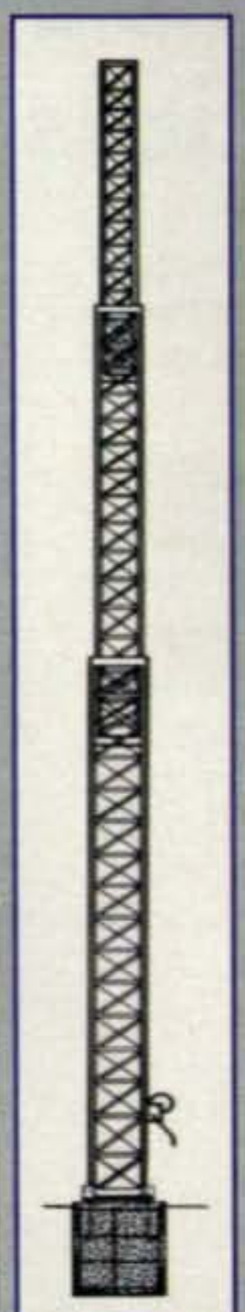
• Handles 35 square feet of antenna load at 50 MPH, 14.75 square feet at 70 MPH.

• All models supllied with hinged T-base, anchor bolts, hand winch (except motor drive models), top plate, and rotor plate.

• MDP & MDPL models include motor drive

• Options include coax arms, raising fixtures, masts, motor drives, and more!

Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!



TX SERIES HEAVY DUTY CRANK-UP TOWERS					
TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
TX-438	38'	21'6"	355	$1,523	$1,289
TX-455	55'	22'	670	$2,107	$1,789
TX-472	72'	22'8"	1040	$3,462	$2,929
TX-472MDP	72'	22'8"	1210	$5,571	$4,699
TX-489MDPL	89'	23'4"	1800	$9,034	$7,649

HDX SERIES CRANK-UP TOWERS

• Heavy duty, handles 44.7 square feet of antenna load at 50 MPH, 35 square feet at 70 MPH.

• All models supllied with hinged T-base, anchor bolts, hand winch (except motor drive models), top plate, and rotor plate.

• MDPL models include motor drive

• Options include coax arms, raising fixtures, masts, motor drives, and more!

Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!

HDX SERIES HEAVY DUTY CRANK-UP TOWERS					
TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
HDX-538	38'	21'6"	600	$1,807	$1,539
HDX-555	55'	22'	870	$3,162	$2,679
HDX-572MDPL	72'	22'8"	1600	$8,281	$6,999
HDX-589MDPL	89'	23'8"	2440	$10,841	$9,179
HDX-689MDPL	89'	23'8"	3450	$20,943	$17,699
HDX-5106MDPL	106'	24'8"	3700	$22,791	$19,299

MA SERIES CRANK-UP MASTS

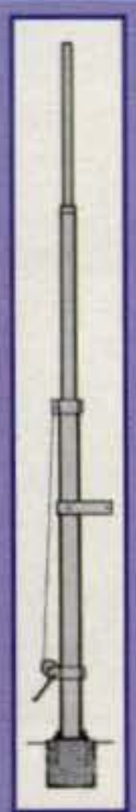
• Handles up to 22 square feet of antenna load. (See chart below)

• MDP models include motor drive.

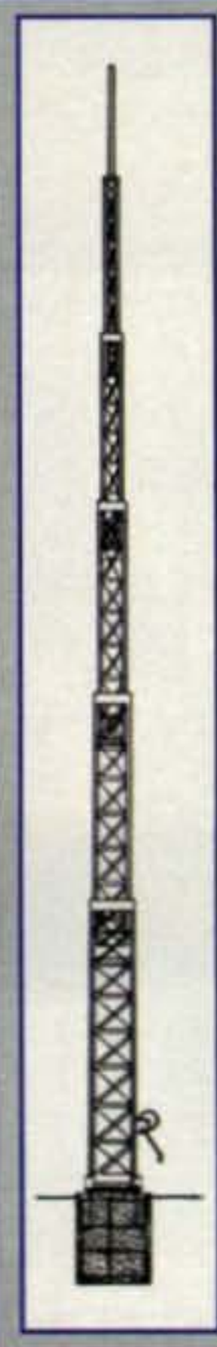
• All models supllied with anchor bolts, load-actuated hand winch, and house bracket.

• Options include coax arms, raising fixtures, motor drives, self-supporting and rotator bases, remote control panel, and more!

Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!



MA SERIES CRANK-UP MASTS							
MAST MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	50 MPH (sq. ft.)	70 MPH (sq. ft.)	LIST PRICE	SALE PRICE
MA-40	40'	21'6"	242	16.5	6.8	$1,209	$1,039
MA-550	55'	22'1"	435	22	9	$1,875	$1,599
MA-550MDP	55'	22'1"	620	22	9	$3,584	$2,999
MA-770	71'	22'10"	645	15.5	5.5	$3,091	$2,619
MA-770MDP	71'	22'10"	830	15.5	5.5	$4,890	$4,129
MA-850MDP	85'	23'6"	1128	15.3	6.3	$6,591	$5,549



TMM SERIES COMPACT CRANK-UP TOWERS

• Handles 20 square feet of antenna load at 50 MPH, 8 square feet at 70 MPH.

• Compact design is great for areas with tower restrictions, or where a less intrusive installation is desirable.

• All models supllied with hinged T-base, anchor bolts, load-actuated hand winch, 8' steel mast, top plate, and rotor plate.

• Options include coax arms, raising fixtures, motor drives, thrust bearing, remote control panel, and more!

Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!

TMM SERIES COMPACT CRANK-UP TOWERS					
TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
TMM-433SS	33'	11'4"	315	$1,626	$1,379
TMM-433HD	33'	11'4"	400	$1,970	$1,669
TMM-541SS	41'	12'	430	$2,135	$1,799

WEEKDAY HOURS:
9 AM–5 PM CST

SATURDAY HOURS:
9 AM–12 NOON CST

CREDIT CARDS:
M/C, VISA, DISCOVER

TEXAS TOWERS

A Division of Texas RF Distributors, Inc. • 1108 Summit Avenue, Suite #4 • Plano, TX 75074

(800) 272-3467

LOCAL CALLS:
(972) 422-7306

EMAIL ADDRESS:
sales@texastowers.com

INTERNET ADDRESS:
www.texastowers.com

washington readout

BY FREDERICK O. MAIA,* W5YI

VECs Hold Annual Conference with FCC Officials

Ham radio growth, the future direction of amateur radio question pools, and a possible new entry-level license class were among the major topics of discussion at July's annual meeting of the National Conference of Volunteer Examiner Coordinators (NCVEC).

VECs act as the links between the volunteer examiner (VE) community and the FCC. Their function is to approve volunteer examiners and to provide testing guidance, license examination materials, and electronic filing of license applications for their accredited VE teams. In addition, the VECs' Question Pool Committee (QPC) is responsible for developing and maintaining the various questions used in all amateur radio examinations, as required by Section 97.523 of the FCC's Amateur Service rules.

The VEC System consists of 14 VEC organizations which oversee the activities of an estimated 3000 VE teams and some 35,000 accredited VEs. The VECs meet annually with one another and with FCC staff to discuss and agree on Amateur Service examination and licensing issues, and 11 VEC organizations were represented at the 2004 gathering. The Anchorage (Alaska), ARRL (Connecticut), GEARS (California), GLAARG (California), Laurel (Maryland), MRAC (Wisconsin), SANDARC (California), Sunnyvale (California), WCARS (Tennessee), W4VEC (North Carolina), and W5YI-VEC (Texas) groups represented more than 98% of all examinations administered in the Amateur Service. Not in attendance were delegations from the CAVEC (Alabama), Jefferson (Louisiana), and MO-KAN (Kansas) VECs.

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

Committee Reports

The bulk of the conference was taken up by committee reports, most of which simply brought the group up to date on activities since their 2003 meeting. For example, VEC Instructions Committee Chairman Michele Cimbala, WK3X, went over all of the revisions and additions to the VEC Instructions. In the interest of uniformity, the VECs maintain a common set of non-binding "instructions" that act as standardized guidelines for each VEC in the administration of their organization. John Johnston, W3BE, of the Laurel VEC—and

NCVEC Chairman Tom Fuszard, KF9PU, of the Milwaukee ARC VEC, addresses the meeting of the National Conference of Volunteer Examiner Coordinators. To his right is NCVEC Vice Chairman and new Question Pool Committee Chairman Jim Wiley, KL7CC. On Tom's left is "Washington Readout" editor Fred Maia, W5YI. (Photo by Bob Zimmerman, KB3IWD)

an ex-FCC staffer—gave a talk on how these instructions were passed from the FCC to the VECs.

It was agreed that the current 15-month retention period for VEC examination records as specified in the rules was adequate ... although some VECs retain records for three years before discarding them.

VEC Petitions for Rulemaking

Your columnist, as chairman of the VEC Rules Committee, reported that it was a busy year for the VECs with two Petitions for Rulemaking submitted and formal comments being filed on a wide-ranging FCC *"omnibus"* proposal—WT Docket 04-140, which addressed 12 amateur radio petitions.

The last VEC Conference was held last year on July 25, 2003, right after the ITU's 2003 World Radio Conference. The countries of the world at that conference agreed to make major changes to Article 25 of the Radio Regulations, which contain the international guidelines for amateur radio.

The most publicized change was that effective July 5, 2003, it would be optional for a country's amateur radio operators to demonstrate Morse code proficiency before being permitted to operate HF. Almost immediately, countries around the world began dropping the code requirement. Many were able to do so administratively by just changing their rules. However, is not quite that easy here in the United States, where our laws mandate that the public must be involved in the rulemaking process.

At last year's VEC Conference, the VECs voted to petition the FCC to eliminate the Element 1 Morse code exam requirements. That petition was developed and filed with the Commission during early August 2003. The nine-page petition calls on the FCC to delete Element 1 and to immediately give "Tech Plus" privileges to current Technician licensees (for details on the NCVEC proposal, see last October's "Washington Readout" and an "Op-Ed" in the December 2003 *CQ*).

In late August 2003, the FCC combined the NCVEC petition with several other Morse-code-related petitions that were filed during July 2003 and invited preliminary comment from the public. These petitions, designated RM-10781 through RM-10787, garnered more than 2500 comments. They are now part of a larger batch of 18 "World Radio Conference-Related" petitions which the FCC will incorporate into a single proceeding. It is unknown exactly when a Notice of Proposed Rule Making will be issued, but when that happens, the comment process will begin all over again.

Also at the 2003 VEC Conference there was a discussion on the need for a new entry-level amateur radio license which the VECs wanted called the Communicator Class. There was a general feeling that the current entry-level license, the Technician, was too difficult for youngsters and – from an RF-safety standpoint—the 1500-watt power level too high for beginners. A 20-question examination was suggested.

After much discussion, a motion was made and adopted for a drafting committee to be formed to develop a proposal for a new entry level amateur radio class with minimal requirements.

The committee worked on the proposal during the fall of last year, the principal author being Jim Wiley, KL7CC, of the Anchorage VEC group. The objective was to come up with an entry-level proposal that would appeal to the majority of the VECs ... and the amateur radio community in general. It took some three months to complete the VECs' entry-level Communicator Class proposal. Details are in the "Washington Readout" column in the June 2004 issue of *CQ*.

During mid-April 2004 the FCC adopted a Notice of Proposed Rulemaking addressing 12 old petitions. The massive (71-page) Notice of Proposed Rule Making in WT Docket 04-140 included several proposals for rule changes in the Amateur Service. It did not address any of the 18 petitions requesting to change the current code test requirements or restructure license classes.

One of the FCC proposals in this docket was to adopt the ARRL's two-year-old "Novice refarming" petition which the FCC said it believed "... provided a basis for a comprehensive restructuring of operating privileges." Basically this proposal redistributed Novice spectrum to other license classes.

Even though the ARRL's March 18th (RM-10867) petition for a new entry-level license is not considered a part of WT Docket 04-140, it proposed the same frequency restructuring as previously put forth in the 2002 "Novice Refarming" (RM-10413) petition.

It thus appeared to the VECs that the Commission intends to consider restructuring the Amateur Service and transferring exclusive CW/data subbands to voice spectrum as part of WT Docket No. 04-140 rather than wait until it considers the 18 remaining WRC-2003 Petitions for Rulemaking (including the ARRL and NCVEC proposals for a new entry-level license).

On that basis, the VECs asked the FCC to consider the NCVEC's proposed entry-level frequencies and wider voice subbands for the General and Extra Class now, rather than waiting until the WRC-03 petitions are addressed.

Of specific interest to the VE/VEC community were paragraphs 91 through 93 of WT Docket No. 04-140. This section covered "Qualifying Examination System Rules."

In paragraph 91, the FCC proposed to eliminate the requirement for a public announcement of VE team test locations and exam times. Paragraph 92

proposed to change the wording of Section 97.505 (which covers examination credit), since there are now no unexpired Technician Class licenses granted before February 14, 1991.

The NCVEC suggested that the wording concerning expired licenses be amended to grant examination credit to examinees who provide "Evidence of having held ..." a specific FCC-issued license rather than a copy of the expired license itself. This would bring the rules in line with current practice, since all VECs currently grant exam credit based on older licensee databases and entries in previous callbooks.

The VECs also suggested that Element 1 (code) credit be granted to examinees who provide "Evidence of having held a now expired FCC-issued General or Advanced Class license." Current rules provide for granting code credit to applicants who have held a Novice or old Technician license, but unfairly, not to General or Advanced Class radio amateurs who have never held these licenses.

Paragraph 93 proposed to eliminate the mandated ten-day time during which VEs and VECs must submit or forward applications. The NCVEC agreed with the FCC proposed changes.

The VECs requested a rule change on how a 5 words-per-minute code test is constructed. Current rules require using all 43 possible characters in an examination. It was suggested that future code test use "most" rather than "all" characters.

Question Pool Committee

In the absence of Question Pool Committee Chairman Scotty Neustadter, W4WW, ARRL's Bart Jahnke, W9JJ, presented the Question Pool Committee report. He mentioned that a new Element 3 (General Class) question pool was implemented on July 1, 2004.

The Element 4 (Extra Class) question pool is the next to be revised, and public input on the syllabus has already been solicited. All question pools will be posted to the new NCVEC.org web page.

The planned release dates of future revisions to the question pools are:

Element 4 (Extra)—December 1, 2005

Element 3 (General)—December 1, 2006

Element 2 (Technician)—December 1, 2007.

Jahnke noted, however, that the Element 4 review may have to be postponed if the FCC adopts a new entry-level license. A starting draft of a new "beginners" syllabus was presented at the VEC Conference; a 20- to 25-question exam will result in a total question pool of about 220 to 275 questions.

It was also mentioned that adoption of the FCC proposals in WT 04-140 and the upcoming restructuring/entry-level petitions will dramatically impact the VEC question pools and may require major revisions to all question pools.

R. C. Smith, W6RZA, of the Greater Los Angeles Amateur Radio Group VEC, gave a presentation in which he related amateur radio growth to implementation of new question pools. He pointed out that the QPC has a profound impact on the state of ham radio and the QPC efforts of the past—especially at the beginning level—were not working. He said the complexity and size of past entry-level question pools have had a negative impact on amateur radio. His charts and data gleaned from FCC licensing records showed a steady decline in newcomers to ham radio which began exactly when the most recent Technician Class pool was released in 2003.

"We have somehow shot ourselves in the foot," Smith later told *CQ*. "Somehow, the questions are perceived to be too difficult ... Whether they are more difficult or not doesn't matter; the perception does." Smith added that in his view, "There are too many questions (in the pool) and they are not tailored to the people we're trying to reach."

A suggestion was made that the VECs should give their QPC guidance by establishing the minimum and maximum number of questions in each pool and the accompanying degree of difficulty. For example, the beginning license questions could be slanted toward junior high school students and the General Class aimed at high school level comprehension. The Extra Class would be adult level.

After hearing Smith's report, the VECs elected to change the membership of the Question Pool Committee for the coming year. Jim Wiley, KL7CC, of the Anchorage Amateur Radio Club VEC, was voted in as Chairman, along with members Bart Jahnke, W9JJ, from the ARRL-VEC, and Larry Pollock, NB5X, representing W5YI-VEC.

Wiley later told *CQ* he agrees with the recommendation to reword many of the current questions. "I think the language is too hard, not the questions," he explained. "I think it's too high a reading level, too high a math level," adding that he believes it's possible to test for the same knowledge with questions that are easier for young people in particular to understand. *(Look for an interview with the new QPC Chairman in an upcoming issue of* CQ.*—ed.)*

On the topic of young people, Mark Spencer, WA8SME, of the ARRL's Amateur Radio Education and Technology Program (ETP)—otherwise known as the "Big Project"—discussed youth initiatives, instruction, motivating teachers and schools, and related ETP activities. The program covers not only amateur radio, but also robotics, wireless communications, and space exploration.

FCC Presentations

Bill Cross, W3TN, of the FCC's Wireless Telecommunications Bureau, acted as moderator for the FCC presentations. He and the FCC staff responded to several questions from the VECs. He told the VECs that the Commission—with help from some law-school interns—is reviewing the approximately 6000 comments filed on the 18 petitions addressing the Morse code as an exam element and amateur radio restructuring. Due to the volume of comments that must be reviewed, a Notice of Proposed Rulemaking on restructuring or the Morse code issue is still some time into the future, but it was suggested that it might be possible to release an NPRM by the end of this year and to have a new entry-level license in place by next fall.

The Enforcement Bureau's Riley Hollingsworth, K4ZDH, emphasized that enforcement of Amateur Service rules is now, and will continue to be, a permanent part of the FCC's enforcement effort. He said VEs and VECs have certain responsibilities to verify applicant data and mentioned that in some past cases, "VEC management was asleep at the wheel." Hollingsworth concluded by saying that he expects the VECs to "add integrity to the process" and be vigilant to avoid future embarrassments and problems.

R.C. Smith, W6RZA, Chairman of the Greater Los Angeles Amateur Radio Group VEC, wanted legally binding wording in Part 97 requiring VEs to certify that they obeyed the rules while giving an exam. However, the group took no action on the request.

Looking Ahead

By the time the NCVEC holds its 2005 meeting next July, we could once again be looking at a greatly restructured Amateur Radio Service—with the possibility of a new entry-level license on the way, HF voice privileges for entry-level hams, and a new focus on tailoring the language of exam questions to their "target" population. 73, Fred, W5YI

ASTRON CORPORATION
9 Autry Irvine, CA 92618
(949) 458-7277 • (949) 458-0826
www.astroncorp.com

E151765 E151765

...POWER ON WITH ASTRON

SWITCHING POWER SUPPLIES...

MODEL SS-10TK

MODEL SS-12IF

SPECIAL FEATURES:

- HIGH EFFICIENCY SWITCHING TECHNOLOGY SPECIFICALLY FILTERED FOR USE WITH COMMUNICATIONS EQUIPMENT, FOR ALL FREQUENCIES INCLUDING HF
- HEAVY DUTY DESIGN
- LOW PROFILE, LIGHT WEIGHT PACKAGE
- EMI FILTER
- MEETS FCC CLASS B

PROTECTION FEATURES:

- CURRENT LIMITING
- OVERVOLTAGE PROTECTION
- FUSE PROTECTION.
- OVER TEMPERATURE SHUTDOWN

SPECIFICATIONS:

INPUT VOLTAGE: 115 VAC 50/60HZ
OR 220 VAC 50/60HZ
SWITCH SELECTABLE

OUTPUT VOLTAGE: 13.8VDC

AVAILABLE WITH THE FOLLOWING APPROVALS: UL, CUL, CE, TUV.

MODEL SS-18

DESKTOP SWITCHING POWER SUPPLIES

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SS-10	7	10	1⅛ x 6 x 9	3.2
SS-12	10	12	1⅛ x 6 x 9	3.4
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	3¾ x 7 x 9⅝	5.0

MODEL SS-25M

DESKTOP SWITCHING POWER SUPPLIES WITH VOLT AND AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SS-25M*	20	25	2⅞ x 7 x 9⅝	4.2
SS-30M*	25	30	3¾ x 7 x 9⅝	5.0

MODEL SRM-30

RACKMOUNT SWITCHING POWER SUPPLIES

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

CUSTOM POWER SUPPLIES FOR RADIOS BELOW

EF JOHNSON AVENGER GX-MC41
EF JOHNSON AVENGER GX-MC42
EF JOHNSON GT-ML81
EF JOHNSON GT-ML83
EF JOHNSON 9800 SERIES
GE MARC SERIES
GE MONOGRAM SERIES & MAXON SM-4000 SERIES
ICOM IC-F11020 & IC-F2020
KENWOOD TK760, 762, 840, 860, 940, 941
KENWOOD TK760H, 762H
MOTOROLA LOW POWER SM50, SM120, & GTX
MOTOROLA HIGH POWER SM50, SM120, & GTX
MOTOROLA RADIUS & GM 300
MOTOROLA RADIUS & GM 300
MOTOROLA RADIUS & GM 300
UNIDEN SMH1525, SMU4525
VERTEX — FTL-1011, FT-1011, FT-2011, FT-7011

NEW SWITCHING MODELS

SS-10GX, SS-12GX
SS-18GX
SS-12EFJ
SS-18EFJ
SS-10-EFJ-98, SS-12-EFJ-98, SS-18-EFJ-98
SS-12MC
SS-10MG, SS-12MG
SS-101F, SS-121F
SS-10TK
SS-12TK OR SS-18TK
SS-10SM/GTX
SS-10SM/GTX, SS-12SM/GTX, SS-18SM/GTX
SS-10RA
SS-12RA
SS-18RA
SS-10SMU, SS-12SMU, SS-18SMU
SS-10V, SS-12V, SS-18V

CIRCLE 134 ON READER SERVICE CARD

*ICS – Intermittent Communication Service

public service

BY BOB JOSUWEIT,* WA3PZO

A Better Prepared Amateur Radio Response

Have you been listening to or reading the comments of the homeland security and emergency management leadership? Have you heard their remarks and thought about how they apply to amateur radio? This month we'll take a look at a few of the puzzle pieces and see if we're getting the message.

Preparation and Preparedness

For decades the Federal Emergency Management Agency has been responsible for preparing and responding to disasters. FEMA has now been integrated into the Department of Homeland Security as the department's Emergency Preparedness and Response Directorate, under the day-to-day direction of Chief Operating Officer Ron Castleman and Undersecretary Mike Brown, who often speaks on the topics of preparation and preparedness.

Over the summer, Secretary of Homeland Security Tom Ridge spoke at a Public Preparedness Symposium. In his speech, he discussed a tabletop exercise in which he and 25 governors participated. According to Ridge, the exercise pointed out that in many cases you do not have all of the information that you would like to have, but "you have to do something. You can't wait until you have it all."

Ridge continued, "You can't secure the country from Washington, DC. You need partners all around the country in order to make it safer and more secure … Homeland security must be a priority in every home, every city, every neighborhood across America."

"Our goal is to achieve seamless protection, a nation knit tightly together by shared vigilance, readiness, and communication," said Ridge. "Vigilance, readiness, and communication. And nowhere is this more important than in the area of emergency preparedness."

"No government entity, no organization, no information expert can replace individual responsibility. Citizens must choose to take actions," Ridge continued. "And our job is to make the choice an easy one. The success of our preparedness efforts and ultimately the entire homeland security mission depends on the involvement and work of individual citizens. Because if our communities are to rise to new levels of preparedness and security, each individual American must choose to make emergency planning a priority—a priority in our homes and our places of work and in our schools."

Disasters Spawn Preparedness

According to Secretary Ridge, "If you ask people in south Florida or the Outer Banks of North Carolina about preparedness, they already know about buying supplies, keeping extra batteries handy, and even having a hurricane evacuation route planned. They get it. They hope they're not going to be hit by a hurricane. Chances are pretty good … they may or may not, but they're not going to wait for chance. They get prepared."

Homeland Security Secretary Tom Ridge: "We've laid out a public goal, and you've got to help me meet it!" (Department of Homeland Security photo)

"I'm just amazed," said Ridge, "that more people don't think of it in terms of providing some peace of mind to their own lives and to their own families." He wants to see people "respond when they have to without thinking about it," and says he feels that "there is a willingness on the part of Americans to take on this responsibility."

Public Goal

Ridge continued, "We've laid out a public goal, and you've got to help me meet it, please….that by the end of this year, we want at least 50 percent of Americans to have accepted their responsibility to be ready. It's a communication plan; some form of training to assist at the time of a disaster, the kit set aside, the readiness kit. We need to get 50 percent by the end of the year, and I think we can get it done.

"The Department of Homeland Security will add strength to the existing Ready Campaign by launching two new endeavors, Ready for Business, Ready for Kids. It will continue to work with the Citizen Corps to encourage participation from families across America, whether by preparing family ready kits and emergency plans or volunteering to aid in disaster planning or engaging in CPR and training exercises to help people in a life threatening situation.

"I've been amazed at the number of people who have come forward to serve on Citizen Corps councils. All walks of life, all backgrounds, all communities. I think we're near 1000 communities that have a Citizen Corps. You meet some fascinating people. One fellow is in charge of the emergency radio network. You've got a bunch of ham radio operators in a tri-state area. He's got them networked together."

Unification

Before September 11th every state, every city, and even individual response teams had their own pro-

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

Training and Response in India

North America is not the only place amateur radio operators are active in emergency communications. Hams in India and other countries actively provide emergency communications support. This past summer, amateur radio operators participated in a simulated earthquake communications drill in the Northeast District of Delhi.

The Delhi Disaster Management Authority notified local hams about the "earthquake." Immediately, three teams of ham radio operators rushed to several critical locations to provide emergency communications. Stations were established at the Office of the Delhi Disaster Management Authority, Police Headquarters, Office of the Deputy Commissioner of Police, and the Divisional Commissioner's office .

According to Sandeep Barauh, VU2MUE, the communications teams brought mobile rigs, antennas, batteries, and solar-panel power backups. A digital communication setup was also established at the Divisional Commissioner's Office. Two-meter links were established on simplex when the local repeater "failed" because of the earthquake. HTs were also used for local communications. Messages were passed from the "disaster site" on behalf of the police and fire departments. Government officials visited the ham stations and felt that amateur radio can play a very important role in disaster communications. The hams were also able to demonstrate the use of Echolink in emergency communications and the potential for retrieving weather information.

In July, five members of the Mumbai Amateur Radio Society (MARS) sprang into action on behalf of the Ministry of Home Affairs and the United Nations Development Program. They were sent to the flood-ravaged areas of Bihar.

Nilesh Rathod, head of the local Amateur Radio Emergency Service, said, "There is a huge crisis in Bihar, but what is startling is that everyone seems used to the floods and the horrific living conditions."

Sandeep Barauh, VU2MUE, provides communications during a simulated earthquake exercise. (Photo courtesy of VU2MUE)

He said that in the town of Sitamarhi the roads and rails were washed away. The local residents were building bamboo bridges to and charging people to cross them. That is how they recovered the cost of making the bridge and earned a living.

In order to get to his communication assignments, Nilesh would have to jump into a Jeep or risk wading through leech-infested waters.

cedures for emergency incidents. "For the first time," Ridge now says, "the National Response Plan provides a comprehensive roadmap for everyone to follow. As part of this plan, the National Incident Management System was introduced so that those involved in emergency response understand what their role is—and have the tools they need to be effective. It's the nation's first-ever standardized approach to incident management and response and it unifies federal, state, and local lines of government into one coordinated effort. This integrated system makes America safer by establishing a uniform set of processes, protocols, and procedures that all emergency responders—at every level of government—will use to conduct response actions."

All-Star Playbook

Ridge describes the system as "the playbook for the NFL Pro-Bowl Game." "When you bring together the best players from 26 different teams," he explains, "a plan of 'blue 42, slant right, release' might mean one thing to the quarterback, another thing to the wide receiver, and yet another to the linemen. At the call of 'hike,' chaos might break out on the field. At the very least, the play won't be successful. Now everyone shows up on game day with the same playbook. They will have the same preparation, the same goals and expectations, and—most important—they will be speaking the same language. When the quarterback calls a play, everyone will know what they are supposed to do. And in this battle, safety is far better than two points—in fact, it is the only result worth anything at all. Of course, a plan is nothing without the people to execute it, and many of you will play a vital role should we ever have to put our plan into action."

Ham Radio is Ready

Now let's take a look at some of the ways amateur radio is

preparing to meet the challenges ahead and be a key player in the "Pro-Bowl."

A year and a half ago, the Department of Homeland Security signed a *formal* agreement with the ARRL to work on ways to expand ham radio's popularity as a public-safety resource. The agreement calls for collaboration on raising awareness about amateur radio, to provide training and accreditation for users, and to form local Citizen Corps volunteer councils to support rescue efforts.

"We're very dependent on ham radio folks," said DHS's Ron Castleman. "When something adverse does happen, they're the first to keep the information flowing, often without electricity."

According to ARRL President Jim Haynie, W5JBP, the ARRL's affiliation with DHS is "part of the bigger picture of getting emergency communications aligned with what our government needs." He continued "Amateur radio stands ready to serve the country as needed in times of emergency." Citizen Corps White House Liaison Liz DiGregorio urged amateur radio operators to explore ways to expand their role in the community beyond being a last resort when other communication systems fail.

"Amateur radio's been in the shadows for 75 years," Haynie added. "We always did our thing and then went home; we are own worst publicists. But I've been spending a lot of time in Washington trying to get us recognition and legitimacy." His efforts have paid off, with the ARRL receiving a federal grant to expand emergency training for homeland security volunteers.

On another front, this columnist and others were interviewed for the July issue of *Homeland Protection Professional* magazine. One of the things I told the writer was that "being able to offer local government and emergency response agencies a trained voluntary communication resource will always make ham radio a desirable resource. The key is for the hams to be part of the training and planning in the community."

Training

The ARRL offers several classes in Emergency Communications, and FEMA offers on-line courses in emergency management and response. A good course to take is one on the National Incident Management System. Take advantage of these courses and others offered in your area. In addition, participate in training opportunities on local nets or field exercises. Learn how to operate radios that may not be familiar to you.

Message Handling

The days of the telegrams and radiograms that have been used for years are fading. Today it's e-mail and instant messaging. If ham radio is going to offer a message-handling system that is uniform at all levels of government and served agencies, then we'll have to learn how to handle messages in e-mail form.

This past summer, the ARRL Board of Directors approved the use of Winlink 2000, a worldwide amateur radio e-mail system, as a standard for digital message handling. ARRL Great Lakes Division Vice Director Dick Mondro, W8FQT, said situations arise when hams in the ARRL's Amateur Radio Emergency Service (ARES), must "pass message traffic across the nation quickly and accurately." The League committee that made the Winlink recommendation said the need for such a nationwide ARES capability is likely to increase in light of the ARRL's partnership with both the Citizen Corps and the Department of Homeland Security. Winlink 2000 is already widely used by hams in the boating and recreational-vehicle communities. Training is needed to properly use the system. As with anything new, digital communications needs to be understood so that when the need to use it arises, you are not stopping to read the directions.

One Set of Standards

Amateur radio emergency communicators are taking advantage of available training and are setting up local systems and plans to meet the national guidelines. These guidelines are here to stay. Even the 9/11 Commission report recommended that "Emergency response agencies nationwide should adopt the Incident Command System (ICS). When multiple agencies or multiple jurisdictions are involved, they should adopt a unified command. Both are proven frameworks for emergency response. We strongly support the decision that federal homeland security funding will be contingent, as of October 1, 2004, upon the adoption and regular use of ICS and unified command procedures. In the future, the Department of Homeland Security should consider making funding contingent on aggressive and realistic training in accordance with ICS and unified command procedures."

Get Involved

If you're not already involved with local emergency communications, get involved now! Participating in Field Day is not enough to make you an experienced emergency communicator. We all need to be talking the same language, whether you're the Emergency Management Director or the ham radio operator.

Being Prepared

This month we featured comments on emergency preparedness by Homeland Security Secretary Tom Ridge. We also highlighted a few of the ways amateur radio operators can respond to a national call for assistance. It's clear that we have had time to prepare and practice. To use Ridge's football analogy, hams have been providing emergency communications for years, but the rules have changed at the top and we have to be ready to play in the Pro Bowl in January. Is your group going to make the All Star Team?

On October 23 I'll be speaking at the ARRL Eastern Pennsylvania Emcomm Conference in Selingsgrove, PA. The conference is open to everyone. I'll be speaking on why "Field Day is Not Enough—The Importance of Establishing and Promoting an Effective EmComm Training Program." Other speakers will provide information on using Winlink 2000 and the National Incident Management System. For further information, go to <http://www.svemcomm.org>. I hope to see some of you there.

Do you have a story to tell? Drop me a note. We're always looking for stories of amateur radio operators serving in the public interest. Until next time . . .

73, Bob, WA3PZO

Hams and Hurricane Charley

When Hurricane Charley hit Punta Gorda, Florida with its 145-mph winds in August, it left the town in "total communication failure," according to one ham who drove there to help with the emergency communications, adding that even a week later, "amateur radio was, and still is in many cases, the only means of communication." We will have complete coverage of the amateur radio response to Charley in next month's "Public Service" column.

books calendars • videos

The Short Vertical Antenna and Ground Radial

by Jerry Sevick, W2FMI

This small but solid guide walks you through the design and installation of inexpensive, yet effective short HF vertical antennas. With antenna restrictions becoming a real problem, this book could keep you on the air!

Order No. SVERT $10.00

Keys, Keys, Keys

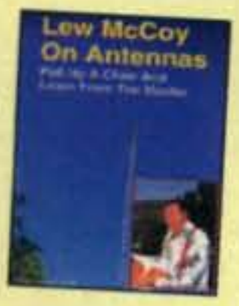
by Dave Ingram, K4TWJ

You'll enjoy nostalgia with this visual celebration of amateur radio's favorite accessory. This book is full of pictures and historical insight.

Order No. KEYS $9.95

McCoy on Antennas

by Lew McCoy, W1ICP



Unlike many technical publications, Lew presents his invaluable antenna information in a casual, non-intimidating way for anyone!

Order No.MCCOY $15.95

Heathkit - A Guide to the Amateur Radio Products

by Chuck Penson, WA7ZZE

This greatly expanded Second Edition is a must for collectors and Ham history buffs, but is a terrific trip down memory lane for any Ham who was there or wishes he had been. Pick up this 328-page volume and you won't be able to put it down!

Order No. HEATHKIT $29.95

VHF Propagation

A Guide For Radio Amateurs

Hot Item!

by Ken Neubeck, WB2AMU & Gordon West, WB6NOA

Finally, a comprehensive source-book on VHF propagation by two of the industry's finest authors!

Here's a sampling of what you'll find inside:

- Tropo Ducting
- Aurora
- Meteor Scatter
- TEP
- Sporadic-E
- Combo Modes
- F_2 Propagation

Order No.VHFProp $15.95

Understanding, Building & Using Baluns & Ununs

by Jerry Sevick, W2FMI

The successor to the popular and authoritative *Baluns and Ununs*. Great deal of new tutorial material, also includes new designs, and crystal clear explanations of howand why they work.

Order No. 2BU $19.95

videos

~~$19.95~~ NOW ONLY $12.95 ea.

Buy all 7 for your Club for only $69.95

Ham Radio Horizons: The Video.....*Order No. VHOR*
Getting Started in Packet Radio.....*Order No. VPAC*
Getting Started in Ham Radio.....*Order No. VHR*
Getting Started in Contesting.....*Order No. VCON*
Getting Started in DXing.....*Order No. VDX*
Getting Started in VHF.....*Order No. VVHF*
Getting Started in Amateur Satellites...*Order No. VSAT*

2005/06 calendars

January 2005 through March 2006

NEW!

Classic Calendar
After an absence of a few years, we're pleased to offer this all-new sepia-tone, Classics calendar. 15 spectcular vitage images! **Order No. CCAL** $10.95

Ham Radio Operators Calendar -
15 spectacular images of some of the biggest, most photogenic shacks, antennas, scenics & personalities.
Order No. ARCAL $10.95

Ham Radio Magazine on CD

Hot Item!

Brought to you by CQ & ARRL

Here's what you've been waiting for! Enjoy quick and easy access to every issue of this popular magazine, broken down by years!

Three sets, each containing 4 CDs -

1968-1976	Order No. HRCD1	$59.95
1977-1983	Order No. HRCD2	$59.95
1984-1990	Order No. HRCD3	$59.95

Buy All 3 Sets and Save $29.90!
Order No. HRCD Set $149.95

FREE Shipping & Handling with every $75 purchase!

Name _____ Callsign _____

Street Address _____

City _____ State _____ Zip _____

Qty	Item #	Description	Price	Total Price
Shipping & Handling: U.S. & Possessions - add $5 for the first item, $2.50 for the second and $1 for each additional item.* **FREE shipping on orders over $75.00** (merchandise only). Foreign-Calculated by order weight and destination and added to your credit card charge.				
			Total	

Method of payment ☐ Check ☐ Money Order ☐ Visa ☐ MasterCard ☐ Discover ☐ American Express

Credit Card No. _____ **Expiration date** _____

CQ Communications Inc., 25 Newbridge Rd., Hicksville, NY 11801/516-681-2922; Fax 516-681-2926
Order Toll-Free 800-853-9797

digital connection

BY DON ROTOLO,* N2IRZ

More Networking & EPROMs

August's column on computer networking generated a lot of reader mail, so before we get into this month's topic, EPROM digital memory, we should revisit one particular point that seems to be throwing a lot of people off—file and printer sharing.

File and Printer Sharing, Take 2

The setup for sharing files and printers within your Local Area Network (e.g., in your house) is something completely separate from the setup for sharing an internet connection. I advise getting all your computers talking to one another before you work on the internet connection. Beware of software firewalls, such as Norton or McAfee Internet Security, because they can prevent communication between your computers, even if everything else is set up correctly. Once everyone is happily talking to one another, then switch on your internet connection and set it up.

There's a wonderful document posted on the Microsoft website that covers the topic of file and printer sharing. Browse to <http://www.microsoft.com/downloads>, and under the "Search Downloads" area (not "All of Microsoft") type in the keywords "file and printer sharing." It should come up with two hits, one for troubleshooting and the other for setting up file and printer sharing. You want the setup document.

The important points for file and printer sharing are to first enable sharing, then pick the type of sharing (I recommend share-level control, which allows you to pick exactly what is shared on each computer, with optional password protection, as opposed to User-level access control, which forces you to set up a user ID for everyone and then define which users have what access). You'll have to give each computer a unique name, and also pick a name for your network. Once that's done (you'll have to reboot), you need to pick what to share and, if you want, assign passwords.

To have your network share a broadband internet connection, first make sure the cable or DSL modem is operating normally when connected directly to one computer, and then connect it to the router. Configure the router to handle the modem (for example, does it need to manage DHCP?). If your broadband router's instructions don't explain how to set this up (I'd be surprised if it didn't), go to the manufacturer's website.

With the broadband modem connected to the router, set up each computer to use that connection to access the internet. Again from Control panel, open Internet Options, select the Connections tab, and click on the "Setup" button for Internet Connections. This starts a wizard that does all the work. After the wizard ran, my computers were set to "Never dial a connection," and my LAN settings were on full Automatic, without a Proxy. That should make it happen, but if not, start up the Windows Help system and ask it about "LAN." I hope that helps. As a last resort, try a Google search on whatever is vexing you. I'm sure you'll find dozens of articles on the web to help you get it working.

Now on to this month's topic: the venerable EPROM.

EPROMs

EPROM (pronounced *Ee-prom*) stands for Erasable Programmable Read Only Memory, and that's exactly what it is—a memory chip that is only for reading (but not writing) in real time, which you can program, erase, and program again. EPROMs are not terribly new technology, having been fairly mature even when the first TNC-2 was produced, but they can still be quite useful in a number of applications.

The most obvious application is to store the software that a microprocessor needs to perform some task. For example, the TNC-2 uses a 27C256 EPROM to store its software. Change the EPROM and you can have a TheNET node instead. Other applications I've used EPROMs for include a CW ID generator for a voice repeater, a digital clock, a process controller, and a specialized logic-gate replacement, implementing an enormous truth table in software.

Before we look at these applications, let's cover a little bit of background. For our purposes here, we'll be looking at the 27xxx series of EPROMs, in particular the 2716 EPROM. These, like many other types of PROMs, are inexpensive, easy to find, relatively rugged, and fast.

An EPROM contains a number of memory "slots." The 27xxx series contains 8 bits of data in each slot, and so we say it is "8 bits wide." Each of these slots has a specific location or address. The 2716, for example, has 2048 such addresses, so it has 2k × 8 memory, or 16 kilobits of data. The 27xxx series EPROMs are commonly available with capacities from 8 kb to 16 Mb, and although other sizes exist, they can be harder to find. The 27xxx series runs off a 5-volt power supply and operates with TTL (transistor-transistor logic) levels (0 and 5 volts), while the 27Cxxx series uses CMOS levels and power supplies (up to around 12 volts) while remaining compatible with TTL.

We refer to the voltages on the address, data, and control pins of an EPROM as having either "logic low" (or "zero") or "logic high" (or "one"). According to the 2716 data sheet, "low" means between –0.1 and 0.8 volt, while "high" means between 2 volts and one volt above the supply voltage. Therefore, if your supply voltage is 5 volts,

*P.O. Box 114, Park Ridge, NJ 07656
e-mail: <n2irz@cq-amateur-radio.com>

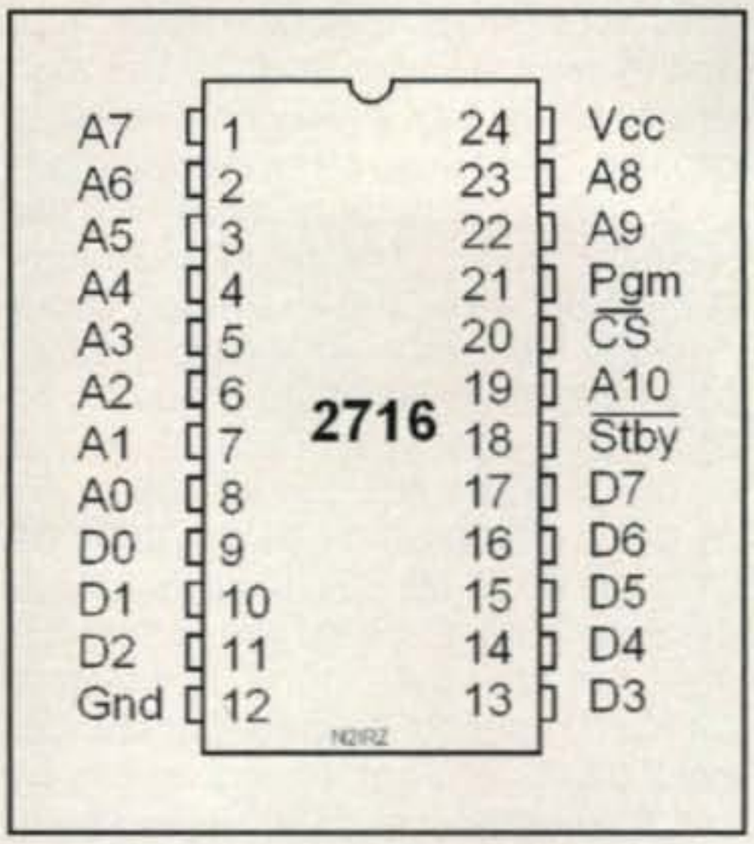


Fig. 1– Pin assignments for a 2716 EPROM. A0 through A10 are the address pins, D0 through D7 are the data output pins, and Vcc is supply voltage. Always refer to a data sheet for the EPROM you're using for accurate pin assignments and device limits.

a logic high could be anywhere between 2 and 6 volts. Voltages outside those ranges must be avoided.

Each address stores 8 bits, or one byte, of data. We represent these eight bits using two characters in Hexadecimal (base 16) notation, each character representing four bits. These data bits appear as low (around 0 volts) or high (around the chip supply voltage, say 5 volts) logic-level signals, at the data output pins of the EPROM, labeled D0 through D7 in fig. 1.

If we wanted the data at some address location to be the binary number 00101011, we could represent that as the two Hexadecimal (Hex, for short)

Hex	Decimal	Binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
A	10	1010
B	11	1011
C	12	1100
D	13	1101
E	14	1110
F	15	1111

Fig. 2– Hexadecimal numbers table.

Pin	Value
A10	low
A9	high
A8	high
A7	low
A6	high
A5	low
A4	low
A3	high
A2	low
A1	high
A0	low

Fig. 3– Voltages used to select Address 842 (see text). Low means "about 0 volts" and high means "about 5 volts." 842 = 01101001010 in binary

characters 2Bh (the "h" indicates we're using Hex notation, to avoid confusion). We use hexadecimal characters instead of binary to represent data values so we don't lose our minds trying to read or program data values. (We also use editors designed for Hex, for similar reasons; programming even a small EPROM by hand is nearly impossible). Too many ones and zeros can send you off the deep end. Take a look at fig. 2 to understand Hex notation.

For a 2716 EPROM you have a total of 11 address lines (labeled A0 through A10 in fig. 1), allowing for 2048 individual data storage locations, so we say it has an "11-bit address bus." The 2732 uses a 12-bit address, while the 27256 uses a 14-bit address. We select a certain address by setting the voltage at each pin so the address number we want is represented in binary. For example, address 847 (01101001010) would have A10 set to logic low, A9 logic high, and so on, as shown in fig. 3. If, for example, we had programmed the data value for that address to A2h (10100010 binary), data output pin D7 would be high; D6 low; D5 high; D4, D3, and D2 low; D1 high; and D0 low.

Writing the data values for each address involves determining exactly what each of the eight data bits needs to be for that address, converting that to Hex, and typing it in. Again, we usually use an editor, such as one supplied with an EPROM programmer (a piece of hardware), which makes it easy to keep the addresses and data straight. For very large amounts of data it can get tedious, but for most applications the amount of data is either relatively small or repeating, in which case it simply can be pasted many times.

Got that? It's a little tricky, but re-read the text, see if you can work out the

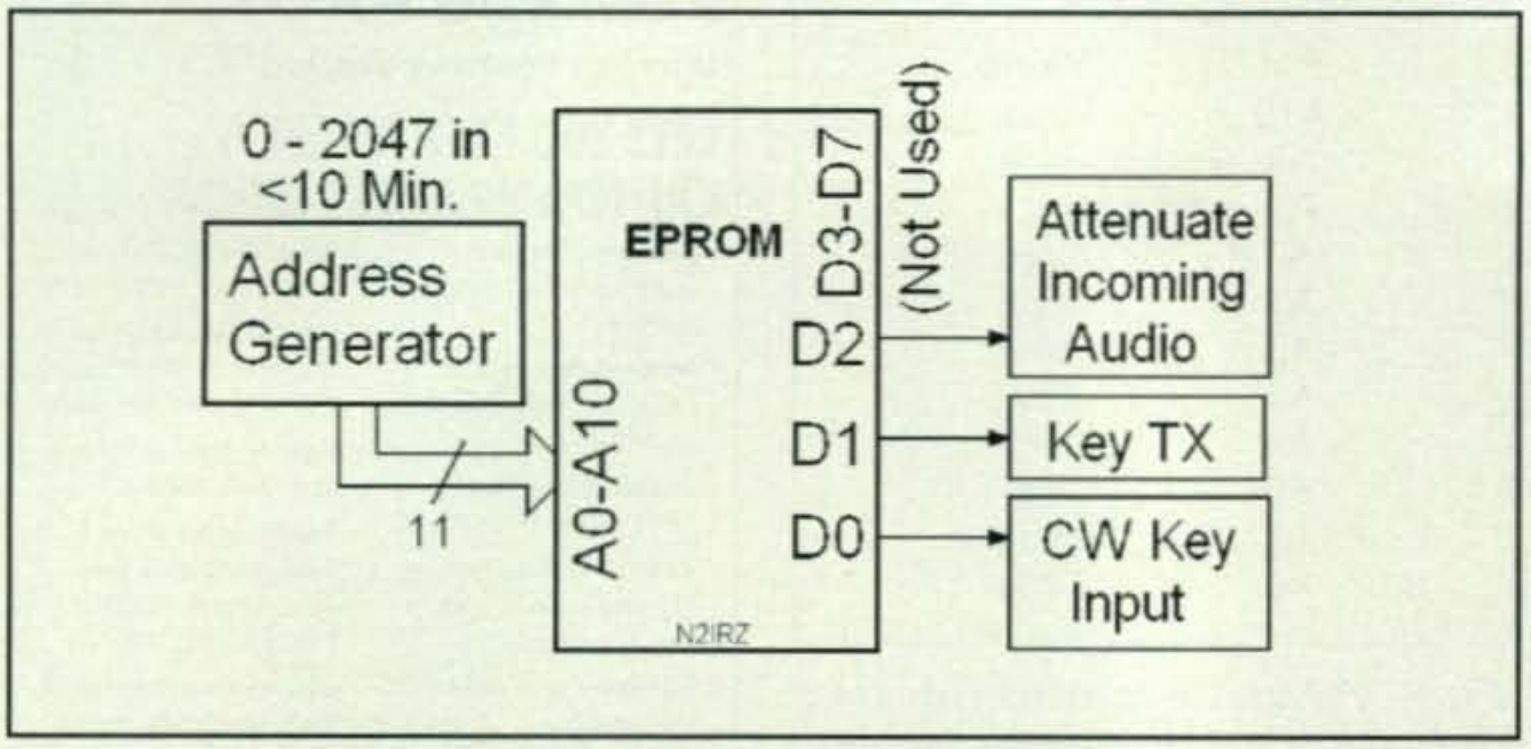


Fig. 4– A system diagram used to send a CW ID for a voice repeater. The callsign to be sent depends on how you program the EPROM and is easily changed by reprogramming. One data pin controls a relay to send the Morse ID tone, a second pin is used to key the transmitter, and a third data pin is used to attenuate any incoming repeater audio.

examples, and you'll get it. Although some readers can do this in their sleep, few actually work in raw binary and Hex, leaving the hard work to software that automatically translates everything into bits. You'd be insane to try this with a 2-Mb EPROM, with 17 address bits (meaning 256,000 storage locations). After more than a quarter million of anything, you'd see ones and zeros floating in your dreams.

Getting Practical

So what about those practical applications? Let's take the idea of a CW ID generator for a repeater, using my callsign, N2IRZ (or dahdit dididahdahdah didit didahdit dahdahdidit), and really get into the details. To program the data, we start at memory location 0, using three locations for each dah and one for each dit, with one memory location between dits and dahs and three between CW characters. Even though the EPROM data is eight bits wide, we really need only one of those bits (D0). The other seven bits (D1 through D7) won't be used, but they could be, perhaps for different callsigns, some other message, or maybe to key the transmitter and attenuate the received audio (if any) during the ID period. All you'd have to do is route the correct data output pin to the circuit it would control. See fig. 4.

Fig. 5– My Intronics pocket programmer, still going strong after 15 years, next to an EPROM eraser and a few EPROMs. EPROMs are static-sensitive, so always store and handle them correctly.

To set D0 high, we use 01h as data, and to set it low, we use 00h. The high values would key a relay connected to a tone generator, so when the relay contacts close, a tone appears on the repeater output. The data would look something like this (starting from Address location 0, all values in hex): 01 01 01 00 01 00 00 00 01 00 01 00 01 01 01 00 01 01 01 00 01 01 01 00 00 00 01 00 01 00 00 00 01 00 01 01 01 00 01 00 00 00 01 01 01 00 01 01 01 00 01 00 01 00 ... (and all the rest of the data in the EPROM would be 00).

To send the data at the right speed, we would connect a simple Up-counter clock (starts at 0 and counts up one bit at a time until it hits some upper value, say 2047, then back to 0 and repeats forever). If we made the clock count at a rate of about 205 (more precisely 204.7) address locations every minute, the cycle (for a 2716) would repeat after about 10 minutes, the required time between IDs. The 53 address locations used to store my callsign in CW would take 53/205 of a minute, or about 15 seconds, to send—far too slow by a factor of about four. To fix that, just use a four-times larger EPROM (2764), program it the same way (all the rest of the addresses would contain data 00h), and set the clock to increment about 820 times each minute (819.2 to be precise, but you want to ID at somewhat less than 10-minute intervals, so maybe 850 would be better), and you're all set. The CW would take about four seconds to send, translating to roughly 15 words per minute.

As another example, let's look at a digital stopwatch. You could use a microprocessor to implement this, but an Up-counter and some EPROMs can do it more simply, more cheaply, and just as well. For a stopwatch with a 1-minute range and a 1/10-second precision (59.9 seconds), you'd look for an accurate clock circuit which increments an Up-counter every tenth of a second and connect it to the address inputs of three EPROMs in parallel. One EPROM counts tenths of seconds, another counts seconds, and the third measures increments of ten seconds. Connect seven of the data pins to the segments of a seven-segment display. Program each EPROM to display the correct digit for that moment, add some start/stop/reset circuitry, and you're done! Need more digits? Use bigger EPROMs to handle the address range; there are 6000 tenths of a second in 10 minutes, so you'll need something larger than the 2716.

Using counters, EPROMs can be

used for the control of any sequential process, including repetitive ones. Possibilities include the control of eight (or more) different aspects of a process —maybe a transverter sequencer, or some industrial process ... perhaps the ultimate holiday light display. Add more (or wider) EPROMs to get wider data, speed up or slow down the counter to control the speed, get larger EPROMs if you run out of addresses.

For applications not involving timing and counters, how about creating a complex logic table and replacing dozens or hundreds of discrete logic ICs? You can make AND, OR, EXOR, and whatever other types of logic gates you can dream up, in any configuration or combination. Since an EPROM is static, no clock is required for the output to appear. EPROMs also have control pins, which are used to enable (or disable) a chip's data outputs, put it into standby (power down) mode, allow you to program it, and more.

The biggest fly in the ointment is the need for an EPROM programmer and, usually, an eraser, which is just a special UV light. You can find both new for under $200, and used for considerably less. Fig. 5 shows my Intronics programmer, which works off the computer's parallel port, and a simple four-chip eraser. Although you can spend more, the Intronics programmer, at $150, is a deal. Contact Intronics at <http://www.in-ks.com> or call them at 913-422-2094. Check eBay or your local ham or computer fest for used programmers and erasers. Make sure you get the required software with the programmer!

EPROMs are often little understood by the average ham, but they are indeed simple and useful devices. Despite their simplicity, they are extraordinarily flexible and can be used to implement circuits and functions that would be difficult or expensive with other technologies. With a counter circuit the data can be read out sequentially, just perfect for applications involving timing of any type, while static applications such as complex truth tables are just as easy. Programming can get tedious, but it is not difficult. Give it a try, and learn more about this powerful digital circuit element.

This month the pendulum swung over to the practical circuit side, with a little bit of a software flavor. Next time we'll swing to the operational side, with a look at digital operating modes other than PSK31 and/or space communications via Echolink. 73, Don N2IRZ

BY DAVE INGRAM,* K4TWJ

Mini Reviews and Notes for Newcomers

It happened again, friends, and I truly wish you had been on 30 meters with us to share the excitement. I was tweaking my little 6L6 retro rig highlighted in this month's "World of Ideas" column, and there they were calling CQ—3B9C, the DXpedition to Rodriguez Island featured in the March 2004 issue of *CQ*. Without pausing to consider I was running only 4 watts, I gave the operator a quick call (akin to standing in the middle of a freeway and yelling "stop" to traffic). No reply. I called again and still no reply. I shifted transmit frequency 100 or 200 Hz to hopefully fall in the exact center of his receiver's passband and benefit from a mild signal boost and called a third time. There he was, replying to my call and acknowledging that my little 4-watt signal was actually riding the waves of ether from central Alabama to a remote island in the Indian Ocean. Oh happy days! How about you? Have you experienced the joys of QRP with your own gear in your own shack lately? I urge you to give low power a good old college try. You, too, will be delighted with the results!

Photo A– The Oak Hills Research 100A QRP kit measures 2.5"H × 6"W × 6"D and pumps out a clean 5-watt signal. The monoband unit tunes an approximate 70-kHz range of 40, 30, 20, or 15 meters, and is generally considered an "intermediate level" project. The transceiver shown belongs to Tom, K4VIZ, and was photographed by Ed, N4ZUM.

As further encouragement to try QRP, this month's column briefly revisits two well-known QRP kit transceivers, explains the art of winding toroidal cores, and covers a new-style multiband antenna that is idea for low-profile hamming. Before starting, however, we invite you to check out two interesting QRP contests scheduled for the upcoming weekends.

First is the Fall CW QRP QSO Party set to run from 1200 UTC October 30 until 2400 UTC October 31. Tune around 3.560, 7.040, 14.060, 21.060, and 28.060 MHz to spot the activity and join the action. Listen to a couple of QSOs and note the exchange: RST, state, and QRP ARCI member number. If you do not have a club member number, use your power level.

The second contest is the "Running of the Bulls" held in conjunction with the ARRL CW Sweepstakes during early November (it is a QRP ARCI rather than ARRL affiliated event, but the times and exchanges are the same). Tune around the previously listed QRP frequencies, run only 5 watts, and operate as a matador by answering CQers (they are the pre-registered bulls). Ideally, bulls in all 80 ARRL sections will be active, so a large number of QRPers can acquire a Sweepstakes "Clean Sweep" prize. These contests are subject to minor changes and you may also wish to register as a bull, so check the contest listings at <www.qrparci.org> for more details. Now let's talk kit rigs!

*4941 Scenic View Drive, Birmingham, AL 35210
e-mail: <k4twj@cq-amateur-radio.com>

Kit Transceivers

A number of new QRPers continue to tell us they would like to build their own low-power transceivers, but are unsure which rig(s) best fit within their technical abilities and/or available time. Everyone's opinion differs here, so let's look at the basic facts and let you make the call.

First, there are three general categories of kit rigs: the quick-assemble fun kits such as Small Wonder Lab's Rock Mite, the regular semi-complex kits such as the Oak Hills Research 100 Series and MFJ's Cub, and the high-end microprocessor-controlled kit rigs such as Elecraft's K1, K2, and KX1. Let's look at the OHR and MFJ rigs this month and Elecraft's more complex rigs next time.

Oak Hills Research transceivers have been on the scene for several years, and they are still quite popular units. The monoband 100 Line is available in 40-, 30-, 20-, and 15-meter versions, and they use a premix or heterodyne-type VFO to cover (or tune) an approximate 70-kHz range in a selected band (photo A). Power output is continuously adjustable from a few milliwatts to 5 watts, and the OHR receiver's bandwidth is adjustable from 1.2

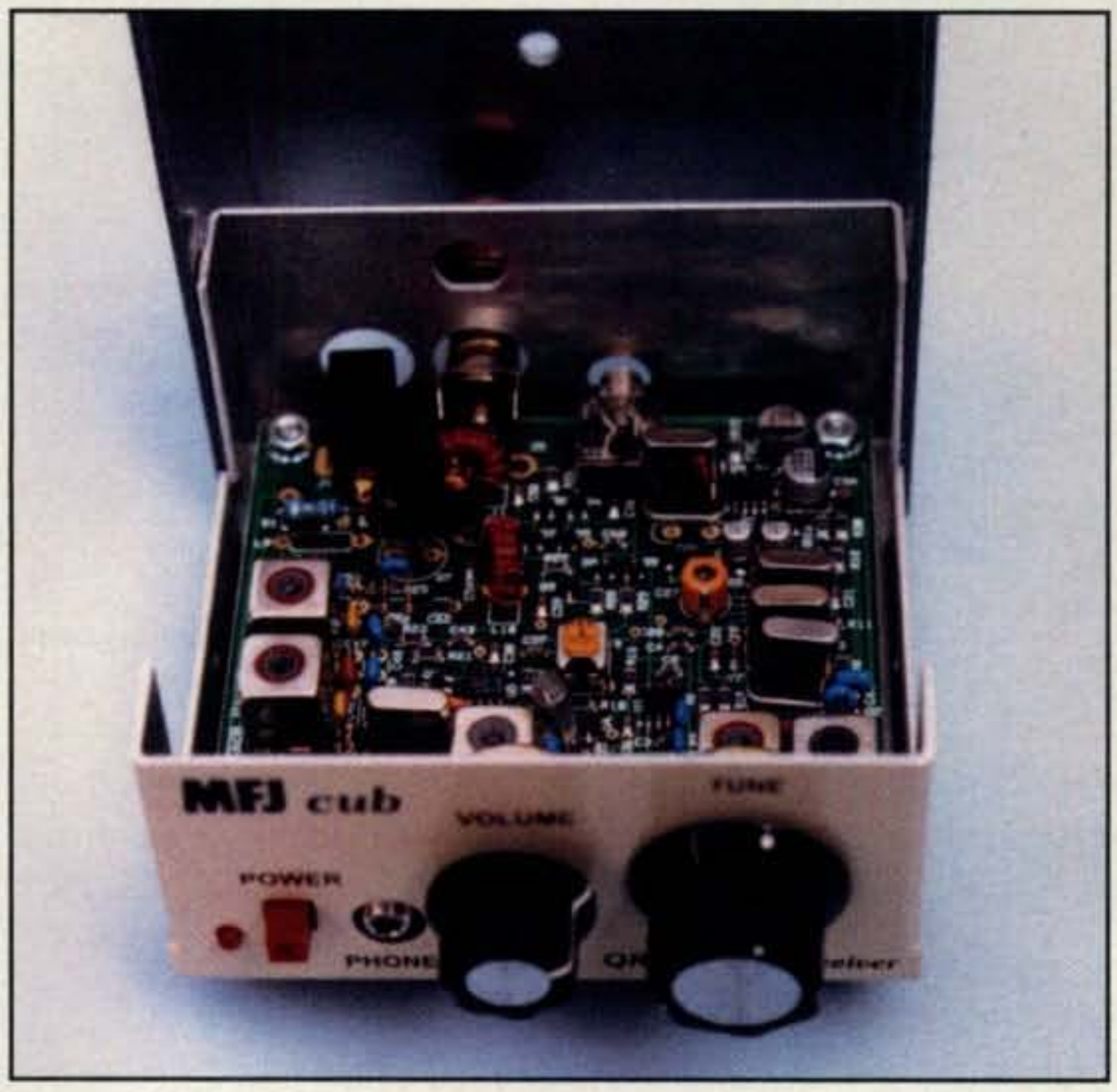


Photo B– The MFJ Cub QRP transceiver with its top cover raised for study. All of those tiny surface-mount parts you see are pre-installed on the PC board. You just install the "big components." This little monobander is available in 80-, 40-, 30-, 20-, 17-, and 15-meter versions and tunes an approximate 50-kHz range on a selected band. Output is 2 watts standard, 4 watts with optional transistor.

kHz, or 1200 Hz, to 400 Hz. Parts count is slightly over 200, so assembling the kit usually takes a few days of "on and off" building, but it is a nice rig and well worth the invested effort. Once you get into it, building is actually fun. Looking at the OHR's circuitry, its receiver employs an SA602 as a front-end mixer. It is followed by a four-pole crystal filter, an MC1350 IF amp, another SA602 as a product detector, and an LM380 as an audio amp. The transmitter section uses an SA602 mixer driving two buffer transistors, which in turn drive a 2SC2078 power-output transistor. OHRs are neat transceivers with traditional circuits and components and could easily become classics in the future. They are available from Oak Hills Research, 10691 E. Bethany Drive, Suite 800, Aurora, CO 80014, telephone (order line) 1-800-238-8205, or via <www.ohr.com>.

MFJ's Cub transceiver (photo B) is a somewhat smaller and easier to assemble kit, mainly because over half of its parts are pre-installed surface-mount components. You just add (the kit supplied) 14 regular-size resistors, capacitors and transistors, 35 band-related components, wind and install two toroids, perform a quick alignment, and enjoy. The Cub is produced in 80-, 40-, 30-, 20-, 17-, and 15-meter versions and employs varicap/VXO tuning to cover an owner-specified 50-kHz range on a selected band. Power output is around 2 watts with the stock/supplied RF output transistor, or 3 to 4 watts output with an optional transistor.

Circuit-wise, the Cub's receiver employs an ever-popular SA602 front-end RF mixer IC driving a three-pole 700-Hz wide crystal filter. The filter outputs to a transistor IF amplifier stage which drives another SA602 functioning as a product detector and BFO. A popular LM386 IC then drives an earphone or a small speaker. The transmitter section consists of another SA602 mixer, two transistor buffer/amplifier stages, and a power transistor output stage. Keying and break-in operation are good, and overall performance is impressive for the rig's price. Cub transceivers are available from MFJ Enterprises (1-800-647-1800) and amateur radio dealers nationwide. MFJ also produces a full line of low-cost, easy-to-assemble Vectronics kits—receivers, transmitters, and transceivers—that are good, fun weekend projects. You will see them on display at the MFJ booth at most hamfests. Also, MFJ's well-known 90 Series of fully assembled and ready-to-operate QRP transceivers continue enjoying high popularity and will be revisited in future columns.

Winding Toroidal Coils

One of the more challenging aspects of building kits is winding toroidal coils. The little gems may seem mysterious and tricky to handle, but the good news is toroid winding is surprisingly easy after you have done it a few times. Practice with some extra wire to perfect your technique, and then use fresh, kink-free, enamel-coated copper wire to wind the coil you actually plan to use.

Most toroids used in QRP gear are T-50 or T-37 types, which are smaller than a thumbnail, and most coils use number 24, 26, 28, or 30 wire. Slight variations in wire size usually are acceptable and will not stop a circuit from working, provided the required number of turns fills roughly four-fifths of the core. Estimate needing one inch per turn (which includes a comfortable amount of overage), and then cut the wire and begin winding. Here's the key*: Count each time the wire passes through the inside of the toroid core as one turn.* In other words, just passing the wire through the core counts as one turn (fig. 1A), and winding one full turn (which requires two passes through the core) counts as two turns (fig. 1B). A core with 11 turns on its outer areas thus will have 12 wire passes through its center and be a 12-turn coil (fig. 1C). Pull each turn tight as you wind, space turns evenly while leaving a small gap at the bottom, then scrape off insulation with an X-Acto® knife, and tin wire ends. Do not settle for melting enamel with a soldering iron, as it encourages cold solder connections. Finally, mount the toroid only by its leads; do not glue it down. Toroids

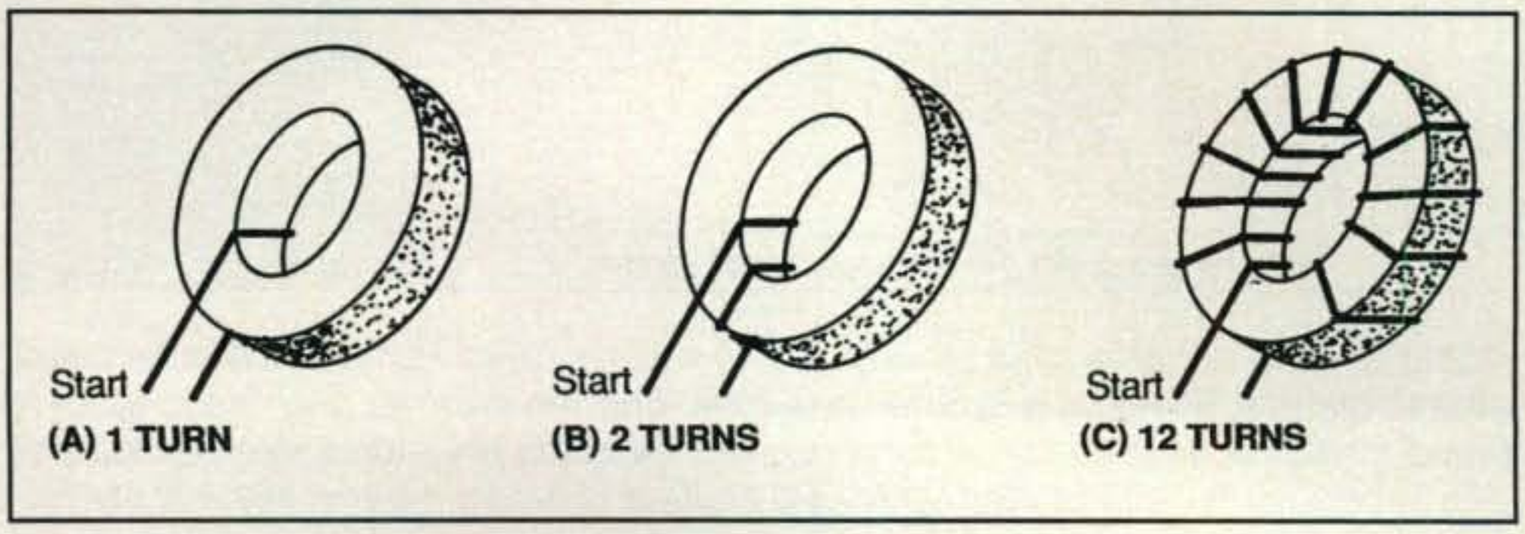
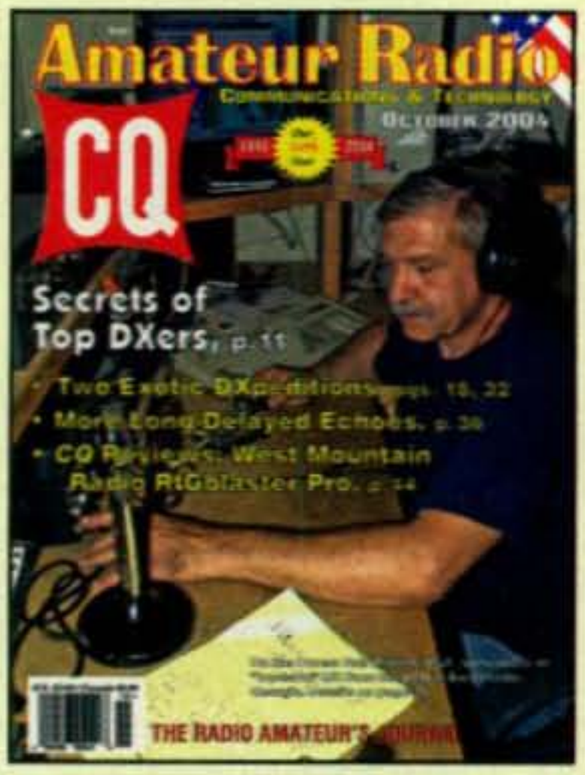


Fig. 1– General how-to guide for winding small toroidal coils like those used in QRP gear. Count each time the wire passes through the inside of the core as one turn. ←



On the Cover

Tom Rauch, W8JI, of Barnesville, Georgia, insists he's not really a DXer—that whatever countries he works or contest scores he achieves are part of his efforts to improve his station. "My goal is to compete only with myself," Tom wrote in an online biography. "Anything I work is a secondary result of experiments with antennas and equipment."

Tom focuses his experiments on 160 meters, also known as "Top band," where he's managed to tweak his station to the tune of working 298 countries in all 40 CQ zones—and that's just on 160! Outside his shack in rural Georgia, has three towers: one at 318 feet, one at 200 feet, and a rotating 150-foot tower. He's planning to install another one or two!

On 160, Tom is using a 4-square array with four vertical elements for transmitting, while his receive antennas include 30 Beverages, 12 phased verticals, a steerable 8-element vertical array set out in a 330-foot circle, and a 330-x-70-foot four-element array that can be switched to aim toward either Europe or New Zealand. Tom's equipment includes four Drake R4C receivers that he's converting from tube to solid state and that he's already modified to track from one master receiver to provide diversity reception from multiple antennas.

Tom also maintains an extensive website with references on antennas, amplifiers, feedlines, receivers, and much more. It's at <www.w8ji.com>. While Tom may not think of himself as a DXer, we think he's an ideal person to be on the cover along with our featured article this month, "Secrets of Top DXers."

(Cover photo by Larry Mulvehill, WB2ZPI)

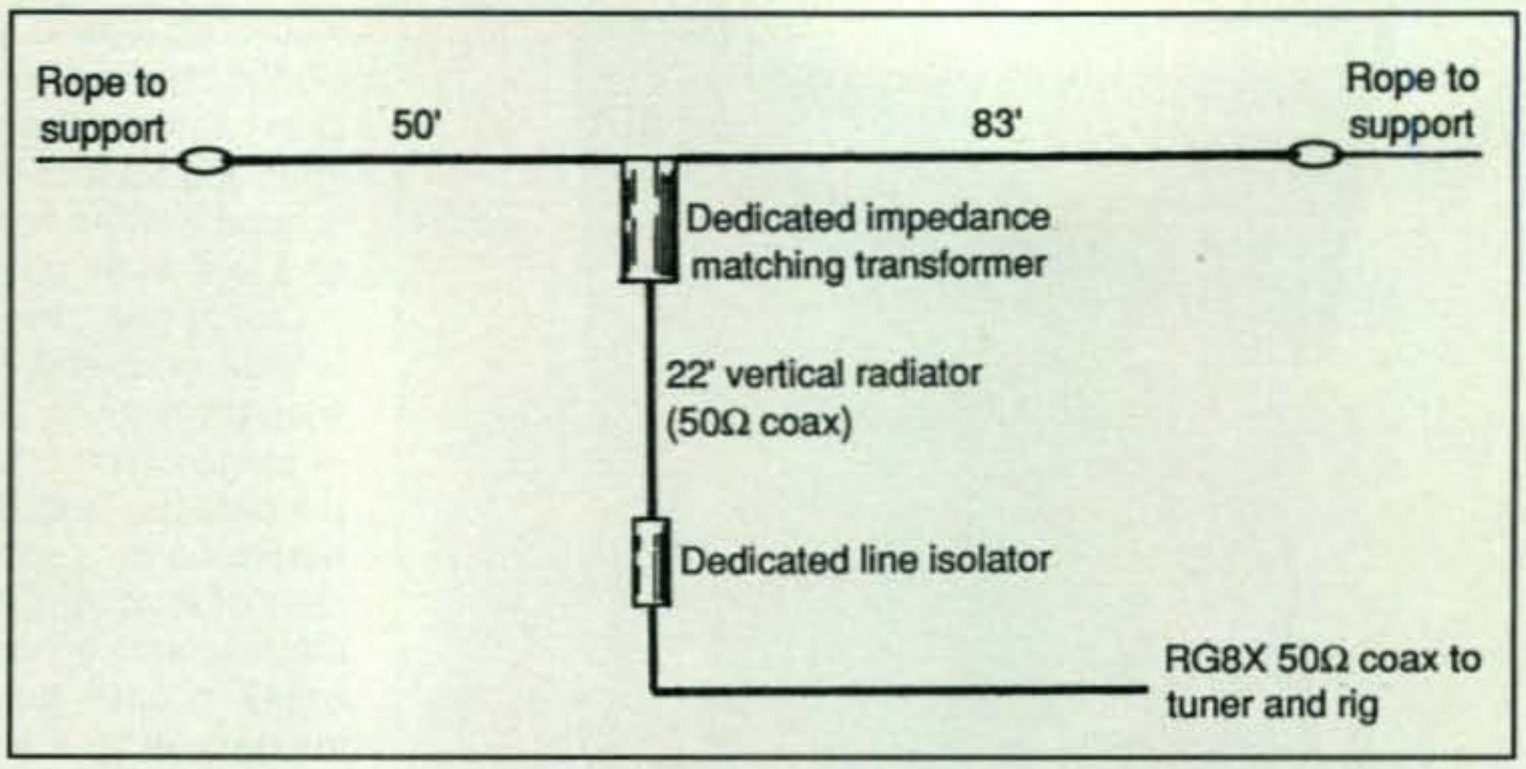


Fig. 2– General view of how the Carolina Windom looks when installed. The Radio Works has fine-tuned its design with a custom impedance-matching transformer and line isolator, plus expanded it into several versions to fit any available space. (Discussion in text.)

are self-shielding, so they can be mounted close to other components without adverse effects. Simple enough?

Hot QRP Antenna(s)

QRPers always appreciate knowing about (and using!) low-profile, high-performance wire antennas, and I recently rediscovered a real gem worthy of recognition—the new LP, or low-profile, version of the Carolina Windom from The Radio Works (photo C). I have used several types of G5RV and multiband doublets over the years and can factually say this new LP line of Carolina Windoms beats them by a noticeable margin. Jim Thompson of The Radio Works has done an outstanding job of making this popular multiband antenna even better.

My first contact with the antenna hastily installed at a mere 30 feet was DU3NXE in the Philippines, and I was running only 50 watts on 20 meters (not "real QRP," true, but close!). During a brief operating stint on 17 meters the next day (again while running 50 watts),

Photo C– Radio Works' new LP (low profile) version of the Carolina Windom uses small-diameter wire and a quarter-size matching transformer and line isolator to blend in with almost any environment, yet it radiates an impressive signal. This multiband antenna handles up to 600 watts and is available in several styles.

I worked ZA1DX in Albania with it. Yes, and the DX results with 5 watts are equally good, resulting in contacts with VK's, JA's, and more. If you are looking for a "work it all" wire antenna with low eye appeal, this one is tops.

If you are not familiar with the Carolina Windom, it consists of a 133-foot flattop horizontal section and a 22-foot vertical radiating section plus a required length of 50-ohm feedline, and works 80 through 10 meters (fig. 2). Early home-brew versions were fabricated with a 4:1 balun at their (top) feedpoint and a 1:1 balun between their vertical radiator and feedline. They suffered impedance mismatches and RF losses, but still worked well enough to make the antenna a national favorite. Radio Works replaced the baluns with dedicated equivalents wound exclusively to match the Carolina Windom's unique impedances, and it outworks homebrewed versions like a champ.

Radio Works has also expanded the Carolina Windom to include over six varieties of sizes/configurations to fit every need and/or space allocation. In addition to the extra-long 265-foot version for 160 through 10 meter operation, there are 133-foot, 100-foot, and 66-foot versions for 80 through 10 meter use, 66- and 42-foot versions for 40 through 10 meters, and a 33-foot version for 20 through 10 meters. Some versions can also be configured with their ends bent down like a bobtail array to produce mild gain figures on several bands.

The new LP Carolina Windoms differ in their use of smaller gauge wire and inclusion of quarter-size transformers/isolators, which again are impedance-optimized to mate with a particular version. Camouflage the transformers with a wrap of black tape, give the horizontal wire(s) a couple of weeks to weather in and collect dust, and the antenna blends in admirably with its surrounds. Possibly I am over-enthusiastic, but I would say even CC&R enforcers in restricted neighborhoods would be hard-pressed to find this antenna in a stand of trees. More details (and antennas!) are available direct from The Radio Works at Box 6159, Portsmouth, VA 23703, or via <www.radioworks.com>. The order-line telephone number is 1-800-280-8327.

That overfills space for this month. We will thus bow out with sincere encouragement to get on the air some every day. Thirty meters is still a great band for QRP. Crank up your receiver gain, listen carefully, and go for the DX!

73, Dave, K4TWJ

magic in the sky

BY JEFF REINHARDT,* AA6JR

Jeff Finally Gets His Name in Lights

Welcome to one of the few places that's free from politics! For the duration of this column, I'm declaring this a "pol-free zone" because I figure you need a break from the assault on your senses the seemingly endless campaign(s) have marshaled. So relax and take comfort from the notion that I'm not going to tell you what to think or how to vote.

On a personal level, the past several months have been a roller-coaster ride, with barely enough time to absorb one activity, and then launching right into another. April, May, and June were seemingly non-stop travel, which included a stop at the Dayton Hamvention® to both work and play. As Art Bell, W6OBB, likes to ask, "Wanna take a ride?"

The Unreported Dayton

There was definitely a new energy at Dayton this year, coming from a number of different sources. Manufacturers created a buzz by introducing several new transceiver models, some of which broke into "five digit" pricing levels between 10 and 15 thousand dollars. If nothing else, something that expensive at least warranted a look. It may just be an impression, but to me, manufacturers and retailers seemed more friendly and helpful this year.

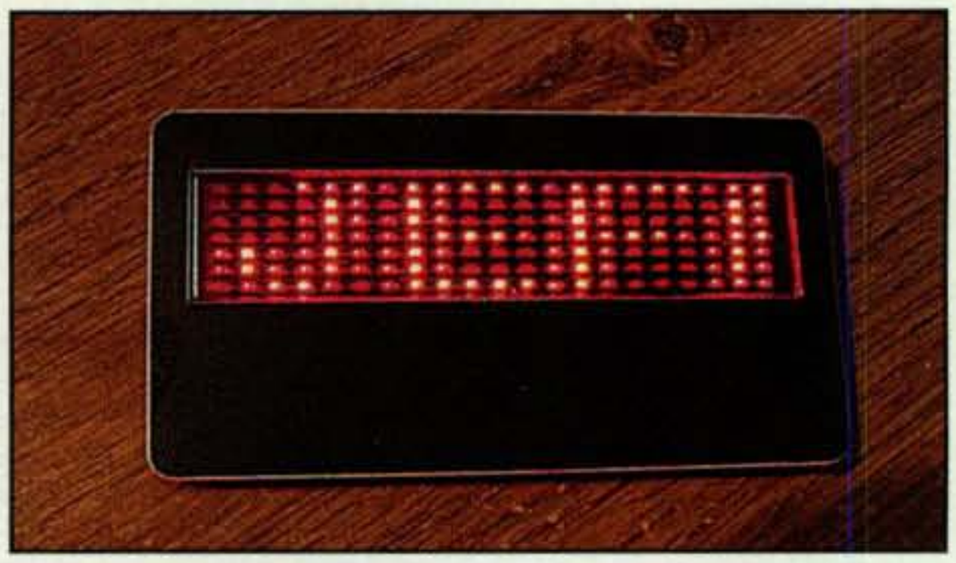
The event itself seemed better organized and there was a pleasant, helpful attitude among those responsible for staging ham radio's largest annual gathering, which was most welcome.

There were several of the usual displays and vendors, and that brings a sense of assurance, but there were also some new players with new products and ideas. There was an amazing array of programs to choose from, with forums on just about any topic you could think of, from highly technical to highly entertaining.

The unfortunate part was the rain that dampened the spirits and, no doubt, vendor profits in the flea-market area. Having been a flea-market seller some years ago, I have great empathy for those folks and the shoppers, who are very sharp bargain hunters.

Just Sign Here

So, you might ask, what did I buy? Well, uh, with professional and volunteer duties pressing on me, I didn't have a lot of time to shop around. Okay, okay. I bought a badge. Not just any badge…this one is a moving message sign, a greatly reduced version of the famous news ticker in New York City's Times Square. *Greatly* reduced. So much reduced that my name barely fits on it. See the photo, although it's darn hard to photograph the thing, because the message is always in motion. The image doesn't do it justice.



Yes, we know it's blurry, but it's hard to catch a clear shot of moving text with a camera that costs less than one of those new five-digit price-tag ham rigs. Besides, Jeff blew his budget on the badge itself.

I admit I'm an admirer of ingenuity and a sap for a good sales pitch. That "perfect storm" came together and I *had* to have one of those message signs for my lapel. For just under $50, I loaded that baby up with extra batteries, a magnetic mount (no holes in the shirt for me!), and the deluxe infrared programming kit.

Thus, like several hundred others walking around Dayton, I had my name and callsign scrolling across the display all weekend, not to mention that I have a really cool novelty to show at all the club meetings I attend throughout the year. Forget the $12,000 radio. They want to see the badge! (Right.) Everyone asks what it cost and then they politely say, "That's nice," and walk away, while I *know* they secretly wish they could get one right that minute.

My wife thinks I'm crazy, but what could she know? She's only been married to me for 30 years. It takes time to get to know someone. (If she was *really* smart, she would have shot me 25 years ago, and even if she served the maximum term, she'd be out by now!)

Of course, I had to try my hand at programming the sign (the instructions that came with it were a bit vague), and I was successful at teaching the sign new things to say. Yeah, it will say *anything* you program into it. Enough said. For one full day at Dayton mine took up a cause, flashing my name and call followed by "Fight BPL," which seemed like a good thing for it to say.

Now some may argue that's not a real "ham" purchase at a place like Dayton. With tongue firmly planted in cheek, I beg to differ. My new "transmitter" "broadcasts" information somewhere in the terahertz band, and my ham license allows me to experiment on those frequencies. So far, though, I have yet to complete a QSO and earn a QSL to confirm the transaction.

If my sign is a bit dumb, it's only because the badge can handle only one message in its limited memory. Maybe selectable messages will be available in "sign badge 2.0." If you want to change this

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

one, you must reprogram it. This can be a bit cumbersome, if not socially clumsy, if you perhaps turn it on and discover you left the *wrong* message in it from the last event you attended. My PDA has an infrared port, but it apparently doesn't speak the same infrared dialect as the badge, which is how it absorbs its programming. Carrying a PC around is a bit cumbersome, so I have to plan ahead, which is not much of a problem, because so far I haven't been able to think of too many places where I could, or should, wear the badge/sign—except perhaps at political gatherings, and I promised that politics was off-limits here.

Sign, Sign Everywhere A Sign

I attended a Simon & Garfunkel concert at the Hollywood Bowl this summer, but I forgot the sign. It would have been cool to program it with "The words of the prophets are written on the subway walls..." but that probably would have been a bit too much. Only true S & G fans would have appreciated it. My sign, like me, is in the wrong time warp. It belongs in the '60s, back when everyone wore buttons for some reason or another.

My practical daughter wanted to program my sign with "ATM" and place it just above my wallet. My enterprising son wants it to say, "Of course you can buy a new Corvette."

If nothing else, my sign has served some small purpose; it has been the source of amusement for me and hopefully you. In that regard, it was $50 well spent. If you have any good ideas on what the sign might say, drop me a note. However, keep the content rated "G," as I have a new computer and it's not old enough to be exposed to, well, you know.

N6CDJ

As friends go, they don't get much better than Wally Foster, N6CDJ, an electrician by trade, citizen of the world through the magic of ham radio, packeteer and APRS guru to hundreds, fan of auto racing and fishing, able to talk about anything and fix just about anything that was broken.

This spring Wally was taken from us by a very fast-moving cancer that left him little time to do much beyond getting his affairs in order. For once, though, instead of being there for his ham radio friends, as he always was, his ham radio friends were there for him. In practically no time at all, Wally's hospice facility was equipped with a multiband transceiver, outdoor antenna, internet access, and a non-stop stream of friends from across the country. Wally loved Dayton, but was too ill to go and make a final lap of Hara. We did bring back some items that brought a smile, including a Dayton Waffle House T-shirt, some other trinkets, and yes, my foolish moving message sign.

Wally's memorial was a true celebration of his life. He's interred at a site overlooking his beloved Burbank, beneath the shadow of the radio tower seen adjacent to L.A.'s famous "Hollywood" sign.

N6CDJ will live on as a memorial call with the BEARS, Burbank's ham radio volunteer support group, so it's not really a "silent key." Should you ever visit the Burbank store of Ham Radio Outlet, you may see a bit of memorabilia that honors Wally. HRO was a "second home" to him and a great place to gather each Saturday to swap lies and spend some money with Eric, the store's affable manager, who was among those close to Wally.

At the memorial service we were reminded that both the spirit and radio waves are forever. Each of us who has transmitted has in theory already achieved a bit of immortality with our modulation traveling the universe. Somewhere out there, moving at the speed of light, there's a friendly voice followed by Wally's call, a fitting tribute to a good friend who added mightily to the Magic In The Sky.

what's new

BY KARL T. THURBER, JR.,* W8FX

Test and Prototyping Equipment, Vee Dipoles, Universal Mount, and More

This month in your "What's New" column we'll again present some noteworthy hamshack accessories, portable and mobile goodies, what's new on the net, books, and other fascinating items. Let's dig right in.

Accessories for the Shack

Test and Prototyping Equipment for the Shack. Phil Anderson, WØXI, told us of some new test and prototyping equipment he has developed. The first item in the series is the Alden McDuffie Case2004 Aluminum Prototyping Case (see photo A).

Phil says he realizes that most radio amateurs don't have a fully-equipped machine shop in their garage or large amounts of cash to purchase today's expensive test equipment. For that reason he has developed prototyping kits to assist you with your projects. Case2004 is a fully formed and predrilled aluminum case measuring 8.1" × 5.2" × 1.575". It consists of four drilled and formed aluminum pieces: a folded chassis bottom, a U-shaped top, and two identical panels (front and back). Mechanical drawings are included for project planning. Two bare-copper printed circuit boards (PCBs) and a multiple DC-DC power supply kit are available to complement (fit in) the case (see below). More extensive audio and RF signal-generator kits are in the planning.

The second item in the series is the Alden McDuffie Case2004 Power Supply Kit (photo B). This PCB-based multiple DC-DC supply is ideal for prototyping where circuits require one or more low-voltage DC supplies running off a +6 to +13.8 VDC bench supply. Regulators featured on the board are: two +5 VDC @ 100 mA, and one variable (2–10) VDC @ 100 mA.

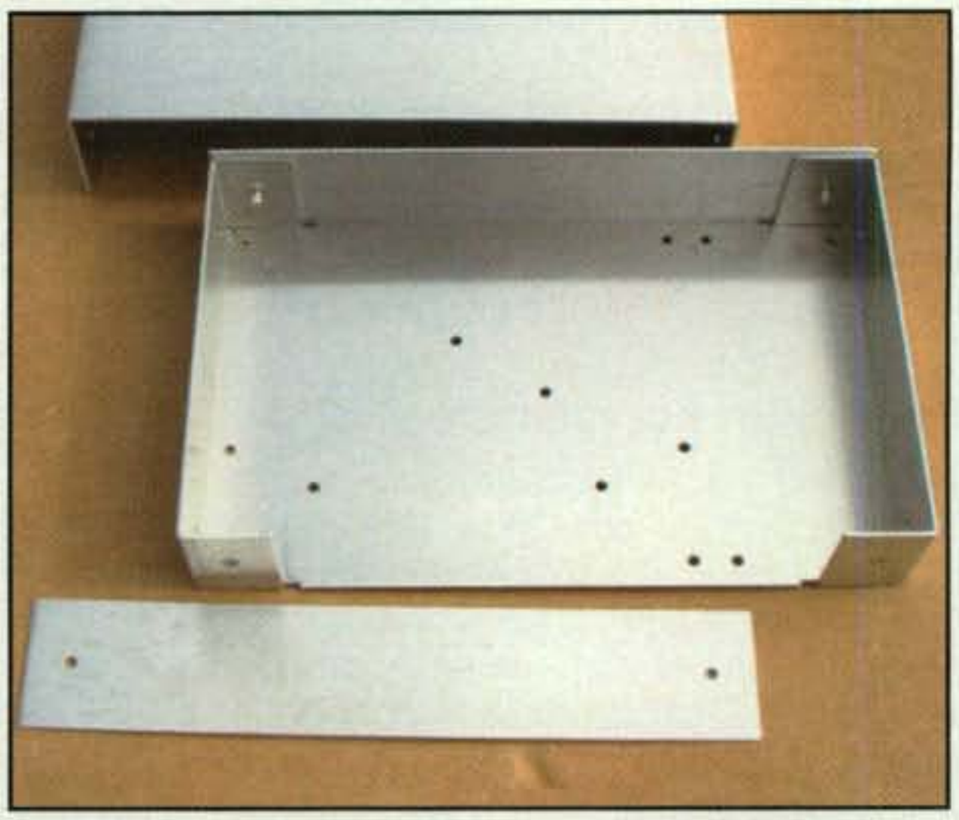


Photo A– The Case2004 Aluminum Prototyping Case is a fully formed and predrilled aluminum case offered by Alden McDuffie, Inc. It consists of four drilled and formed aluminum pieces: a folded chassis bottom, a U-shaped top, and two identical panels (front and back). (Photo courtesy Alden McDuffie, Inc.)

*289 Poplar Drive, Millbrook, AL 35054-1674
e-mail: <w8fx@cq-amateur-radio.com>

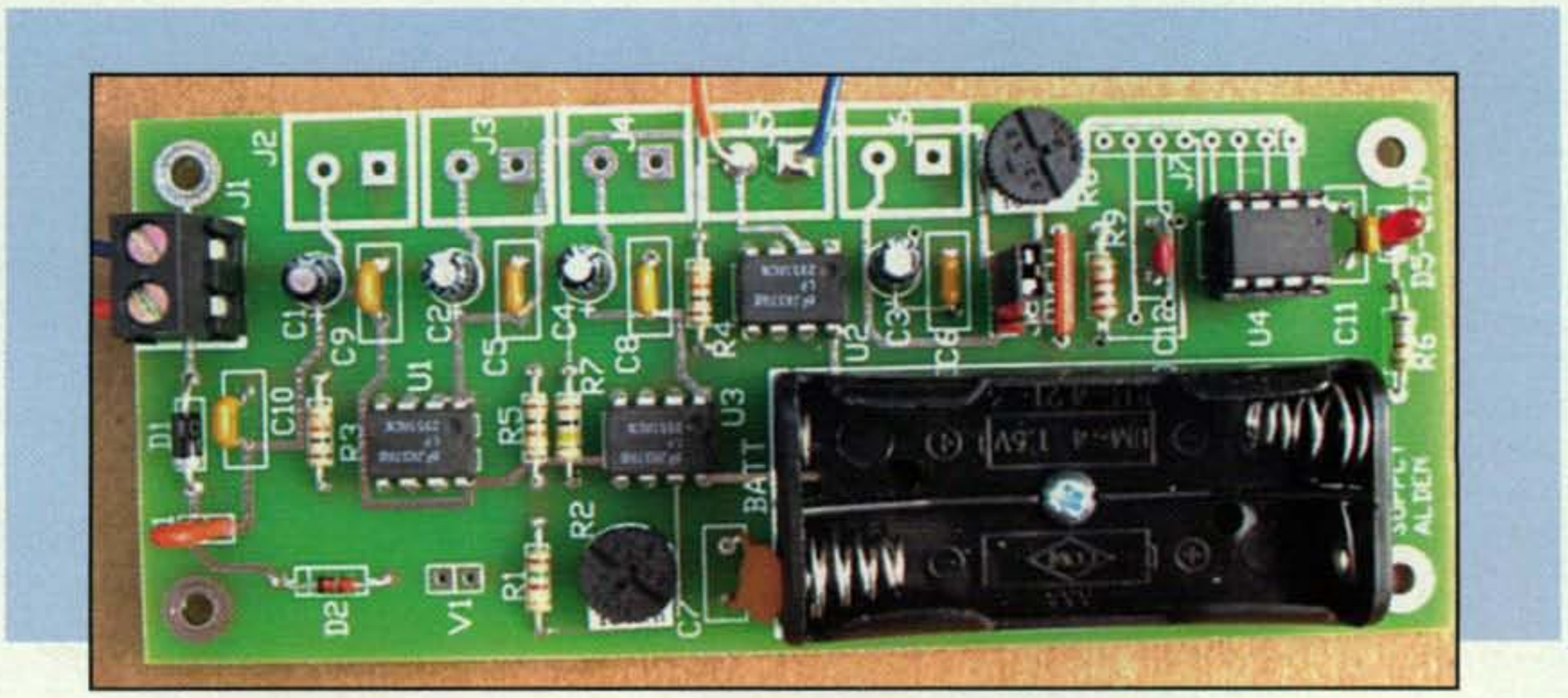


Photo B– A "natural" to use with the Case2004 Aluminum Prototyping Case is the Alden McDuffie Case2004 Power Supply Kit, shown here. This PCB-based multiple DC-DC supply is ideal for prototyping where circuits require one or more low-voltage DC supplies running off a +6 to +13.8 VDC bench supply. (Photo courtesy Alden McDuffie, Inc.)

Photo C– If only the very best, professional-quality gear will do in your radio hamshack, workshop, or lab, Novatech Instruments has another one for you. It's the Model 2965AR Rubidium Frequency Standard. The new unit is described in this month's column. (Photo courtesy Novatech Instruments, Inc.)

The PCB also includes a socketed 12F629/675 PIC micro that produces a pot-adjusted audio square wave (about 500 to 7500 Hz) and an RF square wave (about 430 to 1.8 MHz). The power supply can be ordered as a kit or wired, and the PCB is available. The signal-generator firmware is written in the "C" programming language and the source listing is included.

The Case2004 is $24.95; the Case2004 Power Supply Kit is $29.95. For more info contact Alden McDuffie Inc., P.O. Box 3636, Lawrence, KS 66046 (785-766-0404; e-mail: <info@aldenmcduffie.com>; on the web: <http://www.aldenmcduffie.com>).

Novatech Rubidium Frequency Standard. If only the very best, professional-quality gear will do in your radio hamshack, workshop, or lab, Novatech Instruments has another one for you. It's the Model 2965AR Rubidium Frequency Standard (photo C). Housed in a small, bench-top case, the Model 2965AR contains an extremely accurate and stable atomic time-base. The unit includes a 50-MHz direct signal synthesizer, along with 10-MHz and 5-MHz outputs. The unit is said to be ideal for use as an external reference for laboratory instruments or as an accurate time-base for a variety of telecommunications and radar systems.

The new Model 2965AR uses an auto-adaptive disciplining algorithm that requires no user intervention or tuning. Three front-panel BNC connectors provide sine-wave outputs of 1 V rms into 50 ohms. The TTL-compatible 1-pps input and output signals are on rear-panel BNCs. The synthesized output is programmable from 100 Hz to 50 MHz in 1-MHz steps via an RS232 interface, using simple text commands.

For more information and product pricing, contact Novatech Instruments, Inc.,

P.O. Box 55997, Seattle, WA 98155-0997 (telephone 206-363-4367; e-mail: <sales@novatech-instr.com>; on the web: <http://www.novatech-instr.com>).

Portable and Mobile Goodies

New Yo-Yo Portable Vee Dipoles from DWM Communications. In the August 2002 column, we profiled the Yo-Yo-Tenna Deluxe antennas offered by DWM Communications. As we pointed out then, the Yo-Yo-Tenna Deluxe Portable Dipole Antenna System was claimed to be one of the most unique portable antennas ever developed. Yet, it was (and still is) very basic and easy to use, especially in Field Day, camping, vacation, and business-trip applications, as well as in apartment and condo use. According to the manufacturer, thousands of the antennas have been placed in use around the world in the 12 years since they were introduced.

Recently, we discovered DWM Communications is offering several new related Vee dipole antennas. The firm has taken the popular Yo-Yo-Tenna Deluxe and added a feature to make inverted-Vee operation an easier and less time-consuming process. DWM has added a Budwig center insulator to a pair of Yo-Yo-Tenna windup antenna reels to make connection of a PL-259 coax connector and cable a breeze. The new "Yo-Yo-Vee" antenna covers 2 through 40 meters. The basic price is $39.95 plus s/h, and you can purchase additional antenna reels to cover 75/80 meters and 160 meters. Complete instructions are included, along with tips on inexpensive center antenna supports.

Also offered are the Yo-Yo-Vee Model 4 and Yo-Yo-Vee Model 6 Portable Multiband Dipole Antennas, taking the basic YoYo-Vee one step further. While the Yo-Yo-Vee is a multiband antenna in itself, you can only adjust it for one band at a time. The new Model 4 ($49.95) and Model 6 ($59.95) also cover 2 through 40 meters, and they let you operate two or three bands at once, without an antenna tuner. Additional pairs of reels need to be purchased for 60/75/80-meter or 160-meter operation.

For more information, or a printed flyer, please send a self-addressed, stamped envelope to Catalog, P.O. Box 87-W, Hanover, MI 49241 (517-563-2613; e-mail: <tinytenna@hotmail.com>; on the web: <http://qth.com/dwm>). An online catalog is available at the DWM Communications website, as is a secure online order form. The website explains the various antenna options offered.

Improved LOBOY Universal Mount. Pro.Fit International, Inc., has announced the improved LOBOY Universal Mount (photo D). Introduced to the market well over a year ago, the popular LOBOY mount now includes improvements that make it more versatile for many more applications.

The LOBOY is enhanced by the addition of a 90-degree "L" bracket. The improved low-profile mount will now accommodate a variety of devices from hands-free phone cradles, to XM satellite radios, to the popular TFT video displays in either a horizontal or vertical orientation. The integrated swivel allows for easy adjustment in any direction, securely holding its position without tightening or locking levers.

The LOBOY attaches to nearly any vehicle with a flexible mounting pad, along with a premium 3M® adhesive that is removable without damage or leaving a messy residue. Also, the face of the LOBOY has the standard AMPS hole pattern used in the wireless industry. It's packaged with a double-face adhesive for securing devices without hardware.

Contact Pro.Fit International, Inc., 1335 Eagandale Court, Eagan, MN 55121 (1-800-388-0073; e-mail: <sales@pro-fit-intl.com>; on the web: <http://www.pro-fit-intl.com>). All products can be seen and purchased at the website.

New on the Net

Protonic.com: Free Technical Support. Are you at wit's end getting really helpful tech support for your PC, computer peripherals, and software? You might want to check out Protonic.com, which tries to fill in the gaps in the often mediocre support offered by many computer hardware and software companies.

Protonic.com is an online community dedicated to providing fast, free technical support to any computer user in need of it. The website managers say they are able to provide this service "thanks to our countless volunteers." Interestingly, Protonic.com is not based in any particular city, and its volunteers and administrators are located around the world.

If you have a computer problem—anything from hardware to HTML issues to software installation—you can submit a question on the Protonic.com "Ask a Question" page. Volunteer technicians will answer your question by e-mail. You're welcome to ask any type of computer-related question that you wish. Although almost nothing is out-of-bounds, they do ask you not to ask questions about hacking or other illegal activities.

Check out the website at <http://www.protonic.com>. You might start your site exploration by first navigating to the site's FAQ (Frequently Asked Questions) page.

Major Amateur Radio Manufacturers' Websites Revisited. About two years ago we drew reader attention to the websites of major amateur radio equipment manufacturers. We mentioned that the firms operate very comprehensive, feature-rich, and easy-to-navigate websites. It seems like it's now time to revisit and update these sites.

The manufacturers' websites (see fig. 1) make it easy for you to find out "what's new" in terms of major amateur equipment and accessories. Besides being among the first to announce new and

Major Manufacturers' Contact Information

Listed below is updated contact information, especially including website addresses, for major amateur radio equipment manufacturers. Why not visit (and bookmark) each of these websites soon?

Alinco: Ham Distribution, Inc., 15 South Trade Center Pkwy., Conroe, TX 77385; telephone 936-271-3366; fax: 936-271-3398; on the web: <www.alinco.com>.

ICOM: ICOM America, Inc., 2380 116th Ave. NE, Bellevue, WA 98004; telephone 425-454-8155; on the web: <http://www.icomamerica.com>).

Kenwood: Kenwood U.S.A. Corporation, Amateur Radio Products Group, Communications Division, 3975 Johns Creek Court, Suwanee, GA 30024-1265; or Customer Support/Distribution, at P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745; telephone 310-639-4200; on the web: <http://www.kenwood.net>.

MFJ: MFJ Enterprises, 300 Industrial Park Rd., Starkville, MS 39759; telephone 662-323-5869; tech help: 662-323-0549; on the web: <www.mfjenterprises.com>.

Ten-Tec: Ten-Tec, Inc., 1185 Dolly Parton Parkway, Sevierville, TN 37862; telephone 1-800-833-7373; e-mail: <sales@tentec.com>; on the web: <http://www.tentec.com>.

Yaesu: Vertex Standard, U.S. Headquarters, 10900 Walker Street, Cypress, CA 90630; telephone 714-827-7600; e-mail: <amateursales@vxstdusa.com> or <customerservice@vxstdusa.com>; on the web: <http://www.vxstdusa.com> or <www.yaesu.com>.

Fig. 1– Revisiting these major amateur radio companies' contact information.

upgraded products, the websites also have a welcome variety of interactive features that facilitate user-to-manufacturer communication and technical support. While the features of the manufacturers' sites vary considerably, they generally include, in addition to "what's new" announcements, accessory listings, equipment photos, customer and technical support pages, warranty and repair information, manuals, pricing and promotions, and dealer listings—in addition to trade show and other event locations and dates. Also offered on the sites are information on DX activities, company news and contact information, downloadable software and frequency files, firmware updates, press releases, and more. Often, the manufacturers' sites announce new and planned technology implementations, along with detailed explanations of how these technologies work in practice.

Why not visit each of the websites soon, bookmarking them for convenient future reference? Most likely, you'll be pleasantly surprised at the wide-ranging support and sense of community they can offer you.

From the Bookshelf

New Book on Radio Propagation Published by the RSGB. The books published by the Radio Society of Great Britain (RSGB) are known for their scope and quality. Ian Poole, G3YWX, is the author of a number of radio-related technical books; his new book, *Radio Propagation – Principles & Practice,* has been published by the RSGB (fig. 2).

A knowledge of radio propagation is vital for anyone associated with radio-communication technology. The new G3YWX book addresses the fundamental principles of radio-signal propagation as well as practical application. It provides a fascinating description of relevant information about radio propagation from HF to VHF, UHF, and beyond, enabling the reader not only to be able to understand the underlying principles, but also to have a practical understanding of them so that he or she can use them to their best advantage. Although primarily aimed at radio amateurs, the new radio propagation book also is suitable for professional applications.

Photo D– Pro.Fit International, Inc. has announced the improved LOBOY Universal Mount. The popular LOBOY mount now includes improvements that make it more versatile for many more applications. (Photo courtesy Pro.Fit International, Inc)

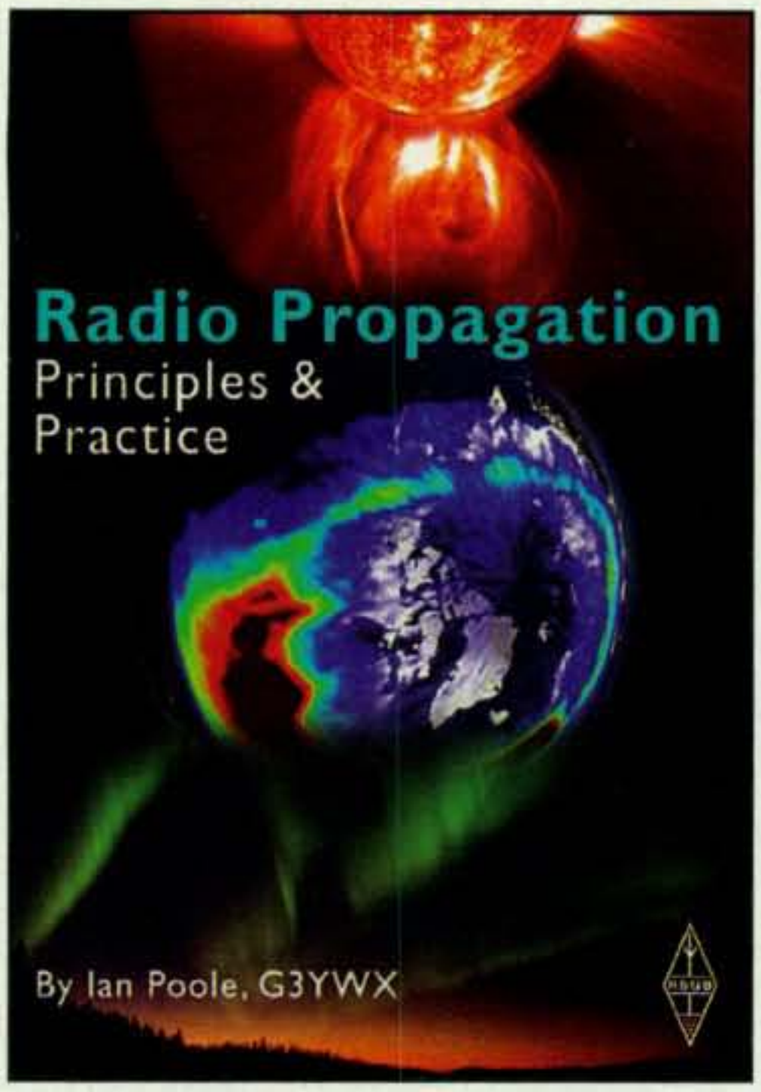


Fig. 2– Ian Poole, G3YWX, has introduced his new book, Radio Propagation – Principles & Practice, *published by the Radio Society of Great Britain (RSGB). It aims to capture the essentials of propagation, looking at the basic principles and then how to use this information to gain a better insight into predicting and assessing conditions. Ian says the book also is available from the ARRL. (Cover graphic courtesy Ian Poole, G3YWX)*

Written in Ian Poole's easy to read and understand style, the book provides a comprehensive description of everything that you need to grasp the essentials of radio-signal propagation, starting with radio waves themselves and how they travel. The book then describes the environment in which the waves travel around the Earth, detailing how it affects them. The Sun, its makeup, and how it affects the upper layers of the atmosphere (the ionosphere) are all described. Ionospheric modes of propagation are comprehensively explained, as are the effects of solar disturbances on the ionosphere, both in terms of the disruption to HF communications and the enhancements to VHF communications.

An understanding of how to predict propagation conditions is given, along with a brief overview of propagation prediction programs. Other modes of propagation also are detailed, including tropospheric propagation and the scenarios that cause enhanced conditions or "lifts." Meteor scatter, satellite communications, and moonbounce are also detailed.

The paperback includes chapters introducing the VHF and UHF frequencies, plus chapters on propagation, bands and bandplans, receivers and transmitters, antennas, mobile and repeater operation, DXing, and data communication.

The G3YWX book is priced at GBP (Great Britain Pounds) 14.99. It's published by, and is available from, the Radio Society of Great Britain, Lambda House, Cranborne Road, Potters Bar, EN6 3JE, UK, tel. +44(0)870 904 7373 (e-mail: <sales@rsgb.org.uk>; on the web: <http://www.rsgb.org>). According to Ian, the book also is available through major book outlets and, in the United States, from the American Radio Relay League (ARRL).

New Searcher's Book from Information Today. Do you want to get more mileage out of popular internet search engines? The folks at Information Today, Inc., are enthusiastic about Randolph (Ran) Hock's new book, *The Extreme Searcher's Handbook: A Guide for the Serious Searcher.* In the book, Ran Hock explains the strategies and tools—including search engines, directories, and portals—for all major areas of internet content. The book is billed as the essential guide for anyone who uses the internet for research and who needs to search the web proficiently.

In particular, readers with little to moderate searching experience should appreciate Ran Hock's helpful, easy-to-follow advice, while experienced searchers will likely discover a wealth of new ideas, techniques, and resources. The book is also supported by a web page.

The ten chapters of the book include treatments of basics; general web directories and portals; specialized directories; search engines; internet publishing; an internet reference shelf; groups and mailing lists; news resources; finding products online; and searching out images, audio, and video.

The new softbound book is $24.95. Contact Information Today, Inc., 143 Old Marlton Pike, Medford, NJ 08055-8750 (telephone 1-800-3009868; e-mail: <custserv@infotoday.com>; on the web: <http://www.infotoday.com>). You can order the book online at the publisher's website.

We Get Letters

Before wrapping up things this month, we would like to acknowledge some of the good folks who took the time and trouble to correspond with us in recent months. In no particular order, a tip of the ol' W8FX hat goes to Dave Thompson, K4JRB; Paul Sergi, NO8D; Phil Anderson, WØXI; Ian Poole, G3YWX; Pawel Staszewski, SP7PS; Dave Martin, WA6TYJ; Craig Clark, K1QX; Peter Shield, G8BXM; and Bernie Lafreniere, N6FN.

A special note: If you e-mail us, please include your full name and call-sign, if any. It would be nice to know we're corresponding with a real person, and not just an e-mail address!

Wrap-Up

That's all for this time, gang. Next time, more "What's New." See you then.

Overheard: One thing I've learned is that, for real results, it's not enough to talk about doing something. Rather, you first should do it, and then you can talk about it.

73, Karl, W8FX

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.*

Better than ever - 15 months of value.

CQ 2005/06 calendars

Now Only $10.95 ea. +$2 s/h

TWO Great Calendars for 2005/06!

15 months of spectacular images for Only $10.95

Classics Calendar - After an absence of a few years, we're pleased to offer an all-new CQ Radio Classics Calendar. 15 spectacular sepia-tone images; including Eico, Drake, Ameco, Hammarlund, Heathkit, Hallicrafters, Collins and more!

Amateur Radio Operators Calendar - 15 spectacular images of some of the biggest most photogenic shacks, antennas, scenics and personalities. These are the people you work, the shacks you admire, the antenna systems you dream about!

These 15 month calendars (January '05 through March '06) include dates of important Ham Radio events such as major contests and other operating events, meteor showers, phases of the moon, and other astronomical information, plus important and popular holidays. Great to look at, and truly useful!

1-800-853-9797 • FAX 516-681-2926 • www.cq-amateur-radio.com

CQ Communications, Inc.

25 Newbridge Road, Hicksville, NY 11801

dx

BY CARL SMITH,* N4AA

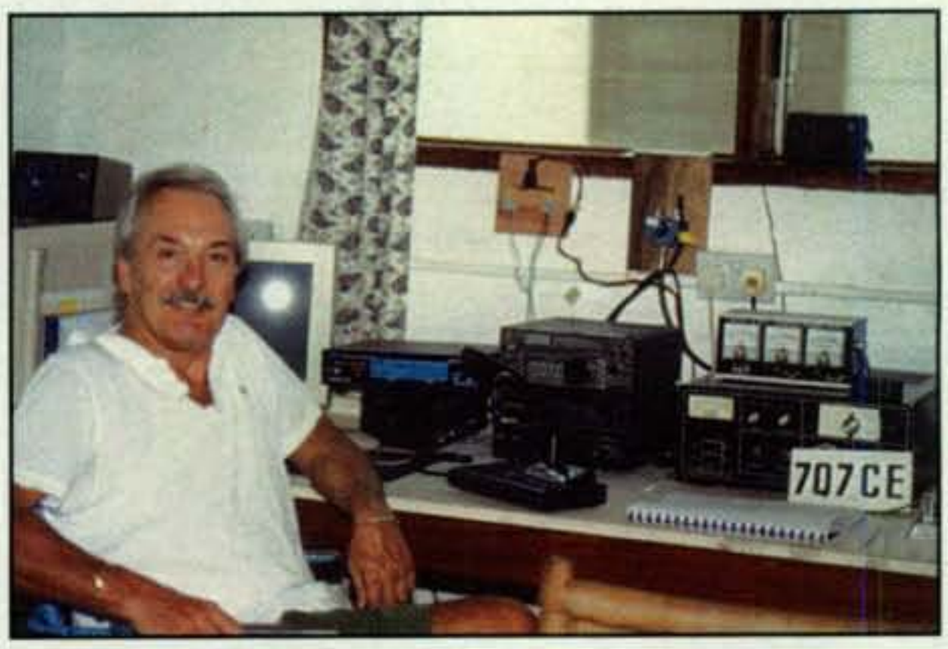
QRMing DXpeditions & QSLing Donations

This month I'm going to get on my "soapbox" regarding two topics. One is the endless problem of QRMing DXpeditions. This goes on every time we have DXpeditions from almost anywhere, even from just remotely rare entities. Virtually all experienced DXers know that DXpeditions operate *split*—on different transmit and receive frequencies—at least 95% of the time. Why is it we continue to have the problem of people calling on the transmit frequency? Let's use our heads instead of our mouths. *Think* about what you are doing. So many operators seem to lose all common sense and logic when they get in a pile-up situation. If we all just take those few extra seconds/minutes to make sure the "buttons" are in the right place before we start calling, everyone will be so much better off. The "Frequency Kops" could go away and our blood pressure would stay within tolerable limits.

My second topic is the matter of QSLing and donations. I know that most mega-DXpeditions arrange for someone to donate the cards for their operations. However, we also have the smaller operations where one, two, or three people go on a trip. These operations probably are not from one of the Top Ten Most Wanted places, but they still are needed by a lot of DXers. The ops spend their own money (sometimes thousands of dollars) because they *want* to do this, not necessarily because they "have more money than they can spend." Transportation is not cheap, for people or equipment; hotels and food are not a tremendous expense (in most cases); equipment is usually already available, as are antennas. Thus, they go and stay a week or two and make thousands of QSOs. Many of those Qs are not really "needed" by the stations working them; they just want to "crack the pile." On the other hand, there will be hundreds, if not thousands, of those operators who will be asking for a QSL card to confirm the contact.

These "lowly" DXpeditioners have already spent a considerable sum of money just to "make it happen," and then they are faced with the QSLing expense. Some of these folks can afford to "foot the bill" for printing the cards, and perhaps they can afford the expense of answering all the bureau cards they will get. Remember, they still have to pay to have those cards processed back to the sender through the bureau system, and sometimes that can be a substantial sum of money. Oh, yes . . . now we come to those "direct requests" that so many expect to be answered immediately, sometimes even before the poor

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>



Ely, IN3VZE/7Q7CE, was to be active again from Malawi from September 9–23 operating SSB all bands 160 meters through 10 meters. (Photo courtesy of Ely, IN3VZE)

DXpeditioners have a chance to unpack their bags when they get home. When they start opening those envelopes with the direct requests, what do they find? Well, many of those envelopes contain only a QSL card—no return envelope, no postage, no IRC . . . *nothing*. These, in most cases, get tossed into a pile for a card returned via the bureau. Many DXers are generous enough to put an SAE (self-addressed envelope) with postage affixed to it for the reply, and *thanks to those people*. Then there are requests accompanied by $1.00 or an IRC. Again, *thanks to those people*. Finally, we find a very small group who put anything from $5.00 to $20.00 in the envelope, and some even more. These are the people who are "supporting" all of those who don't send anything.

Yes, I hear many of you saying, "Yeah, well, they can afford it," and you well may be correct.

The YVØD Aves Island DXpedition Team (left to right): OH2BH, YV5AMH, YY5FRD, YV5OIE, YV5JBI, OHØXX, YV1DIG, YV5KXE, YV4BOU, YV5IVB, YV6BTF, and K6MYC. (Photo courtesy of Martti, OH2BH)

The WAZ Program

15 Meter SSB

613.....EA8AYV 614.....YBØAI

15 Meter CW

322.....SM3NXS 323.....K9ALP

20 Meter RTTY

54.....NIØG

160 Meters

200.....K2UU

All Band WAZ SSB

4927.....JA5XWB 4929.....WB5M
4928.....DL7JAN 4930.....JA1ATB

Mixed

8318.....DJ5FS 8320.....K2BA
8319.....JA3KRK

All CW

431.....N4BAA 433.....DL7JAN
432.....JA3OSI 434.....W6RUJ

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>.

Not everyone can afford to stick a $20.00 bill in an envelope when requesting a QSL card from a DXpedition, especially if it isn't on the Top Ten Most Wanted list. However, let me ask you, "How much did you spend for your rig? Your antennas?" Some spend small fortunes to have the best gear they can have so they can work these DXpeditions. Isn't it only fitting and proper that we give back a little to say thanks to these guys? Could you afford to go to some remote Pacific island or some African country and stay for a couple of weeks? I only wish I could. If I can't afford the multi-thousands of dollars to make the trip myself, surely sending along a few extra dollars to help defray those QSL costs won't put me into bankruptcy.

I urge you to think about this the next time you send a QSL request. It doesn't really matter if it's a U.S. QSL Manager

CQ DX Awards Program

SSB

2437.....EA1AUM 2439.....NJ5T
2438.....EA1BZ 2440.....PA9TT

RTTY

36.....N5ZM 37.....AE5RM

SSB Endorsements

320.....CT1EEN/332 Mobile.....K9HQM
300.....JR4NUN/303 QRPp.....PA9TT
150.....EA1BZ/159

CW Endorsements

320.....YV5ANT/324 310.....PY4WS/319

The basic award fee for subscribers to *CQ* is $6. For nonsubscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 335 active countries. Please make all checks payable to the award manager.

5 Band WAZ

As of August 1, 2004, 660 stations have attained the 200 zone level and 1401 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:

K4UTE K2UU

The top contenders for 5 Band WAZ (zones needed, 80 meters):

N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
WØPGI, 199 (26)
W2YY, 199 (26)
VE7AHA, 199 (34)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40m)
NN7X, 199 (34)
IK1AOD, 199 (1)
DF3CB, 199 (1)
GM3YOR, 199 (31)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W6SR, 199 (37)
W3NO, 199 (26)
K4UTE, 199 (18)
HB9DDZ, 199 (31)
RU3FM, 199 (1)
HB9BGV, 199 (31)
N3UN, 199 (18)
OH2VZ, 199 (31)
K5MC, 199 (22)
W1JZ, 199 (24)
K2UU, 199 (26)
W1WAI, 199 (24)
W1FZ, 199 (26)
SM7BIP, 199 (31)
PY5EG, 199 (23)
SP5DVP, 199 (31 on 40)
W8AEF, 199 (40)
K8RR, 199 (26)
UU5JR, 199 (4)
W8GF, 199 (22)
N4NX, 199 (26)
N4MM, 199 (26)
EA7GF, 199 (1)
N4PQX, 199 (26)
DL2KQ, 199 (31)
JA5IU, 199 (2)
CT3DL, 199 (26)
EA5BCX, 198 (27, 39)
G3KDB, 198 (1, 12)
KG9N, 198 (18, 22)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
K5PC, 198 (18, 23)
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)
N4XR, 198 (22, 27)
RU3DX, 198 (1, 6)
N6HR/7, 198 (34, 37)
OE2LCM, 198 (1, 31)
W7SX, 198 (18, 23)
HA1RW, 198 (1, 31)
WK3N, 198 (23, 24)
HA9RT, 198 (1, 31)
W9XY, 198 (22, 26)

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

IZØCKJ (179 zones)

Endorsements:

K4UTE (200 zones) K2UU (200 zones)

****Please note: Cost of the 5 Band WAZ Plaque is $80 ($100 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 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

5264 9A2AA	3808 N6JV	3271 S53EO	2944 IT9QDS	2510 K9UQN	2175 WB3DNA	1773 W7CB	1535 AI6Z	1090 W2OO
4746 W2FXA	3768 YU1AB	3246 KØDEQ	2824 W2ME	2457 JN3SAC	2070 I2EAY	1772 VE9FX	1521 NG9L	933 SM7GXR
4257 W1CU	3668 N4MM	3234 JH8BOE	2772 YU7GMN	2422 W8UMR	2018 HA9PP	1741 AB5C	1487 WT3W	865 N5DD
4211 9A2NA	3589 N5JR	3166 K9BG	2744 9A4W	2399 W6OUL	2005 VE6BF	1705 W2EZ	1472 OK1DWC	825 KL7FAP
4149 EA2IA	3548 N9AF	3140 I2EOW	2720 K2XF	2385 K5UR	1976 DJ1YH	1697 Z35M	1369 KW5USA	803 VE3NQK
4111 F2YT	3489 SM3EVR	3121 PAØSNG	2705 W9IL	2287 OZ1ACB	1958 CT1EEB	1674 YBØAI	1226 EA2BNU	742 K5IC
4038 N4NO	3379 I2MQP	3082 IK2ILH	2701 WA1JMP	2212 PY2DBU	1837 AA1KS	1561 N1KC	1220 K6UXO	738 AK6I
3822 VE3XN	3291 KF2O	3011 W2WC	2598 W9OP	2203 W4UW	1823 KØKG	1560 KX1A	1130 PY1NEW	710 KØCF
3816 I2PJA	3284 WB2YQH	2987 HAØIT	2550 W7OM					

SSB

4509 IØZV	3226 EA2IA	2734 4X6DK	2259 K5RPC	1993 W9IL	1704 IT9SVJ	1480 AB5C	1162 EA5DCL	851 KU4BP
4027 ZL3NS	3215 I2MQP	2646 LU8ESU	2209 IK2QPR	1973 I3ZSX	1701 K8MDU	1460 NG9L	1148 AG4W	822 K1BYE
4018 VE1Y	3160 N4NO	2618 OE2EGL	2086 W2WC	1969 CT1EEB	1698 W6OUL	1385 JN3SAC	1143 EA3EQT	822 W8UMR
3793 I2PJA	3049 F2VX	2594 I8KCI	2094 LU5DV	1954 CT1EEN	1669 W2FKF	1384 LU3HBO	1082 VE7SMP	812 KU6J
3765 F6DZU	3036 CT1AHU	2538 KF7RU	2028 K5UR	1942 W7OM	1615 KI7AO	1259 I2EAY	1078 EA3KB	726 YBØAI
3373 9A2NA	3004 N5JR	2516 EA1JG	2027 NQ3A	1937 I8LEL	1562 W2NE	1238 LU4DA	1043 AI6Z	737 IK8OZP
3353 EA8AKN	3000 I4CSP	2509 EA5AT	2021 N6FX	1862 EA7TV	1562 SV3AQR	1218 WT3W	990 HA9PP	733 AK6I
3307 OZ5EV	2817 I2EOW	2350 IN3QCI	2014 K2XF	1806 K3IXD	1538 VE9FX	1194 N1KC	934 KX1A	670 VE6BF
3260 CT4NH	2782 KF2O	2325 CX6BZ	1994 W4UW	1721 DK5WQ	1520 DF7HX	1190 K4CN	903 N9DI	601 K7SAM
3234 N4MM	2741 PAØSNG	2289 HAØIT						

CW

4356 WA2HZR	2959 9A2NA	2386 EA7AZA	2146 N6FX	1939 K5UR	1718 I2EAY	1430 EA2CIN	1158 YU1TR	898 WT3W
3655 K9QVB	2948 LZ1XL	2380 KF2O	2112 OZ5UR	1893 EA5YU	1712 I2MQP	1352 WO3Z	1132 WA2VQV	767 VE9FX
3610 N4NO	2694 N5JR	2268 W8UMR	2043 K2XF	1882 W7OM	1584 IK2ECP	1337 AC5K	1048 KX1A	642 PP6CW
3361 VE7DP	2476 W2WC	2260 I7PXV	2040 JN3SAC	1867 VE6BF	1531 I2EOW	1235 AI6Z	998 T94GB	624 W9IND
3229 EA2IA	2416 KA7T	2149 K9UQN	2036 IK3GER	1841 W6OUL	1520 4X6DK	1203 K6UXO	953 PY4WS	

or one in Europe or Japan. They all have expenses related to sending you that card/cards. *And,* if you have multiple QSOs, refrain from asking for a separate card for each one of them, unless you are prepared to include a substantial donation. Nice cards, which most of us like to receive, are not cheap to print. Multiple cards can increase the weight of the envelope and thus the return postage. Try to remember that Golden Rule: "Do unto others as you would have them do unto you."

Aves Island and Losotho

A couple of bright spots this past summer kept DXers' interest going in spite of the overall poor propagation. The much anticipated DXpedition to Aves Island, YVØD, finally came about the first of August. After some delays, the team finally reached the island only to have electrical problems. Following repairs, which took several hours, the team came on the air and did a respectable job by handing out over 18,000 QSOs on 40 through 10 meters, and they added on a few hundred Qs on 6 meters. Unfortunately, the weather forced a decision to depart the island earlier than expected, and the team was only able to get in 58 hours of operating time. Please see the photo of the YVØD team. I know we all thank them for making a good effort under less-than-ideal conditions.

Then there was the African trip by Dave, K4SV, and Neil, VA7DX. They had originally planned to operate from three locations, but in the end they operated only from Lesotho as 7P8DA and 7P8NK. Dave expected to end up with around 10,000 Qs, with a large number of those on 80 meters and a good number on 160 as well. As this column was written in mid-August, I hope to have more details of the operation after their safe return.

The WPX Program

SSB

2913 ..... KB4CL

Mixed

1945 ..... 9A6ZT

CW: 1950 W9IL. 2100 IK3GER.
SSB: 350 KB4CL. 600 W8HGH. 1100 G3TSZ. 2100 W9IL.
MIXED: 500 9A6ZT. 2600 JN3SAC. 2850 W9IL. 3450 I5RFD.

80 Meters: UA1ZKF
South America: UA1ZKF
Oceania: UA1ZKF

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GQ, W4BQY, IØJX, WA1JMP K0JN, W4VQ, KF2O, W8CNL, 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, ABØP, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POF, DJ4XA, IT9TQH, ONL-4003, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1PO, K9LNJ, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MC, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, KZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, S53EO, DF7GK, I7PXV, S57J, EA8BM, DL1EY, KØDEQ, KUØA, DJ1YH, OE6CLD, VR2UW, 9A9R, UAØFZ, DJ3JSW, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, W4BP, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT.

160 Meter Endorsement: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8RSW, W8ILC, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK3AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR1QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N8JV, ONL-4003, W5AWT, KBØG, F6BVB, YU7SF, DF1SD, K7CU, I1POR, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, WX3N, WBØDD, IØRIZ, I2MQP, F6HMJ, HB9DZZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA5CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, KØDEQ, DJ1YH, OE6CLE, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, UAØFZ, CT4NH, W1CU, EA7TV, LY3BA, RW9SG, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, W4GP, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT.

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 593, Clovis, NM 88101 USA. *Note: WPX will not accept prefixes/calls which have been confirmed by computer-generated electronic means.*

Please Note: As of February 2004, the price of the 160 meter bar for the Award of Excellence is now $6.50.

QSL Information

C21YL via DJ2EH
C21ZF via DK2ZF
C6IOTA via WA8LOW
CEØ/AC3A via AC3A
CE4RPM via WB7QXU
CE5ANS via WB7QXU
CN2PM via G3WQU
EA8/OH4N via OH2BYS
EA8/ON4QX via ON4QX
EA9/ON4CJK via ON4ADN
EA9/ON5FP via ON4ADN
CS2004REP via CT1REP
CS2004RV via CT1RVM
CS3B via CS3MAD
CS5E via CT1CSY
CS7T via CT1EEB
CS94BD via CT3BD
CS94EE via CT3EE
CS94KY via CT3KY
CS94MD via CT3MD
CT8ITZ via CT2ITZ
CU34AA via CU3AA
CU34EJ via CU3EJ
CU3E via CU3CY
D71CW via DS3EXX
D80HQ/3 via DS1KVP
D90HE/5 via DS2GOO
D90HN via HL2ADO
D90HS via DS2LGK
E20HHK/P via E21EIC
E31AA via ZL1AMO
E4/G3WQU via G3WQU
E44/G3WQU via G3WQU
EA6TS via EA6AZ
EA8/OH4N via OH2BYS
EA8/ON4QX via ON4QX
EA9/ON4CJK via ON4ADN
EA9/ON5FP via ON4ADN
ED1CL via EA1URV
ED1LYF via EA1AUM
ED1RAV via EA1EG
ED1SDB via EA1DJV
ED1SEM via EA1AUM
ED1SPR via EA1URV
ED1SSV via EA1URV
ED1VIC via EA1YS
ED2EFA via EC2AHS
ED2JJ via EA2AJX
ED2TER via EA2BIB
ED2ZZT via EA2PK
ED3CDC via EA3EJK
ED3URT via EA3TE
ED4AIG via EA4FAS
ED4CLA via EA4AFY
ED4IF via EA4TE
ED4MAD via EA4RCU
ED4PSV via EA4EGA
ED4RCP via EA4RKF
ED4RXG via EA4EGA
ED5AEF via EA5FHK
ED5CPX/P via EA5FER
ED5SSC via EA5DDK
ED6CDB via EA6ZX
ED6FAG via EA6ZX
ED6FSS via EA6ZX
ED6MPC via EA6ZX
ED6PMT via EA6SB
ED6TDC via EA6SB
ED6TOV via EA6SB
ED7AAF via EA7BQC
ED7FPR via EA7BNL
ED7IPE via EA7GOG
ED7MCE via EA7CFU
ED7MCM via EA7CFU
ED7MMC via EA7AYS
ED7SBC via EA7DQM
ED7SRS via EA7URC
ED7URF via EA7PY
ED7URR via EA7DA
EG1PAL via EA1EUR
EG4UCM via EA4GU
EG4UPU via EA4GU
EG7DFA via EA7GRA
EJ7NET via EI6FR
EM3H via UR3HC
EO59I via UR6IM
EO59IS via US7IGF
EO59JK via W1TE
ER500S via ER1DA
ER60ZON via UR4ZXK
ES1FB/1 via ES1RA
ETØU via OK1LU
EV60OB via EW1ABA
EV6ZK via EU6MM
F/DL5XL via DL5XL
F/PA6JUN via PBØAJN
F/TU5KG via F4EFI
F5KAI/P via F8DKG
FG/DL2AWG via DL2AWG
FK/JF1UI via JF1UIO
FO/JAØSC via JAØSC
FO0GC via K6DXX
FO5RH via F2HE
FO5RN via F5NQL
FP/VE7SV via N7RO
FWØBX via ZL1AMO
G4WFQ/HI via G3SWH
G5BXP via DK2ZF
G5W via GØWAT
GBØMPA via GWØANA
GB2MOF via GM4UYZ
GB60DDL via GØVIX
GB6JUN via GØOOO
GB8CC via GØSSC
GI1A via UT5SI
GM3YOG/P via G3YOG
GM4WSB via G4WSB
GM6TW/P via GØUZP
GM7CXM/C6A via EA5ON
GSØTOW via GM4CXM
GXØOUR via G4BJM
GX3WRS/P via M3ZYZ
H40RW via ZL1AMO
H44RW via ZL1AMO
H44TJ via VK3BCN
H74C via N6AWD
HA200CVM via HAØNAR
HA2YNG via HG2EBJ
HBØ/MØDOV via 4Z4DX
HB9/OM3CGN via OM3CGN
HC1HC/HC via NE8Z
HFØPOL via SP7IWA
HF110TG via SP9PTG
HF20RGV via SP8AQA
HF2EU via SP2EB
HF650D via SP1AEN
HF85AMU via SP3PKL
HG2004HU via HA1CW
HG3UHU via HA3MQ
HG4YF via HA4YF
HG56VEK via HA1SR
HG8R via W3HNK
HG8Z via HA8UT
HI3/ON4QX via ON4QX
HK1HHX via EA7FTR
HR5/OH3J via OH3OJ
HR9/N0HJ via NØHJZ
HSØZEO via OE1GZA
HS2CRU via WB7QXU

(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>.)

Here and There

This past summer here on the east coast of the U.S., hurricane Charley bore down on the state of Florida, causing severe damage, and then moved rapidly up the East Coast. I urge all of you to remember that these storms can cause great damage, and often there is the need for emergency and health-and-welfare communications. Keep this fact in mind this as you tune across the bands, and avoid frequencies that are being used for that traffic. Many DXers have big signals and could easily cause interference without realizing it, especially when operating split.

October is the month for a lot of scheduled DXpeditions. There are operations scheduled from Lord Howe (VK9L), Chesterfield (TX/C), Cameroon (TJ), Kiribati (T30), Kure (KH7K), Cambodia (XU), Tuvalu (T20), Miquelon (FP), and Bhutan (A5). That should be enough to keep all of us busy, plus there is always the CQ WW DX SSB Contest the last weekend of the month.

Don't forget that the Peter One (3YØX) DXpedition is set to kick off in January 2005, and it is sure to generate huge pile-ups.

Until next time, enjoy the chase and above all *have fun!* 73, Carl, N4AA

BY JOHN DORR,* K1AR

Being a Good Guest Operator

October's Contest Tip

It's October, and do you know where your VOX delay is? Seriously, how many operators have you encountered who either have their VOX delays set too short (e.g., cutting information off a transmission) or too long (e.g., missing the first few syllables of a station calling)? I've always subscribed to keeping VOX delays as short as possible without disturbing the integrity of the transmission. If you're not sure whether or not it's set up correctly, ask a few folks on the air. Your operating is only as good as your ability to hear and transmit *all* the information you have in mind!

Calendar of Events

Sept. 24–27	Fall Classic Exchange
Sept. 25	Alabama QSO Party
Sept. 25-26	**CQ WW RTTY Contest**
Sept. 25–26	Scandinavian SSB Activity Contest
Sept. 25–26	Texas QSO Party
Sept. 25–27	Arkansas QSO Party
Oct. 2–3	Oceania SSB DX Contest
Oct. 2–3	California QSO Party
Oct. 3	UBA SSB Contest
Oct. 3	RSGB 21/28 MHz SSB Contest
Oct. 6–8	YLRL Anniversary CW Party
Oct. 9–10	Oceania CW DX Contest
Oct. 9–10	Pennsylvania QSO Party
Oct. 10	North American RTTY Sprint
Oct. 10	UBA CW Contest
Oct. 13–15	YLRL Anniversary SSB Party
Oct. 16–17	JARTS WW RTTY Contest
Oct. 16–17	Worked All Germany Contest
Oct. 17	RSGB 21/28 MHz CW Contest
Oct. 30–31	**CQ WW SSB DX Contest**
Nov. 6–8	ARRL CW Sweepstakes
Nov. 20–22	ARRL SSB Sweepstakes
Nov. 27–28	**CQ WW DX CW Contest**

One of the most common dreams for many of us is to have the ultimate contest station a few steps from our living rooms. As we look at pictures of U.S. stations such as KC1XX, K3LR, W3LPL, NQ4I, and K4JA (to name just a few), we daydream about what it must be like to own such a place. The reality is, however, that most of us don't have the good fortune to own such a station. Whether it's because of financial situations, life's circumstances, or lack of motivation, the reality is that the super stations of contesting are few and far between.

Thus, as contesters we are torn between two opposing poles—the desire to maximize our contesting skills using the stations we own, and a passion for winning from somewhere else. In fact, both are legitimate goals, indeed.

Over the years there has been quite a bit of attention focused on the subject of guest operating. Those on the conservative side of the aisle feel that contest participation should only be allowed from your home station. The more moderate view (as well as the overwhelming majority) suggests that guest operating is a way of life within contesting. For example, as a multi-operator station, by definition you are hosting a group of guest operators. In the single-operator arena, while some view guest operators as little more than freeloaders, there is a very high level of participation by this operating group. For the moment, then, let's not debate the appropriateness of guest operating. Rather, let's focus on how guest operators should behave on and off the air.

Off-The-Air Tactics

It's important to remember that the operative word in guest operating is *guest*. This means you are operating at someone else's station by invitation and should treat that opportunity with the respect it deserves. Here are a few tips gathered from my years of guest operating that you may want to consider:

• Remember you are not only a guest of the hosting ham, but also of the entire family. As such, you are invading their private family space and should treat it with respect.

• While it may not be appropriate in every situation, try engaging with your host operator's family (but maintaining an invisible profile where appropriate). You're going to be spending the weekend with them (and maybe many more to follow). While there is a balance to maintain between being engaging and being overly invasive, most host families welcome the opportunity to meet the guest and get to know that person better. It certainly makes for a warmer long-term relationship and an easier situation for your host.

• As a guest, it's a good practice to consider some of the basics: bring your own food, leave your personal demands at home, clean up after yourself, and so on.

• While not always practical, especially for DX-pedition operations, being a guest operator does not mean you simply show up the Friday night of a contest. The benefits that come from building a competitive contest station should be shared among the host and the guest. Operating at someone else's station is a privilege, not an entitlement. The more you operate at someone's station, the more you owe him a slice of your time.

• Support as a visiting operator can be measured in ways other than just time. Put another way, not all host operators are millionaires, and even if they are, it's appropriate to put some of your own financial skin in the game—especially if you're establishing a long-term operating relationship with your host.

• The responsibility of submitting a log is yours, not the host's. Again, I would compare this task to bringing the dishes into the kitchen after enjoying a nice meal at a friend's house. Do you just get up and leave after eating? Do you do the same at the 0001Z hour after a contest, expecting your host to manage the administrative tasks?

On-The-Air Tactics

In addition to some of the suggestions you should consider when being off the air, there are more to

*2 Mitchell Pond Road, Windham, NH 03087
e-mail: <K1AR@contesting.com>

Open Invitation from the FOC

Many of you have heard of the FOC (First Class CW Operators' Club), a CW-focused organization sporting members from around the world. What follows is a brief announcement of one of their upcoming operating events that is open to all amateurs worldwide:

Join us for 24 hours of CW fun, making QSOs with FOC members on all six HF bands (WARC excluded) and VHF. This is an operating event (not a contest) entitled "The Bill Windle QSO Party" in honor of one of the club's long-standing members, now a Silent Key. The primary purpose of the event is to encourage more CW activity. Stations call "CQ BW" in any portion of the band from xx.015 to xx.045. Contact each station once per band.

The exchange for this one is RST and name (FOC members will also send their membership number). The activity event will run from 0000Z to 2359Z on October 16, 2004. No awards will be produced and no reporting is required, but if you are interested, kindly submit your final QSO totals to be listed in the results. Non-members send total number of QSOs with FOC members (count each QSO per band). Members will report the total number of QSOs and separate FOC member QSOs. No logs are required, as the "honor" system will be used. Send your totals via e-mail only to <KZ5D@aol.com> by October 23, 2004. A final listing will be posted on the FOC website at <http://www.firstclasscw.org.uk/> and at <http://www.contesting.com>.

consider as you prepare to fire up the rig and blast away in a contest. One of the first decisions that should be made in any guest operator situation is the callsign to be used. Clearly, this is a non-negotiable decision that is in the hands of the host operator. During my experiences at K1EA's place, Ken did not want to deal with the QSL-card load. Therefore, for years I've used my callsign from his station. Whatever your situation may be, always be sure to follow you host's wishes.

Once the contest starts, there is a critical factor to consider, especially if you're using your host station's callsign. Be sure to show respect for your host's reputation as you operate. As a group, the contest community is fairly small, and word about poor operating tactics travels quickly even when hiding behind someone else's call. I've always subscribed to the theory that my operating style is the same regardless of the callsign I'm using.

Another consideration when operating at someone else's station is that you should show respect for that person's investment in equipment. Hot-switching antennas, running the grid current on the high side, pushing every last watt of power out of the amplifier are just as unacceptable at someone else's station as they are at your QTH.

Here are a few more tips for you to consider:

• Treat your operating environment as if it were your own. Don't run the shack's heating system or air conditioner any differently than you would at home. Keep the coffee in the mug, not on the operating table. Throw your trash away, not on the floor.

• The shack's computer is meant to be a logging device (maybe packet, too). Be respectful of your host's privacy with regard to other data in the system.

• Always ask your host's permission if you want to change things around in the shack. A quick question can diffuse any misunderstanding later on. Most host operators will welcome constructive suggestions when it comes to operating ergonomics.

• If you are operating in a multi-op situation, remember that your host makes the call as to who operates and when (unless the host chooses to designate those decisions to a team captain).

Some Final Thoughts

If you think that the thoughts in this month's column are just plain common sense, you're right. The problem is that we often bypass conventional thinking in the heat of battle. Treating a hosted operating situation as if it were your own situation has always worked for me.

I'd be remiss if I didn't thank W1ZM, W2PV, K1EA, K1GQ, K1DG, W3AU, K1OX, TI2LTA, WØCG, W3LPL, and the others I'm unfortunately forgetting for their fantastic support and hospitality over the years. You guys have made contest operating an incredible experience for this contester!

As a final reminder, I want to let you know that we are in the concluding days of collecting your responses to my 2004 CQ Contest Survey. The level of activity has been at a record high this year, which has been very encouraging. If you want to get your response in under the wire, please check out the on-line source for submitting your answers at <www.hamgallery.com/survey>.

The fall contest season is upon us. I hope you have some exciting plans. See you in the pile-ups!

73, John, K1AR

beginner's corner

BY WAYNE YOSHIDA,* KH6WZ

Contesting for the Rest of Us

Last month we briefly touched on an exciting aspect of ham radio—contesting. With one of the world's most popular HF contests happening later this month (the CQ World-Wide DX Contest), let's take a closer look at the sport of radio contesting.

Contesting is not for everyone, but it is open to every licensed ham and can be very exciting. Hams "do" radio contests for a whole bunch of reasons. Contesting is:

- A good way to test your endurance and concentration; it hones operating skills and tests your radio equipment under "continuous duty" operation.
- Considered an exercise to prepare your station and skills for emergency communications.
- A great way to compress several months of operating into a single weekend or a specific time period.
- A way to work more stations for operating awards such as the CQ DX Awards, ARRL DX Century Club (DXCC), Worked All States (WAS), and VHF/UHF Century Club (VUCC).
- Fun.

If you have an HF station, there are a lot of contests for you. If you have VHF/UHF gear, there are many contests for you as well. As mentioned last month, most contest activity on the VHF and up bands is on SSB and CW, so a multi-mode VHF/UHF rig is needed for even semi-serious VHF contesting.

Contest participants range from brand-new licensees to the most experienced Amateur Extra class hams, and there are contests for operations from HF to the microwave bands and modes from CW and SSB to RTTY and everything else. There is even a contest for one of the more exotic modes of communication—EME, or Earth-Moon-Earth ("moonbounce").

In addition, there are radio contests sponsored by groups all over the world. If amateur radio exists in a country, chances are very good that there are radio contests there, too, and you are encouraged to participate, right from your ham shack at home. Several of the non-U.S. contests are the Japan Amateur Radio League (JARL) All Asian DX Contest and the Radio Society of Great Britain (RSGB) National Field Day. There are many others as well.

Take a look at the contest columns in *CQ* and other ham magazines for information on upcoming contests. My favorite contests include ARRL Field Day, ARRL Sweepstakes, and the CQ World-Wide DX Contest on the HF bands, and the VHF Sweepstakes, the San Bernardino Microwave Society (SBMS) 2 GHz and Up Contest, and the ARRL 10 GHz and Up Contest for the VHF and up frequency bands.

You don't have to have a super antenna system like this, but it helps. Very large and complex antenna systems are used at winning contest stations. Multiple transceivers connected to multiple tower and antenna systems are built to maximize signals in desired directions.

Your Station, Your Desire

As I mentioned earlier, contesting is open to any licensed ham. Although I have operated from some extremely efficient stations with very large antennas and lots of equipment (see photos), I have also worked contests with a single radio connected to an indoor dipole thumb-tacked to the ceiling.

Your station should match what you want to accomplish and vice-versa. For example, if your goal is to contact more states for the WAS award,

*16428 Camino Canada Lane, Huntington Beach, CA 92649
e-mail: <kh6wz@cq-amateur-radio.com>

then a simple dipole and an HF rig might be all you need. If you want to win in your contest category, or be the global champion, you must consider a more effective station. Putting it another way, if you have a single transceiver, no amplifier, and a dipole antenna, you should not expect to have as many points as a station with two transceivers, an amplifier, and a beam antenna on a tower. (Let me also add that operator skill makes a big difference in the final score, regardless of what is on the equipment list.)

Like all aspects of radio communication, the antenna is the single most important item in your station. An old saying goes, "You can't work 'em if you can't hear 'em." This certainly applies to radio contesting. Therefore, you might want to consider getting an antenna with more gain than a dipole or simple vertical. For VHF and above, Yagi (beam) antennas are practical and do not take up much space. Take a look at past issues of *CQ* and the other radio magazines and books for antenna ideas.

Although any rig that puts out a signal can be a "contest radio," some features will make contest operating more enjoyable. Plus, if (when?) you get hooked on contesting, and as you improve your skills, a time will come when a radio's not-necessarily-needed "bells and whistles" become "normal and required" features.

The Human Touch: Operator Skill

One of the most important aspect of a contest station's receiver is not rig performance or accessories, but actually a part of your body—your ears. If we consider your ears as the receiver, then we can consider your brain as the most important filtering mechanism in your station.

In other words, we all have the ability to "sort out" multiple sensory inputs to derive meaningful information. For example, say you are with three friends near the swimming pool at a party. Loud music and dancing are going on in the living room. People are swimming and diving in the pool. The family dog is barking for attention. However, even with all this going on, you are able to hear and understand your three-way conversation about last night's basketball game.

The radio contesting skill is very similar to this ability to concentrate, and honed to focus on receiving (hearing) and understanding (copying) the contest exchange of specific CW or phone information.

Optimize and Maximize

Efficient station layout becomes essential if you want to be effective in contests. Although you can be perfectly fine operating your station with the rig on top of the power supply on the top shelf inside the bookcase, things change completely when you have to sit in front of the radio for hours at a time in a 24- or 48-hour contest period.

A computer is virtually a necessity in 21st century contesting. At the very least, you should have some sort of computer with software that has logging and reporting features, as well as the ability to identify and maybe remove duplicate contacts (known as "dupes"—more on them below). Station automation is becoming more and more elaborate, but at the same time, simplified with interface accessories and computer-enabled radios.

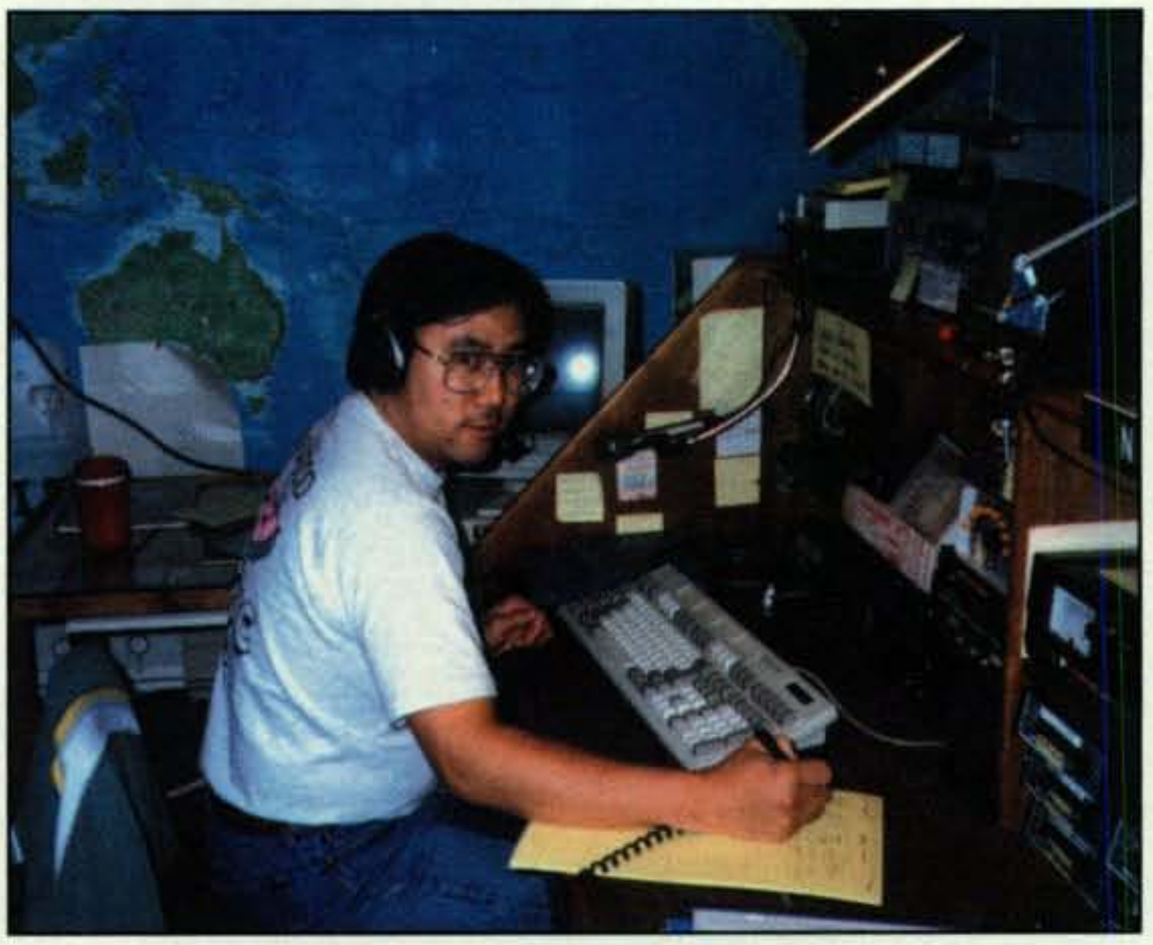
Now I am not saying that you cannot participate in a radio contest if you don't have a computer. The old paper-and-pencil method still works, even today. However, computers sure make operating and post-contest paperwork simple. With modest effort, just about anyone can make 100 or 200 con-

A Most Useful Phone Contest Accessory

One of the most useful contest accessories is the boom-microphone/headset. This combination of headphones and microphone, along with a footswitch connected to the push-to-talk (PTT) line, enables hands-free operating. Using a headset like this will let you listen to the receiver, grab your atlas to see where the signals are coming from, and write or type entries into your log.

The Heil Sound Model BM-10, with the HC-4 DX Dream Machine element, is for contesters. It is a modular unit, in that the main headset and boom mic terminate into a common type of connector, and then you purchase (or make) leads to plug into your rig. Nice idea, since one headset can be made to work with just about any radio in your shack.

The boom-mic headset is a most useful accessory for contest operating.



No matter what sort of gear you have, just about all contest stations are set up for efficiency and ergonomics. Accessories such as computers for logging and headsets for hands-free operating are very useful.

tacts in a single contest weekend. Can you imagine writing all this information down and making sure you (and the contest sponsors) can read your entries? In addition, you must record only unique stations. In many contests, stations may be worked once and only once. Excessive dupes can get you disqualified. Also, it is embarrassing to work for several minutes trying to break through a pile-up of stations, only to find out that you already worked that station an hour or so ago. Your ears will surely turn red (as mine always do) when that station on the other side says, "We've already worked at 1537 UTC Old Man." Try to avoid the dupe as much as possible. *(Some contests permit a station to be worked more than once as long as the contacts are on different bands or modes. See rules for each contest for specific requirements.—ed.)*

While the dupe is embarrassing, the multiplier is always a reason to celebrate. Just like when Ms. PacMan gobbles up a certain doo-dad and your score jumps by more than just one point, certain radio contacts qualify as multipliers. For example, contacts made to a certain geographic area or "zone" are multipliers in the CQ WW DX Contest. In most VHF contests, the multipliers are "grid squares." Multiplier contacts can boost your final score by a huge amount, since the final score is a calculated number based on a variety of items. Generally, though, it's some variation on the basic formula of number of contacts times number of different multipliers.

. . . And Accessorize

Speaking of maximizing station efficiency, radio accessories that maximize station effectiveness or ergonomics may become station "necessities" when you get a little more serious in contest activity. My favorite gadgets include memory keyers for CW, headsets with boom microphones, footswitches for push-to-talk, and digital voice keyers. Other, more complex units enable a single operator to control and operate multiple transceivers and antenna direction systems. You will find many of these devices in the ads and product review sections of the radio magazines.

Let's Do It! The Contest Exchange

Okay, so now we have a radio and an antenna and a computer with some contest software all ready to go. What now? In any ham radio contest, the QSO ("conversation") is an "exchange" of specific information. In the case of the CQ WW DX Contest, you exchange a signal report and CQ Zone (location).

A typical QSO during the CQ WW DX SSB Contest might sound like this:

Me: CQ contest, CQ contest, this is Kilo Hotel Six Whiskey Zulu.

Dean: KH6WZ, this is 8 Papa Two Kilo.

Me: 8P2K, Five-Nine, Zero Three.

Good Contests for Beginners

A beginning contester might be overwhelmed by the massive number of stations on the air and pace of activity that you'll find in the major DX contests, such as this month's CQ World-Wide DX Contest. Don't worry, though, as there are many slower-paced contests in which you can operate without as much pressure.

Most of the VHF contests—such as the ARRL January, June, and September VHF contests, and the CQ World-Wide VHF Contest in July—operate at a more relaxed pace (unless there's a big band opening on 6 or 2 meters, in which case things are as hectic as 20 meters during the CQ WW DX Contest).

In addition, most states have state-specific "QSO parties," generally sponsored by a club in that state, in which the goal for in-state stations is to work as many stations as possible, regardless of where they are. For out-of-state stations, the goal is to work as many different counties as possible in the state of interest. This will also help you toward Worked All States and other operating awards. *—W2VU*

Yankee Clipper Contest Club (YCCC) (New England area): <http://www.yccc.org>
Frankford Radio Club (FRC) (Mid-Atlantic area): <http://www.gofrc.org>
Kentucky Contest Group: <http://www.n4gn.com/kcg>
The Texas DX Society (TDXS): <http://www.hal-pc.org/~kg5u/tdxs-contest.html>
Northern California Contest Club (NCCC): <http://www.nccc.cc>
A map and a list of the CQ Zones: <http://www.cq-amateur-radio.com/cqwwhome.html>
A website dedicated to radio contesting: <http://www.contesting.com>
Japan Amateur Radio League (JARL) All Asian DX Contest: <http://www.jarl.or.jp/English>
Radio Society of Great Britain (RSGB): <http://www.rsgb.org>
San Bernardino Microwave Society (SBMS): <http://www.ham-radio.com/sbms/>

Table I– Examples of ham clubs that specialize in contesting, and other sources of contesting information.

Dean: Roger, Five-Nine, Oh Eight.
Me: Thanks. CQ contest CQ contest, from KH6WZ.
Jon: KH6WZ, this is Juliet Six Eight Delta X-Ray, J68DX.
Me: J68DX, Five-Nine, Zero Three.
Jon: QSL. Five-Nine, Eight, J68DX.
Me: Thanks. CQ contest CQ contest, this is KH6WZ . . . .

And the process repeats.

The station 8P2K is located in Barbados, which is CQ West Indies Zone 8. J68DX is in St. Lucia, also CQ Zone 8. Notice how one operator uses the "oh" for zero and the other does not even mention it. They have different operating styles, but the information still comes across successfully. One other note: If a station is responding to your CQ, the operator might transmit only his/her callsign and not yours. If this happens, make sure the operator is calling you before you log the QSO. *(Beginning contesters, and those with smaller stations, often do best by using what's called the "search and pounce" technique—tuning around listening for other stations calling CQ Contest, and calling them, rather than calling CQ themselves.—ed.)*

Strictly Business

Notice the conversations in a contest exchange have no "friendly conversation"? These contests are "strictly business." Just pass the "traffic" and move on to the next contact.

On the air, you'll run into many operators who are "nice guys" and will say, "Thanks for the contact," "Good luck," and so forth. Personally, I don't like that when working a contest, because if conditions are good, all this "no-points talking" could kill several dozen contacts (points) that could make a difference at the end of the contest.

Even though you might be participating in a contest in a casual manner, the other station may not be, so do not try to engage in a friendly chat in the middle of a contest unless you both want to. Don't take anything personally, as a contester is very busy and needs to move on to get the next points. In fact, contesters are always concerned about contact (QSO) "rate." An efficient phone contester can easily achieve a QSO rate of 200-plus an hour, depending on conditions. Good CW ops can go even faster. With computers and specialized radio contesting accessories, rates, points, and QSOs continue to climb.

One exception: If you're not sure of the essential information in the exchange (generally callsign and location), take the time you need to get it right. Most stations will be patient and helpful. If the info is not copied correctly on both ends, the contact is not valid for contest credit, so even a "big gun" will want to make sure you both have copied the correct information.

More Information

CQ's "Contesting" column editor, John Dorr, K1AR, wrote a three-part series called "Contesting for Newcomers" that started in the December 2002 issue. Read through those articles; a lot of practical knowledge and experience is given to you right there.

You may be lucky enough to live near a ham club that specializes in contesting. There are many scattered across the country. Table I lists some of them, as well as other sources for contesting information.

Books & Videos

"Getting Started in Contesting" video featuring *CQ* magazine Contest Editor John Dorr, K1AR. Available from CQ.

The ARRL Operating Manual, published by the American Radio Relay League. ISBN: 0-87259-793-8

DX Power: Effective Techniques for Radio Amateurs, by Eugene B. Tilton, K5RSG. This book is out of print, but you may be able to find a used copy at your favorite used book store, or online at Amazon.com.

The Complete DXer, by Bob Locher, W9KNI. This book has just recently been updated into a third edition. *The Complete DXer* is a very different book. It is more like an adventure novel, filled with exciting tales about chasing new countries on the radio. Available from CQ or from <http://www.idiompress.com/books-complete-dxer.html>.

Contest Software

Here are links to some of the most popular radio contesting programs. I am sure there are many more!

CT, by Ken Wolf, K1EA: <http://www.k1ea.com>

NA, by David Pruett, K8CC: <http://www.datomonline.com>

TR Log, by Larry "Tree" Tyree, N6TR: <http://www.trlog.com>

WriteLog, by Wayne Wright: <http://www.writelog.com>

73, Wayne, KH6WZ

awards

BY TED MELINOSKY,* K1BV

DX and U.S. Awards

June was a satisfyingly busy month for USA-CA, with the issuance of six All Counties awards. Special congratulations to Istvan Bogyo, HAØDU, who is the first from Hungary to complete USA-CA. I'm always impressed by foreign applicants, as they must deal with limited band openings and larger propagation issues. This month's Special Honor Roll also includes ACØB (father) and NXØX (son), who earned the award within ten days of one another!

Let the record show that Larry Thornsbury, NZ8Q, has submitted additional contacts for his USA-CA #714 such that his award will be recorded as "All 20 Meters Mobile SSB." His original completion date was June 4, 1991.

Robert Wood, N2KX, USA-CA All Counties #1095.

Robert Wood, N2KX
USA-CA All Counties #1095

This time we hear from Bob, N2KX, who was issued USA-CA #1095 on June 17, 2004.

I grew up in Thief River Falls Minnesota, which is the northwest corner of the state. In 1963, two years after high school graduation, I enlisted in the Air Force. I was supposed to have become a photographer; I had been an apprentice photographer for a year and would skip technical school, get promoted, and report to my first assignment directly from basic training. At some point I took a language aptitude test and the Air Force decided I would go to Monterey, California and learn Arabic. No promotion! Not only did I learn to speak, read, and write Arabic, later I also learned Vietnamese. The funny thing is I almost flunked high school Spanish. I was in the Air Force for 23 years, spending the better parts of five years in and out of Viet Nam and other Southeast Asia locations in the late '60s and early '70s. In 1974 I cross trained into ground radar and was transferred to Watertown, New York.

I met my wife of 25 years, Brenda, here in Watertown, got my Novice license in 1978, and made my first CW contact with WB3JLT, Bill, in Oxon Hill, Maryland. My station consisted of a Hammarlund HQ-110 receiver, Hallicrafters HT-40 transmitter, Heathkit HG-10 VFO, and a key. Everything had been very well used by the previous owners. However, assembling and operating the station provided me with hours of excitement, frustration, and satisfaction.

In 1980 I was transferred overseas to Okinawa, Japan, and ham radio took a long vacation. My interests shifted to radio-controlled model airplanes, hunting, and fishing. I managed to keep renewing my ham license and occasionally would visit with my ham friends and operate from their stations. During preparation for a transfer from Omaha, Nebraska back to Watertown, I went so far as to tell my wife not to ship all those "old" QSL cards

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

USA-CA Special Honor Roll

Brian Bird, NXØX
USA-CA All Counties #1096
July 4, 2004 (All SSB)

Charles T. Hopper, WA4IDT
USA-CA All Counties #1097
July 6, 2004 (All SSB)

Wendell Rushton, W4ZAA
USA-CA All Counties #1098
July 9, 2004 (All SSB)

A. Clifford Bird, ACØB
USA-CA All Counties #1099
July 13, 2004 (All SSB)

Nelda M. Smith, W6XJN
USA-CA All Counties #1100
July 15, 2004 (Mixed B/M)

Istvan Bogyo HAØDU
USA-CA All Counties #1101
July 23, 2004 (Mixed B/M)

USA-CA Honor Roll

500
NXØX.....330
7M2PSC..3307
WA4IDT...3308
AA4FU.....3309
ACØB.....3310
W6XJN 3311

1000
NXØX.....1663
WA4IDT...1664
DL8YR.....1665
ACØB.....1666
W6XJN 1667
OZ5MJ.....1668

1500
NXØX.....1391
WA4IDT...1392
ACØB.....1393
W6XJN 1394

2000
NXØX.....1288
WA4IDT...1289
ACØB.....1290
W6XJN 1291

2500
NXØX.....1209
WA4IDT...1210
ACØB.....1211
W6XJN 1212

3000
NXØX.....1118
WA4IDT...1119
W4ZAA 1120
ACØB.....1121
W6XJN 1122

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.

and logs, as I would never get back into that "stuff" again. In 1990 I sold most of my gear.

February 1999 brought about a dramatic change in our lives. I was diagnosed with inoperable stage three lung cancer. How could this be? I hadn't smoked in 15 years; I was asymptomatic. I had gone to my family doctor for a routine check of what I thought was a swollen gland in my neck. Other doctors and specialists, three second opinions, confirmed the diagnosis. I had six months to live. My oncologist suggested that simultaneous, radical chemotherapy and radiation might prolong my life a bit (six to yen months), and my wife and I decided I'd try the treatment. It would continue for four months, with all of the associated side effects.

I started to think about what I could do after chemo and radiation ended. I needed a long-term challenge. I also needed something to occupy my time while I was hooked up to IV's for three to four hours at a time in the doctor's office. I decided I would upgrade my license and set up an HF station in the house. I found the needed study manuals at RadioShack and also purchased my first copy of *CQ* magazine. Wow! I looked at all that neat stuff for sale. I ordered a Kenwood TS570D(G) and purchased headsets on eBay. I still had my original key and a Hustler 5BTV.

By the time the radio and all the necessary items were on hand, I was pretty weak and on oxygen 24/7, so my 105-lb. wife took a sledge hammer in hand and pounded in the 4-ft. mounting pipe and then buried eight radials around the antenna's base. I put ends on the coax and tuned the antenna. I worked all the bands/modes I could. States first, then DX, and my wife brought out the old logbook and a stack of QSL cards she had saved . . . thank you, dear.

In December 2000, after a second round of chemo, underweight, with tufts of hair sticking up here and there, still on oxygen, I upgraded to Extra and got the call N2KX. Now we were cooking—DXCC, Worked All States, Worked All Zones, Ten-Ten, OMISS, Geratol Nets, 14.336 MHz . . . 14.336? What was that? Mobile what? MARAC? The grouchy net control at the time told me to go somewhere else: "We don't use phonetics here." Why the heck not? I thought good ops IDed with phonetics. After reading the information package from MARAC, it started to make sense. I still made mistakes. Forgetting about phonetics was the worst thing, and getting coordinated in relays took a bit of time, but I was hooked! Only . . . let me count what I had with old QSL cards . . . about 2900 counties to go!

I would like to thank Jerry Mass, KAØLJO, for driving 198 miles to give me Costilla County, Colorado, my last one. A big thank you to the net control stations who make operation much easier; KZ2P, KA1JPR, WG6X, N4CD, and others willingly fulfill this thankless function. I worked over 576 unique calls, over 90% mobiles, and thanking them all is tough. KC1NA gave me 155 counties, WB4FFV 130, N4CD 99, and AA9JJ 96. You guys really gave out counties! Thanks to all 576 of you, and a special thanks to my Elmer, WA1FXK, for technical advice and support. *—Bob, N2KX*

DX Awards

The Croatian County Award. Most European countries are divided into provinces or districts, but a few have counties. One of these is England, and another is Croatia. Croatians are active on the air, especially in contests, and it's likely that many of the counties needed for even the higher levels of the award are already in your QSL collection.

The awards are issued for confirmed contacts with hams operating from different Croatian counties on or after 5 July 1992. They are available for CW, Phone, RTTY, and Mixed modes, and all contacts on HF and the WARC bands are allowed. The certificate is available for both 50-MHz and 144-MHz contacts as well, but only in the Mixed category. No repeaters, packet radio, or satellite contacts allowed. SWL okay.

Following are the award levels, followed by the number of counties required and the fee for each certificate:

Basic, Class I—5 counties, $US6 or 5 Euros.

Basic, Class II—3 counties, $US6 or 5 Euros.

The Croatian County Award is issued for confirmed contacts with the counties of Croatia.

Gold Medal—10 counties, $US17 or 15 Euros.

Trophy—15 counties, $US35 or 30 Euros.

Honor Roll Endorsement—21 counties, free if you have the basic award, medal, and trophy.

Send GCR list, which should include callsign, county name, date, time, frequency, mode, and signal report. The award manager reserves the right to check one, or several, cards on request. Apply to: Croatian County Award Manager, Kresimir Juratovic, 9A7K, P.O. Box 88, HR-48001 Koprivnica, Croatia.

County List. An easy way to check your QSL cards to see which counties in Croatia you have confirmed is by using the postal code to identify the county. There are 20 counties, and the city of Zagreb has county status also, for a total of 21 counties. Following are the counties and their associated postal codes: Zagreb City 10000–100xx, Zagreb County 10xxx–10xxx, Krapina and Zagorje County 49000–49xxx, Sisak and Moslavina County 44000–44xxx, Karlovac County 47000–47xxx, Varazdin County 42000–42xxx, Koprivnica and Krizevci County 48000– 48xxx, Bjelovar and Bilogora County 43000–43xxx, Rijeka County 51000–51xxx, Lika and Senj County 53000–53xxx, Virovitica and Podravina County 33000–33xxx, Pozega and Slavonia County 34000–34xxx, Slavonski Brod and Posavina County 35000–35xxx, Zadar County 23000–23xxx, Osijek and Baranja County 31000–31xxx, Sibenik and Knin County 22000–22xxx, Vukovar and Srijem County 32000– 32xxx, Split and Dalmatia County 21000–21xxx, Istria County 52000–52xxx, Dubrovnik and Neretva County 20000–20xxx, Medjimurje County 40000–40xxx.

RNARS International Navy Award. The Royal Navy Amateur Radio Society offers membership to those who have served in the navies of the United Kingdom and Commonwealth countries. The newest addition to the society's group of certificates recognizes working members of RNARS as well as several other similar naval groups. The certificate features an image of the ship *Elettra,* used by Marconi during his travels to test equipment and propagation in the early years of the 20th century. I've found that most members of RNARS and similar groups have either an image of a navy ship or an indication of their association with a naval group prominently displayed on their cards.

Contact members of RNARS and other naval radio clubs after 1 January 2004. SWL okay. Endorsements for mode or band are available upon request. Send GCR list and fee as

Contact members of Royal Naval Amateur Radio Society and other naval radio clubs to earn the International Navy Award.

The Birzai (Lithuania) Radio Club Award is issued for contacting club members.

follows: UK £3.50, EU 5 Euros, and all others $US8 or 8 IRCs. When sending IRCs, only the new-style IRC is now acceptable for RNARS awards; the old-style ones will be returned. The following number of contacts with naval groups are required for the different levels of the award:

Class 1—Ten RNARS contacts; ten MF Runde; three INORC; one MARAC; and one ANARS, BMARS, FNARS, YO-MARC, MFCA, OZ1RDN, or DLØMCM.

Class 2—Five RNARS contacts; five MF Runde; one INORC; and one ANARS, BMARS, FNARS, YO-MARC, MFCA, OZ1RDN, or DLØMCM.

Class 3 (outside Europe)—Three RNARS; three MF Runde; and one ANARS, BMARS, FNARS, YO-MARC, MFCA, OZ1RDN, or DLØMCM.

Clubs are as follows: RNARS = Royal Naval Amateur Radio Society, MF Runde = German Naval MarineFunker Club, BMARS = Belgian Marine ARS, ANARS = Australian Naval ARS, FNARS = Finnish Naval ARS, MARAC = Marine Amateur Radio Club (Netherlands), YO-MARC = Romanian Marine ARC, MFCA = Marine Funk Club Austria, OZ1RDN = Danish Ship Peder Skram, MARCOM = DLØMCM. Joker—a contact with any valid museum ship not listed above counts as any one missing contact.

Lithuania's Birzai RC Award. You might imagine that European castles are cold, dreary piles of Gothic stone walls and turrets. At least that's the impression I've always had. It seems that the Lithuanians exercised some architectural prowess in at least one of their ancient castles. The one in Birzai graces the award offered by the Birzai Radio Club for contacting its members.

Contact members of the Birzai Radio Club on or after 9 March 1994. LY's need 15 contacts; all others need 10. The same member may be worked on multiple bands for credit. Send GCR list and fee of 10 Euros, $US10, or 12 IRCs. Endorsements are available for each additional 5 contacts after the basic award has been earned. QSOs made on 9 March of any year count double; make a note of those contacts on the application. Send to: Dainius Radzevicus, LY2TZ, P.O. Box 39, LT – 5280 Birzai, Lithuania (website: <http://www. qsl.net/birzairc/BRC.htm>.

Members list: LY1BZK, DA, FBS, FBL, FCG, FCH, FCI, FED, FEI, FFP, FO, GA, NDN, NDP, NXT, XJ, YJ; LY2BAU, BBS, BG, BGN, BGZ (SK), BNF, BKF, BSG, BST, BUM, DD, FL, HC, HK, NIP, NIQ, NWM, SH, SQ, TY, TZ; LY3BA, BS, BU, BY, FB, FK, GP, IW, JQ, JM, KB, NCU, NPQ, NQP, NRE, NRO, NRP, NRW, NTM; LY35BA, BU, BY, HK, KB, TZ; LY6K; LY9A.

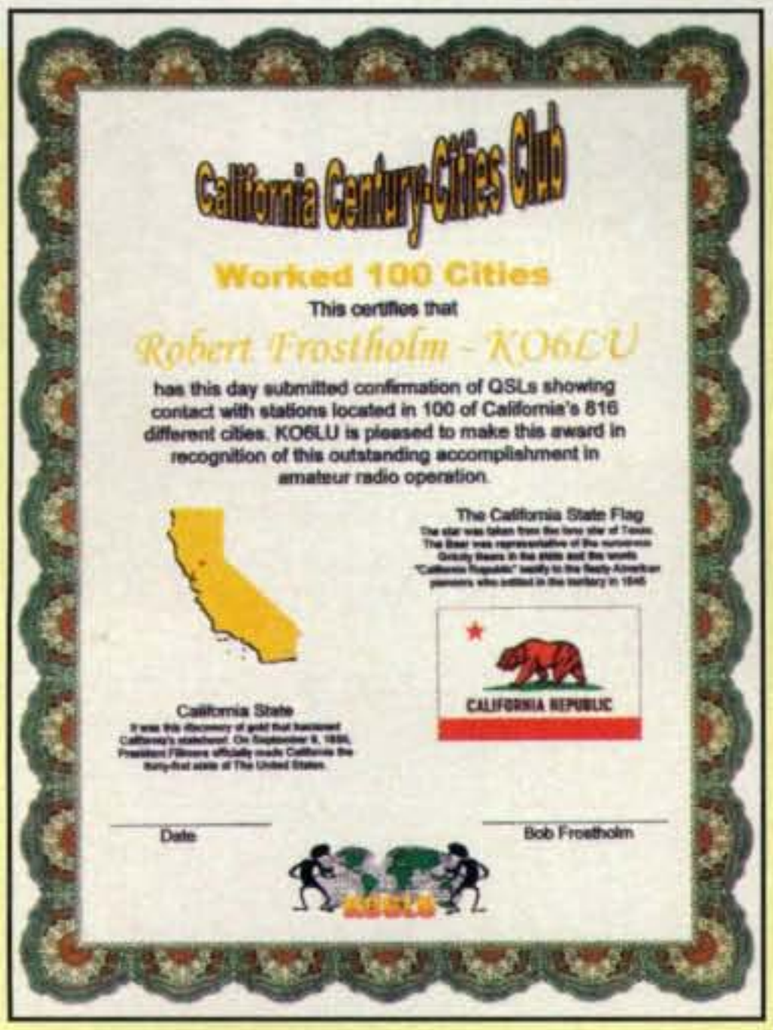
Special Commemorative/Anniversary calls: LY10XJ, BA, KB; LY40BA, KB; LY50UN; LY62TZ; LY63BA, KB; LY75BA, BU, BY, KB, TZ; LY95BA, BY, KB, TZ; LY98BA, TZ.

SWLs: LYB-51, 52, 72, 86, 89.

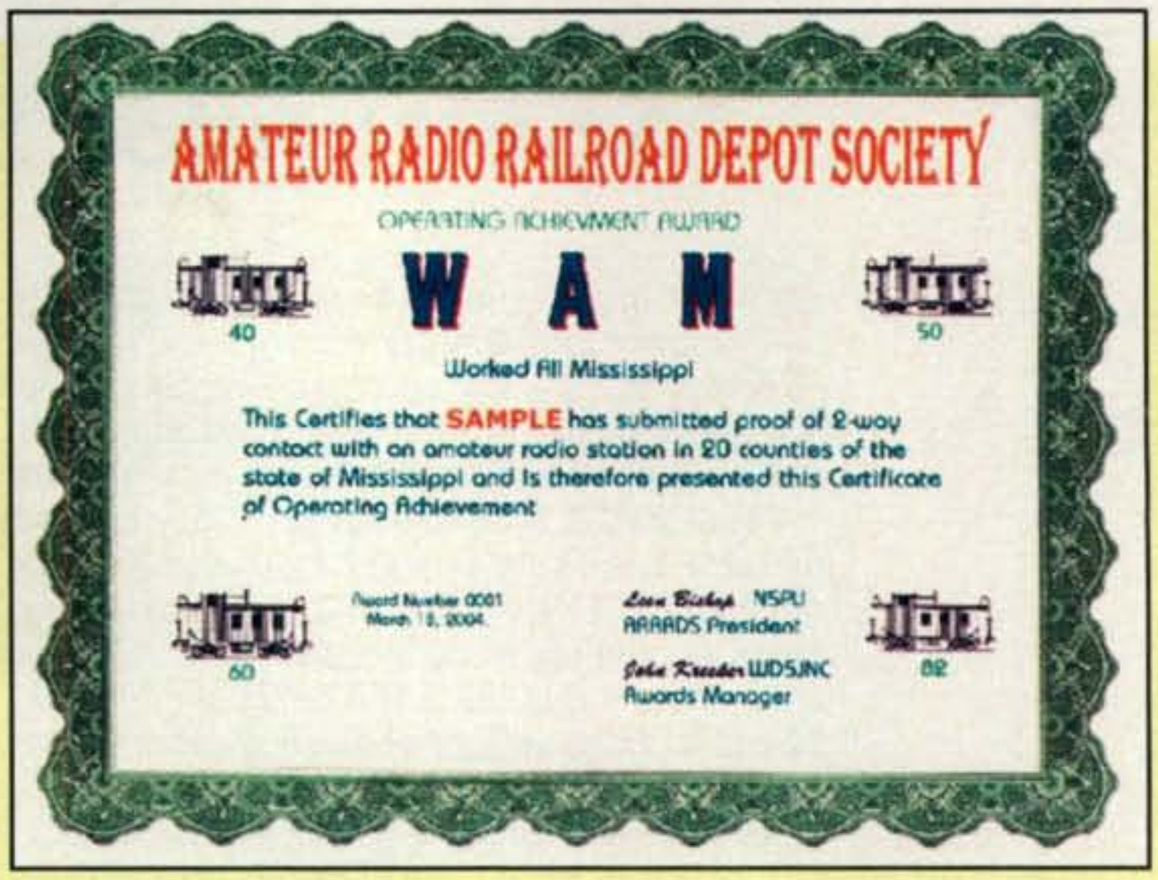
PA8MO, ex-PA3EHW.

U.S. Awards

California Century Cities Club Awards. Bob Frostholm,



Contact at least 100 of the 816 cities in California to earn the California Century Cities Club Worked 100 Cities award. →



The Worked All Mississippi award is sponsored by the Amateur Radio Railroad Depot Society for confirmed contacts with Mississippi counties.

KO6LU, offers a fun series of awards on his website, <http://www.ko6lu.com/>. He has just added a new one which requires contacting different cities in California. Yes, your big pile of W6 cards is going to come in handy for this one, and if you're lucky, you'll have cards from at least 100 of the 816 cities in the Golden State. Bob's website contains a handy application form as well as a complete listing of the cities.

Provide proof of having contacted at least 100 of the 816 cities in California. Endorsements are available for each additional 100 cities. Awards are available even if the contacts are unconfirmed. Log extract is acceptable. Use the applications provided by the sponsor on the website. Fee for the award is $US5. Apply to: Bob Frostholm, KO6LU, P.O. Box 3673, Los Altos, CA 94043.

Worked All Mississippi Award. A few months ago, I listed the states that did not offer a worked all counties award. The list is getting shorter, thanks in part to Leon Bishop, N5PU, of the Amateur Radio Railroad Depot Society of Escatawpa, Mississippi.

The Worked All Mississippi award is issued in five levels for confirmed contacts with Mississippi counties. The basic award starts with 20 counties and has endorsements at 40, 50, 60, and all 82 counties. Send GCR list or a notarized list and fee of $US2 for members of ARRRDS, $US3 for non-members in the USA, or $US4 for DX. The fee includes return postage. There is no charge for endorsements, but an SASE is required. Apply to: Leon Bishop, N5PU, ARRRDS, P.O. Box 566, Escatawpa, MS 39552 (<www.arrrds.net>).

Have you perhaps lost your USA-CA certificate or plaque or has it been damaged? Replacement USA-CA certificates and plaques are available. Just supply me with the appropriate information, including name, call, and the award number and date. The fee is $US2 for a replacement certificate and $44 for a plaque.

Does your club or special-interest group sponsor an award? Send me samples or an internet link to the information, and I'll see about getting you the publicity that will encourage award hunters to apply.

73, Ted, K1BV

BY JOE LYNCH,* N6CL

More ^Spectacular Sporadic-*E* Openings

Last month I covered approximately 25 of the more than 50 reports that I received pertaining to the July 6–7 sporadic-*E* opening. Following are about half of the remaining reports, and the balance will appear next month.

From FN20, K2SMN wrote: "I got on an hour or two late, but it sure was fun. Sounded like 20 meters, not 2 meters! Here is my list of contacts during the *E*-skip opening from my location (FN20oj). Time is in UTC. Running about 1 KW to Cushcraft 18XL up at 160 feet. Band was open for a short time on the 5th to the northeast (also *E*-skip). All contacts on 144.200 MHz ±50 kHz. On July 5: VO1TJM, GN08. On July 6th: KC4PX, EL98; N4LI, EM55; WA4CQG, EM72; K9OIM, EM56; W8FR, EM54; KBØYIA, EM57; NØIS, EM48; WØWPJ, EM29; AF4OD, EM72; AE4PK, EM81; W4WGH, EM83; AA5CH, EM35; KØXXX, EM46; N5DL, EM36; WØBR, EM28; AF4O, EM55; N7JSS/4, EM60; KG4WTO, EM92; KG5NE, EM25; K5SW, EM25; KØKAN, EM29. On July 7: K5BJR, EM37; W4UDH, EM52; and KA9CFD, EN40."

From EM85, AF4HX wrote: "Yesterday's big *E* opening lasted here on 2 meters for a couple of hours. The first string on 144 MHz started at 2252 UTC and ended at 2322 UTC, with 17 grids and 47 contacts made in 30 minutes. Some of the RSTs were 20 over S9. It was so strong that I worked two stations running only one loop each. When I first started calling CQ it sounded like a pile-up on 20 meters. Everyone was so strong. I worked the stations fast and I know there were other stations on the edge that I didn't get to work before it started to die down. Before this strongest opening I worked several stations that would come up and be there for a few minutes and then go away; then a couple more would come up and I would work them.

"This was the best time of the event for me: At 2322 UTC I went to 222 MHz to give it a try. I know this move took 144-MHz QSOs away from my total, but if it was going to happen on 222 MHz, it had to be when the signals were the strongest on 144 MHz. I called on CW for a few minutes hoping to get someone to hear me and then went to SSB. At 2328 UTC on 222 MHz, KMØT in EN13 answered my SSB call and I worked him with a 55 signal report. Then at 2329 UTC KØAWU answered my call from EN37; he was 57. I could hear some other week stations but could not pull them out enough to make the contact. I'll give up some 144-MHz QSOs to work 222 MHz on sporadic-*E* anytime. I almost went out of my chair when I completed the two QSOs on 222 MHz. What a time that day was!

"This event was the best sporadic-*E* that I've ever experienced. I worked Europe on July 5–6 on 50 MHz, and when they died out I ran nearly 500 QSOs stateside from the west coast to the far northeast in Canada. What an event! I will remember this event for a long time."

WØFY, in EM48, wrote: "I am using a TS700A, 150- watt brick, and a 13B2 at 40 feet. I got home from work late. Between 2337 UTC and 0051 UTC I put 26 2-meter contacts into the log. The grids worked included FM08, 18, 19, 28, 29, and FN03, 10, 12, 20, 21, 30, 31, 33, 41, and 42. This was typical 2-meter sporadic-*E* in that no one path seemed to last for more than five minutes—many much shorter times—and signals would disappear entirely for a few minutes at a time. Even so, this was by far the most intense such opening I've ever seen in 40+ years of VHFing. On 6 meters, 50.125 to 50.200 MHz sounded like 75 meters on a busy night. Even so, I spent all my time chasing 2-meter stuff. My friend KMØA got home much earlier (2100 UTC), and he reported working over 60 stations before exhaustion set in!"

KMØT in EN13, wrote: "This opening was a hoot! The band was open for 2.5 hours or so. I worked a few new grids on 144 MHz and about 20 stations. I could have worked a zillion more, but spent most of the time calling and listening on 222 MHz. It wasn't as fruitful as for others, but it sure was exciting!

"On 222 MHz I worked two stations, NG4C, FM16, and AF4HX. I heard AA4H and W4DEX but they faded out. Signals on 222 MHz were not strong. NG4C peaked one time about 57 then back to 51. I heard NG4C three or four times on 222 MHz and chatted with him there a few times. He was pretty much 51 most of the time on 222.100 MHz. NG4C was 59 to 59+20 for most of the opening on 144 MHz. There was an extreme path to him, which was pretty wild. I heard him weakly on 222.100 and could not get his attention. Then I found him on 144.205 blasting in and asked him to QSY to 222 MHz. He was there right away and we worked with little effort due to the QSB. When I worked AF4HX in EM85, he was 57 with QSB, so the closer distance seemed to make the difference on 222 MHz. I believe that NG4C is in FM16tq. Therefore, the distance is roughly 1829 km from EN13vc. Not a bad poke on that band.

"Equipment on the band is an FT-1000MP and a DEMI transverter, a 180-watt amp, and a 2M5WL at

VHF Plus Calendar

Oct. 3	Poor EME conditions
Oct. 5	Moon Apogee
Oct. 6	Last Quarter Moon; 432 MHz Fall Sprint (See text for details)
Oct. 8	*Draconids* meteor shower peak.
Oct. 8-10	AMSAT-NA Space Symposium (See text for details)
Oct. 9-10	First weekend of the ARRL EME contest (See text for details)
Oct. 10	Good EME conditions
Oct. 14	New Moon
Oct. 14–16	Microwave Update conference (See text for details)
Oct. 17	Poor EME conditions
Oct. 18	Moon Perigee
Oct. 20	First Quarter Moon
Oct. 21	*Orionids* meteor shower peak
Oct. 24	Good EME conditions
Oct. 28	Full Moon
Oct. 30–31	Second weekend of the ARRL EME contest (See text for details)
Oct. 31	Poor EME conditions

—EME conditions courtesy W5LUU

e-mail: <n6cl@sbcglobal.net>

about 40 feet. The tower was cranked down, so the height was about 20 feet lower than normal.

"Here is the log: All contacts were 144 MHz unless otherwise noted. Most signals were 59+. On July 6 at 2207 UTC I worked K4RTS in FM08. This was a brief 4-minute opening then things shut down. We tried 222 MHz as well, but no go. He was 59+ on 144 MHz.

"After this contact I set the squelch on low, as I was working on a few projects until NG4C blew my front end on my transverter! Beginning with him I worked the following: NG4C, FM16; N4XD, FM05; WD4KPD, FM15; N1GMV, FM05; N4HN, EM95; AA3ID, FM25; W4DEX, EM95; N3PXU, FM27; W3UJG, FM19; W3OR, FM28; N3JPU, FM19; N8RAT, FM19; K9OYD, FM18; NE4C, FM06; K4WWA, FM06; and K4EJQ, EM86. At 2302 UTC I heard W4DEX, EM95, calling WØGHZ on 222.100. At 2305 UTC I heard NG4C, FM16, on 222.100 MHz. At 2309 UTC I worked NG4C on 222.100 MHz, with a 51 signal with QSB. At 2310 I heard AA4H on 222.100 MHz and then worked the following two stations: W4WA, EM84, and KE8FD, EM84. At 2316 UTC I heard NG4C, with a 55 signal on 222.100 MHz. Next I worked N4XD, FM05. Again, at 2323 UTC I heard NG4C, this time 59, on 222.100 MHz. Next I worked AF4HX, EM85, with a 57 signal and QSB.

"Switching back to 144 MHz, this time on FM at 2353 UTC I logged KQ4NW, FM07, on 146.52 MHz FM. What a zoo! Next I worked KN4SM, FM16, and KO4YC, FM16. The band was still open for quite some time after that. After it closed, I heard a few bursts on 144.200 later on in the night. I also save the US radar maps for the time during the opening; wow, do they show some major stuff going on!"

From EM12, N5TIF wrote: "You have a lot to go through on today's sporadic-*E*, so don't pull your hair out, as we had a blast. All contacts were on 144 MHz. From the log are the following: VE3AX, FN02; NE8I, EN82; KU2A, FN42; 2248; K2AXX, FN12; K8TVD, EN91; W8AC, EN91; WA8RJF, EN91; K2ERG, FN13; W2VE, FN03; KF8IS, EN91; VA3HGO, FN14; NQ2O, FN13; and K8MD, EN82."

K2ERG, in FN13, wrote: "During the opening I worked the following grids: EM12, 13, 25, 31, 36, 42, 46, 52, 54, 55, 60, 62, 64, 65, 66, 70, 72, 73, 74, 75, 81, 83, 85, 93, and EL29, 49, 59, 96, 97, and 98. Total number of QSOs was 51, of which three were mobiles, in Florida, Georgia, and Tennessee, respectively. My station consists of the following: 250-watt linear into a 12-element beam. Wow, what a time of it!"

From EN82, K8MD wrote: At 0146 UTC July 3 I caught the first sporadic-*E* opening (Saturday night EDT). Six meters was getting short, so I started calling CQ at 0130 UTC in hopes of making some sporadic-*E* QSOs. I worked KA5DWI, EM12; NØRQ, EM13; K5RF, EM12; K5ZVV, EM01; and K5CRM, EM15. On Sunday I had to go visit my mother and worked a dozen stations from the mobile on 6 meters, including C6AGN.

"With the bands way up, I decided to get on 6 meters on Monday, July 5. I then proceeded to work VP5JM, PJ7M, V44KI, 5T5SN, EH7RM, CT1BXT, CN8LI, EH9AI, 9H1BT, CT3FT, 9H1XT, ZB3B, and several CT stations. It reminded me of the peak of the cycle we are coming off. Tuesday, July 6: On 6 meters I worked 9Y4/AJ9C, YV1DIG, FM5WD, and several stateside stations. At 1504 UTC I caught the first sporadic-*E* on 2 meters when I worked AC4TO, EM70, but no others. Then the big one at 2133 UTC, when I worked N4XD, FM05; WD5KPD, FM15; NG4C, FM16; and AA3ID, FM25. Then again at 2303 UTC stations from North Carolina to Texas were in. In total, about 35 stations were worked. However, to my chagrin, I failed to turn on 222-MHz station."

From EM31, K5MQ wrote: "We had a fantastic *E* opening. From 2204 UTC July 6 until 0055 UTC July 7—it lasted almost two hours. Altogether I worked 40 stations, including 23 grids in eight states. Sixteen of the QSOs were with Canadian stations. The best DX was KY1K, in FN54il, Maine, for a distance of 1514 miles and a new state. This was state number 46 for me, all on terrestrial. I also worked seven new grids.

"Among the stations worked were the following: K2SHN, FN13ef; VE2DC, FN35ch; K2AN, FN02; VE3SXE, FN25; VE2JWH, FN35; VE3FGU, FN04; KW1AM, FN41ct; VE3DSS, FN03fq; VE2DCP, FN35pj; VE3HJK, FN03; VE3TFU, EN92; WA2BPE, FN12lf; VE3KKL, FN25; NQ2O, FN13ch; K2ERG, FN13fd; VE3DBP, EN94; VE3TEM, EN85; W2MPK, FN23; KC2MHU, FN12sk; N8GX, EN82; VE3TMG, EN82lh; K8MD, EN82BQ; KY1K, FN54; WW8M, EN82ho; K8KD, EN72; VE2HOG, fn07; NE8I, EN82; W1AIM, FN34; K1CMF, FN42bq; W1GHZ, FN42en; K5GMX, FN31; WZ1V, FN31;

ARISS Contact Heard Around the World via EchoLink

The August 16, 2004 ARISS QSO with the Challenger Learning Center at Prairie Aviation Museum, in Bloomington, IL was streamed on EchoLink. The contact took place between 1705 and 1805 UTC. The group of students asked their questions on the first pass of the ISS at 1705 UTC and the replies to the questions were given on the next pass at 1805 by NA1SS. MP3 files of the audio are available at: <http://www.btinternet.com/~g4kqu/ISS_ Contact.htm>.

AA1TT, FN33uj; VE3EU, EN93; WA8RJF, EN91; KU2A, FN42dw; K1TR, FN42; K1TEO, FN31; VE3AX, FN02cw; and VE3NPB, FN03HS. I had lots of fun in the opening. I am running 1500 watts here to a 17-element M² antenna."

N4HN, in EM95, wrote: "I started working stations on 2 meters at 2248 UTC on July 6 when I got home. In the next hour I worked 36 stations in 24 grids — all new ones for me. I worked EN12, 13, 22, 31, 32, 34, 35, 36, 37, 40, 43, 44, 51, 53, 54, 64, 65, 66, 72, 74, 82, and 93 (Canada). The longest QSO was 1062 miles. Also FN 34 Vermont and FN 41 Rhode Island. That was seven new states. I also managed to work Montana on 6 meters for state number 45. The day before, on July 5, I worked four new grids on 2 meters between 2024–2113 UTC. These included FN65, 74, 84, and GN08, the last one being VO1TJM, for a distance of 1427 miles! I have only been active on 2 meters SSB since the 2003 September VHF contest. Thanks to these recent openings, I added 28 grids in two days. I now have 85 grids worked!"

From EN61, W9FS wrote: It was an interesting three days with 6 meters starting it all. Worked CT1DXQ in IN50 on July 3 at 2225 UTC, multiple-hop sporadic-*E*. While the east coast was working EHs, CTs, CUs, F5s, Gs, Carlos was the only station I heard well enough to work.

"For me, 2 meters didn't start until 2255 UTC on July 6. I worked AA3ID, FM25; KG4EEA, FM15; and N4XD, FM05. All reports were 59. I also heard NG4C, FM16, about the same time but had worked him tropo some time ago. I stayed off the air unless I heard a new grid to give the others a chance.

"I had to leave, but came back about an hour later and was hearing the same grids. There were two times I heard FN31 and FN22 for about 20 seconds. Then they were gone. I was running about 120 watts, using an IC756PROII and a DEMI transverter with a brick. The antenna was a 13-element Yagi at 50 feet."

WA3LTB, in EN92, wrote: "When I first got on I heard VE3AX starting to work some stations in Florida and other southern grids but was not hearing any of the other stations for about an hour. Then I *finally* got into the action with signals all up and down the 2-meter band. From Florida to Texas and everywhere in between, it was great for about an hour until it dropped out, and then it came back in for a very short time. I worked the following grids from here: EL98, EL96, EM12, EM13, EM25, EM27, EM36, EM37, EM74, EM75, EM41, EM58, EM62, EM64, and EL59, all with my big 100 watts and single Yagi antenna. This was even more fun than working N4FRE/5 EM03 random on 2-meter HSMS on Field Day weekend!"

From EN31, NØGZ, wrote: "From 2210 UTC July 6 to 0046 UTC July 7, I worked 42 stations in nine states, including DE, MD, NC, NJ, PA, SC, TN, VA, and WV. The total number of grids worked was 22, including FM17, FM29, FM08, FN20, FM19, FM18, FM05, FM15, FM25, EM85, EM86, EM95, FM07, FM06, FM14, EM88, FM27, EM93, FM28, FM26, FM16, and FM09."

N9LR, in EN50, wrote: "The sporadic-*E* opening on 144 MHz started at 2152 UTC on July 6, with my logging K2TXB in FM29 and AK3E in FM19. From the sounds of things, it began a great deal earlier than that for New England stations working into the Deep South. I could hear all the noise via meteor scatter on 144.200! The following grids were worked on 2 meters: FM07, 16, 15, 25, 28, 29, and FN20, 21, 30, 31, 41, and 42. The last station logged was AA2UK in FM29 at 0047 UTC July 7.

"I did work NG4C in FM16 on 222 MHz for my first sporadic-*E* QSO on that band. All in all, this was just an average opening for me. Midwestern stations in Illinois and Missouri were somewhat handicapped due to the position of the *E* cloud that limited the direction and distance we could work. I believe if a VP9 station had been active we would have easily logged it from here *(there was one—ed.)*. However, Florida, Arkansas, Texas, W1, northern Minnesota, and northern Wisconsin will report this as one of the greatest openings in decades. The station in FM25 was grid number 347 for me on 2 meters. I need a double-hop sporadic-*E* contact to the west and then I will send you a great report!"

From EM21, WA5JCI wrote: "I got home from the VA clinic at about 2330 UTC and fired up the computer. Prop log showed band opening so I sent out to the shack and fired up the IC-706, as my regular setup is not working. I think that I was on the edge of the opening. I heard a few big signals but most had heavy QRM and there were periods of no signals. I managed to grab several new grids, including FN25 and FN03."

K1TEO, in FN31, wrote: "It was the first time I've ever experienced such a widespread opening—everything from Florida to the south, Texas, Oklahoma, and Kansas to the west, and Illinois, Kentucky, Indiana, and Ohio to the north was coming in on 144 MHz at the same time. Amazing! S9-plus signals were all over the band. Also, this was the first time I've ever heard or worked 222-MHz sporadic-*E*. I worked WØJRP and NØLIE in EM27, but in separate states, KS and MO, respectively, and K5SW in EM25, Oklahoma on 222.

"I operated about half the opening or so (90 minutes). The 2-meter total was about 70 QSOs in six new grids. Grids worked were EM12, 15, 17 (new), 19, 25, 26, 27, 28, 29, 31, 35, 36, 37, 38, 39, 45, 46 (new), 48, 52 (new), 55, 56, 59, 60 (new), 62 (new), 64, 67, 68 (new), 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 84; EN 40; EL87, 96, and 98. I heard NØKQY in DM98 and NØLL in EM09 as well as a couple of guys in EM41. All would have been new grids. The loudest stations I heard were in EM55, which suggested they were at the center of things for me. Thanks for the QSOs and I hope that this happens again sometime."

From EM73, W5SNX wrote: "I run an 8877 to an M² 2M8WL Yagi at 65 feet. I worked the following stations on July 6: beginning at 1519 UTC, N2OEQ, FN30; K2OVS, FN30; VE2JWH, FN35; VE2DCP, FN35; WA2AEY, FN23; W1ZC, FN42; W3EP, FN31; K1GUP, FN55; K1LPS, FN34; WB2SIH, FN31; W1LP, FN41; WB2VVV, FN41; WA1ECF, FN41; K1NDF, FN42; K1TEO, FN31; VA3HGO, FN14; KW1AM, FN41; N8CJK, EN84; VE2HOG, FN07; KB3WL, FN02; VE3KKL, FN25; VE3TNG, FN25; VE3NPB, FN03; N9IW, EN65; KØKP, EN36; N8LIP, EN56; VE2EU, EN93; KØAWU, EN37; K1VYU, FN31; and K1DG, FN42. That's 31 QSO in 19 grids. Five of the stations I have also worked on meteor scatter (WSJT)."

From FN31, WB2SIH wrote: "It sure was a great opening here in New York. I completed 54 QSOs in 35 grids on 144 MHz. I worked out as far as Oklahoma and Kansas. Contacts were made in EL, EN, and EM grids, for a total of 17 new grids for me!"

AO-51 Operational

After an abortive attempt to make a QSO via AO-51 at the Central States VHF

Hurricane Charley Hits AMSAT's Orlando Lab

The following is from Rick Hambly, W2GPS: "Hurricane Charley made its way across Florida, passing directly over the Orlando Executive Airport, home of the AMSAT Laboratory. It hit Orlando at about 8 PM EDT August 13, 2004 with sustained winds estimated at about 100 mph.

"Fortunately the AMSAT members in the area survived with relatively minor damage, but the hangar that houses the AMSAT Lab has been condemned due to structural damage and will have to be torn down. AMSAT's equipment and parts inventory are in good shape, but following the hurricane AMSAT had less than two weeks to move out and find temporary storage for its equipment. AMSAT will also need to begin a search for a new facility to support the Eagle satellite development.

"Unfortunately, AMSAT's insurance does not cover the costs of temporary storage or of moving to a new facility. You can help by sending a tax-deductible donation to AMSAT's Hurricane Fund, which will be used to get the AMSAT Lab back in operation as soon as possible."

First YA-North America 6-meter Contact Reported

Well-known EME enthusiast Lance Collister, W7GJ, of Frenchtown, Montana, recently worked Bob Sutton, YA1RS, in Kabul, Afghanistan. It marked the first 6-meter contact between North America and YA. The two stations used JT65A mode via EME. For Collister, it was DXCC entity number 88 on the "Magic Band." Sutton logged the first-ever EME contact between North America and Afghanistan in December when he worked Dave Blaschke, W5UN, on 2 meters. *(Courtesy the ARRL Letter)*

Society conference late July, the satellite finally became operational for general public use in early August. As of this writing, the satellite is still undergoing testing before becoming fully operational, which by the time you read this may well have happened. For the latest information on AO-51, go to: <http://www.amsat.org>.

John Kraus, W8JK, Silent Key

The following is from Paul Shuch, N6TX: "I am saddened to report the death on 18 July 2004, just three weeks after his 94th birthday, of Dr. John D. Kraus, W8JK, a true renaissance man. John was Professor Emeritus at Ohio State University, where he had taught engineering physics and radio astronomy for nearly half a century. Long after his retirement, he was still going to the campus daily to meet with students. Ever the optimist, John had renewed his ham radio license a few days before his death—for a period of ten years.

"Prof. Kraus distinguished himself as a prominent physicist, educator, antenna designer, engineer, writer, publisher, radio amateur, and philosopher. His textbooks *Radio Astronomy, Antennas, Electromagnetics,* and *Our Cosmic Universe* guided a whole generation of astronomers and engineers, including me. His two volumes of memoirs (*Big Ear and Big Ear Too*) inspired a whole generation of radio amateurs (again, including me). His short-lived periodical, *Cosmic Search,* was the world's first SETI magazine, its 13 issues still cherished by those of us involved in the SETI enterprise. His designs (including the legendary Big Ear radio telescope) have expanded humanity's knowledge of the cosmos."

More of Paul's tribute to W8JK will appear in his SETI column in the Fall 2004 issue of *CQ VHF* magazine.

Current Contests

The **432 MHz Fall Sprint** is October 6, from 7 PM to 11 PM local time.

The ARRL has announced that beginning this year, the **ARRL EME** contest will be held on three weekends as follows: Three full weekend 48-hour periods (0000 UTC on Saturday through 2359 UTC Sunday). These dates and designated bands for each date are: October 9–10, 50 MHz through 1296 MHz; October 30–31, 2304 MHz and Up; and December 4–5, 50 MHz through 1296 MHz.

For more information on the ARRL EME contest, see page 98 in the September 2004 issue of *QST* or go to: <ttp://www.arrl.org/contests/rules/2004/eme.html>. For Fall Sprint contest rules, see the Southeast VHF Society URL: <http://www.svhfs.org>.

Current Conferences

The 2004 **AMSAT-NA Space Symposium and Annual Meeting** will be held October 8–10 in Arlington, Virginia in conjunction with the ARISS International Meeting planned for October 10–13. For more information, see the AMSAT URL: <http://www.amsat.org/amsat/news/ans.html#03>.

The annual **Microwave Update Conference** dates are October 14–16, and it is to be held in the Dallas-Ft. Worth area of Texas. For more information, see the North Texas Microwave Society's URL: <http://www.ntms.org>.

Meteor Showers

The *Draconids* meteor shower is predicted to peak somewhere around 1000 UTC on October 8. The *Orionids* shower is predicted to peak on either October 21 or 22. For more information on the predictions visit the International Meteor Organization's URL: <http://www.imo.net>.

And Finally . . .

In late July and early August your editor traveled to the Central States VHF Society conference and the EME 2004 conference. Reports of these conferences are being held over for next month due to this month's extensive and ongoing coverage of the July 6–7 sporadic-*E* opening on 144 and 222 MHz. Also next month will be coverage of the new WSJT program that Joe Taylor, K1JT, discussed at the EME 2004 conference.

That's all the room we have for this month. It amazes me that each month more and more activities are happening on the VHF and above ham bands—so many activities that, as you can see, there is not enough room in this column to include all of them.

That's where *CQ VHF* magazine comes in. For more than two years now this magazine has been providing more extensive coverage of these activities. For your copy of the latest issue of *CQ VHF,* please see the subscription advertisement that can be found elsewhere in this issue of *CQ.*

Until next month...

73, Joe, N6CL

N6CL Becomes Dr. Joe Lynch

This past June, CQ's "VHF Plus" Editor, Joe Lynch, N6CL, graduated from Fuller Theological Seminary in Pasadena, California, earning a Doctor of Ministry degree. Joe says that this achievement was the culmination of a lifetime goal to attain a doctoral degree. His final project was a training manual for pastors of congregations that are stuck in their past due to unresolved conflict. No doubt there is application in his training manual for a few ham radio clubs as well. We at CQ congratulate Joe on his latest educational milestone.

propagation

BY TOMAS HOOD,* NW7US

CMEs and the Decline of a Solar Cycle

A Quick Look at Current Cycle 23 Conditions

(Data is rounded to nearest whole number)

Sunspots
Observed Monthly, July 2004: 43
Twelve-month smoothed, January 2004: 55

10.7 cm Flux
Observed Monthly, July 2004: 100
Twelve-month smoothed, January 2004: 119

***Ap* Index**
Observed Monthly, July 2004: 9
Twelve-month smoothed, January 2004: 19

We are well past the middle of the downward slope in solar Cycle 23's decline. The two peaks of the current cycle were in April 2000 (smoothed peak of 120.8) and November 2001 (smoothed peak of 115.5), with the two observed peaks in July 2000 (peak of 170.1) and September 2001 (Peak of 150.7). The end of Cycle 23 is expected to occur sometime in 2007. The overall level of solar activity through most of this year has been low to moderate, with a clear downward trend in monthly sunspot activity. Yet the Sun has thrown us a few curve balls in the form of very active sunspot regions. This is an expected phenomenon during the decline of a solar cycle.

Research scientists have discovered that during the course of the 11-year solar cycle the Sun actually reverses its magnetic poles. This flipping happens each cycle, with the north and south poles of the Sun violently switching places near the solar cycle maximum. The next reversal is expected to occur possibly in 2012.

By studying the vast amount of raw data gathered by Solar and Heliospheric Observatory (SOHO) spacecraft, scientists have discovered the process by which this reversal may be accomplished. The data has revealed that Coronal Mass Ejections (CMEs) play a major role in the Sun's magnetic-pole swapping. This flipping is the cumulative effect of more than a thousand of these huge eruptions which blast billions of tons of electrified gas into space. These CMEs carry the Sun's old magnetic field away, allowing a new one with a flipped orientation to form.

It has been determined that it takes more than a thousand CMEs, each carrying billions of tons of plas-

*P.O. Box 213, Brinnon, WA 98320-0213
e-mail: <cq-prop-man@hfradio.org>

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for October 2004

Propagation Index.....	Expected Signal Quality (4)	(3)	(2)	(1)
Above Normal: 2, 9, 20, 24-27, 29	A	A	B	C
High Normal: 3-8, 10-12, 28-39, 21-23, 30-31	A	B	C	C-D
Low Normal: 1, 28	B	C-B	C-D	D-E
Below Normal: 14	C	C-D	D-E	E
Disturbed: 13, 15-17	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 on the following pages.
2. With the *propagation index,* use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 3 will be fair to good (C-B) on Oct. 1st, excellent (A) on the 2nd and 9th, good (B) on the 3rd through the 8th, poor (D) on the 13th, fait to poor (C-D) on the 14th, etc.

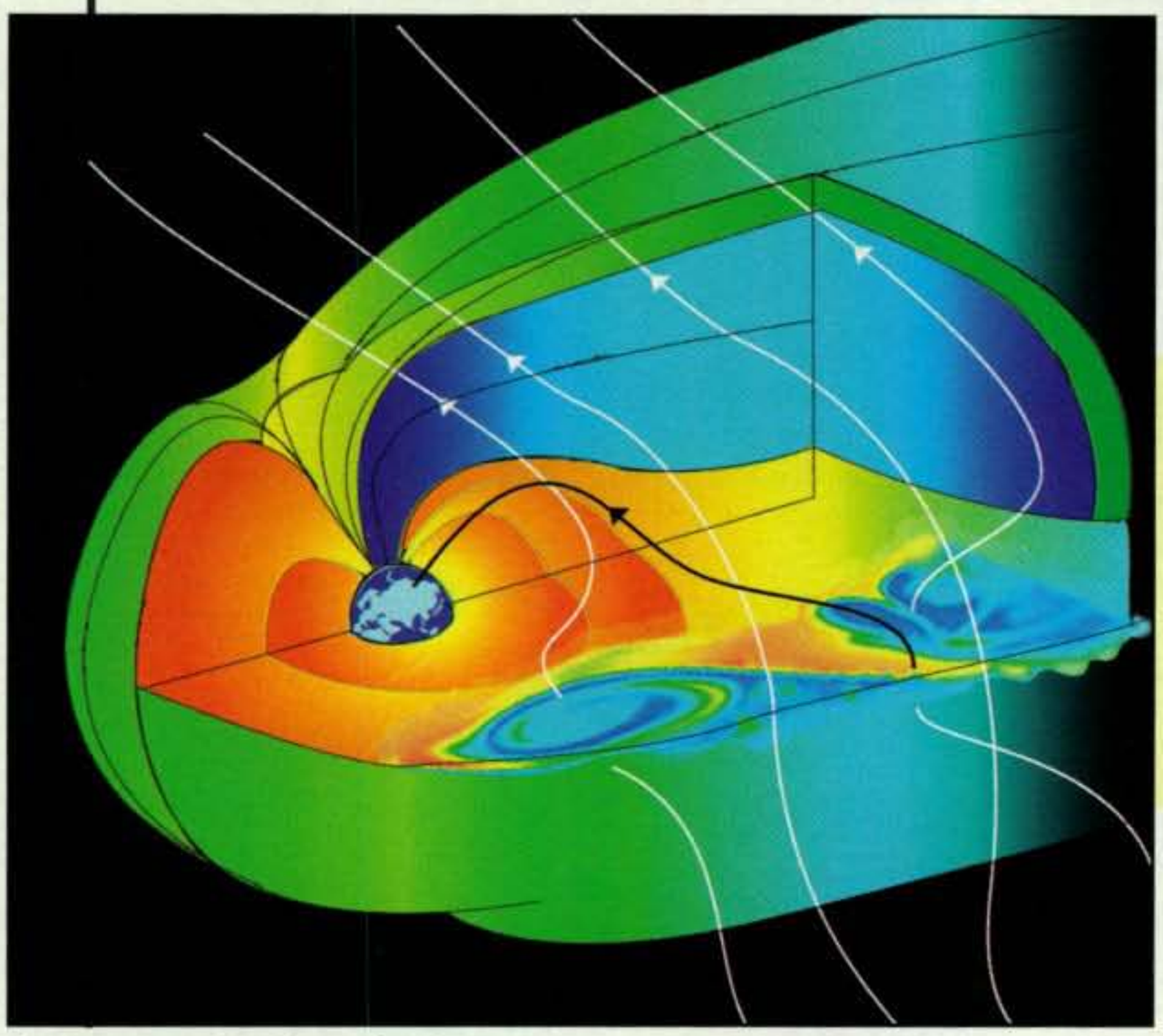


Fig. 1– Three-dimensional computer simulation of the space waves or vortices that inject the solar-wind plasma into the Earth's magnetic field. Green-blue areas represent the solar-wind plasma, and red-orange areas represent plasma trapped in Earth's magnetic field. Earth's magnetosphere develops ripples and folds like a flag in the wind as the solar wind blows past. This turbulence creates rolling waves on the edges of the magnetosphere that engulf the solar wind into the magnetosphere (see orange wavelike structure in the cut-away portion of the image). The blue, green, and orange swirl behind the wave is the vortex that mixes the solar wind into the magnetosphere. The vortices are huge structures, measuring more than 20,000 miles across. The arrows show the direction of the magnetic field, in red is that associated with the solar wind and in green is the one inside Earth's magnetosphere. The white dashed arrow shows the trajectory followed by Cluster. (Courtesy Kentaro Tanaka of Tokyo Institute of Technology)

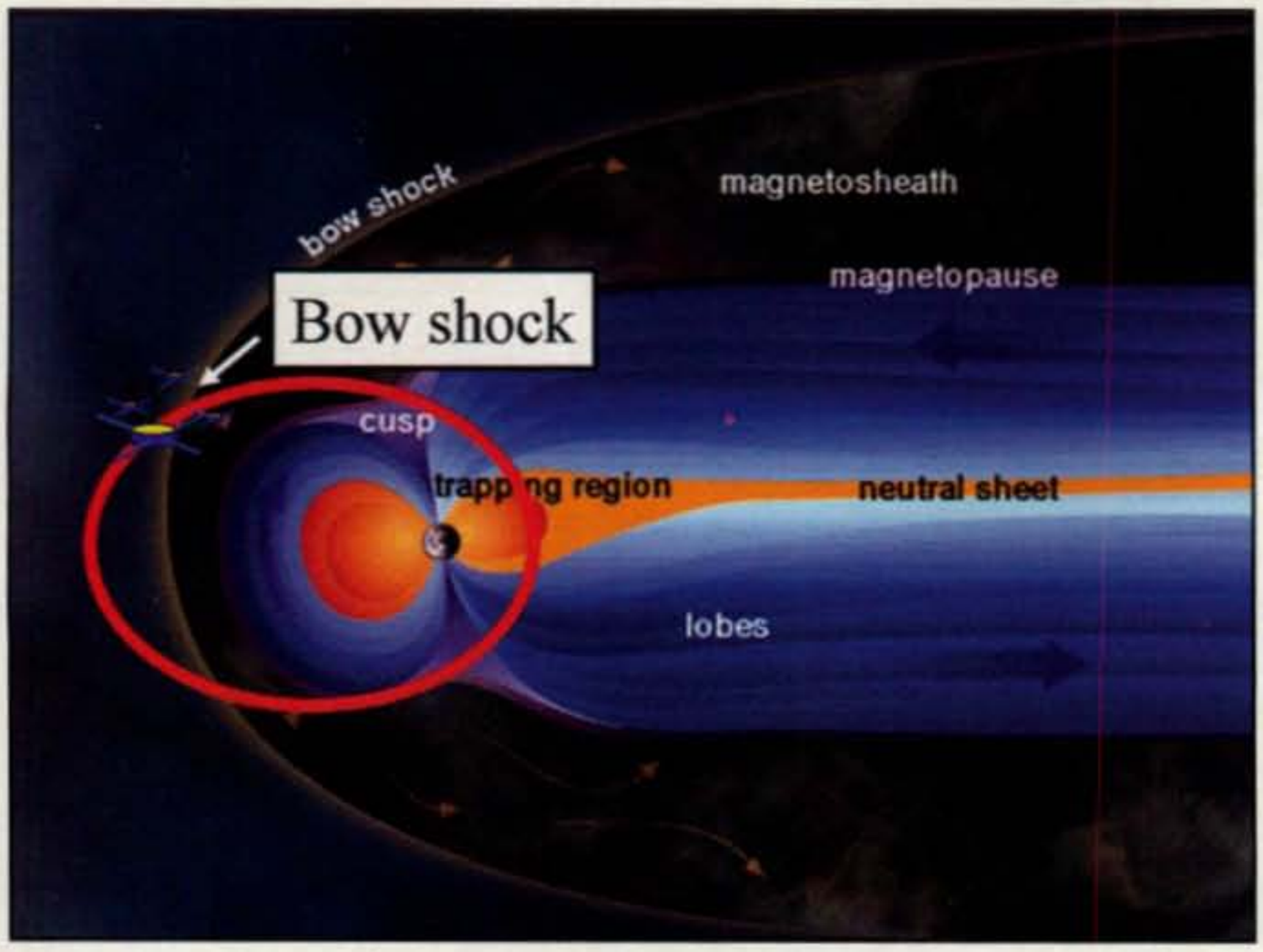


Fig. 2– The orbit of a Cluster spacecraft over a sketch of the Earth's magnetosphere. (Courtesy the European Space Agency)

ma from the Sun's polar regions, to clear the old magnetism away. Finally, when all of the old magnetism is thrown away, the Sun's magnetic field lines are running in the opposite direction.

This is the source of the recent occurrences of intense geomagnetic storms, such as the one in July. These flare-ups come out of some very quiet periods, but they are normal. This is a sign that the Sun is continuing to get rid of the current complex magnetic structures as it starts to form new ones with the reversed orientation.

Since the Sun's magnetic field permeates the entire solar system, and beyond (in a region called the *heliosphere*), it interacts with the Earth and Earth's magnetic field (a field known as the *magnetosphere*). The Sun's huge magnetic field is called the Interplanetary Magnetic Field (IMF) and is a primary cause of space weather. Sprawling out away from the Sun is a solar wind that rides the IMF.

As Earth orbits the Sun, it dips in and out of the wavy current sheet of the IMF. On one side the Sun's magnetic field points north, or toward the Sun. On the other side it points south, or away from the Sun. The IMF's orientation is indicated by the *Bz* index. When the *Bz* is negative, it indicates a southerly oriented IMF; when positive, it indicates a northerly oriented IMF.

South-pointing solar magnetic fields tend to "magnetically reconnect" with Earth's own magnetic field. This allows the solar wind, and the plasma, to flow in and collect in a reservoir known as the *boundary layer.* The energetic particles riding the solar wind can then penetrate the atmosphere, causing aurora and triggering geomagnetic storms.

If the IMF is oriented northward, however, this magnetic reconnection does not take place. This should create a barrier against the solar wind and the plasma riding the IMF. However, measurements of the boundary layer taken by space weather spacecraft and dating back to 1987 reveal that the boundary layer contains a greater amount of solar particles and plasma when the fields are aligned than when they are not. This begs an answer: How is the solar wind getting in?

In 2000, the European Space Agency, in international co-operation with NASA, deployed four spacecraft called the Cluster. The four spacecraft orbit in a formation that allows them to investigate the structure, in three dimensions, of the Earth's plasma environment, such as the interaction between the solar wind and the magnetosphere. The Cluster mission is expected to continue until at least 2005.

Thanks to the data from Cluster, scientists have uncovered an answer to this boundary-layer question. As the four-spacecraft formation moved through the magnetosphere, it began to encounter gigantic vortices of gas, measuring about six Earth radii across, at the magnetopause, the outer edge of the magnetosphere. These had never before been detected in the magnetosphere.

These vortices, almost 40,000 kilometers in size, are created when two adjacent flows of plasma or gas are travelling with different speeds, so one is slipping past the other. You can see this everyday out on the ocean when wind whips up water waves. This phenomena is known as Kelvin-Helmholtz Instabilities (KHI).

When a KHI wave rolls up into a vortex, it becomes known as a Kelvin Cat's eye. Cluster readings have revealed density variations of the plasma right at the magnetopause, precisely like those expected when passing through a Kelvin Cat's eye.

It is thought that these vortex structures might be able to pull large amounts of the solar wind and plasma into the boundary layer as they collapse. Once the solar-wind particles are carried into the inner part of the magnetosphere, they can be highly energized, causing them to smash into the atoms of the upper atmosphere, causing aurora.

While Cluster's discovery supports this model, it does not yet show the precise mechanism by which plasma is carried into the magnetosphere. There could be other processes yet to be discovered that fill up the boundary layer when the IMF and the Earth's magnetosphere both are oriented in the same direction.

When the IMF connects with the magnetic field around the Earth, and as solar wind plasma flows into the atmosphere, the geomagnetic field lines become highly active. This is known as a geomagnetic storm. Geomagnetic storms cause a degrada-

Fig. 3– An artist's impression of one of the four Cluster Spacecraft. (Courtesy the European Space Agency)

	1993	'94	'95	'96	'97	'98	"99	'00	'01	'02	'03	'04
Oct.	45	27	12	9	32	71	108	115	114	91	58	29*
Nov.	41	26	11	10	35	73	111	113	116	85	57	27*

** Predicted values expected during the 2004 contest*

Table I– Smoothed sunspot numbers recorded during CQ World-Wide DX Contests since 1993 (October SSB, November CW).

tion of radio signal propagation as a result of ionospheric recombination. This recombination is similar to what takes place during the hours of darkness, with a lowering of the frequencies each ionospheric layer can refract. Geomagnetic storms can cause long-term (hours to days) degradation, or depression, of the Maximum Usable Frequencies (MUFs), reducing the critical frequencies by as much as 50 percent of normal.

We should see less and less of these geomagnetic storms as we reach solar Cycle 23's end, sometime in 2007. However, don't be surprised when a very strong, short flare up of solar activity occurs, triggering bad propagation conditions on HF.

High Normal Conditions for CQ WW DX SSB Contest 2004

HF radio enthusiasts celebrate the arrival of the winter DX season. From October through November 2004 we will see a steady improvement in the DX bands. During the CQ WW contests taking place in both months (SSB in October and CW in November), we should experience fairly good success.

The 2004 CQ WW SSB Contest will start at 0000 UTC, Saturday, October 30, and run through 2400 UTC Sunday, October 31. Looking at the 27-day rotation of the Sun, taking into consideration the current solar activity at the time of writing this column, propagation should be fair to excellent, depending on the radio signal path between you and the distant station, and the time of the attempted contact.

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 around October 3, 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. November's 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 tabulates the observed sunspot count during previous WW DX Contest periods since 1993, and what's predicted for the 2004 contest. Contest conditions could be somewhat like those of 1994. Low- to middle-latitude propagation paths should be fairly good, with openings even on 15 meters. With the low probability of geomagnetic disturbance during the contest weekend, the bands should be stable, and the lower frequency bands will be much quieter than in the past few years.

The DX Propagation Charts and other information in this month's column are designed to help you make the most of propagation conditions during the contest, if you are participating. Even if you are not a dedicated contester, you should give it a try. If you are trying for your DXCC or other paper, this is the contest of choice, and many die-hard participants will appreciate putting you in their log as well. Sure, conditions may not be as hot as during the years of the solar cycle maximum, but with the improvement of propagation on lower HF bands such as 40 meters, there's a lot of opportunity to make a good score.

The 2004 CQ WW CW Contest will be from 0000 UTC, Saturday, November 27 through 2400 UTC Sunday, November 28. We'll look at the forecast for that weekend in next month's column.

Fall Propagation

The following is a band-by-band summary of DX propagation conditions expected

Time EST	Optimum Band (meters)	Areas To Which Band Is To Be Open
00–02	40	Most of Europe, Eastern Mediterranean, and Middle East. Most of Central and South America. A few African areas and possibly Antarctica.
02–04	20	Some South Pacific, New Zealand, and Australasia. A few Far East and Asian areas. Some South America and Antarctica.
04–06	40	South Pacific, New Zealand, Australasia. Many South American areas. A few Far Eastern and Asian areas. Possibly Antarctica.
06–08	20	Most of Europe, South Pacific, New Zealand, and Australasia. Most of Central and South America. A few African areas. Some Far East and Asian areas.
08–10	15	All of Europe, Eastern Mediterranean, and Middle East. Some of Africa. Most of Central and South America. South Pacific, New Zealand, and Australasia. A few Asian areas.
10–12	10	Most of Europe and Africa. Most of Central and South America. A few Asian areas, New Zealand, South Pacific, and Australasia.
12–14	15	Some of Europe and most of Africa. Most of Central and South America. A few areas of the South Pacific, New Zealand, and Australasia.
14–16	15	Most of Africa, and Central and South America. Some of South Pacific, New Zealand, and Australasia. A few Asian areas.
16–18	20	Most of Europe, Eastern Mediterranean, and Middle East. All of Africa, and Central and South America. A few Australasian areas.
18–20	15	Lots of South Pacific, New Zealand, and Australasia. Some of Far East and Asia. Most of Central and South America. Possibly Antarctica.
20–22	20	Most of Africa, Far East, South Pacific, New Zealand. Australasia, Central and South America. A few European areas and Middle East. Some Antarctica.
22–00	20	Lots of Far East, South Pacific, New Zealand, Australasia, Central and South America. A few African and Asian areas. Antarctica.

**Similar work plans can be devised for single-band operation or for openings to specific DX areas.*

Table II– Sample multi-band work plan for eastern U.S. QTH. (Courtesy of George Jacobs, W3ASK)

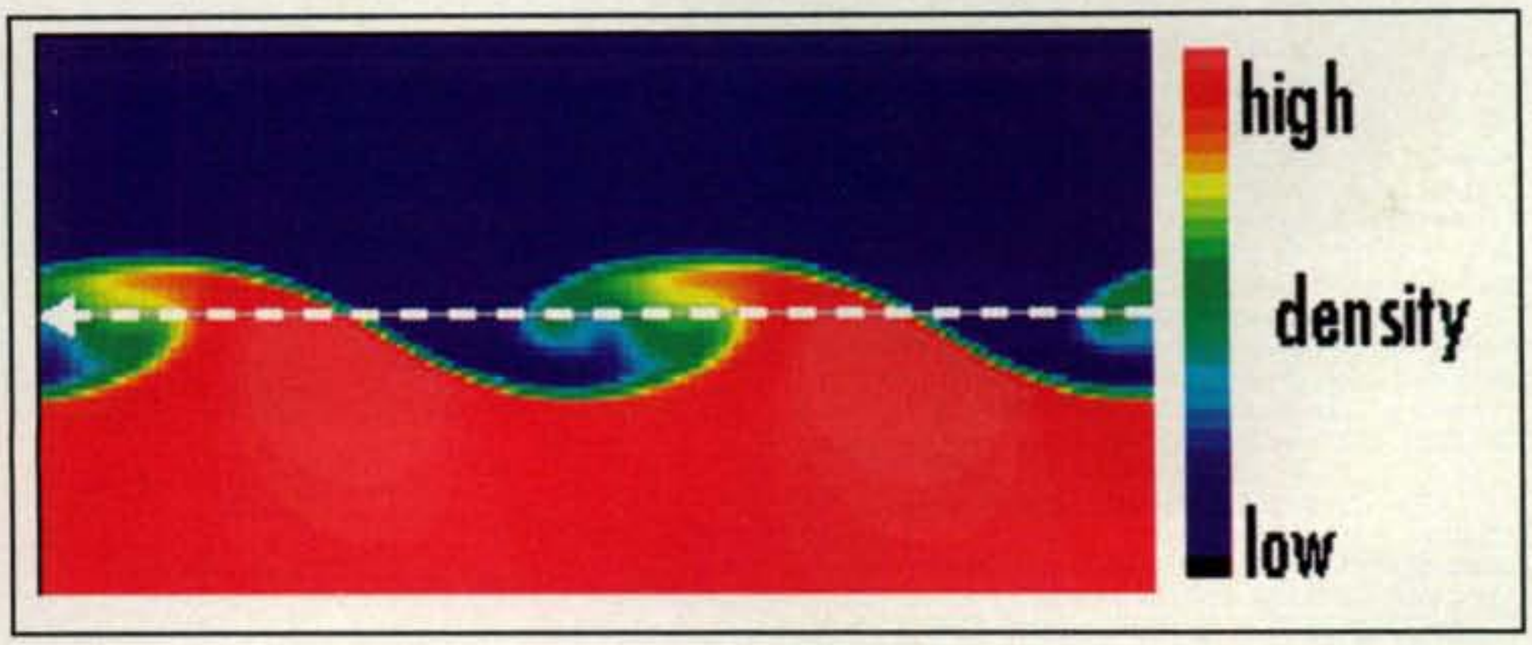


Fig. 4– This computer simulation shows how the density of the electrified gas is expected to vary across the vortices along Cluster's trajectory (white dashed line). The density is lower inside the boundary layer (blue region) and higher outside, in the region dominated by the solar wind (shown in red). The density variations measured by the instruments on board Cluster match those predicted by this model. (Courtesy H. Hasegawa, Dartmouth College)

from mid-October through mid-December and centered on the two CQ WW contest weekends. Next month's column will update this summary.

160 Meters: Considerably decreased static levels, more quiet geomagnetic conditions (as compared to the last few years) and longer hours of darkness in the northern latitudes should provide a number of DX openings on this band. These openings will often be weak due to the relatively high signal absorption, since we are not yet to the longest periods of daily darkness. Give this band a try, though, as some fairly good openings should be possible toward Europe and the south from the eastern half of the United States, and toward the south, the Far East, Australasia, and the South Pacific from the western half of the country. Other DX openings might also be possible. The best propagation aid for this band (and for 80 and 40 meters as well) is a set of sunrise and sunset curves, since DX signals tend to peak when it is local sunrise at the easterly end of the path. A good internet website featuring a grayline map display is found at <http://www.fourmilab.to/earthview/>. Follow the link "map of the Earth," which shows the day and night regions.

80 Meters: This should be a good band for DX openings to many areas of the world during the hours of darkness and into the sunrise period. The band should peak towards Europe and in a generally easterly direction around midnight. For openings in a generally western direction, expect a peak just after sunrise. The band should remain open toward the south throughout most of the night. Propagation in this band is quite similar to that expected on 40 meters, except that signals will be somewhat weaker on the average, noise levels will be a bit higher, and the period for band openings in a particular direction will be a bit shorter.

40 Meters: This should be the hottest DX band during the hours of darkness, as the seasonal static levels are lower than they were during the summer. The band should be open for DX first toward Europe and the east during the late afternoon. Signals should increase in intensity as

darkness approaches. During the hours of darkness expect good DX openings to most areas of the world. Signals should peak from an easterly direction about midnight, and from a westerly direction just after sunrise. Excellent openings toward the south should be possible throughout most of the nighttime period. With conditions Above Normal or High Normal, the choice for best nighttime band will be between the 40 and 20 meters.

20 Meters: DX openings should be possible on this band both day and night. Conditions should peak from about an hour or two after sunrise and again during the late afternoon and early evening hours. Expect to work into most areas of the world between sunrise and sunset. Good to Excellent openings should be possible to many areas of the world well into the hours of darkness as well. When conditions are Above Normal, expect 20 meters to remain open for worldwide DX during most of the night. Look for long-path openings for about an hour or so after sunrise and again for an hour or so before local sunset. Signal levels are expected to be exceptionally strong during the October contest period. If you plan on operating on a single band during the SSB WW DX Contest, this band should be your choice again this year.

15 Meters: This year 15 meters will not be as hot as the previous few years. However, during the daylight hours this band should still see some significant action. Fair to Good conditions are expected from shortly after sunrise through the early evening hours. The band could remain open into the evening toward southern and tropical areas.

10 Meters: For those in low and middle latitude locations, this band could yield a number of daytime contacts during the contest weekends, especially between the points in the Southern Hemisphere, and along paths crossing the equator. However, I don't expect too much excitement on this band. With the continued decline in solar activity, this band suffers. Those in the Caribbean and other tropical regions will find 10 meters a possibly usable band this year.

Contest Work Charts

The DX Propagation Charts in this issue show the times when each amateur band from 160 through 10 meters is expected to open from each time zone area in the continental U.S. to the major DX areas in the world. The information contained in these charts, while useful during the contest period in their present format, can easily be reorganized into more operational work plans or schedules. Experience gained during previous contests has shown that specifically tailored schedules derived from the charts can be extremely useful in piling up contacts and points with a minimum of wasted time.

Table II is an example courtesy of George Jacobs, W3ASK (who wrote this column for 50 years, until December 2001, without missing a single issue) of one of several types of plans that can be devised. It is a multi-band operational work plan that shows the times and bands when propagation conditions are expected to be optimal to various areas of the world for each two-hour period throughout the day. An eastern QTH has been chosen for this example, but similar plans can be devised for central and western locations. This example is not accurate, though, for this year.

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 like a quiet period, there are some days forecast to have high geomagnetic activity and possible radio storms. It is 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

HOW TO USE THE DX PROPAGATION CHARTS

1. Use chart appropriate to your transmitter location. The Eastern USA Chart can be used in the 1, 2, 3, 4, 8, KP4, KG4, and KV4 areas in the USA and adjacent call areas in Canada; the Central USA Chart in the 5, 9, and 0 areas; the Western USA Chart in the 6 and 7 areas; and with somewhat less accuracy in the KH6 and KL7 areas.

2. The predicted times of openings are found under the appropriate meter band column (10 through 80 meters) for a particular DX region, as shown in the left-hand column of the charts. An * indicates the best time to listen for 160 meter openings. An ** indicates best time to check for 6 meter openings.

3. The propagation index is the number that appears in ( ) after the time of each predicted opening. The index indicates the number of days during the month on which the opening is expected to take place as follows:
(4) Opening should occur on more than 22 days
(3) Opening should occur between 14 and 22 days
(2) Opening should occur between 7 and 13 days
(1) Opening should occur on less than 7 days
Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific *propagation index* is likely to occur, and the signal quality that can be expected.

4. Times shown in the charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M.; 13 is 1 P.M., etc. Appropriate *standard* time is used, not GMT. To convert to GMT, add to the times shown in the appropriate chart 8 hours in PST Zone, 7 hours in MST Zone, 6 hours in CST Zone, and 5 hours in EST Zone. For example, 13 hours in Washington, D.C. is 18 GMT. When it is 20 hours in Los Angeles, it is 04 GMT, etc.

5. The charts are based upon a transmitted power of 250 watts CW, or 1 kw, PEP on sideband, into a dipole antenna a quarter-wavelength above ground on 160 and 80 meters, and a half-wavelength above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the *propagation index* will increase by one level; for each 10 dB loss, it will lower by one level.

6. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept of Commerce, Boulder, Colorado 80302.

October 15 - December 15, 2004
Time Zone: EST (24-Hour Time)
EASTERN USA To:

Reception Area	*10 Meters*	*15 Meters*	*20 Meters*	*40/80 Meters*
Western & Central Europe & North Africa	08-09 (1) 09-11 (2) 11-13 (1)	06-07 (1) 07-08 (2) 08-09 (3) 09-11 (4) 11-12 (3) 12-13 (2) 13-15 (1)	04-05 (1) 05-06 (2) 06-07 (3) 07-09 (4) 09-10 (3) 10-12 (2) 12-13 (3) 13-15 (4) 15-16 (3) 16-18 (2) 18-21 (1)	16-17 (1) 17-18 (2) 18-20 (3) 20-01 (4) 01-02 (3) 02-03 (2) 03-04 (1) 19-21 (1)* 21-23 (2)* 23-01 (3)* 01-02 (2)* 02-03 (1)*
Northern Europe & European CIS	08-11 (1)	07-08 (1) 08-10 (3) 10-11 (2) 11-12 (1)	04-06 (1) 06-07 (2) 07-09 (3) 09-11 (2) 11-13 (3) 13-14 (2) 14-16 (1)	17-19 (1) 19-02 (2) 02-04 (1) 20-03 (1)*
Eastern Mediterranean & Middle East	08-09 (1) 09-10 (2) 10-12 (1)	07-08 (1) 08-09 (2) 09-11 (3) 11-12 (2) 12-13 (1)	06-10 (1) 10-13 (2) 13-14 (3) 14-16 (4) 16-17 (3) 17-20 (2) 20-23 (1) 23-01 (2) 01-02 (1)	18-20 (1) 20-22 (2) 22-00 (3) 00-01 (2) 01-02 (1) 20-00 (1)*
Western & Central Africa	08-10 (1) 10-12 (2) 12-14 (3) 14-15 (2) 15-16 (1)	07-10 (1) 10-12 (2) 12-13 (3) 13-15 (4) 15-16 (3) 16-17 (2) 17-18 (1)	04-05 (1) 05-07 (2) 07-13 (1) 13-15 (2) 15-16 (3) 16-17 (4) 17-20 (3) 20-22 (2) 22-01 (1)	18-22 (1) 22-01 (2) 01-03 (1) 00-03 (1)*
Eastern Africa	09-11 (1) 11-13 (2) 13-15 (1)	07-11 (1) 11-13 (2) 13-16 (3) 16-17 (2) 17-18 (1)	07-14 (1) 14-16 (2) 16-20 (3) 20-00 (2) 00-01 (1)	19-22 (1) 22-00 (2) 00-01 (1) 22-00 (1)*
Southern Africa	08-09 (1) 09-10 (2) 10-12 (3) 12-13 (2) 13-14 (1)	07-10 (1) 10-12 (2) 12-15 (3) 15-16 (2) 16-18 (1)	07-13 (1) 13-15 (2) 15-17 (3) 17-19 (2) 19-22 (1) 22-01 (2) 01-02 (1)	18-19 (1) 19-22 (2) 22-23 (1) 19-21 (1)*
Central & South Asia	08-10 (1) 17-19 (1)	07-10 (1) 17-20 (1)	06-07 (1) 07-09 (2) 09-12 (1) 19-22 (1)	18-21 (1) 06-08 (1)
Southeast Asia	09-12 (1) 17-20 (1)	08-12 (1) 18-20 (1)	06-07 (1) 07-09 (2) 09-13 (1) 18-22 (1)	18-20 (1) 05-07 (1)
Far East	08-10 (1) 17-20 (1)	08-10 (1) 16-17 (1) 17-19 (2) 19-20 (1)	02-04 (1) 06-07 (1) 07-09 (2) 09-12 (1) 16-19 (1) 19-22 (2) 22-00 (1)	04-08 (1) 05-07 (1)*
South Pacific & New Zealand	09-13 (1) 13-15 (2) 15-17 (3) 17-18 (2) 18-19 (1)	07-08 (1) 08-10 (2) 10-14 (1) 14-15 (2) 15-17 (3) 17-19 (2) 19-20 (1)	04-06 (1) 06-07 (2) 07-09 (4) 09-11 (2) 11-17 (1) 17-18 (2) 18-21 (3) 21-02 (2) 02-04 (3)	00-03 (1) 03-05 (3) 05-07 (2) 07-09 (1) 03-04 (1)* 04-06 (2)* 06-07 (1)*
Australasia	09-12 (1) 14-16 (1) 16-17 (2) 17-18 (1)	08-10 (1) 10-13 (2) 13-15 (1) 15-17 (2) 17-19 (3) 19-20 (2) 20-21 (1)	05-06 (1) 06-07 (2) 07-09 (3) 09-10 (2) 10-15 (1) 15-17 (2) 17-19 (1) 19-20 (2) 20-22 (3) 22-00 (2) 00-03 (1)	03-05 (1) 05-07 (2) 07-08 (1) 05-07 (1)*

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 6 and 10, and it is expected to peak on October 8. The shower could reach a very high rate of hourly meteors. Like with the *Leonids*, the best time to check for radio propagation would be 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, in 1933 and 1946. In 1999 a wholly unexpected minor outburst was witnessed from the Far East. *Draconid* meteors are exceptionally slow moving, a characteristic which helps separate genuine shower meteors. This shower could produce meteor-scatter mode (Ms) propagation openings on VHF and UHF.

You might also check out the *Orionids*, which is expected to peak on October 21, with an expected visual rate of 20 meteors per hour. This shower could also provide a few strong ionized trails, making meteor-shower propagation possible. Check out <http://www.imo.net/calendar/cal04.html> for a complete calendar of meteor showers in 2004.

Useful Websites (URLs)

One great resource you can utilize during a contest is the internet. Real-time solar, geomagnetic, ionospheric, and HF propagation prediction information is right at your fingertips, allowing you to better plan your on-the-air operation.

If you want to be alerted any time the *Kp*-index rises above 4, or the solar flux changes, and so on, then you will want to subscribe to my propagation eAlert service (a free resource). If you have a pager, a cell phone with e-mail features, or an open e-mail client on your contest computer, these eAlerts will let you know when conditions are changing. Direct your web-browser software to view the eAlert subscription page at <http://prop.hfradio.org/ealert/>. When you fill out the form, enter the e-mail address you will use to receive these eAlerts.

In addition, I now have an RSS feed that you can use to keep tabs on all of the critical space weather and propagation observations collected on my propagation web center. Simply configure your RSS reader to poll the dynamic content at <http://hfradio.org/propsupport/prop.rss>.

If you are at a location where you do not have easy internet access, but you have a WAP/WML wireless device, you may gather the latest propagation information, warnings, alerts, and look at conditions by pointing your WAP device to <http://wap.hfradio.org/>. This is a special URL for wireless access to this free resource.

If you have live internet connectivity at your contest location, use the following websites, which provide real-time data, forecasts, links to in-depth historical data, and graphical content:

The NW7US Propagation Center: <http://prop.hfradio.org/>. This site provides a rich collection of live propagation information. In addition, you will find a lot of links to educational resources covering the science of propagation, links to the many space and earth science resources found around the world, forecasts, and archived analysis and data.

D-Region Absorption Prediction: This is a great resource for those times when you want to know if the lower bands are experiencing degradation due to solar activity. <http://sec.noaa.gov/rt_plots/dregion.html> is updated once every minute. Long-range communications using high-frequency radio waves depend on reflection of the signals in the ionosphere. Along the path to the *F2* peak the radio-wave signal suffers attenuation due to absorption by the intervening ionosphere. This site shows current and forecast conditions of the ionospheric *D*-layer, which

Caribbean, Central America & Northern Countries of South America	07-09 (1) 09-11 (2) 11-13 (3) 13-15 (4) 15-16 (3) 16-17 (2) 17-18 (1)	06-07 (1) 07-09 (2) 09-14 (3) 14-16 (4) 16-18 (3) 18-19 (2) 19-20 (1)	07-09 (4) 09-11 (3) 11-14 (2) 14-16 (3) 16-19 (4) 19-22 (3) 22-02 (2) 02-06 (1) 06-07 (2)	18-19 (1) 19-21 (3) 21-03 (4) 03-05 (2) 05-06 (1) 19-21 (1)* 21-03 (2)* 03-05 (2)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	08-09 (1) 09-13 (2) 13-15 (3) 15-16 (4) 16-17 (2) 17-18 (1)	07-08 (1) 08-10 (3) 10-14 (2) 14-15 (3) 15-17 (4) 17-18 (3) 18-19 (2) 18-20 (1)	14-16 (1) 16-17 (2) 17-18 (3) 18-20 (4) 20-22 (3) 22-02 (2) 02-06 (1) 06-09 (2) 09-11 (1)	20-23 (1) 23-04 (2) 04-06 (1) 23-04 (1)*
McMurdo Sound, Antarctica	14-17 (1)	06-09 (1) 15-17 (1) 17-19 (2) 19-20 (1)	16-18 (1) 18-20 (2) 20-22 (3) 22-02 (2) 02-06 (1) 06-08 (2) 08-09 (1)	00-06 (1)

Time Zones: CST & MST (24-Hour Time) CENTRAL USA To:

Reception Area	*10 Meters*	*15 Meters*	*20 Meters*	*40/80 Meters*
Western & Southern Europe & North Africa	08-09 (1) 09-11 (2) 11-12 (1)	06-07 (1) 07-10 (2) 10-11 (3) 11-12 (2) 12-14 (1)	05-06 (1) 06-08 (3) 08-12 (2) 12-15 (3) 15-19 (2) 19-21 (1) 00-02 (1)	17-18 (1) 18-20 (2) 20-22 (3) 22-00 (2) 00-02 (1) 19-20 (1)* 20-22 (2)* 22-00 (1)*
Northern & Central Europe & European CIS	08-10 (1)	06-07 (1) 07-08 (2) 08-09 (3) 09-10 (2) 10-13 (1)	06-07 (1) 07-09 (2) 09-11 (3) 11-13 (2) 13-16 (1) 01-03 (1)	18-20 (1) 20-23 (2) 23-01 (1) 20-23 (1)*
Eastern Mediter-ranean & Middle East	08-10 (1)	07-09 (1) 09-11 (2) 11-12 (1)	06-08 (1) 08-11 (2) 11-13 (3) 13-15 (2) 15-17 (1) 17-19 (2) 19-22 (1) 01-03 (1)	17-19 (1) 19-22 (2) 22-23 (1) 20-22 (1)*
Western & Central Africa	08-09 (1) 09-12 (2) 12-14 (3) 14-15 (2) 15-16 (1)	06-10 (1) 10-12 (2) 12-14 (3) 14-15 (4) 15-16 (3) 16-17 (2) 17-18 (1)	06-12 (1) 12-14 (2) 14-15 (3) 15-17 (4) 17-20 (3) 20-22 (2) 22-02 (1)	17-19 (1) 19-21 (2) 21-22 (1) 19-21 (1)*
Eastern Africa	09-10 (1) 10-12 (2) 12-14 (1)	08-10 (1) 10-13 (2) 13-15 (3) 15-16 (2) 16-18 (1)	06-14 (1) 14-17 (2) 17-20 (3) 20-21 (2) 21-22 (1)	20-00 (1) 21-23 (1)*
Southern Africa	08-09 (1) 09-10 (2) 10-12 (3) 12-13 (2) 13-14 (1)	07-10 (1) 10-12 (2) 12-15 (3) 15-16 (2) 16-17 (1)	07-13 (1) 13-15 (2) 15-17 (3) 17-20 (2) 20-22 (1) 22-00 (2) 00-02 (1)	18-19 (1) 19-21 (2) 21-22 (1) 19-21 (1)*
Central & South Asia	07-10 (1) 19-21 (1)	07-10 (1) 17-18 (1) 18-21 (2) 21-22 (1)	06-07 (1) 07-09 (2) 09-11 (1) 17-18 (1) 18-21 (2) 21-23 (1)	06-08 (1) 18-20 (1)
Southeast Asia	09-12 (1) 16-18 (1)	09-12 (1) 14-16 (1) 16-18 (2) 18-20 (1)	06-08 (1) 08-11 (2) 11-14 (1) 18-19 (1) 19-21 (2) 21-22 (1)	04-07 (1)
Far East	15-16 (1) 16-18 (2) 18-19 (1)	08-10 (1) 15-16 (1) 16-17 (2)	06-07 (1) 07-08 (2) 08-10 (3)	02-03 (1) 03-06 (2) 06-09 (1)
South Pacific & New Zealand	11-13 (1) 13-15 (2) 15-17 (3) 17-18 (2) 18-19 (1)	08-09 (1) 09-11 (2) 11-14 (1) 14-16 (2) 16-17 (3) 17-19 (3) 19-20 (2) 20-21 (1)	06-07 (1) 07-09 (3) 09-11 (2) 11-17 (1) 17-18 (2) 18-19 (3) 19-21 (4) 21-22 (3) 22-00 (2) 00-02 (1)	23-01 (1) 01-06 (3) 06-07 (2) 07-08 (1) 00-02 (1)* 02-06 (2)* 06-07 (1)*
Austral-Asia	09-12 (1) 14-15 (1) 15-17 (2) 17-18 (1)	08-09 (1) 09-11 (2) 11-15 (1) 15-16 (2) 16-18 (3) 18-19 (2) 19-20 (1)	17-19 (1) 19-21 (2) 21-23 (3) 23-02 (2) 02-04 (3) 04-05 (2) 05-07 (1) 07-08 (2) 08-10 (3) 10-12 (2) 12-14 (1)	02-04 (1) 04-07 (2) 07-08 (1) 03-04 (1)* 04-06 (2)* 06-07 (1)*
Caribbean, Central America & Northern Countries of South America	07-09 (1) 09-11 (2) 11-13 (3) 13-15 (4) 15-16 (3) 16-17 (2) 17-18 (1)	06-07 (1) 07-08 (2) 08-14 (3) 14-16 (4) 16-18 (3) 18-19 (2) 19-20 (1)	06-07 (2) 07-09 (4) 09-11 (3) 11-13 (2) 13-15 (3) 15-19 (4) 19-22 (3) 22-01 (2) 01-06 (1)	18-19 (1) 19-21 (2) 21-02 (3) 02-04 (1) 04-05 (2) 05-06 (1) 19-21 (1)* 21-02 (2)* 02-05 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	08-09 (1) 09-12 (2) 12-14 (3) 14-16 (4) 16-17 (2) 17-18 (1)	07-08 (1) 08-10 (2) 10-12 (1) 12-14 (2) 14-15 (3) 15-17 (4) 17-18 (3) 18-19 (2) 19-20 (1)	02-06 (1) 06-08 (2) 08-14 (1) 14-16 (2) 16-17 (3) 17-20 (4) 20-22 (3) 22-02 (2)	19-21 (1) 21-01 (2) 01-03 (1) 03-04 (2) 04-05 (1) 21-04 (1)*
McMurdo Sound	14-17 (1)	07-10 (1) 15-17 (1) 17-19 (2) 19-20 (1)	16-18 (1) 18-20 (2) 20-00 (3) 00-02 (2) 02-06 (1) 06-08 (2) 08-10 (1)	23-05 (1)

Time Zone: PST (24-Hour Time) WESTERN USA To:

Reception Area	*10 Meters*	*15 Meters*	*20 Meters*	*40/80 Meters*
Western & Southern Europe & North Africa	07-08 (1) 08-10 (2) 10-11 (1)	07-08 (1) 08-09 (2) 09-11 (3) 11-12 (2) 12-13 (1)	05-06 (1) 06-08 (2) 08-10 (1) 10-12 (2) 12-14 (3) 14-16 (2) 16-20 (1) 00-02 (1)	18-20 (1) 20-22 (2) 22-00 (1) 19-23 (1)*
Central & Northern Europe & European CIS	07-09 (1)	07-08 (1) 08-09 (2) 09-11 (1)	06-07 (1) 07-11 (2) 11-16 (1) 23-02 (1)	21-00 (1)
Eastern Mediter-ranean & Middle East	07-10 (1)	07-08 (1) 08-10 (2) 10-11 (1)	06-07 (1) 07-10 (2) 10-14 (1) 14-16 (2) 16-18 (1) 21-23 (1)	18-22 (1) 06-08 (1)
Western & Central Africa	08-09 (1) 09-12 (2) 12-14 (1)	06-10 (1) 10-12 (2) 12-15 (3) 15-17 (2) 17-18 (1)	06-10 (1) 10-14 (2) 14-16 (3) 16-18 (4) 18-19 (3) 19-21 (2) 21-23 (1)	18-23 (1)
Eastern Africa	10-13 (1)	08-12 (1) 12-15 (2) 15-17 (1)	08-13 (1) 13-15 (2) 15-17 (3) 17-19 (2) 19-21 (1)	18-21 (1) 06-08 (1)
Southern Africa	08-09 (1) 09-10 (2) 10-11 (2) 11-12 (1)	06-10 (1) 10-11 (2) 11-12 (3) 12-14 (4) 14-15 (2) 15-16 (1)	06-12 (1) 12-15 (2) 15-18 (3) 18-20 (2) 20-21 (1) 00-02 (1)	18-19 (1) 19-20 (2) 20-21 (1) 06-08 (1) 18-19 (1)*
Central & South Asia	07-09 (1) 17-19 (1)	16-17 (1) 17-19 (2) 19-20 (1) 07-09 (1)	06-07 (1) 07-09 (2) 09-11 (1) 16-18 (1) 18-20 (2) 20-21 (1)	04-09 (1) 17-19 (1)
Southeast Asia	14-15 (1) 15-17 (2) 17-18 (1)	09-11 (1) 13-15 (1) 15-18 (2) 18-19 (1)	06-07 (1) 07-10 (2) 10-12 (1) 17-19 (1) 19-20 (2) 20-22 (1)	02-03 (1) 03-05 (2) 05-08 (1) 03-05 (1)*
Far East	14-15 (1) 15-17 (2) 17-18 (1)	12-14 (1) 14-15 (3) 15-16 (4) 16-17 (3) 17-18 (2) 18-20 (1)	06-07 (1) 07-08 (2) 08-10 (3) 10-12 (2) 12-16 (1) 16-18 (2) 18-20 (3) 20-21 (2) 21-23 (1)	23-02 (1) 02-05 (2) 05-08 (1) 01-03 (1)*
South Pacific & New Zealand	08-10 (1) 10-12 (2) 12-13 (3) 13-16 (2) 16-17 (2) 17-18 (1)	07-08 (1) 08-10 (2) 10-12 (1) 12-16 (2) 16-18 (4) 18-19 (2) 19-20 (1)	05-07 (1) 07-09 (4) 09-11 (2) 11-16 (1) 16-17 (2) 17-18 (3) 18-20 (4) 01-05 (3) 20-22 (3) 22-00 (2) 00-03 (1) 03-05 (2)	21-22 (1) 22-05 (3) 05-07 (2) 07-08 (1) 22-00 (1)* 00-05 (2)* 05-06 (1)*
Austral-Asia	08-10 (1) 12-13 (1) 13-14 (2) 14-15 (3) 15-16 (4) 16-17 (2) 17-18 (1)	08-09 (1) 09-10 (2) 10-12 (3) 12-14 (2) 14-16 (3) 16-18 (4) 18-19 (2) 19-21 (1)	17-19 (1) 19-21 (2) 21-00 (3) 00-02 (2) 02-04 (3) 04-06 (2) 06-07 (3) 07-09 (4) 09-10 (3) 10-12 (2) 12-14 (1)	02-03 (1) 03-04 (2) 04-06 (3) 06-08 (1) 03-04 (1)* 04-06 (2)* 06-07 (1)*
Caribbean, Central, America & Northern Countries of South America	07-08 (1) 08-09 (2) 09-10 (4) 10-12 (3) 12-14 (4) 14-15 (2) 15-16 (1)	06-07 (1) 07-08 (2) 08-10 (3) 10-13 (2) 13-14 (3) 14-16 (4) 16-17 (2) 17-18 (1)	07-09 (4) 09-13 (2) 13-15 (3) 15-18 (4) 18-20 (3) 20-00 (2) 00-05 (1) 05-06 (2) 06-07 (3)	18-19 (1) 19-01 (3) 01-04 (2) 04-05 (1) 19-22 (1)* 22-01 (2)* 01-04 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	07-08 (1) 08-11 (2) 11-13 (3) 13-15 (4) 15-16 (2) 16-17 (1)	06-07 (1) 07-09 (2) 09-13 (1) 13-14 (2) 14-15 (3) 15-16 (4) 16-17 (2) 17-18 (1)	07-09 (1) 12-14 (1) 14-16 (2) 16-17 (3) 17-19 (4) 19-23 (3) 23-02 (2) 02-04 (1) 04-07 (2)	20-22 (1) 22-00 (2) 00-02 (1) 22-00 (1)*
McMurdo Sound, Antarctica	12-16 (1)	07-14 (1) 14-18 (2) 18-20 (1)	16-18 (1) 18-20 (2) 20-00 (3) 00-02 (2) 02-06 (1) 06-08 (2) 08-10 (1)	00-05 (1)

**Indicates best times to listen for 80 meter openings. Openings on 160 meters are also likely to occur during those times when 80 meter openings are shown with a propagation index of (2) or higher.*

For 12 meter openings interpolate between 10 and 15 meter openings.

For 17 meter openings interpolate between 15 and 20 meter openings.

For 30 meter openings interpolate between 40 and 20 meter openings.

Propagation charts prepared by George Jacobs, W3ASK.

has direct influence on the ability of your contest signal reaching its destination.

160-Meter Radio Propagation Prediction Table: <http://solar.spacew.com/www/160pred.html>. Don't miss this page. It is based on selected high-latitude magnetic observatory data that is used to estimate the influence of the auroral oval on 160-meter path propagation. For details refer to "160 Meters: An Enigma Shrouded in Mystery," by Cary Oler and Ted Cohen, N4XX, in the March and April 1998 issues of *CQ*.

The Solar Terrestrial Activity Report from the DX-Listeners' Club in Norway: <http://www.dxlc.com/solar/>. The Solar Terrestrial Activity Report is generally updated once a day. The report contains a graphical view of the last three months of solar-flux values, sunspot count, and planetary *A*-index. In addition there is information on recent solar events as well as a forecast for the next few days. Charts of all sunspot cycles from Cycle 1 are available as well as comparisons of the most recent cycle with previous cycles.

IPS Radio and Space Services from Australia: The Australian Space Weather Agency presents <http://www.ips.gov.au/>. Following the "Space Weather," "Geophysical," "Solar," or "HF Systems" links brings you to a wealth of live data resources.

You can dial each URL directly, and you can find additional links at my page <http://prop.hfradio.org/>. If you do not have access to the World Wide Web (try a local library or school), solar flux, geomagnetic indices, and ionospheric reports can be obtained by calling 303-497-3235, where a recorded announcement is updated every three hours. Both the Space Environmental Center and the U.S. Air Force Space Weather Program staff encourage radio amateurs to either call the recorded line, or to use WWV (Fort Collins, Colorado) at 18 minutes past each hour. WWV transmits the solar and geomagnetic information, storm updates, and other items of concern to radio users. The frequencies are 2.5, 5, 10, 15, and 20 MHz. Sister station WWVH is located in Kauai, Hawaii, and carries the same information at the same times, on the same frequencies.

Current Solar Cycle Progress

The summer geomagnetic activity up until July was reasonably calm, with many days, even weeks, of an Ap lower than 10. However, then, during July, we saw the formation of a very complex sunspot group, numbered by NOAA as 10649. During July it produced five X-class flares and many M- and C-class flares. With that, some very powerful CMEs were directed toward the Earth, causing intense geomagnetic storms. The planetary *K*-index (*Kp*) reached 9, the highest level on the scale, and visual aurora was seen over many parts of the middle latitudes. These intense geomagnetic storms shut down the HF bands, but did provide for very exciting VHF activity via aurora mode (*Au*) propagation.

When the same sunspot group returned in August, though, it did not have quite the same complexity and strength, so most flares were moderate M-class or C-class flares, with very few CMEs. The geomagnetic conditions remained much quieter than the storm period 27 days before.

A few other short periods of increased sunspot activity during the summer also sparked a bit of life into HF radio propagation. During July we saw some strong solar activity with 10.7-cm flux readings reach 175.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 119 for July 2004, quite a bit higher than June's 100, and also the highest to date since the beginning of 2004. The 12-month smoothed 10.7-cm flux centered on January 2004 is 118. The predicted smoothed 10.7-cm solar flux for October 2004 is about 88, give or take about 17 points.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for July 2004 is 51, up from June's 43, May's 42, and April's 39, and even up from March's 49. That made July the most active month up to that period this year. The lowest daily sunspot value during July 2004 was recorded on July 7, with a count of 9, half of June's lowest count. The highest daily sunspot count for July was 100 on July 19. The 12-month running smoothed sunspot number centered on January 2004 is 52, down from the 55 of December 2003. A smoothed sunspot count of 29 is expected for October 2004, give or take about 12 points.

The observed monthly mean planetary *A*-index (*Ap*) for July 2004 is 21, considerably more active than June, when the monthly mean *Ap* was 9. This is also the highest *Ap* so far, from January to July. The 12-month smoothed *Ap*-index centered on January 2004 is 18, one point down from December 2003. Expect the overall geomagnetic activity to be quiet during most days in October, with possibly one major storm during the month. Refer to the "Last-Minute Forecast" for the outlook on what days that this might occur.

I welcome your thoughts, questions, and experiences regarding this fascinating science of propagation. You may e-mail me, write me a letter, or catch me on the HF amateur bands. Please come and participate in my online propagation discussion forum at <http://hfradio.org/forums/>. See you on the air, perhaps during the contest weekend!

73, Tomas, NW7US/AAA0WA

ham shop

Advertising Rates: Non-commercial ads are 20 cents per word including abbreviations and addresses. Commercial and organization ads are $1.00 per word. Boldface words are $1.50 each (specify which words). Minimum charge $2.00. No ad will be printed unless accompanied by full remittance. All ads must be typewritten double-spaced.
Closing Date: The 10th day in the third month preceding date of publication (example: Jan. 10th for the March issue). Because the advertisers and equipment contained in Ham Shop have not been investigated, the Publisher of *CQ* cannot vouch for the merchandise listed therein. The publisher reserves the right to reject any advertisement. Direct all correspondence and ad copy to: CQ Ham Shop, 25 Newbridge Road, Hicksville, NY 11801 (fax: 516-681-2926; e-mail: <hamshop @cq-amateur-radio.com>.

CB-TO-10M CONVERSIONS: Frequency modifications, FM, books, plans, kits, high-performance CB accessories. Catalog $3. CBCI, Box 30655CQ, Tucson, AZ 85751. <www.cbcintl.com>

QSLing SUPPLIES. e-mail: <plumdx@msn.com>.

QSLs FOR DX STATIONS: Our new "International Division" was established to handle QSL needs of DX hams. We understand the problems of packaging, shipping, and dealing with the customs problems. You can trust us to deliver a quality QSL, usually much cheaper than you can find locally. Write, call, or FAX for free samples and ordering information. "The QSL Man—W4MPY," 682 Mount Pleasant Road, Monetta, SC 29105 USA. Phone or FAX 803-685-7117.

"QRZ DX"—since 1979: Available as an **Adobe PDF file** each Wednesday or by regular mail. Your best source for weekly DX information. Send #10 SASE for sample/rates. **"The DX Magazine"—since 1989:** Bimonthly – Full of DXpedition reports, QSL Information, Awards, DX news, technical articles, and more. Send $3.00 for sample/rates. DX Publishing, Inc., P.O. Box DX, Leicester, NC 28748-0249. Phone/Fax: 828-683-0709; e-mail: <DX@dxpub.com>; WEB PAGE: <http://www.dxpub.com>.

CERTIFICATE for proven contacts with all ten American districts. SASE to W6DDB, 45527 Third Street East, Lancaster, CA 93535-1802.

TRYLON SELF-SUPPORTING TOWERS: Delivered **ANYWHERE** in the US for **ONLY** $261.00. This is the **BEST** tower value around – 96 feet for only $2451.00 **DELIVERED TO YOUR QTH!** Go to <www.championradio.com> or call 888-833-3104 for more information.

<http://www.seaqmaui.com>

ALUMINUM CHASSIS AND CABINET KITS, UHF-VHF Antenna Parts, Catalog. E-mail: <k3iwk@flash.net> or <http://www.flash.net/~k3iwk>.

KK7TV COMMUNICATIONS: *See our display ad.*

NAME BADGES BY GENE: In full color, our artwork or yours. See our web page for samples and prices. **www.hampubs.com** Harlan Technologies 815-398-2683.

REAL HAMS DO CODE: Move up to CW with **CW Mental Block Buster III.** Succeed with hypnosis and NLP. Includes two (2) Tapes and Manual. Only $27.95 plus $5.00 s/h US. FL add $2.02 tax. Success Easy, 123 NW 13th Street, Ste 304-2, Boca Raton, FL 33432, 800-425-2552, <www.success-is-easy.com>.

NEAT STUFF! DWM Communications— <http://qth.com/dwm>

PACKET RADIO AND MORE! Join TAPR, connect with the largest amateur radio digital group in the U.S. Creators of the TNC-2 standard, working on Spread Spectrum technology. Benefits: newsletter, software, discounts on kits and publications. For membership prices contact TAPR, 8987-309 E. Tanque Verde Road, #337, Tucson, AZ 85749-9399 (phone 940-383-0000; fax 940-566-2544; internet <tapr@tapr.org>; web: <http://www.tapr.org>).

WANTED: HAM EQUIPMENT AND RELATED ITEMS. Donate your excess gear—new, old, in any condition—to the Radio Club of Junior High School 22, the Nation's only full time non-profit organization working to get Ham Radio into schools around the country as a teaching tool using our EDUCOM—Education Thru Communication—program. Send your radio to school. Your donated material will be picked up ANYWHERE or shipping arranged, and this means a tax deduction to the full extent of the law for you as we are an IRS 501(c)(3) charity in our 18th year of service. It is always easier to donate and usually more financially rewarding, BUT MOST IMPORTANT your gift will mean a whole new world of educational opportunity for children nationwide. Radios you can write off; kids you can't. Make 2001 the year to help a child and yourself. Write, phone, or FAX the WB2JKJ "22 Crew" today: The RC of JHS 22, P.O. Box 1052, New York, NY 10002. Twenty-four hours call 516-674-4072; fax 516-674-9600; or e-mail <crew@wb2jkj.org>. Join us on the WB2JKJ Classroom Net, 7.238 MHz, 1200–1330 UTC daily and 21.395 MHz from 1400 to 2000 UTC.

IMRA-International Mission Radio Assn. helps missioners—equipment loaned; weekday net, 14.280 MHz, 1:00–3:00 PM Eastern. Sr. Noreen Perelli, KE2LT, 2755 Woodhull Ave., Bronx, NY 10469.

PHASED ARRAY NETWORKS by COMTEK SYSTEMS deliver gain and front to back. Call 704-542-4808; fax 704-542-9652. COMTEK SYSTEMS, P.O. Box 470565, Charlotte, NC 28247.

HF VERTICAL COMPARISON REPORT: K7LXC and NØAX test Cushcraft, Butternut, MFJ, Force 12, Hustler, Gap, and Diamond verticals. 64-page report includes protocol, data sets, and summaries. $17 plus $4 s/h. <www.championradio.com>, 888-833-3104.

3200+ DIFFERENT AWARDS from 128 DXCC countries. Complete data online at <http://www.dxawards.com>. One year full access just $6. Ted Melinosky, K1BV, 12 Wells Wood Road, Columbia, CT 06237-1525.

DXPEDITIONS on DVD! Contest and DXpedition videos by 9V1YC. 7 different titles now available on both DVD and VHS! VKØIR Heard, ZL9CI Campbell, FOØAAA Clipperton, A52A Bhutan, VP8THU South Sandwich, VP8GEO South Georgia, and WRTC 2002 Finland. $25 each, shipping included. VISA/MC, paypal, or check. Contact Charlie Hansen, NØTT, 8655 Hwy D, Napoleon, MO 64074, or call 816-690-7535; e-mail: <n0tt@juno.com>.

CASH FOR COLLINS, HALLICRAFTERS SX-88, & DRAKE TR-6. Buy any Collins equipment. Leo, KJ6HI, phone/fax 310-670-6969, e-mail: <radioleo@earthlink.net>.

QRP Now! Today's hottest book on QRP rigs, kits, accessories, contests, DXing tips, and more! Or, **KEYS II** views & info on world's most exotic keys. Either book $16 + $3 Priority Mail. Dave Ingram, K4TWJ, 4941 Scenic View Drive, Birmingham, AL 35210.

MFJ 15 Meter CW Transceiver, Antenna, and Key, $85. 10 Meter Transceiver CB Converter, $20. Call 973-770-9230.

Advertiser's Index

now including websites

Advanced Specialties, Inc.	57	www.advancedspecialties.net
Alinco	29	www.alinco.com
Aluma Towers	56	www.alumatower.com
Amateur Electronic Supply	47	www.aesham.com
Ameritron	9	www.ameritron.com
Amidon Associates	93	www.amidon-inductive.com
Antique Radio Classified	109	www.antiqueradio.com
Astron Corp	63	www.astroncorp.com
Atomic Time, Inc.	77	www.atomictime.com
Batteries America/E.H.Yost	115	www.batteriesamerica.com
Bilal Co./Isotron Ants	56	www.isotronantennas.com
Buckmaster	89	www.hamcall.net
Buffalo Woodworks	113	www.buffalowoodworks.com
Burghardt Amateur Center	103	www.burghardt-amateur.com
Butternut Antennas/Bencher	55	www.bencher.com
Cable X-Perts	99	www.cablexperts.com
Command Productions	38	www.LicenseTraining.com
Command Technologies	87	www.command1.com
Communication Concepts Inc	71	www.communication-concepts.com
CQ Books/Videos	67,85	www.cq-amateur-radio.com
Cubex Quad Antennas	113	www.cubex.com
Cutting Edge Ent.	56,89,91	www.powerportstore.com
DX Engineering	35	www.dxengineering.com
DX4WIN (Rapidan Data Systems)	91	www.dx4win.com
Davis Instruments	69	www.davisnet.com
EQF Software	46	www.eqf-software.com
Elecraft	95	www.elecraft.com
FingerDimple.com	113	www.FingerDimple.com
G4ZPY Paddle Keys	89	www.g4zpy.go-plus.net
GAP Antennas	65	www.gapantenna.com
Global Connections	87	
HamRadioManuals	113	www.hamradiomanuals.com
Ham Radio Outlet	10,116	www.hamradio.com
High Sierra Antennas	71	www.cq73.com
Hy-Gain	1,5	www.hy-gain.com
ICOM America,Inc	7,37,39,Cov IV	www.icomamerica.com
IP Unwired	31	www.ipunwired.com
Idiom Press	51	www.idiompress.com
K2AW's "Silicon Alley"	91	
Kanga US	46	www.bright.net/~kanga/kanga/
Kenwood, USA	3,Cov. II	www.kenwood.net
KK7TV Communications	112	www.kk7tv.com
KY Filter Co.	89	www.ky-filters.com/cq.htm

Looking Ahead in CQ

Here's a preview of some of the articles we're working on for upcoming issues of *CQ:*

"WiMax: Will it Save Ham Radio?"
"*CQ* Interviews: Question Pool Committee Chairman Jim Wiley, KL7CC"
"Still Chasing the Invisible Wave"
"The Ex-D Association"
"Wireless Signaling Without Radiated Power"

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

Advertiser's Index

now including websites

LDG Electronics	83	www.ldgelectronics.com
Log Windows by SCO	91	www.logwindow.com
M² Antennas	40	www.m2inc.com
MFJ Enterprises	23,53	www.mfjenterprises.com
MicroHAM	87	www.microham.com
Morse Express	46	www.MorseX.com
National Antenna Consortium	109	www.antenna-consortium.org
Nemal Electronics	34	www.nemal.com
New Communications Solutions	79	www.ncsradio.com
Nifty Accessories	56	www.niftyaccessories.com
Palomar Engineers	46	www.palomar-engineers.com
Peter Dahl Co.	84	www.pwdahl.com
PowerPort	56,89,91	www.powerportstore.com
Powerwerx	17	www.powerwerx.com
QSLs by W4MPY	89	www.w4mpy.com
Radcomm Radio	61	www.radcomm.bizland.com/rad-comm
Radio Club of JHS 22	111	www.wb2jkj.org
Radio Daze	112	www.radiodaze.com
Radio Works	17	www.radioworks.com
Rapidan Data Systems (DX4WIN)	91	www.dx4win.com
Redstar Radio	101	www.redstarradio.com
Ross Distributing	56	http://rossdist.com
RF Connection	113	www.therfc.com
RT Systems	71	www.cloningsoftware.com
Saratoga A.R. Products	81	www.saratogaham.com
SGC, Inc.	69	www.sgcworld.com
Surplus Sales of Nebraska	87	www.surplussales.com
Tarheel Antennas	34	www.tarheelantennas.com
Ten Tec	25	www.tentec.com
Texas Towers	58,59	www.texastowers.com
T.G.M. Communications	112	www3.sympatico.ca/tgmc/index.html
Tom's Tubes	112	www.tomstubes.com
Universal Radio, Inc.	56,89,91,112,113	www.universal-radio.com
Vibroplex	79	www.vibroplex.com
W3FF Antennas	77	www.buddipole.com
W4RT Electronics	38	www.w4rt.com
W5YI Marketing	45	www.w5yi.org
Wireman, The	112	www.thewireman.com
Yaesu Electronics	14,15,21,Cov.III	www.vxstdusa.com

It's easy to advertise in CQ.
Let me know what I can do to help.
Arnie Sposato, N2IQO.
(516) 681-2922 or FAX (516) 681-2926
e-mail:arnie@cq-amateur-radio.com

12 STORE BUYING POWER

HAM RADIO OUTLET

WORLDWIDE DISTRIBUTION

CALL FOR YAESU SUPER AUTUMN SPECIALS!

YAESU

FT-897D VHF/UHF/HF Transceiver

- HF/6M/2M/70CM • DSP Built-in
- HF 100W (20W battery)
- Optional P.S. + Tuner • TCXO Built-in

Call Now For Our Low Pricing!

FT-1000MP MKV HF Transceiver

- Enhanced Digital Signal Processing * Not including 60M band
- Dual RX
- Collins SSB filter built-in
- 200W, External power supply

NEW Low Price!

FT1000MP MKV field unit 100w w/built-in power supply in stock

NEW!

FT-8800R 2M/440 Mobile

- V+U/V+V/U+U operation
- V+U full duplex • Cross Band repeater function
- 50W 2M 35W UHF
- 1000+ Memory channels
- WIRES ready

Call Now For Low Pricing!

FT-817ND HF/VHF/UHF TCVR

- 5W @13.8V ext DC • USB, LSB, CW, AM, FM
- Packet (1200/9600 Baud FM) • 200 mems
- built in CTCSS/DCS • TX 160-10M, 6M, 2M, 440
- Compact 5.3" x 1.5" x 6.5", 2.6 lbs
- FNB-85 NiMH battery + NC-72B included

Call Now For Low Pricing!

FT-60R

- 2m/440 HT
- 5W Wide-band receive
- CTCSS/DCS Built-in
- Emergency Auto ID

Low Price!

NEW!

VX-7R/VX-7R Black

50/2M/220/440 HT

- Wideband RX - 900 Memories
- 5W TX (300mw 220Mhz)
- Li-Ion Battery
- Fully Submersible to 3 ft.
- Built-in CTCSS/DCS
- Internet WIRES compatible

Now available in Black!
NEW Low Price!

VX-5R/VX-5RS

50/2M/440HT

- Wideband RX • 6M-2M-440TX
- 5W output • Li-Ion Battery
- 220 mems, opt. barometer unit
- Alpha Numeric Display
- CTCSS/DCS built-in

NEW Low Price!

VX-150

2M Handheld

- Direct Keypad Entry
- 5w output
- 209 memories
- Ultra Rugged

Call Now For Special Pricing!

NEW!

FT-857D

Ultra compact HF, VHF, UHF

- 100w HF/6M, 50w 2M, 20w UHF
- DSP included • 32 color display
- 200 mems • Detachable front panel (YSK-857 required)

Call for Low Intro Price!

NEW!

FT-7800R 2M/440 Mobile

- 50w 2m, 40w on 440mHz
- Weather Alert
- 1000+ Mems
- WIRES Capability
- Wideband Receiver (Cell Blocked)

Call Now For Your Low Price!

NEW!

FT-2800M 2M Mobile

- 65w • Ruggedly Built
- Alpha Numeric Memory System
- Direct Keypad Frequency Entry
- Bullet-proof Front End

Call Now For Low Intro Pricing!

NEW!

FT-8900R Quadband Transceiver

- 10M/6M/2M/70CM • Wires capable
- 800+ memories • Built-in CTCSS/DCS
- Remotable w/optional YSK-8900

Call Now For Special Pricing

AZ, CA, CO, GA, VA residents add sales tax. Prices, specifications, descriptions, subject to change without notice.

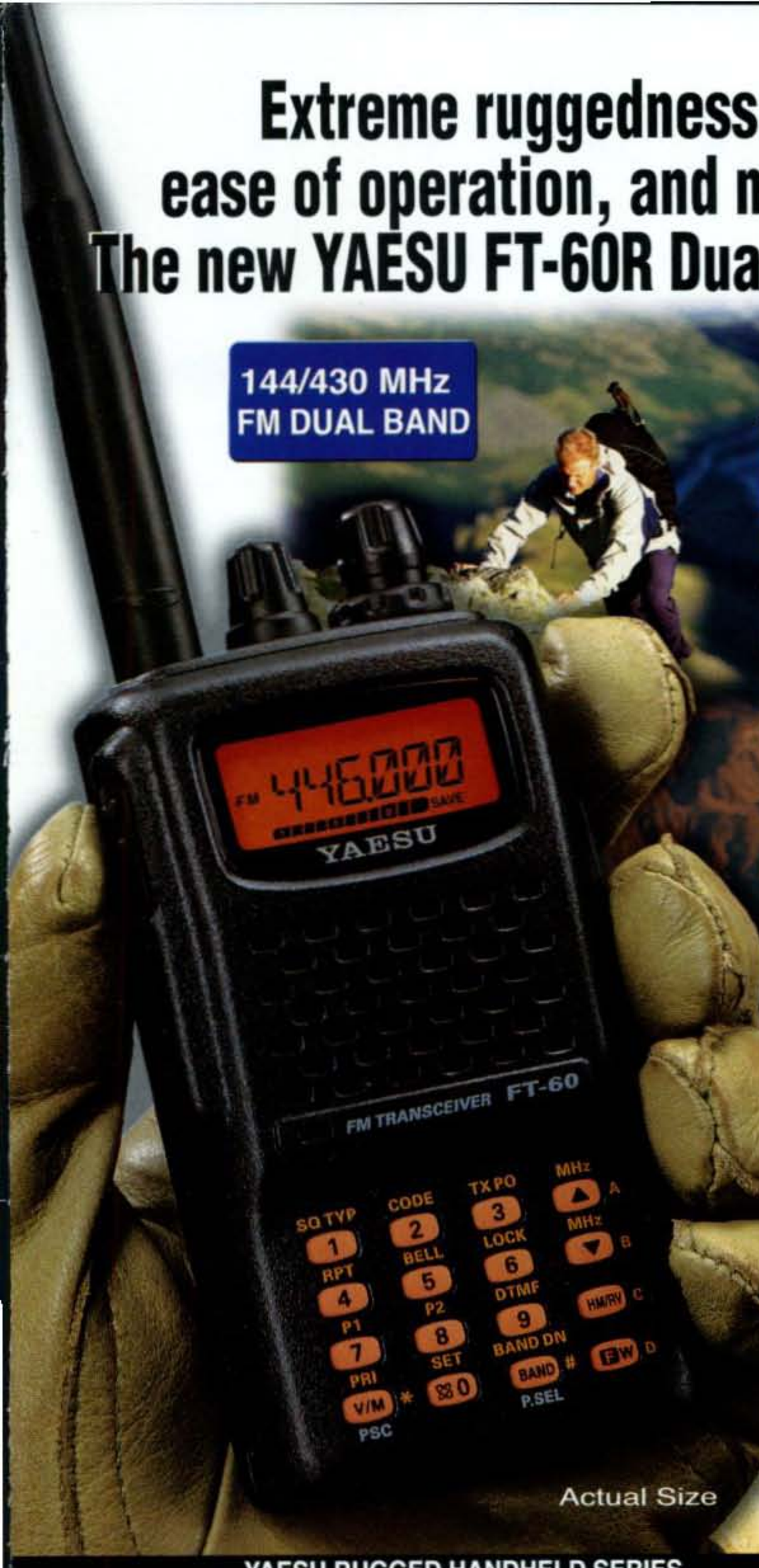
Look for the HRO Home Page on the World Wide Web
http://www.hamradio.com

COAST TO COAST FREE SHIPPING
UPS - Most Items Over $100
Rapid Deliveries From The Store Nearest To You!

Extreme ruggedness, outstanding audio, ease of operation, and new emergency features: The new YAESU FT-60R Dual-Band Hand-Held has it all!

144/430 MHz
FM DUAL BAND

Designed for the rigors of outdoor use, the FT-60R 144/430 MHz FM Hand-Held includes new Enhanced Paging & Code Squelch (EPCS) and Emergency Automatic Identification (EAI) systems that are ideal for Search-and-Rescue operations. Wide receiver coverage, commercial-grade audio quality, and the most flexible CTCSS and DCS features on the market make the FT-60R the expert's choice for Dual-Band communications!



Actual Size

YAESU RUGGED HANDHELD SERIES

50/144/430 MHz
FM TRIPLE BAND
DUAL RECEIVE

5 W Ultra-Rugged Magnesium Case
Submersible (3 feet for 30 minutes)
VX-7RB/VX-7R

50/144/430 MHz
FM TRIPLE BAND

5 W Heavy Duty Aluminum Diecast Case
VX-5R/VX-5RS

144/430 MHz
FM DUAL BAND

1.5 W Ultra Compact
VX-2R

144/430 MHz FM
DUAL BAND HANDHELD
FT-60R

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

Vertex Standard
US Headquarters
10900 Walker Street
Cypress, CA 90630 (714)827-7600

For the latest Yaesu news, visit us on the Internet:
http://www.vxstdusa.com

IC-7800

The Ultimate HF!

Multiple Meter Readouts See the latest in meter technology with the '7800's virtual meter system. These digital meters are visually superior to and of a higher performance than analog. Don't believe it? Log on to www.icomamerica.com/7800 and see for yourself!

Multiple Spectrum Displays You can select a standard spectrum display either centered on your operating frequency or a fixed range to view the band! Choose how you want to SEE the band, and then tune to what signals you see. (Photo shows the fixed range spectrum display.)

CF Card Slot The ultimate way to "take your rig with you". Just pull your CF card from your '7800, slide it into another '7800, and you now have your rig!

Triple Band Stack Registers Memorizes the last 3 used frequencies – quick recall for band hopping, provides the ultimate in multi-mode flexibility.

DUAL RECEIVER CONTROLS

Digital Voice Recorder Controls Simple record and play controls for the internal DVR. Great for quick recording and playback of a call, great for reducing the number of broken calls in your log.

Dual VFO Tuning Knobs Independent tuning knobs for each receiver. There's no mistake about which receiver you are adjusting, as the size difference allows for "no-look" operation!

DUAL RECEIVER CONTROLS

Gentlemen, start your engines. All four of them!

Power your way to front of the pack with Icom's new IC-7800. Cutting edge digital meets the best of world class analog, resulting in an amazing 110dB of receiver dynamic range and a *+40dBm IP3 in the HF bands!* But that's not all. The '7800 has two identical, independent receiver circuits. Receive two different bands simultaneously on different antennas, with no adverse effects from one receiver to the other – take your band hopping and contesting to the next level! There are four 32-bit floating point DSP units with 24-bit AD/DA converters, one each for the main RX, second RX, TX, and spectrum scope, to accelerate data processing to whiplash speeds! Newly designed power amplifiers provide a powerful 200W of output power at full duty cycle and low transmit IMD. So what are you waiting for? Make your move. See your authorized Icom dealer!

Dual Receive Controls Separate key receiver controls are available for each receiver. Controls for volume, RF gain, and DSP controls, the '7800 also has independent controls for the Digital Twin PassBand tuning as well as the 70 dB Manual Notch filters. Whether in a contest, or just hopping around the bands, easy access to receiver controls such as volume, RF gain, and AGC adjustments are at your fingertips.

Dual Digital Twin PassBand Tuning Only Icom brings you Digital Twin PassBand tuning. Adjustments can be made for each receiver without affecting the other receiver.

Independent Digi-Sel Controls Incorporated into the IC-7800 is a newly designed digital pre-selector, with separate controls for each receiver.

Independent Auto Tune Automatically zero beat your CW or AM carrier signals. The '7800 makes sure you're right on the proper frequency for these modes. Each receiver has a separate control.

Independent AGC Settings Multiple AGC settings for each receiver. On-the-fly adjustment for either preset AGC settings, or a completely variable AGC control.

www.icomamerica.com

ICOM