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Amateur Radio

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COMMUNICATIONS & TECHNOLOGY

JUNE 2008

CQ

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On the Cover: James Wiedemeier, KI4PSQ, of Nashville, Tennessee, operates Field Day with the Nashville Amateur Radio Club. Details on page 86.

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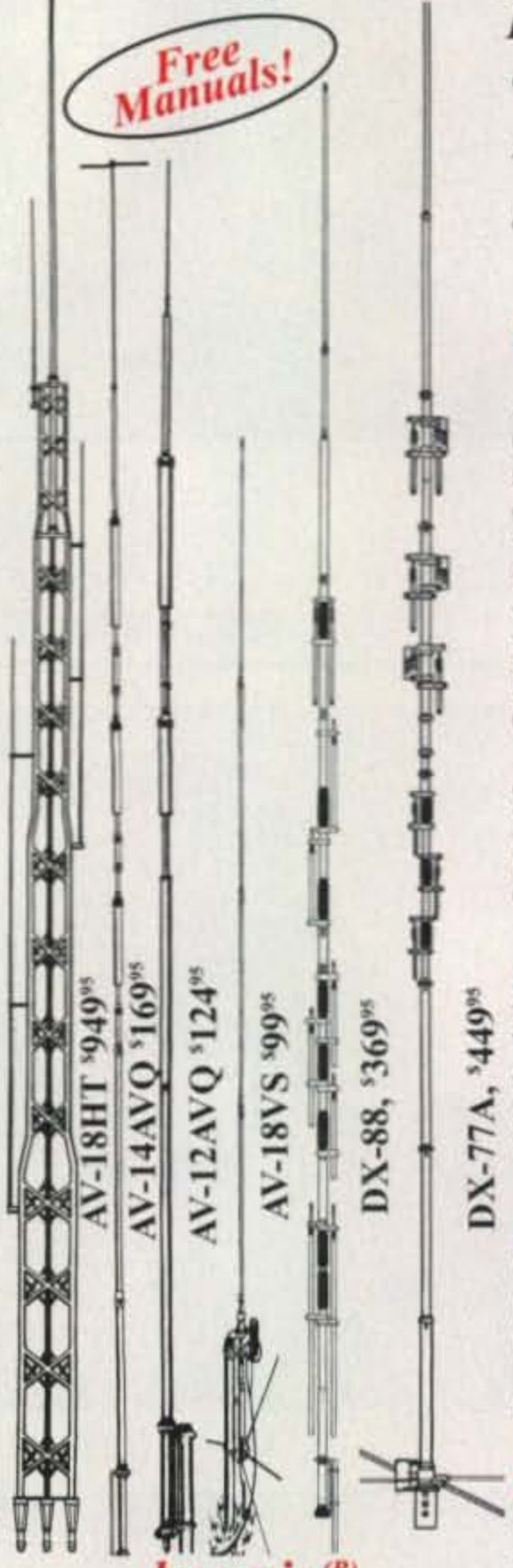


hy-gain(R)

Classics

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

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

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

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

AV-18HT, $949.95. (10,12,15,20,40,80 M, 160, 17 Meters optional). 53 ft., 114 lbs.

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

AV-14AVQ, $169.95. (10,15,20,40 Meters). 18 ft., 9 lbs. **The** Hy-Gain AV-14AVQ uses the same trap design as the famous Hy-Gain Thunderbird beams. Three separate air dielectric Hy-Q traps with oversize coils give superb stability and 1/4 wave resonance on all bands. Roof mount with Hy-Gain AV-14RMQ kit, $89.95.

AV-12AVQ, $124.95. (10, 15, 20 Meters). 13 ft., 9 lbs. **AV-12AVQ** also uses Thunderbird beam design air dielectric traps for extremely Hy-Q performance. This is the way to go for inexpensive tri-band performance in limited space. Roof mount with AV-14RMQ kit, $89.95.

AV-18VS, $99.95. (10,12,15,17,20,30,40,80 Meters). 18 ft., 4 lbs. **High** quality construction and low cost make the AV-18VS an exceptional value. Easily tuned to any band by adjusting feed point at the base loading coil. Roof mount with Hy-Gain AV-14RMQ kit, $89.95.

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

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

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

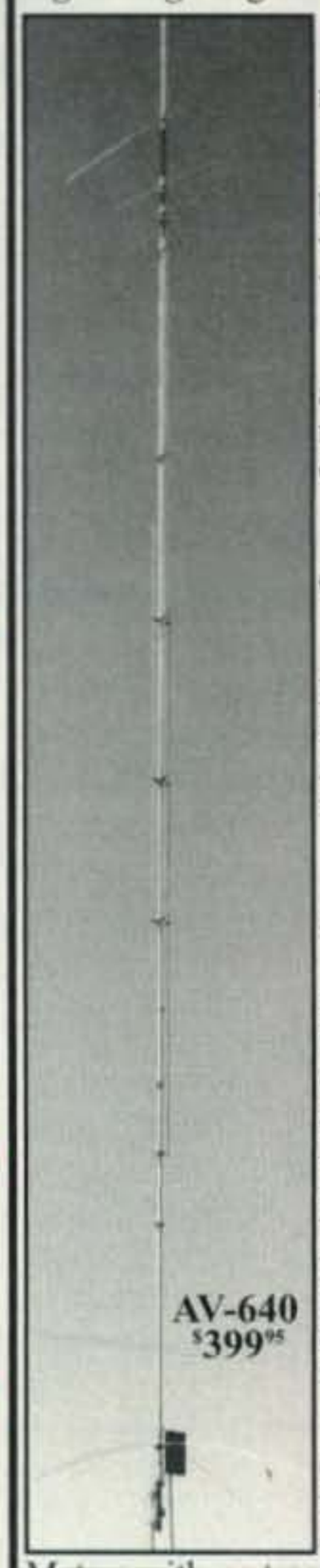
***No** ground radials required!* Off-center-fed Windom has 55% greater bandwidth than competitive verticals. Heavy-duty tiltable base. Each band independently tunable.

Model #	Price	Bands	Max Power	Height	Weight	Wind Surv.	Rec. Mast
AV-18HT	$949.95	10,15,20,40,80	1500 W PEP	53 feet	114 pounds	75 MPH	------
AV-14AVQ	**$169.95**	**10,15,20,40**	**1500 W PEP**	**18 feet**	**9 pounds**	**80 MPH**	**1.5-1.625"**
AV-12AVQ	$134.95	10/15/20 M	1500 W PEP	13 feet	9 pounds	80 MPH	1.5-1.625"
AV-18VS	**$99.95**	**10 - 80 M**	**1500 W PEP**	**18 feet**	**4 pounds**	**80 MPH**	**1.5-1.625"**
DX-88	$369.95	10 - 40 M	1500 W PEP	25 feet	18 pounds	75 mph w/o guy	1.5-1.625"
DX-77A	**$449.95**	**10 - 80 M**	**1500 W PEP**	**29 feet**	**25 pounds**	**60 mph w/o guy**	**1.5-1.625"**

hy-gain(R)

PATRIOT

Hy-Gain's new PATRIOT HF verticals are the best built, best performing and best priced multiband verticals available today. For exciting DX make full use of your sunspot cycle with the PATRIOT's *low 17 degree angle* signal.



No ground or radials needed

Effective counterpoise replaces radials and ground.

Automatic bandswitching

Single coax cable feed. Each band is individually tunable. Extra wide VSWR bandwidth. End fed with broadband matching unit.

Sleek and low-profile

Low 2.5 sq. ft. wind surface area. Small area required for mounting. Mounts easily on decks, roofs and patios.

Full legal limit

Handles 1500 Watts key down continuous for two minutes.

Built-to-last

High wind survival of 80 mph. Broadband matching unit made from all *Teflon*(R) insulated wire. Aircraft quality aluminum tubing, stainless steel hardware.

hy-gain(R) warranty

Two year limited warranty. All replacement parts in stock.

AV-640, $399.95. (6,10,12, 15,17,20,30,40 Meters). 25.5 ft., 17.5 lbs. The AV-640 uses quarter wave stubs on 6, 10, 12 and 17 meters and efficient end loading coil and capacity hats on 15, 20, 30 and 40 meters -- no traps. Resonators are placed in parallel not in series. End loading of the lower HF bands allows efficient operation with a manageable antenna height.

AV-620, $299.95. (6,10,12,15,17,20 Meters). 22.5 ft., 10.5 lbs. The AV-620 covers all bands 6 through 20 Meters with no traps, no coils, no radials yielding an uncompromised signal across all bands.

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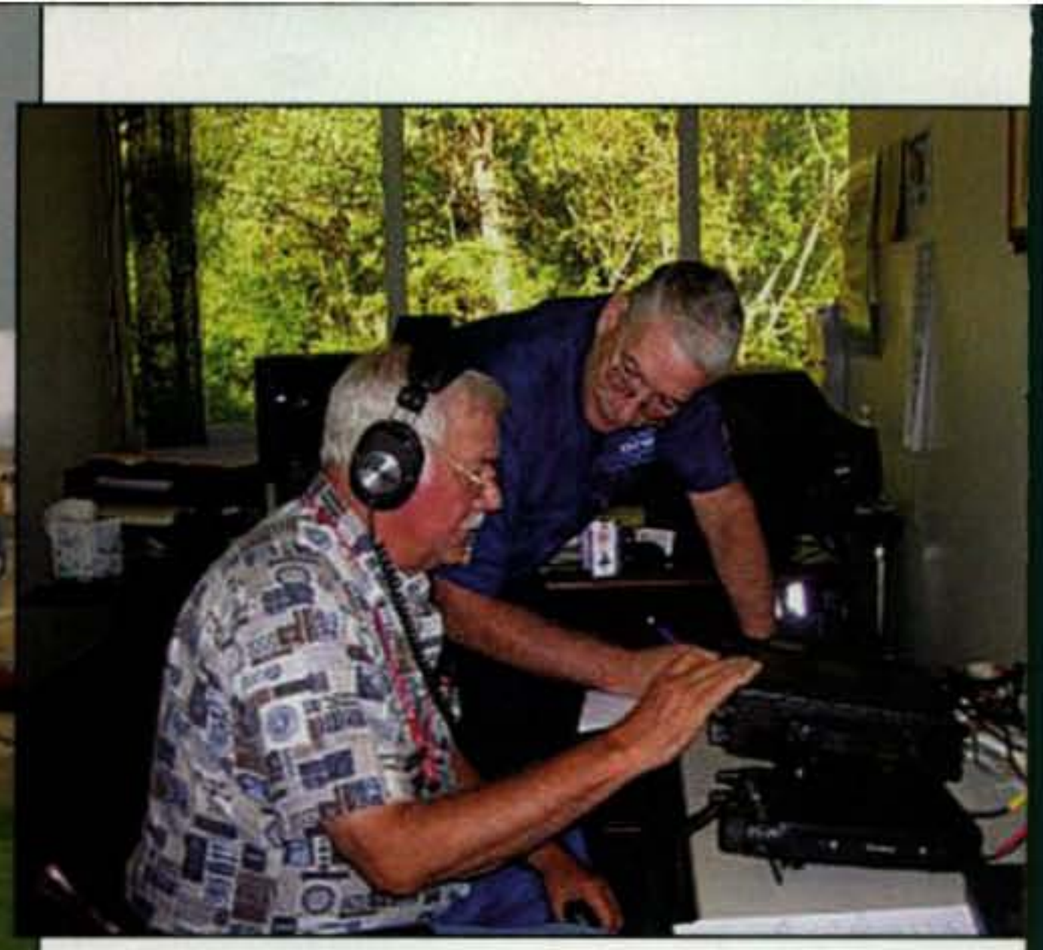

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departments

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ham radio news

N0AX, N5EG, KB9IBW Win Dayton Honors

The Dayton Amateur Radio Association has honored Ward Silver, N0AX; Tom McDermott, N5EG; and Emery McClendon, KB9IBW, with its Hamvention® awards for 2008. Silver, a prolific author whose titles include the introductory *Ham Radio for Dummies* book, was selected as Amateur of the Year. McDermott was chosen for the Technical Achievement Award in recognition of his pioneering work in amateur radio digital communications, starting with developing one of the first wide-coverage packet radio networks in the mid-1980s. McClendon was recognized with the Hamvention®'s Special Achievement Award for starting Amateur Radio Military Appreciation Day (ARMAD) in 2003 and using it not only to help hams and the public express thanks to members of the military for their service, but also to introduce amateur radio to thousands of people around the world. McClendon has also been honored for his volunteer work by President Bush. The three were scheduled to be presented with their awards at the 2008 Dayton Hamvention® in mid-May.

Majority of States Now Have PRB-1 Laws

Kansas has become the 26th state to enact the FCC's basic amateur radio antenna guidelines (known as PRB-1) into state law, removing any questions for local governments as to whether their actions are covered under the FCC's rules. In PRB-1 (now codified into Section 97.15(b) of the FCC rules), the FCC said that state and local antenna regulations "must reasonably accommodate" amateur communications and "must constitute the minimum practicable regulation to accomplish the state or local authority's legitimate purpose." The Kansas law also "grandfathers" existing antenna structures and specifically provides that those may be repaired as needed. It takes effect July 1.

KiwiSAT to Carry Environmental Beacon

New Zealand's first amateur radio satellite will carry a special beacon to help gather environmental information, according to AMSAT-ZL, which is building "KiwiSAT" and hopes to have it launched sometime next year. An announcement on the group's website says the satellite will carry "an additional special beacon" which will be able to be used by hams around the world "to collect data on atmospheric aberrations" which in turn will be useful in collecting information regarding global warming and "carbon balance monitoring." No additional information was available at press time, except that the change involved adding a connection on the satellite for a second 70-centimeter antenna. Plans call for KiwiSAT to have both FM and linear (SSB/CW) transponders, with uplinks in the 70 and 23 centimeter bands and downlink on 2 meters.

ITU Chief Links Contesting, Emergency Communications

The Secretary-General of the International Telecommunication Union (ITU) says contesting is among "the best training for all of us" in emergency communications. In a wide-ranging interview with International Amateur Radio Union Secretary Dave Sumner, K1ZZ, in the May issue of *QST*, ITU Secretary-General Dr. Hamadoun I. Touré, HB9EHT, says "(i)t will be great if all radioamateurs in the world ... will learn how to help, support and if required participate, directly or indirectly, in any disaster relief operation." Touré goes on to say that "(p)articipation in radioamateur contests, field days or any amateur service exercises and activities are the best training for all of us, and during non-disaster periods it's also a great fun and sport competition—part of our hobby."

Antenna Expert L.B. Cebik, W4RNL, SK

Antenna "guru" L. B. Cebik, W4RNL, has become a Silent Key at age 68. The cause of death had not been determined as of press time. Cebik was a prolific author on antennas and related topics. He was a contributor to virtually all of the major ham magazines, was the author of more than a dozen books, and had regular columns in *Ten-Ten International News* and the online antenna magazine, *AntenneX*. His passing was reported to the ham community by *AntenneX* Publisher Jack Stone.

FCC: Plasma TV Interferes with Ham

Here's a new twist on TV interference: the FCC says a homeowner's plasma television is causing interference to a ham in Edgewater, Florida. FCC Special Counsel Riley Hollingsworth, K4ZDH, says the case involves "an elderly couple who saved up their money and bought a $3000 plasma TV, and it's causing interference. I don't know what they're going to do about it but they're going to have to do something." Hollingsworth noted that plasma TVs are becoming notorious as interference generators and that so far, no one has come up with a remedy for it.

Kosova Added as Multiplier in CQ Contests

Kosova (Kosovo) has been added as a multiplier in the CQ World-Wide DX Contest and the CQ DX Marathon as a result of its addition to the entity list for the Worked All Europe (WAE) Award, administered by the Deutsche Amateur Radio Club, DARC. The CQWW and DX Marathon country lists are based on *both* the DXCC and WAE lists, so the addition of Kosova to the WAE list automatically adds it to the CQ lists, effective with Kosova's independence on February 17, 2008. *CQ* previously announced that it was accepting Kosova as a separate entity for award credit, with the same effective date.

FCC: Stay Off the Repeater Means Just That

Two hams, one in New York and another in Missouri, have been reminded by the FCC that when a repeater owner, control operator or trustee says they are no longer welcome on that repeater, they must stay off that repeater. Both were warned that continued use of the repeaters involved after receipt of the letter could subject them to fines and license modifications. In addition, the New York ham was warned that his license, which is due to expire next April, "will not be routinely renewed unless this matter is resolved."

CQ Magazine Online Archive Complete

Back issues of *CQ* magazine all the way back to issue number one in January 1945, are now available online for searching and downloading. Buckmaster Publishing, which has long made microfiche copies of *CQ* for use by libraries and researchers, has been working on the project for several years. The most recent two years' worth of issues is not available online as copies of those back issues are still available from *CQ*.

Searching the collection is free, as is access to the first ten pages of each issue. Additional access for downloading and saving or printing articles is available at a minimal cost. For more info, visit <http://hamcall.net/cq>.

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

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

TAILTWISTER SERIES II

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
$699.95

T-2XD
$1079.95
with DCU-1

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

CD-45II

CD-45II
$389.95

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

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

HAM-V

HAM-V
$999.95
with DCU-1

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

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.

AR-40

AR-40
$289.95

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

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

HDR-300A

HDR-300A
$1379.95

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

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

Digital Automatic Controller

DCU-1
$699.95

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

AR-35 Rotator/Controller

AR-35
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For UHF, VHF, 6-Meter, TV/FM antennas. Includes automatic controller, rotator, mounting clamps, mounting hardware. 110 VAC. One Year Warranty.

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RBD-5
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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.

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2 m / 70 cm Dual Band

5 W Heavy Duty Submersible
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VX-6R

5 W Ultra-Rugged,
Submersible 6 m/2 m/70 cm
Tri-Band FM Hand held

VX-7R/VX-7RB

6 m / 2 m / 70 cm Tri-Band

(220 MHz: 300 mW)

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2 m / 70 cm Dual Band

1.5 W Ultra Compact 2 m/70 cm
Dual Band FM Hand held

VX-3R

5 W Heavy Duty 2 m/70 cm
Dual Band FM Hand held

FT-60R

2 m / 70 cm Dual Band

Tougher than Tough!

IPX7 Submersible 3 feet (1m) for 30 min.

5 W Heavy Duty Submersible
2 m FM Mono Band Hand Helds

VX-120 (8 key Version) **VX-170** (16 key Version)

70 cm FM Mono Band Hand Helds

VX-127 (8 key Version) **VX-177** (16 key Version)

2 m Mono Band

Ultra-Rugged 5 W Full Featured
2 m FM Hand helds

VX-150/VX-110

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IP57 Submersible 3 feet for 30 min Body/Front panel

DUAL BAND

10 W 2 m/70 cm*
Dual Band FM Mobile
FTM-10SR *70 cm 7 W

Great New Features to Support Outdoor Motor Sports Activities Mobile Transceiver... Great Appearance ... Easy to Operate

IP57 Submersible 3 feet for 30 min Front panel

DUAL BAND

50 W 2 m/70 cm*
Dual Band FM Mobile
FTM-10R *70 cm 40 W

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

DUAL BAND

50 W 2 m/70 cm* Dual Band FM Mobile
FT-7800R *70 cm 40 W

50 W 2 m Ultra Rugged VHF FM Mobile
FT-1802M *2 m Band*

65 W 2 m Rugged FM Mobile
FT-2800M *2 m Band*

QUAD BAND DUAL RECEIVE

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

DUAL BAND DUAL RECEIVE

50 W 2 m/70 cm* Dual Band FM Mobile
FT-8800R *70 cm 35 W

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zero bias – a CQ editorial

BY RICH MOSESON,* W2VU

Half Empty or Half Full?

This month's reader survey results caught me somewhat off-guard, and while my initial reaction was negative, a look at the same statistics by our publisher, K2MGA, drew a decidedly positive response. I guess it's a case of whether the glass is half empty or half full. The questions were asked in March and the topic was multi-ham families. We wondered how many of you have family members, either immediate or extended, who are hams, and how much influence you have exerted on each other regarding ham radio. We also asked who or what your primary influence was in becoming a ham. I'm not going to repeat all the numbers here (they're on p. 40), except to touch on some of the major points. Plus, I fully realize that these results are not scientific—they represent a self-selected group of a few hundred readers out of a total in the tens of thousands—but generally, they're accurate enough to give us a broad-brush look at what our readers are thinking.

The good news is (half-full) that one in every three *CQ* readers comes from a multi-ham family (the half-empty side, of course, is that two out of three don't). But let's apply that figure to our total U.S. ham population of 656,000 (as of 3/31/08, per AHØA). Simple math says that nearly 230,000 of us live in multi-ham families. Of course, *CQ* readers tend to be more active than the average licensee, but it's still pretty impressive at one in four (164,000) or even one in five (131,000). Add to that the 28% of *CQ* readers who say a member of their extended family is licensed (the initial 35% was for immediate family). That's another 183,000, not including overlap. Now 35 plus 28 equals 63% of *CQ* readers reporting that at least one member of their immediate or extended families is also a ham. If you deduct for overlap, then you're probably still sitting around 50%. Maybe that glass is half full after all!

Get on it, Gramps!

The greatest family influence seems to extend only one generation, with percentages ranging between 10 and 20 for other hams in the family who are parents, siblings, spouses, children, in-laws, aunts/uncles, or cousins. Yet only 2% reported that their grandparents were hams and 3% that their grandchildren are amateurs. With the bulk of our readership being over age 55, there is a great opportunity here to pass on the excitement and magic of ham radio to our grandchildren. We need to make a greater effort in that arena. Of course, the approach will have to be a little different. What excites grandpa may not have the same effect on grandkids. But there is so much going on in our hobby (and I'm sure that as a loyal *CQ* reader, you are up-to-date on all of it!), that you should be able plant some seeds.

We've got satellites (how many other hobby groups have their own *fleet* of satellites—that they've designed and built themselves?); we've got software-defined radios for folks who are more comfortable with ones and zeros than with coils and capacitors; we've got bunches of keyboard modes (see this month's "Digital Connection" column on p. 54) for those more comfortable in front of a computer screen than a microphone; we get to "play with meteors," as my son is fond of saying (WSJT is another keyboard mode that N2IRZ doesn't even get to this month); we have our own "secret code" (yes, kids get *excited* by Morse code, not turned off); and isn't it cool that stuff happening on the sun *really is* important to us? It's all in the presentation, folks. Of course, you've got to know at least a little bit about what you're talking about (kids can smell a phony a mile away) and learning about some of this stuff may require you to venture beyond your comfort zone, but isn't that what learning is all about?

When we asked about family members who are potential hams, 4% of you said yes, one of your relatives is interested and working on a license, and another 22% said yes, he or she has expressed some interest. Again, expand that to the "amateur radio universe" in the U.S. of 656,000. That works out to 26,000 family members working on their licenses and another 144,000 showing interest. Moving more of those 144,000 into the "working on his/her license" category is our challenge, followed, of course, by getting them licensed and active.

Primary Influences

This brings me back to the half-empty side, because one particular part of the answer to the question about your primary influence in becoming a ham was somewhat disturbing. First of all, 31% of you replied that a friend was your primary influence (vs. just 10% for relatives), followed by 23% who were motivated by reading about ham radio, and 21% who were influenced by observing ham radio activity. This means that Field Day and other public events are critically important for our future, as are all the articles that we are always trying to get into local news media. But the choke point appears to be follow-up.

Example: Recently, NASA Astronaut Garrett Reisman, KE5HAE, made a ham radio contact from the International Space Station back to his hometown middle school in Parsippany, New Jersey, which he attended in the 1980s. It was front-page news in the daily regional newspaper. How many potential hams may we get in the near (or even distant) future as a result of that contact and the news coverage it received? That all depends on the follow-up, and most often, the "agent" for that follow-up is the local amateur radio club. The disturbing statistic from our survey? Only 5% of *CQ* readers responding credited their local radio club with being their primary influence in becoming a ham. Another 8% cited school radio clubs, which were much more likely to exist when many of our readers were first licensed than they are today. So that leaves the ball in the hands of the local radio clubs, and in all too many cases, it appears that those clubs are dropping the ball.

In this instance, the results might be better than average, because the club facilitating the space sta-

(Continued on page 111)

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announcements

Ham Station on Icebreaker Mackinaw Museum Ship – The Charlevoix, Cheboygan, Emmet Counties Public Service Communications Organization, a northern Michigan Amateur Radio emergency communications organization, received permission in March from the Icebreaker Mackinaw Maritime Museum, in Mackinaw City, Michigan, to establish a full-time ham radio station onboard the *Mackinaw*. In addition to HF operations, included will be the installation and operation of two repeaters to provide VHF and UHF coverage in the Straits of Mackinaw. The station will operate with the callsign W8AGB, selected to commemorate the ship's WAGB-83 designation. For more information, contact the CCECPSOC at <info@ccecpsco.org>.

The following special event stations are scheduled for June:

NC4ZO, from the North Carolina Aviation Museum annual Fly-in and War Bird display, Asheboro, NC; 1400–2000Z on 21.350, 14.260, 7.260, all ±QRM. For QSL send SASE or SAE and one IRC, for certificate send QSL and $1.00 or one current IRC if DX, to: Butch Simpson, WS4H, 6747 King Mtn. Rd., Asheboro, NC 27205. Bureau QSL via WS4H okay.

W4RKC, from the 60th anniversary of the Shenandoah Valley ARC, Winchester, VA; 0000–2359Z June 7–8 on SSB 3.840, 7.240, 14.240, 21.240 MHz; CW 3.540, 7.040, 14.040, 21.040 MHz. For QSL send QSL and SASE to: Shenandoah Valley ARC, P.O. Box 139, Winchester, VA 22604.

K9UXZ, from 50th anniversary of the National Trail ARC, Effingham, IL; 9 AM to 6 PM CDT June 14 on 7.250 and 14.250 ±QRM. For certificate send QSL and SASE to National Trail ARC, P.O. Box 903, Effingham, IL 62401.

NB9QV, from aboard the WW II Memorial Submarine *USS Cobia* AGSS-245, Manitowoc, WI, for Memorial Ships Afloat weekend; USS Cobia Radio Club & ManCoRad Radio Club; 1400Z June 7 to 2100Z June 8 on 3.900, 7.250, 14.260 MHz (±25 kHz). For *USS Cobia* QSL send QSL and #10 SASE to: Fred Neuenfeldt, W6BSF, 4932 So. 10th St., Manitowoc, WI 54220-9121. <www.w9dk.com>

WØS, from Stars & Stripes National Museum and Library, birthplace of the *Stars & Stripes* newspaper, Bloomfield, MO; SEMO ARC and Bootheel ARC; 6 PM (local time) June 13 to 6 PM June 14 on 3.950, 14.260, 7.260, 28.500 MHz. For certificate send QSL and SASE to Stars & Stripes, P.O. Box 98, Jackson, MO 63755. <http://www.starsandstripesmuseumlibrary.org/>.

The following hamfests, etc., are slated for June:

June 7, **Good Old Days Hamfest/Computer Fair**, Hudsonville Fairgrounds, Grand Rapids, MI. Contact Kathy, e-mail: <kwerkema@juno.com>, phone 616-698-6627 after 4 PM EDST. <www.w8hvg.org>. (Exams 12:30 PM)

June 8, **Six Meter Club of Chicago Hamfest**, DuPage County Fairgrounds, Wheaton, IL. Info: call 708-442-4961, <www.K9ONA.com>, e-mail: <WD9GJK@arrl.net>. (Talk-in 146.52, 146.37/97 [107.2 Hz]; exams 9–11 AM)

June 8, **Egyptianfest**, Granite City, IL campus of SW Illinois College. Contact Frank Shears, K7RMJ, e-mail: <cuban9@charter.net>, phone 615-796-0314. (Talk-in 146.79, CTCSS 127.3; exams)

June 8, **Hall of Science ARC Hamfest**, NY Hall of Science parking lot, Flushing Meadow Corona Park, Queens, NY. Contact Stephen Greenbaum, WB2KDG, e-mail: <WB2KDG@arrl.net>, phone 718-898-5599, <www,hosarc.org>. (Talk-in 444.200 PL 136.5, 145.270 –600 kHz PL 136.5; exams 10 AM)

June 13–14, **Ham-Com**, Plano Centre, Plano, TX. Information: <www.hamcom.org>. ***See us at the CQ Booth.***

June 14, **Knoxville Hamfest & Electronics Exposition**, Kerbela Temple, Knoxville, TN. Contact Louis Dreinhoefer, WB3JKQ, e-mail: <pdreinho@tds.net., phone 865-675-3206, <http://www.w4bbb.org>. (Talk-in 147.30, 224.50, 444.575; exams)

June 14, **Kootenai ARS Hamfest**, American Legion Hall, Post Falls, ID. Contact Jim Monroe, N7ESU, e-mail: <jim@intermountainsecurity.com>, phone 208-755-2100. (Talk-in 146.98/146.38 PL 100, 146.50; exams 9 AM)

June 14, **Midland Hamfest**, Midland County Fairgrounds, Midland, MI. Contact Del, W8FYR, e-mail: <WB8FYR@arrl.net>, phone 989-689-3477, <www.qsl.net/w8kea>. (Talk-in 147.000+; exams 9 AM, registration 8 AM)

June 15, **Monroe Hamfest**, Monroe County Fairgrounds, Monroe, MI. Contact Fred VanDaele, KA8EBI, e-mail: <ka8ebi@yahoo.com>, phone 734-242-9487 after 5 PM, <http://www.mcrca.org/hamfest.htm>.

June 21, **Lufkin Hamfest**, Denman Avenue Baptist Church, Lufkin, TX. Contact Jerry Wilson, K5JLW, e-mail: <ac5zj@cs.com>, <www.lufkinhamfest.com>. (Talk-in 146.940/ –141.3 PL; exams 9 AM)

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What do you call a man who was a space pioneer, helped negotiate the first space science treaty with the Russians, helped start both NASA and NOAA, ran an aerospace company for a decade, and then finished his career back at NASA, leading America's return to space after the Challenger accident? How about W3PRB?

CQ Interviews:

Dr. John Townsend, W3PRB

BY DAVID GREER,* N4KZ

When he's on the ham bands, he's Johnny, W3PRB, an old-timer with more than 60 years on the air and an even longer love of radio that dates back to his youth in the 1930s. However, in real life he is John W. Townsend, Jr., a physicist, administrator, businessman, diplomat, and ac-tive ham—a person who credits amateur radio with playing a significant role in his long and varied career in which he made major contributions to rocketry and satellites. Sometimes called Jack by colleagues and his wife, Townsend has held presidential appointments with federal agencies, met face-to-face with a half-dozen presidents, played a role in establishing the National Aeronautics and Space Administration (NASA), received NASA's highest honor, led the agency's return to space following the tragic 1986 Challenger mishap, and concluded his career as director of the Goddard Space Flight Center, not far from his Maryland home.

After seven decades on the air, Townsend sees a bright future for amateur radio. "I'm an optimist in that regard," he said. "Some of it's too easy now, like the Internet. There's still room for ham radio. There's a challenge to it. Emergency services are also very important. … Skywarn, for example, in this area, is very active and I think that's going to make a difference in the future.

"I think education is another kind of future activity. There's a fascination with ham radio that a good educator can attach to. As you know, things have been very active in a number of schools."

Retired since 1990, Townsend is an active ham who often spends time talking with friends on 40 meters SSB. He is a proponent of educators who use ham radio in the classroom to inspire students to pursue careers in science and technology.

"Ham radio is a useful tool in doing that," Townsend said. "As you know, we had a nasty shock after Sputnik and there was fear the United States was falling behind in both science and technology. All of a sudden there was a big push to get education to make up for it. An early NASA administrator, James Webb, was particularly keen on early education. He pushed early education in K-12 because that's where you hook kids. By grade school or junior high or certainly by high school, you have to have them hooked on science and technology or else they're going to do something else."

John Townsend, W3PRB, a space program pioneer (among other achievements) remains active on the ham bands today at age 83. He even just put up a new tower and beam! (Photo by Larry Mulvehill, WB2ZPI)

"Ham radio has a fascination to it and kids love things that are fascinating. Almost all of the space station inhabitants in recent years have had ham licenses," Townsend noted. "They talk to kids in schools and that's fascinating to a kid. I can even remember pictures of Queen Elizabeth over at Goddard Space Flight Center a while back talking to the people in the space station. She was quite a science fan herself and still is."

Born in Washington, D.C. in 1924, Townsend credits his grandfather for his interest in ham radio. Although not a ham himself, his grandfather bought him a crystal set. "I had this lit-

*159 Skyview Dr., Frankfort, KY 40601
e-mail: <n4kz@arrl.net>

Townsend's career in government service began as a pilot and flight instructor in the Army Air Corps during World War II. He got his first ham license after the war in the Philippines. (Photo courtesy W3PRB via Larry Mulvehill, WB2ZPI)

W3PRB as a young physicist at the Naval Research Labs in 1953. (Photo courtesy Naval Research Labs)

tle crystal set and I had a set of headphones and went to bed listening to a local radio station every night," Townsend said. Later, his grandfather bought him a more sophisticated receiver which even further fueled an interest in radio, but it would be several years before he obtained an amateur radio license.

Townsend completed more than a year of college before joining the Army Air Corps during World War II, flying missions out of Tinian Island in the Marianas in the Pacific. He was also a flight instructor. As the war drew to an end, Townsend was reassigned to the Philippines, then an American territory. He took an amateur radio license exam from the Philippine government and was issued the callsign KA1ABC in late 1945 or early 1946, he said.

After the war, the amateur bands were released to hams, with 10 meters being the first. "Ten meters was wide open and you could load up a mattress spring," Townsend said. He enjoyed many contacts back to the United States.

Soon afterward, Townsend returned to the U.S. to resume his education at Williams College in Williamstown, Massachusetts. He took the exam for his American ham license, was issued the callsign W1OIQ, and became an active operator from the college ham station.

"Coming back from the Pacific, I went to college and then graduate school. During that whole period, I was quite active in ham radio. It did influence my career. Before the war, I had planned to become a chemist. That was my big interest. I had a really good high school education in the old Washington, D.C. school system and had particularly good chemistry teachers." However, his service in World War II changed his focus. "I had had education during the war in radar countermeasures," Townsend explained. "I was a pilot and my B-29 had countermeasures equipment, so I had gone to Yale in a speed-up course in radar communications and radar countermeasures and I got commissioned out of that.

"When I came back, I suddenly found that I had enough credits picked up in the service ... to qualify me as a junior if I switched to physics. Since I was a ham, a professor that I was fond of was in the radiation lab during the war working on radar and communications, and he took me under his arm and I became a physicist and got my graduate and masters degree in physics." He went on to complete his doctorate in 1961.

"During the whole time that I was back in college, I worked a lot of radio at the ham station at Williams College. I also worked as an engineer at an AM radio station in North Adams, Mass. I qualified for an FCC First Class Commercial License. That wasn't ham radio, but it was radio, and the fact that I understood high-power transmitters ... all that went along with my career."

As a project toward completing his master's degree, Townsend, working alone, built a mass spectrometer—an instrument that measures the mass of gases in a mixture such as the upper atmosphere. Later, his experience with mass spectrometers would prove to be a stroke of good fortune.

In 1949, Townsend visited the Naval Research Laboratory (NRL) in Washington, D.C. The agency was starting a new rocket program. His experience with mass spectroscopy helped him land a job.

Townsend and his wife moved to Maryland. At the time, FCC rules required hams to have callsigns that indicated the call area in which they resided. Townsend was assigned W3PRB. NRL had just begun upper-atmosphere research using several rockets, including the V-2. Townsend and his colleagues constructed a rocket-bound mass spectrometer in 1951 or 1952. Ham radio know-how was instrumental in designing their spectrometer, he said.

"They worked in instrumentation and helped out in the atomic tests in the Pacific, all of which involved electronics. In those days, it was an early digital telemetry. All of those kinds of things influenced me. During the entire period I spent at NRL and ever since then, I have been on the air," Townsend said. "I wasn't on the air all the time but I never had a long period when I let it lapse."

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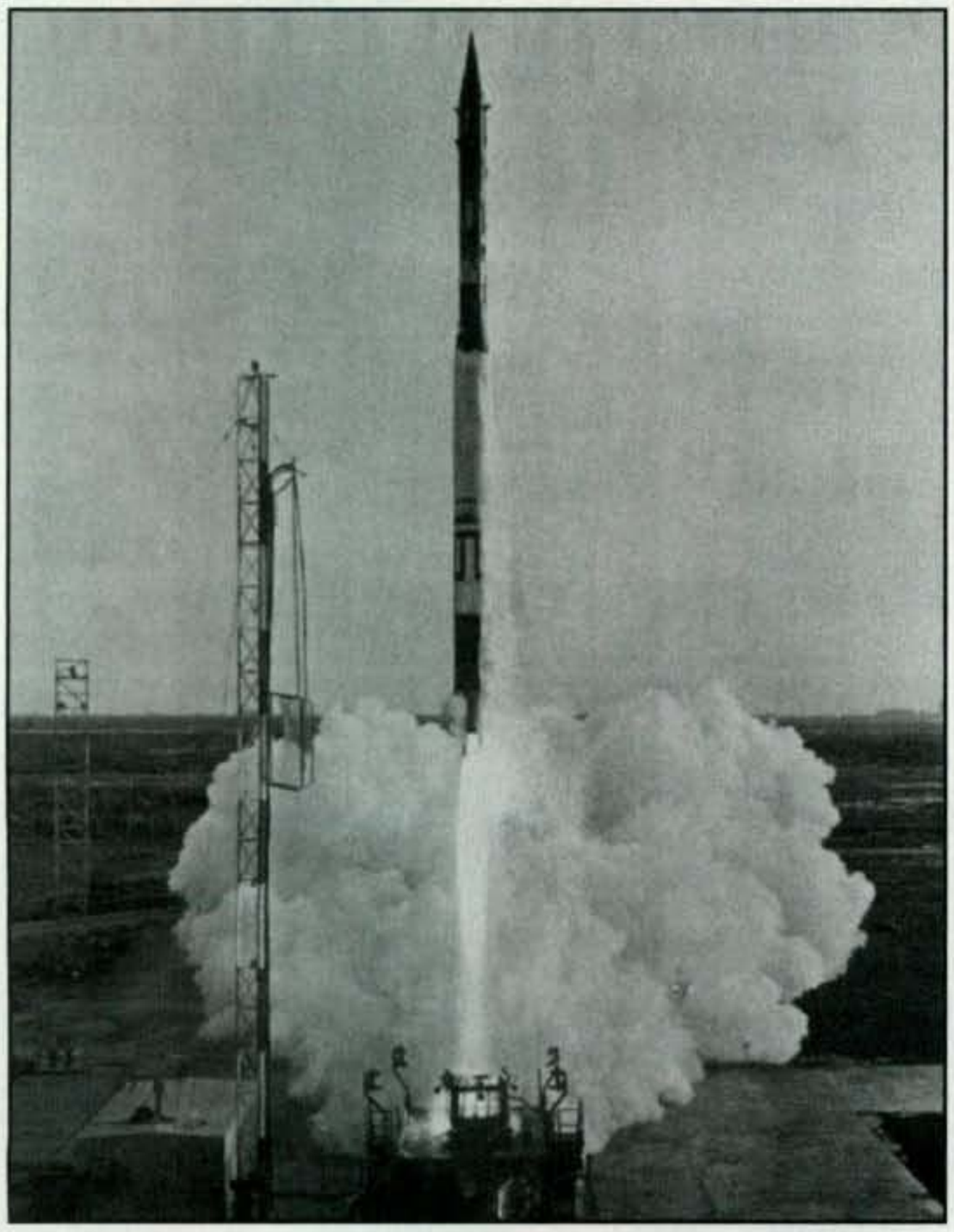


The first U.S. satellite, Vanguard I, was launched by the Naval Research Labs during Townsend's time there as Chief of the Rocket-Sonde Branch. When NASA was formed, he and his entire branch were moved to the new agency. (Photo courtesy Naval Research Labs)

Oddly enough, his mass-spectrometer experience would later benefit another nation's space program, a fact Townsend found upsetting. More on that later.

In 1957 and 1958, Townsend was a U.S. representative to the International Geophysical Year project (which actually ran 18 months). He served on the Committee for Peaceful Uses of Outer Space. More than 60 nations participated in the IGY. There were concerted efforts to conduct research in a number of areas, including aurora, cosmic rays, geomagnetism, gravity, ionospheric physics, meteorology, oceanography, rocketry, seismology, and solar activity. The 18-month period was selected because it coincided with that sunspot cycle's solar maximum.

Ringside Seat on History

Townsend's IGY involvement gave him a ringside seat to what would prove to be one of history's most historic scientific achievements. As he recently recalled the events of more than 50 years ago, Townsend said the Soviets and the Americans both wanted to launch earth satellites into space as part of the IGY. He said the United States, through the NRL, was working on launching the Vanguard satellite, but the project was running several months behind schedule.

Then on the evening of October 4, 1957, Townsend was among a group of IGY scientists attending a reception at the Soviet Embassy in Washington, D.C., when news broke that the Soviets had successfully launched Sputnik, an artificial satellite about twice the size of a basketball, weighing nearly 200 pounds and orbiting the Earth every 96 minutes.

According to the 2001 book *Sputnik, The Shock of the Century*, by Paul Dickson, the news reached the group of Soviet and American scientists about 6 PM while they attended the reception on the embassy's second floor. Dickson wrote that a *New York Times* reporter at the reception received a phone call from his editor saying the Associated Press was reporting that Radio Moscow had announced the launch.

A Soviet official at the party told those present that Sputnik was transmitting on 20 and 40 mc. Townsend said some at the embassy reception went to the roof to look for Sputnik as it circled overhead, but he headed home and to his ham shack.

"Immediately, I went to my ham radio station at home to pick up Sputnik," he said. "I had some reporters with me. We heard a beep, beep, beep come up…"

Hams across the nation also reported hearing Sputnik. "In less than 24 hours, reports on the satellite were coming back to the National Science Foundation, where a temporary control room had been established," Dickson wrote in his book. "Eventually, these hams and other amateur and professional trackers would consider themselves part of a great international fellowship known as ROOSCH, or the Royal Order of Sputnik Chasers."

Townsend was a member of the National Advisory Committee on Aeronautics (NACA), the predecessor of NASA. He and NACA Executive Secretary Hugh Dryden were vocal in advocating the creation of a civilian space agency. They thought the nation's space goals could be better accomplished with a civilian agency rather than leaving space exploration in the hands of the military, Townsend recalled.

"We pitched the idea to President Eisenhower," Townsend said. "He was 'ho-hum' about a civilian agency, but Vice President Richard Nixon and Sen. Lyndon Johnson (D-Texas) liked the idea. There was considerable support on Capitol Hill for a civilian agency, as well."

"There was a feeling up on the Hill … if we started flying over other people's countries with our spacecraft that it should be open …" Townsend said.

Dedication of the Goddard Space Flight Center in Maryland in 1961. W3PRB negotiated NASA's acquisition of the land from the U.S. Department of Agriculture, an arrangement that included providing for the relocation of WWV from its Maryland home to Colorado. (NASA photo)

In 1970, John Townsend (third from the left) became the first Associate Administrator of the new National Oceanic and Atmospheric Administration (NOAA), the agency that today includes, among other things, the National Weather Service. (NOAA photo)

Townsend transferred to NASA on the day it was created in October 1958 and stayed with the agency for 10 years while holding a number of positions, including being Deputy Director of the Goddard Space Flight Center from 1965 to 1968. One of his NASA assignments, Townsend said, was to secure land for the construction of the Goddard Center in Washington's Maryland suburbs. As it turned out, the land already belonged to the U.S. Department of Agriculture and Townsend was able to work out a transfer to the new space agency. But sitting in one corner was something known by hams, shortwave listeners, and sailors around the world.

Moving Time Westward...

"I was the one who swung the deal for the land with the Agriculture Department, and lo and behold in one corner was WWV's tower and transmitter. I had to pay the old Bureau of Standards to move WWV out to Colorado," Townsend said. "The whole thing kind of ties in with my interest in radio as a kid and later on in ham radio."

In 1962, Townsend was one of three American representatives who traveled to Moscow and negotiated four treaties with the Soviets for the peaceful use of outer space. As Townsend tells the story, the negotiations hit a rough spot when deciding how to pay for a joint research project. The Soviets wanted the Americans to pay, but Townsend instead suggested a novel approach for sharing the costs and the Soviets agreed.

It was during the Moscow trip that the Soviets confided to Townsend that they had built a mass spectrometer and flown it aboard Sputnik 3. They admitted they had taken his mass-spectrometer plans from a magazine article he had written and copied it. What did Townsend think about the Soviets sending his project into space? "I was somewhat pissed," he said.

His negotiating skills caught the attention of officials at the Environmental Sciences Services Administration, the federal agency that preceded the National Oceanic and Atmospheric Administration (NOAA). Townsend moved to ESSA as Deputy Administrator in 1968 and became Associate Administrator of NOAA when it was established in 1970, a post he held until 1977. He served at ESSA and NOAA under Presidents Johnson, Nixon, and Ford.

John's various government positions brought him to the White House multiple times, meeting with presidents from Eisenhower to Reagan. Here are two photos from his archives, taken with President Gerald Ford in the 1970s and President Ronald Reagan in the 1980s. (Photos courtesy W3PRB via Larry Mulvehill, WB2ZPI)

In 1971, Townsend became a recipient of the NASA Distinguished Service Medal, the agency's highest honor. The award is given to senior NASA administrators, mission control leaders, and astronauts who have completed several successful space flights.

Something Spectacular

Townsend recalled that President Nixon wanted to do something spectacular for the nation's Bicentennial Celebration in 1976, and asked NASA administrator James Fletcher for some ideas. Townsend was appointed to a committee chaired by Vice President Spiro Agnew. The committee recommended a manned mission to Mars. Steps along the way included building the space shuttle and a space station in Earth orbit. Eventually, Townsend said, the Mars portion of the project was shelved for financial reasons, but the shuttle and space station concepts remained and eventually came to pass.

After Nixon resigned from office in 1976 and Ford became president, Townsend said he and two colleagues were summoned to the White House to meet with the new president. "Ford took us into the Oval Office one by one and talked to us. He was very impressive," Townsend said. "I liked him."

In 1977, after many years of government work, Townsend decided to move to the private sector. He became president of Fairchild Space and Electronics Co., an aerospace firm and NASA satellite contractor. In 1983, he was named president of Fairchild Space Co. At Fairchild, he was responsible for the Multi-Mission Modular Spacecraft, which resulted in research of the oceans, Earth, and sun.

The Challenger space shuttle tragedy occurred in 1986. The NASA administrator called Townsend and asked if he would return to the agency to become the Associate Deputy Administrator, the agency's number three person. "At that point, I was willing to help," he said. His function was that of NASA general manager and his duties included leading America's return to space. It was at this time that Townsend met President Ronald Reagan. Along the way he had also gotten to know Barry Goldwater, K7UGA (SK), U.S. senator from Arizona, 1964 Republican presidential candidate, and active ham.

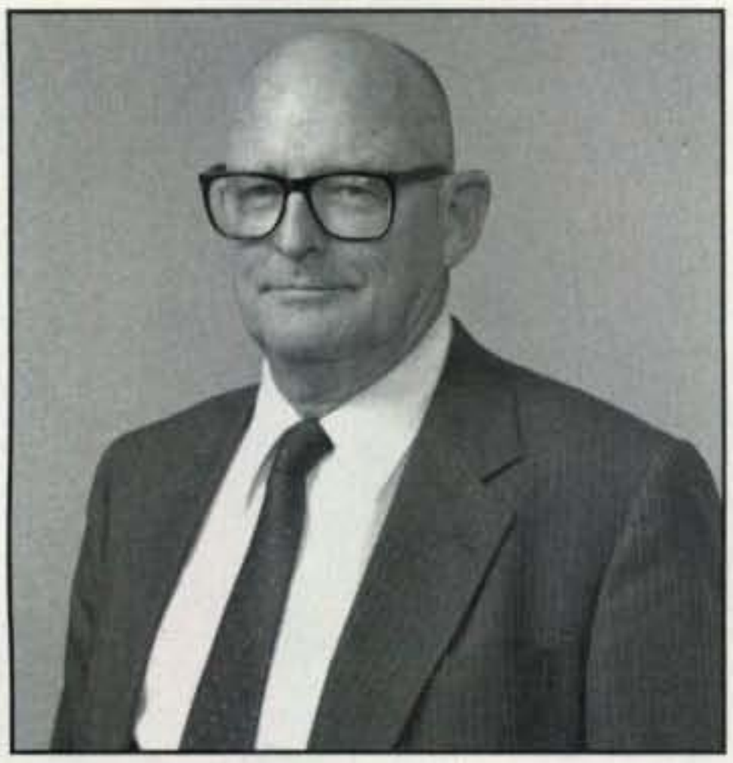
A year after rejoining NASA, Townsend asked that his final NASA assignment return him to the Goddard Space Flight Center as its director. He served there from June 1987 to June 1990, when he retired. However, Townsend has stayed active during his retirement, serving a number of organizations and on several boards.

When Townsend retired from Goddard in June 1990, NASA administrator Richard Truly said in a prepared press release: "Jack Townsend exemplifies the best in government servants. He came back to NASA ... to help out in the post-Challenger recovery period after a distinguished career in a number of positions at NASA and in other government agencies. As he departs 33 years of distinguished public service, all of us at NASA wish him the best in his years ahead."

Nine years later, in June 1999, the American Geophysical Union awarded the Edward A. Flinn III Award to Townsend. The award recognizes people who "personify the Union's motto, 'unselfish cooperation in research' through their ... activities."

"Throughout his career, Jack Townsend has excelled at visionary institutional leadership ... and dedicated professional management that always enabled researchers and engineers to accomplish objectives that helped maintain advanced technology, especially space technology..." according to a statement on the organization's website.

"At Goddard, Jack initiated the developments of in-house capabilities for small and medium scientific spacecraft in the 1960s and supervised the beginnings of the development of the Delta rocket, which has played such an important role for



After a decade at NOAA and another in private industry, John Townsend returned to NASA to lead the nation's return to space after the Challenger accident in 1986, then became Director of the Goddard Space Flight Center until his retirement in 1990. (NASA/ Goddard photo)

30 years in the launching of science missions into orbit," the AGU said.

Ham Radio Never Far Away

Despite a career with many demanding jobs and often long hours, Townsend always found time for ham radio.

"I kept active," he said. "The house I had before my current one had a big tower and a KLM beam." He was also active for several years on amateur satellites, including modes B and S on OSCAR 13. He was one of a handful of amateur satellite operators to make contact through a French satellite before it failed, Townsend recalled. Earlier, he had been active on VHF and UHF and even enjoyed contesting on those bands for a time.

These days, he's a regular on 40 meters SSB and other HF bands using his Ten-Tec Omni-VII and brand new tower and SteppIR Yagi covering 40–6 meters. He's also been active on the five upper sideband frequencies of the 60-meter band and uses a shortened indoor vertical. Despite his compromise antenna on 60 meters, Townsend said he's made many contacts up and down the East Coast on that band.

As for the future of ham radio, clearly it's digital, Townsend said. "But with the coming of the new sunspot cycle, it will be a drawing card to attract new people to ham radio."

Author's Note

I first met W3PRB on 40 meters SSB a few months ago when I answered his CQ. As our conversation unfolded and he mentioned some of his career accomplishments, I realized I was speaking with a true American "techno-hero."

In turn, I told Johnny about my unabashed enthusiasm for America's manned space program, a journey that began for me with Alan Shepard's suborbital flight in 1961 and continued with my visits to the Kennedy and Marshall Spaceflight Centers and a 2002 Florida trip to watch a shuttle launch. Even today, I often amuse my wife by heading to our front yard to watch the International Space Station pass overhead. I put my contact with W3PRB in the same league as my 20-meter QSO with Father Moran, 9N1MM (SK), who answered my CQ from Nepal many years ago; or later when I worked Barry Goldwater, K7UGA (SK), on 40 meters.

It's often said—and it's true—that you just never know who you will talk to on the air. That's part of the fascination of ham radio.

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radio not included

AT-897 for the Yaesu FT-897

If you own a Yaesu FT-897 and want a broad range automatic antenna tuner, look no further! The AT-897 Autotuner mounts on the side of your FT-897 just like the original equipment. We even added the ability to mount the "feet" on the side of the tuner so when you're transporting your rig by the handle, you can safely set it down and not worry about scratching the case. The AT-897 takes power directly from the CAT port of the FT-897 and provides a second CAT port on the back of the tuner so hooking up another CAT device couldn't be easier. ***Suggested Price$199***

AT-100Pro

This desktop tuner covers all frequencies from 1.8 – 54 MHz (including 6 meters), and will automatically match your antenna in no time. It features a two-position antenna switch, allowing you to switch instantly between two antennas. The AT-100Pro requires just 1 watt for operation, but will handle up to 125 watts. All cables included. ***Suggested Price $219***

Z-100

Designed from the ground up to provide 100 watt power handling in a small, lightweight package. Perfect for portable as well as sitting on your desk in your shack! The Z-100 will tune with 0.1 to 125 watts (50 watts on 6 meters), making it an excellent choice for almost any radio or operating style. Backpackers and QRP operators will appreciate the latching relays. Power can be removed from the tuner once you have tuned. Additionally, when it's not tuning, it draws nearly zero amps. ***Suggested Price $149***

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- Backlight brightness adjustment is also on the back of the unit; so you can set the backlight to your desired level brightness.

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The original portable Z-11 was one of LDG's most popular tuners, accompanying adventurous hams to their backyards, or to the ends of the earth. Now meet the Z-11Pro, everything you always wanted in a small, portable tuner. Designed from the ground up for battery operation. Only 5" x 7.7" x 1.5", and weighing only 1.5 pounds, it handles 0.1 to 125 watts, making it ideal for both QRP and standard 100 watt transceivers from 160 - 6 meters.

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RCA-14 Your Cable Problems Solved!

RCA-14 is a breakout box for the accessory jacks on most popular transceivers. It comes with cables with the right DIN plugs, and all the outputs are RCA jacks. You simply plug the RCA-14 into your radio's accessory jacks, and all your ports are right there at your fingertips; just plug and play, one function or all of them. The RCA-14 is compatible with: Icom 703, 706, 718, 746, 756, 7000 and 7800, Yaesu 817, 857, 897 and 840, Kenwood 480, 570, 2000, Ten Tec Orion and many more. ***Suggested Price $59***

AT-200Pro

The AT-200 features LDG's new "3-D memory system" allowing up to eight antenna settings to be stored for each frequency. Handles up to 250 watts SSB or CW on 1.8 – 30 MHz, and 100 watts on 54 MHz (including 6 meters). Rugged and easy-to-read LED bar graphs show power and SWR, and a function key on the front panel allows you to access data such as mode and status. All cables included.
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The second running of the revived CQ DX Marathon resulted in more than double the number of logs received the first year, increased activity on the bands, and most importantly, was lots of fun for the participants.

Results of the 2007 CQ DX Marathon

BY JOHN SWEENEY,* K9EL

Two years ago, after a 60-year hiatus, *CQ* magazine revived the year-long DX Marathon. An annual DX contest was just what motivated many of us to spend time listening for the weak ones. Top scores in 2006 were good, but participation was not at the desired level. For 2007 we added the WARC bands and wow! Participation in the 2007 edition more than doubled from 2006, and we were in the lowest part of the current sunspot cycle! Overall, 174 scores were submitted, significantly up from last year's 87. Country participation was up as well, with 34 countries represented versus last year's 23. The majority of the submissions were from the USA, but there was increased participation from Germany, Italy, Japan, Czech Republic, Belgium, and Turkey.

Although two classes of operation are allowed, two-thirds of the submissions were in the Unlimited class. (For an explanation of the entry classes, see the DX Marathon rules on the *CQ* website (www.cq-amateur-radio.com) or in the December 2007 issue of *CQ*.) Eight stations submitted logs with all CW contacts, indicating that CW is alive and well! Fifteen stations submitted all SSB logs; of those, VE2PIJ submitted his log with only 6 meter QSOs! VE8DW and DK8JB submitted all SSB, all 20-meter scores, and GUØSUP submitted all QSOs via RTTY. Several stations used a maximum of 10 watts, while M5AEF used only 1 watt for all contacts. All bands from 160 through 2 meters were used to make contacts.

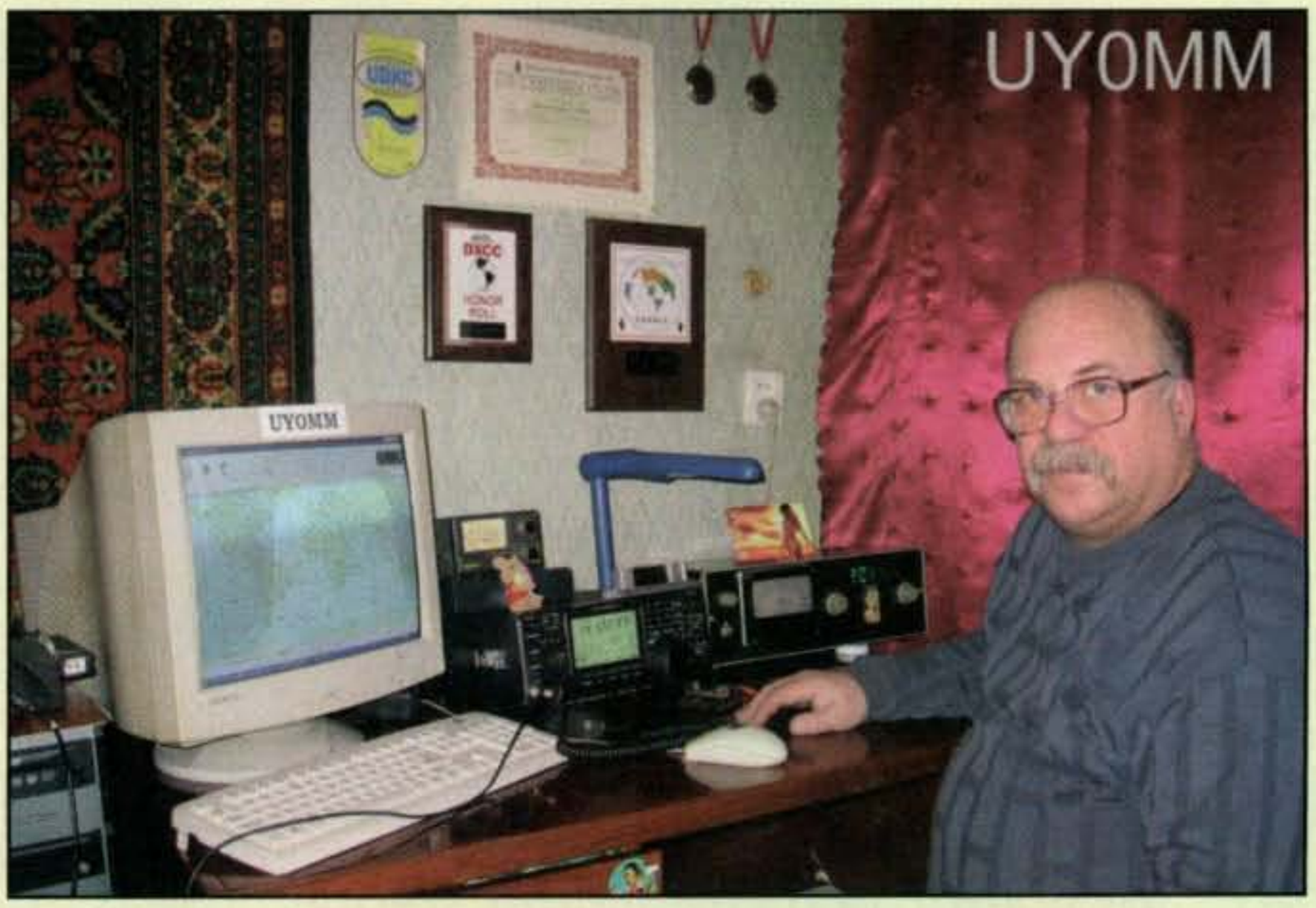
Accuracy Counts!

Although submission errors generally were small, each score sheet should be thoroughly reviewed before submission. Typical errors included putting the time in the frequency column, entering a callsign in the wrong country, submitting contacts for stations that do not have valid licenses (most YA portable stations, for example[1]), and errors with zones. By far, the biggest confusion is Zone 2, with 15% of all submissions listing stations for Zone 2 that were not in Zone 2![2] For 2007, we were flexible on the scoring and allowed participants to submit alternate QSOs as long as they were received by the January 31st deadline. As participation grows, however, country and zone errors will count against the submitted score.

Scoring a DX contest can always be a challenge, and we had many fewer problems with the scoring spreadsheet this year. Your feedback and comments helped tremendously, and we urge anyone with a comment to let us know. 2007 scoring was made easier for users of DX4WIN and DX Base. Jim, AD1C, created a utility to export from DX4WIN to

Winner Profile: Anatoly Pivovaroy, UYØMM, Formula Class Winner

Anatoly is 56 years old and has been licensed since 1975. Previous calls held include UB5MGG, UB5MRO, and UB4MM. Currently he uses an IC-7400 and inverted-Vee antennas for 40 and 80; slopers for 30, 20, 17, and 15; dipoles for 12 and 10; and a 3-element quad for 6 meters. Anatoly holds DXCC, DXCC-160, 5BDXCC, and other awards. He has worked 344 countries (including deleted entities) and has all 40 CQ Zones confirmed on 9 bands!



Anatoly Pivovarov, UYØMM, from Lisichansk, Ukraine in his shack. Anatoly won the Formula Class by contacting 249 countries in all 40 zones—a higher score than many entrants in the Unlimited Class!

*Manager, CQ DX Marathon
e-mail: <k9el@dxmarathon.com>

Winner Interview: Pete Meyer, NØFW, Unlimited Class Winner

This is Pete's second year as Unlimited Class winner and a complete profile was published in the June 2007 issue of CQ. The following interview was conducted with Pete after informing him of his repeat win.

CQ: Why do you enjoy the CQ DX Marathon?

NØFW: I believe the true test of a DXer is to be on the air as often as possible. I have been DXing for over 35 years and haven't missed many opportunities to chase the rare ones. I enjoy the hobby and try to be active. The *CQ* magazine DX Marathon embodies that spirit.

CQ: How does it feel to win two years in a row, especially years one and two of the competition?

NØFW: To be honest, I am shocked. I saw last year's list when it was published and it contained a lot of folks I hear in the pile-ups. So the competition is intense. I didn't really start out to try and "win" anything. I just looked at my log last year and decided to submit. When I looked at the final result, I was actually amazed that I had worked that much DX—and at the bottom of the sunspot cycle. I can imagine that there will be some pretty impressive scores when the bands really start to open in 3–4 years!

CQ: What are some of your secrets to working so many different countries?

NØFW: To be honest, I do a lot of listening. That is a skill that has long evaporated in this hobby. I do look at the packet-cluster, but most of the DX I get is from just tuning around and seeing where and when the band is open to different areas of the world. If you want results, you need to make calls. Sitting around complaining about poor conditions or a lousy antenna situation does nothing. Get out, operate, and have fun, but, do so in a polite and respectful manner. Adapt, be respectful, listen, and be patient—you get through quicker and more reliably.

Unlimited Class Winner Pete Meyer, NØFW, had 335 total points, working 295 countries in all 40 CQ zones.

CQ: Will you be going for #3 in 2008?

NØFW: Well, I certainly intend to enter. However, if I get a third victory, it will likely be due to a lot of luck. After 46 years as a bachelor, I will be getting married in mid-April. There will be a lot of other non-radio things to take care of and I may not have as much time. Besides, I want to start DX-contesting again from outside the U.S. It is hard to work DX when you are not at home! If anyone needs another op, please let me know.

CQ: Any suggestions for changes or improvements in the DX Marathon?

NØFW: I think the theory behind the DX Marathon was well thought out. But I would like to see it become mode-specific rather than power/antenna specific. Some folks don't like phone; some don't like CW. Additionally, I don't think that categorizing people according to output power and/or small antennas is necessarily an equalizing factor. I have worked a lot of DX with low power and small antennas and made a whole lot of perfectly solid contacts. Besides, working QRP does nothing to show your skill in working DX; it only shows that the operator on the other end is either an awesome operator or has a terrific receiver. The other change I would consider would be to change the contest to count "band countries," just like the contests. It would really be a challenge to see on how many bands you can work each country and CQ zone in a year! Just think of the high scores that will be generated!

automatically populate the score sheet, and a similar utility is available for DX Base. Utilities for other logging programs are in the works as well and will be posted on the DX Marathon website as they become available. Several participants expressed concern that they did not own a copy of Excel and thus could not submit a score. The DX Marathon website (www.dxmarathon.com) contains links to several programs that are completely compatible with the official score sheet and are available at no charge.

The Envelope, Please

A total of 295 countries and all 40 zones were available in 2007 for a maximum score of 335 points. Once again Pete, NØFW, came out on top. Pete's final score was a very impressive 329 with 289 countries and all 40 zones worked! OM3EY was again second in the Unlimited class with a score of 326, which included 286 countries and all 40 zones. RU6YY was third with a score of 323, followed by W1JR and PY2OMS in fourth and fifth, respectively, each with a score of 321. W1JR was awarded fourth place, as his final QSO was two days prior to PY2OMS's final QSO.

Profile: Gyorgy Kasper, HA1CW Runner-up Formula Class

Gyorgy is an avid DXer and contester. At home, he has a modest station including a Yaesu FT-920 for 100W operation and an FT-817 for QRP activities. For 40 and 80 meters Gyorgy uses dipoles, but for all other bands he uses single verticals for 40 and 20 and a multiband vertical for the higher bands. He made over 15,000 QSOs in 2007! Gyorgy enjoys DXing with 100 watts or less, but calling for 13 hours for one BS7H QSO and 6 hours for N8S often led to frustration!

In the Formula class, UYØMM had an amazing score of 289 with 249 countries and all 40 zones worked. Rounding out the top three for Formula class were HA1CW with a score of 274 and OM7DX with a score of 266.

Any new activity has a few start-up issues, and for 2007 we concentrated on fixing errors in the score sheet and expanding the website. Plaques and certificates for both the 2006 and 2007 contests will be issued very soon. Once again, we thank the Northern Illinois DX Association for sponsoring the DX Marathon plaques.

Notes

1. Contacts for Afghanistan count only when the station is officially licensed by the Ministry of Communications. Most have T6 prefixes and most portable-YA stations are not properly licensed by the Afghan government. See also *CQ* magazine, March 2008, page 13.

Results 2007 DX Marathon

(Any comments appear beneath the line score of the entrant)

Call	Class	Score	Zones	Countries
NØFW	**U**	**329**	**289**	**40**
		Winner Unlimited Class		
OM3EY	U	326	286	40
RU6YY	U	323	284	39
W1JR	U	321	281	40
PY2OMS	U	321	281	40
K4SAV	U	318	278	40
I4TJE	U	316	276	40
OZ7YY	U	314	274	40
OK2PAY	U	313	273	40
WT8C	U	312	272	40
N5AU	U	305	265	40
K9QVB	U	302	263	39
US7MM	U	300	260	40
UX1UA	U	299	259	40
F1JKJ	U	298	258	40
SM6CNN	U	298	258	40
KØDEQ	U	297	257	40
W4VQ	U	296	257	39
				All CW
K8SIX	U	293	253	40
UYØMM	**F**	**289**	**249**	**40**
		Winner Formula Class		
YU3A	U	289	249	40
W2QO	U	288	248	40
KØXB	U	286	247	39
N1BAA	U	286	247	39
IK5PWQ	U	282	242	40
W8AV	U	282	242	40
K3KO	U	281	242	39
N3XX	U	280	241	39
JA0DAI	U	279	240	39
K8AJS	U	279	239	40
KK9DX	U	279	239	40
W2IRT	U	279	239	40
K6TA	U	278	238	40
SV1DPI	U	278	238	40
WX6V	U	278	238	40
K7UA	U	277	238	39
IZ1LBG	U	276	236	40
N8BR	U	276	236	40
HA1CW	F	274	235	39
LU2NI	U	273	234	39
				All SSB
WA5VGI	U	273	233	40
N6EE	U	272	232	40
N6NG	U	268	228	40
F5CQ	U	267	228	39
OM7DX	F	266	226	40
RL3BM	U	265	226	39
JAØFVU	U	263	224	39
DL5XL	U	262	224	38
W1UE	U	262	222	40
7Z1HL	U	261	221	40
VK4AN	U	261	222	39
W4VIC	U	258	218	40
OK1RR	F	256	217	39
WØHT	U	256	217	39
IWØHOU	U	255	217	38
VE3ZZ	U	255	218	37
WA6JRZ	U	255	215	40
WA8VDC	U	254	214	40
NI5F	U	253	213	40
G4IIY	U	251	212	39
K9ZG	U	248	210	38
ON4ON	U	245	206	39
K5EWJ	U	244	206	38
W9OL	U	244	206	38
WA1Z	U	242	202	40
AA4S	U	241	201	40
T94GB	F	240	204	36
W4CU	U	240	202	38
F8CRS	U	238	202	36
UA3QUO	U	238	202	36
LA6CF	F	237	197	40
K9WMS	U	236	198	38
LZ1VB	F	236	196	40
				All CW
W2LK	U	236	198	38
K1SND	U	235	197	38
I2WIJ	U	232	193	39
T94WG	F	231	195	36
OZ7DN	U	230	193	37
				All SSB
IØMOM	U	229	192	37
W9OA	U	229	189	40
AD1C	U	228	189	39
DJ4EY	U	227	189	38
				All CW
OK1BA	F	227	189	38
HA8TI	U	224	186	38
ON5SY	U	224	187	37
K9UQN	U	222	183	39
KI4PRK	F	222	190	32
				Age 13
K8ZEE	U	218	181	37
				All SSB
G1VDP	U	214	177	37
W9IL	U	214	178	36
DL4CW	F	212	176	36
SV1UT	U	211	176	35
NØRB	F	210	172	38
K8RMC	U	209	172	37
EC8AFM	F	208	177	31
				All SSB
WA9YYY	F	207	172	35
K8CQ	F	204	169	35
VK3FM	U	204	169	35
WB4YDL	U	203	164	39
JA7OXR	F	202	163	39
NY9H	U	202	178	24
PY2IQ	U	202	167	35
TA1DX	F	201	165	36
DJ9ZB	F	200	164	36
K3MSB	U	200	163	37
K4WY	F	199	159	40
OH5VG	U	198	162	36
DK8JB	U	194	159	35
				All SSB, all 20m
W8QZA	F	194	156	38
W9ILY	U	194	161	33
PAØMIR	U	193	155	38
WR3H	U	186	153	33
K8ZT	F	185	151	34
				5 watts
N1AM	F	182	151	31
W9IXX	U	181	145	36
VE4EAR	F	179	146	33
WB9EEE	U	175	136	39
JA1NLX	F	173	137	36
N4TL	U	173	140	33
DH5MM	F	171	140	31
W9OA/9	U	171	136	35
GUØSUP	U	170	135	35
				All RTTY
WA4JUK	U	170	138	32
OK1BLU	F	168	142	26
AA4FU	F	163	133	30
				All CW
KZ1M	U	163	133	30
				All CW
VK6HG	F	163	130	33
W2WC	F	163	129	34
				All CW
K6JRY	U	162	131	31
W9VA	U	162	131	31
NU4B	F	161	134	27
				All CW
WB4DNL	F	160	131	29
ZS6DXB	U	159	124	35
KT7G	U	158	124	34
N1MD	U	157	131	26
WB2TFM	U	156	125	31
WK5X	F	155	125	30
N4LF	F	154	122	32
WA2VQV	F	152	122	30
SP5CGN	F	150	126	24
TA1HZ	F	148	120	28
				All SSB
AA5JG	U	147	116	31
KØGEO	F	146	115	31
				All CW
JH7RTQ	F	144	111	33
K8AO	U	143	118	25
				All SSB
W6KY	F	143	113	30
KG1V	F	141	119	22
W3ZGD	U	141	111	30
EA4EQD	F	135	110	25
ON3AD	F	132	108	24
TA3J	F	132	104	28
IW5EIJ	U	123	99	24
G6OKU	F	121	94	27
ON6FC	F	117	94	23
W2SFD	U	117	92	25
YV6BXN	F	112	92	20
				All SSB
HC2SA	U	111	91	20
K2BBQ	F	109	86	23
				All SSB
MØOKT	F	109	86	23
VA3RNJ	F	108	86	22
DL7FA	F	106	84	22
PY5WH	F	82	59	23
				All SSB
V5/DL5XL	U	77	60	17
W4DDR	F	71	57	14
N9TF	F	70	52	18
				All 40m
M5AEF	F	65	55	10
				1 watt
W2VU	F	65	51	14
				All SSB
PP2PR	F	57	42	15
TA3YJ	U	57	45	12
K9JH	F	46	33	13
N2TDT	F	36	21	15
				All SSB
VE8DW	F	33	20	13
				All SSB, all 20m
W6GMT	F	32	19	13
				All SSB, only 6/10 meters
VE2PIJ	U	18	11	7
				All SSB, all 50MHz

2. Zone 2 includes VO2 (Labrador), the portion of VE2 Quebec north of the 50th parallel, and Nunavut Territory east of 102 degrees (includes the islands of King Christian, King William. Prince of Wales, Somerset, Bathurst, Devon, Ellesmere, Baffin, and the Melville and Boothia Peninsulas, excluding Akimiski Island, Bear Islands, and East Pen Island in Hudson Bay).

QRM

Thank you for providing this great annual event! I was reading a *RADIO* magazine from 1942 that mentioned this event way back then! . . . *VK4AN*. I came up a bit short in my quest for 300 points on CW. My thanks for your effort on behalf of the Marathon. . . . *W4VQ*. Was pleased with my score compared to last year given the state of the sunspot cycle and my modest antennas. My best catch was SV2ASP/A! The addition of the WARC bands was beneficial. . . . *W4CU*. I guess that real hams don't need any marathon sunspots. Thanks for running the contest again this past year looking forward to 2008. . . . *N1AM*. I hope there is no minimum acceptable score! The Excel sheet is very user friendly and easy to learn and use. I've started 2008's already. . . . *WB9EEE*. You will find my score rather low. All QSOs were achieved using 1 watt. I hope others will be inspired by my efforts! . . . *M5AEF*. We thank *CQ* magazine for providing a fun, stress-free contest. The CQ DX Marathon is a great motivator for many of us to get back on the air and enjoy the experience all over again. In fact, three of us were motivated enough to create our own competition. Thank you for a great operating experience and we look forward to the 2008 CQ DX Marathon. . . . *W6XK*. Thanks for a neat year-end look back through the log. . . . *W2SFD*.

This was a FUN year DXing in spite of being at the bottom of the sunspot cycle. Thanks for providing the motivation through your sponsorship of the CQ DX Marathon. . . . *N6EE*. DX Marathon—one year of fun. . . . I4TJE. Wish I had started earlier in the year. My DX Marathon score will be better next time, hi. . . . *WA8VDC*. Just wanted to see what could be done from Texas during the solar minimum year. I missed a few but they were almost impossible to work from Texas even with big antennas. The DX Marathon is a great idea for keeping active. . . . *N5AU*. Thanks for the activity. . . . *WR3H*. Glad to participate. Having DX Base work with your submission form made this possible. . . . *W2IRT*. I really enjoy the DX Marathon and I hope it will grow. . . . *NU4B/QRP*. I used AD1C's conversion file to prepare my DX4WIN log for insertion into your application file. Pretty slick. . . . *K6JRY*.

The Marathon is fun but takes lots out of a DXer. . . . *W1JR*. Did not score as well as last year but I did lose my antennas towards the end of the year. Here's to 2008 and another fantastic DX Marathon. . . . *G1VDP*. Thanks for your efforts in developing this event for the amateur community. . . . *N8BR*. Really enjoyed it this year! . . . *LA6CF*. Having the WARC bands eligible helps the score. I refuse to believe I worked this much DX in a year. . . . *NØFW*. Marathon is a great idea; hear a new one, gotta go. . . . *K4WY*. The DX Marathon provided a good excuse to get on every day. Glad to see that the WARC bands were included this year. Looking forward to 2008 Marathon. . . . *WA5VGI*. Wish I had looked at this challenge earlier in the year. I was working towards some other goals and this marathon will make next year a good one. . . . *WA8VDC*. I was unaware that 4U1VIC and IG/IH were counters. That is what I get for not reading the rules early. I look forward to this year. . . . *K8SIX*. Tnx for the great contest. . . . *LZ1VB*. I enjoyed this contest. . . . *JA7OXR*.

Thanks for the fun. . . . *WR3H*. Thanks for the great DX Marathon. . . . *OH5VG*. The challenge is a great competition for those of us that have CC&R antenna restrictions. . . . *K8CQ*. Amazingly I had a higher score this year than in 2006. Fewer zones, more countries. Great contest. . . . *NU4B*. Thank you for the Marathon. I greatly enjoyed putting together a 2007 report card. . . . *KØGEO*. The Marathon is fun, and maybe will try 2008 in the 100w Formula class with my SteppIR vertical. . . . *W9VA*.

A hands-on practicum on antenna zoning from a radio amateur who has walked the walk … and won!

So You Want To Put Up a Tower…

BY JOHN LINDHOLM,* W1XX

September 17, 2007, marked the successful conclusion of a year-long battle to validate my 100-foot rotating amateur radio tower. This is the story of that effort.

Most articles dealing with antenna zoning and antenna ordinances are written by attorneys. I'm not a lawyer and I haven't played one on TV (with apologies to Fred Thompson). However, as a layperson, I think I can lend a perspective and practicality—that perhaps a lawyer can't provide—to the average ham who dreams of having an amateur radio tower.

The jubilation of a successful appearance before the town Zoning Board of Review (sometimes called the Zoning Board of Appeals or other similar name) had not subsided before I found myself offering advice to local amateurs contemplating erection of antenna towers. Some were going to make what I considered the wrong moves from the outset. Thus, the need for this article presented itself. Why not share my experiences, which might help others in similar circumstances?

Some Starting Assumptions

First of all, let's assume that you probably either intend to put up a tower or already have (see fig. 1). Also, that it is (or will be) perfectly safe in every respect. Its distance from any power lines is greater than its height. It will be erected by hams who really know what they're doing, or better yet, by professionals. Its configuration can be documented by a professional engineer if required (more on that later). Your property does not come under any restrictive covenants that clearly prohibit amateur radio towers. If you live in a CC&R (covenants, conditions, and restrictions) environment, I don't think this article can help you. Should you be seeking the perfect ham radio QTH, I'm sure you already know to beware of any such restrictions. I went through that process a few short years ago and did find what I considered the near perfect location to build a new home with amateur radio a prime consideration (fig. 2).

Fig. 1– The author's 100-ft. rotating tower, the subject of this article. Majestic, isn't it? (Photo by KB1LN)

Do I Need a Permit?

The obvious technical answer is: "Of course you do, knucklehead!" Any lawyer will tell you that. But don't you know hams who simply have put up an

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antenna tower without any repercussions? I know several. My guess is that 50% of amateur towers are, let's say, not quite legal.

If you contemplate putting up an amateur radio tower, that's probably the first question you will have to answer: Do I get a building permit? You can't press the "easy button" on this one. The answer will depend on a lot of factors. Every case is different. Here are a couple of examples that may guide you.

Scenario #1: You live (or contemplate buying) in a housing development or neighborhood of houses built on quarter-, half-, or even acre-size lots. You can see some of the other houses. Decision: You had better contemplate getting a permit prior to tower installation.

Scenario #2: The property in question is high on a hill hidden in the woods on a private drive leading to your ham radio heaven of 5-plus acres. You can barely see other residences through the trees. This aptly describes the property my wife and I purchased on which to build a retirement home complete with a beautiful amateur radio tower with HF and VHF antennas. After consultation with knowledgeable hams in the area (we were relocating from a different state), we adopted the "erect first and (if necessary) apologize later" approach. In most cases, I believe it would have worked. Unfortunately, things backfired for us. More on that later.

Know the Regulations

Regardless of which approach you take, knowing your local town ordinances prior to taking any action or making any decisions with regard to towers is a must. Many cities and towns now post ordinances online, which makes your research job somewhat easier. If they don't, put on a disguise (I'm only half joking here), or send someone to the town hall to pick up a complete copy of the building regulations without letting on why you want them. Paranoid? Maybe so, but going to officialdom with all the wrong questions from the outset could shoot you down before you have even started.

You have accessed your town's Building Code. Here's where you may need some professional help in interpreting the Building Code. I actually did that and still felt safe proceeding to "erect first." You will find copious references to cellular towers. They do not apply. Study every part of the Building Code. The saving grace in my particular situation was tucked away in a section dealing with church steeples and

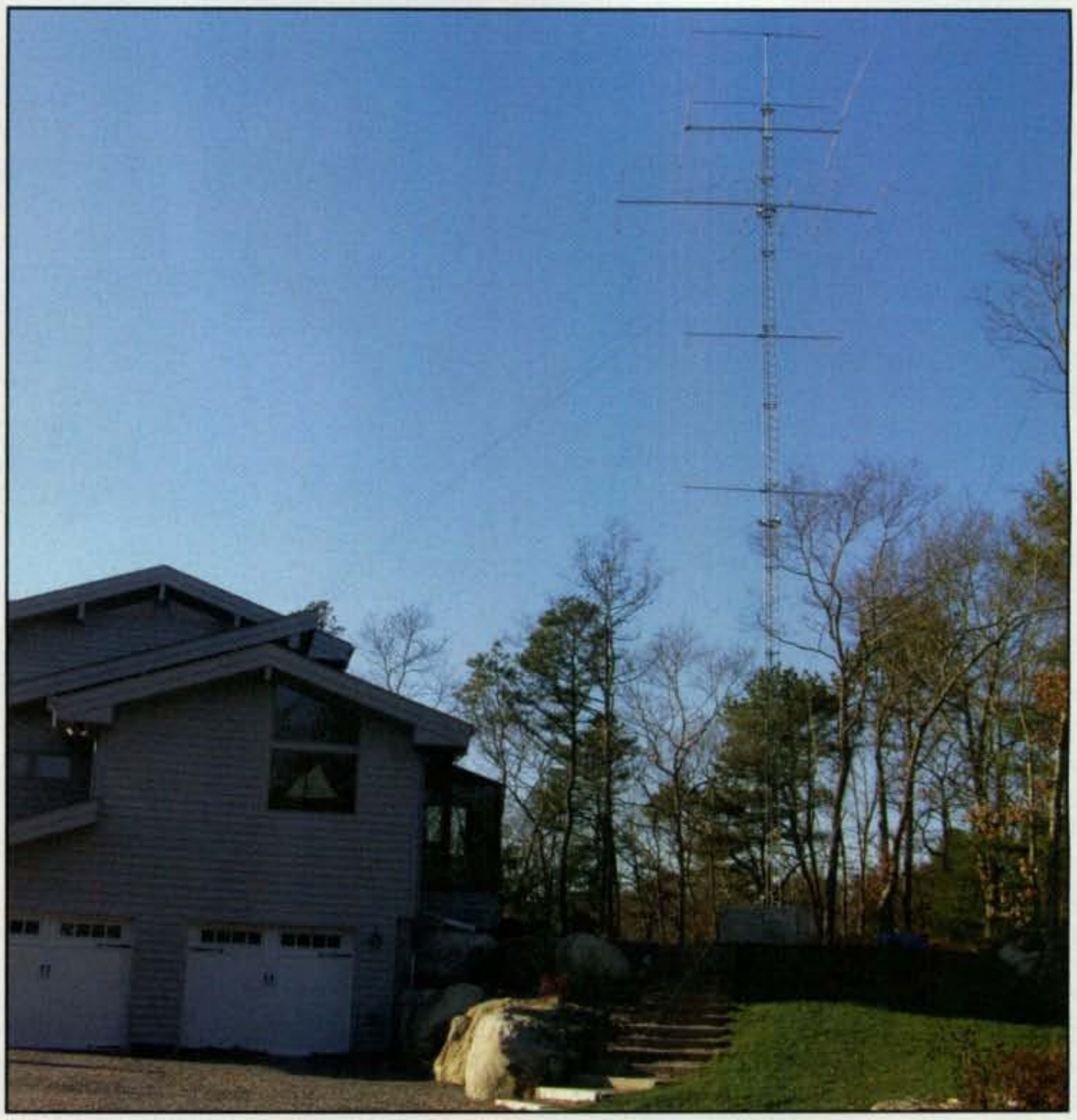

Fig. 2– W1XX's new home was built with ham radio in mind and his tower is well-shielded from view by the neighbors … except from another hilltop a half-mile away in the next town. (Photo by N1CX)

barn silos, the significance of which I did not recognize at the outset. I subsequently learned this from the town's Building Official (in many jurisdictions referred to as the Building Inspector). How cool was that?

You probably will find that there is a height limit to any structure, including ham towers. In my area it's 35 feet. If you can live with that, you should have no further problem. If you have loftier goals, as did I, read on, Macduff.

When Your Tower is Not a Tower

The word *tower* conjures up all the wrong images to the uninitiated. In ham radio, we know it's a beautiful thing. However, say the word *tower* to any city official and images of cellular phone, broadcast radio, and TV and commercial two-way radio behemoths come to mind. "You want to put up a tower in a residential neighborhood in this town? Are you joking?" Delete the offensive word from your vocabulary whenever speaking to officials. Refer to it in all future official dealings as an *antenna support structure,* but we will continue to call it a tower here for purposes of clarity and saving print space.

My Personal Saga Continues: Time to Apologize

My tower went vertical in early June 2006 situated on a pad of five cubic yards of concrete. Each of the guy anchors was secured in a cubic yard of concrete with a rebar cage, as specified in the manufacturer's engineering drawings—i.e., all according to Hoyle. It sat vacant for over a month and drew no attention except from me as I gazed lovingly at it daily. During the lull, I was busy in my garage putting together the tri-band beam, 40-meter 2-element Yagi, and stacked beams for 6 and 2 meters. The antennas were installed in July.

Hours, days, and months of DXing and contesting bliss followed, until one day a certified letter arrived in the mail from the town's Building Official. Uh oh, trouble in River City!

From a veritable precipice over a half-mile away in the next town, my tower

was visible and had violated someone's sense of aesthetics ... a clear case of NIMBY (not in my back yard). Here's the short version of what happened next: The Building Official accepted my tardy apology and application for a building permit and advised the complainers that I was well within my rights; but they appealed to the Zoning Board of Review (ZBR), which scheduled a public hearing. That triggered the realization that a full-scale defense would have to be undertaken.

Back to Your Situation: Do You Wave PRB-1 in Someone's Face?

You have studied and fully understand the local Building Codes. You have found the supporting paragraphs and are ready to apply for a building permit. Determine the parameters of the potential minefield you now have to negotiate. Try not to ask questions for which you do not already have the answers. Prime objective: getting a building permit from your town's building department. If it's going to be a no-hassle experience, you may need only a minimum of documentation—an engineer's or manufacturer's drawing, copy of your license, plot plan, cost estimate, and whatever your Building Official requires for any construction project.

Let's talk about PRB-1, the FCC limited preemption of local ordinances, mandating a "reasonable accommodation with minimum regulation" with regard to amateur antenna and tower installations, now ensconced in Section 97.15(b) of the FCC rules. It, along with the 23 states that have adopted similar language (my state had not), is a nice arrow to have in your quiver, but subject to significant interpretation and thus significant litigation if necessary. Go to <http://www.arrl.org> and bone up on PRB-1. You will probably want to provide a copy of the conclusions (short version) of PRB-1 when applying for your building permit. However, waving it in the official's face with impetuous demands is a no-no. Good manners will do much better.

A bureaucrat must, of necessity, cover his or her fanny with whatever documentation is required to justify issuance of a building permit. The Building Official is not really out to give you a hard time (it will only seem that way!). Approving amateur radio antenna tower installations is not an everyday occurrence. It may raise all sorts of red flags at city hall. It's up to you to provide beaucoup documentation to bolster the decision to issue the permit.

48 SHANNOCK ROAD — SUBMITTED BY JOHN LINDHOLM

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

TOWN OF SOUTH KINGSTOWN
ZONING BOARD OF REVIEW

SUPPLEMENTAL INFORMATION
IN SUPPORT OF THE FINDING
BY THE
ZONING ENFORCEMENT OFFICER
AND
SUPPLEMENT TO AN APPLICATION
FOR A BUILDING PERMIT UNDER
§502.03

PLAT 78-1, LOT 3

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APRIL 11, 2007

Fig. 3– The supplement to the application for the tower's building permit. This is the 59-page document that saved the tower.

At some point it will become obvious that it's either clear sailing for your tower to go legally vertical or that a protracted struggle lies ahead. We always hope for the former. In my case, notification of a formal zoning hearing signaled the latter. What follows will outline steps to be taken when your tower (or potential tower) is under legal attack.

Do I Hire a Lawyer?

Your predicament at this stage is one of the following: (1) The Building Official is balking at issuing the permit for whatever reason, or simply requiring more documentation; (2) The Building Official has already rejected your application for a building permit; (3) There is some citizen outcry blocking permit issuance; (4) A Zoning Board meeting is scheduled to hear the merits of your application. It may be some combination of the above.

Before you proceed further, you must be prepared to go "all the way"—an all-out battle. The legal struggle that may follow could cost you as much as, or more than, the tower installation itself! Never let on to anyone that you are not committed to see this through to victory. Imply that you'll go bankrupt before you surrender! Even if you do not have a large bank account (I will show you how to keep your costs reasonably in check), always project a determined persona.

An all-encompassing treatise in support of your tower application needs to be written. It will be lengthy and cover every issue and potential objection to your tower installation. It will require many hours to compose. Being essentially a legal document, it will require professional supervision to produce. Who is going to write it?

Before that is determined, you need to do some more research:

Step 1: Purchase from your favorite bookstore (and study), the ARRL publication *Antenna Zoning for the Radio Amateur*, by Fred Hopengarten, K1VR. Fred is a communications law attorney and has written the definitive book on the subject.

Step 2: Contact the closest ARRL Volunteer Counsel (see the ARRL website), who will give you a free initial consultation on your situation; more on this to follow.

Following steps 1 and 2, you may see the task before you appears monumental. Do not despair. All good things come to those who have the right approach, but you will now have to determine if you need to retain a lawyer.

Besides pocketbook issues, the severity of the opposition will play a role. Advice: If you really want a tower to your specifications, don't go cheap! Remember, the objective now is to produce a supplement to your building permit application, or, what I call the "killer document." Here are some probable scenarios.

Scenario #1: Your funds are severely limited. Write the supplement yourself, relying heavily on the Hopengarten book. This is not recommended unless it's your only option. Hopefully, the opposition to your tower is not strong.

Scenario #2: You have good writing skills and retain either the VC or a local attorney to oversee your writing of the supplement. This will save you considerable cost while getting professional direction. This was the approach I took.

Scenario #3: Turn the matter over entirely to an attorney to represent you. Obviously, this will be the costliest approach and—believe it or not—perhaps not the best.

Let's talk a bit more about retaining an attorney. First of all, keep in mind the VC is a ham and understands antenna zoning. He (or she) does it for a living. Thus, beyond the initial consultation, advice is not free. Expect to pay an initial retainer to cover his expenses and time that may run up to $200 per hour or more. Is it better to hire a local attorney, who may be cheaper? Others in this situation have suggested that bringing in a local attorney not well versed in amateur radio antenna zoning matters can be counterproductive, as it will take

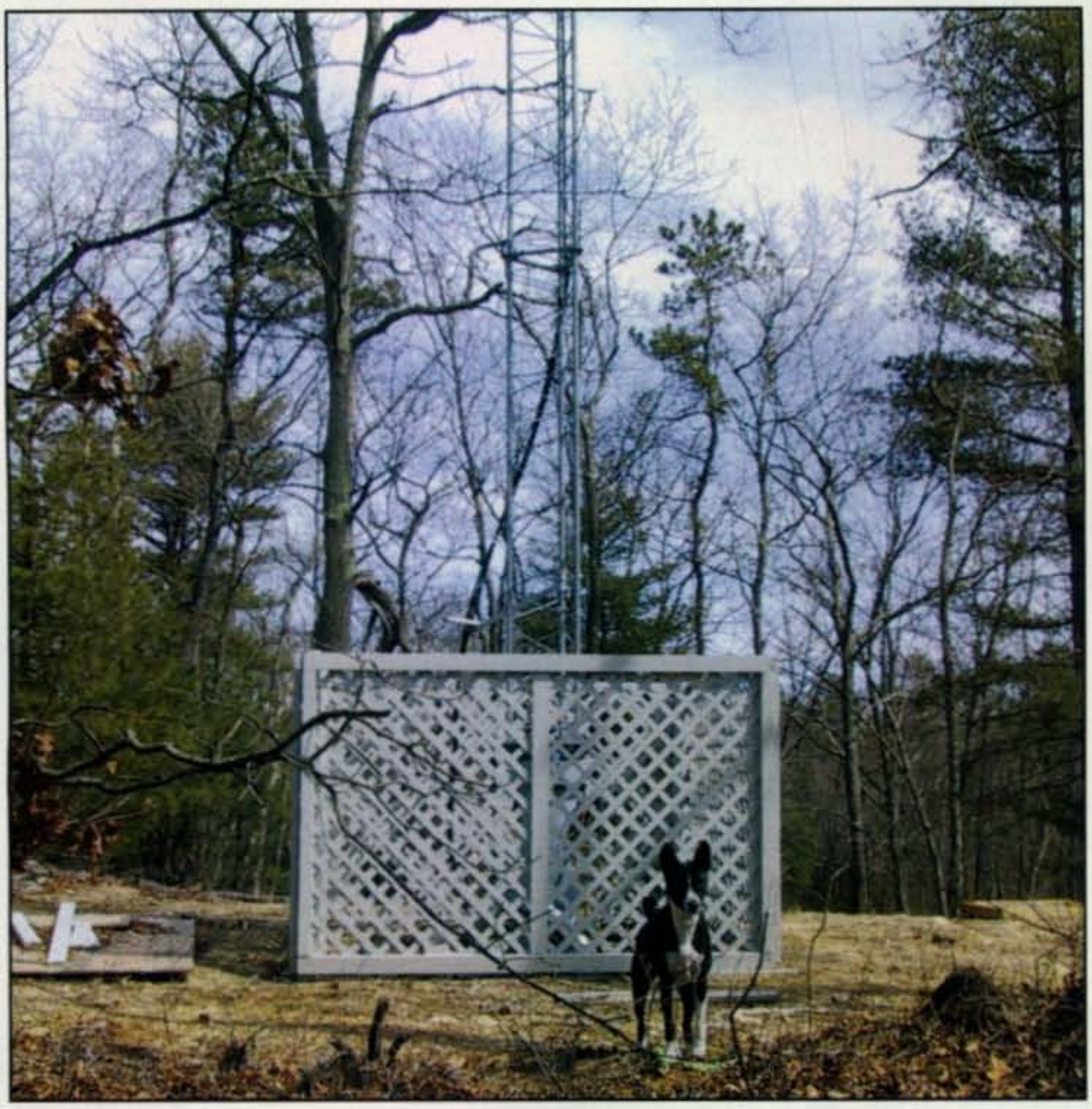


Fig. 4– The author's ferocious dog guarding the tower from intruders. Note that the fence serves as an anti-climbing device. (Photo by KB1LN)

time for you to bring him up to speed. On the other hand, a local attorney may have considerable political sway. Hiring an out-of-town legal expert may be negatively perceived as a "gunslinger." It's a determination you will have to make.

It's Time to Write The "Killer" Document

For both economic reasons and confidence in my own ability to write a cogent sentence, I chose scenario #2: I would write the document (see fig. 3) under the watchful eye (via e-mail) of a paid professional. This would be a full-time job for over two weeks and the most important "term paper" (ham radio-wise) that I had ever authored. Let's outline the format and issues one by one that need to be addressed, referencing supportive exhibits (Exhibit A, etc.).

Title Page: States the area of jurisdiction, controlling ordinance, your name and address, date.

Table of Contents

Executive Summary: In no more than two pages, state the essence of the case and the relief sought.

Zoning Compliance: If applicable, detail the relevant zoning ordinance with which your application for a tower is compliant.

Reference the Communications Act of 1996: Pray that your opposition fumbles by attempting to shoot you down on the basis of the limited preemption of local zoning contained in the Communications Act of 1996. The term *personal wireless services*, contained therein, refers by definition to commercial services. It does not apply to amateur radio.

Description of the System: Describe the antenna support structure and antennas in detail. Give a simple explanation of the physics of radio propagation that determined the tower height. Provide exhibits from the manufacturer on wind loading and proper installation. Describe visual impact with maps annotated with distances to lot-line setbacks and nearest neighbors.

Safety Issues: Your insurance agent should be able to provide you with a letter that your standard homeowner's policy provides liability coverage due to failure of an amateur radio antenna sys-

Randall REALTORS® GMAC Real Estate

Box 422, Old Post Road, Charlestown, RI 02813 Telephone (401) 364-3388 Fax (401) 364-2040

April 5, 2007

To Whom It May Concern;

RE: 48 Shannock Road, South Kingstown, RI

The following research has been done to determine if the presence of radio towers in the Shannock Road neighborhood has had a negative impact on property values.
I have researched real estate sales in South Kingstown in the period of January 1, 2004 -April 1, 2007. The year 2004 was selected based on the year the subject property with the tower in question was built. This was to ensure the analysis is a window on the market place for property that could have been affected by the presence of a radio tower at 48 Shannock Road. The research analyzes two segments of the single family real estate market in South Kingstown. They are:

1. All single family sales in South Kingstown 1/1/04-4/1/07.
   1008 sales are recorded
2. All single family sales in the neighborhood of the tall Verizon commercial radio tower and 48 Shannock Road tower. The streets included are:
   Lab Hill Rd, Estampes Ct, Whippoowill Dr, Windwood Valley Rd, Lee Rd, Shannock Rd, Iacuele Dr.
   11 sales are recorded

The analysis of the data (1.) above show that the average property sold at 95.5% of the asking price and took 87 days on the market to sell.
The analysis of the data (2) above show that the average property in this group sold at 97.1% of the asking price and took 86 days on the market to sell.

Further research of single family property values in the immediate area of the Verizon and 48 Shannock Road towers reveals that the South Kingstown Assessor's recent re-valuation completed, 3/16/07, indicate an average 21% increase in assessments.

Based on the data and my knowledge of the market it is my opinion the presence of the radio towers has not had a negative impact on property value. In fact, the market group "2" in the tower's neighborhood experienced a slightly higher selling price and shorter days on market than the general South Kingstown marketplace.

In my professional opinion, in the cases sited, the presence of a radio tower has not affected property values negatively.

I am a broker licensed since 1973, a member of the National Association of Realtors, with GRI and CBR designations.

Faith LaBossiere
Associate Broker License # B13168
Randall Realtors, GMAC

241 Post Road, Westerly, RI 02891, (401) 322-0357 · 23 Brown Street, North Kingstown, RI 02852, (401) 294-4000 · 235 Main Street, Wakefield, RI 02879, (401) 783-9611

Fig. 5– Exhibit X was the real estate broker's market analysis of neighborhood properties. It showed that the presence of an amateur radio tower has no effect on property values. An SASE to the author will get you a copy.

tem structure, without additional premium. In addition, include a photo of a standard "anti-climbing device" to be used to discourage any inquisitive neighborhood children (see fig. 4).

Potential for Radio Interference: The question of potential for RFI has been completely preempted by federal law with exclusive jurisdiction reserved to the FCC. State or local law has no standing in such matters. It is wise, however, to point out that you are the good-guy radio amateur who pledges to cooperate with any affected individual.

Environmental Effects: Contrast amateur intermittent operation of over 50% listening to commercial broadcast. Based on your power output, after feedline losses, calculate the worst-case scenario power density at your nearest neighbor as a percentage of the American National Standards Institute (ANSI). Mine was a mere 2.975%. Contact Ed Parsons, K1TR, for his PWR_DENS V3.0 calculation program, or use the on-line calculator from Ken Harker, WM5R, found at <http://n5xu.ae.utexas.edu/rfsafety/>. Point out that the higher the antenna, the lower the exposure. And finally, point out that on FCC Form 605 used to obtain or renew a license, one must certify the following: "Amateur Applicant certifies that the construction of the station would NOT be an action that is likely to have a significant environmental effect."

Property Values: I requested a professional market analysis by a respected real estate broker in my area, the conclusion of which was that the pres-

ence of a radio tower does not negatively affect property values. (See fig. 5, copies available for an SASE.)

Federal Preemption, PRB-1: You will need some professional guidance here as you point out in detail the significance of PRB-1, citing extensive precedent-setting case law that supports your position. Your objective here is to show that not only is your tower reasonable and permitted by the law, but that any attempt to deny your rights will be met with severe retribution! (Read: "I'll sue the pants off you!) Rely heavily on the Hopengarten book to quote case-law excerpts verbatim.

Conclusion: State the desired action.

Exhibits

Include all the supporting documents of the above points in chronological order, plus the following:

- A copy of your amateur radio license.
- Your amateur radio resume. Make sure this includes membership and credentials in your local Amateur Radio Emergency Service or Emergency Management affiliation.
- TOWAIR Determination Results. Use Google© or another search engine to determine whether FCC or FAA registration is required.
- Press reports on amateur radio in Hurricane Katrina, etc.
- A site plan.
- Letters of support from abutting neighbors. Don't shy away from visiting abutting neighbors with a form letter in hand for their signatures. Point out the positive aspects of your emergency communications capability, an asset to the community. I was pleasantly surprised by the warm reception I received from neighbors, many of whom I had never met.
- Any other documents pertinent to your particular situation.

My killer document weighed in at a total of 59 pages, including exhibits A through Y. Yours might require even more. Take it in CD format to your local printer to make as many plastic-ring bound copies as may be needed. If a zoning hearing is on your calendar, distribute to each commissioner and any ex-officio participants at least a week before the hearing.

Zoning Hearing

A zoning hearing will require a formal presentation either well-rehearsed by you or by your attorney. A PowerPoint© presentation will focus on the key points. Project a friendly but knowl-

edgeable command of the subject and determination in your quest, but keep it short. Enlist support from your local amateur radio community to attend, as you are a test case for their tower aspirations, but no bizarre hats with blinking lights and rotating miniature antennas in the audience! Exhibit support with reserved decorum. Have a couple of well-spoken amateurs briefly present support on a single issue, such as the value of emergency communications to the community.

The Happy Ending to My Story

After my killer document had been completed and distributed to the members of the Zoning Board well prior to the hearing date, my consulting attorney directed I give a copy to the complainants a day in advance of the hearing. "No, I don't want to do that!" Case in point: Listen to professional advice. Reluctantly complying, the evening of the hearing came with a full audience of supportive hams from all over the state. It seemed like a hamfest, except no funny hats! We were number two on the agenda.

Numero uno seemed like a perfectly reasonable request to put up a cellular tower on commercial property. But no ... denied! It was not looking good. Then, however, redemption for all the hard work. Upon reading the strength of the arguments for the tower, the complainants sent word that their objection was withdrawn. Hallelujah! Procedurally, the matter was withdrawn with prejudice, meaning it could not be resurrected. Great rejoicing with ham friends followed outside.

In due course, the building permit was issued, the site inspected and found in compliance, and a final use permit issued. "Hello DX on 20 meters!"

Mega Thanks

This success story could not have been written without the help of many others. They include: my lovely, supportive, wife Carolyn; Fred Hopengarten, Esq., K1VR, who reviewed the draft of my application supplement and this article; the CTRI Contest Group; Rhode Island ARES; Kevin Gallup, Director Charlestown (RI) Emergency Management; Matt Strelow, KC1XX, President XX Towers; Faith LaBossiere, Associate Broker, Randall Realtors, GMAC; my dog Ito, who posed in front of photographs of the tower; Bobby Rogers, KB1LN, photographer; and radio amateurs everywhere who provide emergency radio communications capability.

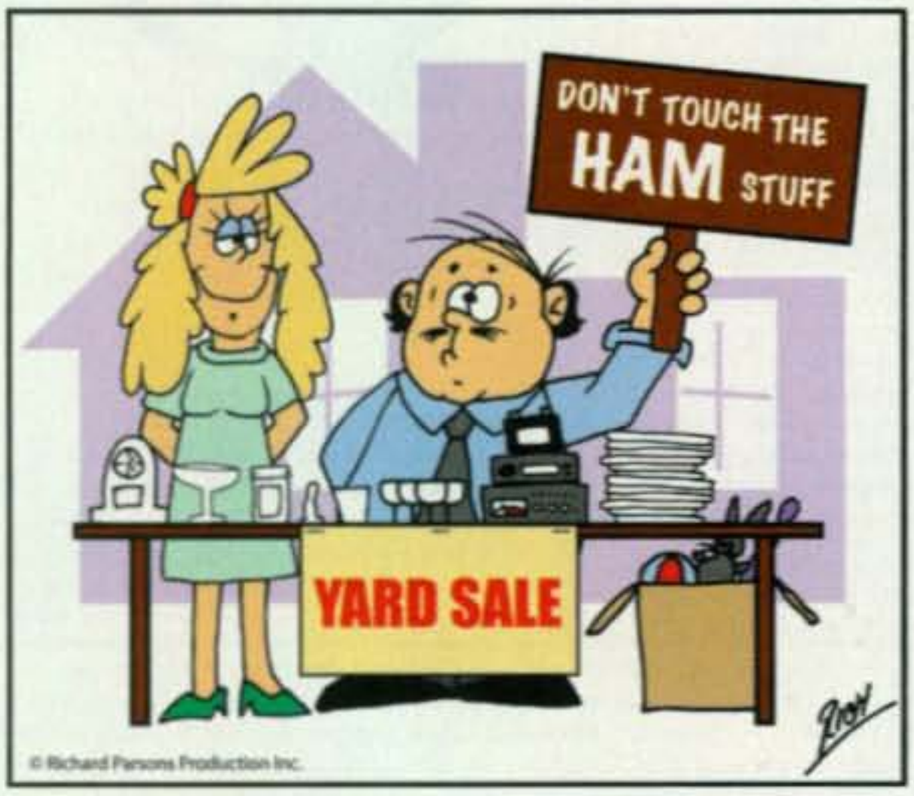
I hope my experiences help other tower aspirants navigate the sometimes torturous path to their own tower story of success.

Introducing Stan ... He's "Such a Ham!"

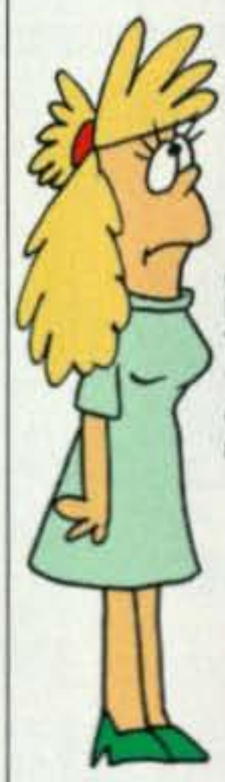
This month, we're pleased to introduce a new series of cartoons to the pages of *CQ*, authored by graphic artist Richard Parsons, VE2WGH. Richard has worked as a graphic artist and art director for the past 15 years, and in his spare time has developed cartoons for magazines and newspapers from his home office. He's been a ham since 2005, discovering amateur radio as an outgrowth of another hobby, camping. "During camping trips, communication was always a problem," Richard notes, adding, "Ham radio was my 'ticket' for getting in touch with the outside world ... Since then, I have discovered the great world of ham radio and what a great world it is."

To get us started, we not only have Richard's first cartoon this month, but a handy guide to "who's who" in "Such a Ham"-land. We welcome Richard, Stan, Mavis, Clifford, and Mary to the pages of *CQ*.

SUCH A HAM SH-003



Meet Stan,
This HAM operator gets in more trouble with his favorite hobby than most of us would like to admit.
Who knows, you might even find a bit of youreself in Stan...



And this is Stan's better half, Mavis.
This perfectly grounded tower of strength is ready for any situation her #1 HAM might encounter.

Within simplex range is Clifford, Stan's best buddy. When these two are together they sometimes forget about life, and radio is all that matters.

Mary is Clifford's wife.
This couple achieve a perfect 1:1 match... until Stan gets involved.

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Little Tarheel II

200 Watts P.E.P.
3.5 Mhz - 54.0 Mhz
1 ¼" coil
16" base
1.9 Lbs.

this antenna is easily installed on a trunk, door, or rear hatch.

Available in Black, White, Red, Blue, and Silver

48" tall on 54.0 Mhz w/ 32" whip
54" tall on 3.5 Mhz w/ 32" whip

Buy the Package and Save!!

Package includes:

Antenna	20' Control Cable
MT-1 Mount	3/8x24 Stud
6' Whip	21' RG-8X Coax
Ferrite Core	Fuse Holder w/Fuse
Coax Seal	Dielectric Grease

Quick Disconnect for Whip
Manual UP/DOWN Switch

Model 75
10-80 Mtrs.
250 watts P.E.P.
$389

Model 100A-HP
10-80 Mtrs.
1.5 Kw P.E.P.
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Model 200A-HP
10-80 Mtrs.
1.5 Kw P.E.P.
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10-160 Mtrs.
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Summertime, and the E-skip is rolling, so we thought this would be a good time to share W4YO's story and to help you get on "the magic band" with a low-cost, easy-to-conceal antenna.

Six Meters at Last . . .

or How I Overcame CC&Rs and Made an Old Wish Come True!

BY EDMUN B. RICHMOND,* W4YO

After 51 and a half years as a licensed ham, I finally got on 6 meters! It all came about when I decided to take my trusty, venerable, 1980-era Yaesu FT-107 out of service. In its place, I purchased a more modern, technologically relevant, HF plus 6 meters transceiver, an FT-920. I've always been interested in DXing, and in my younger days as an amateur, I used to wish I could get on both 160 and 6 meters. Back in the 1950s, I considered those two bands to be the extremes of the DX world. The times and technology certainly have changed since then. I actually had been hamming on 160 meters since the early 1980s, when I lived in the Atlanta area; now I was going to try 6 meters with my new 920. After all these years, my wish was going to come true.

Photo A– The 6-meter dipole in the attic. It's so tight up there, I had to hold onto a rafter for dear life and hope I pointed the camera in the right direction. (Photos courtesy of the author)

It All Started with Television

The thing that stoked my interest in VHF began in the mid-1950s before I was even licensed. At that time I lived in Lakeland, Florida. We didn't have many TV stations available to us in those days, just channel 6 in Orlando and channels 8 and 13 in Tampa. On a good day we might be able to see channel 2 in Daytona, and even channel 4 from Jacksonville, but they were both considered fringe-area reception and were not reliable for viewing on a regular day-to-day basis. In the summer of 1954, however, I was surprised to see that the lower TV channels, 2 through 6, had all sorts of audio and video images, lasting from a few minutes to several hours. But from where were these signals coming? They certainly weren't local! Languages in these transmissions included English, French, and Spanish. Sometimes there were so many stations coming in on one channel that the images were intertwined and blurred with accompanying raucous sync-buzzes. At other times the video was from one station, and the audio was from another. I had discovered the world of sporadic-*E* and tropospheric propagation on these frequencies!

With great amazement and excitement, I sat down in front of the TV, mounted my Speed Graphic camera on a tripod, and started to photograph the ID slides of all these stations as they paraded across the screen. I was receiving signals from the Caribbean, across the Gulf of Mexico, and all up and down the eastern seaboard and midwestern states and Canada.

I finally received my ham ticket in January 1956 and started DXing on the

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e-mail: <w4yo@arrl.net>

Photo B– A view from my house through the oak trees toward the west, across Harbor Island and onto St. Helena Sound, with St. Helena Island in the background. (If you look closely in the middle of the photo, down toward the lower half, you can see what looks like a vertical brown stick. That is the camouflaged Gap Eagle antenna that I use for the HF bands.)

HF bands, never really considering any VHF activity. However, my interest in 6 meters was still there, encouraged by my experiences with TV DXing. That interest also led to my reading the monthly VHF columns in *CQ* and *QST*, even though I didn't work those bands.

So here I was, in June of 2007, with a chance to get on 6. With the fact that the sunspot cycle is at its lowest ebb, HF conditions are lousy, and I had worked all DXCC entities except North Korea, I wanted something new.

In 2001, we had moved from the Atlanta area to Harbor Island, a small barrier island about 14 miles out in the Atlantic Ocean, near Beaufort, South Carolina. Unfortunately, the community in which we live has a case of the ubiquitous CC&R[1] disease, so that meant no tower for a beam. My yard has a lot of oak trees, but being 74 years old, I'm no longer as agile as I once was, and climbing around limbs and doing a balancing act to snake an antenna through all those limbs was out of the question. I therefore had to build an antenna in the attic of our home (see photo A). Luckily, the houses here are pretty high due to their proximity to the water, and by local building code are built up on pilings. My QTH sits at the edge of a salt-water marsh that looks out onto the Atlantic (photos B and C). Nice take-off in all directions.

The roof of the house is 40 feet high, certainly high enough for an antenna. However, my attic is not an easy place in which to move around. This is mainly due to the construction of the house, with a high-pitched roof and high-pitched ceiling in the master bedroom. The attic area is layered with abundant insulation, HVAC (heating, ventilation, and air conditioning) ducting, electrical wiring, roof trusses, and other bracings, along with a very small area in which to actually stand upright. The combination makes climbing around up there something like an acrobat working a trapeze but with little room to swing around or maintain balance. Actually, that's about the same problem I would have had in the oak trees!

This configuration left me with one choice—a dipole. However, with that choice came two immediate problems —how to support the dipole in such lim-

Photo C– This is the salt marsh in front of house, looking southeast, with Atlantic Ocean breakers in the background. Living over a salt marsh, with an unobstructed ocean view, certainly has its advantages when it comes to 6-meter DXing.

ited space, and how to climb up to a point where I could eventually mount the dipole. It was time for some thought and some fancy engineering.

There was no way I could string a wire dipole from rafter to rafter or from one end of the attic to the other. I couldn't even mount it as an inverted-Vee. The dipole, then, had to be rigid. I didn't have any long pieces of aluminum tubing, so I cut my dipole using some wire I had in the storage room and attached it to a 4:1 balun. Then I took a length of electrician's PVC conduit I had, taped the wire of the dipole to the conduit, and attached the balun to the center point of the conduit with a bolt. Now I could stand in one position in the attic and move the dipole in an appropriate direction according to the orientation of the rafter trusses. It was like using a fishing rod.

First, however, I had to build some sort of platform on which the antenna could rest so the PVC wouldn't sag under the weight of the balun and coax. Getting up on the higher members of the rafter trusses also required that I build a small ladder on the high-pitched ceiling joists. I nailed some wood across two joists, used them as steps, and climbed up as far as I could. I hoisted a length of 1×6×8 lumber horizontally over two parallel truss members at about the 35-foot level, and then simply raised the antenna and laid it on top of that length of lumber. The whole project took about an hour. The antenna was in place and I didn't damage myself in the process! I routed the coax to my shack, hooked it up, and was ready to go.

Starting with a Bang

I hit the band on Saturday, June 16th, which, as luck would have it, was right in the middle of the SMIRK[2] contest weekend, which meant lots of activity. My first 6-meter QSO was with NP4A. Wow, only 99 more to go for DXCC on 6! We had excellent sporadic-*E* skip conditions, and by the end of the weekend I had logged more QSOs on 6 meters than I had made in the last six months on HF!

Two and a half months have passed since I made my first contact on the Magic Band, and my indoor dipole has netted me well over 100 grids, 44 states, and 23 countries, including three in Europe. My farthest QSO was with MMØAMW in Scotland, nearly 4000 miles away, on a path completely over water. I've worked some tropo, lots of *Es,* and made 26 double-hop QSOs into the western United States. One noteworthy contact was with XE3ARV. Back in 1983, I had worked him for my first contact with Mexico on 160, and then worked him again this June for my first with Mexico on 6!

At the time of this writing (the end of August), the *Es* season has slowed down, and after several small openings in the latter part of the month, it seems to have ground to a halt, at least at my QTH. Nevertheless, I check the band daily and occasionally put out a CQ on 50.125, but it appears that the summer *Es* season is now just a pleasant memory. More important, however, my wish to be on 6 had indeed come true after all these years.

I still get on the HF bands and work my share of DX and certainly have enjoyed my first excursion onto 6 meters, even to the extent of catching up on the latest research on propagation modes at these and higher frequencies. I'm still waiting for that big opening into KH6 and KL7, and I am also waiting for the *F2* season to begin. Even the new sunspot cycle to come will bring much anticipation for several years. You know, maybe I'll even try some 2 meters in the future. I think I've been bitten!

Notes

1. CC&Rs are "Conditions, Covenants and Restrictions," limitations often placed on owners of homes in planned communities and developments overseen by a neighborhood association. Many CC&Rs restrict or even ban amateur antennas.

2. SMIRK is the Six Meter International Radio Klub. More information on the club and its activities can be found at <http://www.smirk.org>.

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MFJ *IntelliTuner*™ Automatic Tuners

The MFJ-993B *IntelliTuner*™ lets you tune any antenna *automatically -- ultra fast.*

It's a comprehensive automatic *antenna tuning center* complete with SWR/Wattmeter, antenna switch for two antennas and 4:1 current balun for balanced lines.

MFJ's exclusive *IntelliTuner*™, *Adaptive Search*™ and *Instant Recall*™ algorithms give you *ultra fast* automatic tuning with over 20,000 *VirtualAntenna*™ Memories.

You get a highly efficient L-network, 6-1600 ohm matching at 300 Watts SSB/CW or *extra-wide* 6-3200 Ohm matching at 150 Watts SSB/CW, 1.8-30 MHz coverage, Cross-Needle *and* digital meters, audio SWR meter, *backlit* LCD, remote control port, radio interface, heavy-duty 16 amp/1000V relays.

MFJ-993B **$259.95**

The MFJ-993B automatically tunes for minimum SWR and remembers your frequency and tuner settings. The next time you operate on that frequency and antenna, these tuner settings are instantly restored and *you're ready to operate in milliseconds!* 10W x2¾ Hx9D". Use 12-15 VDC/1 amp or 110 VAC with **MFJ-1316, $21.95**. Radio interface cables, remote control available. See ***www.mfjenterprises.com***

600 Watt MFJ Automatic Tuner

MFJ-994B **$359.95**

Like MFJ-993B but handles 600 Watts SSB /CW, matches 12-800 Ohms. 10,000 memories. Does not have LCD display, antenna switch, 4:1 current balun, audio SWR meter/feedback. 10Wx2¾Hx9D in.

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Every MFJ tuner is protected by MFJ's famous one year *No Matter What*™ limited warranty. We will repair or replace your MFJ tuner (at our option) for a full year.

More hams use MFJ tuners than all other tuners in the world!

MFJ-9982 *2500 Watt* Tuner

MFJ-9982 **$699.95**

The MFJ-9982 *ContinuousCarrier*™ antenna tuner handles 2500 Watts *continuous carrier* output on all modes and all HF bands into most unbalanced antennas -- even 160 Meters. 6-position antenna switch, 4-core balun, 1.5kW dummy load, true *peak/average* SWR/Wattmeter, 13¾Wx7Hx6¼D".

MFJ-989D *Legal Limit* Tuner

MFJ-989D **$389.95**

New, improved MFJ-989D *legal limit* antenna tuner gives you better efficiency, lower losses and a new *true* peak reading meter. Easily handles *full* 1500 Watts SSB/CW, 1.8-30 MHz, including MARS/WARC bands. Six position antenna switch, dummy load. *New* 500 pF air variable capacitors. *New* improved *AirCore*™ Roller Inductor. *New* high voltage current balun. *New* crank knob. 12⅞Wx6Hx11⅝D".

MFJ-962D *compact* kW Tuner

MFJ-962D **$299.95**

A few more dollars steps you up to a KW tuner for an amp later. Handles 1.5 KW PEP SSB amplifier input power (800W output). Ideal for Ameritron's AL-811H! *AirCore*™ roller inductor, gear-driven turns counter, pk/avg lighted Cross-Needle SWR/Wattmeter, antenna switch, balun, Lexan front, 1.8-30MHz. 10¾Wx4½Hx10⅞D in.

MFJ-969 300W *Roller Inductor* Tuner

Superb *AirCore*™ Roller Inductor tuning. Covers *6 Meters* thru 160 Meters! 300 Watts PEP SSB. *Active* true peak reading lighted Cross-Needle SWR Wattmeter, *QRM-Free PreTune*™, antenna switch, dummy load, 4:1 balun, Lexan front panel. 10½Wx3½Hx9½D inches.

MFJ-969 **$219.95**

MFJ-949E *deluxe* 300 Watt Tuner

***More** hams use MFJ-949s than any other antenna tuner in the world!* Handles 300 Watts. Full 1.8 to 30 MHz coverage, custom inductor switch, 1000 Volt tuning capacitors, *full size* peak/average lighted Cross-Needle SWR/ Wattmeter, 8 position antenna switch, dummy load, *QRM-Free PreTune*™, scratch proof Lexan front panel. 10⅝Wx3½Hx7D inches.

MFJ-949E **$179.95**

MFJ-948, $159.95. Economy version of MFJ-949E, less dummy load, Lexan front panel.

MFJ-941E *super value* Tuner

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

MFJ-941E **$139.95**

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

Extends your mobile antenna bandwidth so you don't have to stop, go outside and adjust your antenna. Tiny 8Wx2Hx6D in. *Lighted* Cross-Needle SWR/Wattmeter. Lamp and bypass switches. Covers 1.8-30 MHz *and* 6 Meters. 300 Watts PEP. **MFJ-20, $6.95,** mobile mount.

MFJ-945E **$129.95**

MFJ-974HB *Balanced Line* Tuner

The MFJ-974HB *true* fully balanced antenna tuner tunes any balanced lines. Matches 12-2000 Ohms. Covers 1.8-54 MHz *continuously* including all WARC bands. 300 Watts SSB/150 Watts CW. Lighted Cross-Needle SWR/Wattmeter. 7½Wx6Hx8D in.

MFJ-974HB **$209.95**

MFJ-976, $499.95. 1500 Watt *fully balanced* antenna tuner. 1-30 MHz.

MFJ-971 *portable/QRP* Tuner

Tunes coax, balanced lines, random wire 1.8-30 MHz. Cross-Needle Meter. SWR, 30/300 or 6 Watt QRP ranges. Matches popular MFJ transceivers. 6Wx6½Hx2½D in.

MFJ-971 **$119.95**

MFJ-902 *Tiny Travel* Tuner

Tiny 4½Wx2¼Hx3D", full 150 Watts, 80-10 Meters, has tuner bypass switch, for coax/random wire.

MFJ-902 **$99.95**

MFJ-904H, $149.95. Same but adds Cross-needle SWR/Wattmeter and 4:1 balun for balanced lines. 7¼Wx2¼Hx2¾D in.

MFJ-16010 *random wire* Tuner

Operate all bands anywhere with MFJ's reversible L-network. Turns random wire into powerful transmitting antenna. 1.8-30 MHz. 200 Watts PEP. Tiny 2Wx3Hx4D inches.

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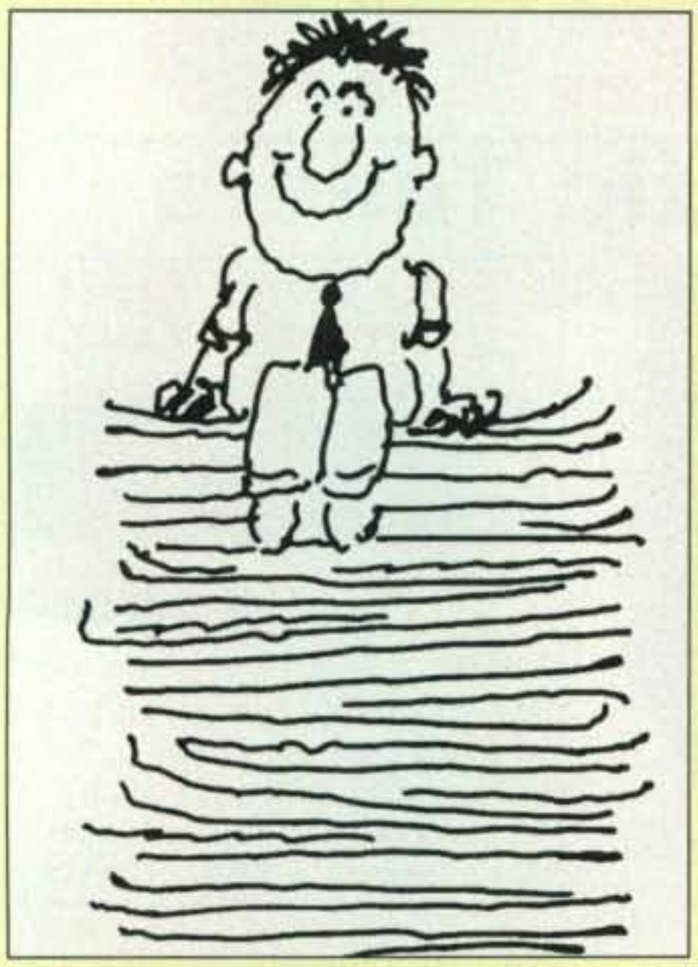

What You've Told Us...

Our March survey asked about other hams in your family and who influenced whom to become a ham. Two-thirds of the readers who replied said there were currently no other hams in their immediate families; 72% reported no additional hams currently-licensed hams in their extended families, and 53% said no other relative, living or deceased, has ever been a ham.

We next asked which relatives were or had been hams and, interestingly, only 38% of you reported "none." Beyond that, 18% said their spouse is or was a ham; 16% said a child; 14% each said sibling or cousin; 12% each said a parent or in-law; 10% said an aunt or uncle; 3% said a grandchild and 2% said a grandparent. On the question of who influenced whom to get licensed, 47% said they were not influenced by relatives, 27% said they influenced a relative, 21% have no ham relatives, 16% said a relative influenced them, and 7% said "we became hams together."

So who or what *was* your primary influence in becoming a ham? Nearly a third of you (31%) said it was a friend, 23% said reading about ham radio, 21% were influenced by observing a ham activity, 17% reported "other," 10% were influenced by realtives, 8% by a school radio club and only 5% by a local radio club.

Finally, we asked whether you currently have any family members who are potential hams. Disappointingly, most of you (57%) said no; 22% said yes, he/she has expressed some interest; 14% said yes but the person has *no* interest, and only 4% responded "yes, he/she is working on a license."

This month's free subscription winner is John Carson, KD5SRW, of Norman, Oklahoma.

Reader Survey
June 2008

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

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

This month, we'd like to get a sense of how your ham radio time fits in with your other commitments.

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

1. Do you feel you get enough time to operate ham radio?
- Yes 1
- No 2
- Sometimes yes, sometimes no 3
- Is there such a thing? 4

2. About how often do you get on the air?
- Less than once a month 5
- A few times a month (but less than once a week) 6
- At least once a week (but not every day) 7
- Once a day 8
- Several times a day 9
- Not currently active 10

3. In an ideal world, if there were no other demands on your time, how often would you get on the air?
- Less than once a month 11
- A few times a month (but less than once a week) 12
- At least once a week (but not every day) 13
- Once a day 14
- Several times a day 15
- More than 24 hours a day 16

4. Would you like to be on the air more frequently than you are now?
- Yes 17
- No 18

5. What are currently your greatest obstacles to more on-air time? (Choose all that are significant)
- Antenna restrictions 19
- Family obligations 20
- Ham radio not permitted where I live 21
- Health/mobility restrictions 22
- Household obligations 23
- Lack of equipment 24
- Lack of motivation 25
- Lack of sunspots 26
- Other hobbies 27
- Religious obligations 28
- Work/school obligations 29
- Other 30
- None; I'm happy with the on-air time I have 31

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

AOR announces "Dayton Deals"!

Come visit AOR at Dayton Hamvention 2008 and take advantage of these special offers!

AR8200 Mark III

Versatile handheld offers unparalleled frequency coverage from 500KHz ~ 3GHz*, superb sensitivity, precision stability from the TXCO, enhanced resistance to intermod and broad range of optional features.

Purchase at Dayton and receive a FREE USB Interface! Value: $99

AR8600 Mark II

The choice of monitoring professionals, this desktop receiver covers 100 KHz ~ 3GHZ* With 1000 memory channels, alphanumeric channel labels, optional cards for added capabilities and free control software from the AOR website.

Purchase at Dayton and receive a FREE DS3000A antenna! Value: $125

ARD9000 Mk2

- Digital Voice

ARD9800

- Digital Voice & Image

Fast modem converts any analog transceiver into digital in one easy step with NO transceiver modifications needed.

Purchase at Dayton and receive a FREE rig interface connection! Value: $29.95

AR5000A+3

Professional grade receiver with tuning accuracy to 1 Hz delivers automatic electronic front end pre-selection and precision stability from its built-in TXCO. Coverage from 10KHz ~3GHz*. Features 2000 memory channels with alphanumeric channel labels and free control software from the AOR website.

Purchase at Dayton and receive a FREE DS3000A antenna! Value: $125

Stop by to visit AOR at Dayton in Booth 451 – 454 and present your receipt showing your "special Dayton purchase" to receive your FREE gift.

**Cellular blocked. Unblocked version available to qualified users. Documentation required.*

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Announcing:

The 2008 CQ World-Wide VHF Contest

Starts: 1800 UTC Saturday, July 19, 2008
Ends: 2100 UTC Sunday, July 20, 2008

I. Contest Period: 27 hours for all stations, all categories. Operate any portion of the contest period you wish. (*Note:* Exception for QRP Hilltopper.)

II. Objectives: The objectives of this contest are for amateurs around the world to contact as many amateurs as possible in the contest period, to promote VHF, to allow VHF operators the opportunity to experience the enhanced propagation available at this time of year, and for interested amateurs to collect VHF Maidenhead grid locators for awards credits.

III. Bands: All authorized amateur radio frequencies on 50 MHz (6 meters) and 144.00 MHz (2 meters) may be used as authorized by local law and license class.

IV. Class of Competition:

For all categories: Transmitters and receivers must be located within a 500 meter diameter circle or within the property limits of the station licensee's address, whichever is greater. Only the entrant's callsign may be used to aid the entrant's score.

For the four single-op categories: A single-op receives no operating help either on or off the air.

1. Single Op—All Band. Only one signal allowed at any one time; the operator may change bands at any time.

2. Single Op—Single Band. Only one signal allowed at any one time.

3. Single-Op All-Band QRP. There are no location restrictions – home or portable – for stations running 10 watts output or less.

4. Hilltopper. This is a single-op QRP portable category for an all-band entry limited in time to a maximum of 6 continuous hours. Backpackers and portables who do not want to devote resources and time to the full contest period are encouraged to participate, especially to activate rare grids. Any power source is acceptable.

5. Rover. A Rover station is one which is manned by no more than two operators, travels to more than one grid location, and signs "Rover" or "/R" with no more than one callsign.

6. Multi-Op. A multi-op station is one with two or more operators and may operate 6 and 2 meters simultaneously with only one signal per band.

Stations in any category, except Rover and QRP Hilltopper, may operate from any single location, home or portable.

V. Exchange: Callsign and Maidenhead grid locator (4 digits, e.g., EM15). Signal reports are optional and should not be included in the log entry.

VI. Multipliers: The multiplier is the number of different grid locators worked per band. A "grid locator" is counted once per band. *Exception:* The rover who moves into a new grid locator may count the same grid locator more than once per band as long as the rover is himself or herself in a new grid locator location. Such change in location must be clearly indicated in the rover's log.

A. A rover station becomes a new QSO to the stations working him or her when that rover changes grid locator.

B. The grid locator is the Maidenhead grid locator to four digits (FM13).

VII. Scoring: One (1) point per QSO on 50 MHz and two (2) points per QSO on 144 MHz. Work stations once per band, regardless of mode. Multiply total QSO points times total number of grid locators (GL) worked.

Rovers: For each new grid locator visited, contacts and grid locators count as new. Final Rover score is the sum of contact points made from each grid locator times the sum of all grid locators worked from all grids visited.

Example 1. K1GX works stations as follows:

50 QSOs (50 × 1 = 50) and 25 GL's (25 multipliers) on 50 MHz

35 QSOs (35 × 2 = 70) and 8 GL's (8 multipliers) on 144 MHz

K1GX has 120 QSO points (50 + 70 = 120) × 33 multipliers (25 + 8 = 33) = 3,960 total points.

Example 2. W9FS/R works stations as follows:

From EN52: 50 QSOs (50 × 1 = 50) and 25 GL's (25 multipliers) on 50 MHz

From EN52: 40 QSOs (40 × 2 = 80) and 10 GL's (10 multipliers) on 144 MHz

From EN51: 60 QSOs (60 × 1 = 60) and 30 GL's (30 multipliers) on 50 MHz

From EN51: 20 QSOs (20 × 2 = 40) and 5 GL's (5 multipliers) on 144 MHz

W9FS/R has 230 QSO points (50 + 80 + 60 + 40) × 70 multipliers (25 + 10 + 30 + 5) = 16,100 total points

VIII. Awards: Certificates suitable for framing will be awarded to the top-scoring stations in each category in each country. Certificates may also be awarded to other top-scoring stations who show outstanding contest effort. Certificates will be awarded to top-scoring stations in each category in geographic areas where warranted.

Geographic areas include states (U.S.), provinces (Canada), and countries, and may also be extended to include other subdivisions as justified by competitive entries. U.S. rover certificates are issued on a regional basis.

Unique, handsome plaques will be awarded to the highest scoring stations. For more information on plaque sponsorship, click on "Plaque Program" on the contest website at <http://www.cqww-vhf.com>.

IX. Miscellaneous: An operator may sign only one callsign during the contest. This means that an operator cannot generate QSOs by first signing his callsign, then signing his daughter's callsign, even though both callsigns are assigned to the same location.

A station located exactly on a dividing line of a grid locator must choose only one grid locator from which to operate for exchange purposes.

A different multiplier cannot be given out without moving the complete station at least 100 meters.

Making or soliciting QSOs on the national simplex frequency, 146.52 MHz, or your country's designated national simplex frequency, or immediately adjacent guard frequencies, is prohibited. Use of commonly recognized repeater frequencies is prohibited. Recognized FM simplex frequencies such as 146.49, .55, and .58, and local-option simplex channels may be used for contest purposes.

Aeronautical mobile contacts do not count.

Contestants should respect use of the DX window, 50.100–50.125 MHz, for intercontinental QSOs only.

UTC is the required logging time.

X. Log Submissions: Log entries must be submitted by September 1, 2008 to be eligible for awards. Submit your electronic log in the Cabrillo format created by all major logging programs. Send via e-mail attachment to <cqvhf@cqww-vhf.com>. Subject line: Callsign [used in the contest] only.

Entrants are reminded to be sure their log indicates their grid location. For USA/VE stations operating away from their home address, be sure to indicate the state or province location of operation.

It is strongly recommended that paper logs be entered on-line for automatic Cabrillo submission. Click on the "CQ WW VHF Web Form" link on the contest website at <http://www.cqww-vhf.com>. Computer-generated logs must be e-submitted. Callsigns of electronic logs received are posted and updated regularly on the website.

For those without web access, paper logs may be submitted to: CQ VHF Contest, 25 Newbridge Road, Hicksville, NY 11801 USA. Questions may be sent to <help@cqww-vhf.com>.

AMERITRON 600 Watt *no tune* FET Amp

Four rugged MRF-150 FETs at 50 Volts give high efficiency . . . No deterioration with use

ALS-600
$1299
Suggested Retail

Ameritron ALS-600 *Solid State FET* compact desktop station amplifier is only 4 dB below 1500 Watts -- less than an S-unit!

There are no tubes, no tube heat, no tuning, no worry rugged -- just turn on, select band and operate. 600 Watts PEP/500W CW -- lets you talk to anyone you can hear!

Covers 1.5-22 MHz, (10/12 Meters with $29.95 kit, requires FCC license), instant bandswitching, SWR/thermal protected, extremely quiet, lighted peak reading Cross-Needle SWR/Wattmeter, front panel ALC control, operate/standby switch. 12.5 lbs., 9½Wx7¼Hx12D in.

Includes ALS-600PS transformer AC power supply for 120/220 VAC, inrush current protected. 32 lbs., 9½Wx6Hx12D inches.

ALS-600 Amp with Switching Power Supply

***New!* ALS-600S, $1429.** ALS-600 amplifier with 10 lb. ALS-600SPS switching power supply combo.

Switching Power Supply

ALS-600SPS
$629
suggested retail

Works with all ALS-600 amplifiers. Extremely lightweight, just 10 lbs. Superb regulation, very low radiated noise. 9Wx6Hx14½D in.

From QST Magazine, March, 2005

". . . the ampifier faulted only when it was supposed to. It protected itself from our boneheaded, sleep-deprived band changing manuevers . . . "

"I found myself not worrying about damaging this amplifier. It seems quite capable of looking out for itself. . . . Kudos to Ameritron."

"I couldn't hear any noise at all from the SPS (*switching power supply*) on the vertical or quad . . ."

"I came to greatly appreciate the size, weight, reliability and simplicity of this amplifier."

"The ALS-600S makes it possible to pack a transceiver and a 600 Watt amplifier, that together weigh less than 30 pounds."

AMERITRON *mobile* 500 Watt *no tune* Solid State Amp

Instant bandswitching, no tuning, no warm-up, SWR protected, 1.5-22 MHz, quiet, compact

ALS-500M
$849
Suggested Retail

Ameritron's ALS-500M solid state *mobile* amp gives you 500 Watts PEP SSB or 400 Watts CW output! Just turn on and operate -- no warm-up, no tuning, instant bandswitching. Fits in very small spaces.

New ALS-500RC, $49 *Remote Head* lets you mount ALS-500M amplifier *anywhere* and gives you full control. Select desired band, turn On/Off and monitor current draw on its DC Current Meter. Has power, transmit and overload LEDs. RJ-45 cables plug into Amplifier/Remote Head.

Covers 1.5-22 MHz, (10/12 Meters with $29.95 kit, requires FCC license).

Virtually indestructible! *Load Fault Protection* eliminates amplifier damage due to operator error, antenna hitting tree branches, 18-wheeler passing by. *Thermal Overload Protection* disables/bypasses amp if temperature is excessively high. Auto resets.

Typically 60-70 watts in gives full output. ON/OFF switch bypasses amplifier for "barefoot" operation. Extremely quiet fan comes on as needed. Excellent harmonic suppression, push-pull output, DC current meter. 13.8 VDC/80 Amps. 3½x9x15 in. 7 lbs.

ALS-500M, $849, 500 Watt mobile amp.
ALS-500MR, $879, ALS-500M/Remote Head
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Free online manuals! **Ameritron brings you the finest high power accessories!**

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Protects rig from damage by keying line transients and makes hook-up to your rig easy!

RCS-4 Remote Coax Switch . . . $159.95

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

RCS-8V Remote Coax Switch. . . $169.95

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

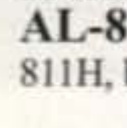
RCS-10 Remote Coax Switch. . . $179.95

Replace **8** coax with 1! SWR<1.3 to 60 MHz.**RCS-10L, $219.95** with lightning arrestors.

New! RCS-12C Fully Automatic Remote Coax Switch Controller. . . $239.95

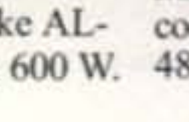
Band data from transceiver auto selects antennas. Antenna memories. No hotswitching. Rig-to-amp interface. For 3/4 BCD, 1 of 8 relay boxes. **RCS-12, $309.95**, auto controller with 8 coax relay box, to 60 MHz. **RCS-12L, $349.95**, with lightning arrestors.

AWM-30 Precision SWR Wattmeter..$149.95



Active circuit gives *true* peak/average readings on lighted cross-needle meter.3000/ 300 Watt ranges, Remote sensor.

AWM-35 Flat Mobile SWR Wattmeter . . $159.95

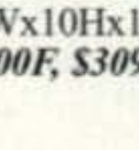


1⅝ in. thin on dashboard. Remote sensor, 25' cable. True *peak*, Cross-Needle,1.5 kW, 1.8-30 MHz. *High-SWR* LED.

ATP-100 Tuning Pulser . . . $69.95

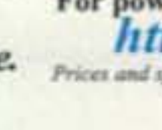
Safely tune up for full power, best linearity. Prevents overheating, tube damage, power supply stress, component failure.

ADL-1500 Dummy Load with oil . . . $74.95



Oil-cooled. 50 Ohms. 1500 Watts/5 minutes. SWR< 1.2 to 30 MHz. Low SWR to 400 MHz.

ADL-2500 fan-cooled Dry Dummy Load, $219.95



Whisper quiet fan, 2.5kW/1 minute on, ten off. 300W continuous. SWR< 1.25 to 30 MHz.<1.4 to 60 MHz.

SDA-100 Mobile Screwdriver Antenna

$409.95 80-10M, fiberglass form, Pittman motor, CNC parts, magnetic sensors, #14 wire, 1.2 kW PEP. 6' whip, $24.95

800 Watts . . . $899
with four 811A tubes

AL-811H, $899. Plugs into 120 VAC outlet. All HF bands. Hi-silicon transformer, heavy duty tank coils, tuned input, operate/standby switch, Xmit LED, ALC, lighted meters, 32 lbs. 13¾Wx8Hx16D in.

AL-811, $749. Like AL-811H, but three 811A, 600 W.

Desktop Kilowatt
with Classic 3-500G tube

AL-80B, $1399. Whisper quiet 3-500G desktop amp gives *full* kilowatt SSB PEP output. Plugs into 120 VAC. Ameritron's exclusive *DynamicALC*™ doubles average SSB power out and *Instantaneous RF Bias*™ gives cooler operation. All HF bands. 48 lbs. 14Wx8½Hx15½D in.

True Legal Limit™
with Eimac® 3CX1500/8877

AL-1500, $3495. Ameritron's *most powerful* amplifier uses the herculean *Eimac®* 3CX1500/8877 *ceramic* tube. 65 Watts input gives you full output power -- it's just loafing with a 2500 Watt power supply. All HF bands, all modes. 77 lbs.17Wx10Hx18½D inches.

AL-1500F, $3095, Import tube.

1500 Watt* True Legal Limit™ *Antenna Tuner

ATR-30, $599.95 • Super high current edge-wound silver plated roller inductor • 500pf capacitors • 6:1 reduction drives • 3 core current balun • 6 position antenna switch • True *peak* meter

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In March, the Radio Society of Great Britain moved out of its long-time headquarters in Potters Bar, outside London, to new offices in Bedford, about 40 miles to the north. At about the same time, EB1BSV sent in this article on what turned out to be a farewell visit to "Lambda House."

Visiting the Radio Society of Great Britain
A Farewell Visit to Lambda House

BY JULIO CÉSAR GARCIA MAHILLO,* EB1BSV

Once again I decided to spend my holiday in London. London is really a lovely city, an enchanted place where you can find whatever you want. The first time I visited London was in July of 2004 and I was captivated by its charm. Since then, I have been back at least once a year. Thus, this was the fifth time I was there, but this time I decided I would spend some of my time learning about amateur radio.

The home of radio is in Chelmsford, near the North Sea. Although Marconi installed his first experimental transmitting station at Poole (Dorset), it was in Chelmsford where, in 1899, he opened the world's first radio factory on Hall Street (this site is marked with a blue plaque); and where, in 1920, he inaugurated Britain's first broadcasting service and the world´s first wireless news service (read by W. T. Ditcham).

The Radio Society of Great Britain (RSGB) was founded in 1913, only 15 years after Marconi installed his first radio station in Dorset. Its patron is Prince Philip, Duke of Edinburgh and husband of Queen Elizabeth II.

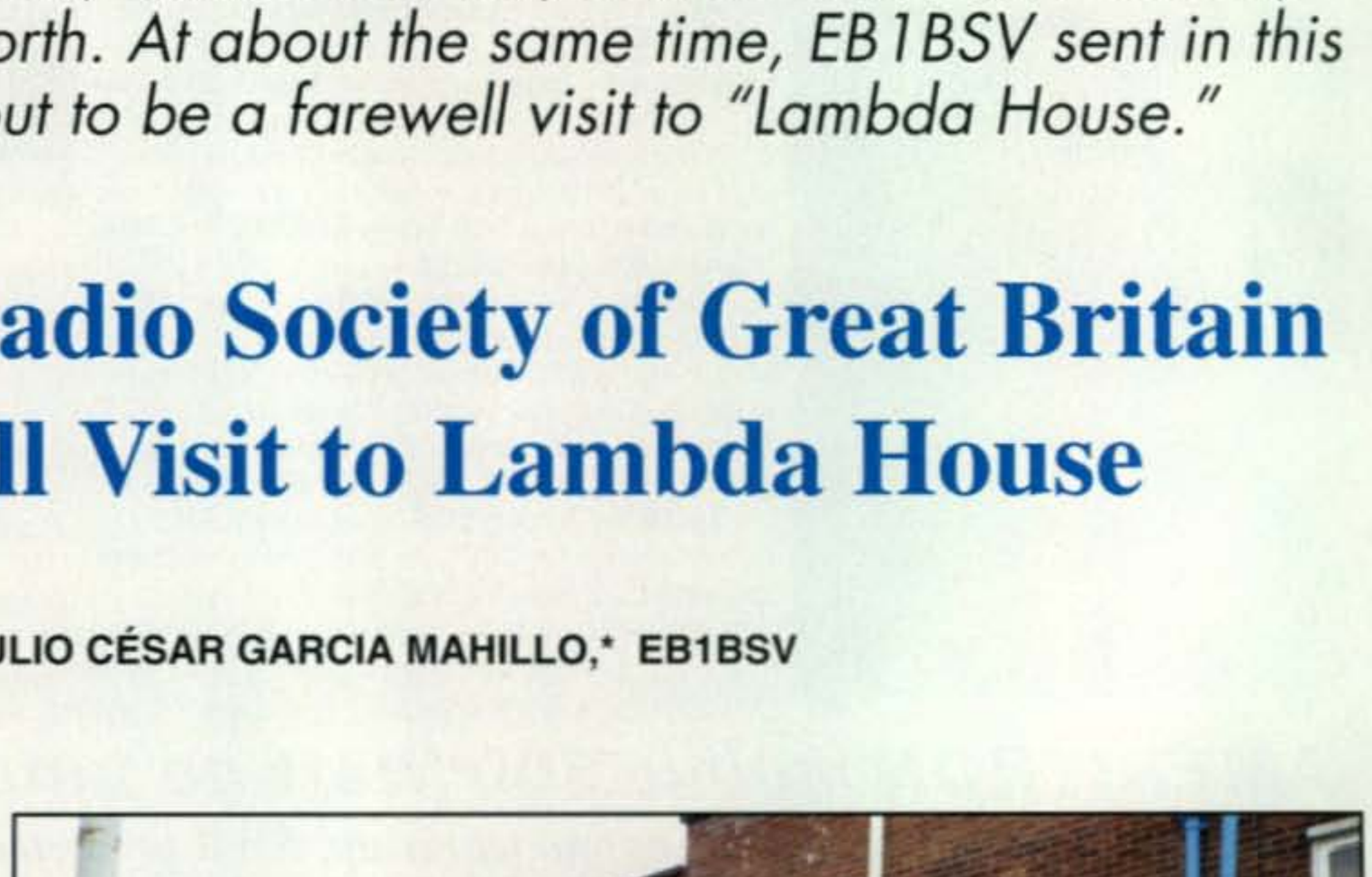


Photo A– The Radio Society of Great Britain's (former) headquarters building, Lambda House, in Potters Bar, north of London. (All photos courtesy of the author)

A Trip to Potters Bar

The RSGB's headquarters for the past quarter-century (photo A) has been in the north of London, in Potters Bar, only 25 minutes by train from Victoria Station. In addition to the society's offices and QSL bureau, Lambda House included the Amateur Radio National Museum and the library, so it is an interesting place for ham tourists from all over the UK and around the world.

*e-mail: <buscaper@telefonica.net>

When we got there, we were welcomed by John Crabbe, G3WFM, a very nice and cordial man who showed us the museum (photos B, C, and D) and told us about every piece of equipment they have there, all of which still works. John showed us Marconi's radio, his aerial tuner from 1903, and his magnetic detector (1902) called "Maggie," which was installed in the Italian Navy warship the *Carlo Alberto* (1903), as well as a Morse key from 1900, several valve (vacuum tube) TRF receivers, and a large collection of valves from 1908 (photo E). There is a huge collection of valves from 1909–1936 donated by Mr J. V. Tourtel, G2ATT.

The RSGB museum also has equipment from the Second World War. To begin, there is a 1940s RCA AR88 made for the US Navy and sent to the UK and Russia for the war effort. It covers 75 kHz to 30 MHz in six bands, and although it produces much heat due to its manifold valves, it is still stable enough to resolve single sideband (SSB). There is also a typical transmitter to go with the AR88, one used just after the war, a 40-watt crystal-controlled CW and AM transmitter, operat-

Photo B– The author in one of the rooms of the RSGB museum.

Photo C– One of the rooms of the museum. On the right you can see some Morse keys, and at the back some equipment from the Second World War.

Bedford and Bletchley
The New Home(s) of the RSGB

Over the past several years, officials of the Radio Society of Great Britain came to the realization that their headquarters building in Potters Bar had become too big for the society's needs, with technology and modern business practices allowing it to reduce its staff from about 40 people 15 years ago to about 20 today. Thus, a decision was made to sell Lambda House and move the RSGB's offices to a newer, smaller building about 40 miles north in Bedford (3 Abbey Ct., Priory Business Park). Unfortunately, the new location had no suitable space for either the RSGB museum, its library, or its headquarters station, GB3RS. According to an editorial in the February issue of *RadCom,* the RSGB magazine, an agreement has been reached to relocate all of these facilities to Bletchley Park, already a favorite destination of many radio fans as home to Britain's National Codes and Ciphers Centre. It is where British codebreakers managed to unlock the secrets of the German Enigma machine and relay intercepted messages to London. Bletchley Park is located in the town of Milton Keynes, about 45 miles northwest of London and a short drive from the new RSGB headquarters in Bedford. The relocated RSGB musuem, library, and station are expected to open sometime this summer.

Photo D– Another museum room. On the right is a a rack-mounted transmitter from 1947.

ing on 40 meters and putting out 30 watts from its single 807 valve.

In the 1950s, a British company made a 100-watt transmitter called the LG300 (it appeared in the RSGB bulletins in January 1955). It has two big compartments: One is the transmitter and the other one is the modulator and power supply. It has an 813 valve and produces 100 watts on AM and CW. The modulator has four huge transformers, each one weighing 10 kg (22 pounds).

Photo E– Some of the early valves (vacuum tubes) in the RSGB museum's extensive collection.

Photo F– The Eddystone EA12 receiver, as well as a variety of code keys, make up part of the RSGB museum display.

Photo G– Some of the numerous QSL cards in the RSGB museum's collection. Many of these are from prefixes and entities that no longer exist.

From 1960, there is an Eddystone EA12 (photo F), made in Birmingham, a real collectable item among enthusiasts. It is one of the first receivers built for SSB, and it provides full coverage on six amateur bands; its first oscillator is crystal-controlled.

A small part of the museum is dedicated to VHF and UHF, converters and transmitters for 4 meters, 2 meters, 70 cm, and 23 cm, built by Bill Scarr, G2WS.

In addition, there is a huge collection of QSL cards from all over the world, some of them (photo G) very old. Among them you can find the card of Britain's first female ham, Barbara Dun, G6YL, from 1933.

We also visited the library, where you can find magazines about amateur radio from all over the world, some of them from the beginning of radio. They also have good, interesting books. It is the biggest library about amateur radio in Europe.

Once we had toured the museum and the library, we visited the "shack," and I had the opportunity to operate with top-quality equipment on HF, UHF, VHF, and satellites, using the famous GB3RS callsign.

Finally, we visited the shop, where I got some great books and CDs.

London, birthplace of the Industrial Revolution and home of numerous great intellectuals, surprised me once again, this time about radio history and its beginning. I advise every radio ham who visits London to leave a place in your schedule to visit the RSGB (see the sidebar, "Bedford and Bletchley," on the RSGB's new "digs"). Finally, I want to take this opportunity to thank to John Crabbe, G3WFM, for his time and generosity during our visit to the RSGB.

math's notes

BY IRWIN MATH,* WA2NDM

Simple Digital Data Transmission Modes

As I have mentioned in the past, in my work we design custom fiber-optic transmission systems and are often faced with the task of interfacing all sorts of odd data formats for transmission. Recently we have been explaining various schemes to our customers more times than usual, so I thought an explanation of at least a few of the more common might be in order for my readers this month. Please keep in mind that this is not intended to be a description or specific recommendation of all schemes or protocols that are used, nor is it an attempt to describe all of the many details. It is just intended to give you a general idea of what is out there.

As we know (or should know), most digital data is basically a series of ones and zeros. As opposed to analog, a digital signal can only occur in one to two states, usually referred to as logic 1 or logic 0. In fig. 1 is shown a digital stream consisting of logic 1, 0, 1, 0, 0,1, 1 levels, one after the other. The "T" signifies the time interval of the individual logic levels (the bit period) and is important to assure that successive 1s and 0s do not get confused. Now let's see some of the ways we can transmit these.

Fig. 2 shows the same series of logic levels but now they have been converted into the TTL (Transistor-Transistor Logic) format. In the TTL world any voltage level from 0 to 0.8 volts is considered a logic 0 signal, while any voltage from 2 to 5 volts is considered logic 1. In reality, 0 to 0.4 volts and 2.4 volts to 5 volts are the typical values encountered. Various TTL gates, inverters, flip-flops, etc., all respond to signals within these levels. The only drawback with conventional TTL (for long-distance transmission) is that it operates at a fairly high impedance (around 3K ohms), which means that proper matching at high speeds can be a problem, as well as there being an increased susceptibility to noise pickup due to the high impedance. To try to solve this, a data format using the same TTL voltage levels but operating at a low impedance of 50 ohms has been developed.

Transmitting TTL levels from point to point usually requires simple gates. We like to use the ACT logic families (74ACT04, for example), as they have high current drive capabilities and are very low cost. Fig. 3 shows a simple one-way (uni-directional) data link. You will note that we have connected five of the inverters in parallel and one in series. This results in a driver that can provide more than 100 ma into a 50-ohm load at speeds well into the megabit region for a cost of 50 cents or less. For a receiver, a simple gate or two is all that is needed, and even 50-ohm coaxial cable can be used for long distances.

Fig. 4 shows the same series of logic levels as in fig, 1, but now they have been converted into RS-232 signals. RS-232 is an industry standard that has been around for many years and uses bipolar voltages to transmit signals at data rates of only up to 20 Kb/sec,

*c/o CQ magazine

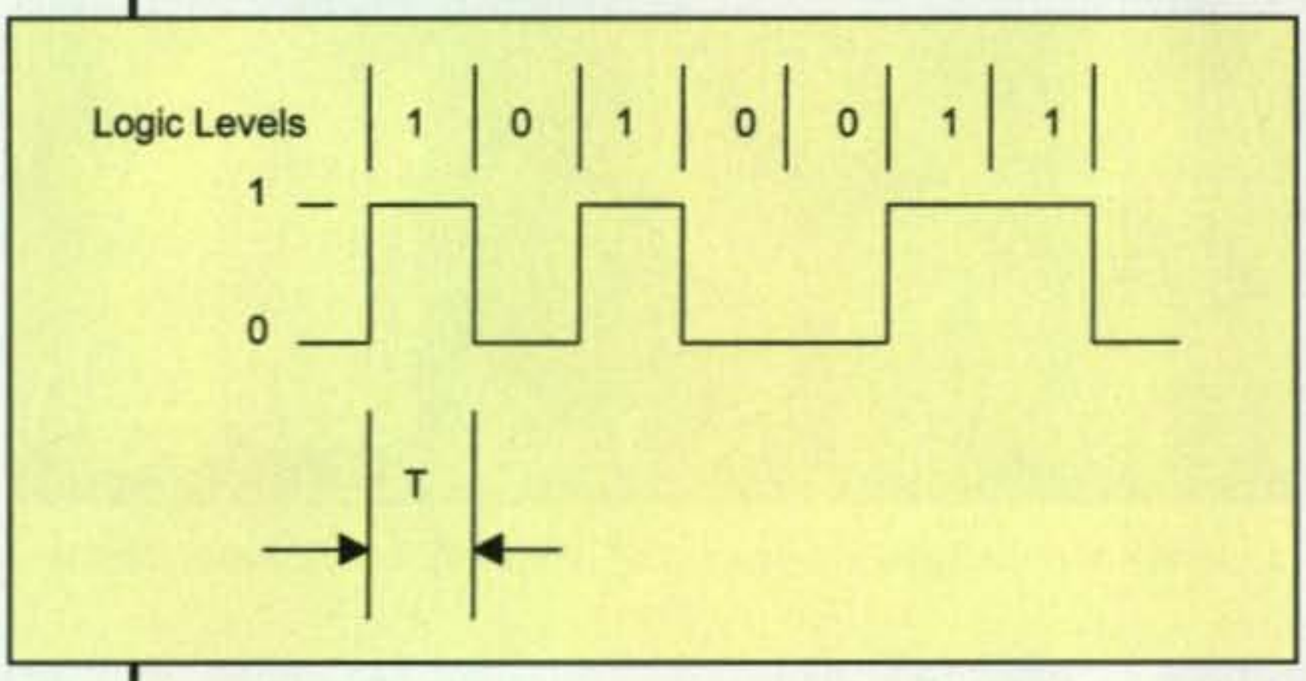


Fig. 1– A digital data scheme.

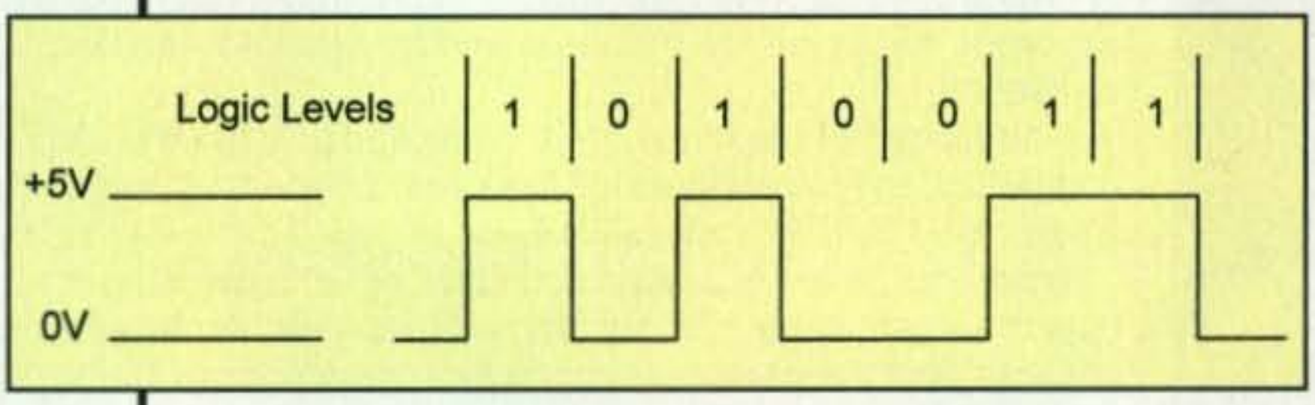
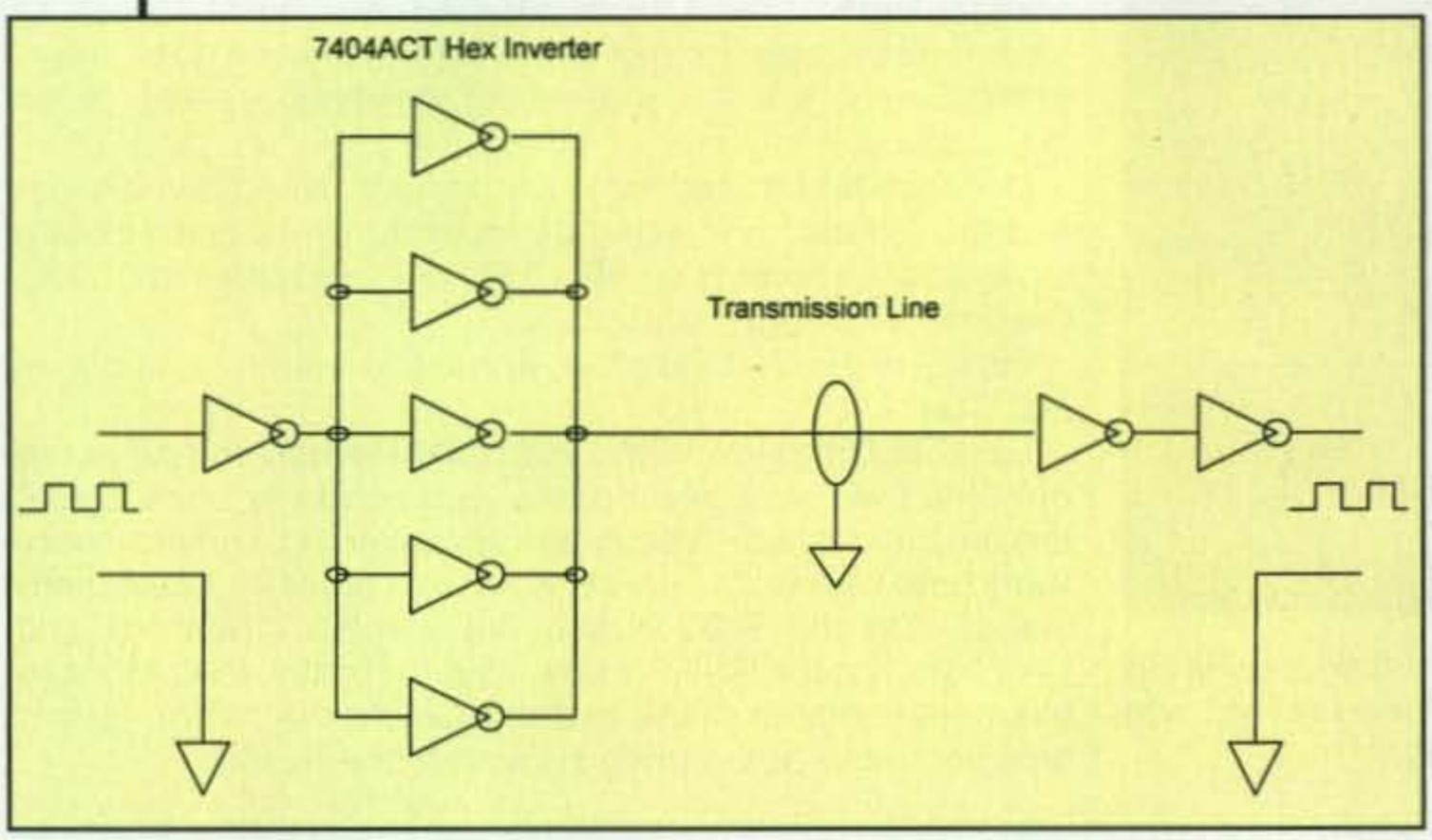


Fig. 2– TTL digital data stream.



← Fig. 3– A simple TTL data link.

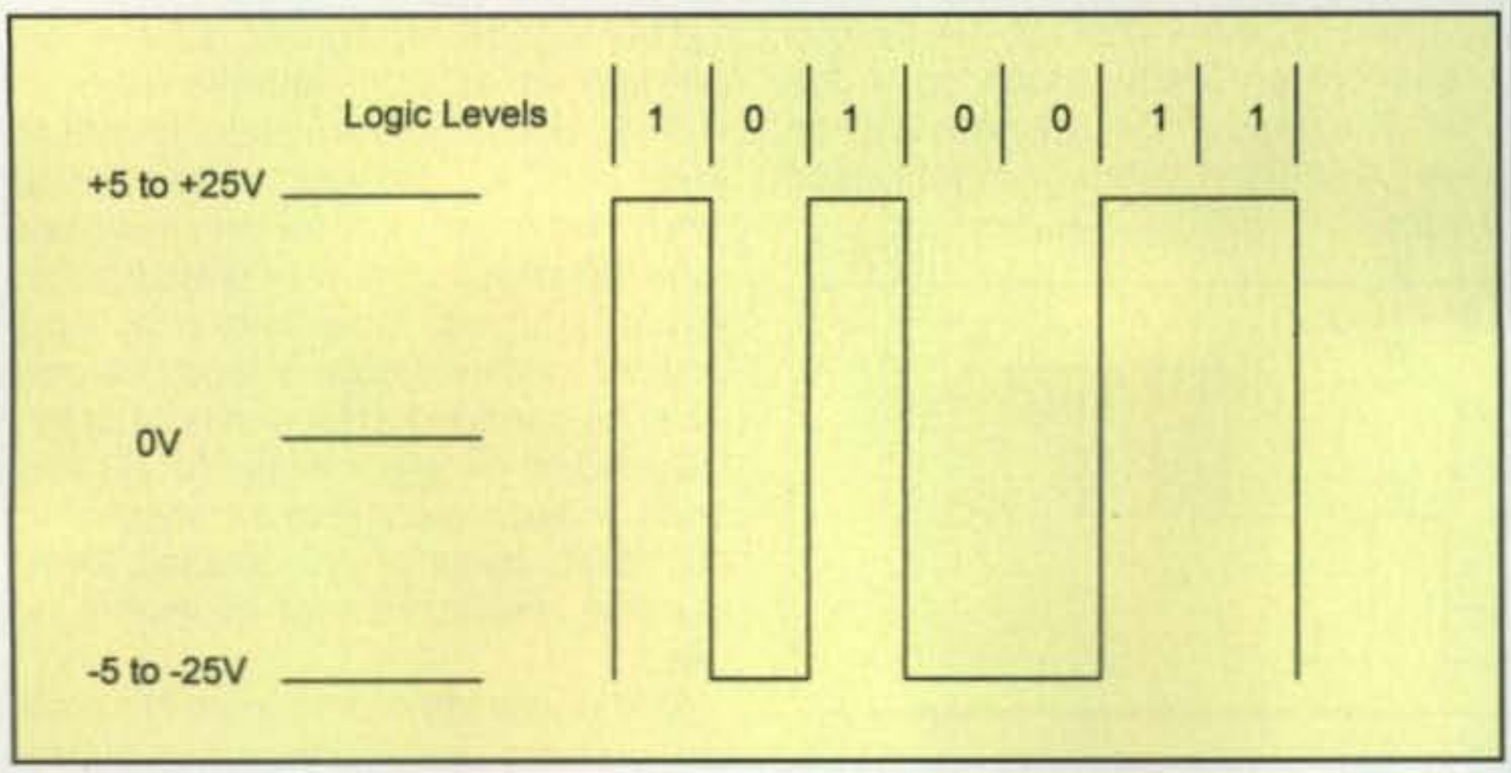


Fig. 4– RS-232 digital data stream.

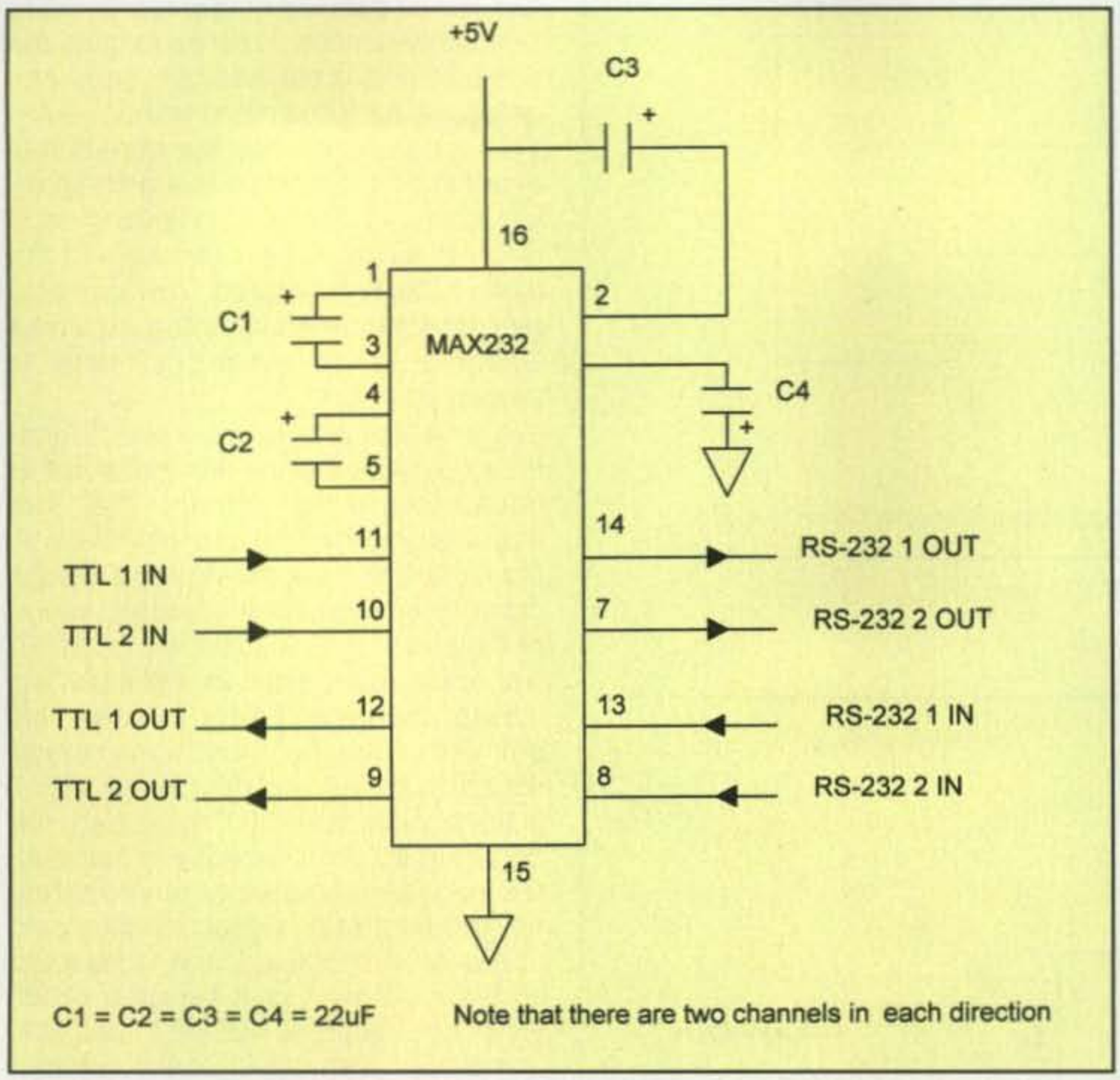


Fig. 5– TTL to RS-232 converter using the Maxim MAX-232.

although higher speeds are often used. The voltage excursions go from –5 to –25 volts at one logic level to +5 to +25 volts for the other. Zero volts in this format is not a valid condition. The bipolar format assures that the two logic levels can easily be differentiated from each other even over long distances, since one is always positive while the other is always negative.

The rather high voltages, by the way, stem from the days of vacuum tubes and mechanical relays. In today's world, however, RS-232 signal levels are usually in the range of ±5 to ±15 volts. The impedance level for RS-232, like TTL, is high and as a result can suffer from limited transmission distances. Fig. 5 shows a circuit for a bi-directional RS-232 data link using special ICs specifically designed to handle this format. In this case, we have used the common Maxim Integrated Circuit MAX232, which provides two bi-directional

TTL/RS-232 channels in one chip. The MAX232 also contains circuitry to generate the needed negative voltage. Similar chips are available from most major semiconductor manufacturers. By the way, the values of the various capacitors are pretty much up to the user. The ones shown are ones that we have often used in the past with good results.

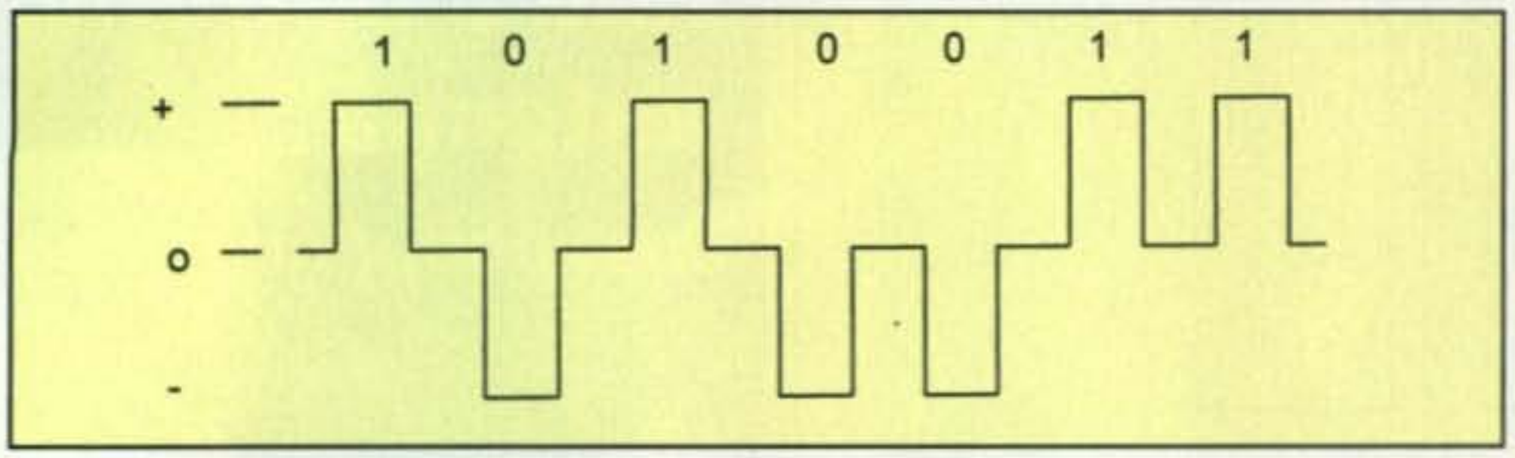


Fig. 6– The RZ format.

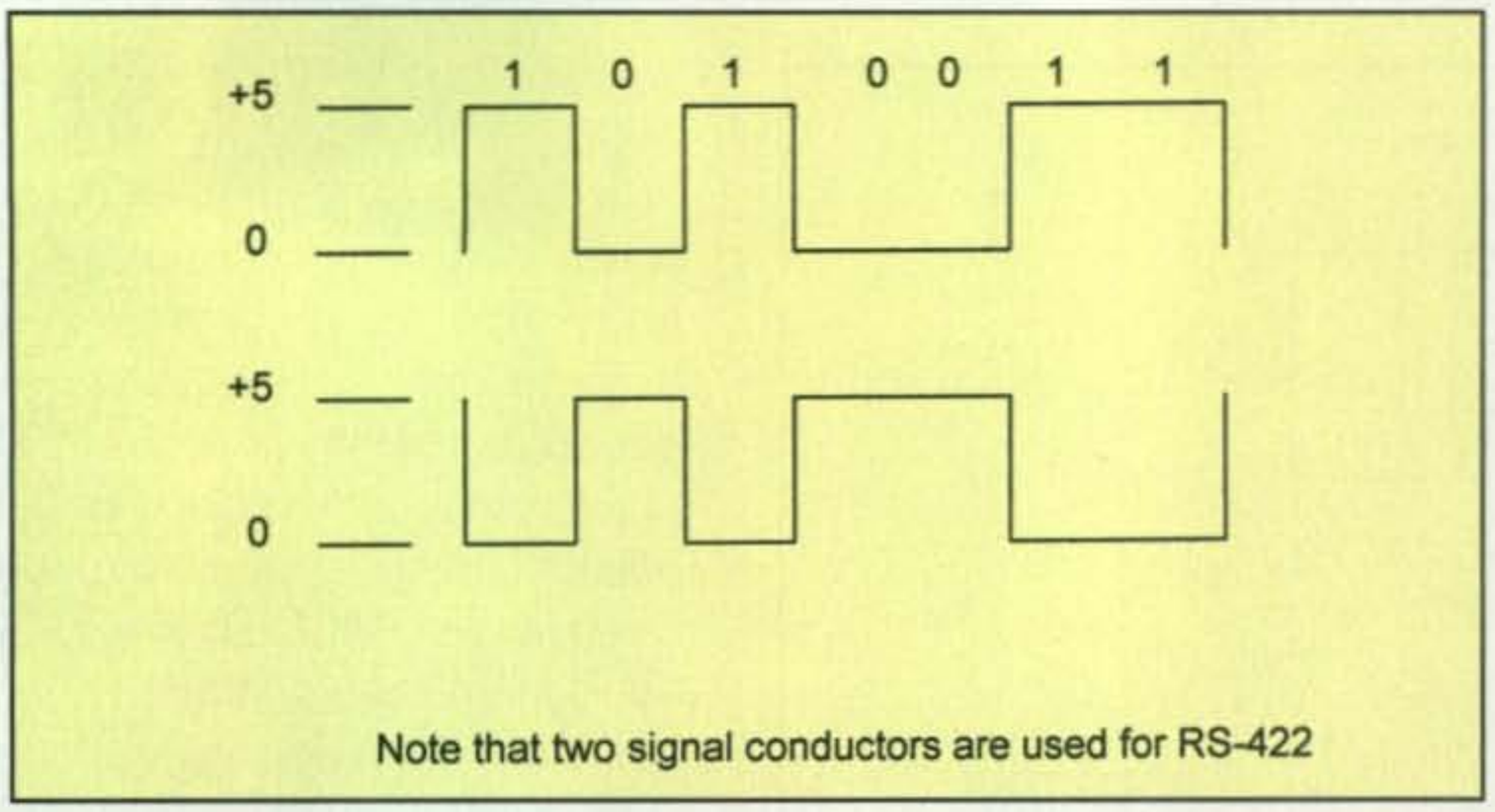


Fig. 7– The RS-422 format.

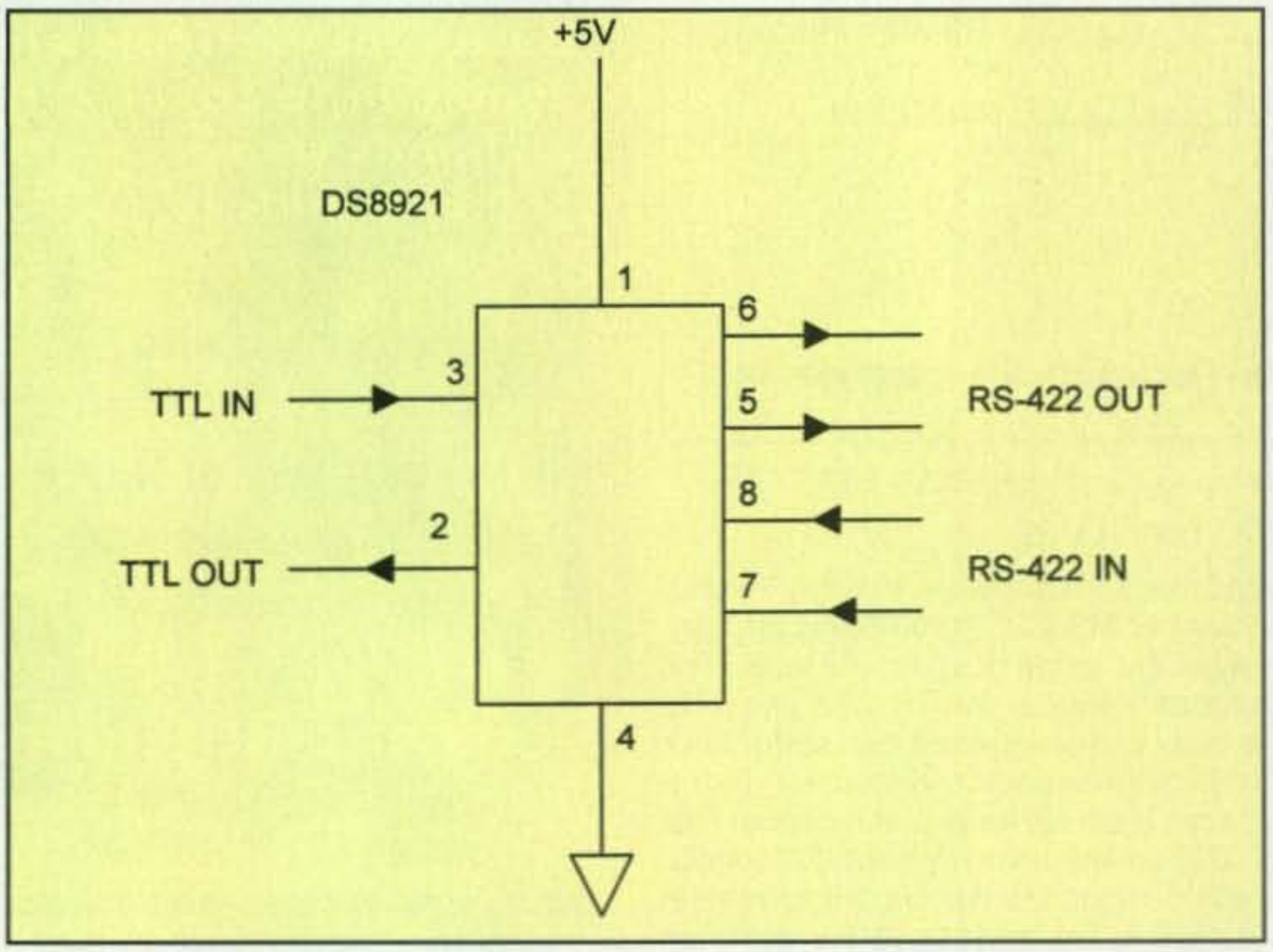


Fig. 8– TTL to RS-422 converter using the National Semiconductor DS8921.

The signals in figs. 2 and 4 are referred to as non-return-to-zero, or NZR-L, signals, since a specific voltage level must be present for each logic level. This means that for very slow data rates DC coupling must be used to avoid errors. Imagine, for example, a hypothetical system where a logic 1 signal must be transmitted for a minute or two followed by a logic 1 signal for 20 seconds. In such a scheme a transformer, capacitor, or other AC-coupled transmission means cannot ordinarily be used.

One way to attempt to solve this problem was the development of a bipolar return-to-zero format called "RZ." This is shown in fig. 6. Here the logic levels are conveyed by bipolar pulses that are half the bit period and always return to zero between bits. Now as long as the bandwidth is great enough, ones and zeros will be transmitted without error. This scheme also has the benefit that every logic 1 or logic 0 has a companion pulse. As a result, the leading edge of each pulse can be sensed and the system clock recovered. This is important for various multiplexing schemes where a clock synced to data is employed.

A problem with any uni-polar transmission method is the fact that noise or other interfering signals that get induced onto the line can interfere with the data if the interfering level comes close to or exceeds the voltage range of the protocol. A 6-volt spike on a TTL line at the wrong time, for example, will corrupt the data. To try to solve this problem various balanced transmission schemes have been developed. Fig. 7 is the popular RS-422 format. Here the data and its complement are transmitted along two separate conductors. Any noise or interfering signal along the path appears on both lines and is rejected by the receiver. Fig. 8 shows a circuit for a bi-directional RS-422 data link using a National Semiconductor DS8921, a chip specifically designed for this purpose. Similar chips are available from most major semiconductor manufacturers.

You can read more details on these formats as well as other versions of chips and applications at both Maxim's and National's websites as well.

I hope the above examples have been of interest to you. I felt that a general idea of some of the more common data schemes was in order.

73, Irwin, WA2NDM

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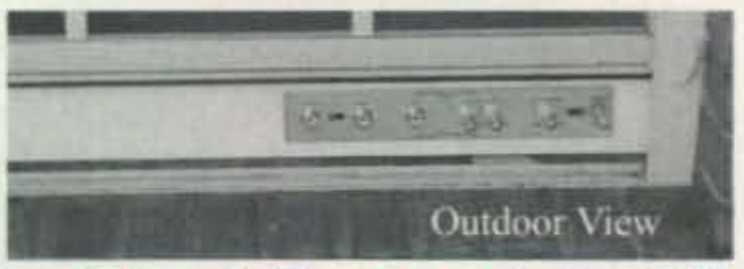
Stainless Steel Bonding Plate


Indoor View


Outdoor View

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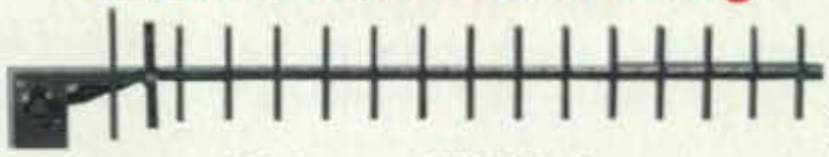

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digital connection

BY DON ROTOLO,* N2IRZ

The Digital Playground
An Overview of Modes

One great thing about ham radio is its diversity—of people, of places, and of operating modes. Most hams use their radios for voice communications, although a significant minority are involved in other aspects of the hobby. This month I thought we'd take a fresh look at some of the digital modes that are popular today.

Most people, when they think of digital modes, think of data. Ultimately, all digital communications are data transfers, but in this context I'm talking about file transfers, regardless of the contents of the file, whether it is text, images, or executable software. However, there are also keyboard-to-keyboard modes for those of us who like to communicate in real time, yet don't feel like speaking. For those who do want to speak, while feeling a need to make it as complex as possible, there are the digital voice modes.

We'll now take a look at the top two or three ways hams today are doing these things. Almost any of these systems can be used for any purpose, so there's a lot of overlap, but I'll be covering the more common uses of each.

Keyboard to Keyboard

One of the most enjoyable ways of operating for me is the classic ragchew. Having lengthy conversations with complete strangers, learning about some aspect of their lives, brings a certain satisfaction to me. Sometimes these conversations remind me of how small the world really is, finding some odd coincidences or mutual experiences.

One defining factor for keyboard-to-keyboard modes is the fact that they are not error-free. It's possible to have the occasional incorrect character or word, but by and large the message will be easily understood. When there's a human at each end, most errors can be compensated for, while for data file transfer, nothing less than perfection is acceptable.

The most popular keyboard-to-keyboard (K-K) mode today, by far, is Morse code (also called CW, for Continuous Wave). While not a binary digital mode, it does use on-off keying and is generally considered digital in nature, even though timing of both signals and pauses is critical for decoding the message. Also, I admit it really doesn't need a keyboard, per se *(think "key" "without the "board"—ed.)*, but you can't argue that it's not wildly popular.

Most CW operators send by hand (with a straight key or keyer) and receive by ear, both requiring some skill (especially at higher speeds). Although knowledge of Morse code is no longer a licensing requirement in many countries (the USA included), it's also not a requirement for actually using the mode, either.

Today there are several computer programs that use your sound card to send and receive Morse code, along with several other systems that use some external hardware. At least as early as 1959 there were machines to decode random-speed CW, and my venerable PK-232 can send and receive with good results.

I won't go into any detail on getting started with CW, since I imagine the details are well known, but if you have any questions, I would bet that 80% of any on-air contact you might make can walk you through the details—or just write to me. For a somewhat humorous look at the origin of CW (not), browse to <www.zerobeat.net/morse505.html> and click "play." Real resources can be found at <cw.hfradio.org/>.

The next most popular K-K mode is PSK-31. There's no chance of decoding it by ear, but your computer can pick up and decode signals that are almost in the noise, and working a station that is sending less than 100 Hz from another station is not only not unusual, but quite common indeed. For many CW operators, signals that close to each other are difficult to decode.

I've written about PSK-31 in recent columns, but as long as you have a computer, sound card, and radio, the information available on the web should be plenty to get you started. As with all the sound-card modes, having a pre-made computer-to-radio interface simplifies things, but is not strictly required. Personally, I use the DigiPan software, available at <www.digipan.net> and K4ABT's RASCAL interface <www.k4abt.com>, although a basic web search will uncover several other choices, including those from West Mountain Radio <www.westmountainradio.com>.

To find PSK-31 activity, look near the top of the CW subband for any given HF band. I find activity around 7073 kHz almost all the time.

Data, Files, and E-mail

Data files need to be received error-free, or they generally won't open properly. While there are literally hundreds of ways to move data over a radio link, there are four that really stand out today. *Not* in that select group is packet radio. While I'm still partial to packet, it's been surpassed by other modes in the more than 20 years since it was first developed. Today, the majority of packet involves APRS <www.aprs.net>, which is found at 144.39 MHz, and DX Clusters, which kind of co-exist on the radio and on the internet.

For sending data on HF, I have not yet found a mode that beats PACTOR III from SCS Communications <www.scs-ptc.com>. It is the fastest mode for use on HF channels (which are

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SS-10	7	10	1⅛ x 6 x 9	3.2
SS-12	10	12	1⅜ x 6 x 9	3.4
SS-18	15	18	1⅜ x 6 x 9	3.6
SS-25	20	25	2⅞ x 7 x 9⅜	4.2
SS-30	25	30	3¾ x 7 x 9⅜	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 9⅜	4.2
SS-30M*	25	30	3¾ x 7 x 9⅜	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 9⅜	6.5
SRM-30	25	30	3½ x 19 x 9⅜	7.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M	20	25	3½ x 19 x 9⅜	6.5
SRM-30M	25	30	3½ x 19 x 9⅜	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 9⅜	10.5
SRM-30-2	25	30	3½ x 19 x 9⅜	11.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M-2	20	25	3½ x 19 x 9⅜	10.5
SRM-30M-2	25	30	3½ x 19 x 9⅜	11.0

MODEL SS-12SM/GTX

MODEL SS-10EFJ-98

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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
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UNIDEN SMH1525, SMU4525
VERTEX — FTL-1011, FT-1011, FT-2011, FT-7011

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SS-12EFJ
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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

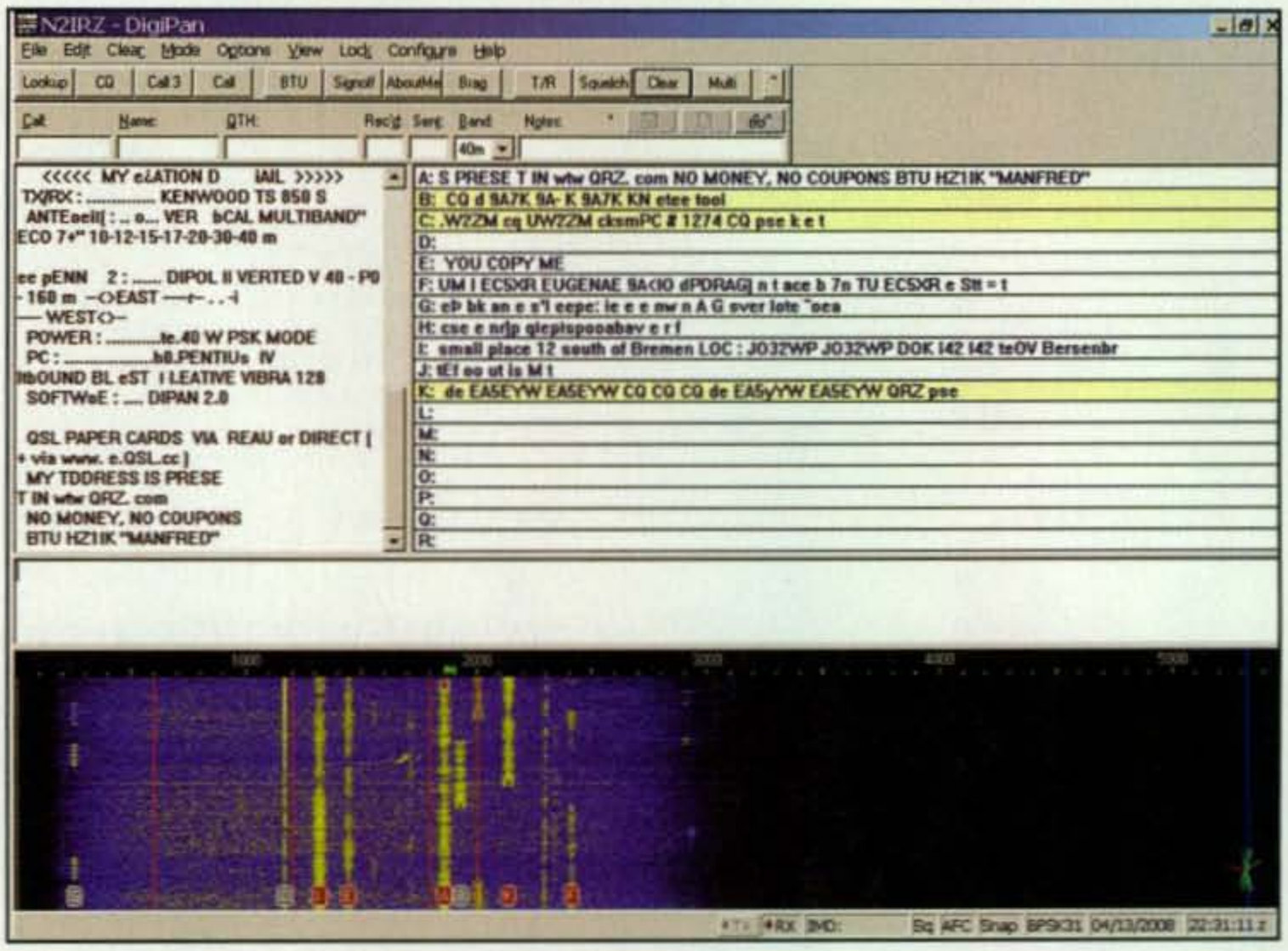
*ICS – Intermittent Communication Service

often subject to noise), plus it is extremely robust. Much of this performance comes from its ability to automatically adapt to band conditions. The big downside to this mode is that the PACTOR III protocol is proprietary, and a specialized modem is required to use it. The cost factor does rankle some hams, but in this case you do get what you pay for.

A direct competitor to PACTOR III for the attention of amateurs worldwide is WinDRM. An offshoot of the DRM (Digital Radio Mondial) concept <www.drm.org> used for HF commercial broadcasting, WinDRM is a very versatile piece of software, and especially endearing is that it's free for the download at <n1su.com/windrm>. It also does not require any special hardware, making it ideal for portable or emergency operations.

Transmitting binary data files (at nearly 1 kb/s) is the main strength of WinDRM. Not only used for the mundane trading of data files, this ability can be used for DSSTV (Digital Slow Scan TV), in which operators trade images with each other, and just about any other thing you can imagine, including digital voice, which I'll discuss in a moment.

I find a lot of WinDRM activity around



The band lights up with European stations operating PSK-31. Stations only 50 Hz away from each other are still easily decoded. Even very weak signals, such as the one marked "F," can be decoded with reasonable accuracy.

7173 kHz, but since this is outside the General band, I also look for the activity around 7228 kHz. Other active frequencies are 14236, 3733, and 21370 kHz. Also note that WinDRM isn't limited to HF, but I haven't found any local activity in the New York City area on VHF or above.

Moving up in frequency to VHF and UHF, we find D-STAR DD (Digital Data) mode. I just wrote about that in April, so I won't go into much detail, but with a 128 kb/s raw data rate (translating to about 90 kb/s throughput), this is about as fast as it gets on most amateur bands. Keep in mind that these are ISDN speeds, more than double the best dial-up speeds, so internet access is easy. The Ethernet interface is also as easy as it gets, making D-STAR DD mode just as useful as the internet, with no learning curve.

The downside, of course, is that someone needs to put up a D-STAR repeater with DD mode, and you need a DD-capable transceiver. Also, at the moment, only the 23-cm band is supported, since DD mode is about 150 kHz wide. On the plus side, ICOM has a wide range of capable products from which to choose. As noted last time, <www.k5tit.org> is a great resource for D-STAR information.

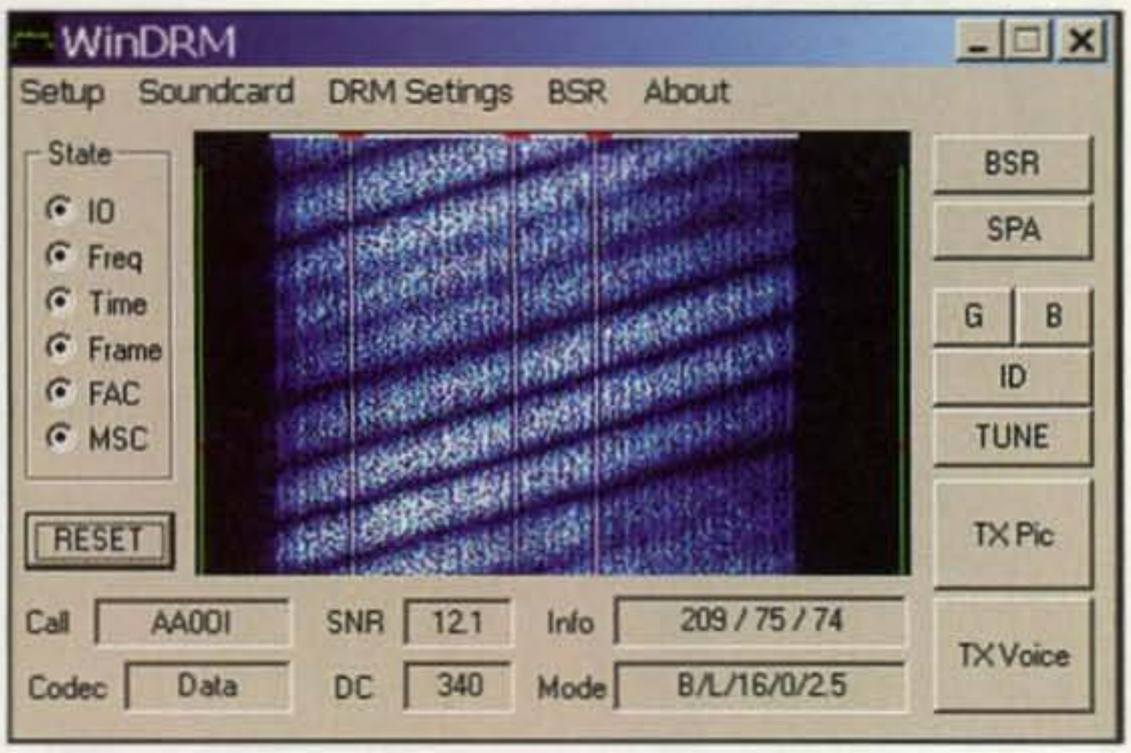
Moving up in frequency again is the ubiquitous WiFi and WiMax equipment that many hams are using under Part 97. While not technically amateur radio equipment, some 802.11 and 802.16 frequencies are within amateur allocations, and hams have taken full advantage of the reduced restrictions on power, antennas, equipment, and (more recently) encryption to build wireless networks available to amateurs.

Data rates of 54 Mb/s are the big attraction here, almost compensating for the extra effort required to build such a network while maintaining decent RF accessibility. The equipment for 802.11 operations is also very inexpensive, due to the consumer electronics aspects of the available equipment.

Digital Voice

The ARD9800 and related products from AOR <www.aorusa.com>, including the ARS25 APCO 25 decoder, have been around for several years. Their performance is excellent, but they are not to be considered weak-signal or narrowband systems. Their chief advantage over analog SSB is the audio quality, which sounds like FM simplex, most notably the absence of noise. The downside is the need to buy the modem, of course.

WinDRM is also able to operate in digital voice mode, as mentioned before. Because we have two audio streams—one is RX audio and TX audio for the radio, the other is voice in and voice out for the human operator—you either need to manually switch the sound-card



Almost perfect copy on WinDRM. AAØOI is sending an image file, but one of the frames, indicated by a red blip in the green line to the left of the waterfall display, was corrupted. ARQ (Automatic Repeat reQuest) allows me to automatically ask for a fill-in of the missed frame.

inputs and outputs for sending and receiving, or add a second sound card to your computer. External voice encoders (VoCoders) such as MELP (the default), SPEEX, or LPC are also needed, the default MELP being freely available for download.

Today's gold standard for digital voice is FDMDV (Frequency Division Multiplexing digital voice). Available as a download from N1SU <n1su.com/fdmdv>, this free program is rapidly gaining popularity. Setup is similar to WinDRM, including the need for two sound cards.

This is a weak-signal mode, needing only a signal-to-noise ratio of about 3 dB to decode voice well, and it is spectrally efficient, using only 1100 Hz to transmit near toll-quality voice with all of the features of digital voice. Mel Whitten, KØPFX, and others can be found on 14236 kHz on the WinDRM/FDMDV Digital Voice net at 3 PM eastern on Saturday and Sunday. If you just want to listen, only a single sound card is necessary, and the net will take SSB check-ins if you have questions about the software or troubleshooting your installation.

FDMDV is very sensitive to tuning, needing to be within a few Hz to decode, but an automated tuning function makes this almost trivial to get right; a single mouse click takes care of it for you. Even if you're not ready for digital voice, or don't have a second sound card, I urge you to download the software and listen in once, just to see what it's like. While you are listening, try to imagine of all your HF contacts sounded like that, especially those that would normally be down in the noise, and using only 1.1 kHz of the band. That will give you some idea of the future of amateur radio.

As I've written before, digital is the future of radio. Just like there's still a place for CW and AM, the conventional modes such as SSB won't be going away any time soon. Digital voice operations, at least for amateurs, are really still in their infancy. Just wait and see, though. Digital operations will continue to gain popularity, due to their better performance (especially under poor conditions), their spectral efficiency, and (for DV) superior quality.

The bottom line is that you should give a digital mode a try. Resources are on the web, and if you really run into a problem you can't figure out, just drop me a line. I think you'll find digital modes a lot of fun, and they might even revitalize your interest in ham radio.

73, Don, N2IRZ

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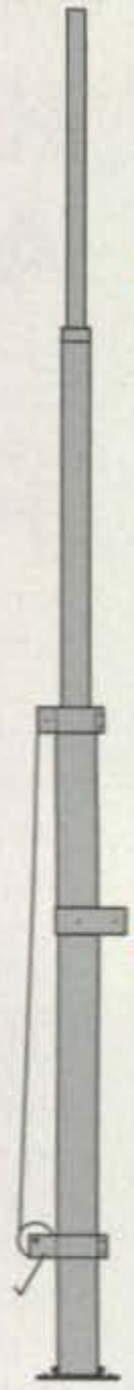

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BY DAVE INGRAM,* K4TWJ

Keys 2008: A Captivating Mix – Part I

Rejoice, dear friends and devotees of the CW art; your appreciation for fine telegraphic instruments is being honored with another two-part series on keys of all types. We are also proud to confirm those rumors and reports of CW flourishing rather than fading since the Morse code requirements have been dropped from license exams. Yes indeed, keys are hotter than ever before, and the kaleidoscope of new styles and designs continues to boggle the mind. We obviously do not wish to see this timeless cornerstone of amateur radio lost, and that is most admirable. Also, and like our good friend Bob Heil, K9EID, says about good voice operations always starting with the microphone, true CW enjoyment always starts with a good key. Furthermore, we all know CW ops never have enough keys, right?

Bearing those thoughts in mind, this year's Keys Special features a captivating mix of keys, bugs, paddles, and miniatures with the spotlight especially favoring miniatures. Many friends helped make this year's views possible, so we will recognize and thank each of them as the tour unfolds.

Happiness Is ...

Yes, you guessed it: Happiness is a new key—or bug, paddle, or miniature manipulator that fits your particular lifestyle. It adds new enjoyment to your operations, it is less expensive than a new rig, it can go with you when you travel, and a really good key is a treasure for life.

If you've read this far, you surely agree with those statements, so let's begin our tour with the spotlight on some "buy it now" newbies such as the magnificent N3ZN QRP Paddle made by Tony

Photo 2– Vibroplex recently added this trim little Code Mite to its world-famous line of Morse manipulators, and it makes a nice traveling companion. The key measures 1.5 × 3.0 inches and is engraved with traditional red Vibroplex logo. More details at <www.vibroplex.com>.

*3994 Long Leaf Drive, Gardendale, AL 35071
e-mail: <k4twj@cq-amateur-radio.com>

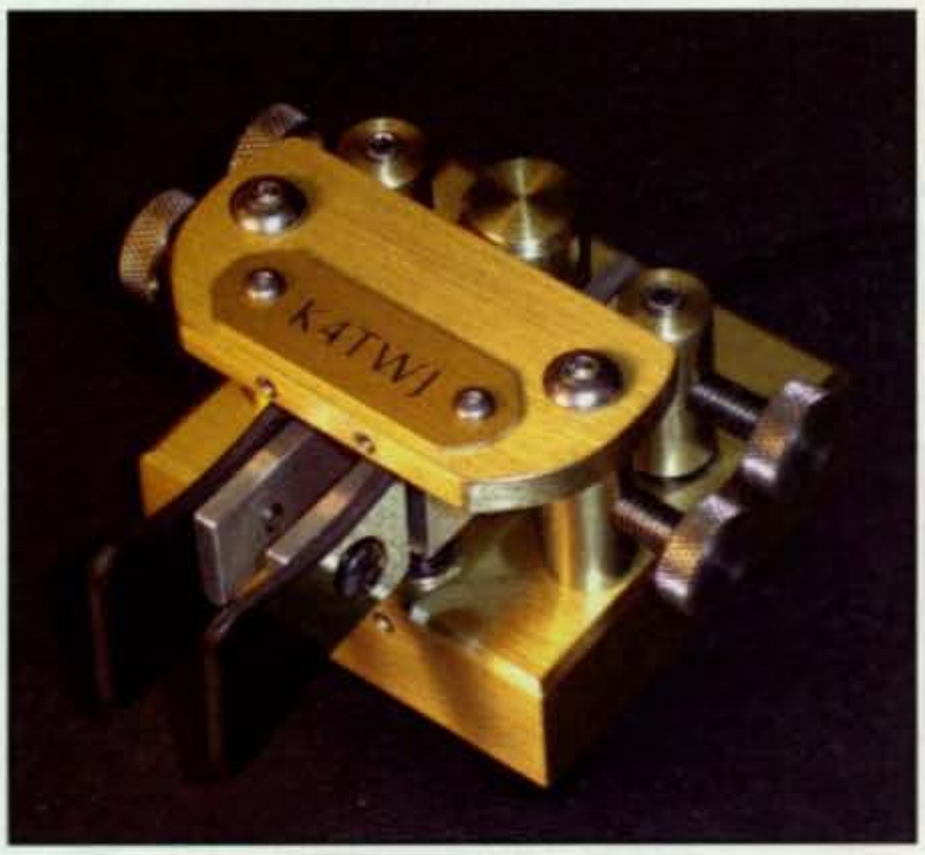

Photo 1– This snazzy little iambic paddle is made by Tony Baleno, N3ZN, and features magnetic tensioning, highly responsive arms, plus a lacquer-coated base and frame for blow-away good looks and outstanding performance. It is called a "QRP Paddle" and it is only one in a line available from <www.n3znkeys.com>.

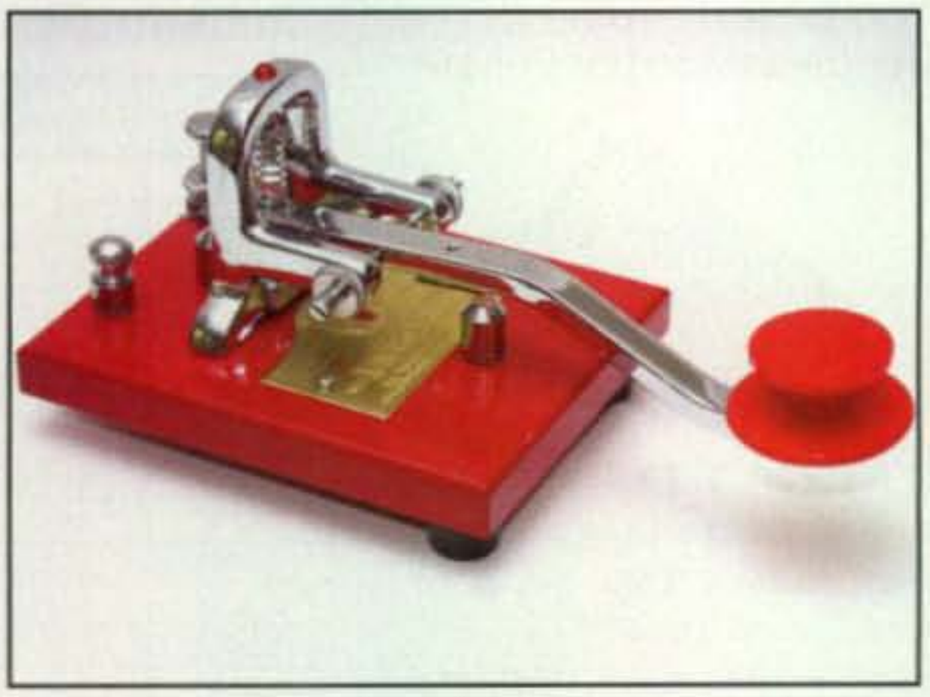

Photo 3– Another recent addition to the Vibroplex line is this flashy red-base Know Code key that was inspired by the FISTS CW Club and the new no-code licensing structure. It sports a 3.5×6 inch base with logo plate bearing the "Know Code" name and full-range adjustments. (Photo courtesy of Vibroplex Company)

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RSGB 2002 Ed., 224 pages.

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Takes the guesswork out of adjusting any home-made or commercial antenna, and makes sure that it is working with maximum efficiency. Describes RF measuring equipment and its use, constructing your own antenna test range, computer modeling antennas. An invaluable companion for all those who wish to get the best results from antennas!

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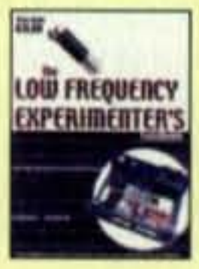
By Peter Dodd, G3LDO



RSGB, 2000 Ed., 296 pages.

An invaluable reference written to meet the needs of amateurs and experimenters interested in low power radio techniques below 200kHz.

Order: RSLFEH $33.00

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Fully updated, lists all islands that qualify for IOTA, grouped by continent, and indexed by prefix. Details the award rules and includes application forms.

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RSGB, 2001 Ed., 320 pages.

Choose from dozens of simple transmitter and receiver projects for the HF bands and 6m, including the tiny Oner transmitter and the White Rose Receiver. Ideal for the experimenter or anyone who likes the fun of building and operating their own radio equipment..

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RSGB, 2007 Second Ed.

HF or shortwave bands are one of the most interesting areas of amateur radio. This fully revised and expanded second edition guides you through setting up an efficient amateur radio station, equipment to choose, installation, the best antenna for your location and MUCH more.

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Technical Topics Scrapbook 1985-1989

by Pat Hawker, G3VA

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By Joe Carr, G3YWX

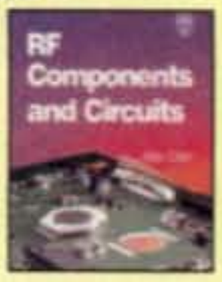

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Photo 4– One of the most prized camelback-style keys ever made was the Chubbock, and this miniature 1.5 × 2.75 inch replica made by Englmar Wenk, DK1WE (www.morsekey.com) brings it back to life in high style. It is fully adjustable, works great, and is loaded with artistic beauty.

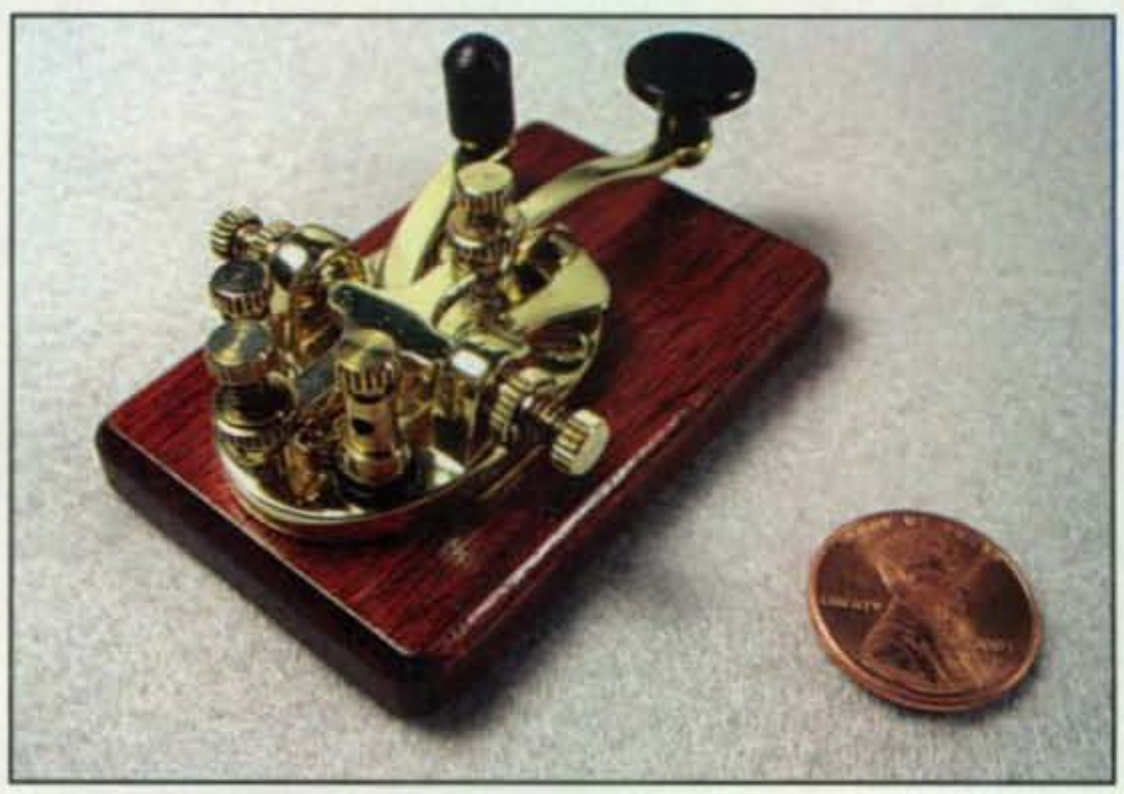


Photo 5– Many radio amateurs fondly recall starting out with a dear J-38 key, and this palm-size replica is exact in every way—even down to its tiny set screws. What a pumper! This key is available from its producer, Lee Hutchins, KA6IRL. (Details at <www.qrpj38.com>)

Baleno and shown in photo 1. This is a magnetically tensioned paddle with short-throw aluminum arms and ball-bearing movement for smooth and positive action at both slow and high speeds. It has gold-plated silver contacts and quick-adjust screws that hold in place without traditional locknuts, and a high-gloss lacquer coating to seal in its brand-new appearance.

Tony calls the little gem a "QRP Paddle" because of its small size (2 × 2.5 inch base), but I find the hearty little brass beauty works equally well with high power rigs (gotcha!), and its small foot print makes it a real space saver on a crowded desk. In checking around, I also noted every "ZN" paddle owner complimented Tony on his devotion to ensuring happy customers. He is a stand-up guy. If you have any questions, you can e-mail Tony at <n3znkeys@yahoo.com>.

Do you like miniatures (they are so irresistible!) but prefer a hand/pump key rather than a paddle? The little Code Mite from Vibroplex should fill the bill (photo 2), and its red logo against the black base is a real eye-catcher. It has gap and tension adjustments and, being a "pocketable" key, a slightly tight feel for holding together under intense grab-and-go use.

I must also compliment Felton "Mitch" Mitchell, W4OA, on diligently and responsibly continuing the proud 100-year-old legacy of Vibroplex (it is a significant part of telegraphic history). Mitch has devoted creditable effort to keeping the line alive and well by adding new keys to the mix. This company is as American as apple pie. Surely I speak for the multitudes in wishing Vibroplex another hundred years of admirable existence.

Tiny Treats

Our 2008 tour of keys continues with four more heart throbs, each capturing attention in its own special way. The key in photo 4, for example, is a miniature replica of the legendary Chubbock-style camelback key from the late 1800s. It is made by Englmar Wenk, DK1WE. Its brass mechanism has ball race bearings at the off-center fulcrum, silver contacts set in Teflon® insulation, and a non-tarnish finish. Nice! More details at can be found at <www.morsekey.com>, or e-mail Englmar at <inseco.wenk@t-online.de>.

Another all-time favorite key reproduced in miniature form is the 1.5 × 2.5 inch J-38 made by our good friend Lee Hutchins, KA6IRL (photo 5). The smooth workmanship, tiny parts, and fine adjustment screws on this little showpiece are remarkable, and you can order it at <www.qrpj38.com>. What an ideal mate for a 1950s-era 1S4 transmitter such as highlighted n this issue in my QRP column.

If your preference leans more toward an iambic paddle and you would like something different but very functional, the little Bulldog paddle made by Louis Petkus, K9LU, is a very good choice (photo 6). Its wood base is 2 × 2 inches and it has four suction cups to hold in place like, well, like a bulldog. I have used one in all kinds of unfriendly environments, and it continues to hold up great. It also serves a special purpose of operating silently, which can be an important consideration in some applications. Details at <www.bulldogkey.com> and you can e-mail questions to K9LU at <loupet@gmail.com>.

The round-base miniature in photo 7 disappeared from production a couple of years ago, but we are sure you will enjoy studying its unusual design. The key was made by Jim Richards, K6VDH, and its main arm is fashioned from a law officer's handcuff key.

Classy Classics

Many of us have seen incredible-design keys from eras past, and some of the

Photo 6– Louis Petkus, K9LU, makes this miniature iambic paddle from a modified bulldog paper clip. It is rugged, reliable, economically priced, and handles remarkably well for such a small key. It is also silent in operation, so it is ideal for times when you operate quietly and use earphones. You can order one at <www.bulldogkey.com>.

Photo 7– Check out this round-base miniature key. Its main arm is a handcuff key drilled out and fitted with a fulcrum pin and gap setting screw, and topped with a Cocobolo wood knob. It was originally made by Jim Richards, K6VDH, and sold by Marshall Emm, N1FN, of Morse Express. Now it is well on its way to becoming a collectible. It truly puts K6VDH in the keys and CW hall of fame.

Photo 8– Shifting size while continuing the round-base key theme, we find this intriguing dual-lever paddle Morse Express owner Marshall Emm, N1FN, uncovered at the Friedrichshafen Convention (Germany) in 2004. It's all circles—right down to its round "broomstick" fingerpieces! (Photo courtesy of N1FN)

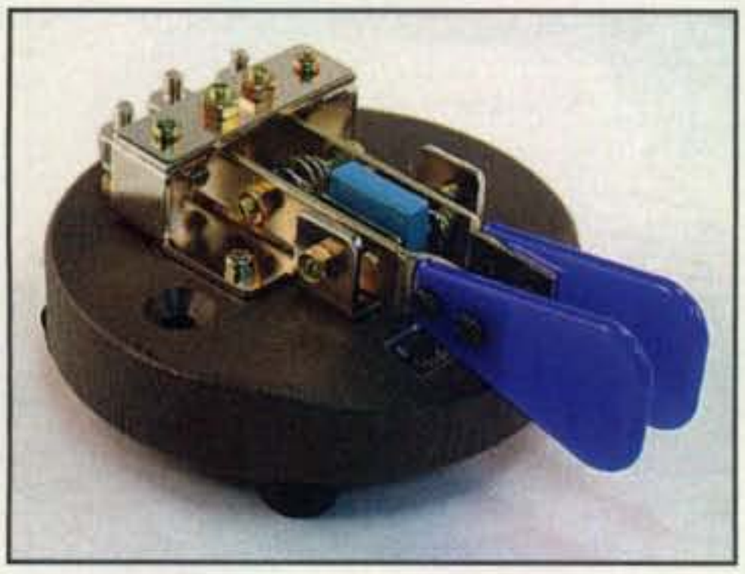
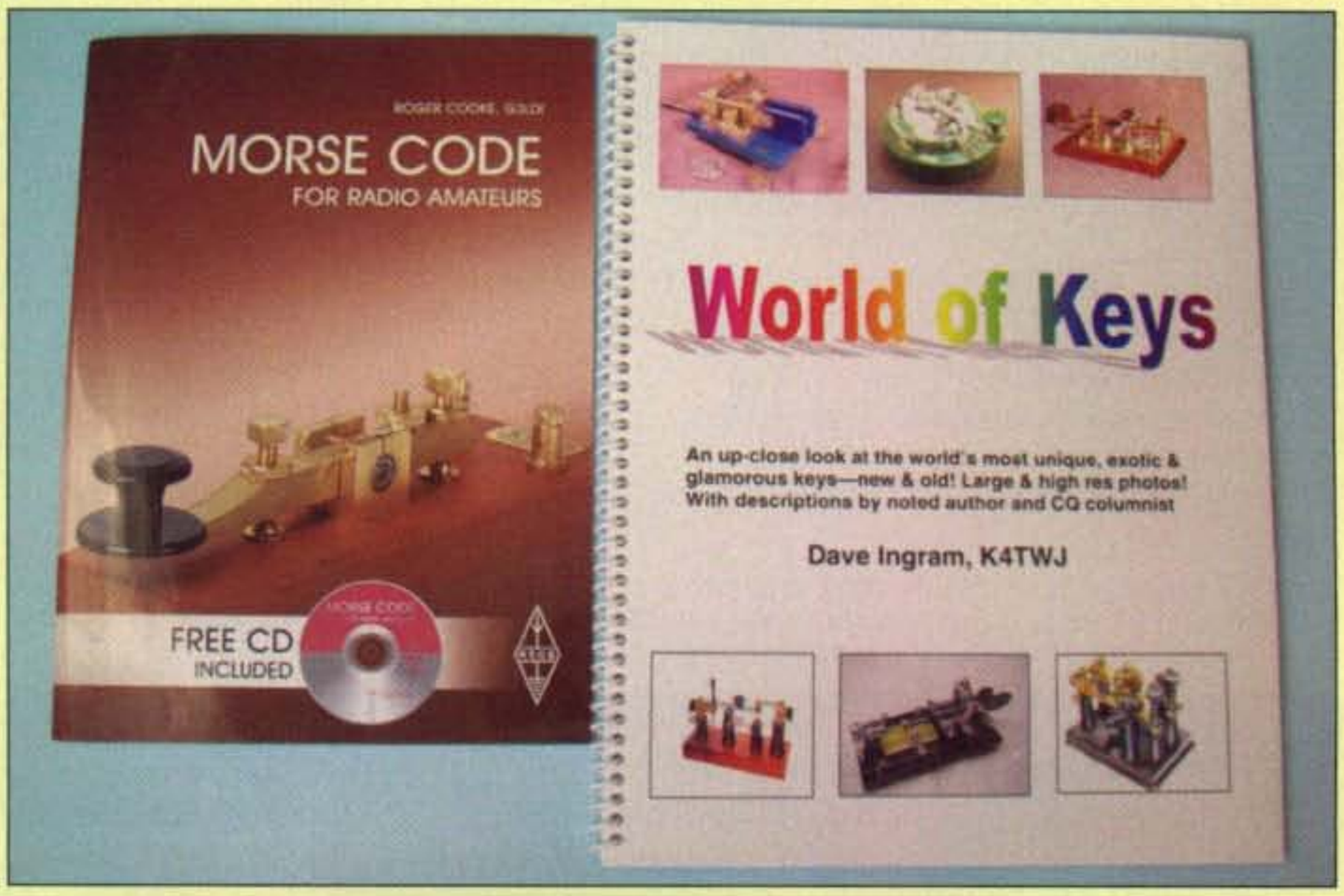


Photo 9– Still standing proud as a top value in the "under $100" class is this round-base and smooth-functioning Katsumi iambic paddle available from <www.MorseX.com>. This is one beautiful key!

New Bundle of (CW) Joy

Heads up, CW aficionadas near and far: Your enthusiasm for Morse code and keys has been noted, and the ARRL is now discount-bundling two of today's top books on the subject especially for you. *Morse Code for Radio Amateurs* was written by Roger Cooke, G3LDI, and describes the proud history and legacies of Morse code plus explains code sounds, CW abbreviations, how to perfect your CW abilities, and more. A combination computer and audio CD for practicing/improving your CW speed is included.

My own *World of Keys* features large, high-resolution pictures plus descriptions of the world's most unique keys, bugs, and paddles—new and old. It contains a blow-out array of telegraphic treats seldom seen outside private collections, and it has also inspired radio amateurs of all ages to enjoy CW to the max. Order these two books toll free from the ARRL at 1-888-277-5289 or via <www.ARRL.org/shop>.



gems just reach out and grab you with their unforgettable old-world charm. The Swedish key with vertically positioned contacts between two—err—upright arches shown in photo 10 vividly shows that fact. The key was made by a facility operated under the Royal Telegraph Workshops in Stockholm Sweden in 1877. This particular one is in the rare key collection of Lars Erik Edin, SM5ATG, and its photo is shared with us courtesy of Rune Wande, SM5COP.

Looking at the key's mechanism, its leaf-type contacts are visible between two horseshoe-type arches, and small contact screws at the top of each arch set gaps for both "make" and "break." Notice the adjustment screw with knurled nut extending from the front arch (the one closest to knob). It varies pressure applied to the vertically positioned leaf spring and

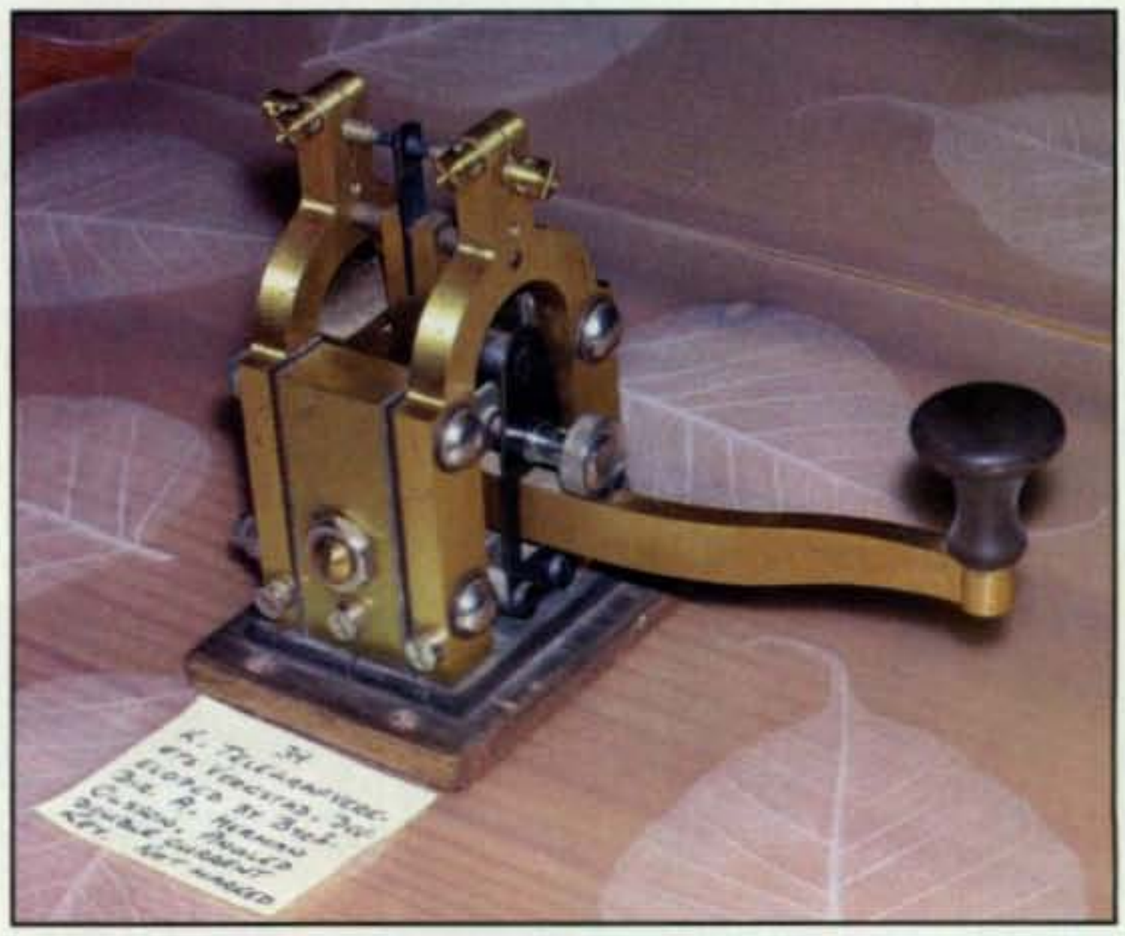


Photo 10 –This rare and unusual pumper was made in Sweden in 1877 and now resides in the private collection of Lars Erik Edin, SM5ATG. Notice the vertically positioned leaf-type contacts between the upright supports and the classic Swedish-style knob and arm. A most historically significant key for sure. (Photo courtesy of SM5ATG and Rune, SM5COP)

Photo 11– Ray Jacob, W2RJJ, was using this WW II British Air Ministry key when I contacted him recently, and he cheerfully shared a picture for inclusion in this column. The overall case design leads me to think it was a forerunner of the famed NATO keys. (Photo courtesy of W2RJJ)

serves as a travel stop for the arm. Looking at the overall lines of this 130-year-old masterpiece, we can't help but feel it was a forerunner of today's well-known Swedish Key popular around the world for its smooth operation and exquisite feel.

Another classic European key worthy of recognition is the unusual RAF item shown in photos 11 and 12. Ray Jacob, W2RRJ, was using this key when I contacted him on Straight Key Night 2007, and it sounded quite good so I asked him for details. Ray said the key was used by the British Air Ministry during WW II and saw service in Royal Air Force ground stations. Its large wire terminals, contacts, and protective cover suggest it was used in high-current/ high-power transmitter applications.

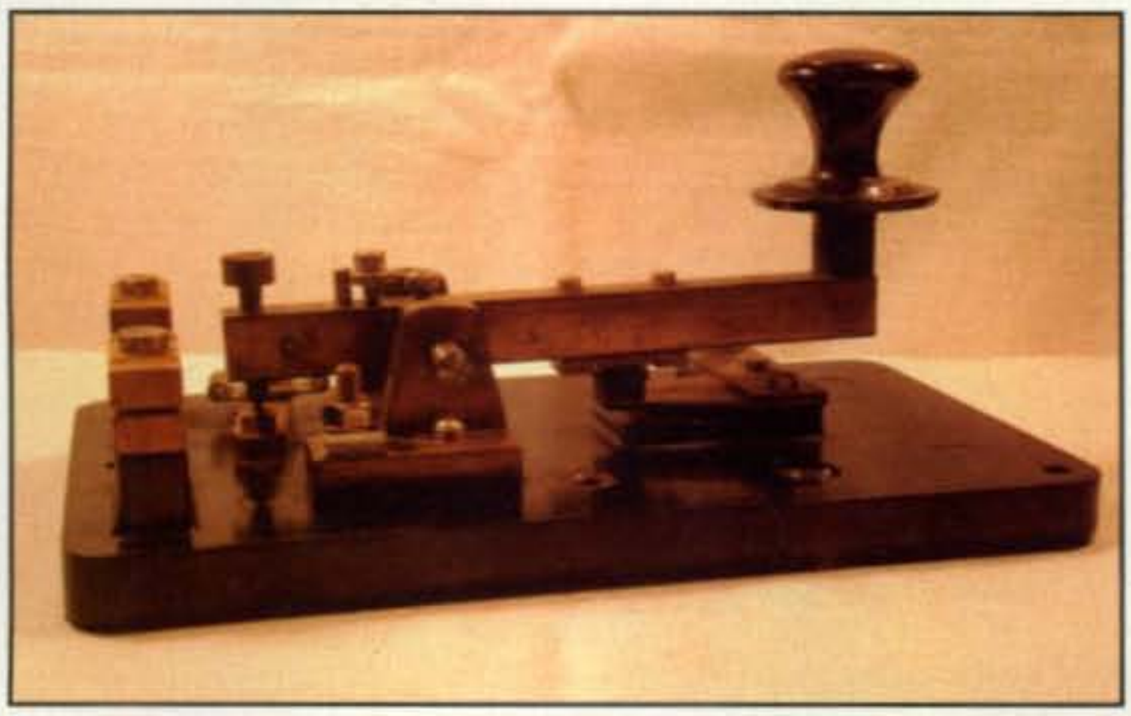


Photo 12– Ray, W2RJJ, removed the top cover from his British Air Ministry key to reveal its large contacts, double-height knob, and lower leaf-spring-type contact that produces a "soft" feel and contact wiping action during use. It is a real "pumper"! (Photo via W2RJJ)

CW Ring Tones

What is the latest way to carry your appreciation for Morse code and CW on the road? Replacing your cell phone's ring tones with CQs and your ham call, naturally. That's right, and your present cell phone may be capable of accepting external programming of such ring tones right now. Where to start? Check out <www.planetofnoise.com/midi/morse/2mid.php>. I understand this website was put together by Andy Booth, M1RGZ, of the U.K. and it can convert your (keyboard-entered) text/words/ callsign into a Morse code ring tone playable on most cell phones capable of playing "polyphonic," or "poly," ring tones. I also understand "RTTTL," or "mono ring tones," for older Nokia phones are available. Also, if you have a later model phone with WAP internet access you can download the ring tones (free) using the website's directions.

Using the website is fairly easy, considering there are thousands of cell-phone types, both new and old, and different people prefer different sounds in ring tones. Just type your desired CW ring tone into the "make Morse box" to get started and follow the related directions to the letter. If you have any questions, you can e-mail Andy, M1RGZ, at <braintankboogie@blueyonder.co.uk>.

Wrap-Up

That overflows available space for this month, friends, but even more telegraphic treats are waiting to be showcased in part two next month.

73, Dave, K4TWJ

BY FREDERICK O. MAIA,* W5YI

RF Safety Regulations and the Radio Amateur

It has been ten years since the FCC's new radio frequency (RF) safety rules went into effect, yet many amateurs—especially those recently licensed–may not be aware of them. Did you know that when you applied to become a radio amateur, or renewed your license, that you certified that you were familiar with the FCC's radio-frequency exposure rules and that you would comply with them? It's there in the fine print. This month, let's review RF safety.

What is Radio Frequency Radiation?

The RF portion of the electromagnetic spectrum is generally considered to range from 3 kHz to 300 GHz. Virtually all transmissions by amateur operators, of course, occur in this range. As a general rule, the higher the frequency, the greater the energy content and potential for damage through heating of biological tissue. There is a substantial disagreement over exactly what levels of RF radiation are "safe," particularly with regard to low levels of exposure.

Under the National Environmental Policy Act of 1969, the Commission is required to consider environmental effects when performing its licensing and regulatory functions. However, the FCC is not a proficient health and safety agency and must, therefore, rely on expert organizations for guidance on appropriate standards to use to ensure the safety of equipment that emits RF radiation. These expert health and safety agencies are the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH), and the Occupational Safety and Health Administration (OSHA).

In 1996 the FCC adopted new guidelines and procedures for evaluating human exposure to environmental RF electromagnetic fields from FCC-regulated transmitters. The new guidelines replaced those adopted by the FCC in 1985 (the 1982 RF protection guides of the American National Standards Institute, ANSI).

The new standard (ANSI/IEEE C95.1-1992) is generally more restrictive than the 1982 version in the amount of environmental RF exposure permitted. It also extends the frequency range under consideration to cover frequencies from 3 kHz to 300 GHz.

The 1982 ANSI standard specified only one set of exposure limits, regardless of whether the individual exposed was a worker or a member of the general public. The 1992 ANSI/IEEE standard set higher allowable limits for those who know they are in an RF field and, for the first time, included specific restrictions on currents induced in the human body by RF fields.

This newer standard specifies two tiers of exposure criteria, one tier for "occupational/controlled environments" (usually involving workers) and another, more stringent, tier for "general population/uncontrolled environments" (usually involving the public). Since they are usually in residential environments, amateur radio installations can be both in a "controlled" and "uncontrolled environment."

Most amateur transmissions are back-and-forth, two-way communications. Therefore, a station is normally only transmitting about half of the time—or a 50% duty cycle. The "controlled" and "uncontrolled" RF exposure limits are time-averaged over 6- and 30-minute time periods. It thus is permissible to exceed the recommended limits as long as the average exposure over the time period does not exceed the limits. The premise of time averaging is that the human body can regulate the thermal load caused by high localized RF exposures for short periods of time.

The 1992 ANSI/IEEE standard is also generally more restrictive in the evaluation of low-power devices, such as handheld radios and cellular telephones, than the 1982 standard, which permitted exclusion from compliance with the Maximum Permissible Exposure (MPE) limits if the input power of the radiating device was 7 watts or less.

The new guidelines also eliminated the categorical exemption for radio amateurs, which results in amateurs having to prove that their transmissions do not expose anyone to RF radiation in excess of the 1992 ANSI/IEEE guidelines. The "new" standard is five times stricter for devices operating in "uncontrolled" environments and includes all handheld radios on which the antenna is located close to body of the user.

Health Effects of RF Exposure

The public and the news media have been increasingly concerned during recent years about the dangers of electromagnetic fields (EFS) and nonionizing radiation. It has been known for some time that high intensities of RF radiation can be harmful due to the ability of RF energy to rapidly heat biological tissue. This is the principle by which microwave ovens cook food and how low-power infrared lasers can burn through human tissue during surgery. Exposure to RF power densities on the order of 100 milliwatts per square centimeter (mW/cm^2) or more can result in heating of the human body and an increase in body temperature.

Two possible harmful effects are RF burns and excessive RF exposure. RF burns occur when a person touches a live antenna or feed line that has high power going through it. This is similar to being burned by touching a stove, except that the burn

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is deeper. Excessive RF exposure occurs when a person is too close to an antenna transmitting at high power. The higher the power, the more precautions need to be taken.

In addition to intensity, the electromagnetic frequency of RF radiation is important in determining the relative hazard. At a distance of several wavelengths from a source of radiation, the human body will absorb RF energy at a maximum rate when the frequency of the radiation is between about 30 and 300 megahertz. This includes the amateur 6-, 2-, and 1 1/4-meter (222 MHz) bands. Because of this "resonance" phenomenon, the RF safety guidelines take this frequency dependence into account. Therefore, the most stringent standards are in this frequency range of maximum absorption.

Tissue damage results primarily because of the body's inability to cope with or dissipate excessive heat. The extent of the heating depends on several factors, including the power level and frequency of the radiation, size of the person exposed, duration of exposure, and the efficiency ofheat dissipation.

If the power level is high enough, RF radiation can cause body heating, which can cause blindness or sterility. Always point your handheld transceiver as far away from your eyes as possible, since the eye lacks sufficient blood flow to dissipate any excessive heat load. The biological effects that result from heating of tissue by RF energy are often referred to as "thermal" effects.

As a rule, the thermal effects of RF energy generally are not a major concern for most radio amateurs or their neighbors because of our relatively low power levels and the two-way (intermittent, low duty cycle) nature of most transmissions. Very few amateurs operate their stations "key down" for extended periods of time.

The levels of RF radiation routinely encountered by amateur radio operators are far below the levels necessary to produce significant heating and increased body temperature. However, there are certain isolated situations in which the RF safety standards may be exceeded and people could be exposed to potentially harmful levels of RF radiation. Amateur radio is a hobby that can be pursued safely, provided a few simple precautions are followed.

The MPE requirements are given in a table contained in FCC Rule Section 1.1310. This table (which is not in the Part 97 Amateur Rules) indicates MPE for radiated electric fields, magnetic fields, and power density by frequency band. The MPE assumes continuous-duty operation.

Amateur Radio and the New Standards

Amateur stations may legally transmit with up to 1500 watts on many bands throughout the radio spectrum using a wide variety of emissions, some—such as FM and RTTY—with high duty cycles. While most amateur stations transmit for short periods of time at power levels considerably lower than the maximum allowed, the possibility still exists for human exposures to RF radiation to be in excess of the new guidelines. Therefore, the blanket RF safety evaluation exemption that previously applied to the Amateur Radio Service was lifted. Amateurs were given until January 1, 1998 to comply with the new rules.

The standards for RF safety that amateurs (and other FCC licensees) are required to meet are a combination of the 1992 ANSI/IEEE standards and somewhat stricter standards developed by the National Council for Radiation Protection and Measurement (NCR) and the Institute of Electrical and Electronics Engineers (IEEE). The standards establish limits for human exposure to RF fields; the permissible field strength and power density varies by frequency.

The most stringent limit on power density allowed is in the 30–300 MHz VHF range, where the maximum permitted "controlled environment" exposure limit is 1.0 milliwatt per square centimeter, averaged over a 6-minute time period. A power density of 0.2 milliwatt per square centimeter, averaged over a 30-minute time period, is the maximum permitted in "uncontrolled environments." Amateurs and their families come under the "controlled" guidelines, while a neighbor's residence falls under the stricter "uncontrolled" tier.

All amateur transmitters fall under the new rules regardless of power, operating mode, or station configuration. However, the FCC assumes that certain stations are safe without a formal evaluation. Those are base-station amateur stations radiating less than 50 watts PEP at the transmitter output and push-to-talk handheld, mobile, or portable transceivers.

Although not required by the FCC's rules, it is advisable that mobile stations also be considered for potential exposure before an amateur automatically applies the categorical exemption. As an example, a 500-watt, 10-meter mobile installation with a vehicle-mounted

FCC'S 700-MHz Auction is Over; Google Wins by Losing

Wireless airwaves sell for nearly $20 billion

In our April column we told you about the FCC's sale of UHF spectrum reclaimed from the upcoming transition to digital television broadcasting. The 700-MHz auction re-licensed the old commercial analog UHF-TV band from Channel 51 to 69. The switch has been in the works for many years.

Digital television takes up less bandwidth,and converting to digital freed up a large chunk of valuable UHF airwaves which the U.S. government wanted to sell to the highest bidder. Congress thought the 700-MHz spectrum could bring $10 billion. The auction raised nearly twice that figure.

The 700-MHz auction started January 24, and after 261 bidding rounds ended on March 18 with more than $19.5 billion in revenue generated. The big winner of the lucrative "Upper C-Block" nationwide license was Verizon Wireless with a bid of $4.75 billion. The important C-Block covered 22 of the total 60 MHz that was auctioned.

Verizon Wireless is jointly owned by the Vodafone Group and Verizon Communications Inc. Vodafone, headquartered in the United Kingdom, is the world's largest mobile telecommunications network operator. Vodafone owns 45% of Verizon Wireless, the second largest mobile carrier in the United States behind AT&T.

Google lobbied the FCC last summer to include several rules in the C-Block bidding that would require open access and said they would pay the minimum starting bid if they were adopted. The FCC did not adopt all of Google's suggestions, but went along with the key request that the spectrum winner would have to allow any device or application to connect to the network as long as it met minimum technical specifications.

Although Google did not win any spectrum, it did meet the $4.6-billion minimum bid needed to trigger the open-access condition on the C-Block. However, it quickly withdrew from bidding once a higher bid was on the table. It became clear that Google wasn't serious about getting into the telecom business.

Instead, it wanted rules which could provide a fast, open network that would allow any software application (and its Android-based platform) on any wireless device without having to spend money building it. Google's strategy played a huge part in the outcome and the company got its way at no cost.

Google called the auction "a major victory for consumers" and predicted that "consumers soon should begin enjoying new, Internet-like freedom to get the most out of their mobile phones and other wireless devices . . . along with Google ads, you can be sure.

Even before the auction started, Verizon announced a new open-device initiative, a complete change of direction for the company. Anticipating Google's scheme, Verizon said it would now allow subscribers to bring their own wireless devices and software to its network. As soon as the auction concluded, Verizon released specifications and certification testing information for devices that it will allow on the 700-MHz network.

Expected are new generations of IP-based mobile broadband services that can accommodate data and full internet access as well as voice traffic. The company clearly wants to get its 700-MHz network going as fast as possible. It will be the first coast-to-coast wireless network open to all devices and software applications.

The auction was a huge financial success in total. FCC Chairman Kevin J. Martin said the auction raised more revenue than all of the spectrum auctions over the past 15 years combined. Some 80% of the more than $19.5-billion proceeds will be returned to the U.S. Treasury, or to put it a different way, to the American taxpayer. Winning bidders will have to pay by June 30, 2008.

About $1.5 billion of the proceeds will go to fund a program to subsidize consumer education on the transition to digital televison and digital-to-analog converter boxes. The National Telecommunications and Information Administration (NTIA) is offering—on a first-come, first serve basis—up to two "$40 price off" coupons toward the purchase of two converter boxes. You can get them by calling the toll-free DTV hotline (1-888-DTV-2009) or ordered them online at <https://www.dtv2009.gov> until March 31, 2009.

antenna would certainly merit a closer look. On VHF, the use of a high-power amplifier could also present problems in some cases.

In general, it is recommended that in these higher powered installations the antenna be located such that the vehicle's occupants will be shielded from the antenna during normal use. One good location is in the center of an all-metal roof. Locations to be avoided for high-power operation would be a trunk-mounted antenna, or installation on a vehicle with a fiberglass roof.

Unless categorically exempted, amateurs radiating more than 50 watts output are required to evaluate their station parameters (including power output, antenna gain, frequency, distance from the antenna to the populated environment, and duty-cycle of the communications) to assure that the MPE is not exceeded.

Nearly all amateur stations already meet the MPE limits described in the guidelines, especially when you consider the time-averaging aspect. Most hams need only to perform a "routine analysis" of their station operation, which can be done merely by comparing their station configuration to a similar station shown in a chart in the FCC's OUT/OUT Bulletin Number 65, "Evaluation Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation."

The bulletin offers guidelines and suggestions for evaluating compliance. However, it is not intended to establish mandatory procedures, and other methods and procedures may be acceptable if based on sound engineering practice.

The Bulletin's Supplement B contains information, tables, and figures that can be used by amateur station licensees in determining whether a station must be evaluated for RF compliance. The complete text of OUT Bulletin 65 and its Supplement B (about 150 pages total, complete with all the tables) can be viewed and downloaded from the FCC's OUT website at: <http://www.fcc.gov/oet/info/documents/bulletins/#65>.

In general, the information contained in Bulletin 65 and Supplement B is intended to enable the amateur to make a reasonably quick determination as to whether a proposed or existing amateur station is in compliance with the exposure guidelines, and if not, the steps that can be taken to bring it into compliance.

Most amateurs will not need to make any technical adjustments whatsoever. A survey of amateur stations in southern California conducted by the FCC in 1990 concluded that very few stations would normally exceed the RF exposure guidelines. Assuming a 50% duty cycle, even a transmitter running a kilowatt into a three-element triband (14, 21, and 28 MHz) Yagi antenna need only be 35 to 40 feet from a neighbor's residence to comply with the RF safety standards.

There is no special amateur station evaluation paperwork that needs to be sent to the FCC to prove that you have completed the required RF exposure evaluation. Only a short certification statement included on the station application Form 605 needs to be signed, certifying that you have read and understand the new RF exposure guidelines. This form is submitted when you qualify for a new license or renew your current one. The FCC does recommend,

however, that each amateur keep a record of the station evaluation procedure in their station records in case a question arises.

Determining RF Field Strengths

The new RF safety guidelines require amateur operators whose stations are not categorically excluded to perform a routine compliance analysis of their stations. The FCC is relying on amateur radio operators to perform this evaluation.

There are basically three ways to determine if your station exceeds the maximum permissible exposure levels. They are:

1. Using electronic instruments that measure field strength;
2. Performing mathematical calculations based on generic formulas provided by the FCC; and
3. Using tabular charts and computer programs that determine "worst case" estimated distances between typical transmitting antenna systems and the neighboring environment.

Each system has its shortcomings. Professional RF power density meters are very expensive and relatively complex to use accurately, especially in the near field. Low-cost meters for home use are often inaccurate. Field strengths calculated using mathematical formulas fail to take into account the random hot spots that often exist in the near field. Also, charts and computer programs intentionally overstate the actual RF energy.

It is expected that most amateurs will adopt this third method since it is the least expensive and easiest to use. The theory is that if your station can pass the "worst case" test, then it complies with the RF exposure guidelines. You may begin operating as soon as you determine that your station complies. There's no need for FCC approval before operating and no records to submit.

In short, there is no universal consensus about safe energy levels, and even if there were, electromagnetic radiation is difficult to measure. One of the best ways to deal with RF energy is to minimize the potential health hazards as much as possible.

Amateurs should follow a practice of "prudent avoidance"—that is, to minimize exposure to RF energy whenever it is practical to do so. This is also the policy that has been adopted by the American Radio Relay League. Some amateur operating practices are safer than others. Here are some suggestions.

• You should radiate as little RF power as possible. The power-level regulations have always required amateurs to use the least amount of transmitter power necessary to perform their communications.

• Make it a practice to operate without your linear amplifier whenever possible!

• Never use an amplifier that has its shielded metal cover removed. The cover keeps RF energy from escaping into the environment.

• Reduce the duty cycle. Keep transmissions short, especially when operating at the VHF/UHF/microwave level.

• Transmitting antennas should be mounted as far away from residences and populated areas as possible,—and the higher the antenna the better.

• Since feed lines can radiate, route open-wire line (or even coaxial cable if the standing wave ratio is high) away from populated areas.

• Do not transmit when people are near a ground-mounted or mobile antenna. Vertical antennas are best installed on monopoles, towers, or roofs and not at ground level.

• A good rule-of-thumb to follow is to allow at least a 35-foot distance between the antenna and the environment if 100 watts or more is being transmitted. Allow an even greater distance if you transmit with high-gain antennas at the high-energy VHF/UHF frequencies.

• Don't transmit if anyone is within five or six feet of a whip antenna.

• Be careful when using indoor antennas, including those mounted in attics, because they can generate substantial RF fields.

• Use low power (10 watts output or less wherever possible), and keep your transmissions short when someone might be near the antenna.

• Do not use high-power VHF/UHF or microwave transmitters and high-gain directional antenna arrays such as used during moonbounce or weak-signal communications in a residential environment.

• Never look into the open end of an activated waveguide or stand in front of a high-gain VHF-UHF antenna array when the transmitter is on.

•Always use the lowest power level possible when using a handheld transceiver, and point the antenna as far away from your head, and especially your eyes, as possible.

• Amateurs can also minimize the amount of RF energy radiated into the surrounding environment by changing frequency bands and using lower duty cycle emission types such as single sideband and CW.

• Limiting access is an easy way to reduce exposure, such as having a fenced-in yard and erecting warning signs.

73, Fred, W5YI

BY BOB JOSUWEIT,* WA3PZO

SATERN Turns 20

Public Service Editor Bob Josuweit, WA3PZO, is taking a couple of months off from writing his column in order to devote time to getting married and taking a honeymoon. Bob will be back (presumably well-tanned) in August. For now, editor W2VU is filling in.

We've spent a fair amount of time visiting MARS (the Military Affiliate Radio System) on these pages in recent months, so I thought it would be a good idea to continue our exploration of the ham radio "solar system" by dropping in this month on SATERN, the Salvation Army Team Emergency Radio Network. This is particularly appropriate since this month SATERN is celebrating its 20th anniversary.

SATERN was founded in June 1988 by four hams and Salvation Army members—Major Patrick McPherson, WW9E (SATERN's National Director); Art Evans, KA9KLZ (now N9KQ); Harold Gibson, VE3NKU; and Ernie Reid, VE3BIX (both Gibson and Reid are now Silent Keys). The goal, according to SATERN Eastern Territory Coordinator Dick Montgomery, N3DV, was "to develop a pool of trained ham operators who would be familiar with, and to, The Salvation Army and be able to provide communication support in times of need, both locally and for widespread or international disasters or emergencies."

"In case you don't know," he added, "The Salvation Army is an international Christian Church, known most widely for its ministry to those in need." Montgomery explained that The Salvation Army in the United States is divided into four "Territorial Commands"—eastern, southern, central, and western—and that SATERN's structure follows suit. There is an international SATERN net on 14.265 MHz every Monday through Saturday at 1500 UTC "and whenever the need for emergency tactical traffic or health-and-welfare traffic exists to support ongoing emergencies." In addition, Montgomery said, each Salvation Army territory has its own weekly Territory Net, with Eastern and Central meeting on Saturdays, at 1400 and 1630 UTC, respectively, on 7265 kHz, with the Southern Territory net on Saturdays at 1600 UTC on 7262 kHz, and Western on Sundays on 3977.7 kHz at 0400 UTC. There are also some state-level nets on 75 meters and even 60 meters.

"There are currently almost 4000 members worldwide," Montgomery added, noting that an incoming health-and-welfare traffic bureau "was developed in the '90s to answer an obvious need for information of survivors of widespread disasters. ... We have a separate, dedicated group of hams who respond to requests for H&W inquiries received by radio, telephone, and internet. Inquiries are handled by whatever means we can, NTS, ARES nets, local contacts, etc., by this group. This frees the 14.265 MHz net to handle just tactical and outgoing H&W traffic." During Hurricane Katrina," Dick noted, "SATERN handled over 61,000 H&W requests and successfully connected over 25,000 families."

Local Teams, Too

Local SATERN Communication Teams have also been developed, explained Dick, "principally in those Salvation Army Division HQs most frequently affected by natural disasters—e.g., Chicago Metro Division, Kansas-Missouri Division, Southern California, Houston-Galveston, Greater New York City, Mass Division, and where strong Salvation Army Emergency Disaster Service Teams were already in place and providing relief to both the survivors and responders as part of the local ministry of The Salvation Army."

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Then-New York City Mayor Rudolph Giuliani meets after the 9/11 attacks with SATERN National Director Maj. Pat McPherson, WW9E. (Photos courtesy N3DV)

SATERN members Geoff Banfield, KB2WQG, and Ruth Signorelli, KC2ONE, at the New Jersey Division Headquarters SATERN station, NJ2SA.

Some of these local groups are supported by weekly nets on VHF and UHF repeaters, most of which cover a city and/or surrounding areas. Two exceptions to this are a "local" SATERN net in north Texas, which operates through two linking systems and covers a large part of the entire state, and the local net which I happened to tune in a few weeks ago. The New Jersey-New York Net uses a linked repeater system consisting of eight VHF/UHF repeaters covering all of New Jersey, most of New York City and Long Island, and parts of Delaware and eastern Pennsylvania. In addition, the system includes Echolink, IRLP (Internet Repeater Linking Project), and WIRES nodes, and the net regularly has check-ins over the internet from people in different parts of the country who do not have local SATERN nets where they live. Dick, N3DV, is net control.

Linked Repeaters and Emergencies

I asked Dick about the benefits and drawbacks of using a linked repeater network for his local SATERN net, and about the use of Echolink in real emergencies. "We had hoped, and still do hope, to make it a New Jersey, New York, Pennsylvania/Delaware Net, thus linking three TSA Divisions together with one system," Dick explained, but added that, "so far, we haven't had much response from the Philly area."

Montgomery continued, "From an emergency standpoint, three of the key repeaters in the system do have emergency (power) back-up, including the Echolink server hub. Recently, another repeater has been added to the system … with an additional 6 Echolink portals, so the system can theoretically handle 11 Echolink check-ins." However, Dick noted that, "while it is very nice to have regular check-ins from Couer d'Alene, Idaho and Miller's Creek, North Carolina (both SATERN members with no local nets of their own), our focus for the net still remains on the New Jersey, Greater New York, and Penn/Del Divisions."

"The challenge of using a wide-coverage system for any communication is that it opens up the communication to all of humanity, with all of its foibles." Dick added. "Unfortunately, we haven't managed to devise a ham radio operator's test that will weed out that element of society which likes to be immature or intentionally disruptive. Fortunately, the occasions of disruption that we have experienced have been relatively infrequent. We persevere."

"As for use of Echolink in times of emergency," Montgomery continued, "yes, I believe it has a place, as another mode to provide vital communication links. We have used it quite meaningfully as a part of SETs (Simulated Emergency Tests). For example, one of the challenges of The Salvation Army is that requests for assistance must go up the chain-of-command. In other words, if we, here in the NJ Division, require assets or assistance from other TSA commands, we have to make that request through channels. During the 2007 SET, the scenario SATERN used was that additional assets would be required by the NJ Division from surrounding, unaffected commands. We put out a call from our local TSA Command, NJ DHQ, temporarily located at Camp Tecumseh, in Pittstown, NJ, to the Eastern Territory HQ located in West Nyack, New York, requesting canteens, field kitchens, and delivery vehicles, suggesting both Southern Territory and Central Territory as potential sources. Calls went out from the ETHQ operator to Echolink operators standing by in Chicago, Illinois and Charlotte, North Carolina. From there, presumably, communication could be handled via normal channels. Return traffic, with expected arrival times, were received via Echolink."

Dick also commented on working with other emergency communications groups, something with which he is quite familiar, wearing many different EmComm "hats" himself, including being SATERN liaison with New Jersey State RACES (Radio Amateur Civil Emergency Service).

"As to the interface between SATERN and the other emergency communication organizations, such as MARS, RACES, ARES, HWN, MMSN, REACT, NTS, etc.," he said, "they are all valuable, vital, and handled with mutual respect and cooperation. Any one of us is likely to receive traffic which can best be handled by someone with the connections and practice to handle it more efficiently. ... On various levels, SATERN works closely with each, and all of the EmComm groups, and is familiar to, and respected for, what we do by each of them in turn."

Becoming a SATERN Volunteer

Finally, I asked Dick about the process of becoming a SATERN volunteer, specifically whether one needs to be a member of The Salvation Army and whether SATERN requires the same sorts of background checks that have been so controversial with the American Red Cross.

Columbus, Ohio SATERN members Richard Carey, KB8OTZ (seated), and Mark Griggs, KB8YMN, operate from Mississippi after Hurricane Katrina.

Running with RFID

I recently helped with communications for a 10K run in my local area (the Essex Co., NJ "Cherry Blossom Run"). It was the first foot race I've worked in quite a while and I was fascinated with how modern technology has worked its way into this sport (along with everything else). I was stationed at the mid-course point, where runners were funneled into crossing a special mat with a computer connected to it. I asked the "split timer" with me what it was all about. It turns out that each runner is issued an RFID (radio frequency identification) chip at registration that contains a unique identification number. The chip is laced into the runners' shoes, and as they cross the mat, a sensor reads the chip's ID number and records it along with the exact time. This information is then posted to the internet, where a runner can later check to find out his/her exact "split time" at the halfway point. It is also a powerful anti-cheating device, since someone who reaches the finish line without being recorded at the halfway point most likely has taken a shortcut! (This is especially useful on a course such as the one we were using, on which runners use the same road in both directions.) It has nothing to do with ham radio, of course, but as a "tech junkie," I found it fascinating and wanted to share it. —*W2VU*

Kansas/Missouri SATERN member Lynn Grimes, KGØWQ, receives a hug from President Bush last summer in the aftermath of the tornado that destroyed Greensburg, Kansas in May 2007.

"All you need to become a member of SATERN," Dick replied, "is a ham ticket issued by an appropriately authorized governmental agency (we have SATERN members around the world, and SATERN Territory Coordinators in Canada, Great Britain, Russia, India and Australia). There is no religious affiliation requirement whatsoever. Agnostics, atheists, Jews, Hindus, Russian Orthodox Catholics, all are welcome. You just need to want to help your fellow beings."

On the question of background checks, Montgomery explained that there are two different levels of participation, one of which does not require any sort of background check and one for which a criminal check (only) is required.

"I am pleased to say that there is no background check required for membership in SATERN. However, you also need to understand that SATERN is a group of hams who want to help and want to be associated in whatever way with The Salvation Army. You can be a SATERN member and provide abundant and very welcome and valuable aid and assistance through your radio and never leave your shack. Many of our members do just that.

"However, to become an Emergency Disaster Services (EDS) volunteer with The Salvation Army (TSA) and work with Salvation Army Officers, staff ,and other volunteers 'on the ground' at emergency sites giving aid and comfort to survivors and emergency responders, you *will* undergo a criminal background check before you are credentialed." But, Dick pointed out, "(y)ou are not required to give your Social Security Number. A financial check is definitely *not* part of a TSA background check. In most cases around the U.S. and Canada, those TSA Division HQs which have active EDS units will also have a part of their volunteer rolls filled with SATERN members and these SATERN members will have undergone a background check."

With Thanks...

This month, we took a closer look at SATERN—the Salvation Army Team Emergency Radio Network—as the group celebrates its 20th anniversary of providing communications in disasters and other emergencies. A special thank you to SATERN Eastern Territory Coordinator Dick Montgomery, N3DV, for his input.

"What Are You Doing?" A Primer on Outdoor Operations

BY WAYNE YOSHIDA,* KH6WZ

For hams all over our nation, the month of June and the nice weather mean the coming of the most popular ham radio operating event of the year, amateur radio Field Day (FD); see photos 1, 2, and 3.

Every fourth weekend in June for more than 70 years the American Radio Relay League (ARRL) has been sponsoring this nationwide emergency communications drill. This is a chance for every ham (and even non-licensed individuals) to show off our communications capability in a public place. The fresh air and sunshine naturally suggest ham radio operations out in the great outdoors. There is a very informative "Field Day Package" available for a free download at the ARRL website: <http://www.arrl.org/contests/announcements/fd>. The package explains the details of what is needed to participate in FD.

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Prepare the Neighborhood and Yourself

These days it is not uncommon for "diligent" security- and privacy-minded people to become "concerned" about unusual activity in their neighborhood. Certainly, setting up antennas and stringing wires all over the place can be considered unusual in many places! Prepare the area in advance with a news release, and send or even hand-deliver the information to your local Neighborhood Watch program leader, community association, and local newspapers. Talk to your nearest neighbors about this upcoming event and what you are doing. Also, this publicity information is worth 100 bonus points!

If you are operating in a park or other public location, make sure you have written permission and/or any necessary permits well in advance,

Photos 1 & 2– The Huntington Beach RACES group raises the flag at the 2007 Field Day operating site.

Photo 3– Outdoor operating means weather, portable power sources away from the AC mains, and lots of fun!

and be sure to have those documents with you during Field Day. When you operate a station in a public place (or maybe even a not-so-public place), you must also be prepared to deal with the public and explain what you are doing.

Prepare an "elevator speech" before you start your operation. This elevator thing is a 30-second, non-technical, no-acronym explanation about what ham radio is, what you are doing, and why ham radio is an important asset for emergency situations. This is a great time to promote ham radio and your ability to assist in public service with a reliable communications network at no charge.

A one-page document in the form of a question-and-answer format to hand out to curious people is a useful tool. See "A Most Useful Handout" elsewhere in this article.

Uh-Oh: An Official "What Are You Doing?"

Keeping a copy of your ham radio license in your wallet is also a good idea. This way if a law-enforcement official

Photo 4– Microwave rigs can look very suspicious. Here is my 10-GHz rig set up in Huntington Beach, CA, the ARRL Orange section.

A Most Useful Handout

Years ago, while visiting a local radio control (RC) airplane field, I came across a question-and-answer sheet used by one of the model pilots. The Q & A sheet was pasted on his ground equipment box, and I thought it was a perfect example of something that we can use during Field Day. Please feel free to use this information in your own hand-outs, customizing it to fit your needs and your area.

What Are We Doing?

We are licensed amateur (ham) radio operators participating in an emergency communications drill. The goal is to talk to as many other ham radio stations as possible in a 24-hour period under simulated emergency conditions. As you can see, we are operating outdoors away from our home stations and we are not plugged into any power outlets.

Is this like CB?

Yes and no. Ham radio is similar to CB in that both use two-way radios and antennas to talk with each other, but hams can communicate using Morse code and computers in addition to voice, and we even have our own satellites. Ham radio requires a license issued by the Federal Communications Commission (FCC) and licensees are required to pass a written test involving electronics theory, radio regulations, and operating procedures.

How far can you talk?

We can communicate to other ham stations around the corner or across the globe, depending on a variety of factors that affect the way radio waves travel.

Is this legal?

Yes. The Amateur Radio Service was created to encourage development of radio communication technology and establish a public service communications force at no charge to citizens or the government. It is regulated in the United States by the Federal Communications Commission, an agency of the U.S. government.

How much does this equipment cost?

Like any other hobby, people spend as much or as little as they can afford. The most basic setups begin at about $100. Most people who are deeply involved in ham radio spend as much as any other serious hobbyist, such as an amateur photographer or woodworker.

Where can I get more information?

More information on ham radio is available from the American Radio Relay League (ARRL). Their mailing address is: American Radio Relay League, 225 Main Street, Newington, CT 06111; phone 860-594-0200; website: <http://www.arrl.org>.

For more information about ham radio in the local area, contact *[add your club contact info here]*.

asks you the question "What are you doing?" you have a document that may prevent getting some kind of ticket, or even a trip to the local headquarters. Again, if a permit is required to operate where you are, make sure you have it—and have it with you.

In addition, I always have several back issues of my ham radio magazines in my vehicle, and if any visitors seem more than casually interested in what we are doing, I give them a copy or two. Information about your group and upcoming meetings/licensing courses is also helpful.

Some of the more interesting, funny, or scary questions I have heard over the years include:

"Are the whales coming soon?"
"Is something bad going to happen?"
"Can you call my friend in [some city]?"
"Are you going to put a cell phone tower up here?"
"Excuse me, sir, is this a listening device?"

The last question was the scariest and happened to a friend of mine using his microwave gear in an event last year. Admittedly, microwave ham radio equipment does look strange (see photo 4).

He was setting up his gear somewhere in the desert, and almost out of nowhere a US Army Hummer drove to his operating spot at a very high speed. The giant tires locked up and clouds of dust and sand flew all over the place. Four soldiers jumped out, complete with very large weapons pointed directly at my friend. After the soldiers examined the equipment and my friend explained what he was doing, and promised to leave immediately, they drove off to wherever they had come from. Needless to say, my friend Dave did not delay in packing up his gear and moving to another place to operate.

It's Just Like Camping. . .

Operating outdoors is just like camping, only with more gear to worry about. One of the first things you must have is some form of shelter, or at least some shade to help protect you from the broiling sun, and in some areas a nice summer shower (see photo 5).

Therefore, just like camping, there is a list of the essential survival items you must bring, a list of the "nice to have" things, and maybe a list of what not to bring. According to Recreational Equipment, Inc. (REI), this list of "Ten Essentials" for camping has been in existence since the 1930s:

Map
Compass
Sunglasses and sunscreen
Extra clothing
Headlamp/flashlight
First-aid supplies
Fire-starter
Matches
Knife
Extra food

Photo 5– Shelter can mean many things to many people. In any case, shelter is a must to protect you and your gear from the hot sun, possible rain, and bugs. This vehicle tent accessory makes a handy and quick-to-set-up shelter for emergency communications.

An updated "Ten Essentials" list adds a few things we should always carry:

Navigation aid (map, compass &/or GPS)
Sun protection
Insulation (extra clothing)
Illumination
First-aid supplies
Fire-starter
Repair kit and tools
Nutrition (extra food)
Hydration (extra water)
Emergency shelter

These ten items are not only good for "camping," but are also the basis of any survival or emergency-preparedness kit. It may be a good idea to prepare one of these kits for your FD operation and then keep it in your car in case something bad happens. By the way, when I say "something bad," I do not mean some major disaster. It could be a smaller problem, such as developing unexpected car trouble such as a flat tire or some other malfunction. You may be temporarily stranded in some remote location away from a store or service station, and you will appreciate being prepared with something to eat and drink while waiting for the tow truck to come and rescue you.

What Happens at Night?

Perhaps unlike camping, FD activity does not stop when the sun goes down. In most areas of the country, the operations run well into the wee hours of the morning, if not through the night, so you must be prepared with proper illumination when it gets dark. Flashlights are not enough, and even lanterns may not provide enough light in order to fill out the paperwork (the FD log) needed to document your participation in the

How to Find a Nearby Field Day Operation

If you're not already a member of a club that's putting on a Field Day operation, but would like to visit one to see what it's all about, the ARRL has a new online Field Day locator service available on its website, using online mapping technology. Point your web browser to <http://www.arrl.org/contests/announcements/fd/locator.php>, plug in your home address, and the map will show you the locations of registered Field Day operations in your area that are accessible to the public.

Note to clubs: Listing on the map is not automatic. To register your FD location, go the same web page, click on "Add a Station," and follow the prompts.

event. A computer screen provides its own light, but it usually is not enough to illuminate the keyboard.

Over the years, I have used desk lamps and floor lamps of various sorts for illuminating the FD operating tent and surroundings. However, several years ago, just for fun, I brought several strings of Christmas lights I bought at the after-Christmas sale at the local hardware store. The many little individual light bulbs are spread out, so they lit up our operating tent quite nicely. As a bonus, the lights created a festive look for our operation. You might want to try this for your event, too.

The Information Exchange and the Log

The log is a running record of your contacts, including the date, time, callsign, and information exchanged with the station you "worked" or made contact with. It may be on paper or on a computer. The Field Day information exchange (or just "exchange") is the number of transmitters used followed by a designator that describes your FD operation or set-up, and your location described using ARRL Section. I know this sounds complicated, but once you get through some contacts on the radio, you will begin to understand the pattern. Besides, Field Day is almost always a group effort, which includes experienced FD operators as well as beginners. A list of the ARRL sections is available on the League's website at <http://www.arrl.org/sections/>.

For example, if the City of Huntington Beach Radio Amateur Civil Emergency Service (RACES) group had seven stations (each station is comprised of a transceiver and an antenna) on the air and operated from the City's Emergency Operations Center (EOC), located in the ARRL's Orange section, the exchange would be "7F ORANGE."

Let's take a look at typical FD contact. In this example, the HB RACES Field Day group (W6GOS) is calling for a contact on 40 meters (7 MHz band) using single sideband (SSB) voice. This is what it might sound like on the radio:

W6GOS: "CQ Field Day, CQ Field Day, CQ Field Day, this is W6GOS, Whiskey Six Golf Oscar Sierra, Whiskey Six Golf Oscar Sierra, calling CQ Field Day and listening."

The W6GOS operator pauses to listen, then hears a station responding:

W6RO: "W6GOS, this is Whiskey Six Romeo Oscar, W6RO, over."

The W6GOS operator writes W6RO in the logbook or types it on the keyboard, notes the time, and acknowledges W6RO, and gives the W6RO operator the exchange:

W6GOS: "W6RO, this is W6GOS, Seven Foxtrot, Orange Section, over."

The W6RO operator logs the exchange in his log, acknowledges he has the information, and completes the exchange by providing the W6GOS operator with their information:

W6RO: Roger, W6RO is Five Alpha, Los Angeles, LAX, over."

The W6GOS operator writes the remaining information in the logbook, finishing a complete and valid FD contact, and then calls for more contacts:

W6GOS: "QSL. 73. CQ Field Day from W6GOS. . . "

This sounds cumbersome when reading the exchange in "printed dialog form," but you may be surprised to know that most good operators can make hundreds of valid Field Day contacts like this all day and all night. It takes practice along with good listening and speaking skills. If there is some element of the exchange that you're not certain of, even after listening carefully, don't hesitate to ask the station to repeat it, more than once if necessary. The contact "counts" for Field Day points only if both stations acknowledge receiving the complete exchange.

Get in There and Do It

As mentioned, Field Day is the most popular ham radio operating activity in the U.S. and Canada. It is most often a group effort and is a great opportunity to learn—and teach—about setting up a radio station, operating efficiently, and accurately copying complex and specific information. All of these skills are important for any and all ham operators to have, because we must always be prepared for any communications emergency. Equally important is the fun and the camaraderie you cannot help but feel during FD.

73, Wayne, KH6WZ

the weekender

BY PHIL SALAS,* AD5X

Build Your Own Air-Wound Coils – Part II

Last month I showed you how to make your own air-wound coils. This time I'll show you a simple way to make coil supports for your home-brew or purchased air-wound coils.

Fiberglass Coil Support

While I've used PVC and wooden dowels for coil supports in the past, my preference is fiberglass. I prefer 3/8-inch fiberglass rod, but this usually is hard to find locally. However, I've recently discovered an easy way to use sections of readily available and inexpensive 1/4-inch diameter fiberglass bicycle flags.

Note: Fiberglass rods are easily cut with a hacksaw. However, use care when cutting them! The little fiberglass shards (the "glass" in "fiberglass") can cause you a lot of grief. Goggles and gloves should be worn.

For about $5 you can purchase a 6-foot bicycle flag that will provide many coil supports. One-quarter-inch brass compression fittings are also readily available from your local hardware store. One-eighth NPT (National Pipe Thread) fittings are characterized by a 27 TPI (threads-per-inch) tapered thread. Surprisingly, this thread is compatible with the typical 3/8 × 24 mobile mounting thread in that a 3/8 × 24 stud will screw into a 1/8 NPT female connector. It is actually a little bit of a friction fit, but it does work well interfacing to 3/8 × 24 mounts. The male 1/8 NPT stud will *not* screw into a 3/8 × 24 socket, but you can easily make a 3/8 × 24 male connector by screwing a 3/8 × 24 bolt tightly into a 1/8 NPT socket and then cutting off the head of the bolt. On the other hand, you can do as I do and make everything in your antenna system out of the 1/8 NPT fittings and don't even worry about 3/8 × 24 fittings. Photo A shows various coupling options using 1/8 NPT and 3/8 × 24 hardware.

Photo A– 1/8 NPT and 3/8 × 24 coupling options.

Fig. 1 shows the details of the 1/4-inch diameter loading coil support section, and photo B shows the necessary parts. The coil support end pieces are 1/4-compression-to-1/8 NPT male and female brass adapters. (I found everything I needed at ACE Hardware.) The 1/4-compression ends of the adapters do a great job of securing the 1/4-inch diameter fiberglass rod as shown.

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

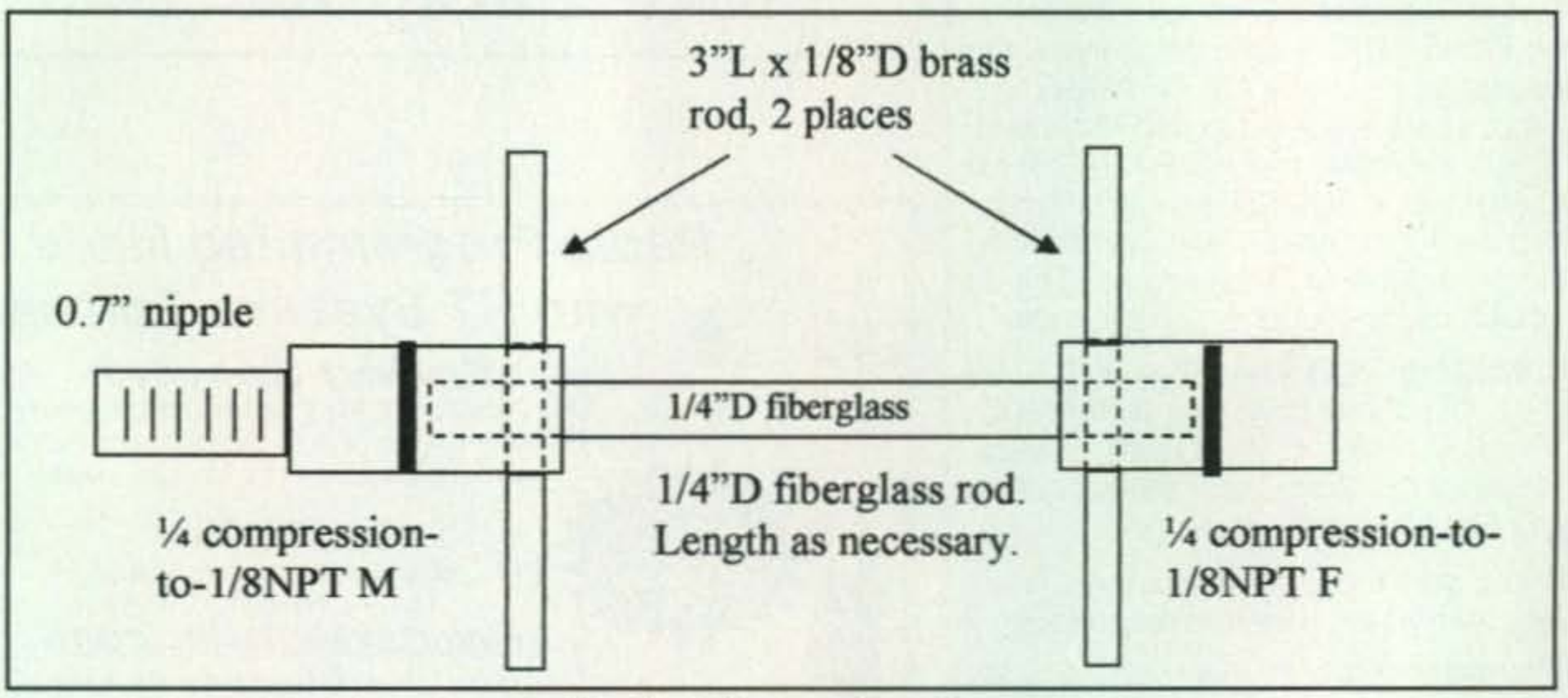

Fig. 1– Coil support section.

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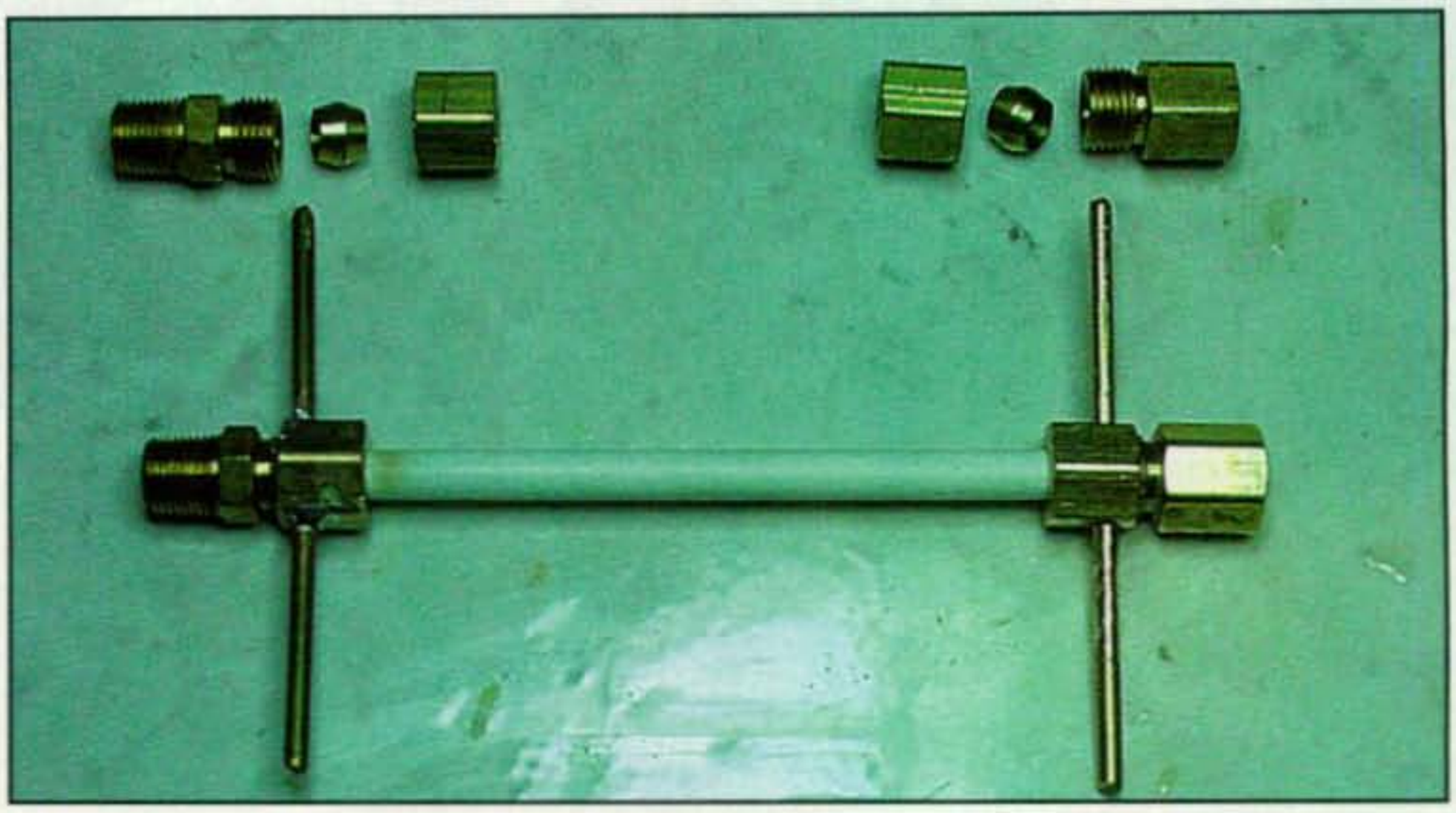

Photo B– 1/8 NPT male and female fittings used to make air-wound coil supports.

After you assemble the adapters and fiberglass rod together, drill a 1/8-inch diameter hole completely through each of the brass adapters and fiberglass rod as shown in fig. 1.

Next cut two 3-inch lengths of a 1/8-inch diameter brass rod. Insert one of these 3-inch sections through the holes on one brass adapter. Center the rod so that equal lengths are available on both sides of the adapter, and solder the rod to the coupling with a large soldering

Reader Feedback

Reader Chuck Wehner, W1FJW, wrote in relation to the April Weekender:

The circuit for the dual-voltage DC power supply on page 80 of the April issue contains serious errors. The circuit violates the National Electric Code as it connects the neutral to ground, which is only allowed at the building power panel. Also this circuit will not work with many popular, small, inexpensive inverters. Most of these inverters do not have a grounded neutral; in fact, their neutral operates about 60 to 85 volts above ground. Most carry a warning that they are not to be used with a grounded neutral system. Using this power supply with such an inverter will blow the fuse and/or prevent proper operation of the inverter. The ground lead should only be used to provide a safe path away from people for leakage currents and short circuits.

There should be a power return connection, separate from the ground terminal, mounted near the +325 and +450 VDC terminals and it should be connected to the white neutral lead. If the radio ground lead happens to get disconnected from the circuit as shown, the radio powered from this supply would not only lose a ground connection, but any exposed metal on the radio may be left connected to +450 VDC.

The connection as shown between the junction of D1 and C2 to ground will negate any protection provided by the fuse. The white neutral lead should connect to the junction of D1 and C2. The fuse should be connected between the black power lead and the on/off switch where it can provide both over current protection for the power supply and, if the power supply is placed in a metal case, it will blow if the on/off switch should short to the case. Better yet, if you plan to use this power supply with an inverter, use two fuses. Put fuses in series with both the black power lead and the white neutral lead."

AD5X responds:

Chuck makes some very good points, and I learned some things from him! First of all, as I'd pointed out in the article, it is very dangerous to power anything from the AC mains without isolation, and that is why this voltage-multiplier power supply should be connected to a DC/AC inverter or isolation transformer. In addition, the power supply should be built into a plastic box as called out in the article. In my previous receiver HV transformerless power-supply article (July 2007 "Weekender"), I'd remounted the inverter into a separate plastic box, and built the rectifier circuitry directly into the same box. In this higher voltage power supply, I built the rectifier/voltage doubler/voltage tripler circuitry into a separate box, leaving the possibility that someone might decide to connect this directly to the AC mains. Therefore, I put that protection fuse there in case someone did this and the black/white AC mains wiring was incorrect. I assumed (bad idea) that this was acceptable, since it was in a published technical bulletin for transformerless power supplies (see www.e-sonic.com/whatsnew/Microchip/power/TB008.pdf). However, Chuck points out that this violates the National Electric Code. Again, therefore, ***do not*** operate this directly from the AC mains; use a DC/AC inverter or isolation transformer. As Chuck also pointed out, with a DC/AC inverter there is frequently no ground pin connected or the inverter won't work properly if you use the ground pin. In the two different inverters I used in my projects, neither had a wire connected to the ground pin on the AC output of the inverter. Based on Chuck's input, I've revised the power-supply circuit as shown below to improve safety.

The bottom line when building a high-voltage power supply: Don't operate without isolation from the AC mains (use a DC/AC inverter or an isolation transformer), and be ***extremely*** careful of the high voltages generated from the power supply. *Phil, AD5X*

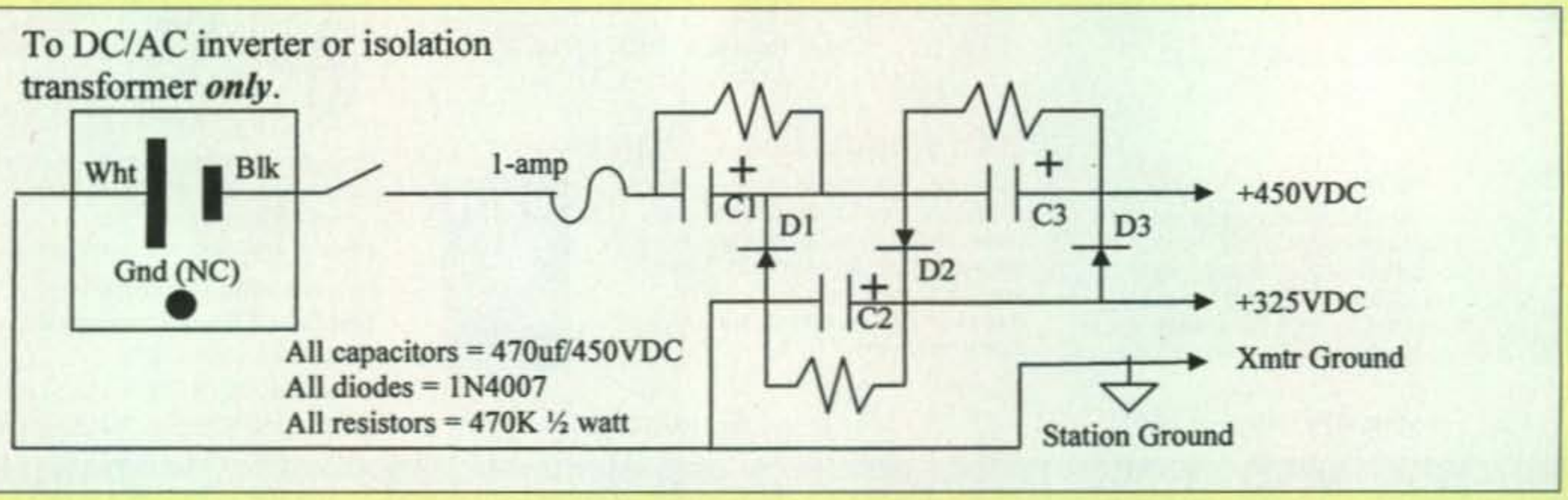

Fig. 1– Dual-voltage high-voltage DC power supply.

Photo C– The final coil—1/4-inch fiberglass support male end.

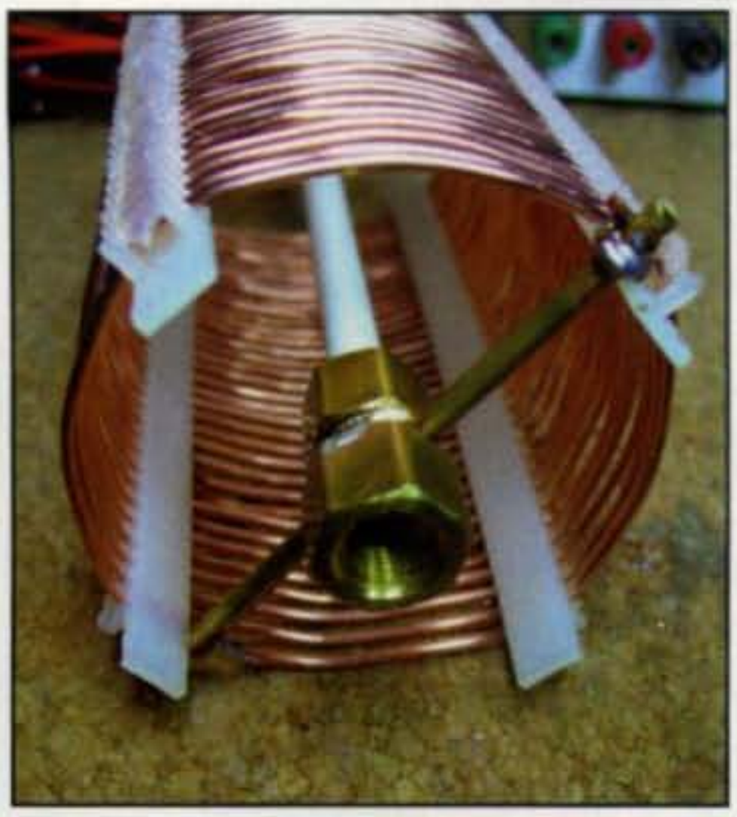

Photo D– The final coil—1/4-inch fiberglass support female end.

iron or torch (I like the butane torches sold by the Solder•It™ company, <http://www.solder-it.com>). Position your coil such that the 3-inch brass rod just installed pokes through the last two turns on the coil. Solder the coil turns to the rod. On the opposite end of the coil assembly insert the remaining 3-inch brass rod through two adjacent turns on this end of the coil, through the brass coupling, and through the opposite coil turns. Solder the coil turns to the brass rod, and then solder the brass rod to the coupling. See the final coil assembly in photos C and D.

Conclusion

Over the past two months I've described a way for you to build low-cost, high-Q air-wound inductors and coil supports. Give these ideas a try, and save some money on coils for your homebrew antenna projects. Until next month…

73, Phil, AD5X

qrp

BY DAVE INGRAM,* K4TWJ

Three Little Rigs

Whether large or small, elaborate or simple, home-assembling low-power transceivers and fun projects continues to be very popular among QRPers of all ages and backgrounds. Yes, and with apologies for clichés, it reminds us of eating potato chips: You can't stop with just one. We heartily endorse the proud building addiction (it is a long-established amateur radio tradition!), so this month's column highlights three "build me" projects of different levels—something to fit every interest and budget, so to speak. We trust you will find the trio enticing, and using a rig that you built is a reward of the best kind. Enjoy this month's triple treat of solder-slinging fun!

New Elecraft K3 Transceiver

Would you like to add some genuine big-rig excitement to your QRP activities? Elecraft's new "do it all" K3 may well be the answer, and the 10-watt version/model truly stands out as a modern QRPer's dream rig (photo A). It has every operating feature imaginable: all HF band plus 6-meter operation, full shortwave reception, dual VFOs, 100 memories, 32-bit IF-level DSP with variable-width SSB and CW filtering, notching, noise blanking, and noise reduction. It also sports dual passband tuning, speech compression, eight-band audio equalization on transmit and receive, built-in CW keyer with 8 memories, plus encoders and decoders for CW, RTTY, and PSK-31. That's right: You can transmit RTTY or PSK-31 by inputting words using your CW paddle and read incoming CW, RTTY, and/or PSK-31 right on the K3's front display. No external interface or computer is required. There is more, too, much more than we can include in this brief "first look."

If you wish to really go wild, incidentally, check out the K3's optional sub-receiver with its own roofing filters, DSP, and audio combiner. Other options include a snap-in 100-watt output unit for non-QRPers, 100-watt automatic antenna tuner, digital voice recorder, and an array of crystal filters to complement the DSP system. This little rig is loaded for bear . . . err, action!

The K3 is also a software-defined transceiver. A one-click PC download program checks and automatically updates microcontroller and DSP firmware as required. We understand this "field upgrade" concept is working well, as some new owners of K3s report installing quick and easy software/firmware upgrades from Elecraft. Owners also say the upgrades are true performance enhancements rather than mere "fixes" for pre-existing problems or bugs.

The K3 can be purchased factory-assembled or as a no-soldering kit. Although a personal opinion, I suspect this concept may be the wave of the future, and it is really not as intimidating or frightening as it seems. Case in point: Here is one of today's top-rated all-mode, all-band HF transceivers many owners compare to an ICOM 7800 or other multi-kilo-buck rigs, and you home-assemble it "plug-in board style" similar to the way you build a home computer. The typical assembly time seems to be between five and ten hours in which you read the manual, plug in boards, and learn functions and purposes of boards in the process.

The building process starts by fitting a number of small boards or modules to the main/motherboard, which is then fitted with side rails for the cabinet. A few sub-boards are next plugged into the front panel, and then the panel plugs into the motherboard. The board-to-board plugging/connecting process continues, eventually adding the basic 10-watt RF output board to the rear of the motherboard and energizing the finished K3 so it can perform a self-alignment. Overall there are approximately a dozen PC boards and modules involved in the assembly. Several folks reported their K3s went together with the perfection of a Swiss watch.

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Photo A– In its 10-watt version, Elecraft's new K3 is truly a serious QRPer's dream rig. It sports variable SSB and CW bandwidths, DSP filtering and noise reduction, built-in keyer, CW and RTTY readers, plus every other operating feature and frill imaginable. It is also small and battery-friendly for "take it anywhere" QRP fun. More info at <www.elecraft.com>. (Photo courtesy of Elecraft)

Early reports and personal opinions on the K3 are most impressive, with many owners stating it's the best-performing CW transceiver they ever used. Everyone agrees it is a modern bargain in features per dollar. Most folks also complimented the rig's ergonomics; there is no dinking with menus to make changes on the fly during on-the-air operations. Thus far I have heard only one K3 on the air and it sounded terrific.

If you want to be a big fish (pig?) in a little (QRP) pond, check out Elecraft's 10-watt version of the K3. More information on the K3 is available at <www.elecraft.com>, or you can e-mail Elecraft at <sales@elecraft.com>.

New "Brendon" Transceiver Kit

From across the big pond comes news of an interesting new mini-transceiver kit, the "Brendon" (photo B), produced by Walford Electronics of the U.K. The unusual aspect of this little gem is its double-sideband operation. It is an SSB-compatible transceiver for voice-oriented QRPers, and its builder-friendly design makes it a good project for new homebrewers.

As normally sold, the little transceiver covers 50 to 100 kHz of 75/80 meters using a variable capacitor to frequency warp a ceramic resonator (a full oscillator circuit in a package the size of a crystal!). Operation on 40 or 20 meters is also possible using Walford's optional Mini Mix kit, or you can use your own 40/20-meter crystal if limited tuning range afforded by the kit's variable capacitor is acceptable. If you choose the crystal route, *incidentally*, consider adding a 7- or 10-µHy inductor in series with the variable capacitor. This "VXO combo" should double the tuning range (probably to 10 kHz rather than 5 kHz, whereas the Mini Mix kit will probably produce around 50 kHz range). RF output is typically 1.5 watts using a 12-volt DC supply. Interestingly, the output transistor is an IRF510 power MOSFET on a heat sink, the same transistor often used in 20-watt RF amplifiers. It should take abuse like a champ.

Looking at the Brendon's block diagram (fig. 1) while adding a few words from Tim Walford, G3PCJ, we note the direct-conversion receiver employs two front-end filters feeding a mixer IC that outputs to a high-gain audio-amplifier stage. The amplifier reportedly has enough output to drive a speaker. The transmitter section uses the same (receive) mixer IC as a balanced modulator—to null or balance out the carrier and leave only the sidebands. The

On the Cover

James "Wheaty" Wiedemeier, KI4PSQ, of Nashville, Tennessee, operates Field Day with the Nashville Amateur Radio Club at Lock Two Park on the banks of the Cumberland River. James holds a General Class ticket and has been licensed for nearly two years. His main interests are public service and emergency communications, particularly working with Skywarn to observe and report on severe weather. James says he grew up on a farm outside Carroll, Iowa, and is the second-youngest of 14 children. He says he moved to Nashville in order to pursue a career in music, playing guitar, singing and, as he puts it, "trying to make it like everyone else in Nashville."

The Nashville Amateur Radio Club, K4CPO, has been around since the 1930s and currently has about 60 members. It is a general-interest club, according to President Bob Malone, WB5ZDS, with a strong focus on public service. He says the club provides communications for many events throughout the year, including the "Trace Tribute" horseback ride along the Natchez Trace and a several walks and bike rides for multiple sclerosis, including the two-day, 150-mile "Jack and Back" bike ride from Nashville to the Jack Daniel's whiskey distillery in Lynchburg, Tennessee—and back again. That event reportedly raises a quarter of a million dollars each year to fight MS.

The club operates Field Day in the 2A class—drawing about 30 operators last year—from outside its clubhouse at Lock Two Park, the former site of one of many locks and dams built on the Cumberland in the 19th and early 20th centuries to promote river traffic. *(Cover photo by Larry Mulvehill, WB2ZPI)*

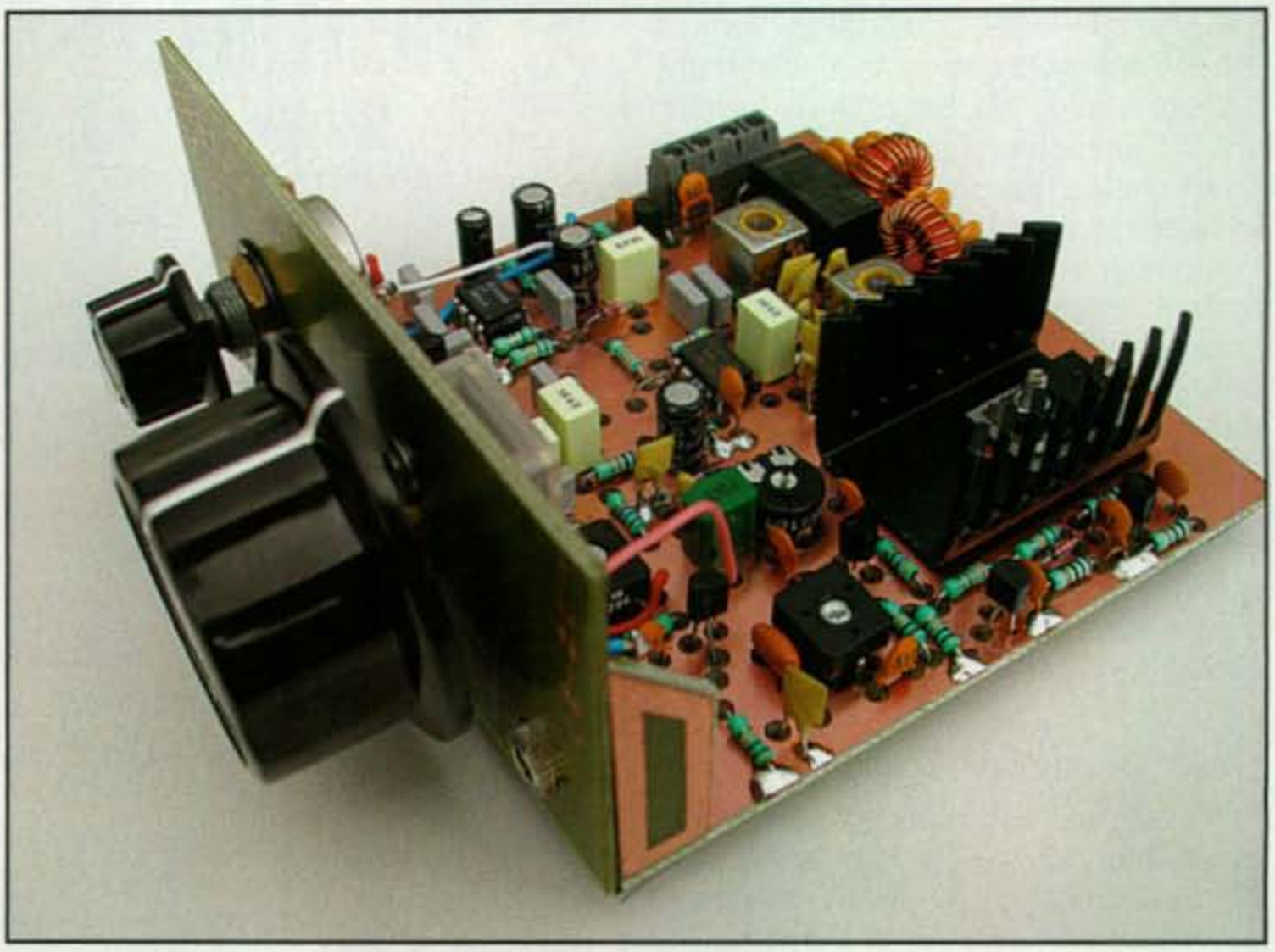


Photo B– Check out this neat little "Brendon" DSB mini-transceiver kit available from Walford Electronics of Great Britain. It works 75 meters (or 40 or 20 meters with an optional Mini Mix kit), pumps out a cool 1.5-watt signal, and looks like a miniature version of those dear open-case rigs we used as Novices. Wow! (Photo courtesy Tim Walford, G3PCJ)

IRF510 MOSFET then amplifies the signal and a double-half-wave filter removes undesired harmonics. The rig's T/R relay is controlled from the mic's PTT switch and also mutes the receiver during transmissions. It is a novel approach, sort of like a direct-conversion transmitter except different (how's that for a high-tech description?), and it works quite well.

Incidentally, Walford Electronics is a well-known producer of low-cost QRP kits in the U.K. Readers may recall we highlighted Walford's "Brent" CW mini-transceiver in our December 2005 column. It was well-received. Additional Walford goodies include a regenerative and a direct-conversion receiver plus separate CW and phone transmitters. More details, including guidelines for ordering, are available at <www.users.globalnet.co.uk/~walford>. *Tip:* Order using PayPal and let it do the dollar-to-pound conversion, which, as of Feb-

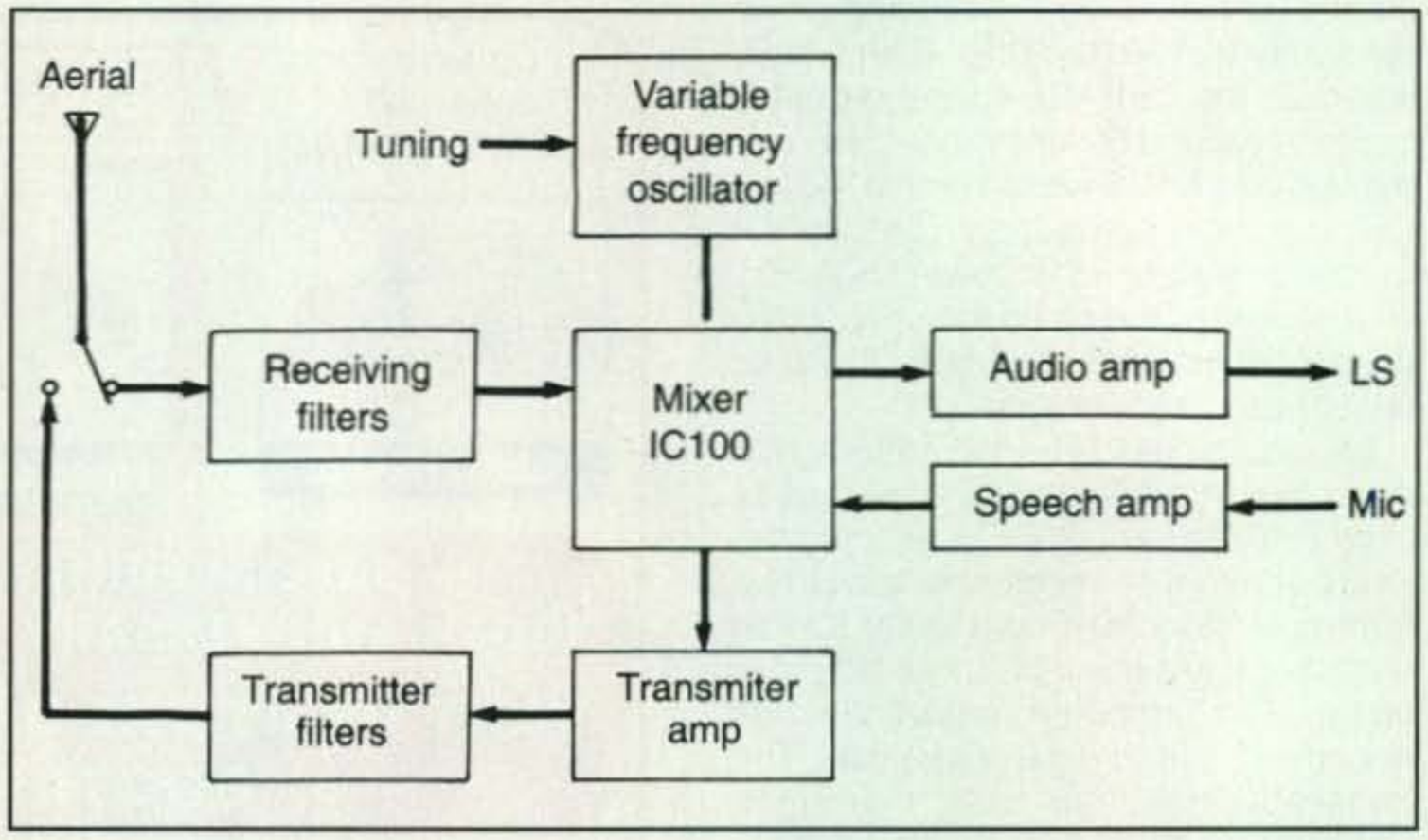
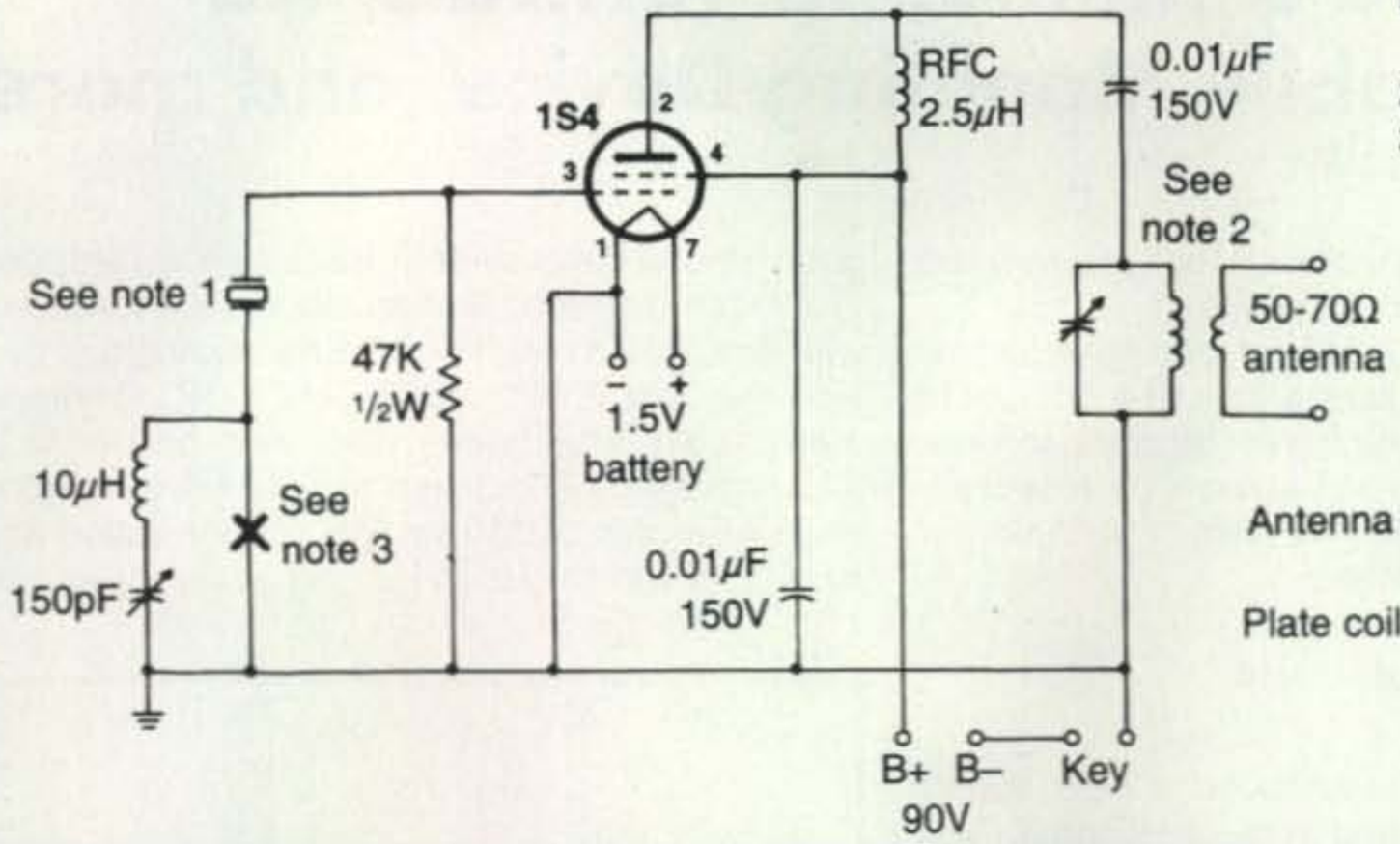
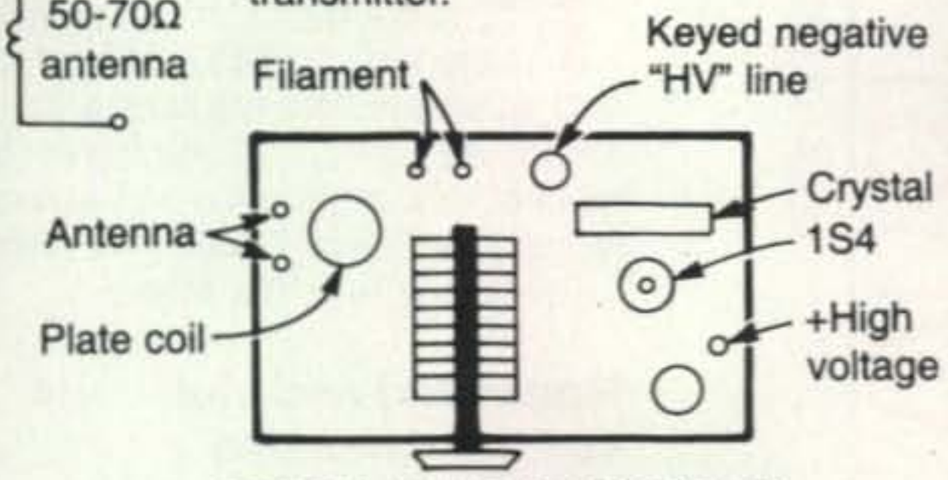


Fig. 1– Block diagram of the Brendon mini-transceiver kit. Notice both receiver and transmitter sections utilize the direct-conversion concept. Interesting idea!



NOTES:

1. Regular ham band crystal for 30 or 40m operation.
2. See text for coil and capacitor info.
3. Optional VXO circuit. Break circuit at "X" and add only after confirming smooth operation of basic 1S4 transmitter.



PARTS LAYOUT (SUGGESTED)

Fig. 2– Circuit details and suggested layout of components for the 1S4 "Peanut Whistle" QRP transmitter described in the text. Classic QRP supreme!

ruary 2008, was approximately 1.9:1. In other words, the Brendon transceiver costs 49 British pounds, or roughly 99 U.S. dollars, and the Mini Mix option is 14 pounds, or 28 U.S. dollars—plus postage. The price seems fair (have you fueled up the big SUV and eaten out at a nice restaurant lately?), and the British are well known for their neat QRP gear. Questions? You can e-mail Tim at <walford@globalnet.co.uk>.

Encore, Encore!

A number of QRPers have asked me to revisit the dear little 1S4 "Peanut Whistle" transmitter featured in my September 1995 "World of Ideas" column, and I am delighted to honor that request this month. The little 1S4 and its 3-volt sister, the 3S4, were proud depictions of true QRP during the 1950s and 1960s—and 1970s and 1980s. This tube is more famous than Jack Daniel's Whiskey!

Circuit and layout details of the 1S4 transmitter are shown in fig. 2. It is comprised of less than a dozen parts and fits nicely on a 3 × 4 inch wood board. Look carefully at hamfest flea markets and you can probably find the seven-pin tube socket, crystal socket, variable capacitor, and RF choke (the now scarce items). Assembly goes as smooth as silk after passing that hurdle. A 35-mm plastic film canister or a 1.25-inch pill bottle glued to the transmitter's base board makes a good coil form, and No. 18, 20, or 22 enamel-coated copper wire or plastic-insulated solid "hookup" wire serves nicely for the plate coil. Wind 25 to 28 turns for 40 meters, or 20 to 22 turns for 30 meters, and then add an antenna pickup coil of six or seven turns of similar-size solid insulated wire wound over the plate coil. Experiment with the antenna coil's position to secure maximum output consistent with the cleanest signal quality.

Ideally, the mating tuning capacitor will be between 75 and 250 pF. A 50-pF "midget variable" might be pressed into use if you experiment with adding a 50 pF fixed/mica capacitor in parallel with it. Similarly, a 365-pF variable may work if you tune it carefully. Some crystals are a mite slow to oscillate and need help with a kick start. If you experience that problem, twist an insulated wire routed from tube pin 3 (the control grid) two or three times around the plate wire (don't connect it; just twist it).

Both the 1S4 and 3S4 were originally designed for battery-powered AM radios and have a maximum plate rating of 90 volts. You can dink with an AC power supply using a dropping resistor, but I suggest taking the easy route of snapping together a series string of ten Dollar Store® obtained 9-volt batteries for plate voltage and using a C or D cell for filament power. This is one of the sweetest little vacuum-tube QRP transmitters you will find anywhere. Build one for occasional use and for show. You will love it!

That overflows available space, so I will wish everyone good QRP hamming and quickly bow out for another month.

73, Dave, K4TWJ

what's new

BY ANTHONY A. LUSCRE,* K8ZT

Monoband & Multiband Verticals, K3 Filters, Mobile Mounting Device, and more

This month's items include a look at a new line of monoband and multiband vertical HF antennas, InRad K3 filters, and speaker-mic and headsets. We will take a look at a product to mount a variety of electronic devices in your mobile, too, while providing a clean, professionally installed look. Finally, we visit "The Amateur Radio Website of the Month."

Monoband and Multiband Vertical Antennas

DX Engineering has announced a new line of monoband and multiband vertical HF antennas. Based on its Thunderbolt™ antenna technology, monoband models are available for 30, 40, or 60 meters, and multiband versions are available for 160–10 or 80–10 meters. Each model is available as either a "fast" or "slow" taper (photo A). The fast taper is made up of 3-foot-long tubing sections for lowest wind resistance. The slow taper is constructed of 6-foot-long tubing sections for greater bandwidth. Due to their smaller size, the fast-taper models are economically export-shippable by postal service or convenient for a DXpedition.

The 40VA-1 (photo B) is an example of a slow-taper monoband offering. The 40VA-1, self-supporting, EZ-UP™ vertical antenna system operates over the entire 40-meter band with an SWR of less than 1.5:1, yet is less than 24 feet high. An included top-mount capacity hat forces radiation current to be equal over the entire height of the vertical. The same model can be used to cover the entire 30-meter band by omitting the capacity hat during installation. This vertical uses no coils or linear loading elements to rob power. Designed with 6063 corrosion-resistant aluminum tubing and stainless-steel hardware, this antenna is very durable.

The MBVE-1 is an example of a fast-taper, 160–10 meter vertical multiband offering. With the use of a customer-supplied, high-quality outboard tuner, the MBVA-1P can be operated with an SWR of 1.5:1 or less on 160 through 10 meters. The fast-taper element provides low wind resistance, while the 6063 corrosion-resistant aluminum tubing and stainless-steel hardware provide durability in this 43-foot antenna.

The MBVE-1 vertical includes the antenna element, mounting plates, tilt base, stainless-steel hardware, and clamps. An optional current balun (such as the DXE-BAL200-H10-AT) is required to force equal current to both the vertical radiator and the radial ground system, and allow your tuner to properly adjust the antenna's impedance.

For best performance, DX Engineering reminds all users that "a key to vertical performance is a good ground radial system; 32 radials, 65 feet long are recommended. Fewer radials will work, but with diminished results." DX Engineering can provide the user with the DXE-RADP-1P, stainless-steel, radial attachment plate and hardware to allow efficient connection of radials. For more information on the complete line of monoband and multiband vertical antennas and accessories, you

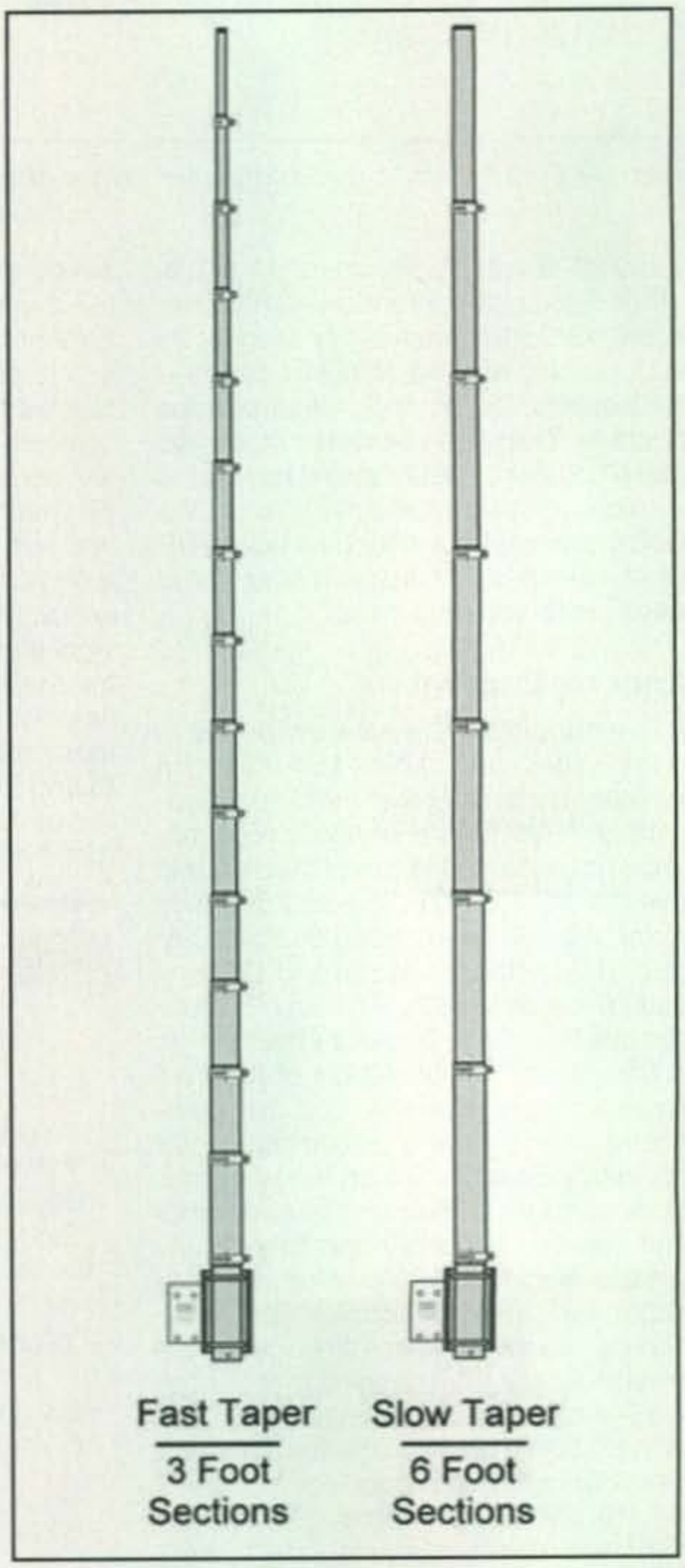


Photo A– Fast-taper versus slow-taper construction of the DX Engineering vertical antennas. (Photo courtesy of DX Engineering)

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can visit <www.dxengineering.com> or call toll-free 800-777-0703.

InRad Filters

International Radio is now offering plug-in filters for the new Elecraft K3 HF Transceiver (see my October 2007 column for more information on the K3). Available in eight bandwidths, from 400 to 13000 Hz, these filters are can be used in any of the K3's five filter slots in the main receiver or the optional second receiver. The filters are designed to plug directly into the radio in the same manner as the Elecraft offerings. There are three models for CW (400 to 1000 Hz), three for SSB (1800 to 2800 Hz), plus one each for AM (6000 Hz) and FM (13000 Hz). The complete International Radio Spring 2008 product catalog is now available online at <www.inrad.net/files/Inews/catalog.pdf>.

MacKay Radio Speaker Microphone and Headsets

MacKay's 4SM Heavy Duty Industrial Speaker Microphone is described on their website as "the tough speaker-mic that always comes through loud and clear." The 4SM is a medium-size, heavy-duty speaker-microphone that is fully sealed from dust and water and available with connector styles for a variety of radio makes and models.

MacKay offers four styles of headsets (photo C): Heavy Duty/Industrial, Racing, Medium Duty, and Light Weight. The Heavy Duty/Industrial and Racing Headsets feature an active noise-canceling microphone, up to 26 dB external noise attenuation, and a choice of over-the-head and behind-the-head styles. The more traditional ham style, model 6HNHS Medium Duty Headset, features over-the-head style with noise-canceling microphone (up to 20 dB external noise attenuation) and whole-ear coverage for hours of use without fatigue. An optional, small (1 1/4 inch diameter), push-to-talk (MPTT) module has a clip for belt or clothing attachment and the coiled cord stretches out to 3 feet. The Light Weight model is available as the 5LWHSP—a monaural over-the-head style headset with a microphone boom that can swing 270 degrees for wearing on the left or right ear, or as the 5LWBHP—a wire-band behind-the-head style headset with a left-ear-only monaural speaker. Both the 5LWHSP and 5LWBHP feature noise-canceling microphone, in-line push-to-talk switch, and radio Interface cable. For more details on these accessories and other items for tactical operations or privacy in communications, you can visit <www.mckayproducts.com> or phone 860-808-1280.

Photo B– DX Engineering's 40VA-1 is a monoband 40-meter vertical antenna. Note the top capacity hat, which allows the antenna to provide good performance on 40 meters with only 24-foot height. (Photo courtesy of DX Engineering)

VSM G3 Dash Mount

Pro.Fit International has announced its new G3 VSM (Vehicle Specific Mount); photo D. The G3 bracket is a small, stylish bracket that incorporates unique features to mount a wide variety of electronic devices to the dashboard of a vehicle. The VSM G3 attaches to the dash behind the vehicle's trim to provide installations that do not produce holes in, leave marks from adhesives on, or otherwise damage the dash trim. This avoids an unsightly appearance, decreased resale value, and/or conflicts with leasing agreements. They also provide firm attachment and avoidance of air-bag paths for safety in installing your mobile devices.

The stainless bracket mounts behind the trim pieces and extends just beyond the front of the dash with only a small

molded ball visible. This molded ball performs two functions: It is the point at which the interchangeable components are attached, and it creates a ball-and-socket joint that allows users to move, remove, or reposition their electronics.

Your electronic device is mounted on a Pro.Fit A-Plate. The A-Plate then acts as the socket to the VSM G3's exposed ball. For added flexibility in positioning your device, a Pro.Fit J-Stem can be placed between the A-Plate's socket and the G3's ball, providing two articulating joints. The A-Plate can be used to mount remote-mount radio heads, equipment display screens, hands-free microphones, and the other electronic items a ham may desire in his or her mobile installation. Items mounted on the A-Frame can easily be removed from the G3's ball mount for secure storage or to switch to another mounted device.

The A-Plate has an industry-standard AMP mounting hole spacing and application-specific adapters to mate with a wide variety of consumer electronics, including MP3 players, cell phones, GPS units, satellite radios, PDAs, and more (this ability might be a great way to get your family members to actually acknowledge that having a ham in the family is a good thing!). For more information, including a very informative online video, visit <www.pro-fit-intl.com/G3%20index> or for inquires e-mail: <scottknight@pro-fit-intl.com>.

The Amateur Radio Website of the Month

This month's Amateur Radio Website is the work of Takumi Nomura, JF9EXF. The site, Hammaps, is at <www4.plala.or.jp/nomrax/hammaps.htm> (figs. 1, 2, and 3). At the site you will find eight main maps— DXCC, CQ Zones, WAC continents, ITU Zones, ITU Regions, Grid squares, Beam map, and Districts of Japan. Each map is a small, simple outline map, but the magic starts when you select one of the

Photo C– MacKay headsets (clockwise from upper left): Heavy Duty/Industrial, Racing, Medium Duty, and Light Weight. (Photo courtesy of MacKay)

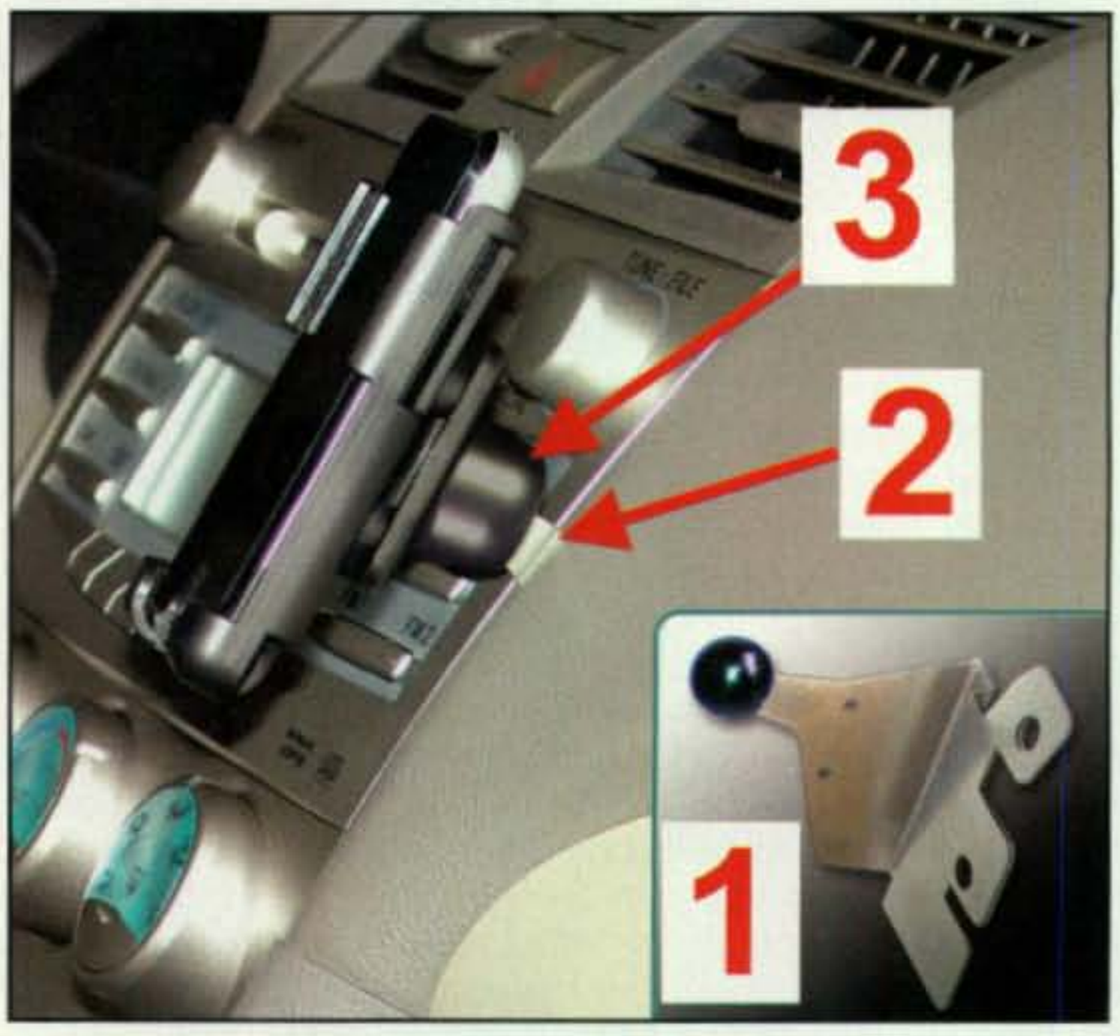


Photo D– The Pro.Fit G3 VSM: (1) inset photo of the G3 before installation; (2) exposed portion of the G3 after installation behind dash trim; (3) A-Frame, with attached electronic device, mounted on the exposed ball of the installed G3 allows the user to swivel the device for the best view. (Photo courtesy of Pro-Fit International)

eight. You will then be presented with a "key" list of the maps entities. By clicking on each key you will be taken to a close-up map of that entity and its surroundings. For example, if I want to see which countries are in CQ Zone 26 (an especially rare zone from my QTH), I would click on the "26" link and be taken to a map of that zone. Each detail map also has country names and prefixes.

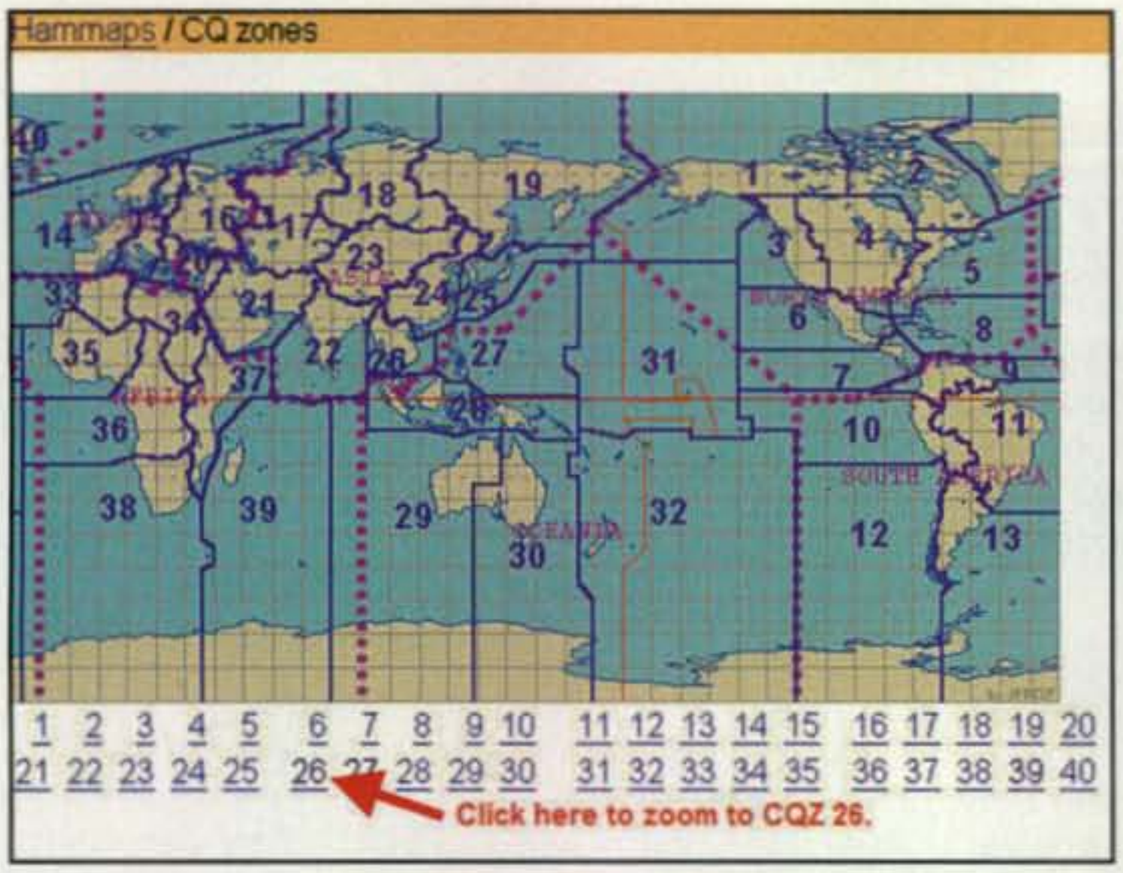
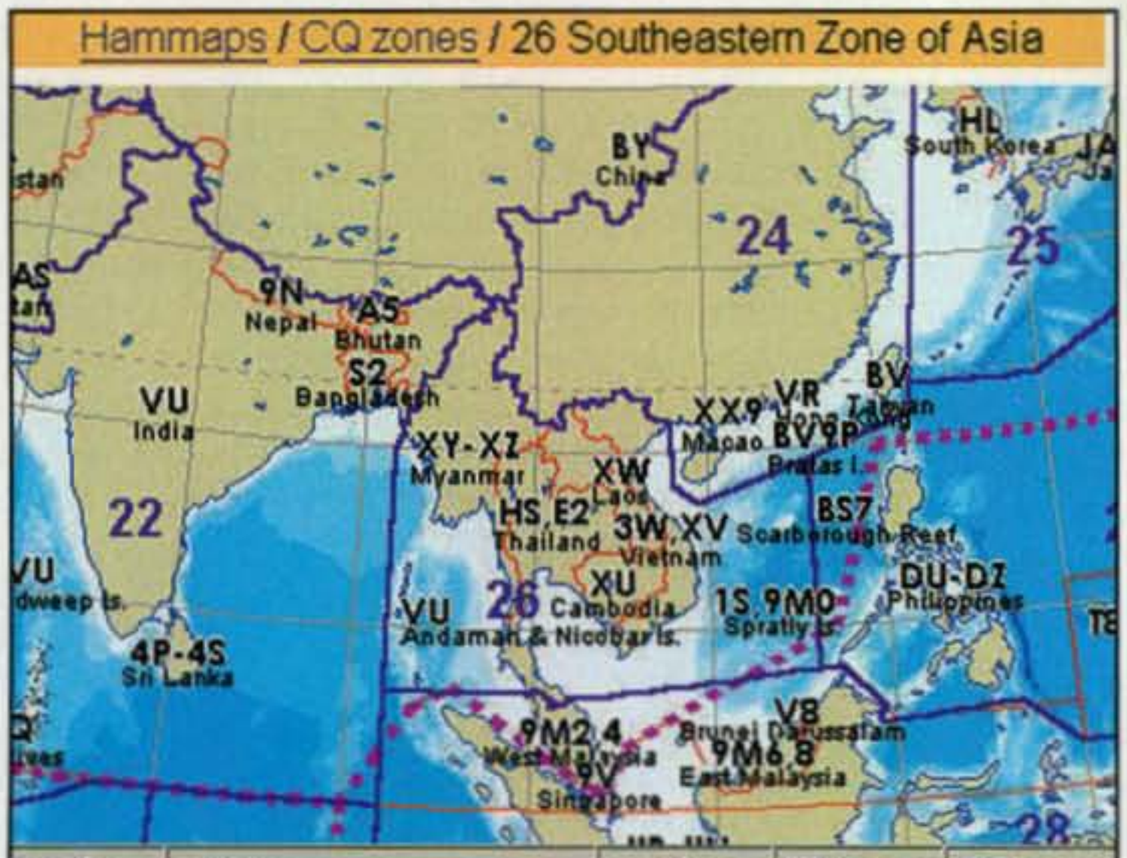


Fig. 1– Screen shot of the website of the month, Hammaps, showing the CQ Zones World Map, one of eight main maps available. Clicking on a zone number takes you to that zone.



prefix	entity	continent	ITU zone	CQ zone
1S,9M0	Spratly Is.	AS	50	26
3W,XV	Vietnam	AS	49	26
HS,E2	Thailand	AS	49	26
VU	Andaman & Nicobar Is.	AS	49	26
XU	Cambodia	AS	49	26
XW	Laos	AS	49	26
XY-XZ	Myanmar	AS	49	26

Fig. 2– Once you get to the specific CQ Zone map, you are presented with a table listing the Prefixes of DXCC entities, Continents, GL (Grid Locator), ITU Zones, and Country Names (this last column is in Japanese) in that zone. Clicking on an ITU Zone number takes you to a map of that zone.

The Grid Square Map (fig. 2) allows you to find a grid by entering longitude and latitude or visa versa. You can also calculate the distance and bearing between any two grids. Many of the map pages also have pertinent links to outside sites (e.g., the CQ Zone Map has a link to the site "Official Rules – The CQ WAZ Awards"). This is definitely a site you will want to have bookmarked on your shack computer's browser for quick access.

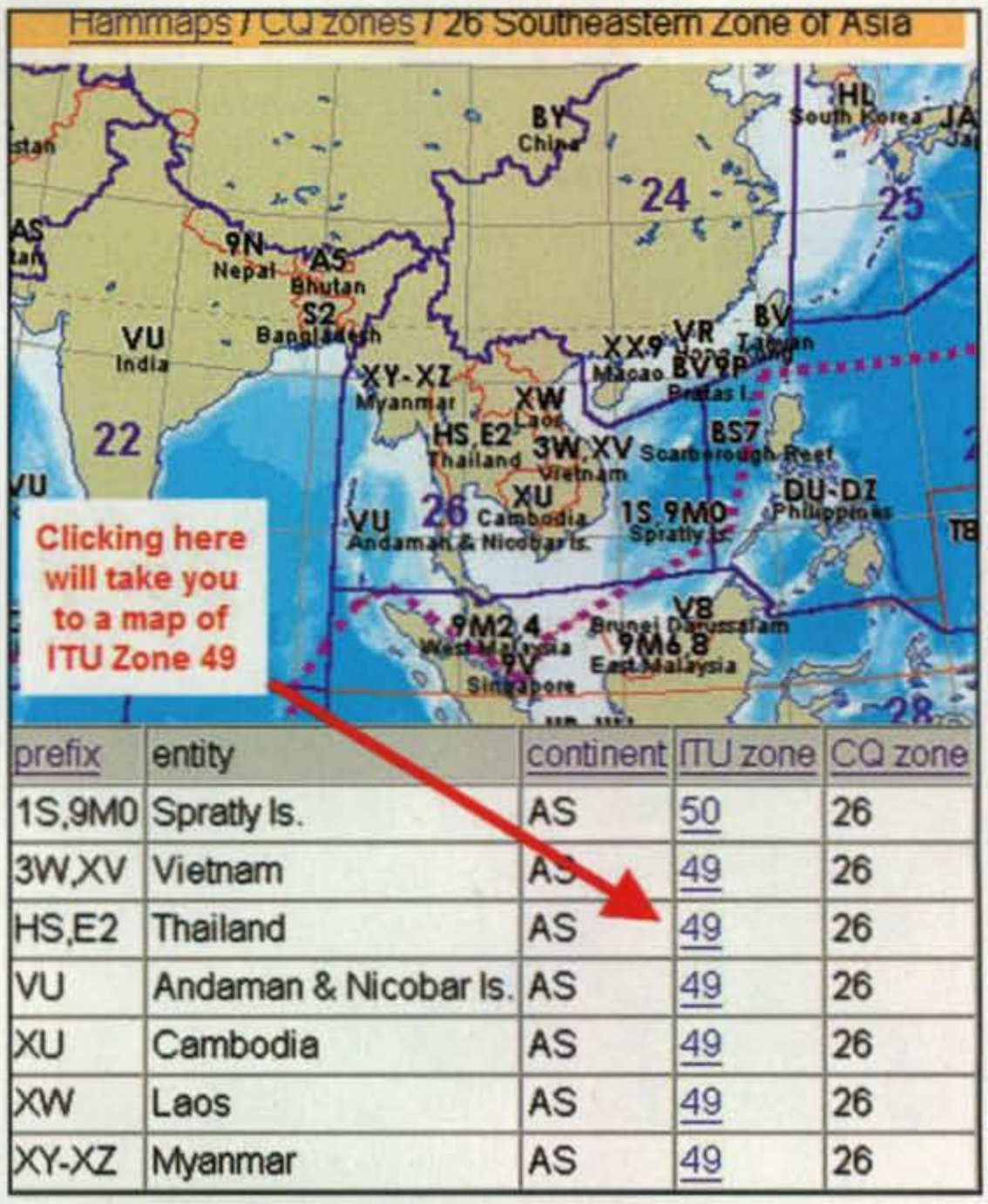
Wrap-up

That is all for this month. With this month's column I am also starting a new feature—a web page with all of the links given in my columns. This will allow you to click on each link instead of having to type them from the written page. It will also allow me to update links as they change over time. The page will include links from all *CQ* columns I have written since my first, in the September 2007 issue. To reach the page, visit <www.k8zt.com/cq>.

Remember, I welcome your feedback, questions, and/or comments. If you are a producer of a new product for amateur radio, please feel free to e-mail me or use the address on the first page of this column. Until next month . . .

73, Anthony K8ZT

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



prefix	entity	continent	ITU zone	CQ zone
1S,9M0	Spratly Is.	AS	50	26
3W,XV	Vietnam	AS	49	26
HS,E2	Thailand	AS	49	26
VU	Andaman & Nicobar Is.	AS	49	26
XU	Cambodia	AS	49	26
XW	Laos	AS	49	26
XY-XZ	Myanmar	AS	49	26

Fig. 3– Map of ITU Zone 49. Clicking on a GL (Grid Locator) takes you to a map of that grid.

BY JOE LYNCH,* N6CL

It's VHF-plus Contest Time

In many ways the month of June signifies the beginning of the annual contest season for those of us in weak-signal VHF-plus communications. Granted, the first contest of the year is the ARRL VHF Sweepstakes, which is followed by EME and Sprint contests. Yet all of the advantages that summer sporadic-*E* presents to the average VHF-plus operator, along with three different major contests in one month, plus vacation time off from work and good weather, makes this the month that really starts our annual contesting season. Assuming that you will want to benefit from all of the advantages and participate in the contests, what follows are some tips to help you be a successful contest operator.

VHF-Plus Contesting

VHF-plus and HF contesting are alike yet different. VHF-plus contesting is like HF contesting in that the goal-setting and preparation involved are the same. In addition, some software written for HF contests is also available for VHF-plus contests. The principal difference between VHF-plus and HF contesting is the length of time between contacts. For instance, when the band isn't open (on 6 meters) or when there's simply no one to work (on the higher VHF-plus frequencies), you may wait for hours between contacts. On the other hand, when the band does open in the next 15 minutes, you may begin a 90 QSO/hour.

e-mail: <n6cl@sbcglobal.net>

Photo A– This truck, owned by Steve Hicks, N5AC, is a fine example of a well-equipped rover station. Look for Steve during at least one of this month's contests. (N6CL photo)

VHF Plus Calendar

June 1	Good EME conditions
June 3	Moon Perigee and New Moon
June 8	Excellent EME conditions
June 10	First Quarter Moon
June 15	Poor EME conditions
June 16	Moon Apogee
June 18	Full Moon
June 21	Summer Solstice
June 22	Poor EME conditions
June 26	Last Quarter Moon
June 29	Moderate EME conditions
July 1	Moon Perigee
July 3	New Moon
July 6	Very good EME conditions

—EME conditions courtesy W5LUU.

Patience is one skill you must have on the VHF-plus bands that's not as necessary on HF. Knowing when to wait and when to quit is very important.

VHF-plus Contest Strategy

What does it take to create a winning contest station? To give you a picture of what it takes to win, I'll borrow a bit from HF operators such as my friend John Dorr, K1AR, and a lot from the big guns of VHF-plus contesting. Most of the advice that follows applies to the general VHF-plus contests. However, some of the strategy also applies to Field Day and, to a lesser extent, the SMIRK contest.

Your Body: How you feel is just as important for the success of your contest experience as your equipment. Have you rested adequately before the contest? Even though VHF-plus contests almost always allow you to get a good night's sleep (because the bands shut down at night), you still need to be in top shape for the endurance associated with contesting. What are you eating? Some operators prefer a diet of pasta, because it's high in carbohydrates. Taboos include: caffeine (that includes chocolate) and sugar (some operators even avoid fruit, because of the high fructose content). Both caffeine and sugar are stimulants that, after they wear off, could leave you in an energy crash. Don't try anything new just before a contest, especially spicy foods. Your digestive track may not approve.

Your Goals: Your biggest decision probably is to define what winning means for you. Winning may involve being tops in the country in your category, or it may mean making ten contacts on 10 GHz. Setting a goal and writing it down helps you focus on what you intend to accomplish during the contest. Always remember: Whatever your goal, if you achieve it, you're a winner.

Your Station: What may seem to be the most obvious ingredient is also the most taken for granted. If you're contemplating operating a contest, your station must be in top shape. If you recently pur-

chased a piece of new equipment, use it as much as it takes before a contest to become very familiar with it. Know the knobs and buttons and their functions. Know the equipment's strengths and weaknesses. If possible, make several dozen contacts with it. Make sure every aspect of the station is working to your satisfaction. Check the antenna, the coax, the rotator, and the rotator lead-in. Check the radios, power supplies, preamps, amplifiers, and cables used to connect all these items.

Are you operating away from your home QTH as a rover (see photo A) or at a fixed location? If so, then be sure to assemble your antennas and towers or masts just as you plan to use them in the field. There are two important reasons to go through the exercise of setting everything up. The obvious one is to make sure the equipment is working properly. The second is to ensure that you have overcome the learning curve associated with the station's assembly. This exercise, hopefully, will make station assembly in the field much easier and faster.

Once assembled, make several contacts with your "portable station" set up in the back yard. Be sure to make duplicate sets of cables—and check to see that they are working to your satisfaction. Also, make sure your field location is viable. Take a mobile or portable radio to the site. Check for power-line noise or other reception problems. Make sure the lay of the land is sufficient to allow enough room for every station, if there are multiple ones.

Look around your station. Is the setup comfortable? When you're sitting in your ergonomically correct chair, is everything within easy reach?

Are you using software or paper logs? If you've chosen to use software, make sure the computer is working and you really know the software. Don't try to learn it the night before the contest. If you're using paper logs, make sure you have enough log sheets, dupe sheets, scratch paper, and pencils (yes, pencils because you can erase information when you're trying to change an entry).

On the Air: VHF-plus contests have an entirely different pace than HF contests. This sometimes frustrates HF operators who try contesting on VHF. Unless the band is open, you won't get the steady runs that HF contest operators experience. Therefore, it's imperative to tune through all the bands that you have available. This isn't as hard as it seems, because the other operators out there are just as motivated as you are to make multiple contacts.

Stay off the calling frequencies. If you have a loud signal people will come to you. If not, you can go to the loud signal. It takes only one station on the calling frequency to ruin it for everyone. When on 6 meters, stay out of the DX window. Reserve it for contacting DX stations only! During some past June VHF QSO Parties operators in England were hearing stations as far away as the southwestern portion of the United States, but couldn't be heard because of stateside QRM in the DX window.

Have Fun: This hobby is supposed to be fun, so naturally contesting should also be fun. Unless you make it enjoyable for yourself, you may find the experience frustrating and unfulfilling.

How can you make it fun? One way is by setting goals. You may want to work enough stations to earn a pin in one of the ARRL contests or a certificate from CQ. You may want to work stations in new grids only. You may want to run QRP and see how many stations you can work with as little power as possible. Another way to make it fun is to find a group of like-minded hams and make the contest an outing (similar to Field Day). Do whatever works for you for your enjoyment.

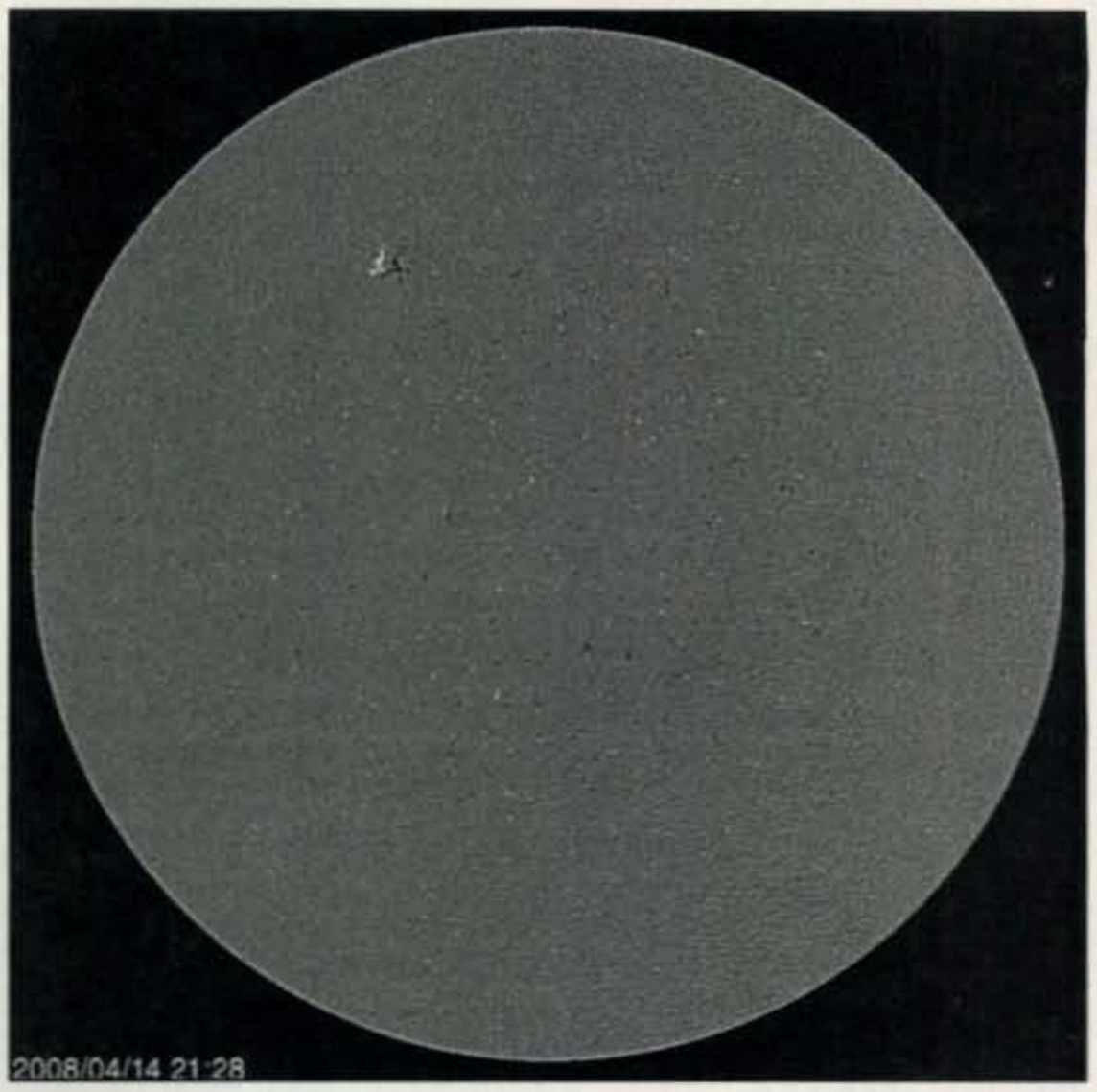


Photo B– Magnetogram for April 14, 2008 showing a "new cycle" sunspot region. (Courtesty of Stanford MDI/SOI instrument on the NASA/ESA SOHO spacecraft)

There you have them, a few suggestions for having a great time during the VHF-plus contests!

Second Cycle 24 Sunspot Finally Appears

From NOAA Space Weather came the following announcement on April 13, 2008: "New Region 990 (N26E20) was numbered today. The magnetic polarity (negative leader, positive trailer) of Region 990 is consistent with a new cycle sunspot." The website <http://www.spaceweather.com> for 13 April 2008 states that this is only the second sunspot from the new cycle since it officially began on January 4, 2008.

Jim Kennedy, KH6/K6MIO, points out that since Cycle 24 began, "We are definitely in the period when both Cycle 23 and Cycle 24 are simultaneously producing visible effects on the Sun." He adds:

> As of 13 April 2008, I have noted ten instances of Cycle 24 bipolar magnetic regions on the Sun since the original 12 December 2007 occurrence that appears to have signaled the beginning of Cycle 24 (in the north). The first southern Cycle 24 region I have seen occurred on 1 January 2008.
>
> Ten of the twelve regions were in the Northern Hemisphere, and only two were in the south. This is consistent with the Cycle 23 observation that the Southern Hemisphere cycle is phased many months behind the north (the reason for the double maximum in Cycle 23).
>
> Most of these Cycle 24 magnetic regions did *not* produce visible sunspots. Nevertheless, they were clearly visible in the MDI and other magnetograms.
>
> The Cycle 24 connection is determined by the fact that these regions occurred near latitudes 30 north (or 30 south), with reversed magnetic polarity from Cycle 23 regions in those same hemispheres. On the magnetograms, Cycle 24 regions in the north have black on the right and white on the left. In the south, it is white on the right and black on the left.
>
> Photo B is the 14 April 2008 magnetogram. The lighter area in the upper left part of the photo is Region 990. Figure 1 is a chart of the sunspot numbers through March 2008. The last four sunspot data points on the smoothed line (red) are averaged over less than twelve months, so the values will probably change slightly in fol-

lowing months. The last two monthly points (gray line) are shown without smoothing.

Kjell Rasmusson, SM7BAE, SK

This past March the world of EME communications lost one of its pioneers. Kjell Rasmusson, SM7BAE (photo C), became a Silent Key on March 22, 2008. What follows are just a few of the many tributes to appear on the World Wide Web:

From **Stan Gulich, SM7WT:**

It is always a heavy burden when one of our mentors has passed away. Their eagerness to improve technology and our knowledge about what can be achieved has paved the way for us. Kjell was one of these outstanding forerunners. When the first attempts were made to use the Moon as a passive reflector, almost all the active hams could be found in North America. Kjell was the one who accepted the challenge to try EME from Europe. Kjell and Yngve, SM7BCX, decided to build a 160-element array at Kjell's farm and their first step was to attend a training course—in welding!

Shortly after the first successful QSOs, a tremendous storm destroyed the antenna. This would probably make most hams give

Photo C– Kjell, SM7BAE (SK), and his wife Carin in 2005 when Rod Macintosh, ZL3NW, visited them. Note the Swedish and New Zealand flags as a welcome. (Photo courtesy of ZL3NW)

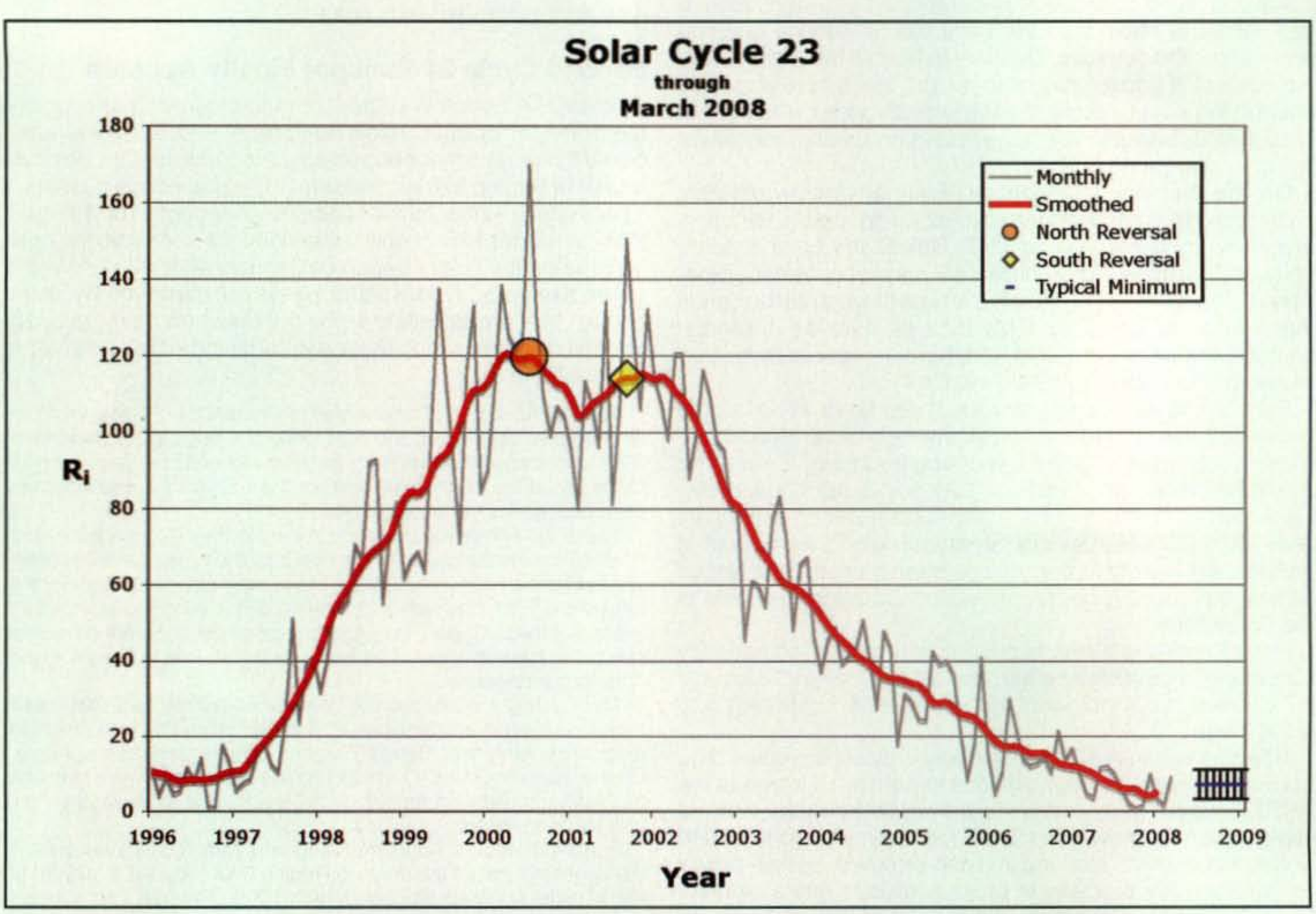


Fig. 1– Cycle 23 sunspot data through March 2008. The sunspot numbers are courtesy of SIDC/RWC Belgium.

up any further attempts, but Kjell and Yngve just started rebuilding the antenna and Kjell's EME activity continued. In 1981 Kjell became the second one—after VE7BQH—outside the USA to have worked all states, and in 1983 he became the third one in the world to get DXCC for 144 MHz. His QSO with ZL1AZR became the world record, which remained unchallenged for many years. Kjell was also definitely one of the very few who after calling CQ on 144 MHz was answered by ZS8IR and ZF8OC.

For someone with Kjell's energy, 160 elements were not enough. The lawn offered space for an enormous 360-element array, but large could be larger, and after a while the 24 × 15 elements were replaced by 24 × 20 elements. Now if you can work DX via EME on 2 meters, why not on 6 meters? Some of the 2-meter Yagis were replaced by 6-meter antennas and Kjell could continue to work DX on 6 even when the number of sunspots was low. DXCC on 2 and 6 was not enough. Kjell is probably the only one in the world to have DXCC on all 11 bands from 2 to 160 meters. (If there is another one, it must be W5UN.)

It is easy to envisage Kjell as someone who spent his life working DX and building antennas, but first of all, he worked on his farm. Even after one of his sons took over, Kjell helped out on the fields whenever needed. It is tragic that someone who has lived a healthy life and who less than a year ago still had his enormous energy should slowly be defeated by cancer just a month prior to his 80th birthday. Kjell's own words were: "It's unfair!" We will always remember Kjell not just for his achievements and his outstanding energy, but also for his modest approach and his helping hand.

We were 6 hams among the 52 guests at Kjell's funeral. It's a sad feeling to pass by his farm and see his antennas, knowing they will never be used again. We miss him very much; we were personal friends and neighbors. Carin, Irene, Anders, and Arne, we are many who share your sorrow.

From **Joe Taylor, K1JT:**

I am greatly saddened to learn of the death of Kjell Rasmusson, SM7BAE. I had many, many exchanges with Kjell over the last few years, talking him through various difficulties he was having in setting up the computer in his hamshack. Kjell was always the experimenter—always interested in learning something new, and truly understanding it.

From **Paul Kiesel, K7CW:**

We had several QSOs on 6 meters, during the peak of sunspot Cycle 23. I remember I was very sorry to hear of Kjell's passing. In November of last year, I sent an email to Kjell asking for a 50 MHz EME CW sked. He replied immediately that he would not be able to make the sked because he was very ill. He told me that he would "call" me when he was better to arrange the sked.

In February, I sent him a note wishing him a fast recovery, but got no reply. I sent queries as to Kjell's status to a couple of SM7 hams whom I knew were close to Kjell, but got no replies from them. Alas, Kjell and I were not able to have our sked.

I remember the first time I heard Kjell's callsign. I was in Jerry, WA7KYZ's (now SK) shack in the early 1970s as Jerry was preparing to call CQ in his first attempt at 2-meter EME. The antenna was pointed at the point on the horizon where the moon would first appear. We were wondering whether we would be able to hear anybody.

A few minutes before moonrise, we began hearing a station calling CQ. He was weak, but I was able to pull SM7BAE out of the noise. Back then neither of us knew that such a station existed, so it took Jerry a little while longer to confirm that that's who it was. Jerry called Kjell. Kjell copied Jerry's callsign almost immediately, but persisted in sending "?" after it, as though he wasn't sure. Jerry's was undoubtedly the first WA7 station he'd ever heard on 2m EME.

Eventually, Kjell was certain of Jerry's callsign and they completed the QSO. It wasn't my shack, but I think I was just as excited as Jerry at working Kjell. All the best, Kjell. Sorry you couldn't make the sked.

From **Phil Philippe, FR5DN:**

It's with real sadness that I read Kjell had passed away. Kjell had been my teacher since early 1991 when I made my first EME QSO

from FR. That was on 2 meters. He was always available for technical discussion, and all kind of info. At that time, I had no internet here and had to talk on 20 meters—discussions on step-by-step construction of the station, advising a lot about what was the best way to go. Whatever I needed, he was always available. Then, I finally made the first ever EME QSO with him on 8 May 1991. You can imagine what my feelings were at that moment. I was using a multimode mobile FT-480R with 160w brick, 2 × 17-el F9FT, and very long coax, with some 0.7 dB NF.

After that we made several QSOs. Each time I needed him as a reference signal. Since then, he has always been with me somewhere—and will always be. Stay in peace, Kjell.

From **Lance Collister, W7GJ:**

I was very sorry to learn of Kjell's passing. I had heard that he had been ill, and I just hope he did not suffer for long. It certainly is sobering and sad to see so many of our old friends dropping away.

Kjell was my 18th 2-meter contact back on October 16, 1978, and he was always willing to help encourage new EME stations and bring them along. I remember how I always used to grin with great frustration as he would send our calls on CW—"WA1JXN/7 de SM7BAE"—at about 10 wpm on a fast day. The dashes were so long and slow that they would get broken up into dots!

I remember many contacts with Kjell on 2 meters and 20 meters SSB in the old pre e-mail days when we needed HF to set up skeds. It was 18 years and 3 days after our first EME contact (on 2 meters) that Kjell gave me my first 6-meter EME contact and that certainly demonstrated his patience and kindness in helping new stations get on 6 meters! I had just gotten on 6 meters for the first time in the spring of 1996 with a newly built 8877 amp and 7-element Yagi (designed for me by Lionel Edwards, VE7BQH).

It was only 20 feet off the ground, but it seemed to work FB, and I ran for a number of months with Kjell before we completed that fall. We kept running skeds on my moonrise during the optimum days of each month, and every four weeks we had recurring geomagnetic disturbances and aurora that coincided with our skeds. It was quite an exciting accomplishment when we finally completed!

Kjell was very dedicated to 6m EME—as you would *have* to be to put up eight large Yagis with full elevation on that band! When Joe Taylor, K1JT, came out with the new weak-signal digital modes, Kjell immediately was aware of what they would mean to 6 meters EME, where signals always seemed more than a little *too* weak! I was pleased to see Kjell migrate so quickly to this welcome new technology and continue to provide such a reliable big signal for newcomers to 6 meters EME. I worked him many times on digital modes on 6 meters EME, and he always had a great signal (about 500 Hz off frequency, as I recall, hi!), and often called me out of the blue just to let me know I was getting out.

He had sent me tapes of his 6-meter echoes to share with others at club meetings, along with photos of his EME arrays. He shared with me via e-mail in the last couple of years how pleased he was to see the large growth in 6 meters EME, and I believe that was one of his favorite personal challenges.

We will miss Kjell and his pioneering spirit. RIP, Kjell.

Current Contests

ARRL June VHF QSO Party: The dates for this contest are June 14–16. Complete rules are in the May issue of *QST*. Rules can also be found on the ARRL website (http://www.arrl.org). Many are making plans to activate rare grids. For the latest information on grid expeditions, check the VHF reflector (vhf@w6yx.stanford.edu) on the internet. For weeks in the run-up to the contest postings are made on the VHF reflector announcing rover operations and grid expeditions. It is a contest that will create plenty of opportunities for you to introduce the hobby to your friends who are not presently working the VHF-plus bands or who are not hams.

SMIRK Contest: The SMIRK 2008 QSO Party, sponsored by the Six Meter International Radio Klub, will be held from 0000 UTC June 21 until 2400 UTC June 22. This is a 6-meter-only contest. Exchange SMIRK number and grid square. Score 2 points per QSO with SMIRK members and 1 point per QSO with nonmembers. Multiply points times grid squares for final score. Awards are given for the top scorer in each ARRL section and country. Logs and log requests should be sent to: Dale Richardson, AA5XE, 214 Palo Verde Dr., Kerrville, TX 78028. Entries must be received by August 1. For more information see <http://www.smirk.org> and click on the SMIRK Contest link at the top of the page.

Field Day: ARRL's classic, Field Day, will be held on June 28–29. Complete rules for this contest can be found in *QST* and at <http://www.arrl.org>. In years past tremendous European openings have occurred on 6 meters. Also, as happened in 1998, large sporadic-*E* openings can occur. This is one of the best club-related events to involve new people in the hobby.

Current Convention

The annual **Ham-Com Hamfest** will be held June 13–14 in Plano, Texas. As always, the North Texas Microwave Society will present a microwave forum. For details, see the Ham-Com website: <http://www.hamcom.org/>.

Calls for Papers

Calls for papers are issued in advance of forthcoming conferences either for presenters to be speakers, or for papers to be published in the conferences' *Proceedings*, or both. For more information, questions about format, media, hard-copy, e-mail, etc., please contact the person listed with the announcement. The following have announced a call for papers:

Central States VHF Society Conference: Technical papers are solicited for the 42nd annual Central States VHF Society Conference to be held in Wichita, Kansas on July 24–27. Papers, presentations, and posters on all aspects of weak-signal VHF and above amateur radio are requested. You do not need to attend the conference, nor present your paper, to have it published in the *Proceedings*. Non-weak signal topics such as FM, repeaters, packet radio, etc., generally are not considered acceptable. However, there are always exceptions. Please contact the folks below if you have any questions about the suitability of a topic. Strong editorial preference will be given to those papers that are written and formatted specifically for publication, rather than as visual presentation aids. Submissions may be made via the following: electronic formats (preferred); via email; uploaded to a website for subsequent downloading; on media (3.5" floppy, CD, USB stick/thumb drive). Deadline for submissions: For the *Proceedings*, June 2; for presentations to be delivered at the conference, June 30; and for notifying them that you will have a poster to be displayed at the conference, June 30. Bring your poster with you on July 28. Contact information: Mel Graves, WRØI, via e-mail <wr0i@ sgdrugfree.com>, or snail mail at P.O. Box 273, Wichita KS 67201-0273.

ARI – Comitato Regionale Toscana is calling for the submission of papers and presentations for the upcoming 13th EME Conference to be held in Florence, Italy on August 8–10. Material is solicited on the technical and operational aspects of EME. The deadline for submission of papers and presentations is May 15. All submissions should be in Microsoft® Word (.doc), Adobe Acrobat (.pdf), or Power Point format. When submitting a paper or presentation, please indicate if you plan to attend the conference or if you are submitting for

publication only. Papers and presentations will be published in bound *Proceedings.* Send all questions, comments, and suggestions via e-mail to <eme2008@ari-crt.it>. For more information about the conference, go to <http://www.ari-crt/EME2008>.

Technical papers are solicited for presentation at the **27th Annual ARRL and TAPR Digital Communications Conference** to be held September 26–28 in Chicago, Illinois and for publication in the conference *Proceedings.* Presentation at the conference is not required for publication. Submission of papers is due by July 31 and should be sent to: Maty Weinberg, KB1EIB, ARRL, 225 Main Street, Newington, CT 06111, or via e-mail to <maty@arrl.org>. For suitable topics and submission guidelines also contact Maty via e-mail, and check <http://www.arrl.org>.

Meteor Showers

Between June 3 and 11, the *Arietids* meteor shower will once again be evident. This is a daytime shower with the peak predicted to occur on June 7 at around 0500 UTC. Activity from this shower will be evident for around eight days, centered on the peak. At its peak, you can expect around 60 meteors per hour traveling at a velocity of around 37 km/sec (23 miles per second).

On June 9 the *Zeta Perseids* is expected to peak around 0400 UTC. At its maximum, it produces around 40 meteors per hour. The *Boötids* is expected to make a showing between June 27 and July 2, with a predicted peak on June 27, around 0230 UTC. On June 28 the *Beta Taurids* is expected to peak. Because it is a daytime shower, not much is known about the stream of activity. However, according to the book *Meteors* by Neil Bone, this and the *Arietids* are two of the more active *radio* showers of the year. Peak activity for this shower seems to favor a north-south path.

For more details on the above meteor shower predictions see NW7US's "Propagation" column elsewhere in this issue. Also visit the International Meteor Organization's website: <http://www.imo.net/calendar/2008>.

What is Happening At Your Next Club Meeting?

Gary Pearce, KN4AQ, of Amateur Radio/Video News has produced a DVD that might provide a creative answer to the above question. From his press release is the following:

Amateur Radio/Video News has produced a one-hour documentary DVD titled Digital Voice for Amateur Radio to show what the future might bring. Producer and host Gary Pearce, KN4AQ, traveled to Dallas, Washington DC, Alabama, Chicago, St. Louis, and Dayton to interview the hams leading the way and to record demonstrations of each mode in operation. The program will be eye-opening for hams who only know digital voice through articles and ads in our magazines.

The DVD is designed to be a radio club meeting program. There's a 25-minute segment on the HF modes and a 35-minute segment on the VHF/UHF modes, so it can be played all in one meeting, or divided over two. Each segment is extensively indexed by topic for easy review.

The price is $25 (including shipping). The DVD can be ordered directly from the ARVN website: <http://www.ARVideoNews.com>. There is also an 8-minute preview to download free from the website.

And Finally . . .

As usual, I have run out of room in my effort to cover all of the VHF-plus news. For more coverage, please read *CQ VHF* magazine. For coverage of your story in this column or a future issue of *CQ VHF* magazine, you can send it to me via my e-mail address: <n6cl@sbcglobal.net>.

Until next month...

73 de Joe, N6CL

BY JOHN DORR,* K1AR

The Old Days of Contesting

June's Contest Tip

Whether you are in the U.S. or other parts of the world, Field Day events emerge with the warm weather. These portable operating events are a great training ground for new contesters to learn from experienced operators, sharing their skills with the new guys. Think about where you fit in the mix and get involved. Sitting next to an experienced operator in a an event such as Field Day is a fantastic way to learn the game.

Calendar of Events

All year	**CQ DX Marathon**
May 24–25	**CQ WW WPX CW Contest**
May 31–June 1	Kid's Roundup
June 7–8	SEANET Contest
June 7–8	Alabama QSO Party
June 14–15	ANARTS WW RTTY Contest
June 14	Portugal Day SSB Contest
June 14	Asia-Pacific SSB Sprint
June 14–15	GACW CW DX Contest
June 14–15	West Virginia QSO Party
June 14–16	ARRL June VHF QSO Party
June 21–22	All Asian CW Contest
June 25	BCC QSO Party
June 28–29	King of Spain SSB Contest
June 28–29	Marconi Memorial HF CW Contest
June 28–29	ARRL Field Day
July 1	RAC Canada Day Contest
July 5–6	DL RTTY DX Contest
July 12–13	IARU HF World Championship
July 19–20	**CQ WW VHF Contest**
July 26–27	RSGB IOTA Contest

How many of us have wished for the old days of contesting to return? This month I'm going to take the term "old man" and literally apply it to myself. I'm going to act like an old man. I believe that there are many contesters who have watched our sport evolve over the past few decades and wish to a certain degree that they could turn back the clock. I'm not sure that I am part of that crowd, but there are a few aspects of old-time contesting that I truly miss.

The first question I had to ask myself was whether or not I was even qualified to comment on the subject. After a quick look at the calendar, I realized that I'll be entering my 40th year of contesting in September, so I guess I pass the test. Many of you can play back a historical perspective of contesting better than me; this month I'm going to try to do it as best as I can.

The K1AR ham clock began in September 1969. I was a young, 14-year-old kid who knew little about ham radio and virtually nothing about contest operating. My rig was a Heathkit HW-16 (imagine that, a radio that you actually had to build yourself!) that delivered 90 hard-earned watts into a 20-foot high dipole hung between two Long Island trees. The days of stacked beams, 160-meter 4-squares, and receiving Beverages every 45 degrees had, for the most part, yet to arrive.

I stumbled along in my role as a new contester. After all, there was no internet or CQ-Contest reflector that one could use as a resource. No one had published a book on contesting, nor was there a VCR to play a training video that had yet to be created. The grand-old contest clubs (e.g., the Potomac Valley Radio Club and Frankford Radio Club) were in full swing, but there was no local contest club within hundreds of miles from where I lived. Whatever skills I developed were achieved simply by getting on the air and learning the game all by myself.

My "on the air" experience in those days seemed to be part of a friendlier kind of competition. No one bragged about 400 Qs per-hour rates or their trips to monster stations in the Caribbean and West African islands. It seemed that there were fewer battles over the band edges on SSB, and not many stations sent more than 30 or 35 wpm on CW. Amazingly, everyone sent the entire exchange in each contest, with 5NN being the breakout shortcut on CW. Also, while contesting had its share of cheaters in those days as well, it seemed that very few competitors were looking to cut corners and push the gray areas in the rules.

Speaking of rules, contesting was simpler in those days as well. Technology had yet to make its mark on the sport. As a result, there were fewer categories, less adjudication, and some would argue more fun. Not everyone who entered a contest expected an award. Most people simply got on the air to have a good time. The notion of instant gratification had yet to dominate society in general and contesting in particular.

It's hard to imagine a contest world without packet spotting, but amazingly to some, it actually did exist. In today's world, one can hardly conceive of a contesting experience in which the operators actually had to find stations all by themselves. There were no instant packet pile-ups. Rare DX would sometimes operate for hours with few callers simply because nobody had discovered where they were on the band. While 2-meter VHF spotting had its place before packet, it hardly had the same impact on our operating experience.

It's fair to say that, from today's perspective, contesting has cleaned up its act in many respects. In years past, there were no UBN reports. Logs were checked by hand, and only the most egregious offenders were caught. One of the great changes of contesting is that competitors are working harder than ever to deliver accurate logs.

The historical barrier to entry in contesting was certainly much lower in our earlier days. When I got my start, there were few, if any, SO2R (Single Operator Two Radios) stations. Certainly in those times station design was predominated by the choice of transceiver. Now it seems that the cost of your radio is secondary to the investments required to competitively "wire it all up." I won't even comment on what is required outside the shack! That said, I vividly remember being able to win the CQ WW Single Operator All Band contest category with a single tower, no stacked antennas, and a simple wire on 160 and 80 meters. Sadly, those days are probably gone forever.

What's the bottom line? There are many aspects of old-time contesting that have long since left us, and frankly, I miss many of them. I sometimes long for the days when the operator was at the center of the action and not technology. And while you still need to copy what you hear entering your headsets, today's

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e-mail: <K1AR@contesting.com>

method of obtaining that information has certainly changed—not all for the good, in my opinion. One cannot deny that contest activity is at an all-time high. This is great news for our sport. In part, the reason is that some of our technology has blended the interests of the casual operator who uses packet spotting, for example, with simply working interesting stations that appear on their screen. The fundamental of using our radio sets to work faraway lands has not really changed. Perhaps as the new solar cycle emerges and we have the opportunity to spread out more (i.e., operate on more bands than just 20 meters during the day) we will return to the kinder and friendlier contest world of days past. We can only hope!

Perhaps Cynical, But Not So Outrageous?

I received an e-mail from a well-known contester expressing his concern over the impact of technology on contesting in recent years, and it was written in a very clever yet cynical way. While you may not agree with this person's views, I guarantee it will make you think:

Now that it's been firmly established that the overall objectives of radio contests are to have fun and increase participation, it's time to highlight another successful endeavor where adoption of technology has produced a model that amateur radio contesting can look up to and hopefully emulate. The "gaming" industry has used technology to produce computerized machines that are overwhelming successes with respect to those two top radio contesting goals.

In ancient times, people played card games like pinochle and bridge. These required people to learn, plan, and think to be successful. Those three drudge-filled barriers to fun are obsolete concepts that should at least be minimized if not eliminated from the 21st century.

The gaming industry first developed slot machines, which permitted people to play games without any of the dreaded mental effort, but initially these machines required physical effort, as players had to individually place coins into slots and pull handles. Today,with computer automation, the modern versions of these machines allow people to simply press a button over and over and over again, and the machines randomly proclaim certain people as winners.

Whereas bridge clubs are going out of business, gaming casinos are sprouting up everywhere, and a visit to any of them will confirm their popularity. If you need confirmation of the fun part, simply look at the happy faces on the players in any of the casino advertisements. And, in further endorsement of such machines, the people of California, for example, just voted to vastly increase their number in the state and fund the state government with part of the take. Total thought-free participation should also be an objective of radio contesting, and the recent development of automatic devices to copy callsigns and therefore take thinking and drudgery out of operating should be applauded. There should be no need or benefit to understanding radio propagation or any of the other technical gibberish that once permeated your father's ham radio.

If having large numbers of people mindlessly pushing buttons over and over isn't what you think contesting should aim for, I'd suggest you take up with some group of fossils who discuss things such as medical check-ups on 75-meter AM phone.

The saying "No one ever went broke underestimating human intelligence" isn't just something sarcastically uttered among business entrepreneurs, but should be the goal of all forward-thinking people, especially those involved with structuring contesting. Once the word "Homer" brought up thoughts of *The Iliad* and *The Odyssey*, but today Homer means Marge, Lisa, and Bart. Today, Homer's good friend Barney sums life up with his trademark belch.

Let's drag ham radio contesting into the 21st century where it belongs. Viva technology! Viva spotting and skimmers!

—Anonymous

Final Comments

Thanks for reading this month's column. The summer antenna season is upon us (well, at least for those in the Northern Hemisphere!). Now is the time to get prepared for the fall's contest extravaganzas. Also, as you can see by this month's contest calendar, there is no lack of operating events to keep the dust off your microphone, paddle, and keyboard. Don't sit on the sidelines. Get involved. See you in the next one!

73, John, K1AR

Kosova (Kosovo) Added as Multiplier for CQ WW DX Contests & CQ DX Marathon

The Worked All Europe (WAE) award committee of the Deutsche Amateur Radio Club (DARC) has voted to add Kosova (Kosovo) to the WAE country list. The CQ World-Wide DX Contests and the CQ DX Marathon both use a combination of the DXCC and WAE lists as the basis for their country lists. Therefore, Kosova will now be considered a separate entity for both the CQ DX Marathon (effective February 17, 2008) and the CQ WW DX Contests, beginning with the CQ WW RTTY DX Contest on September 27–28, 2008.

CQ previously announced that it was accepting Kosova as a separate entity for award credit as of February 17, 2008.

awards

BY TED MELINOSKY,* K1BV

County Hunting Record Keeping

The *CQ Counties Award Record Book* has been around a long time, and changes have occurred over the years. The United States has added Broomfield County in Colorado (2001) and Dade County in Florida has changed to Miami-Dade (1999). However, use of the booklet has been decreasing, because about half of the applications that arrive here are done with a home computer and printer, which is fine (see below). In the early 1960s, when the program began, computers usually were not found in the home. They were expensive, and they were not a part of our lives as they are today for many of us.

Printouts of your applications for USA-CA are welcome as long as they contain the same data in the old (or new) booklet. You should send an alphabetical list of counties by state order with the following variable data: Call of station worked, City/Town (or "Mobile"), Band, and Mode. Signal reports and date of contact are not needed. If the application is for an endorsement, we need the complete list of counties up to and including the ones that are part of the endorsement. If you have the 500 counties level of USA-CA and are applying for the 2000 level, your list must include all 2000. This is where a computer data base comes in handy.

The Queen Gizella Award

European countries, with their long recorded history filled with conflict, exploration, and trade, among other things, are blessed with almost countless opportunities to celebrate anniversaries of every sort. When this is combined with an abundance of talented designers and high-quality printing, the net effect is very often a handsome certificate that encourages the special effort needed to make the contacts to earn that piece of paper.

The short-term Queen Gizella Award sponsored by the Veszprém County Section of the Hungarian Radioamateur Society.

First a little history: Gizella of Bavaria married King Stephan I of Hungary in 995 (some say 1008, hence the anniversary celebrated in 2008) and is popularly known as the first queen of Hungary. She is best known for aiding the spread of Christianity to Hungary and is recognized a "blessed" person by the Catholic church.

The certificate includes a picture of the castle of Veszprém. This city was a favorite of Queen Gizella, and for centuries the queens of Hungary were crowned by the Bishop of Veszprém. The second image on the award is a statue of King Stephan and Queen Gizella.

In late June, I will be only a few miles from this historic area enjoying a tour on the Danube River, beginning in Budapest and heading south, passing through Croatia, Serbia, Bulgaria, and Romania.

Sponsored by the Veszprém County Section of the Hungarian Radioamateur Society in memory of Queen Gizella, the award may be earned by licensed amateurs, club stations, and SWLs and is based on points that can be earned on any valid band or mode with the exception that repeater contacts are not allowed. Contacts must be made during the period January 1, 2006 to December 31, 2011.

Points needed: Hungarian stations need 100 points, other Europeans need 60, all others need 40.

Point values:
HA2G = 10 points
HA2RI, HA2EQD, HA2RQ = 5 points
Stations in the town of Veszprém = 3 points
Stations in the Hungarian second call area = 2 points
Other Hungarian stations = 1 point

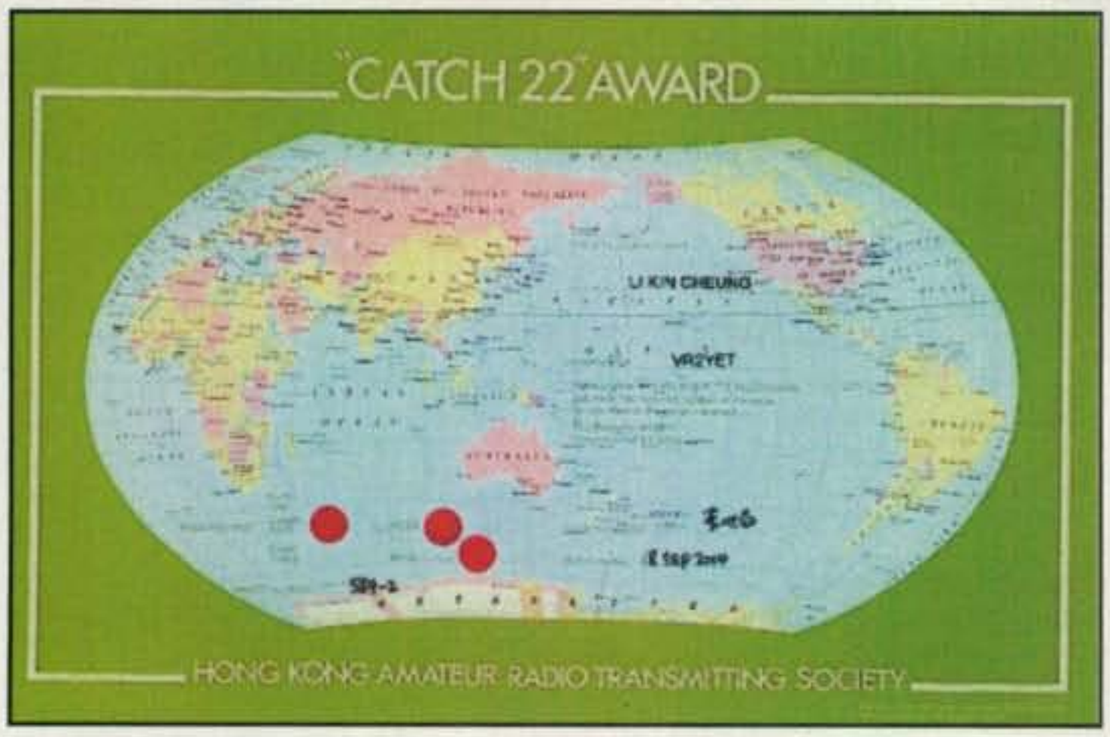
Each station may be worked only once. Send log extract witnessed by two amateurs to: Schenk Róbert, Egry J. u. 16/3, H-8200 Veszprém, Hungary. Fee for the award is $US5 or 5 Euros. Applications will be reviewed and sent out at the end of each quarter.

USA-CA Honor Roll

500		2000	
LA8OM	3430	PA3ARM	1361

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.

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



The Catch 22 Award is part of the awards series of the Hong Kong Amateur Radio Transmitting Society.

Earning the Firecracker Award requires six contacts with different VR2/VS6 stations.

Hong Kong Amateur Radio Transmitting Society Awards

This month we also feature the colorful award certificates sponsored by the Hong Kong Amateur Radio Transmitting Society. Besides the three permanent awards offered by the society, they also offer a special award to commemorate the occasion of their 10th anniversary. The one-year period for making VR10-prefix contacts expires at the end of June 2008.

General Requirements: GCR list requested (cards not wanted). Apply to: Awards Manager, HARTS, GPO Box 541, Hong Kong. Fees and contact dates vary; refer to each award's details. Internet: <http://www.harts-web.org/>.

Catch 22 Award. Contact stations located on the 22nd parallel of latitude north per the list below after January 1, 1980. A VR2/VS6 contact is required. The award is given in three class-

Stephen W. Morton, AA8HH
USA-CA All Counties #1161, October 4, 2007

I was originally licensed as WN8PME (and WA8PME) in 1964 and started county hunting shortly thereafter. Back then, there was an organization operated by Cliff Evans, K6BX, called the Certificate Hunters Club, and it sponsored a Counties Worked Award. I worked around 400 counties towards the award, and then lost interest about the same time I started to develop an interest in girls. My license eventually lapsed, and I didn't get back into ham radio until my son convinced me that it would be a fun thing for us to do together.

Fast forward about 35 years. While traveling in the South, I started listening to the county hunters group on 14.336 MHz and it sounded like fun. So for a couple of years or so I handed out contacts in counties I traveled through, but didn't bother to keep track of the counties I had worked.

Around 1999, I decided to actively start collecting counties. Since I had lost all of my old QSL cards, I had to start from scratch. To compound the difficulty, I didn't have a "home station," so all of my contacts were made from the mobile station. I really didn't expect to ever work all of the counties, but I figured that I could certainly work enough of them to earn the basic award. I kept putting off applying for each level of the award as I earned it, and eventually I realized that I could actually work all of the counties.

Currently, I enjoy chasing DX, working CW, and operating in events such as the Ohio QSO Party, Sweepstakes, and Field Day.

I live in a planned unit community, but have managed to assemble a home station that performs adequately. The station is comprised of an ICOM 756PROII and Ameritron ALS-600 amplifier feeding a "flagpole" that has a Hy-Gain 14AVQ vertical hidden inside with lots of radials. My mobile station includes an ICOM 706MKIIG with an ICOM AH4 tuner and a homebrew stainless-steel antenna using Hustler resonators.

As I started getting close to working all of the counties, several of my county hunter friends made it a point to operate from counties I needed to help me get finished. Everyone told me that the last ten counties would go quickly, and they were right! The last ten only took a couple of months. Finally, Larry, N2OCW, drove to Martin County, Kentucky to give me the last county for the "whole ball of wax." At the last minute, I decided to hop in my car and meet him there.

We made the last contact for my USA-CA All Counties in the parking lot of the Martin County Courthouse . . . Larry in his truck and me in my car. Thank you to all of those great folks who helped me finish up USA-CA!

Stephen Morton, AA8HH, USA-CA All Counties #1161.

es: Class 3 = 15 countries, Class 2 = 20 countries, Class 1 = all 25 countries. Fee is $US15, HK$45, or 45 IRCs. Endorsements are available for band and mode. Upgrade stickers cost $US1, HK$10, or 5 IRCs.

Countries List: VR2/VS6 Hong Kong, XW Laos, A6X U.A.E., TT8 Chad, CN Morocco, XX9 Macao, XZ Myanmar, HZ Saudi Arabia, 5U7 Niger, C6 Bahamas, BY China, S2 Bangladesh, ST Sudan, 7X Algeria, CO Cuba, BV Taiwan, VU2 India, SU Egypt, TZ Mali, XE Mexico, XV Vietnam, A4X Oman, 5A Libya, 5T5 Mauritania, KH6 Hawaii.

The Nine Dragons Award requires contacts with specific CQ zones.

Firecracker Award. This award requires six contacts with different VR2/VS6 stations after January 1, 1964. Stations in zones 18, 19, 24 to 30 require 10 contacts with different VS6 stations. Fee is $US5, HK$50, or 15 IRCs.

Nine Dragons Award. Make one contact with a country in each of the following CQ zones: 18, 19, 24 to 30 inclusive. The contact for zone 24 must be a VR2/VS6. Stations within the nine listed zones require two contacts in each zone with two VS6 contacts. Contacts after January 1, 1979 count for the award. Fee is $US10, HK$100, or 30 IRCs.

10th Anniversary of HKSAR Award. To commemorate the 10th anniversary of Hong Kong's reunification with China, radio amateurs in Hong Kong have been granted permission to use the special prefix VR10. The award is available to all licensed amateurs and may be earned by making 10 QSOs with VR10 stations using at least three different bands during the term June 30, 2007 16:00 UTC to June 30, 2008 16:00 UTC. QSL cards are not required. Send a log extract accompanied by either a photo copy from your log book (certified by two or more licensed amateurs) or a photo copy of the QSL cards. Award may be endorsed for any mode. Fee for the award is $US10, HK$100, or RMB100.

We're always interested in hearing from clubs, special interest groups, or individuals who sponsor awards. Please contact me at the e-mail address shown on the first page of this column.

73, Ted, K1BV

BY CARL SMITH,* N4AA

DX News, W3HC Retiring, IRCs Update, and XE1CI

The year moves on, and as this is written in early April the weather is moderating and the trees (and grass) are starting to show signs of turning green again here in North Carolina. As I drive by the gasoline station and see the prices going up almost on a daily basis, it makes me wonder if this will have any effect on the upcoming convention/hamfest travels. If you choose to fly, that will cost more; if you rent a car when you "get there," it will cost more for the gas; if you drive from your QTH, that will undoubtedly cost more. Transportation costs are driving up the price of virtually everything we buy, see, or feel. Postage is going up, UPS rates are up, FedEx rates are up, so it's going to cost more to get anything from anywhere. This includes the gadgets we like to buy to enhance our ham shacks. Well, maybe going to a hamfest will be cheaper in the long run. We can buy all those things and carry them home in a suitcase. Now on to DX matters . . .

DX News

Did you work **9XØR**? If you didn't, you must have been off the air for some reason or under the weather. The team did a very respectable job of making 9X available on bands/modes we needed/wanted. Thanks to the whole group for providing 62,679 QSOs to 20,299 unique callsigns. They worked 185 countries in all 40 CQ zones during their operation. More details of the activity are on the website <http://www.9x0r.com>, but I'll give you a sample here:

QSOs: CW 31,603; SSB 26,088; RTTY 4,988.

By continent: Europe 35,813; North America 14,535; Asia 6,585; Africa 1,032; South America 953; Oceania 257.

TX5C on Clipperton had trouble almost from the time they arrived. They went QRT at 1400Z on March 15, two days earlier than planned. The weather and sea conditions were so bad during their stay that the ship's captain said the early departure was necessary to ensure the safety of the team and his crew. With heavy rain and wind almost daily, along with extreme heat, many of the team members were barely able to function. I applaud their efforts to "stick to it" and sincerely hope that no one has suffered any long-term effects from the ordeal.

During the 6 1/2 days with 156 hours of operation, they were able to provide 71,794 QSOs. It is unfortunate that of that 71,794, there were nearly 3,000 dupes. One of my pet peeves is people who make all of those so-called "insurance" contacts. It is possible that "some" of those were legitimate, where the "duper" honestly felt that a previous contact was not confirmed by the DX station. I cannot believe that nearly 3,000 fell into that category, however.

There is more good DX news as well. Petrus, ZS6GCM, who was on Bouvet for a few months, is now on Marion Island as **ZS8T**. Although he arrived there the end of March, he would *not* be able to be on the air before the end of April. The good news is that he will be there for up to a year. Unlike his last-minute trip to Bouvet, Petrus had time to make preparations for this trip and he was able to take a new radio, amplifier, and antennas, which should give him a significant signal. Keep listening for him from this #6 Most Wanted place in the world.

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>

The officers of the INDEXA gathered for this photo opportunity (left to right): Carl, N4AA; Lynn, W4NL; John, K8YC (VP); Gary, K4MQG (president); and Bob, K4UEE. (Photo courtesy of David, K4PZT)

Left to right: Raj, 8R1RPN; Jim, G3RTE; Peter, 8R1WD; and Phil, G3SWH, enjoying yet more Banks' beer! This gathering was during a DXpedition to Guyana in February 2008. (Photo courtesy of G3SWH)

Several members of the French team that brought us Europa in 2003 as TO4E have been working diligently to get permission to operation from **Glorioso (FR/G)**. Announced in late March, the permission has finally been given. There are a few "strings" attached, such as only French military personnel will be allowed, transportation will be only by French military transport, and the timing cannot be given much ahead of their departure due to military directives. Thus, we won't have much warning that they are going, but again there is *good* news . . . when they do go, they will be staying for a month. As of early April, the operation was slated to happen in the month of May, but that could change due to the "strings" mentioned above.

Mac, W3HC, Retiring QSL Manager

One of the oldest QSL Managers is retiring. Mac, W3HC, has decided it is time to hang up his "envelope slicer." According to Bob, N2OO, of the QSL Managers Society (http://www.qsl.net/qslmanagers/): "The QSL Manager's Society is acquiring the logs and cards from Mac. All calls will be assigned to new managers from the QSL Manager's Society. It will take some time to sort and

The WPX Program

CW

3197	K2UF	3199	N6QQ
3198	IQ3WW		

SSB

2992	K6EID	2996	EA2BCJ
2993	KB2TGU	2997	N6QQ
2994	SQ9DXT	2998	VE3TMG
2995	WB3BFC		

Mixed

2004	N2SS	2005	N6QQ

Digital

4	N8BJQ	7	7K3QPL
5	GUØSUP	8	N6QQ
6	WB9B	9	KUØA

CW: 1050 K4IE. 1200 IV3DYS. 3250 N4MM.
SSB: 350 VE3TMG. 400 SQ9DXT. 500 KB2TGU. 750 IK4THK. 800 K7SAM. 1150 K4IE.
Mixed: 1350 K6UXO. 1800 K4IE. 2300 N2SS. 3050 OZ1ACB. 3400 ON4CAS. 4000 I5RFD.
Digital: 650 N8BJQ. 1000 GUØSUP.

160 Meters: K2UF, ON4CAS
80 Meters: K2UF
40 Meters: K2UF
30 Meters: ON4CAS, KT2C, 7K3QPL, N4MM
20 Meters: K2UF
17 Meters: ON4CAS, N4MM
15 Meters: K2UF
12 Meters: ON4CAS, N4MM
10 Meters: K2UF
6 Meters: AE5B, N4MM, VE3TMG

Europe: K8ZEE, SQ9DXT

30, 17, 12, 6 Meter Bars: N4MM
30 Meter Bar: KT2C

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, IØJX, WA1JMP, KØJN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBF, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, KØDEQ, DKØPM, SV1EOS, UAØFAI, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR2QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, KBØG, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, WX3N, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, DJ1YH, KUØA, VR2UW, UAØFZ, DJ3JSW, OE6CLD, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, CT4NH, EA7TV, LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ, DKØPM, SV1EOS, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if airmail desired) to "CQ WPX Awards," P.O. Box 355, New Carlisle, OH 45344 USA. Note: WPX will not accept prefixes/calls which have been confirmed by computer-generated electronic means.
*Please Note: The price of the 160 meter bar for the Award of Excellence is $6.50.

5 Band WAZ

As of April 1, 2008, 747 stations have attained the 200 zone level and 1586 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:
WV6E

The top contenders for 5 Band WAZ (zones needed, 80 or 40 meters):

N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
W2YY, 199 (26)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40m)
IK1AOD, 199 (1)
DF3CB, 199 (1)
GM3YOR, 199 (31)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W3NO, 199 (26)
HB9DDZ, 199 (31)
RU3FM, 199 (1)
N3UN, 199 (18)
OH2VZ, 199 (31)
W1JZ, 199 (24)
W1FZ, 199 (26)
SM7BIP, 199 (31)
SP5DVP, 199 (31 on 40)
N4NX, 199 (26)
N4MM, 199 (26)
EA7GF, 199 (1)
N6HR/7, 199 (37)
JA5IU, 199 (2)
RU3DX, 199 (6)
N4XR, 199 (27)
HA5AGS, 199 (1)
VE3XN, 199 (26)
YU7GMN, 199 (10)
K7LJ, 199 (37)
RA6AX, 199 (6 on 10m)
RX4HZ, 199 (13)
KØGM, 199 (17)
EA5BCX, 198 (27, 39)
WØCP, 199 (18)
G3KDB, 198 (1, 12)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
K4CN, 198 (23, 26)
G3KMQ, 198 (1, 27)
N2QT, 198 (23, 24)
OK1DWC, 198 (6, 31)
W4UM, 198 (18, 23)
US7MM,198 (2, 6)
K2TK, 198 (23, 24)
K3JGJ, 198 (24, 26)
W4DC, 198 (24, 26)
F5NBU, 198 (19, 31)
OE2LCM, 198 (1, 31)
HA1RW, 198 (1, 31)
WK3N, 198 (23, 24)
W9XY, 198 (22, 26)
KZ2I, 198 (24, 26)
W7VJ, 198 (34, 37)
K9MIE, 198 (18, 21)
W9RN, 198 (26, 19 on 40)
W5CWQ,198 (17, 18)
WB9EEE, 198 (17, 18)
YU3VQ, 198 (27, 31)

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

K5TT (170 zones)
WØMM (170 zones)
NP3D (179 zones)
WØVX (180 zones)

5 Band WAZ updates:

NØIJ (200 zones)
EA8AYV (200 zones)
EW1CQ (170 zones)

***Please note: Cost of the 5 Band WAZ Plaque is $100 shipped within the U.S.; $120 all foreign (sent airmail).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 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>.

CQ DX Field Award Honor Roll

The CQ DX Field Award Honor Roll recognizes those DXers who have submitted proof of confirmation with 175 or more grid fields. Honor Roll lisiting is automatic upon approval of an application for 175 or more grid fields. To remain on the CQ DX Field Award Honor Roll, annual updates are required. Updates must be accompanied by an SASE if confirmation is desired. The fee for endorsement stickers is $1.00 each plus SASE. Please make all checks payable to the Award Manager, Billy F. Williams. Mail all updates to P.O. Box 9673, Jacksonville, FL 32208.

Mixed

K2TQC	258	JN3SAC	199	F6HMJ	182
HAØDU	228	W4UM	198	K2SHZ	182
W1CU	220	N4NX	192	K2AU	182
VE3XN	217	VE3ZZ	191	KØCA	181
N8PR	214	HA9PP	190	K1NU	180
HA1RW	213	BA4DW	188	K8OOK	180
KØDEQ	210	OK1AOV	187	ON4CAS	180
KF8UN	205	9A5CY	187	W5ODD	177
N4MM	201	W6OAT	185	NØFW	176

SSB

W1CU	207	W4ABW	184	NØFW	176
VE7SMP	190	N4MM	184	DL3DXX	175
KØDEQ	184	W4UM	180		

CW

W1CU	212	JN3SAC	193	N4MM	179
DL3DXX	203	W4UM	190	N4NX	177
KØDEQ	201	OK2PO	184	KØCA	175

The WAZ Program

80 Meter SSB

89 ..... HB9BGV

17 Meter CW

69 ..... WI8A

30 Meter CW

83 ..... WI8A

160 Meters

265 ....GM3YTS (40 zones)
266 ..... W5UN (40 zones)
267 ..... K1LPS (30 zones)
268 ..... YL2SM (40 zones)
269 ..... WI8A (32 zones)
270 ...EW1CQ (32 zones)

All Band WAZ

Mixed

8501 ..... SMØLQB
8502 ..... WB4YDL
8503 ..... EA5XP
8504 ..... W1NK

SSB

5066 ..... JH7BBK
5067 ..... DL2BK
5068 ..... EA1YY
5069 ..... EA5ATK
5070 ..... WØVX

CW

539 ..... JA1CKE
540 ..... WØVX

RTTY

182 ..... UAØAGI
183 ..... EA2RY
184 ..... NP3D
185 ..... ZS2EZ

Digital

5 ..... RA9SC

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>.

CQ DX Awards Program

SSB Endorsements

330 ..... K9BWQ/338
330 ..... K5OVC/338
330 ..... K4MZU/338
330 ..... WB4UBD/338
330 ..... K4MQG/338
330 ..... KZ2P/338
330 ..... W6EUF/338
330 ..... N4JF/338
330 ..... DJ9ZB/338
330 ..... VE2GHZ/337
330 ..... K2FL/337
330 ..... N7WR/334
330 ..... F6HMJ/331
300 ..... K7SAM/303
275 ..... WD9DZV/287

CW Endorsements

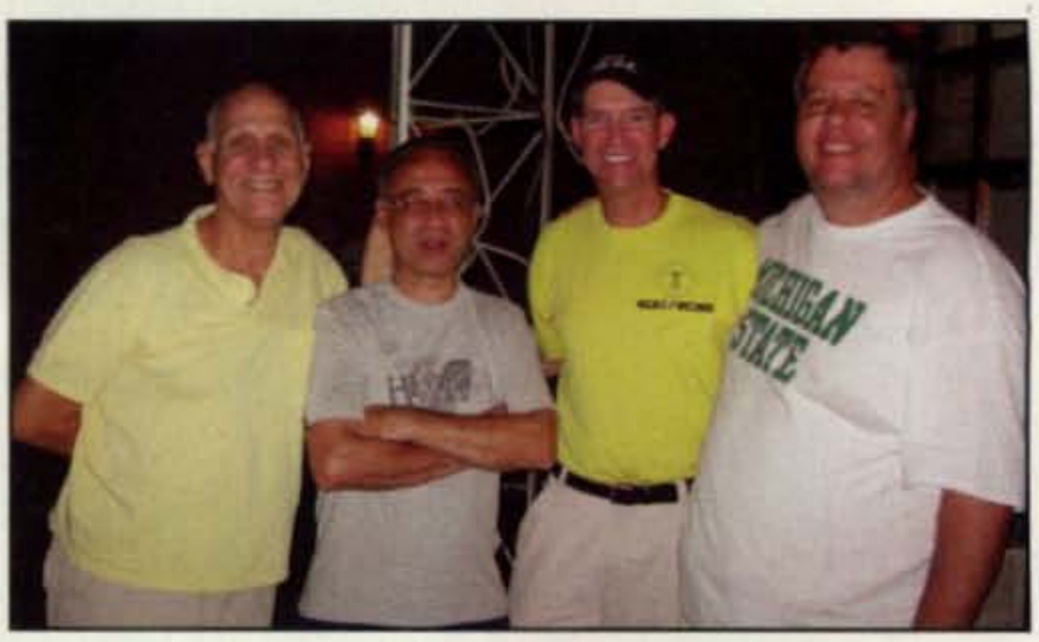
330 ..... K2FL/337
330 ..... K4MQG/337
330 ..... N4JF/337
330 ..... WB4UBD/337
330 ..... NØFW/337
330 ..... K9BWQ/337
330 ..... W8XD/337
320 ..... F6HMJ/326
275 ..... WD9DZV/295

RTTY Endorsements

330 ..... WB4UBD
330 ..... NI4H/335

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 338 active countries. Please make all checks payable to the award manager.

Rick, NE8Z, gets around to a lot of places. Here he is in Brazil during an ARRL contest with some friends (left to right): Lima, PY1NEZ; Vieira, PY1LVF; Rick, PY1/NE8Z; and Ricardo, PY1VOY. (Photo courtesy of Rick, NE8Z)



reassign most of these calls. However, these currently *active calls only* will be handled by Kim Larsen (her dad is Steve Larsen, N3SL) via N3SL: CO6AP, 7X5VRK, PY2KC, YL2EC, TU2XZ, PT5T, PS2T, and ZY1ØØS (previous special event).

"I ask everyone with any QSLs for Mac to hold off sending them until we announce new managers. Anyone who has already sent a QSL via W3HC does not need to resend. All mail already received by Mac will also be passed along to us. Please be patient while we organize this project. It could take a few weeks to sort it all out."

We thank Mac for his many years of faithful service as QSL Manager for dozens of stations.

IRCs Update

I have mentioned IRCs and the availability of postage stamps from a couple of sources in recent columns. I heard from one reader who said that his post office told him IRCs were no longer being printed. Well, according to my resident expert on such things, Dave, W2CC, that post office is *wrong*. It may not want to stock them or handle them, but Dave says IRCs are most definitely

CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries. With few exceptions, the ARRL DXCC Countries List is used as the country standard. The CQ DX Award currently recognizes 338 countries. Honor Roll listing is automatic when an application is received and approved for 275 or more active countries. Deleted countries do not count and all totals are adjusted as deletions occur. To remain on the CQ DX Honor Roll, annual updates are required. All updates must be accompanied by an SASE if confirmation of total is required. The fee for endorsement stickers is $1.00 each plus SASE. Please make checks payable to the awards manager, Billy F. Williams. All updates should be mailed to P.O. Box 9673, Jacksonville, FL 32208.

CW

K9BWQ 337	W8XD 337	K8LJG 336	F3AT 334	WØHZ 333	W4UW 330	SM5HV/HK7 327	OZ5UR 320	VE7KDU 300
N7FU 337	W4OEL 337	N4CH 336	WA4IUM 334	W4MPY 333	W7IIT 330	F6HMJ 326	CT1YH 320	KT2C 300
N4JF 337	EA2IA 337	K4JLD 336	PA5PQ 334	K8JGJ 333	G3KMQ 329	W4LI 325	YT1AT 317	WD9DZV 295
K4IQJ 337	K2TQC 336	F3TH 335	K3UA 334	K6LEB 333	N5HB 329	N4OT 325	EA3ALV 317	K4IE 291
K2FL 337	N7RO 336	PY2YP 335	K2ENT 334	K5RT 332	K1HDO 329	YV5ANT 324	W6YQ 315	G3DPX 284
N4MM 337	K2OWE 336	N6AW 335	NC9T 334	HB9DDZ 332	K7JS 329	KF8UN 323	UA9SG 310	KØKG 284
K4MQG 337	N5FG 336	N4AH 335	W2VJN 334	K3JGJ 332	W6OUL 329	IKØTUG 321	WA4DOU 310	N2VW 282
W7OM 337	K4CN 336	K9IW 335	G4BWP 334	VE3XN 331	N7WO 329	W3II 320	W9IL 309	DJ1YH 281
NØFW 337	WØJLC 336	K5UO 335	W1JR 334	K2JF 331	KE3A 329	IKØADY 320	YU7FW 306	XE1MD 280
WB4UBD 337	OK1MP 336	N5ZM 335	I4LCK 334	WA8DXA 331	K6CU 329	WG5G/QRPp 320	ON4CAS 304	W2JLK 277
K9MM 337	K9OW 336	KA7T 335	K7LAY 334	K8SIX 331	KA3S 328	F5OIU 320	N1KC 302	
W7CNL 336	DL3DXX 336	K2JLA 334	YU1AB 334	W2UE 330	K1FK 328	PY4WS 320	RA1AOB 300	

SSB

K6YRA 338	EA2IA 338	YU1AB 337	K2ENT 335	VE7WJ 334	K1HDO 331	KD5ZD 326	KA1LMR 312	KW1DX 295
IK1GPG 338	XE1L 337	K3JGJ 337	IK6GPZ 335	YZ7AA 334	K7HG 331	WR5Y 325	ON4CAS 312	W4EJG 295
K5TVC 338	W6DPD 337	IØZV 337	NC9T 335	WS9V 334	K3LC 331	KC4MJ 325	WA5MLT 310	K7ZM 295
NØFW 338	N7RO 337	K8LJG 337	K1UO 335	WA4WTG 334	N5YY 331	PY2DBU 325	RW9SG 310	XE1MW 293
K2TQC 338	K7LAY 337	W3AZD 337	I8KCI 335	K5UO 334	F6HMJ 331	YT1AT 325	XE1RBV 310	XE1MEX 293
KZ2P 338	OE3WWB 337	KØKG 337	I8LEL 335	ZL1BOQ 334	KB2MY 330	KE4SCY 325	IØYKN 310	K1RB 292
K4MZU 338	K9OW 337	W2FKF 337	DU1KT 335	N7WR 334	K3PT 330	K6GFJ 324	AA1VX 308	W9ACE 291
N4JF 338	XE1AE 337	W7FP 337	CT1EEB 335	4N7ZZ 333	N1ALR 330	W6WI 323	KK4TR 306	W5PVE 288
W4WX 338	N5FG 337	VE2GHZ 337	W1JR 335	VE1YX 333	W9OKL 329	EA3CYM 323	WB2AQC 305	WD9DZV 287
K5OVC 338	DU9RG 337	K2FL 336	I4LCK 335	W2JZK 333	W2FGY 329	WN9NBT 322	K3BYV 303	KKØDX 285
W6BCQ 338	PY2YP 337	EA3BMT 336	ZL1HY 335	K8LJG 333	CT1CFH 329	W6OUL 322	JR4NUN 303	VE7HAM 285
DJ9ZB 338	N6AW 337	W4UNP 336	AB4IQ 335	VE4ACY 333	EA1JG 329	CT1ESO 321	YV2FEQ 303	N8LIQ 284
W6EUF 338	OZ5EV 337	N5ZM 336	W7BJN 335	VE2WY 333	W9IL 329	KD2GC 321	KU4BP 303	WØIKD 283
K4MQG 338	OZ3SK 337	K8SIX 336	W2CC 335	K9PP 333	KF8UN 328	VE7SMP 321	K7SAM 303	KBØRNC 282
N7BK 338	VE2PJ 337	K4CN 336	K9IW 335	EA3EQT 333	WØULU 328	N1KC 320	VE7KDU 302	AE9DX 282
N4MM 338	K9HQM 337	W4UW 336	N2VW 335	YV1KZ 333	K1EY 328	W5GZI 320	W5GZI 302	IK8TMI 281
4Z4DX 338	KE5K 337	DL3DXX 336	WDØBNC 334	YV1AJ 332	K4DXA 328	KD2GC 320	W4PGC 302	F5INJ 279
N4CH 338	VE3MR 337	KE3A 336	WØYDB 334	KSØZ 332	LU5DV 328	LU3HBO 317	EA8AYV 302	W5GT 276
W7OM 338	VE3MRS 337	K2JLA 335	W4NKI 334	LU4DXU 332	XE1MD 327	WB4GMR 317	N2LM 302	HSØ/EA4BKA 276
K9MM 338	AA4S 337	OE7SEL 335	OE2EGL 334	VE4ROY 332	DK5WQ 327	N8SHZ 316	4X6DK 301	K9DXR 275
K4JLD 338	OK1MP 337	ZL3NS 335	WA4IUM 334	CT1EEN 332	CP2DL 327	XE2NLD 315	4Z5FL/M 301	AD7J 275
K9BWQ 338	IK8CNT 337	K7JS 335	K5RT 334	DL9OH 331	NI5D 327	WØROB 315	N5WYR 300	
WB4UBD 338	IN3DEI 337	PY4OY 335	W6SHY 334	YV1JV 331	K7TCL 326	IZ6CST 314	K4IE 300	
W8AXI 338	EA4DO 337	VE3XN 335	W5RUK 334	N5ORT 331	HB9DDZ 326	W6NW 314	RA1AOB 300	
W9SS 338	K3UA 337	PA5PQ 335	EA3KB 334	CT1AHU 331	YV4VN 326	EA3ALV 313	YC9WZJ 300	
VK4LC 338	CT3BM 337	XE1VIC 335	CT3DL 334	EA3JL 331	SV3AQR 326	W7GAX 312	WA1ECF 295	

RTTY

WB4UBD 336	K2ENT 333	N5ZM 326	OK1MP 325	EA5FKI 320	PA5PQ 311	K8SIX 300	W4EEU 297	K4CN 283
NI4H 335	N5FG 331	G4BWP 325	K3UA 321					

still being printed and are available, if you want to push the issue. They are listed in the new rate schedule for the rate increase, which goes into effect May 12th. Dave said they will cost $2.10 (if my memory is still working, as I failed to write it down).

As to the whole issue of IRCs, US$, stamps from the country you are sending a card to and requesting one in return, or whatever other means you choose, it is not going to get any cheaper. Frankly, I like the way it works on the LoTW. If you are not doing your QSLing this way, you really should check it out. Unless you are trying to wallpaper your ham shack with cards, the LoTW really works great. I used to want to collect all those cards myself, but I guess I'm getting too old to appreciate all of that anymore. These days, a confirmation via LoTW gets credited to my DXCC without all the trouble of sending the card to ARRL HQ or taking it to a hamfest/convention to have it checked with the possibility of it getting lost or damaged. I just log on maybe once a month, or after I see something I need has been uploaded to LoTW, and let the computers do the work. It's not all that difficult and it saves so much time and money.

If you still want to make a donation to a DXpedition, go to its website and send whatever you want. Most of the teams now accept PayPal or some other easy way to send your donation in a quick and very safe way. You can still send for the "wallpaper" if you wish, but without all the hassle of IRCs, dollars, etc.

Nellie, XE1CI

Many of you know Nellie de Lazard, XE1CI, for her many years of DXing and DXpeditioning. Please see the photo of Nellie in this column. Over many years

QSL Information

40/EA1DR via EA1DR
4D63RG via DU9RG
4D68RG via DU9RG
4D70RG via DU9RG
4D9RG via DU9RG
4E9RG via DU9RG
4G9RG via DU9RG
4H9RG via DU9RG
4J50R via EY8CQ
4L/UA4WHX via UA4WHX
4L1MA via ON4RU
4L9DX via 4Z4DX
4N6DX via 4Z4DX
4O/YT1HA via YT1HA
4O3M via OH2PM
4O4DX via 4Z4DX
4O8O via YT1HA
4S7/DK2SC via DK3FW
4S7/DK3FW via DK3FW
4S7DAG via DL1DA
4U1ITU via DJ6QT
4V200YH via DL7CM
4W/K7BV via K7BV
4X/AA6AD via AA6AD
4X/DJ6QT via DJ6QT
4XØA via DJ6QT
4XØAI via 4Z4DX
4X25/DJ6QT via DJ6QT
4X4DH via AA6AD
4X4DX via 4Z4DX
4X9HQ via AA6AD
4Z5DX via 4Z4DX

(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>.)

Nellie, XE1CI, is well known in DX circles. See the related material on Nellie in the column. She was the first YL to work 7-Band WAS–All YLs. It took her 22 years. (Thanks to Lenny, K5OVC, and Mike, W5ZPA)

she has operated as SKØYL, KP4/XE1CI, VP2/XE1CI, J37NL, FP/XE1CI, XF4CI, KG4CI, V31CK, 4X/XE1CI, JY8XE, XRØY, DL/XE1CI, 4M5LR, BQ9P, E4/XE1CI, and CO/XE1CI. She was the first and the only YL permitted on Pratus Island (BV9). The late King Hussein of Jordan, JY1, invited her to Jordan, where she operated from the club station.

Nellie is quite ill and one of your QSL cards, with a simple greeting, sent to the following address would be most thoughtful and greatly appreciated: Nellie de Lazard, Sierra Chalchihui 235-502B, Mexico City, 11000, Mexico.

A CW Note

Many of you know I favor CW. A reader recently sent along the following, and I thought you CW folks would appreciate it: "In days of old, when hams were bold, and sidebands not invented, word was passed by pounding brass, and all were quite contented."

As you read this, summer is upon us here in the northern part of the world. Some activities are scheduled for this time of year: ARRL Field Day (June), the IARU Championship (July), hamfests all over the place, and other events, too. Take some time to be with your family this year—picnics, ballgames, the beach, etc. Yes, there will be DX to work when you get back home, right after you fix the old or erect a new antenna. Whatever it is, enjoy the chase and Have Fun. 73, Carl, N4AA

The CQ DX Field Award Program

CW

57 ..... KB2TGU 58 ..... N3YZ

Mixed

92 ..... J68AS

Endorsements

Mixed

200 ..... W1CU/220 50 MHz J68AS
200 ..... N4MM/201 28 MHz J68AS
200 ..... N8PR/214 3.5/7 MHz J68AS
100 ..... J68AS/135

SSB

200 ..... W1CU/207 175 ..... N4MM/184

CW

200 ..... W1CU/212 175 ..... N4MM/179

RTTY

100 ..... W1CU/138

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio. com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Please make all checks payable to the award manager.

BY TOMAS HOOD,* NW7US

Field Day 2008!

A Quick Look at Current Solar Cycle Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, March 2008: 9
Twelve-month smoothed, September 2007: 6

10.7 cm Flux
Observed Monthly, March 2008: 73
Twelve-month smoothed, September 2007: 72

***Ap* Index**
Observed Monthly, March 2008: 10
Twelve-month smoothed, September 2007: 9

The annual ARRL Field Day is June 28 and 29. The official Field Day 2008 introduction states that this year's field day is "where the spirit of 'Amateur Radio Past' [joins] forces with the Next Generation of Innovations, Interests, and Individuals." An emphasis is being made on stretching beyond the predominance of voice-mode operation. Digital technologies in the amateur radio event are being promoted this year. Not only modes such as PSK-31, but also digitized voice and other innovative modes are mentioned as viable and exciting choices. This could be an boon to your Field Day operations this year; with the current lack of solar activity here at the bottom of the cycle, if you can have an advantage, take it!

The two figures shown in this month's column are examples, made with the propagation modeling software ACE-HF Pro version 2.05, of area coverage using two modes of operation from Missoula, Montana during Field Day 2008. In the first area coverage map, a plot is made of a 100-watt SSB signal on 20 meters at 2100 UTC. The second map plots a 5-watt PSK-31 signal on 20 meters at the same time of day. Notice the extended range of coverage on the digital signal. In addition to reaching more potential stations, the Field Day rules afford additional points to stations running digital modes. By running PSK-31 at 5 watts, you will outperform (in terms of area coverage) an SSB station running 100 watts, and you will get all those extra points for each contact!

Running ACE-HF models on 15 and 10 meters, the forecast is dismal. Even with digital modes, the *F*-layer mode propagation models on these upper HF bands indicate limited openings, if any, from the Missoula location. Of course, I am certain that this year will be like most years in which sporadic-*E* propagation will make possible openings on 10 and 6 meters for short-range and some long-range (North American) paths.

*P.O. Box 9, Stevensville, Montana 59870-0009
e-mail: <nw7us@hfradio.org>

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for June 2008

	Expected Signal Quality			
Propagation Index.....	(4)	(3)	(2)	(1)
Above Normal: 2, 4-5, 7-15, 19-24, 29	A	A	B	C
High Normal: 1, 3, 6, 25, 27-28, 30	A	B	C	C-D
Low Normal: 16, 18, 26	B	C-B	C-D	D-E
Below Normal: 17	C	C-D	D-E	E
Disturbed: N/A	C-D	D	E	E

Where expected signal quality is:

A—Excellent opening, exceptionally strong, steady signals greater than S9.
B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing in *The New Shortwave Propagation Handbook* by George Jacobs, W3ASK; Theodore J. Cohen, N4XX; and Robert B. Rose, K6GKU.

2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 1 will be fair to poor (C-D) on June 1, 3, and 6; fair (C) on June 2 and 4–5, but no openings are expected on F-layer DX paths on June 17, etc..

3. As an alternative, the Last-Minute Forecast may be used as a general guide to space weather and geomagnetic conditions through the month. When conditions are Above Normal, for example, the geomagnetic field should be quiet and space weather should be mild. On the other hand, days marked as Disturbed will be riddled with geomagnetic storms. Propagation of radio signals in the HF spectrum will be affected by these conditions. In general, when conditions are High Normal to Above Normal, signals will be more reliable on a given path, when the path is ionospherically supported.

One of the best available methods to predict HF propagation conditions in advance is the 27-day recurrence tendencies of geomagnetic, solar, and ionospheric conditions. It is not an absolute method, but it does give a very good indication of what is expected. This column is being written in April, about three 27-day solar rotation cycles away from the start of Field Day weekend. Based on a study of the patterns expected during the next three rotational periods of the sun, it looks as if conditions for Field Day will be good to fair with low geomagnetic activity due to coronal activity.

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 June 1 and 2, since this would be one rotational period before Field Day weekend. There is better than a 90 percent chance that conditions observed on those days will recur during the event weekend. Remember, also, that short-skip propagation often by the sporadic-*E* (E_s) mode is a big part of Field Day on-the-air activity, especially on the higher HF bands and even on low VHF bands.

If you wish to maximize your on-the-air efforts, you'll want to check out the Last-Minute Forecast.

Use these charts, as well as a good forecasting and analysis software tool such as ACE-HF <http://hfradio.org/ace-hf/> or WinCAP Wizard <http://www.taborsoft.com/> to help you prepare operating guides for your Field Day operations. For the very latest update on conditions, take a look online at my up-to-the-day Last-Minute Forecast chart, which is available on my Space Weather and Radio Propagation Center located at <http://hfradio.org/lastminute_propagation.html>.

June Propagation

June marks the changeover from equinoctial to summertime propagation conditions on the HF bands. Solar absorption is expected to be at seasonally high levels, resulting in generally weaker signals during the hours of daylight when compared to reception during the winter and spring months.

When using the Last-Minute Forecast chart, realize that the column you should use is either the (2) or (1) column, as we are at the very bottom of the solar cycle. Use the (2) column if the flux is averaging around 80 or higher for a few days or more, but to be conservative, use the (1) column for the rest of the period.

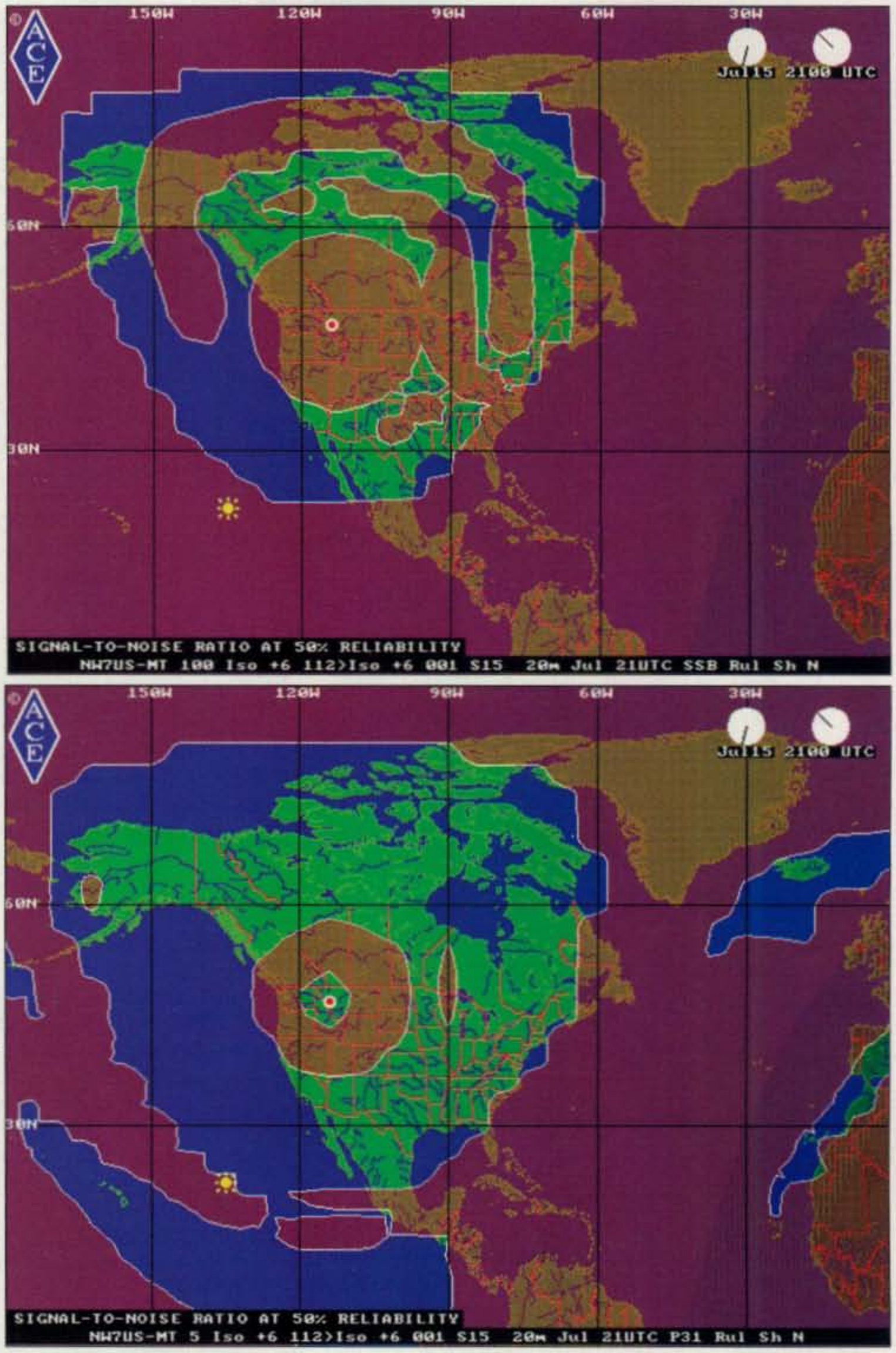
Ten-meter propagation to DX locations far to the east and west is a rare event during the peak of summer. With the low solar activity at this stage of the solar cycle, I don't expect to see much on 10, except via sporadic-*E* short-skip propagation. Solar activity just won't create a high enough MUF (maximum usable frequency) on most *F*-layer DX paths. North and south paths on 10 meters may still present an opportunity for limited and short-lived DX, especially around sunrise and sunset.

Seventeen and 15 meters will be just a bit more reliable than 10, holding some promise. However, these bands will still be a challenge with the decreased solar activity.

Twenty meters is poor to fair during the hours of darkness and is good to fair during daylight hours. The best openings on 20 will be the hours around sunrise and sunset.

Recurring coronal holes will cause occasional periods of geomagnetic storminess during June, degrading higher latitude signal paths more than middle- and low-latitude paths. Coronal holes and the associated high-speed solar winds containing clouds of plasma released by the coronal holes are the bane of propagation during the solar minimum. These geomagnetic storms will play rough on HF propagation. In addition, noise from electrical storms increases considerably during June and the summer months. These higher static levels will make DXing on 40, 80, and 160 more of a challenge.

The 30- and 40-meter bands should offer good DX conditions during the early morning, late evening, and during the night despite higher static. Look for Europe and Africa as early as sunset. After midnight, start looking south and west for the Pacific, South America, and Asia. Short-skip should be possible out to about 750 miles during the daytime.



Two area coverage plots over North America at 2100 UTC during Field Day 2008 using the ACE-HF Pro version 2.05 propagation modeling software. The top map plots the signal-to-noise area at 50-percent reliability of a voice SSB signal of 100 watts. The bottom map plots a 5-watt PSK-31 signal at the same time of day. Notice the greater area of coverage possible with just 5 watts with a PSK-31 signal. Field Day stations running digital, low-power (QRP) stations get extra bonus points.

Expect some openings on 80 meters, similar to how 40 meters will be acting. Fairly frequent short-skip openings up to 1000 miles are possible during darkness, but expect very few daytime openings with all the static and absorption occurring.

Sporadic-*E* propagation starts to peak during June. Expect an increase in the number of short-skip openings on HF, and often on 6 and 2 meters, with paths open between 50 and 2300 miles.

VHF Conditions

The summertime sporadic-*E* (E_s) season for the Northern Hemisphere begins in force in May. By June, things could well be hot on 6 meters, and there might even be openings on 2 meters. During the late spring and summer months, a sharp increase of E_s propagation occurs at mid-latitudes. Through June you can expect to see 20 to 24 days with some E_s activity. Usually these openings are single-hop events with paths up to 1000 miles, but June's E_s openings are often double-hop. Europe sometimes can be worked from the East Coast of the U.S. throughout June.

During the daylight hours, monitor 6 meters for transcontinental openings, as well as between Hawaii and the western states, and the Caribbean and Central and South America. The best time to look for these is during the afternoon hours, especially when conditions are High Normal or better.

There is usually a seasonal decline in TE (transequatorial) propagation during the summer months, but some 6-meter openings may still be possible during June. The best time to catch an opening across the geomagnetic equator is between 8 and 11 PM local daylight time.

Current Solar Cycle Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 72.9 for March 2008. The 12-month smoothed 10.7-cm flux centered on September 2007 is 71.5. The predicted smoothed 10.7-cm solar flux for June 2008 is about 64, with a range from a high of 82 to a low of 60.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for March 2008 is 9.3, a nice bump up from February's 2.1, and October 2007's 0.9. The lowest daily sunspot value during March—recorded on March 1–2, 4–5, 7–9, 11–14, and 18–23—was zero (0). The highest daily sunspot count was 36 on March 26. The 12-month running smoothed sunspot number centered on September 2007 is 9.9. A smoothed sunspot count of 6 is expected for June 2008, but it can be anywhere from a high of 17 down to a low of zero.

The observed monthly mean planetary *A*-index (A_p) for March 2008 is 10, showing a steady monthly rise since January. The 12-month smoothed A_p index centered on September 2007 is 7.8. Expect the overall geomagnetic activity to be quite active during most of June, with several possibly stormy periods; check the Last-Minute Forecast for those days likely to see geomagnetic storms.

Drop me an e-mail or send me a letter if you have questions or topics you would like to see me explore in this column. Also, I'd love to hear about your Field Day experiences and how propagation was for you at your Field Day station, as well as any feedback you might have on what I have written. Until next month . . .

73, de Tomas, NW7US

zero bias *(from page 8)*

tion contact was the New Providence Amateur Radio Club, featured in these pages last October for its innovative ham radio summer camp program. This is a club that understands community involvement. There are others. ARRL Executive Vice President Dave Sumner, K1ZZ, points out in his May *QST* editorial that analysis of licensing information and ARRL membership activity suggests there are "hot spots" around the country "where newcomers are joining our ranks in relatively large numbers compared to other areas." One reason he cites is local radio clubs that have "made a commitment to reach out to the community ... with a program to bring friends and neighbors from a vague awareness of Amateur Radio all the way to being active radio amateurs." Dave's challenge to other clubs is to learn from these examples. Our reader survey statistics suggest that many of these clubs have a long way to go.

One challenge for the ARRL is to most effectively share the "secrets of successful clubs" with all the rest, and to make those "other" clubs more aware of the resources and information it already makes available (as, for example, on its Club Companion web page at <http://www.arrl.org/FandES/field/club/>). There is a tendency in Newington to believe that once something appears in *QST* or is posted on the ARRL website, then everybody who needs to know about it does and always will. The truth is—as they know very well in the advertising department (theirs and ours)—getting your message out once is not enough. It needs to be repeated regularly to be most effective, regardless of whether you're "selling" widgets or information.

This is also understood by the ARRL's Field Day planners, who have scheduled the event at the same time, the fourth weekend in June, every year for decades. It is, collectively, our "ham radio sales weekend" each year. We put on a display for the general public, but it is not only for them. We also give ourselves, as well as newer operators, an opportunity to try—and maybe "buy"—new bands or modes and to try out contesting in a fun, family-oriented atmosphere.

Family ... that's where we started out. But it bears repeating. Let's make sure that Field Day as well as other operating activities are as family-oriented as possible, so that those 144,000 relatives showing "some interest" in ham radio can get an opportunity to see firsthand just how fun and magical it can be.

— 73, W2VU

our readers say

The April issue of CQ drew an unusually heavy amount of reader mail. We have room in this issue only for a sampling...

More Kids!

Editor, *CQ*:

Congratulations to *CQ* magazine for featuring 12-year-old Michael Bayern, W2CVZ, on the April cover and for printing an enjoyable article from 14-year-old KB1OGL, Brittany Decker! The cover subject, in particular, was a brave departure from *CQ*'s traditional stoic-faced radio-veteran, positioned uncomfortably in front of their treasure trove of equipment.

The future of this hobby lies squarely on the shoulders of interested kids, like Michael and Brittany. However, the responsibility to expose children of all ages to the fun and enjoyment of amateur radio lies squarely on ours! Opportunities such as JOTA, Field Day, Kid's Day, or a science class at *your kid's school* are all wasted chances to bring fresh faces into the hobby unless we take the time to schedule a demonstration. Kudos to the adult amateurs who fostered their kids' interest and helped them earn a ticket!

Chris Brady, N3CB

(Father of 14-year-old Caitlin, W3CJB, and ham-in-training, Heather, age 9)

W2VU replies: I am with you 100%, Chris (except for the "stoic-faced" part); see this month's "Zero Bias" editorial. It's also why CQ is a long-time co-sponsor of the Newsline Young Ham of the Year Award (deadline for 2008 nominations is May 30!). We can't print what we don't know about, though. We need to hear more from young, active hams, and hear about what they're doing in order to get them hooked up with our photographer.

Point-Counterpoint

Editor, *CQ*:

I'm really surprised you published Jim Aguirre's comments (April letters) on your chronic publishing of long interviews with government officials. I agree with Jim completely. These articles are too long, boring, and mostly irrelevant. I have nothing against the individuals you interview, but much of what you print has nothing to do with amateur radio. You could sum up such interviews in a quarter-page article and then use the saved space to talk about radio.

How about it? Can we see more articles on the technical and operational aspects of radio? Let's see some block diagrams, schematics, and photos of actual stuff for a change.

Whitham D. Reeve

Editor, *CQ*:

Clearly Mr. Aguirre (W7DHC), and to a lesser degree Mr. Ramm (DK3UZ), have forgotten about what "ham radio" meant to them as young people with an interest in something new and intriguing. I would find it interesting to know just how much "Elmering" these two have done since they've matured. How many young students who first learned about electricity and then progressed to SWL'ing and Amateur Radio were given copies of *CQ* and *QST* to read to motivate them?

Eureka! That may be the clue why these "malcontents" whine and complain ... they've become card-carrying members of the great "unmotivated" society that permeates communities and radio clubs all over this country. Those of us who have been in this hobby for a few decades have seen this cancer cause the collapse of prominent clubs whose membership of "blue hairs" talk about their aches and pains and the "good ol' days."

Please keep up the good work. The Dr. Haseltine story was the most enjoyable read I've had in years. He's an inspiration to all generations! Fantastic !

Jim, K2HYQ

Interoperability

Editor, *CQ*:

Reference Digital Modes (April 2008 "Digital Connection"): The multiplicity of digital modes available to radio amateurs is leading to the same problem that police, fire, and medical services have been attempting to overcome, non-interoperability. Millions of dollars have been spent to build inter-format converters. Settling now on basic MF/HF and VHF/UHF audio and data formats that the most basically equipped radio amateur can use will greatly increase the number of operators available to contribute communications and information available to the emergency management officials.

Robert A Myers, KB2DHK

W2VU replies: The ARRL has basically settled on Winlink-2000 as its HF digital emergency communications standard. But we also need to continue to encourage the experimenters among us to help bring about the next generation of "standards" for the rest of us. Both aspects of the hobby carry equal weight in FCC rules.

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Photograph depicts after-market keyboard, keyer paddle, and monitor, not supplied with transceiver. Display image simulated and may differ in actual use.

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Two Pairs of Meters, plus LCD Window; Data Management Unit and Flash Memory Slot Built In. Main/Sub Receiver VRF, plus Full Dual Receive Capability. External 50 V/24 A Switching Regulator Power Supply and Speaker with Audio Filters

Display color (Umber or Light Blue) may be selected at the time of purchase. Modification from 400 to 200 W not possible.

HF/50 MHz Transceiver
FT DX 9000D 200 W Version
Large TFT, Data Management Unit and Flash Memory Slot Built In, Main/Sub Receiver VRF, plus Full Dual Receive Capability, Three μ-Tuning Modules for 160 - 20 M, 50 V/12 A Internal Switching Regulator Power Supply

HF/50 MHz Transceiver
FT DX 9000 Contest
Custom-Configurable Version
Two Pairs of Meters, plus LCD Window, VRF Input Preselector Filter, Three Key Jacks, and Dual Headphone Jacks, 50 V/12 A Internal Switching Regulator Power Supply

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Shown with after-market keyboard, and monitor (not supplied).
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HF/50 MHz Transceiver
FT-2000D
200 W Version (External Power Supply)

HF/50 MHz Transceiver
FT-2000
100 W Version (Internal Power Supply)

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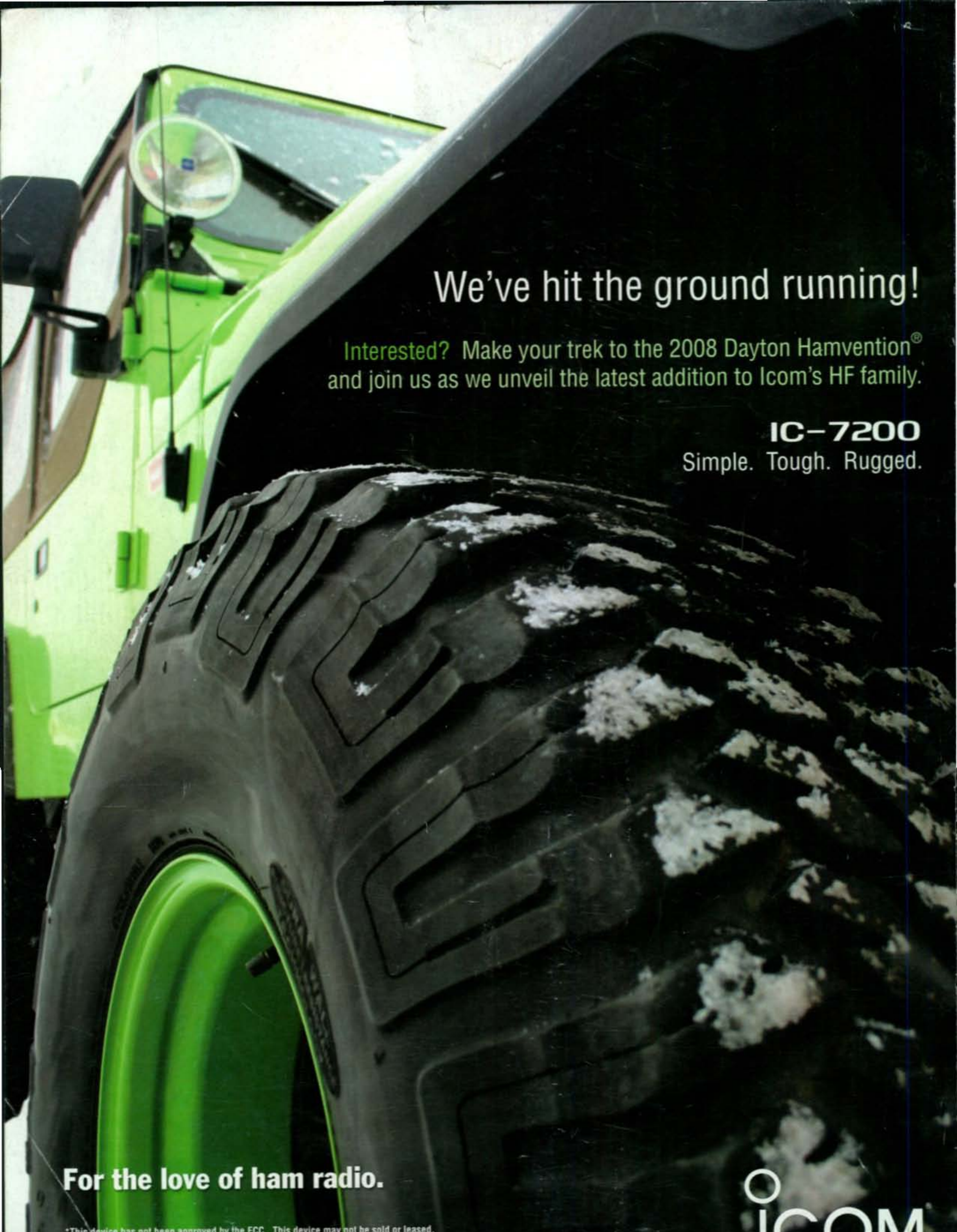
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