45241

Amateur Radio

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COMMUNICATIONS & TECHNOLOGY

JUNE 2005

CQ

1945 Our 60th Anniversary 2005

Introducing: The CQ iDX Award, p. 20

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On the Cover: Field Day each June presents a perfect opportunity to introduce young people to amateur radio. Details of this Amateur Radio For Youth operation in Colorado on page 88.

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THE RADIO AMATEUR'S JOURNAL

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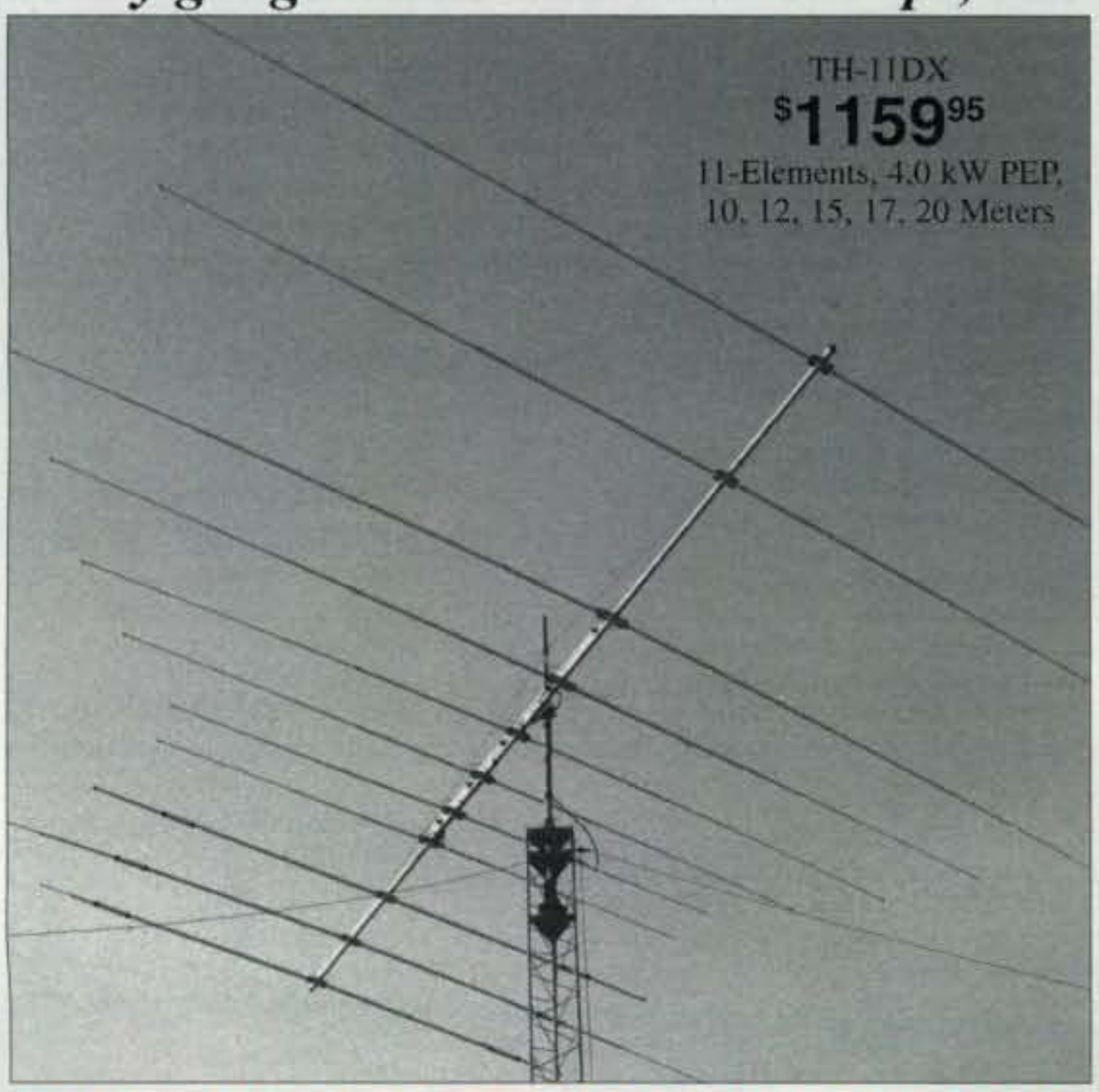

TH-11DX, $1159.95. 11-element, 4.0 kW PEP, 10,12,15,17,20M

The choice of top DXers.

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

Handles 2000 Watts continuous, 4000 Watts PEP.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

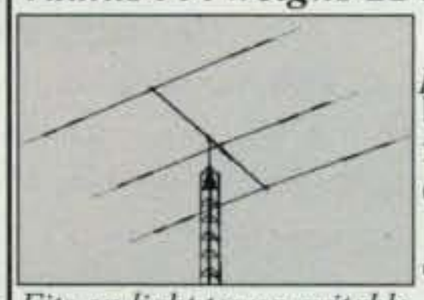
BetaMATCH™ provides DC ground to eliminate static. Includes BN-86 balun. Easily assembled.

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

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

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

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



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

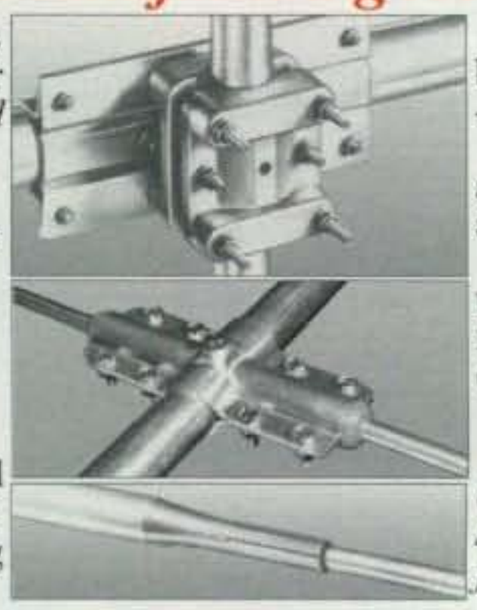
TH-3JRS, $359.95. Hy-Gain's *most popular* 3-element 10, 15, 20 Meter tri-bander fits on most lots! Same top performance as the full power TH3MK4 in a compact 600 watt PEP design.

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

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

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

Tooled Manufacturing . . . Highest Quality Materials



1. **Hy-Gain's** famous super strong *tooled* die cast *Boom-to-Mast Clamp*
2. ***Tooled*** *Boom-to-Element Clamp*
3. **Thick-wall** *swaged* aluminum tubing

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

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

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

Durable precision injection molded parts.

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Thinking about getting into Digital? Icom leads the industry in bringing Digital technology to amateur radio. Go Digital! Go Icom! Now available at your authorized Icom dealer.

NEW IC-V82

2M @ 7W • Optional D-STAR format digital unit for voice and data communication! Features include callsign calling, up to 20 character text message, position exchange* • CTCSS/DTCS encode/decode w/tone scan • desktop trickle charger • Also available in a 70CM version (IC-U82) • And much more!

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2M/70CM @ 55W/50W • D-STAR format digital unit for voice and data communication! Features include callsign calling, up to 20 character text message, position exchange* • CTCSS/DTCS encode/decode w/tone scan • detachable control head • And much more!

IC-2200H

• 2M @ 65W • 207 alphanumeric memories • Optional D-STAR format digital unit for voice and data communication! Features include callsign calling, up to 20 character text message, position exchange* • CTCSS & DTCS encode/decode w/tone scan • weather alert • And much more!

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*When connected to an external GPS.

ham radio news

Ham Named to Head NASA

Michael Griffin, NR3A, has been named the next Administrator of NASA by President Bush. According to the *ARRL Letter*, Griffin holds five master's degrees and a doctorate in aerospace engineering. He was serving as head of the Space Department at the Johns Hopkins University Applied Physics Laboratory when tapped for the top post at the nation's space agency. Griffin has been quoted as saying he believes that human space flight "is in the long run possibly the most significant activity in which our nation is engaged." His appointment is subject to confirmation by the U.S. Senate.

BPL Pilot Project Shut Down

A controversial Broadband over Power Lines (BPL) pilot project in Texas has been shut down, and as a result the ARRL has withdrawn a pending complaint before the FCC which sought to have the government order the system to close. System operator TXU has not said why it terminated the project in Irving, Texas, a Dallas-Fort Worth suburb, and removed all of the associated equipment. The *ARRL Letter* reports that local amateur and North Texas Section BPL Task Force Chair Jory McIntosh, KJ5RM, played a key role in gathering data about the interference caused by the system, which used equipment from Amperion. The Texas site is the third BPL pilot using Amperion equipment to shut down amid interference complaints by hams. After the test was terminated and the equipment removed, the ARRL withdrew its complaint and urged the FCC to turn its attention to two other sites that are subjects of amateur interference complaints.

One of those sites is in Briarcliff Manor, New York, a suburb of New York City, where the system operator had previously announced it was receiving a $200,000 state grant to help promote the project. The ARRL promptly objected, and the *ARRL Letter* reports that League Chief Executive Dave Sumner, K1ZZ, recently received a letter from the agency involved saying that no money had yet been awarded and that contract negotiations with Consolidated Edison, while ongoing, are "not particularly encouraging." An official at the New York State Energy Research and Development Authority said one of the agency's goals was to evaluate potential benefits "and the critically important issue of whether [BPL] as practiced by Con Ed in Briarcliff can be made fully FCC compliant."

Two Hams Summoned to DC for License Hearings

Two amateurs whose license applications are being held up due to allegations that they've operated beyond the frequency limits of their current privileges have been told they'll need to come to Washington, DC, for a hearing before an FCC Administrative Law Judge. Yuriy Ryabinin, KC2LLM, of Brooklyn, New York has an upgrade to General pending, while Thomas Lynch, K6COL, of Los Altos, California is trying to renew his existing General Class license. Each has been accused by the FCC of repeatedly operating on frequencies not authorized to them, and designated their applications for hearings. That means, according to letters from FCC Amateur enforcement chief Riley Hollingsworth, K4ZDH, that "you will be required to appear at the hearing (in Washington) and will have the burden of proof to demonstrate that you are qualified" to have the license either issued or renewed.

Sumner Tells Broadband Conference BPL is Inherently Flawed

A recording of interference from the Briarcliff Manor BPL test site was the centerpiece of a recent presentation made by ARRL CEO Dave Sumner, K1ZZ, before an "Alternative Broadband Platforms" conference in New York City. Calling BPL a "radio spectrum polluter" rather than a spectrum user, Sumner played the interference tape and said, "anyone who is thinking about investing in BPL" should be concerned with the problem "because the interference you just heard is illegal." By the end of the conference, the *ARRL Letter* reported, very few participants indicated an interest in investing in BPL, with most preferring fiber-optic cables, coaxial cables and wireless as the best means of providing broadband access for the next 10 years.

Hams Unaffected by New "Smart Radio" Rules

The FCC has adopted new rules regulating so-called "smart-radios," or devices using "cognitive radio technologies," but excluded amateur radio transceivers and digital-to-analog converters from any new restrictions, at least for now. The AMSAT News Service reported that the amateur satellite group had objected to proposed rules limiting software-defined radios in the Amateur Service to frequencies within ham bands, on the basis that that would prevent the use of SDRs in connection with transverters for higher microwave frequencies. Some hams using transverters convert the microwave signals to frequencies outside amateur bands. The signals on those frequencies are used only between the transceiver and the transverter, but the limitations proposed would have prevented their use. In the end, according to the *ARRL Letter*, the FCC said, "no parties have provided any information that shows that software programmable amateur transceivers ... present any significantly greater risk of interference to authorized radio services than hardware radios." However, the FCC cautioned that it would revisit the issue if interference problems did develop.

ARRL Panel Refines "Bandwidth Regulation" Proposal

The American Radio Relay League's Executive Committee has agreed on refinements to its long-discussed proposal to petition the FCC to change its regulation of amateur subbands from a mode basis to a bandwidth basis. This, proponents claim, would make it easier to introduce and experiment with new technologies that don't neatly fit into current definitions of various modes. The panel agreed not to ask the FCC to mandate separate areas for analog and digital transmissions; to request authorization for stations under semi-automatic control throughout the HF ham bands—with full automatic operation limited to narrow band segments—and to continue to permit wideband AM and independent sideband (ISB) transmissions on all bands now permitting phone operation. The committee stressed, however, that it would be vitally important to develop and abide by voluntary "gentlemen's agreements" on who does what where in order to avoid interference between incompatible analog and digital signals. The recommendations are subject to approval by the full ARRL Board of Directors before being submitted to the FCC.

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

hy-gain® ROTATORS

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

HAM-IV

HAM-IV
$559.95

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

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

TAILTWISTER SERIES II

T-2X
$649.95

T-2XD
$1029.95
with DCU-1

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

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

CD-45II

CD-45II
$389.95

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

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

HAM-V

HAM-V
$949.95
with DCU-1

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

ROTATOR OPTIONS

MSHD, $99.95. Heavy duty mast support for T2X, HAM-IV and HAM-V.
MSLD, $39.95. Light duty mast support for CD-45II and AR-40.
TSP-1, $34.95. Lower spacer plate for HAM-IV and HAM-V.

AR-40

AR-40
$289.95

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

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

HDR-300A

HDR-300A
$1379.95

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

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

Digital Automatic Controller

DCU-1
$649.95

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

AR-35 Rotator/Controller

AR-35
$69.95

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

RBD-5
$29.95

NEW! Automatic Rotator Brake Delay

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

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FT-897D

HF/50/144/430 MHz
100 W All Mode Transceiver
(144 MHz 50 W/430 MHz 20 W)

TCXO DSP 60 m Band

- **High Stability TCXO Built In (0.5 ppm @ 77° F/25° C) for rock-solid PSK31, SSTV, or other data modes.**
- **Improved 1st IF Roofing Filter for enhanced operation in crowded bands.**
- **Compatibility with optional MH-59A8J Remote Control Microphone.**
- **Built-in DSP (Digital Bandpass Filter, Digital Noise Reduction, Digital Notch Filter).**
- **32-Color Liquid Crystal Display.**
- **Optional ATAS-120 Auto-Tune and ATAS-25 Manual-Tune Antennas.**
- **Optional YF-122CN 300 Hz Collins® Mechanical CW Filter.**

FT-857D

HF/50/144/430 MHz
100 W All Mode Transceiver
(144 MHz 50 W/430 MHz 20 W)

DSP 60 m Band

- **Built-in DSP (Digital Bandpass Filter, Digital Noise Reduction, Digital Notch Filter).**
- **Improved 1st IF Roofing Filter for enhanced operation in crowded bands.**
- **Optional MH-59A8J Remote Control Microphone.**
- **32-Color Liquid Crystal Display.**
- **Optional ATAS-120 Auto-Tune and ATAS-25 Manual-Tune Antennas.**
- **Optional YF-122CN 300 Hz Collins® Mechanical CW Filter.**

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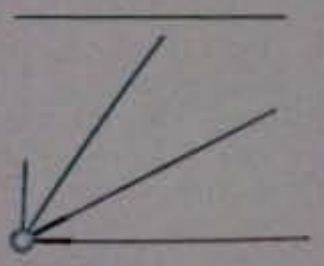
7 ~ 430 MHz
ATAS-120
Active Tuning Antenna System (no separate tuner required).



ATAS-120
VHF/UHF Base Radial Kit ATBK-100.

Automatic Matching for FT-897/857 Series Transceivers

NEW

FC-40
Automatic-Matching 200-Memory Antenna Tuner

WATER PROOF

- **Compatible with all versions of FT-897/857, and requires only two supplied cables (RF and Control) for interconnection to transceiver!**
- **Required Drive Power: 4 ~ 60 Watts. Maximum TX Power: 100 Watts.**
- **Typical Matching Time: Less than 8 seconds.**
- **During Matching, less than 0.25 Watts will be radiated to reduce QRM.**
- **200 Match-Data Memories for instant "refresh" when returning to previously-used frequencies.**
- **Operational on 1.8 ~ 54 MHz when used with 66' (or longer) wire, or 7~ 54 MHz with standard 8.2' whip antenna (wire/whip antenna not supplied).**
- **Compact Size (9" x 6.9" x 2.2" WHD) and Light Weight (2.65 lb.).**

ATAS MICRO Manually-Tuned High-Performance Portable Antenna ATAS-25

- **Slide resonating tube up and down for coarse tuning, then rotate tube for precise matching on your operating frequency.**
- **Mounts on standard camera tripod screw for quick, sturdy portable installation (tripod not included).**
- **Breaks down to less than 2' lengths, and weighs 2.1 pounds (plus tripod)-ideal for portable use!**
- **Attach supplied 144/430 MHz radials and use base section for 144/430 MHz operation.**
- **Capable of full 100 W operation with FT-857D/FT-897D.**

Frequency Range: Amateur Bands 7 – 430 MHz.
Power Capability (50% duty cycle, 1 min. TX/1 min. RX): HF/50 MHz CW/SSB 100 W
AM 50 W
144/430 MHz 50 W

Size: 7.2' (2.2m) maximum, 2' (0.6 m) collapsed for packing.
Weight: 33 oz. (930 g)
Included Accessories: HF wire radials, 144/430 MHz radials, Allen wrench. Not included: coaxial cable, camera tripod, QSL cards!

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Pioneer of the World's top DX'ers

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a CQ editorial

BY RICH MOSESON,* W2VU

But is it Radio?

This month, we are concluding our "Waking Up DXing" program of new awards and activities by introducing the **CQ iDX Award** (details are on page 20). This one might stir up a bit of controversy among traditionalists because it gives credit for contacts made partially over the internet. On the other hand, as I've quietly discussed this award with ham radio opinion leaders over the last few months, their responses have been overwhelmingly positive. I won't repeat the details you'll find elsewhere, but in a nutshell, the **CQ iDX Award** will be a beginner's level award issued for making confirmed contacts with 25 or more DX countries by using Voice over Internet Protocol linking networks, such as IRLP, Echolink, and internet-accessed remote bases. Our goal here is to bring new blood into DXing by bringing back the concept of the newcomer's award, and to do so, we need to go to where the newer hams are.

Points of Entry

When I became a ham some 35 years ago, the most common "point of entry" into ham radio was the Novice license, which in 1970 was a two-year non-renewable license with very limited HF CW privileges. Such awards as the ARRL's DXCC and *CQ*'s Worked All Zones seemed unreachable. But it wasn't really a problem. There were Novice versions of some awards (such as CQ's WPX program, which offered a WPNX Award with less-stringent requirements) and awards focused on the accomplishments that an active Novice was likely to be able to achieve, such as working all ten U.S. call areas or becoming a member of the Rag Chewer's Club for having at least one contact that lasted a half hour or more.

Well, those awards are gone now, along with most of the Novices. Today, the most common entry point into amateur radio is the Technician license, with no HF privileges at all. Typically today, the only way a newer ham can be introduced to the fun of talking with other hams in faraway places is via internet-linked repeater or remote base systems. (Yes, we know about satellites and EME, but they're really not for beginners.) It is virtually certain, though that within the next 12 months, the FCC will make changes in our licensing rules that will either give all Techs at least some HF privileges or remove the code requirement from General, making it possible to upgrade from Tech to General just by passing a 35-question written exam.

Today's new hams are introduced to the public service aspect of amateur radio, and to ragchewing, on VHF and UHF FM. Until the advent of VoIP systems, however, they were not being introduced to the concept and mindset of DXing, which we here at *CQ* consider to be the heart and soul of ham radio. We think it is very important for hams coming to HF to be exposed to the fun of working DX as early as possible. The way to do that today is through the VoIP systems.

iDX Inspirations

If you've been reading these pages over the past few months, you know that we at *CQ* have been discussing ways of "Waking Up DXing" since last fall, and that these discussions have led to the introduction over the past two months of the **CQ DX Field Award** (April issue) and the **New CQ DX Marathon** (May issue). But both of these programs are aimed primarily at encouraging existing DXers to be more active on the air. Frankly, they do little to bring new people into the hobby/sport of DXing.

There were two things that happened last winter that pointed the way toward creating the **iDX Award** as the entry ticket to DXing for hams who have not yet been introduced to the fun of contacting faraway places. First, during the elementary school "cluster" about which I've written several times recently, we used IRLP to contact hams in various parts of the world (HF propagation wasn't cooperating) and everybody loved it. The second inspiration was Sean Barnes's guest "Magic in the Sky" column in the January issue. As you may recall, Sean has successfully licensed over 100 students at the high school where he teaches. One requirement for his new hams is that they make *Echolink* contacts with hams in a minimum number of foreign countries. When I asked Sean why he specifies Echolink contacts rather than on-air contacts, he responded, "Very few of the students have radios, but they all have computers with sound cards and internet access." So even though these new hams do not yet have radios of their own (and when they do get something, it'll likely be a VHF or UHF FM rig), they are still being introduced to the mindset and the fun of DXing.

Now, we can't require our readers to get on the air and make DX contacts. What we *can* do is encourage them and recognize them when they achieve a certain level of accomplishment. We've been doing that for years with our traditional programs. Now we're simply expanding it in hopes of bringing new blood into the world of DXing.

But is it Radio?

The primary objection of those who dislike ham radio VoIP systems is that "it isn't radio." In our view, it isn't all that clear. These VoIP systems are extensions of RF-linked repeater systems that in some cases have linked repeaters in multiple states over distances of 1000 miles or more. Internet-linked networks do the same thing, with potentially worldwide coverage. How much difference is there between contacting a ham 800 miles away on my handheld using an all-RF linking network and contacting the same ham over a network that includes one or more internet links? And what about the ham in an antenna-restricted neighborhood who gets on HF using an internet-accessed remote base system? How different is this than using a microwave link to make the same connection?

We submit that there is little difference and that the negatives of the "loss of purity" of these connections will be more than made up for by the positives of introducing many new people to the sport of DXing. (However, in recognition of the fact that this is a *radio* award, we do require that at least one station participating in each QSO must be on the radio in order for the contact to count for the award. Computer-to-computer QSOs will not count. And QSOs for this award will not count toward traditional CQ awards.) So, while we recognize the concerns of traditionalists, we feel the potential benefits of bringing back a "Novice award" using modes and frequencies available to today's newer hams will considerably outweigh any negatives.

Finally, this award will not be limited to newcomers ... I, for one, have a ball on IRLP (it's what's most readily available where I live) and have every intention of continuing to enjoy it, even if it's not "pure RF." And when I get confirmations from 25 countries (I've got about 4 worked, none confirmed, so far), I'll be applying for the **CQ iDX Award**.

73, Rich W2VU

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

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announcements

WW2LST On the Air During May–July Mobile-Boston Cruise – The LST-325 WW II ship, which is also a cruising museum, was expected to depart Mobile, AL on May 17th bound for Alexandria, VA, with arrival scheduled for May 26th, and then should subsequently arrive at the Massachusetts Maritime Academy around June 3rd, at Charlestown Navy Yard in Boston around June 8th, and into Gloucester, MA on June 20th, ultimately arriving back in Mobile on July 4th. The ship's will be on the air with the call WW2LST/MM. The tentative ARS operating schedule (when ship duties permit) during the at-sea periods of May 17-26, May 30–June 3, and June 23-July 4th) is as follows. SSB: 1500 UTC, check into US Sub Vets Net, 14.243 MHz ±; 1700 UTC, check into Maritime Mobile Service Net, 14.300 MHz; 1800 UTC, 7.251/ 7.255 MHz; 2100 UTC, 5403.5 MHz USB; 0200 UTC, 3.900 MHz ±; evenings, 50.125 MHz, and AM, 29.000 MHz. CW: 1100 UTC, 7.020 MHz; afternoons, 14.020, 18.080, 21.040 MHz; evenings, 50.125, 7.035, 3.550, 1.805 MHz. For QSL information go to www.qrz.com. WW2LST can also QSL via eQSL.

The following other special event stations are scheduled for June:

NJ2BB, from *Battleship New Jersey*, Camden, National Safe Boating Week, members of the U.S. Power Squadrons AR Net; June 11–12, 1400–2200Z, on 7.267, 14.267, 21.367, 28.367 MHz. For certificate send 9×12 SASE to Donald Stark, N3HOW, 65 Stark Spur, Eighty Four, PA 15330.

W2GLQ, from Waterloo Village, Stanhope, NJ; Nutley ARS; June 11, 1700–2300Z, General portion of 10–40 meters. QSL with SASE to W2GLQ, Nutley ARS, 169 Chestnut Street, Nutley, NJ 07110. <http:// hometown.aol.com/kc2aup>

W2W, from commemoration of use of electronics in D-Day invasion, baltimore, MD; Historical Electronics Museum ARC; June 4 & 5, 1300–2200Z; SSB near 7.244 and 14.244 MHz. For certificate (9×12 SASE) or QSL (business-size SASE) send QSL to HEMARC, P.O. Box 1693 – MS 4015, Baltimore, MD 21303. <http://www.hemarc.org>

W7AIA/75, from Clark County ARC 75th anniversary, Vancouver, WA; June 3–5, 1700–2359Z daily, on 28.450, 21.350, 14.260 MHz, CW on request. For certificate send QSL and SASE to W7AIA, P.O. Box 1424, Vancouver, WA 98685.

W7M, from Lewis & Clark Bicentennial, Great Falls, MT; Great Falls ARC; 0000Z June 13 to 2359Z June 26, on 28.350, 21.350, 14.250, 7.250, 3.850 MHz, 35 kHz up on CW bands. For QSL send QSLand 1 IRC to W7ECA, P.O. Box 1763, Great Falls, MT 59403-1763.

N8S, from 150th anniversary of opening of the locks at Sault St. Marie Michigan; Upper Peninsula Net & Wexaukee ARC; 1400–2200Z June 24 on 3.921, 7.255, 14.255, 21.225 MHz and 146.64 repeater. For certificate send 9×12 SASE to Al Robertson, K8BLL, P.O. Box 202, Stevensville, MI 49127.

W8D & W8G, from covered bridges in Norwich, OH (W8D) and Cambridge, OH (W8G); Cambridge ARA; 1200Z June 11 to 2400Z June 12 *(frequencies not given)*. QSL to Cambridge ARA, P.O. Box 1804, Cambridge, OH 43725. <www.w8vp.org>

VE3MIS, from 32nd Streetsville Founders Bread & Honey Festival, Ontario, Canada; Mississauga ARC; June 4–5, 1400–2000Z both days; 7.227, 14.240, 21.315, 28.480 ±QRM. For certificate, non-Canadians send 2 green stamps or 2 IRCs to MARC, c/o Michael Brickell, VE3TKI, 2801 Bucklepost Crescent, Mississauga, ON, Canada L5N 1X6. <www.marc.on.ca>

The following hamfests are slated for June:

June 3–5, **Wenatchee Hamfest**, Dryden Gun Club, Dryden, WA. Contact Bryan & Tracy Savage (KD7KBE), 509-264-1974, e-mail: <kd7kbe@msn.com>. (Exams 1 PM)

June 4, **Grand Rapids (MI) IRA Hamfestival**, Hudsonville Fairgrounds. Contact kathy, 616-698-6627 after 4 PM; e-mail: <ira@w8hvg.org>; <www.w8hvg.org>. (Exams 10:30 AM)

June 4, **Sangamon Valley RC Hamfest**, Illinois State Fairgrounds, Springfield, IL. Contact Ed Gaffney, 217-628-3697; e-mail: <egaffney@family-net.net>; <www.w9dua.com>. (Talk-in 146.685–; exams 9 AM)

June 4–5, **Starved Rock RC Hamfest & Computer Show**, Bureau County Fairgrounds, Princeton, IL. Contact Matt Weaver, 815-433-2117, e-mail: <w9mkshamfest@yahoo.com>; <www.qsl.net/w9mks/hamfest.htm>. (Talk-in 146.955, –103.5; exams noon June 4)

June 5, **HOSARC Hamfest**, NY Hall of Science parking lot, Queens, NY. Contact Steve Greenbaum, WB2KDG, 718-898-5599, e-mail: <wb2kdg@arrl.net>; <www.HOSARC.org>. (Talk-in 444.200 PL, 136.5, 146.52; exams 10 AM)

June 11, **Pikes Peak RAA Megafest**, Lewis Palmer High School, Monument, CO. Info: <www.qsl.net/ppraa>. (Talk-in 146.97– 100 Hz, 146.52)

June 11, **RAC of Knoxville Hamfest & Electronics Exposition**, Knoxville Exhibition Center, Knoxville, TN. Contact Carol Whetstone, 865-673-0476, e-mail: <whetstone@esper.com>. (Exams)

June 11, **CMARC Hamfest**, Bloomsburg, PA Fire Hall. Contact Dave, WC3A, 570-752-6851, e-mail: <drs352478@nni.com>. (Talk-in 147.225, 146.52; exams 10 AM)

June 11, **Franklin Repeater Assn. Picnic & Tailgate**, Bronco Club, Franklin, VA. Contact Chris Hanslits, KA8UNO, 757-242-9570, e-mail: <ka8uno@charter.net>. (Talk-in 147.300, 131.8 PL)

June 18, **Raritan Valley RC Hamfest**, Piscataway, NJ High School. Contact Marty Ficke, 732-968-6911, e-mail: <kd2qk@optonline.net>, <www.w2qw.org>. (talk-in 146.025/625, 447.250/442.250, PL 141.3, 146.52 simplex; DXCC & WAS verifications)

June 12, **Six Meter Club of Chicago Hamfest**, DuPage County Fairgrounds, Wheaton, IL. Infoline: 708-442-4961, e-mail: <wa9rij@mc.net>, <www.qsl.net/K9ONA>. (Talk-in 146.52, 146.37/97; exams 9–11 AM, call info line to preregister)

June 12, **Wabash County ARC Hamfest**, Wabash County Fairgrounds, Wabash, IN. Contact John Netro, KB9NSO, 260-569-1191, e-mail: <kb9nso@hotmail.com>.

June 19, **Lake County ARC Hamfest**, Lake County Fairgrounds Industrial Arts Bldg., Crown Point, IN. Info: <www.qsl.net/w9lj/index.html>. (Talk-in 147000 +600, 131.8, 146.52; exams)

June 19, **Monroe Hamfest**, Monroe County Fairgrounds, Monroe, MI. Contact Fred Van Daele, KA8EBI, 734-242-9487 (after 5 PM), e-mail: <ka8ebi@arrl.net>, <http://www.mcrca.org/hamfest.htm>.

A publication of

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

Offices: 25 Newbridge Rd., Hicksville, NY 11801, Telephone 516-681-2922; Fax 516-681-2926. E-mail: cq@cq-amateur-radio.com. Web site: www.cq-amateur-radio.com. CQ (ISSN 0007-893X) is published monthly by CQ Communications, Inc. Periodical postage paid at Hicksville, NY 11801 and additional offices. Subscription prices (all in U.S. dollars): Domestic-one year $31.95, two years $57.95, three years $83.95; Canada/Mexico-one year $44.95, two years $83.95, three years $122.95; Foreign Air Post-one year $56.95, two years $107.95, three years $158.95. U.S. Government Agencies: Subscriptions to CQ are available to agencies of the United States government including military services, only on a cash with order basis. Requests for quotations, bids, contracts, etc., will be refused and will not be returned or processed. Entire contents copyrighted by CQ Communications, Inc. 2005. CQ does not assume responsibility for unsolicited manuscripts. Allow six weeks for change of address.

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Hams often consider themselves, or at least their hobby, somewhat insulated from world politics. But as W4YO explains, the political world and the ham radio world are deeply intertwined.

Geopolitics and Amateur Radio

A Brief Look at the FCC Banned List and the ARRL DXCC Deleted List

BY EDMUN B. RICHMOND,* W4YO

Anyone who has been involved with working DX and submitting QSLs for the DXCC Award is aware of the so-called Deleted List. However, that isn't the only list American hams have had to contend with. If you operated at any time from the end of World War II through the 1960s, you also had to deal with the FCC Banned Country List. This article will look briefly at these two lists and see how international geopolitics has influenced, and continues to influence, our DXing hobby.

Ivan Pastre, F3AT/FQ3AT, on the air in 1946. (Photo courtesy F5NQL via hamgallery.com)

The Banned Countries List

The key to understanding the Banned Countries List is Article S25 of the international radio regulations of the International Telecommunications Union (ITU). Until recently, Paragraph 1 of Article S25 stated: "Radiocommunications between amateur stations of different countries shall be forbidden if the administration of one of the countries concerned has notified that it objects to such communication."[1]

This paragraph is found in the regulations as early as 1932. However, it became an important consideration after World War II, and especially during the years of the Cold War which followed. Certain countries made known their objection through international channels that amateur communications with U.S. stations were not desired. Consequently, the FCC published a Banned Country List which admonished U.S. amateurs not to engage in radio contacts with any country on that list, and that to do so would result in grave consequences, both for the amateur and for the countries involved. Such communication could trigger an international incident.

The actual countries on the list changed over time, as the political climate between these countries and the United States changed. Certain DXCC entities, which we now contact as a matter of course on a regular basis, were on that list at one time or another. These included Austria, Indo-China (Cambodia, Laos, Vietnam), Indonesia, Iran, Jordan, Korea, Lebanon, Netherlands Antilles, Romania, and Thailand, to name but a few. Interestingly enough, during the height of the Cold War, neither the Soviet Union nor the Peoples' Republic of China was ever on the list! American worked Russian stations without difficulty, mostly on CW.

**11 Ocean Marsh Lane, Harbor Island, SC 29920-5002*
e-mail: <w4yo@arrl.net>

KS4AZ was apparently one of the few stations operating from Swan Island to have a call assigned there. Most others operated with their home calls "/KS4." (QSL card images and photo from the hamgallery.com website, courtesy Thomas Roscoe, K8CX)

However, if you heard and called BY1PK, the operator would never reply. Nevertheless, several American hams sent their QSL to BY1PK as an SWL report, and months later they received the BY's card with their report on it! As these countries came off the Banned List, some tremendous pile-ups were created as American hams vied with one another to work another new one. Currently, there are no countries on the FCC Banned List.

The DXCC Deleted List

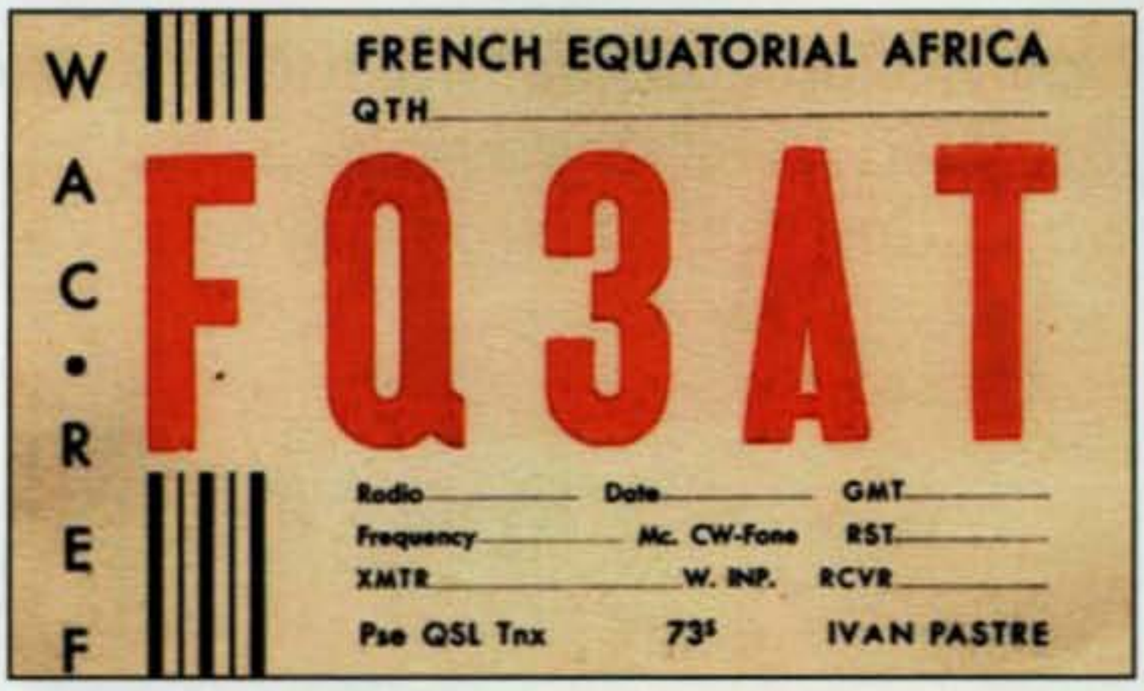
This list contains DX entities that, at one time, were valid for DXCC credit and later were removed from the active DXCC Country List, now called the Entity List. As of this writing (November 2004) there are 58 entities on the Deleted List.

According to DXCC rules, an entity can be placed on the Deleted List if it meets any of the following four criteria: (1) Annexation, (2) Independence, (3) Partition, or (4) Unification.[2] All four of these criteria are geopolitical in nature, and as DXers we work new ones or delete outdated entities as a result of geopolitical decisions in the real world. Usually an announcement regarding the addition or deletion of entities, and the rationale for these actions, is published in *QST*, announced on W1AW, or posted on the ARRL website. It may seem very cut and dry, but in reality, the geopolitical processes, or the sidebar historical facts, can be more interesting than the dry wording of a deleted DXCC listing might indicate. Those few terse words don't even begin to tell the whole story.

This article will look at several geopolitical actions leading up to a deletion. Each of the 58 deleted entities has its own story, but limitations of publication space do not permit us to cover each one here. The callsigns mentioned in the article are those from my own logbooks and QSL cards. The reader might wish to visit a huge collection of images of DXCC QSL cards, old and new, which can be seen at K8CX's Ham Gallery QSL Museum on the internet at <http://www.hamgallery.com/qsl>.

Swan Island (KS4): *Only contacts made August 31, 1972, and before, count for this entity. Contacts made September 1, 1972, and after, count as Honduras.*[3]

The story of this entity is one of the more colorful ones. Although there are several Swan Islands in the world, this



FQ3AT is the only station ever issued the FQ3 prefix. All other hams licensed in French Equatorial Africa were issued FQ8 prefixes.

one lies in the Caribbean Sea, some 97 miles off the northeast coast of Honduras. Swan Island actually comprises two islands, Greater and Lesser Swan. There is very little information about the history of these islands and much of it appears to be contradictory. Occasionally inhabited by pirates, farmers, guano miners, and fishermen, very few people have actually lived there permanently. It was claimed by the U.S. in 1863 by virtue of the Guano Island Act of 1858. Sometime after WW II, a weather station, complete with radar, and along with a medium-wave radio station, were established by the U.S. Army. The radio station, signing "Radio Swan," beamed programs in Spanish to Castro's Cuba. During the Bay of Pigs invasion in 1961, coded messages were sent to anti-Castro forces by the CIA over Radio Swan. After the ill-fated invasion the station changed its name to "Radio Americas" and continued broadcasting until May 1968. The islands were relinquished by the U.S. through the signing of a treaty with Honduras on November 22, 1971. The treaty became effective on September 1, 1972 and Swan Islands reverted to their former Spanish name, Islas Santanilla.

Several hams were active over the years from Swan. Some had KS4 calls, while others used their stateside call with a /KS4 attached to it. My own collection of QSLs shows KS4AZ, W4EMF/KS4, WA1ARF/KS4, and KP4BCL/KS4. As I remember, the ops all said they were connected with the weather station there.

French West Africa (FF8): *Only contacts made August 6, 1960, and before, count for this entity.*

French Equatorial Africa (FQ8): *Only contacts made August 16, 1960, or before, count as this entity.*

These two entities gave birth, in part, to what became known in the DX world in the 1970s as "The Terrible Ts." FF8 and FQ8 will be treated together, because they have similar points of origin and experiences. In the late 1950s, Prime Minister Harold MacMillan, of the United Kingdom, gave his famous speech, "The winds of change are blowing over Africa." These two deletions were part of that phenomenon.

European interest in Africa goes back to the mid-15th century, when the Portuguese landed on the west coast of that continent. The Dutch soon followed, along with the French and British, and later the Belgians, Spanish, Germans, and Italians. These European countries fought with one another over trading and territorial rights in Africa and soon began to grab as much land as they could. This culminated in the late 19th century in what is known as "The Scramble for

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Clockwise from left: Jack Burchfield (seated), K4JU, President; Gary Barbour, AC4DL, VP/Engineering Director; Scott Robbins, W4PA, Sales & Marketing Manager; Larry Worth, WA4BSM, Production Manager; Paul Clinton, WD4EBR, Service Manager

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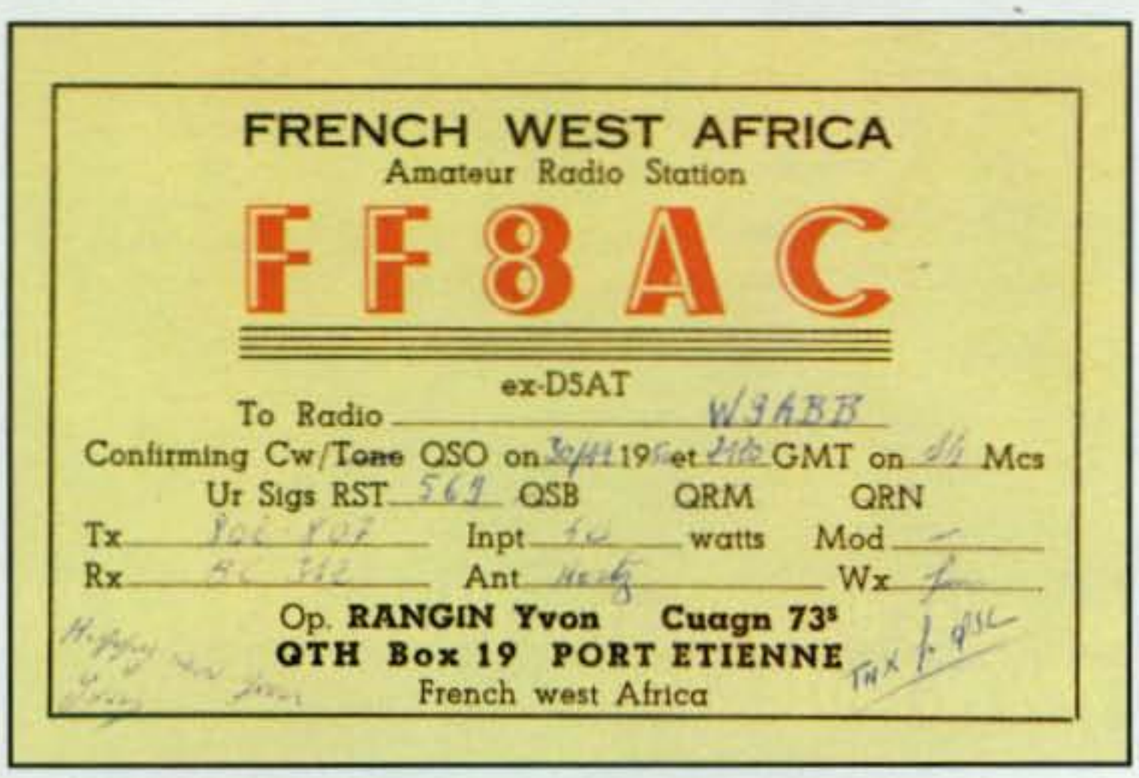
Africa." The Berlin Conference of 1885 brought all these belligerents to the table to discuss European interests on the continent as to who had rights to what territory. A few years later, lines on the map of Africa were drawn in order to establish limits of each country's territory. This was known as the Colonial Period, where the boast "the sun never sets on the British Empire" was uttered.

During this period the French established two federations, French West Africa (FWA) and French Equatorial Africa (FEA), both of which contained huge amounts of land full of indigenous peoples, natural resources, and waterways. Originally, monies to govern these two federations came from Paris, but eventually each federation had to take an increasingly larger role in pulling its own weight, mostly through forced labor and imposing taxes on the indigenous peoples.

Both World Wars I and II found Africans fighting alongside Europeans in all theaters of conflict. Between those wars, many educated Africans began considering and discussing the idea of independence. During WW II Britain and France realized that they must have direct support of their African colonies. Africans agreed to join the fight, but at a price. Before they agreed, they demanded that after the war was won by the Allies, France and the U.K. would enter serious negotiations for independence. Both France and the U.K. agreed, but in reality they had wanted independence to be a slow and gradual process. However, the Africans had other ideas and moved at a quicker pace. In 1957 Ghana, the former British colony of the Gold Coast, was the first African nation to gain independence. In 1958 French Guinea, a part of FWA, proclaimed its independence, which infuriated the French, and became the Republic of Guinea.

Events moved rather swiftly, and in 1960 the two federations were completely dissolved into a total of 12 independent countries, eight for the former FWA and four for the former FEA. Internal administrative borders established by the French were kept, and these became the borders of the newly formed independent countries. Immediately after independence, no new radio prefixes were issued. In the former FWA, Ivory Coast used the interim prefix FF4, Mauritania became FF7, and the FF prefix was used for the new republics of Dahomey (now Benin), Mali, Niger, Voltiac Republic (Now Burkina Faso), and Senegal, until new prefixes were assigned by the International Telecommunications Union. In the former FEA, the FQ8 prefix continued to be used for the new republics of Central African Republic, Chad, Congo, and Gabon. Events happened so quickly that many of these hams didn't even have an opportunity to have new QSLs printed; they just continued with hand-written notes of "new country" or rubber-stamped the new country's name on their old cards. With the exception of Guinea (7G1, later 3X), Mauritania (5T5), Niger (5U7), and Senegal (6W8), all other countries were assigned a prefix beginning with the letter "T" (such as TL, TR, TT, TU, and TZ), the prefixes presently in use.


FRENCH WEST AFRICA
Amateur Radio Station
FF8AC
ex-D5AT
To Radio W3ABB
Confirming Cw/Tone QSO on 3/11 19[illegible] et 2[illegible] GMT on [illegible] Mcs
Ur Sigs RST 569 QSB QRM QRN
Tx [illegible] Inpt [illegible] watts Mod —
Rx [illegible] Ant [illegible] Wx [illegible]
Op. RANGIN Yvon Cuagn 73s
QTH Box 19 PORT ETIENNE
French west Africa
Thx for QSL

FF8AC was active from French West Africa in the 1950s.

During the colonial period, most operators were French nationals and were quite readily available on the bands. It was not difficult to work an FF8 or FQ8. However, after independence, and on into the 1970s, the number of stations active from the newly independent countries diminished because many of the French nationals who operated there left for other assignments or returned to France, and not many Africans were licensed or had equipment. In addition, many of the operators who were active did not speak much English and avoided contacts with anyone who did not speak French. Consequently, these countries became increasingly rare DX and therefore became known as "The Terrible Ts"—hard to find, hard to work, and hard to confirm!

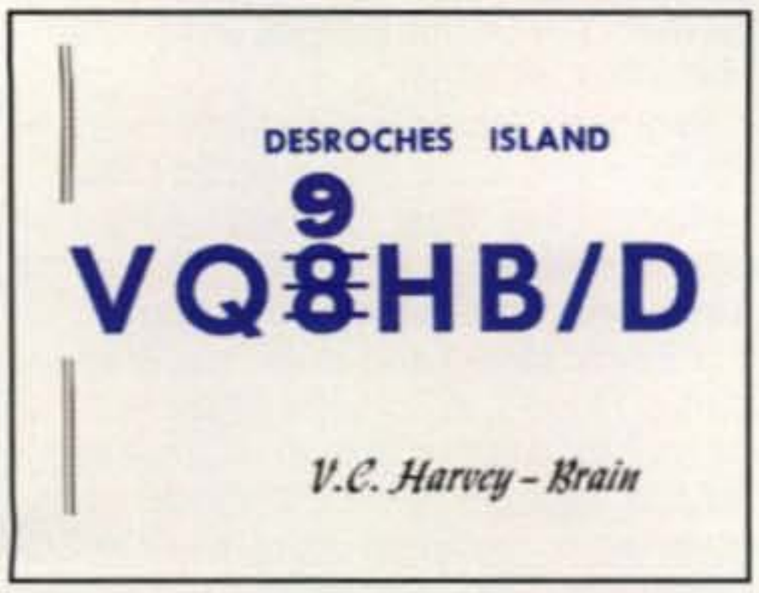
Saudi Arabian-Iraqi Neutral Zone (8Z4): *Only contacts made December 25, 1981, and before, count for this entity.*

Saudi Arabian-Kuwaiti Neutral Zone (8Z5, 9K3): *Only contacts made December 14, 1969, and before, count for this entity.*

The beginnings of the Saudi state go back to about 1750 in the central Arabian peninsula. A local ruler, Muhammad bin Saud, joined forces with an Islamic reformer, Abd Al-Wahhab, to form a new political entity. Over the next 150 years the Saud family had to contend with Egypt, the Ottoman Empire, and other Arabian families for control of the area. The modern Saudi state was founded in 1902, and the Saud family continued to clash with rival families. In the 1920s, international boundaries were established with Iraq, Jordan, and Kuwait through a series of treaties. Among these, two "neutral zones" were created, one jointly with Iraq the other with Kuwait. The Saudi-Kuwaiti neutral zone was partitioned in 1971, with each state equally administering the area and equally sharing profits from the petroleum fields. Tentative agreement for the partition of the Saudi-Iraqi neutral zone was reached in 1981 and was finalized in 1983.

In June 1964 a YL named "Annie" created quite a stir on 20 meters, signing LU2XL/9K3 and claiming to be operating from the Saudi-Kuwaiti Neutral Zone. It turned out to be a hoax (WFWL!—*to the uninitiated, that means "Work First, Worry Later," Hi—ed.)* The first legit amateur radio activity from these two neutral zones took place in 1965 by Vic Crawford, HZ3TYQ, who was employed by the Arabian-American Oil Company (ARAMCO) in Dhahran. The first DXpedition was to the Saudi-Iraqi Neutral Zone in January of that year and used the callsign HZ3TYQ/8Z4. *(The hamgallery.com website shows a 1964 QSL from HZ2AMS/8Z4, so it's possible that Vic's operation was not the first from the zone.—ed.)* In four days Vic, who was all alone, made 1340 contacts from an unheated tent in high winds, rain, and 20–30°F temperatures. According to notes on Vic's QSL card, "This is one of the remoter areas of the world, inhabited only by a few Bedouins and accessible only by 150 miles on unimproved camel trails." Later, in May of that year, Vic traveled to the Saudi-Kuwaiti Neutral Zone and in four days made 1080 contacts from the relative comfort of a "weather shack" at one of the many oil camps in the area.

The last DXpedition to the neutral zones before deletion was carried out in November 1979. 8Z4A was activated by



Desroches Island in the Indian Ocean is among several former British possessions that are now part of the Seychelles.

members of the Royal Jordanian Radio Amateur Society, who made a total of 40,800 QSOs on five bands using both CW and SSB.

Aldabra Islands (VQ9), Desroches Island, Farquhar Island (VQ9): *Only contacts made June 28, 1976, and before, count for these entities. Contacts made June 28, 1976, and after, count as Seychelles.*

These three DXCC entities will be treated together, because they have similar history and were all deleted at the same time. Aldabra Atoll is actually a group of coral islands in the Indian Ocean, 265 miles northwest of the northern point of Madagascar and 690 miles southwest of Mahe, the main island of the Seychelles. It is the largest coral atoll in the world. Naturalist David Attenborough, for one of his TV programs, visited the atoll and spoke of Aldabra as one of the most isolated spots on the planet. The atoll is approximately 40 miles in circumference, enclosing a shallow lagoon. Channels divide the circle into four islands. Because of its isolation and lack of a permanent human settlement, vegetation and fauna indigenous to the atoll have flourished and are found nowhere else. The atoll was designated a strict nature reserve in 1976 and has been listed on the UNESCO-designated World Heritage List since 1982. The only resident population is composed of World Wildlife Fund employees and visiting scientists.

The first Europeans to visit the islands were the Portuguese in 1511, but the islands were already known to Arab sailors from whom the atoll got its name. In the middle of the 18th century the islands became dependencies of the French, who had previously settled the island of Bourbon (Reunion Island). In 1814 Aldabra, along with Bourbon, Ile de France (Mauritius), Seychelles, and other islands became possessions of Great Britain as a result of the Treaty of Paris after the French defeat at the end of the Napoleonic Wars. They were administered as part of Mauritius until 1903, when Seychelles was constitut-

Not Just the Past...

While W4YO's article focuses on historical events in world politics that have determined where we hams may or may not communicate or operate, and whether certain places are viewed as separate DX "entities," such political considerations are not only in the past. Today, two Caribbean island "entities"—both U.S. territories, Navassa (KP1) and Desecheo (KP5)—are off limits to hams for what proponents of operating there believe are political reasons. They are attempting to get the policy changed.

While *CQ* has not taken a position on this matter, our DX column this month (on page 98) has the latest details on efforts to permit amateur operations from the two islands.

—W2VU

Vic Crawford, operating HZ3TYQ/8Z4, put the Saudi Arabia/Iraq Neutral Zone on the ham bands in 1965.

ed as a Crown Colony. When this happened, the other islands of the archipelago, including the Amirante Group, where Desroches is located, were added to the original group of islands acquired by Britain in 1814. The Farquhars were later transferred from Mauritius to Britain in 1922. In 1965 the British Indian Ocean Territory (BIOT) was established as a territory of the United Kingdom and included these three island groups as well as the Chagos group in the central Indian Ocean. When Seychelles attained independence in 1976, the Aldabra, Amirante, and Farquhar groups became part of that republic.[4]

Amateur activity from these three islands began in earnest in the 1960s. The first operation from Desroches in my log was in April 1966 by V.C. Harvey-Brain as VQ9HB/D.[5] Don Miller was there in October 1966, operating VQ9AA/D. That same month, Bud Clabough, VQ9BC/D, and Ted Crawford, VQ9TC/D, also put Desroches on the air. In November of the same year Miller activated Farquhar as VQ9AA/F. In January 1968 the British Royal Society Aldabra Expedition took place, with John, VQ9JW, providing the QSOs. In 1969 Gus Browning signed VQ9/A/D from Desroches.

The Strange Case of Wrangel Island and Tannu Tuva

Sometime after the end of World War II, when hams were allowed back on the bands and a postwar DXCC program began, Wrangel Island and Tannu Tuva were placed on the DXCC Countries List. After checking my first ARRL Logbook, which I used in 1956, I indeed saw both Wrangel Island and Tannu Tuva on the Countries List, with no official prefix for either.

Wrangel Island is located in the Russian Far East, in the Arctic Ocean, between the East Siberian and the Chukchi Seas, in CQ Zone 19. Tannu Tuva was an autonomous republic of the Soviet Union and is still so listed as part of Russia, in Zone 23 *(it appears to be the only part of Russia in Zone 23—ed.)*. It appears that both these countries were removed from the DXCC Countries List, rather than deleted, because no one had ever submitted cards nor received credit for either one![6] Certainly neither would qualify for entity status today!

Final Thoughts

All of the above point to the fact that geopolitical entities can, and do, change with time and local conditions, and these changes affect the listing of DXCC entities. There is no way to predict what these changes will be, nor when they will occur. The DXCC Deletion List is a reasonable likeness of the world's geopolitical climate, and it will continue to change according to the geopolitical whims of the countries involved. Perhaps with the current state of the world, a new Banned List might again rear its ugly head. One thing is for sure: It certainly makes for interesting and unexpected changes and keeps us DXers alert for the latest updates, which can come at any time. ■

Notes

1. Paragraph 1 is no longer written in the negative, but is now expressed in a positive fashion: *Radiocommunications between amateur stations of different countries shall be permitted unless the administration of one of the countries concerned has notified that it objects to such radiocommunications.* See <www.iaru.org/rel030703att3.html>.

2. See Section III of the DXCC rules, Deletion Criteria.

3. These, and subsequent quotes at the beginning of each deletion, are phrases as written in the ARRL DXCC Entities List. For more on Swan Islands, see the Swan Island DX Association website at <www.qsl.net/sidxa>. A nautical chart of the area can be found at <www.lib.utexas.edu/maps/americas/swan_islands_85.jpg>.

4. Today the BIOT only includes the islands of the Chagos group.

5. Harvey Brain, VQ8HB, lived on Mauritius and the Seychelles and was very active in DXpeditioning from several locations in the Indian Ocean.

6. Personal communication with Bill Moore, NC1L, of the ARRL DXCC Desk, who noted mention of the removal of Wrangel Island in the September 1960 issue of *QST*.

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• Conn: Gold-plated SO-239 • Construction: Fiberglass, 2 Sections

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Two months ago, we introduced the new CQ DX Field Award. Last month, we announced the return of the CQ DX Marathon. This month, we conclude our three-pronged effort at ***Waking Up DXing*** *with another new award, this one aimed at introducing newer hams to the wonderful world of DXing.*

Announcing:

The CQ iDX Award

BY RICH MOSESON,* W2VU, AND BILLY WILLIAMS,† N4UF

A long time ago, in a galaxy far, far away, newcomers to amateur radio were known as "Novices" and there were special contests and awards designed just for them to provide a lower-pressure introduction to amateur radio contesting and DXing. Today, in our galaxy, the vast majority of new hams are known as "Technicians" and their world consists of the frequencies above 50 MHz, where traditional DXing opportunities are rare. Yet, within the next year, it is widely expected that the FCC will change our licensing rules and open up at least part of the amateur HF bands to tens of thousands of Technicians.

We at *CQ* do not fear this influx. We will welcome it, as it is sure to re-energize traditional DXing. And if you've been following our articles over the past few months introducing the **CQ DX Field Award** and the revival of the **CQ DX Marathon**, you'll know that we feel that traditional DXing needs to be re-energized. We hope that the **CQ iDX Award**, along with these other programs, will help provide that necessary spark.

Different Mindsets

One thing we've noticed over the years is that there seem to be two major operating mindsets among hams–the *DXer* (which also includes contesters, award chasers, etc.) and the *communicator,* for lack of a better term, which includes ragchewers, public service and emergency communicators, repeater users, etc. (There is a third mindset—the *experimenter*—but experimenters tend to be more focused on designing and building than on operating.)

VHF FM and repeaters, which provide most new hams' introduction to our hobby, tend by their nature to reinforce the communicator mindset. Weak-signal VHFing and VHF contesting provide an alternative for the DXing-minded new ham, but these activities generally require an investment in specialized and expensive equipment and antennas that many newcomers are not yet ready to make.

In addition, advances in technology, along with policy changes by regulators, continue to shape the future of amateur radio. The demarcation be-tween wired and wireless communication is blurred by modern integrated systems employed by public safety agencies and commercial users. In the 1980s, trunked radio systems and microprocessor management led to a reduction in operator flexibility and control. The next decade saw development of "smart" radio systems which are now being embraced by the FCC and other regulatory bodies. This "blurring of the line" between wired and wireless has already reached amateur radio in several ways—using the internet collect and distribute DX "spots," propagation data and location information, using the internet to link existing VHF and UHF repeaters over great distances, and using the internet to access an HF "remote base" station. It is these last two on which the **CQ iDX Award** will focus.

Expanding a Long-Standing Concept

There are already large networks of repeaters around the United States, mostly connected via UHF and/or microwave links. In many cases, these networks provide users the ability to cover several states with a handheld or mobile FM transceiver. The development of Voice over Internet Protocol, or VoIP, led to the expansion of this concept with the development of internet-linked networks that increase the user's "range" from many states to many countries. These systems, which include IRLP (Internet Radio Linking Project), Echolink, WIRES and D-Star, use the internet to link repeaters and individual amateurs all over the world. In many ways, using IRLP or Echolink while driving is like having a 20-meter rig in your car, only without the 20-meter rig and HF mobile antenna. For the first time, hams whose stations are limited to VHF FM mobile and handheld rigs are getting

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the opportunity to at least get a taste of working DX. Once you've established contact, you quickly forget that your path is using wires and satellites rather than the ionosphere, and you concentrate on the fun of talking to another ham in a faraway place. And that, after all, is what DXing is all about.

In addition, growing restrictions on antennas are giving greater appeal to internet-linked HF remote bases (W7DXX's is the best-known), which allow you to remotely control and operate an HF station from your computer via VoIP.

Whether one is a traditionalist or a progressive, this communications evolution and its effects on Amateur Radio cannot be ignored. The **CQ iDX Award** recognizes the changing landscape and its inevitable effect on where Amateur Radio will be in 2020.

Using these systems to make contacts in faraway places helps develop and promote the DXer mindset among hams who previously were exposed only to the "communicators" among us. We want to encourage this and, hopefully, encourage an eventual transition to traditional HF DXing through our third "Waking Up DXing" program, the **CQ iDX Award.**

The CQ iDX Award

The **CQ iDX Award** is an introductory award, along the lines of old-time Novice awards, which encourages the development of a DXing "mindset" by recognizing the accomplishments of those amateurs who make confirmed contacts with between 25 and 100 different DX countries ("entities") through the use of internet-linked repeater systems or remote bases.

Because this is an introductory award, because many repeater-only hams do not yet have traditional QSL cards, and because these contacts do/will not count toward traditional DXing awards, our confirmation requirements are somewhat more relaxed for this award than for traditional DX awards (see rules for specifics). However, since it is still an amateur radio award, we will require that *at least one end of each contact must be made by amateur radio.* Computer-to-computer contacts, while possible on systems such as Echolink, *will not count* for this award. At least one person in each contact must be *on the radio.* (We realize this will not satisfy many of the purists among you, but remember that the goal of this program is to introduce new people to the concept of DXing and encourage them to pursue traditional DXing activities and awards once they are active on HF.)

Unlike other CQ awards, the **CQ iDX Award** mandates a "fresh start." All contacts must be made after 0000Z on January 1, 2006. For gathering verifications, we encourage use of technology to avoid the inconvenience, expense, and delay of postal mail whenever possible. Make plans now, so that in a few months you will be set to begin earning this exciting new award.

So with that, we are pleased to introduce our third new **Waking Up DXing** operating program, the new **CQ iDX Award:**

Rules: The CQ iDX Award

1. The **CQ iDX Award** is an introductory award for contacts made between licensed amateurs in different countries by means of Voice over Internet Protocol (VoIP) linking systems. These systems include, but are not limited to, IRLP (Internet Radio Linking Project), EchoLink, WIRES, and internet-linked remote base systems, which use the internet and VoIP to connect amateur radio repeaters and operators. At least one station in each contact must be transmitting via radio in the amateur bands (e.g., computer-to-computer Echolink QSOs do not count toward this award). SWLs may qualify by monitoring the required contacts and receiving confirmation from at least one of the stations involved.

2. The basic award is issued for confirmed VoIP contacts with amateurs in at least 25 countries. Endorsement stickers are issued for 50, 75, and 100 confirmed countries. All contacts must have been made after **0000 UTC, January 1, 2006**.

3. All contacts must be two-way (SWLs must monitor two-way contacts). Confirmations are required. For the purposes of this award only, acceptable confirmations include traditional QSL cards, electronic/online confirmations from sources approved by CQ (see CQ website for details), and verifiable e-mails. All confirmations must contain the callsigns of both stations; the name, mailing address, and location of the sending station (if different from the mailing address at the time of contact); and details of the contact, including date, time, mode, and frequency band used by the sending station for the contact (if the station accessed the amateur bands via the internet, the confirmation should indicate "Internet" in place of frequency), and must state that the contact is via VoIP (including specific system name). E-mail confirmations must also include the sender's valid e-mail address and must be dated within 60 days of the contact for which credit is claimed. CQ reserves the right to spot-check confirmations.

4. Applications should be submitted on the official **CQ iDX Award** application (form 2006A). Reasonable facsimiles or computer printouts are also acceptable. Contacts should be listed in alphabetical order by callsign prefix. Listings must include the frequency band (or internet) used by each station, as well as the VoIP linking system used. Confirmations must be verified by one of the authorized check points for the CQ DX Awards, or must be included with the application. Return postage must be included.

5. An SASE must be enclosed with all endorsement applications. Stations outside the United States must include an SAE with two IRCs for airmail return

6. Any altered or forged confirmations will result in permanent disqualification of the applicant.

7. Fair play and good sportsmanship in operating are required for all amateurs working toward CQ DX Awards. Repeated use of poor ethics will result in disqualification of the applicant.

8. A fee of $6.00 is required for CQ subscribers applying for a **CQ iDX Award** certificate. The latest *CQ* mailing label must be attached for the subscriber discount. For non-subscribers the certificate fee is $12.00. Endorsement stickers are $1.00 each for all applicants. IRCs (International Reply Coupons) are acceptable in lieu of check or cash.

9. All contacts must be with land-based or shipboard amateur stations. Contacts with aircraft are not acceptable. Contacts from international waters are not acceptable. Shipboard stations must be in the territorial waters of a country, no more than 12 miles (19 kilometers) from shore, operating in accordance with that country's laws and regulations, and the confirmation must indicate the country from whose waters the shipboard station is operating. The CQ DX Award countries list or ARRL DXCC Countries List determine what entities are considered separate countries. In the event of differences between the lists, the CQ DX Award countries list will govern.

10. In the event of any disputes or disagreements, decisions of the CQ DX Awards Manager shall be final.

11. All checks must be made payable to B. F. Williams. Applications should be sent to Billy Williams, N4UF, P.O. Box 9673, Jacksonville, Florida 32208-0673. Do not send applications to CQ.

If your ability to put up an HF antenna is restricted by too little space or too much regulation, consider this new no-radials vertical from Comet Antennas that covers 80 through 6 meters.

CQ Reviews:

The Comet CHA250B HF/VHF Vertical Antenna

BY DAN DANKERT,* N6PEQ

In February, Mick Stwertnik of NCG offered me the opportunity to test the new Comet CHA250B HF/VHF vertical antenna (photo A). With the ARRL SSB DX contest just a couple of weeks away, the timing was perfect! I had the opportunity to A/B test the CHA250B against my home antenna system knowing that plenty of DX stations around the world would be on the air.

The main selling points of this antenna are ease of assembly, simple installation, elimination of ground radials (see photo B) and an SWR of 1.5:1 or less from 3.5 MHz to 57 MHz. An antenna tuner is not needed, thus making portable operation that much easier.

I was intrigued by the possibility of this antenna being an answer for numerous hams who live in areas that frown upon large antennas. How would the CHA250B fare on a crowded HF band during a contest? Would the antenna be "quiet" on receive? Finally, how would it perform across all the ham bands from 6 meters to 80 meters?

Easy Setup

Once the antenna arrived at my home, I was anxious to learn how complex (or painless) the task of assembly would be. Since the instruction sheet is a single-page leaflet (front and back, see photo C), with one side comprised of the antenna's specifications, I asked myself, "How difficult could this be?" The antenna consists of five sections of aluminum tubing of various diameters. These five sections slide into one another and are fastened by either a hose clamp, self-tapping screws, or Allen screws. The bottom section of aluminum tubing is supplied with the matching network already mounted, which minimizes installation time. There are only two length measurements that need to be taken when fastening the sections together, and these are quite straightforward. Without exaggeration, the antenna was assembled in less than 10 minutes, including opening the box and removing any packaging material. I love efficiency and simplicity, and the CHA250B is the "aerial embodiment" of these two words!

The antenna is designed to mount to a mast with a diameter ranging from 1 inch to 2 inches. I decided to place the antenna atop some aluminum military mast sections that I have set aside for antenna projects. Using four sections of mast, the base of the antenna would be at approximately 15 feet, making the top of the vertical roughly 38 feet. I taped a few turns of coax to form an RF choke as indicated in the instructions, and then

Photo A– The CHA250B mounted on the military mast. The antenna has a low wind foot print, and it almost seems to disappear into the air. This was the setup used for the A/B testing.

Photo B– Here is the base of the antenna mounted to an aluminum mast section. Notice the exceptionally small matching network (black cylindrical section) of the antenna. No extended radials; this is it!

*e-mail: <n6peq@dxer.com>

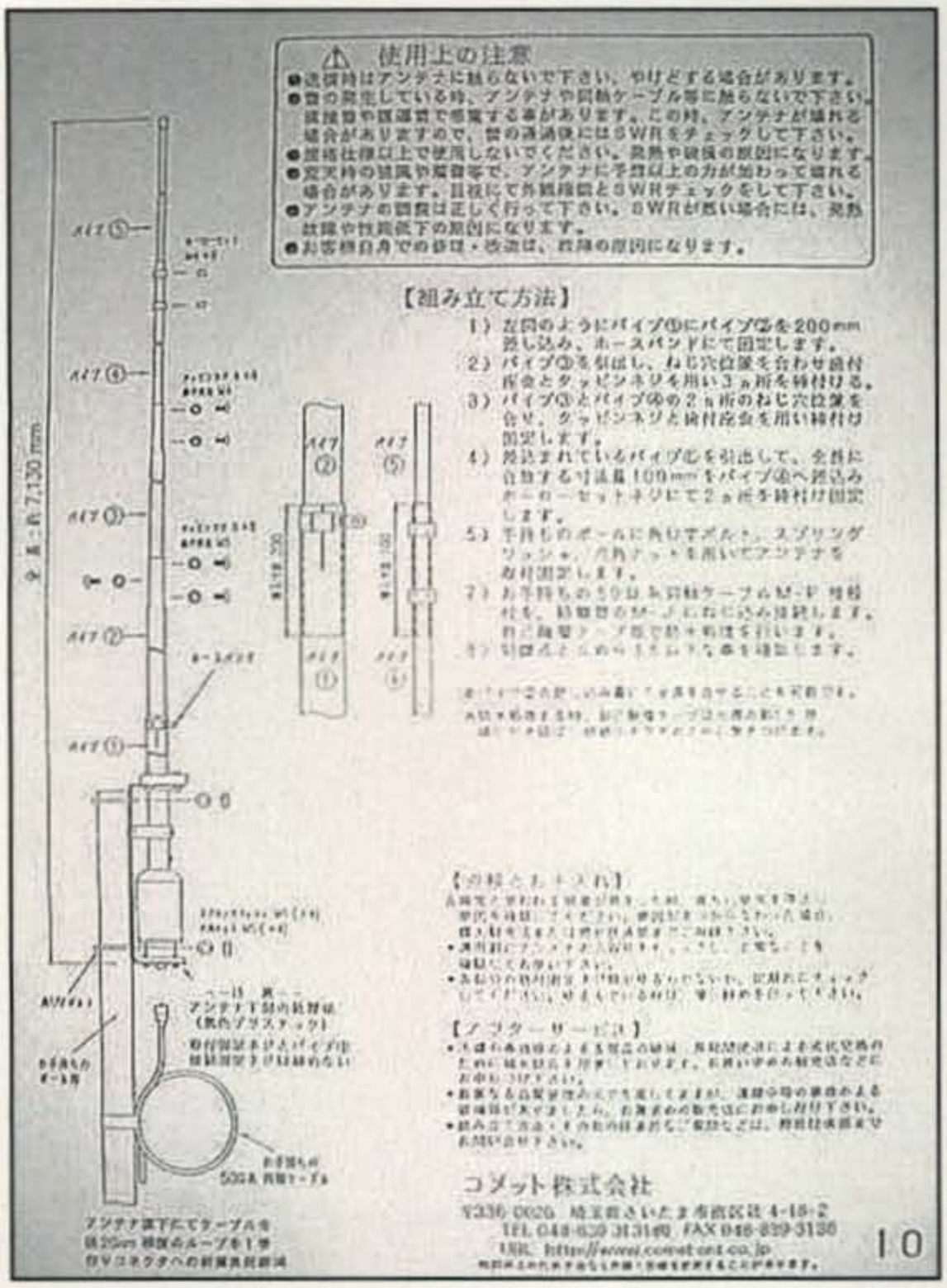


Photo C– This is the single sheet of instructions that is supplied with the antenna. Although it is printed in Japanese, the detailed drawing clearly indicates how the sections are joined together. Also specified are the two dimensions (in millimeters) that are to be measured during installation. You certainly do not need to know how to read Japanese in order to understand the assembly instructions. Ideally, it would be nice if in the future the instructions are provided in English.

Photo D– A snapshot of the IC-7800 spectrum scope while on 20 meters with the CHA250B. The frequency range displayed is 14.140 to 14.340 MHz. Notice the large number of strong signals across the band.

Photo E– A snapshot of the 31-meter shortwave broadcast band. The frequency range displayed is 9.465 to 9.965 MHz. Plenty of strong signals to listen to here!

SO-239 connector. Hoisting the antenna into position was a breeze thanks to the antenna's lightweight (7 lbs!) construction. I secured the antenna/mast assembly to the eave of my house, and connected the transceiver end of the coax to one of the remote antenna switches located at the base of my antenna tower. This would make for effortless switching between the CHA250B and other antennas when comparing signal levels.

With the antenna safely secured and the coax run, it was time to see how this antenna would perform! It was just past 0000Z, and the ARRL DX SSB contest had already started. I fired up the IC-7800 and switched to the CHA250B. I heard plenty of signals, and many were quite loud. I measured the SWR, and sure enough it was 1.3:1 or less across the entire 10-meter band. Hmmm . . . I wondered what it would read on the other bands? I checked 12 meters, then 15 meters and so on. Sure enough, the SWR was 1.3:1 or less on all bands from 6 meters to 40 meters. On 75/80 meters the SWR peaked at the low end of 80 meters with a reading of 1.5:1, and then gradually dropped across the band until it reached a minimum of 1.2:1 at the high end of 75 meters. I was beginning to wonder if this antenna was simply a real long dummy load, or if I would actually be able to work some DX with it. Time to go make some Qs!

On the Air

I set the transmitter output power to approximately 100 watts and began calling stations. Within a short period of time, from my QTH in southern California I had worked several stations in South America on 10 meters, and 15 meters provided contacts into Asia, South America, Central America, and the Caribbean. I generally made contact within one or two calls. So far, so good. Signal levels on 10 and 15 meters were definitely lower than on my tri-band Yagi, but the CHA250B is an easy to put up vertical designed to be quickly raised and lowered in areas that are "antenna unfriendly." You obviously cannot achieve this simplicity with a Yagi, rotator, and tower.

The following day brought many more contacts on 10, 15, and 20 meters. Approximately 90 countries were worked over the weekend with minimal operating time. Ten-meter contacts included R1ANF, 9Y4W, KH7X, HP3BS, PJ4G, and ZF2NT. Fifteen-meter contacts included OHØR, SKØX, ES5RW, S9SS, OH3RR, S58A, R1ANF, and 8R1EA. Twenty-meter

Amateur Bands Covered: 6, 10, 12, 15, 17, 20, 30, 40, and 75/80 meters
Transmit Frequency Range: 3.5–57 MHz
Receive Frequency Range: 2.0–90 MHz
SWR: <1.5:1
Height: 23 ft. 5 in.
Weight: 7 lbs. 1 oz.
Wind Survival: 67 mph
Transmit Power Rating: 250 watts SSB and 125 watts FM
Country of Origin: Japan

Table I– The Comet CHA250B manufacturer's specifications.

contacts (see photo D) included TF3CW, EA8ZS, SO2R, OH6KN, UW2I, J68RI, RU1A, CN2R, and EI7M. Over the next week I made abundant contacts on bands from 10 through 30 meters using several modes, including SSB, CW, RTTY, and PSK, some of which included BG1JJR, ZD8AD, 9M6BG, YB7M, EA9EU, T77CD, HG3X, and 9Z4FE. I was pleasantly surprised at how well the antenna played on 30 meters. Some of the stations logged on 30 meters were: JWØHS, TO7C, XT2JZ, V31TR, FS/KT8X, VP2V/DL7DF, FG/F5CWU, CE/W3WKP/M, and even FT5XO on Kerguelen Island!

As I proceeded down in frequency, it became more difficult to make long-haul QSOs. On 10, 12, and 15 meters it was quite easy to work whatever DX stations I could copy. Seventeen and 20 meters were more difficult, usually taking a few more calls to establish a contact. The weaker stations tended not to respond to me. Surprsingly, it was easier to make contacts on 30 meters than on 17 and 20. This is most likely due to the less-crowded band conditions, plus the fact that stateside stations are limited to a maximum power of 200 watts output on 30. Forty meters was more of a challenge, although the signal levels seemed relatively decent, with stateside stations typically hearing my signal. I was able to work into Central America and the Caribbean as well, but that was the extent of the DX on 40 meters. As would be expected, 75/80 meters was very difficult. The antenna is only 23 feet tall, so the fact that the antenna loads up well and is broadbanded on this band is an accomplishment in itself. I was able to work west coast stateside stations on 75/80 meters, and I was able to work one station in Alaska. The antenna also seemed "quiet." I live in an area that is generally quiet as far as noise is concerned, and I did not seem to acquire any greater level of noise with the CHA250B. In addition, I did not appear to pick up any "new" noise.

I did not work any stations on 6 meters. This was not the fault of the antenna, but rather the fact that I live in southern California, which happens to be "the pits" for 6-meter propagation. However, I was able to verify that the antenna does load on this band.

Another nice feature of the CHA250B is that not only is it resonant on the ham bands, but it is also resonant on the shortwave broadcast bands. The CHA250B does an admirable job as an all-around receiving antenna for the shortwave broadcast bands. Signal levels were excellent on the major SWBC and UTE bands (see photo E). Being an avid shortwave listener, I found this to be a nice attribute. An SWL who would like an antenna that is "all bands in one," low profile, and simple to erect should find this antenna to fill the bill nicely.

Tables II, III, and IV show signal levels received on the CHA250B versus larger antennas at my station (Table I is the manufacturer's specifications for the antenna). As you can see, the signal levels on the CHA250B are consistently lower than those of the bigger antennas, as would be anticipated.

Band	DXCC QTH	Comet CHA250B	2-el Yagi @ 45'
10 m.	XE	S4	S9
10	LU	S3	S8
10	CE	S2	S7
10	W4	S3	S9
10	VE7	S4	S9
10	VK	S2	S7
15 m.	YB	S3	S8
15	W4	S7	S9+20
15	3D2	S3	S7
15	PY	S8	S9+20
15	JA	S4	S9
15	W7	S7	S9+20
15	9G	S2	S7
15	EA	S2	S7
20 m.	JW	S3	S8
20	JT	S3	S8
20	8R	S5	S9
20	W0	S7	S9+20
20	W4	S7	S9+20
20	V3	S6	S9+20
20	EA	S6	S9+20
20	G	S4	S9
20	JA	S6	S9+20

Table II– The A/B comparison of signal strength between the Comet CHA250B antenna and a triband Yagi for selected contacts on 10, 15, and 20 meters from the author's southern California QTH.

Band	DXCC QTH	Comet CHA250B	Rotatable Dipole @ 45'
30 m.	WØ	S9+10	S9+25
30	W4	S9+20	S9+20
30	UAØ	S7	S9
30	ON	S9	S9+10
30	YO	S6	S8
30	LU	S9+10	S9+20
40 m.	W7	S9+15	S9+35
40	W9	S8	S9+20
40	FT5X	S8	S9+10
40	JA	S9+10	S9+20
40	LU	S8	S9+10
40	OE	S7	S9+10

Table III– A/B comparisons on 40 and 30 meters between the Comet vertical and a two-band rotatable dipole.

In spite of this, I was still able to work many stations as well as numerous DXCC countries!

Conclusions

At the get-go of this antenna project I found myself pondering whether this antenna would radiate at all due to its small size and lack of a radial system. As we all know, bigger is better in the antenna world, and if you have room to install a large antenna system, I highly suggest your doing so. This antenna is not designed to replace a Yagi or any other full-size antenna, but rather is intended to assist a specific segment of the amateur market that is forced to manage with antenna or space restrictions. If you are a ham or SWL and live on a small lot or in an antenna-restricted area, or if you just prefer to operate incognito, without a question you will be forced to make significant compromises. I found the CHA250B to be an excellent choice for these circumstances. While we don't recommend violating any rules governing your QTH, one person can effortlessly raise the antenna at night when no one can spot it and take it down before daybreak. This antenna is also a great choice for portable operations, such as a quick and easy mini-DXpedition to a campground or a nice tropical island!

Band	DXCC QTH	Comet CHA250B	82' Long Dipole @ 35' (NW/SE)
75/80 m.	W7	S9+20	S9+35
75/80	BV	S4	S7
75/80	UAØ	S7	S9+10
75/80	YV	S7	S9+10
75/80	VK	S5	S9
75/80	EI	S7	S9+10

Table IV– A/B comparison on 80/75 meters between the CHA250B and a much-less-than quarter-wave dipole.

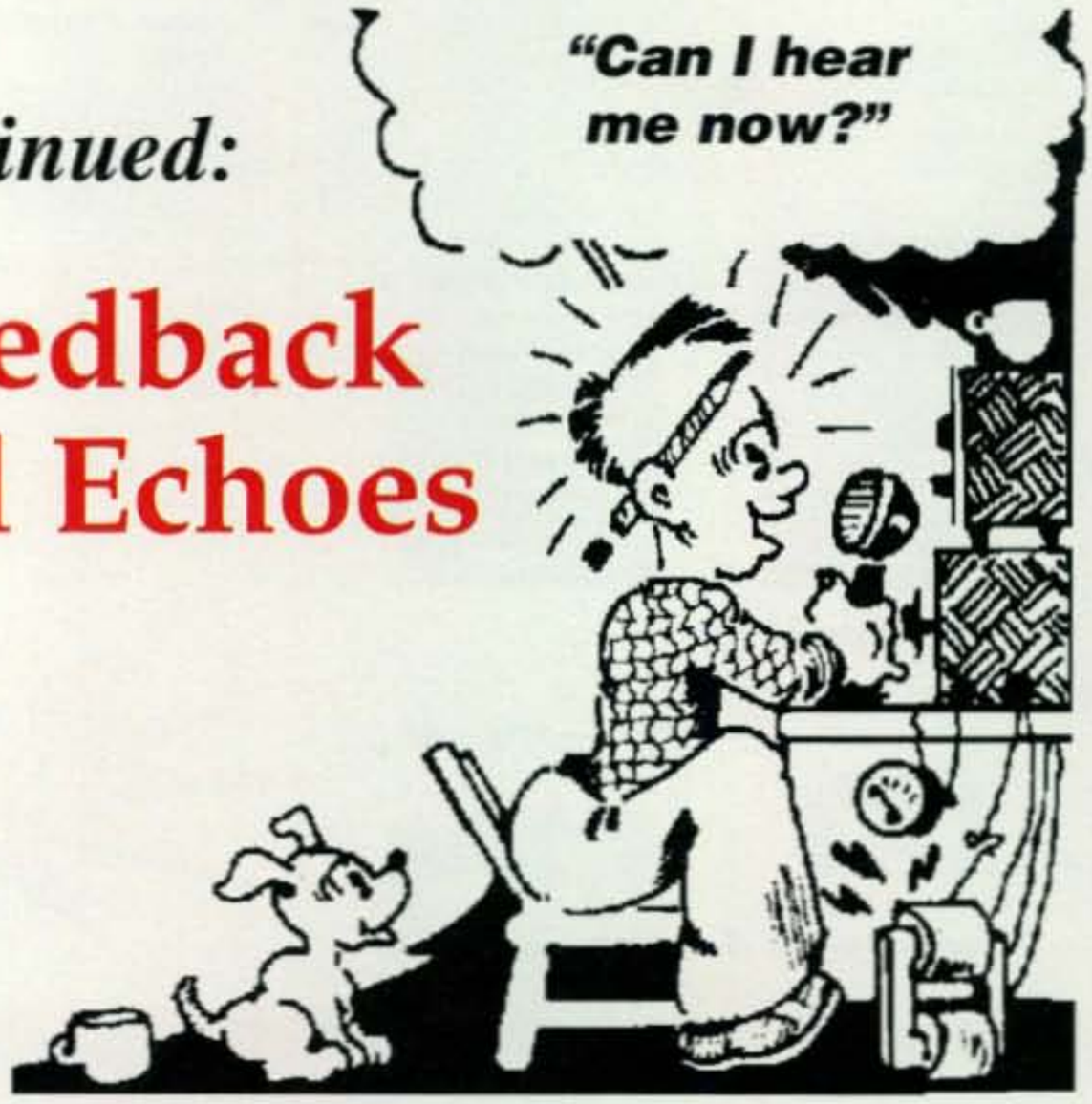
In short, the Comet CFA250B (estimated price $400 to $425) is simple to assemble, painless to elevate, and easy on the eyes, while at the same time getting you on 6 meters through 80 meters without the requirement of an antenna tuner and ground radials. You'll even be able to work some DX while you're at it!

More information on the Comet CHA250B can be obtained by contacting Comet's North American distributor: NCG Companies Inc., 1275 North Grove Street, Anaheim, CA 92806 (phone 1-800-962-2611, fax 714-630-7024, e-mail: <sales@natcommgroup. com>, on the web: <http://www.cometantenna.com>. ■

The responses we've received to February's article suggesting the existence of an ionosphere in space have been thought-provoking, to say the least. We share some of them with you here.

A Healthy Discussion, continued:

More Reader Feedback on Long-Delayed Echoes



When we published TZ6JA's article, "Long-Delayed Echoes: Reflections from an Ionophere in Space?" and the accompanying editorial, "Outside the Box," in the February 2005 issue of CQ,[1] we said our primary goal was to encourage innovative thinking and discussion on phenomena we don't yet understand. We even started the "conversation" with a discussion about Mac Obara's theory in a sidebar within his article. It worked! The feedback has been great, and CQ author Bob Haviland, W4MB, takes the conversation one step further in the article that follows this one, with suggestions on other areas of research which might be of interest to hams. First, though, let's have a look at what some of you had to say. —W2VU

From Mark Erbaugh, N8ME:

Rich,

I appreciated the comments in your editorial in the February 2005. I think they are right on the mark and I applaud *CQ*'s approach in presenting novel ideas or propositions that may conflict with conventional wisdom. One of the things I enjoyed during my school years was that the answers were in the back of the book. In other words, there was a *right* answer that was easy to distinguish from all the *wrong* answers with the proper application of knowledge. However, since my graduation from college some 32 years ago, I'm learning more and more that, for the most part, the answers aren't in the back of the book. Please don't give in to the detractors and keep those ideas coming.

I have really appreciated the discussion of Long Delayed Echoes. To me it defies common sense and seems like a story suited for the tabloids. One of theories I have is that perhaps they are caused by some manmade terrestrial mechanism. One of the cases cited was that the echo was received when the radio was tuned to the same frequency when a VCR recording of the original transmission was made. While I don't know the specifics of the VHS format, I know that a TV signal is approximately six megahertz wide. If the VHS were recorded at baseband (0 Hz), the signal would range from 0 to 6 MHz, which includes the 160 and 80 meter bands where most LDEs are observed. Perhaps a small amount of the transmitted signal is being captured by the VCR and recorded. When the tape is played back, a small amount of this energy is re-radiated and can be picked up by a sensitive receiver. The latest article says that the majority of LDEs originated between 10 PM and midnight local time in February and October and the echoes were received between 4 PM and 6 AM. This would be consistent with a morning person who goes to bed early, but tapes "ER" (or some other show) and watches it the next day, or a second shift worker who tapes it and watches it in the early morning when he/she gets home. The LDEs also occur more frequently between October and February when most shows are running original episodes and not reruns. Coincidence? —73, Mark

From Bill Lawson, AE6HP:

Dear Rich,

I really don't mean to make a habit of responding to articles, but, being a plasma physicist, I feel obliged in this case.

The constant lament of the scientist is "Another beautiful theory destroyed by an ugly fact." The theory described in the recent *CQ* article "Long-Delayed Echoes: Reflections from an Ionosphere in Space?" is interesting and imaginative, but it falls down on two points (there are others, but these suffice):

1. The electron density in interplanetary space has been measured by spacecraft. There is no room for belts or spheres of high electron density.

2. The Earth's own ionosphere not only keeps HF radio waves in, it keeps them out as well. (One of the brightest sources of RF noise in the solar system in the 1 km range is our own polar magnetosphere. We can't hear any of it on the ground.)

The parabolic (actually spherical) reflection and ducting ideas put forth by Dick Ross and yourself solve the signal

strength problem, but there is a subtler problem with them. Because the signal was intelligible, the longest propagation path could be no longer than 0.1 light-second longer than the shortest. For a 48-hour delay, this is less than one part in a million, which is implausible for a naturally-occurring system. If the observed signal is free of the kind of flutter heard in EME signals, then the path-length requirements become even more stringent.

The most likely explanation is that the signal is being recorded and re-transmitted. Malice is one possible explanation, but a carelessly designed TiVo or VCR could easily record the entire spectrum up to several MHz and unintentionally re-transmit it—very locally—on replay. The signal might even propagate through the ground or power connections. This possibility seems to explain the observations as reported, and should be easy to test.

Bill Lawson, AE6HP

From Edgar Heinen, VE3TQU:

Hello,

Oh, you folks at *CQ* should get an award for publishing such interesting articles (by Mac Obara about LDEs in the February 2005 edition, page 24,and also the one in June of last year by Bob Shrader,W6BNB)!

This article really interested me and threw a whole new spin on the hobby. And I do not believe it is a hoax, for his theory holds sense, it is quite believable, and I do know this theory, having some mathematical experience in this field.

Any circular belt or spheroid of ionized plasma or matter centered on the sun, however far away (length of radius), can return a radio signal to the point of origin (us) with very little path loss, except the loss due to reflection inefficiency. The 82-hour delay cited by Mac may not be the end of the story, unless it came from the farthest reflector, which we do not yet know. Of course, only a solar system type of object would allow such efficient radio reflections. That it is much more efficient than moonbounce is also amazing, giving even the 1950s Novices with their 75 watt rigs a chance to attempt such "research," for that is all the equipment needed.

Edgar Heinen, VE3TQU
Toronto, Canada

From Dave Thompson, K4JRB:

Rich,

The recent articles on long delayed echoes reminded me that starting in

Ecliptic +23 1/2	Ecliptic –23 1/2	Local Meridian Time
August	February	08
September	March	06
October	April	04
November	May	02
December	June	00
January	July	22
February	August	20
March	September	18
April	October	16

Table 1. Approximate times at which the ecliptic (the plane of the planets) is directly overhead at the Tropic of Cancer (+23 1/2) and the Tropic of Capricorn (–23 1/2).

1969, Dr. Oswald Villard (now SK) of Stanford University had a series of five articles or letters on LDEs published in *QST*. Dr. Villard did quite a study and distinguished between LDEs (of 3 to 4 seconds) and the common multipath delayed echoes you hear on signals arriving on both long and short path. He also discussed hoaxes he found.

In 1969 I had just graduated from LSU with a shiny new MBA and moved across the state (beyond 150 miles), so for the time being I had to start DXCC over. So with a new Tristao 71 ft. tower and 4-element Gem Quad, I was ready to test LDEs. I was familiar with multipath echoes, but until Villard's article I had no explanation for the LDEs of my own signal I had heard.

In the middle '60s I built the W5HVV quad featured in *QST* and was on 10 meters SSB early one morning. There was a K2 who worked gray-line DX just at sunrise, and I listened to him working VU and Indian Ocean stations, so I determined that if I waited an hour for my sunrise, I too might hear these stations beaming southeast. I called CQ DX on a dead band while a VE3 questioned my sanity. Lo and behold, an FR7 came back and we exchanged 5/5 reports. After the short QSO, I again called CQ and heard a weak signal about 4 or 5 seconds later. Listening closely I heard "CQ DX this is K5MDX" (my call at the time!) clearly at about S3. Not only did I hear it, but the VE3 (all I remember is his name was Ham and he was a pastor) heard it, too. We talked about it for at least half an hour. I had a tape recorder for tape wheels for contesting but I never again heard an LDE that year.

I passed this info to Dr. Villard and he told me this was a normal occurrence of an LDE. I am sure he had some theories, as he was a scientist and astronomer. His first article, according to ARRL member search, was May 1969 and his last May 1980.

Dave Thompson, K4JRB
(ex-K5MDX)

From Karl H. Oyster, Jr., K1KO

Dear Rich,

I just finished reading—for the third time–your editorial in the February issue of *CQ*. It is, in my opinion, the finest piece of writing I have ever found in an amateur-radio-oriented magazine or book. You are to be congratulated (and should get a pay raise) for it.

I believe we have far too many crusty old-timers (and a few "new-timers" trying to emulate their idols) who say, "___ just can't be done; why is ___ wasting my time with that trash?" or words to that effect.

I am a social scientist, a psychologist, but my technical expertise is quite minimal, especially compared to that of those who so often write for the magazine. However, there are theories which have been "true" in my business, too, and later proved to be wrong. This has always been the case. Somebody in the cave probably said, "If you take those skins out of the cave and go to sleep under them—even if they're up on poles, like you say they will be—the saber-toothed tiger will end up having an easy meal," but lots of people still use tents every day and never give it a thought that at one time tents were high-tech, ground-breaking, avant-garde equipment.

Well done!!

Karl H. Oyster, Jr., K1KO
Virginia Beach, VA

From Walter Bain, W4LTU:

Hi Rich,

The article in February 2005 *CQ* on LDEs was outstanding. This may well be the most significant finding in amateur radio in many years. I tried to get more details by calling up the Japanese websites referenced but the material given was pretty much identical to what you published. In case it is not widely appreciated, I will pass along the following thoughts which may expedite observations of LDEs. (Perhaps we should call them VLDEs, Very-Long-Delayed Echoes.)

It is possible the main limitation to the observation of these LDEs is our own ionosphere! Habitually we desire high densities in the *F*-layer to support terrestrial communications by reflection. However, for LDEs near 3.5 MHz we need *low* densities to permit penetration into outer space. The lowest frequency to penetrate the *F*-layer is the vertical critical frequency, known as *foF2*. (A slightly higher critical frequency, *fxF2*, also exists due to the Faraday Effect, but it is not relevant here as we desire the lowest frequency penetrating.) At mid-latitudes the *foF2* currently can drop below 3.0 MHz in the nighttime hours during the winter. During the summer it may drop to 4 MHz just before dawn. During a sunspot minimum these values will be even lower. In daylight hours, penetration at 3.5 MHz is very unlikely due to the high electron densities.

If the LDE reflecting surface lies on the ecliptic, ideally it is desirable to have it directly overhead in order to provide best penetration of the *F2*-layer. However, this ideal condition could exist only for stations between the equator and latitudes of ±23 1/2 degrees, and then only at certain times. Fortunately, however, the oblique factor increases only gradually as we move off from the vertical when viewing the ecliptic from higher latitudes. For a ray 30 degrees off vertical, the penetration frequency is increased only about 15%. Thus, an *foF2* of 3.0 MHz would still allow penetration above about 3.4 MHz. The added 30 degrees to the ray angle (due to moving toward mid-latitudes) would then permit penetration, toward the ecliptic, for stations to above 50 degrees latitude.

To favor mid-latitude stations, the ecliptic should be overhead at its maximum distance from the equator, 23 1/2 degrees (so minimum tilt-off vertical is required). This condition varies with date and local meridian time as shown in the accompanying table. The plus ecliptic applies to the Northern Hemisphere and the minus to the Southern Hemisphere. Summer values are not given, but you see the pattern.

How can we estimate current *foF2*? I have found two good sources and there are undoubtedly others. A few worldwide ionospheric sounders are still in operation and data is given at: <http:// www.sel.noaa.gov/ftpmenu/lists/iono_day>. Click on the sounder site desired (good luck, many are switched off and just entering blank data). The first data column gives *foF2*, usually at 15 minute intervals, sometimes 30 minutes. At this writing, active U.S. sounders include Pt. Arguello, CA;

Millstone Hill, MA; Dyess AFB, TX; Boulder, CO; and Wallops Is., VA. I have logged numerous readings of 2.8 MHz and 3.0 MHz during quiet magnetic conditions. During disturbances values as low as 2.1 MHz have been seen. (This effect could account for 160 meter LDEs.)

The other source of *foF2* information is an automated near-real-time prediction system showing worldwide map contours of *foF2,* which updates at 5 minute intervals. It is available at: <http://www.spacew.com/www/fof2.html> and seems to be fairly accurate.

Summer is likely to be a poor time for LDEs. However, winter is now approaching in the Southern Hemisphere and 80 meter hams there should be looking for echoes during times of low *foF2*. In the north, we should be making plans for next winter when *foF2* will be even lower due to the sunspot cycle. W1AW makes several hours of transmissions each weekday night on 3581.5 kHz. Monitoring for their echoes during the hour they are on other frequencies should be possible. Also, they make no transmission on Saturday, so a full evening of monitoring for echoes of their Friday transmissions should be possible. A network of monitors in the northeastern U.S. might resolve the question as to what extent reception of echoes is limited to the area of the transmitter (an effect that might be expected for an ionospheric hole of limited extent).

Other hams across the southern U.S.—particularly in Florida, Texas, Hawaii, and Puerto Rico–might run tests with their own transmissions to determine whether echoes are more likely when the ecliptic is closer to the zenith than it was for the Japanese tests. Perhaps a dedicated 80 meter frequency or slot could be added to the band-plan for LDE tests (or would this just encourage spoofing by clowns?).

Non-ham stations in the 2–5 MHz range might be monitored for echoes if they make extended breaks that could be used for look-throughs. If we can gather enough widespread confirmation of the effect, it could be presented in a scientific journal and provide ham radio with favorable publicity in technical circles that it has not enjoyed in a very long time.

Walt Bain, W4LTU

From Bob Reif, W1XP

I just wanted to write to mention a couple of thoughts. First of all, this sounds a bit far-fetched that there are

concentrations of ions dense enough to return 160 and 80 meter signals at the distances from the sun proposed by Mr. Obara. But people a lot smarter than I have been wrong before. We didn't know about other belts of ions until Dr. Van Allen built a satellite some years ago (*Explorer I, the first successfully launched U.S. satellite—ed*).

What struck me is that only the originating station is likely to recognize that a signal is an LDE signal. I hear TZ6JA calling CQ on 160 or 80 meters and if he doesn't come back to my call, I just think I should build the 4-square and leave it at that. The fact that he made the call as long as 82 hours ago goes unnoticed. My suspicion may be raised by the time of day at the sending end but I may still not suspect an LDE. So it struck me that sending a time stamp on the transmission may be useful for identifying the time of transmission and a possible LDE. Thinking about this in more detail, a full time and date would take up to ten digits–DDMMHHMMSS, for example. It could certainly help identify the time of origin, but even with having it programmed to be sent before the K on a CW transmission, for example, would be a lot of extra baggage to regular operating.

It has crossed my mind that beacon station operation sending transmissions at likely times with the above time stamp might be a good way to investigate these LDEs in a more organized manner. A simpler approach might be to just send the seconds (UTC) of the end of transmission. IE CQ CQ CQ DE W1XP W1XP 37 K. A receiving station could then recognize that the signal was delayed more than the normal propagation delay when he received the above at 03 seconds after the minute, for example. It doesn't fill in the 82 hours, maybe, but does provide a way to recognize unusual propagation delay times on signals.

In order for this to work, the clocks at each end must be kept in close calibration. It has amazed me how good time my $20 watch keeps and how poor time my $2000 computer keeps. But that is another issue. (*A free program to automatically synchronize your computer clock to WWV is available for download from the National Institute of Standards and Technology. For more information, go to <http://www. boulder.nist.gov/timefreq/service/its.htm>.*) Anyway, once the signal was identified as an LDE signal the exact delay time may possibly be determined by off-line checking between the two stations. Just some thoughts on this interesting subject.

W2VU's comments: It is clear from these letters and from those received in response to past articles that long-delayed echoes, while uncommon, have been observed by many amateurs in many locations for many years. The speculation of the first two writers about the possibility of poorly-engineered VCRs being the cause of LDEs falls down on the basis of reports of LDEs that predate the existence of VCRs. W4LTU's analysis of the times when the critical frequency is likely to dip into the 2 or 3 MHz range seems to this layperson to be much more scientifically sound than whether TV shows are airing original episodes or reruns. And while the problems AE6HP brings up about electron density in space and the difficulty of propagating intelligible signals over immense distances may or may not be valid (I'm not a physicist so I can't say), it is clear to me that LDEs are real and that there is something *somewhere—most likely a natural phenomenon that we haven't yet identified – that is responsible. Mac's theories are a good start.*

I think Walt Bain's idea of a concerted, organized effort to monitor and study LDEs is, as he suggests, a great way to learn more about them and to bring radio amateurs back into the forefront of propagation research. If someone is willing to coordinate such a project, we will be happy to report periodically on it and provide other support as our resources allow, such as space on our website. In any event, let's continue this conversation, and perhaps expand it to other areas in which hams can make a valid contribution to research. The following article, "On Technical Investigations, or, Research for the Radio Amateur," by Bob Haviland, W4MB, offers some tips in that direction. ■

Note

1. This is the fourth article we've run in the past year on Long Delayed Echoes, or LDEs, a topic which appears to have caught the interest of many *CQ* readers. The first appeared in the June 2004 issue, written by Bob Shrader, W6BNB. In October 2004 we ran an article with feedback to Bob's original article, including a letter from Makoto "Mac" Obara, TZ6JA, referencing his series of articles on the topic in the Japanese *59* magazine. We asked Mac to write a summary of those articles for *CQ* readers, and that article–proposing the hypothesis of an ionosphere in space–appeared in our February 2005 issue, along with a related "Zero Bias" editorial. A fifth related article, "On Technical Investigations, or, Research for the Radio Amateur," by Bob Haviland, W4MB, follows this article.

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Practice by copying along with the MFJ-461. It'll help you learn the code and increase your speed as you instantly see if you're right or wrong.

Eavesdrop on interesting Morse code QSOs from hams all over the world. It's a universal language that's understood the world over.

Automatic Speed Tracking

MFJ *AutoTrak*™ automatically locks on, tracks and displays CW speed up to 99 Words-Per-Minute.

Simply place your MFJ-461 close to your receiver speaker until the lock LED flashes in time with the CW.

Four Display Modes

1. Bottom line scrolls and fills with text, then that entire line is displayed on top line until bottom line refills -- makes reading text extra easy! Automatically displays speed in WPM.

2. Same as **1**, without speed display -- gives you maximum text display.

3. Top line scrolls, bottom line displays speed in Words-Per-Minute.

4. Both top and bottom lines scroll.

Two-line LCD display has 32 large 1/4 inch high-contrast characters.

MFJ Instant Replay

The last 140 characters can be instantly replayed. This lets you re-read or check your copy if you're copying along side the MFJ-461.

High Performance Modem

Consistently get solid copy from MFJ's high performance *PLL* (*phase-lock loop*) modem. Digs out weak signals. Even tracks slightly drifting signals.

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Computer Interface

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Digging into the mysteries of long-delayed echoes (see previous article) is just one area in which ham radio operators can still make serious contributions to scientific research. In this article, Bob Haviland, W4MB, author of CQ's The Quad Antenna *book, offers suggestions on research paths hams can follow on LDEs and a variety of other subjects.*

On Technical Investigations . . .

or, Research for the Radio Amateur

BY R. P. HAVILAND,* W4MB

Author's note: This material was originally intended to be a step in increasing amateur interest and work in fields of technical investigation, primarily for research itself, rather than for what we generally understand as "amateur radio." Its aim was to encourage work of the type used by the late Grote Reber (ex-W9GFZ) in building the world's first radio telescope in his back yard, in discovering radio noise from the sun, and in making the first radio map of the heavens—all on his own. The paper presents some possible lines of work, some of which can be done by a single amateur using existing equipment, progressing in difficulty and size to efforts which would require a large club activity. Note that these are suggestions. There are other lines that can be developed by looking at the fields involved.

The CQ article "Long-Delayed Echoes" (Obara, February 2005) prompted a review of these thoughts to see if the techniques proposed would help "tie down" their source. A few additions to the original thoughts are included, but much of the material is as originally written.

The Radio Regulations of the International Telecommunications Union, Article 1, Section 2, (Paragraph 78) state the following:

"*Amateur Service:* a service of self-training, intercommunications and technical investigations carried on by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest."

Put in list form, the purpose of amateur radio, the justification for its existence, is:

- Self Training
- Intercommunications
- Technical Investigations.

If you review the articles in the various amateur publications, you will see that the largest percentage of the material relates to intercommunication, with some articles addressing means of enhancing this. A smaller percentage of the articles relate to self-training, many including operating techniques. There are also a goodly number of technical articles, but virtually all relate to receivers, transmitters, antennas, and communication modes.

An article covering a technical investigation—or as commonly called, *Radio Research*—is rare. Despite this, amateurs have made significant contributions to radio and radio-astronomy research, quite a few strictly as amateurs, but many more by applying the interest and knowledge gained as amateurs to their professional and academic work. The first radio telescope designed and used as such was designed, built, and operated by an amateur with no help from the scholastic world and no government contract.

This article is intended to help increase the amount of work by amateurs on "technical investigations" in several areas. It attempts to do this by outlining a series of possible investigations, some promising, others veritable long shots, and ranging from some that are within the capability of a single amateur using existing equipment to others which would tax the capability of the largest amateur club. All are within the limits of current amateur regulations, although some could be enhanced by requesting an experimental license from the FCC, always possible and welcomed if carefully thought through.

Even though the techniques outlined here are more powerful than those commonly used in amateur communications, it is not likely that results can be expected immediately upon firing up the equipment. Failure after failure is more likely. The trick is to try variations: For example, if nothing is found on 10 meters, try 20 after the band closes. Perhaps try different times, or antenna directions. Above all, ask why this didn't work and what the possibilities for change are.

If you are wondering why I don't do these things myself, I was first licensed in 1931, and the energy coefficient isn't what it used to be, so here goes:

LDE Research

There have been many reports of long-delayed echoes, primarily one's own transmission heard after a delay of seconds. This is in contrast to the fairly common echo produced by around-the-world transmission, a delay of 0.13 second. Reports of attempts to secure a repeat of an LDE are only of failure.

Let us make a guiding assumption: The echo is there on many transmissions, but it is so weak that it is buried in noise. Thus, detection must involve signal enhancement and measurement of time delay. Signal enhancement is really a simple process: The original signal plus noise is repeatedly sampled and integrated, or in other words, the value of one sample is added to the preceding values. Because the noise is random, it averages out, but the signals add. In signal voltage the processed signal-to-noise ratio (S/N) is equal to the original

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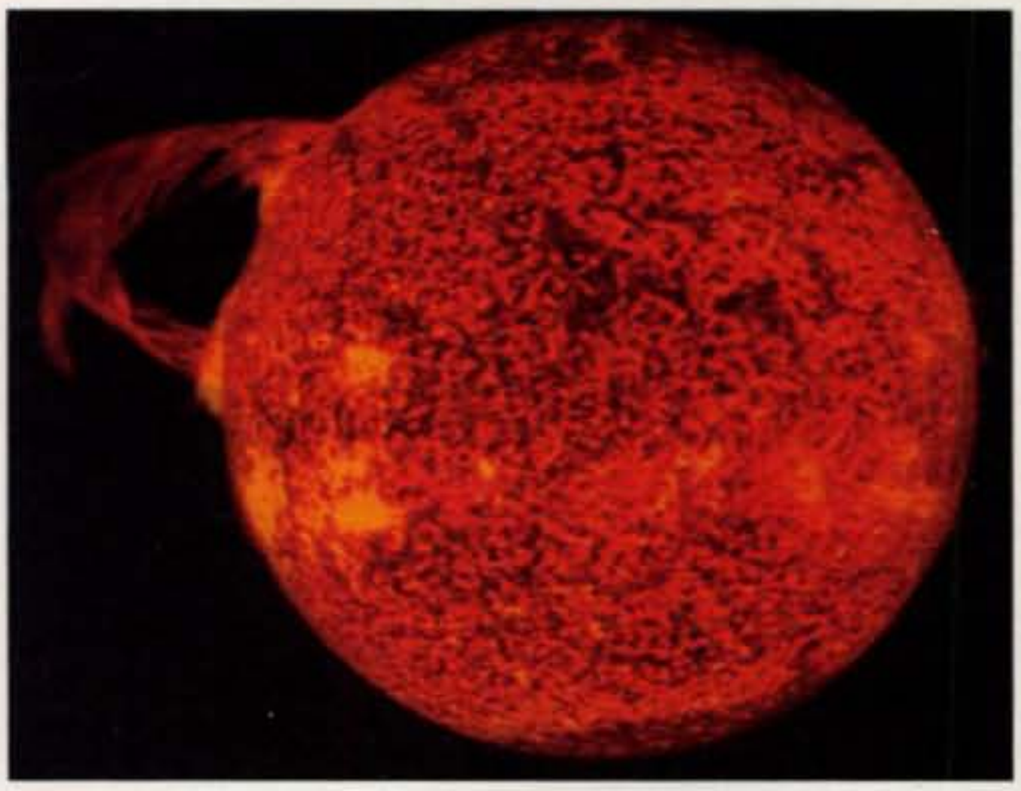


We all know the sun is a major source of radio noise. Are there patterns in the noise that change with events on the sun, such as solar flares? (Photo courtesy of the Naval Research Laboratory)

value divided by the square root of the number of samples. Ten samples give a 10-dB improvement in S/N, 100 samples a 20-dB improvement, and so on.

There are many ways to integrate a signal. The first radio measurement of the distance from Earth to moon used a bank of electrolytic integrator cells. These are a relative of a battery, basically two electrodes immersed in an electrolyte. A common one breaks down water into gasses, and the amount of gas is the integral of the current through the cell. Switching is arranged to change the received noise or signal plus noise from cell to cell in time sequence, repeating the sequence with each transmitted pulse. The cell with the most gas is the one with the reflected signal. Today it is much easier to use a computer to do the integration, which means that many hams could combine two fields they view as hobbies.

Suppose we transmit a rock-steady one-second pulse every 10 seconds, and receive on the same frequency with a narrow-band receiver. We measure the receiver indicated signal level for a tenth of a second, record this value in a computer register, and repeat nine times, adding the signal level to contents of the same register, then switch to another register for the next second, and so on. We have improved the S/N by 10 dB, separating the echo possibilities into 186,000-mile blocks of travel. We could get a 20-dB improvement by using 1/100-second sampling duration, or get 18,600-mile resolution with 1/10-second long transmissions.

Applying these concepts to the echoes outlined in the *CQ* article by Obara requires a few changes. The space between pulses should be lengthened to the distance to be searched divided by the speed of light. Table I of the article gives some separations. An alternate is to divide the search time into intervals, and to code the pulse at each interval for identification, but this needs a good S/N and is probably not good. However, I'll discuss another method of S/N improvement later.

What band, what time, what direction? I haven't found a clue in the reports. Try a band that has just closed for normal propagation, a quiet spot on other bands, or your best guess. Just don't forget to identify at intervals, possibly with something like "v v v propagation research de XXXXX" at normal code speed.

Probability of success? I don't know, but it should be greater than zero.

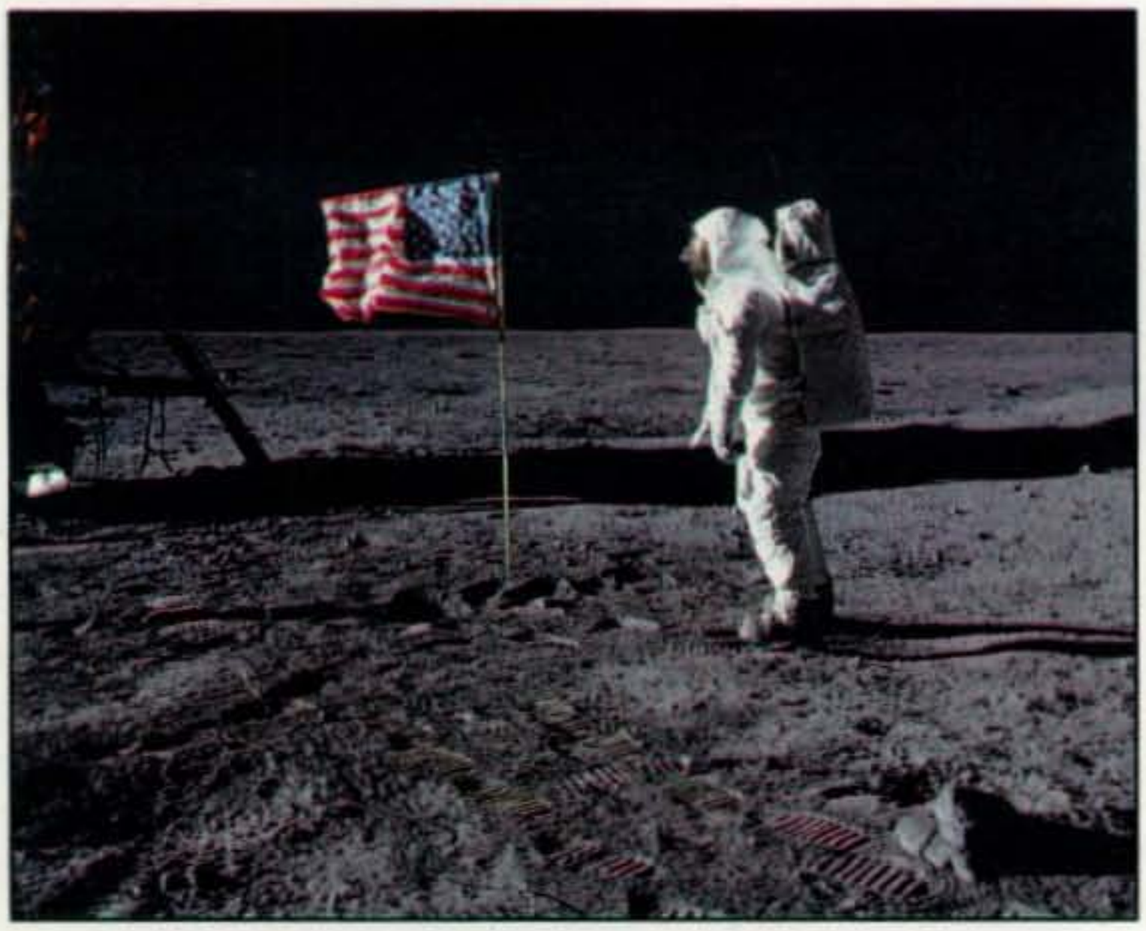
Extending Propagation Distance Records

Working with another station for signal transmission, this technique could be used to extend the recorded maximum range of the bands that are currently propagation limited. This includes 136 kHz and the gigahertz bands. There is a possibility of improvement by synchronizing signals with WWV time ticks. Look up the literature.

Search for Unusual Propagation Modes

Years ago, as a W2, several times I encountered one-way propagation on 10 meters. Once I listened to two South Africans at S9 discussing how dead the band was, then stopping to listen, but not hearing calls from me or several other stations. This lasted for about a half-hour, and then propagation became normal. I have heard central Pacific stations with strong signals with no other signals present, and observed some of the super-stations showing that 10 and probably 6 meters are never really closed, and that there is at least propagation out to 1000 miles or so.

The point is there seem to be one or more unusual propagation modes plus some regular low-intensity ones. In-



Even though we haven't sent anyone with a radio receiver to the moon in three decades, it's still possible for hams on Earth to do research based on both manmade and natural signals reflecting off the lunar surface. (NASA photo)

Jupiter is known to produce radio signals at about 20.1 MHz (see <http://radiojove.gsfc.nasa.gov/>), and the Great Red Spot is thought to be the site of huge ongoing thunderstorms. Can hams detect any static crashes from the lightning (if there are any)? (NASA photo)

vestigation is needed as to when they work, under what conditions, and how we can use them. The question of why they work can come later. Again, the premise can be that they are always present and that weak-signal searches should find them. For this we need some beacons, preferably with high power, operating on a regular schedule—say for the first 5 minutes of each hour—sending long pulses, preferably synchronized to WWV. Reception would be as described above. Some of the possibilities to investigate are trans-equatorial propagation, extended ground wave, atmospheric forward scatter, and the effect of thunderstorm sprites (upward bursts of lightning that go from a cloud toward the *E*-layer) on sporadic-*E*—an example, paths across Florida during the high-probability lightning period each summer afternoon.

An incidental question: Is there enough ionospheric heating during contest activity to cause an increase in the ionization and therefore the MUF (maximum usable frequency)? In other words, do contests *really* create their own propagation, or does the increased activity level let us take advantage of openings that are there but are missed at other times? Equipment is relatively simple—a vertically pointed wide-band antenna, a frequency-hopping transmitter, and a fast-recovery receiver.

The Sun

During active periods, the sun is a strong wide-band emitter. I have heard S9+ solar noise on 10 meters lasting for hours. WWV carries reports of 10-cm noise. Some questions:

- Does the noise on 10, 6, and 2 meters, in particular, have the same pattern as on 10 cm?
- Is the pattern different during quiet and active periods?
- Are the noise spikes synchronized on the several bands?
- What is the relationship between optical and radio events?

More will come to mind upon reading the accounts of solar radio astronomy and solar astronomy in general.

There is some evidence that the solar cycle is related to the existence of planets, although this is based only on correlations and some tenuous conclusions, rather than on a theory of cycle formation. Note that the sun must be considered to be an almost variable star, with only a few percent variation in the visible bands, but enormous variation in the radio bands. If this is true for all stars or even for the spectral classes similar to the sun, it would be worthwhile to measure the noise output of the nearer stars over a period of years. Probably the best region is one of the meter-wave bands. There seems to be only one way to find out: Start the measurements. Note that this method might show close-in planets as well as the giants, which are the only ones shown by current optical techniques.

Simple vs. Complex Investigations

All of the above investigation possibilities are within the capability of a single typical ham station or a pair working together. Let us move to ones which require a super-station, or a club activity, or going to what might be called a super-super installation. All require signal enhancement, measurements over a long time, and probably major effort with large antennas.

The Moon

The moon reflects signals impinging on it, as used in EME. It also reflects natural signals, such as from the sun, and the incidental leakage radiation from the Earth, although these are much weaker. Some questions:

- Does the lunar reflectivity change with solar illumination or solar activity?
- What is the "signature" of the Earth signals as reflected by the moon, with particular attention paid to meter and microwave bands (see the later discussion of SETI)?
- Can the modulation of Earth signals caused by power-supply ripple be detected and resolved, including 25, 50, and 60 cycles, and their second and thirrd harmonics, and the color-scan doublet just above 60 cycles?

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• Can the "quiet hours" associated with the small numbers of transmitters on the oceans be detected?

• Can low-power EME be established by using signal integration and/or known pulse timing?

Jupiter

Jupiter is a source of strong signals, now attributed to synchrotron radiation, and detectable around 15 meters (20.1 MHz). Some questions are:

• Do signal intensity and characteristic change with the position of the inner moons?

• Is there a signal component that varies with Jupiter's rotation?

• Can the spherics associated with storm activity such as the Red Spot be detected?

• Can a way to determine the MUF be developed?

SETI

It seems that there are three ways to search for signals from planets outside the solar system:

• Search for a beacon signal.

• Search for incidental or leakage radiation.

• Search for natural signals that indicate the possibility of planets.

In all of these, it seems that the search can be based on the principles of physics and communication operation that we have found to exist or simply to be useful.

There are roughly a dozen stars, possibly with planets, within a 20 light-year radius sphere, with five being nearly sun-like. It seems reasonable to start with the two close ones 5–12 years away. These are Alpha Centauri and Tau Ceti. Of the farther ones, Sigma Draconis and Delta Pavonis are considered possibilities.

The thought that a SETI beacon would be in the range 1000 to 2000 MHz because of background noise, and tied to a natural signal, seems reasonable. However, the signal should not be at or close to the natural hydrogen signal at 1420.4 MHz, at sub-harmonics or even its harmonics, for a simple reason: The intended and incidental radiation from a high-power beacon would destroy the research usefulness of the frequency. It would seem that some relation not involving a small integer would be chosen. A frequency multiplied by the constant e and divided by pi would seem to be suitable, but there are other simple relations. It might be worthwhile to try 1420.4/pi or e, since transmitters would be simpler. Any repeated signal could be evidence of a beacon. Any repeated pattern, even a simple one such as the Morse number-code, is definitely evidence of intelligence.

Earth itself has been radiating for just over a century, and its signals are therefore detectable out to about 100 light years. By analogy to the history of development, early incidental signals from other civilizations would be low frequency and narrow band. Power-supply noise would be based on the ranges allowed by iron and copper, from 25 to about 150 cycles. Also, signals would be arranged in channels for reasons of standardization and interference control.

Channelization produces a signal at the channel spacing, probably not too many kHz, and power-line frequencies are low. All can be detected by rectifying the output of a wide-band receiver, separating the rectified output into frequency bands using the Fast Fourier Transform computer program and integrating for the observation period. It would seem that good starting choices are the meter bands, say from 6 to 1 meter. Frequencies from 20 to 150 cycles for power signals and channel widths from 1 to 25 kHz for meter-wave bands seem reasonable. With experience, higher bands could be used, although channel widths are probably greater. Power frequencies would remain low.

A possible natural signal is the change in level of transmitted signals due to the presence of oceans between continents. The signal components would be long, multiples of one cycle per local day, but should be relatively strong, since a large percentage of transmissions from a planet are affected.

Super-Super Stations

It doesn't seem likely that an amateur or even a club group can have a really large movable antenna, although there are some amazing sizes. One approach in amateur research has been to "piggyback" on even the largest academic dishes, and this may be possible with a well-thought-out program. However, on the lower frequencies, four arrays pointed vertically and phased can give enough pointing control to be useful. Since the meter-wave bands are reasonable choices for search for channelized signals, standard amateur antenna concepts can be used. The arrays can be a bank of Yagi or helix antennas over a ground screen. Again, look at the literature. While this can be a very large effort, a super antenna can require more work than money.

There is another possibility for increasing the S/N in the experiments that include transmitters. Suppose ten stations are fed from a single-source transmitted pulse, with attention to phase and time delay. Then the output signal can be up to 10 dB greater, and the received signals (if any) also 10 dB larger. Perhaps even 20-dB improvement would be possible with 100 transmitters.

As far as I can see from the amateur regulations, this is perfectly legal if the identification period uses the calls of the individual stations. However, in the frequencies shared with other services, the sharing is based on normal amateur signal strengths. It is probably best if this mode were only used with an experimental license, which can be set up to authorize the experiment in or even outside of assigned amateur bands.

Reports

Suppose you do make an effort in one of these fields, or in another one of your own. Then suppose you do get a positive indication of the phenomena you are searching for. What should you do?

For most, if not all, persons, a goal would be to get credit for the discovery. There are two ways to do this. One is the quick way and is recommended: Read the instructions located at <http://cfa-www.harvard.edu/iau/HowToReportDiscovery.html>. (Note: The capital letters are important. This should be entered exactly as it appears.)This makes a record and gets the news around so others can confirm and even extend what has been done. The guidelines for such announcements can be summarized as what, where, when, and who.

This should always be followed up by a technical article, probably in a technical journal[1] or in an amateur journal (remember that the pre-launch announcement of the first Russian Sputnik was in their popular magazine, *RADIO*). This should be terse but complete. The announcement guidelines are the same, but expanded, and why and how should be added.

Even if you don't get lucky and make a discovery, a technical article can be worthwhile. It can give another person something on which to build, and at the least, you can get an E for Effort. However, if you do make a discovery, the rewards can be fantastic, complete with a place in history. ■

Note

1. For examples of articles in a technical journal by an amateur in the field, see Reber's articles in the *Proceedings of the IRE*, 1940, 28, 68; 1942, 30, 367; 1948, 36, 1215.

60 Great Things About Ham Radio

In celebration of *CQ*'s 60th anniversary in 2005, we've come up with 60 great things about ham radio which we'll bring you each month, five at a time. We're sure you'll have more great things that we haven't thought of, so when we're all done, we'd love to compare our list with yours.—*W2VU*

This month we'll focus on the ways in which ham radio quietly educates you while you're having a good time...

26. Informal way to improve technical skills—Maybe you don't consider yourself a particularly technical person. Maybe you do. Either way, as you do different things in ham radio, you'll find that you need to measure something, solder something, build something, fix something, etc. As you learn how to do what needs to be done, you also learn more about how and why things work as they do (or don't), and before long, you suddenly find yourself helping someone else do something that you needed help with not too long ago.

27. Informal way to improve communication skills—Maybe you're better with a soldering iron than with a microphone. But as you get involved with events and activities, you'll find yourself getting practice in getting a message across clearly and succinctly, and before long, you find that you're a better communicator off the air as well as on the air.

28. Practical uses for high school math–If algebra and geometry seemed like exercises in futility when you were in high school, with no possible application in real life, ham radio lets you put that dusty knowledge to use. If you can attach one end of a wire antenna to a tree at 50 feet, and the other end to the top of a 20-foot pole 75 feet away, how long can the antenna be?

29. Practical uses for high school physics—If your hamming interests extend beyond your local repeater, you're going to need to learn something about propagation, sunspots, satellites, moonbounce, or APRS, and that means you're going to be putting some basic physics knowledge to use. And if you never learned it in school, guess what? You're learning it now! And it will actually make sense because there's an immediate practical use.

30. A good way to learn about virtually any topic—Hams come from all walks of life and know something about just about everything ... and it's not too hard to find someone who knows more than you do about just about anything. And the best thing about hams is that we love to talk and help each other out. No matter what it is you need to learn about, chances are you can find a ham somewhere to help you with it.

We'll be back next month with another installment...

Looking for a mini contest DXpedition you can do in a weekend? Just head for your nearest high spot for July's CQ World-Wide VHF Contest.

Hilltopping in the CQ WW VHF Contest

BY JOHN LINDHOLM,* W1XX
CQ WW VHF Contest Director

Cadillac Mountain in Bar Harbor, Maine is the first spot in the United States where one can see the sun rise. It's also a fantastic VHF location. W1HDQ, legendary former VHF editor for *QST;* WB2WIK, former VHF contest guru for *CQ* magazine; and your present esteemed CQ WW VHF Contest director visited Cadillac often. However, you don't have to go all the way to Maine to experience the joy of "heightened" VHF operating (besides, the mountain is full of those who report on VHF activities, it would seem). There are desirable VHF locations in every area of the country.

Check your local topographic maps for potential VHF operating sites. Look for any location that has a commanding view of the surrounding terrain. This could be anything from a mountaintop to a high spot on the prairie. An electrically quiet spot is most desirable. Be sure that from wherever you choose to operate, you have permission to access the location and conduct yourself in such a way that you will be asked to come back.

For the 2004 CQ WW VHF Contest, Clarke Greene, K1JX, and I ventured out relatively close to home. We drove to Mohawk Mountain in western Connecticut (FN31it). It's one of those drive-to-the-top locations in a state park. The elevation is 1683 feet with a commanding 360-degree horizon. Being close to the high-density Northeast population area, it is close to ideal for a low-effort VHF operation. With other commitments, neither one of us could afford the time and effort to devote 30 hours to operating with high power and monster antennas. Sound familiar?

The objectives were as follows:

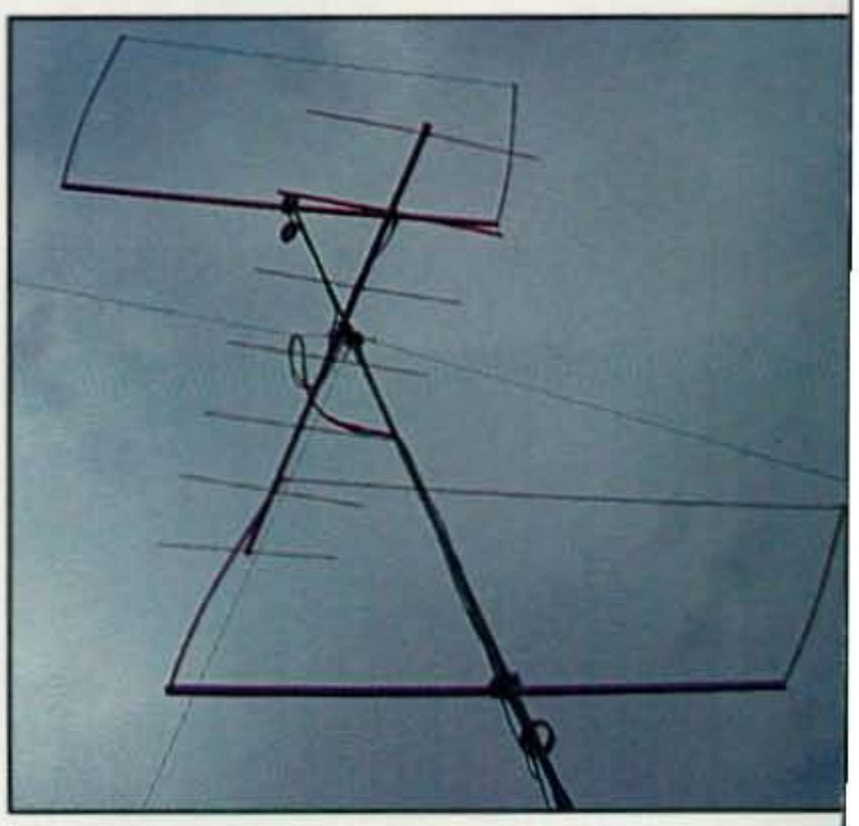
1. Have fun.
2. Operate from a great location where lots of contacts could be made in a limited time.
3. Install the entire antenna system in 20 minutes or less.
4. Use battery power.
5. Have fun!

The real key to meeting these objectives was to do some prior homework on the antennas. That's where K1JX and his expertise with antennas and mast fabrication stepped to the fore. Getting reasonable-size antennas up in the air on a mast without a backbreaking effort was a requirement. The answer was a *fiberglass* mast. We used the 21-foot Wonder Pole, which is a telescoping mast that "grows" from the ground up and was described in "Short Takes," April 2004 *QST*. Check <www.arrl.org> under "Recent Equipment" for the review.

For the 6-meter radiator we opted for the lightweight and easy-to-assemble Stressed Moxon antenna, which was reviewed in March 2004 *QST*. (The Par Electronics SM-50 Stressed Moxon is available from Amateur Electronic Supply, Universal Radio, and the manufacturer.) We had used a single Moxon rectangle in the previous September VHF contest with great success, but this time we stacked two of these to give us gain of 1–2 dB over a 3-element Yagi—without the weight or wind load. With a single 7-element 2-meter Yagi in between, the mast was plenty strong enough to handle the load. Some PVC pipe fittings and nylon tent rope from the local hardware store, a guy ring from RadioShack, and lightweight LMR240 coax easily completed the antenna installation, which was simple and light enough for even a single op to handle. The antenna installation was completed in less than 20 minutes.

Results? Running just a single FT-847 at 100 watts on 6 meters and 50 watts on 2 meters, we took turns operating. In so-so conditions in the 2004 CQ WW VHF Contest we logged 139 QSOs and a grid multiplier total of 40 in just a little over four hours of operating. Most of this was accomplished on 6 meters, with an even 100 QSOs and an opening hour rate of 52. Not bad for a pretty simple setup.

The 21-foot fiberglass Wonder Pole with two 6-meter Moxon rectangle antennas and a 7-element 2-meter Yagi. The antennas are rotated "Armstrong-style" out the vehicle's window for a quick fix on direction. (Photo by Clarke, K1JX)



The 6-meter Moxon rectangles are separated by 10 feet. The coils of coax at each antenna feed point act as RF choke baluns. (Photo by K1JX)

The CQ WW VHF Contest now recognizes such low-commitment QRP portable operations with the "Hilltopper" category. See the announcement for the 2005 contest elsewhere in this issue. You folks with 6- and 2-meter capability in your newer HF radios owe it to yourselves to give this type of operation a try. Good luck! ■

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- *3 core choke balun*
- *6 position antenna switch*
- *True peak reading meter*

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

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

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

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with Eimac® 3CX1200A7 tube

AL-1200

$2645

Suggested Retail

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

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AL-82

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

Desktop Kilowatt

with Amperex® 3-500G tube

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

AMERITRON *no tune* Solid State Amplifiers

500 Watt Mobile Amp

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

600 Watt FET Amp

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

Flat Mobile SWR/Wattmeter

AWM-35, $159.95. 1⅝ inch thick, flat mounts on dashboard. Remote sensor, 25 ft. thin cable. True peak reading. Cross-needle, lighted. 1.5 kW, 1.8-30 MHz. *High-SWR* LED.

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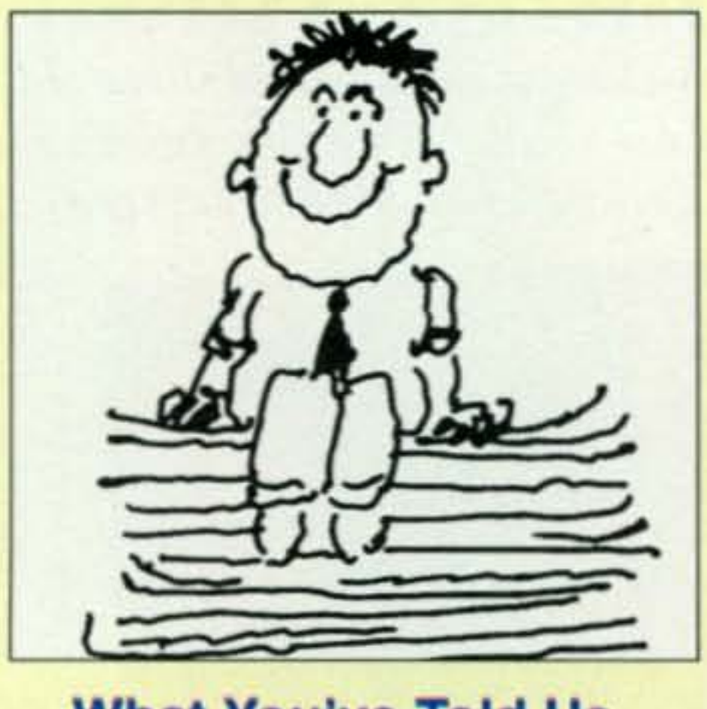

What You've Told Us...

"Hams just don't build stuff anymore." "Today's hams are all appliance operators, not like in the good old days." We've all heard it, and we all tend to believe it. But guess what? At least among *CQ* readers, it simply isn't true. Our March survey questions asked about your own experience in building and homebrewing, and the heavier-than-usual response stands traditional wisdom on its head.

Nearly two-thirds of you (62%) say you consider yourself builders or homebrewers. And it's no surprise that 91% of you have built an antenna. But 82% of you have built a station accessory, 62% have built a transmitter, 50% a receiver and 37% a transceiver! In addition 52% of you have built some furniture for your shack, 22% have built a computer, 17% a computer network and 32% built something that wasn't on our list. Only 3% report building nothing.

The results also show most of you have been building stuff for a long time, and *are continuing to build today*. Three-quarters of you report building your first ham project more than 20 years ago ... but 61% say their most recent project was built within the past year, and another 19% have built something within the past five years (that's 80% altogether). And (whew!) magazines are still your primary source for project designs. Many of you get designs from multiple sources, so the totals here far exceed 100%: Designs in magazines: 70%; kit instructions: 68%; designs in books: 65%, self-designed: 58%; designs posted online: 18%; other: 14%.

So the next time somebody starts griping that hams don't build anything anymore, show them this survey and ask them when they're getting started on *their* next project!

Our free subscription winner this month is Chris Bindrim, KE7GZ, of Athens, Tennessee.

Reader Survey
June 2005

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

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

This month, we'd like to get a sense of your feelings regarding the ARRL's Field Day event.

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

1. Have you ever participated in Field Day?
Yes 25
No 26

2. How frequently do you participate in Field Day?
Every year 27
Most years 28
Sometimes 29
Rarely 30
Never 31

3. Are you a member of a club that runs a Field Day operation?
Yes 32
No 33
Don't know 34

4. What is (or has been) your role in Field Day operations (circle all that apply)?
Planning 35
Setup 36
Operating 37
Logistics (cooking, etc) 38
Public relations 39
Socializing 40
Tear-down 41
None 42

5. In the past 3 years, how effective has YOUR Field Day group been in the following areas:

a. Scoring points
Very effective 43
Somewhat effective 44
Not particularly effective 45

b. Building emergency preparedness
Very effective 46
Somewhat effective 47
Not particularly effective 48

c. Promoting amateur radio to the public
Very effective 49
Somewhat effective 50
Not particularly effective 51

d. Promoting amateur radio to government officials
Very effective 52
Somewhat effective 53
Not particularly effective 54

e. Building social cohesion within your group
Very effective 55
Somewhat effective 56
Not particularly effective 57

f. Welcoming new operators and visitors to your operation
Very effective 58
Somewhat effective 59
Not particularly effective 60

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

The ARD9000 makes Digital Voice FUN and AFFORDABLE!

Hearing is Believing!

Digital voice could be the biggest revolution in HF radio since SSB! All over the world, hams have been discovering how much fun it is to work HF without background noise.

AOR set the pace in this breakthrough technology with its ARD9800. Now, in response to worldwide demand, AOR has developed the ARD9000 which makes digital voice communications even more affordable.

AOR's digital voice technology delivers audio quality you have to hear to believe. Whether you are working digital voice across state lines or across an ocean, amazing doesn't seem strong enough to describe it.

With an ARD9000, it's easy to convert existing HF analog transceivers to work digital voice with NO transceiver modifications. The ARD9000 automatically detects a digital signal and decodes it, so you also maintain full analog capabilities. Whether a contact comes in as digital or analog, the ARD9000 can handle it.

Try it yourself!

You'll be amazed at how much fun it is to work ham radio in digital voice mode.

- NO transceiver modifications necessary
- Digital voice communications using existing analog transceivers
- Works on Single Side Band (SSB) mode.
- Automatic digital receive
- Optional interface cables for most popular transceivers
- Built-in high grade Vocoder (AMBE)
- Built-in FEC error correction
- Compact unit. Easy to operate.
- Utilizes a uniquely designed high performance DSP engine
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Be sure to check the website at www.aorusa.com for FAQs, links to user groups and more!

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Announcing:

The 2005 CQ World-Wide VHF Contest

Starts: 1800 UTC Saturday, July 16, 2005
Ends: 2100 UTC Sunday, July 17, 2005

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. All antennas used by the entrant must be physically connected by wires to the transmitters and receivers used by the entrant. Only the entrant's callsign may be used to aid the entrant's score.

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.

Unique, handsome plaques will be awarded to the highest scoring stations. For more information on the CQ VHF Contest Plaque Program see <http://www.cq-amateur-radio.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, 2005 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.com>. Subject line: Callsign [used in the contest] only.

Those using paper logs are urged to utilize "web forms," which allows you to transcribe your logs for entry on-line and automatic Cabrillo submission. Web forms can be found at <http://www.b4h.net/cabforms/cqwwvhf_cab.php>.

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 <vhf-questions@cqww.com>.

MFJ *Balanced Line* Antenna Tuner

Superb balance . . . Very wide matching range . . . Covers 1.8-54 MHz . . . Cross-Needle SWR Wattmeter . . . Handles 300 Watts . . . Compact size . . .

The MFJ-974H is a* fully balanced true *balanced line antenna tuner. It gives you superb current balance.

Johnson Matchbox

For decades, the Johnson Matchbox has been the standard of comparison for balanced line antenna tuners. But, it had a severely limited matching range and covered only 80, 40, 20, 15 and 10 Meters.

***The** MFJ-974H is its successor*. It meets today's needs and even surpasses the Johnson Matchbox outstanding performance.

Everything You Need

The MFJ-974H gives you excellent current balance, very wide matching range(12-2000 Ohms) and covers 1.8 through 54 MHz *continuously* including all WARC bands, 160 Meters, 6 Meters and the new 60 Meter band. Handles 300 Watts SSB PEP and 150 Watts CW.

Tuning is fast and easy - - just three tuning controls. You can adjust for highly efficient broadband low-Q operation or use higher Q when you encounter extreme loads.

A large three-inch lighted Cross-Needle SWR/Wattmeter lets you read SWR, peak or average forward and reflected power *all at a glance* on 300/60 or 30/6 Watt ranges.

A ground post is provided to ground one output terminal so you can also tune random wires and coax fed antennas.

Compact 7½Wx6Hx8D in. fits anywhere.

Tunes any Balanced Line

The MFJ-974H tunes any balanced lines including 600 Ohm open wire line, 450/300 Ohm ladder lines, 300/72 Ohm twin lead - - shielded or unshielded.

Superb current balance minimizes feedline radiation that can cause troublesome TVI /RFI, painful RF bites, mysterious RF feedback problems and radiation pattern distortion.

Excellent Balance, Excellent Design

The MFJ-974H is a *fully balanced* wide range T-Network. *Four* 1000 Volt air variable capacitors are gear driven. A high-Q air wound tapped inductor is used for 80-10 Meters with separate inductors for 6 and 160 Meters. The tuning components are mounted symmetrically to insure electrical balance.

A 1:1 *current* balun is placed on the low impedance 50 Ohm input side to convert the balanced T-Net-work to unbalanced operation. An efficient balun is made of 50 ferrite beads on RG-303 *Teflon*™ coax to give very high isolation. It stays cool even at max power.

MFJ-974H
$199.95

Balanced Line = Extremely Low Loss

Balanced lines give extremely low loss.

Doublet, horizontal loop, vertical loop, quad, double extended Zepp, Lazy H, W8JK antennas all give efficient multi-band operation when fed with balanced lines.

6-80 Meter Balanced Line Tuner

MFJ-974
$179.95

MFJ-974, $179.95. Same as MFJ-974H but for 6-80 Meter operation (no 160 Meters).

160-6 Meters All Band Doublet Antenna

MFJ-1777, $49.95. 102 feet doublet antenna covers 160-6 Meters with balanced line tuner. Super strong custom fiberglass center insulator provides stress relief for 450 Ohm ladder line (100 feet included). Authentic *glazed ceramic* end insulators. Handles 1500 Watts.

MFJ *High Current* DC Multi-Outlet Strips

Choose super versatile 5-way binding posts AND/OR Anderson PowerPole® connectors

Anderson PowerPole® is a registered trademark of Anderson Power Products.

Provide multiple high current DC outlets for transceivers and accessories from your main 12 VDC power supply – keeps you neat, organized and safe. Prevents fire hazard. Keeps wires from tangling up and shorting. Outlets are fused and RF bypassed.

All MFJ DC power strips have *built-in* six foot, eight gauge, flexible color-coded cable with ring tongue terminals -- *no extra cost*. *RF-tight* aluminum cabinet has mounting ears and ground post with wing nut.

Choose MFJ's *super versatile* super heavy duty 5-way binding posts (spaced for standard dual banana plugs) and/or *Anderson PowerPole®* outlets.

Each *Anderson PowerPole®* is individually fused as needed. Standard color coded automobile fuses plug in externally. Extra *PowerPole®* connectors, contacts, fuses are included at *no extra cost*.

Versatile 5-Way Binding Posts

MFJ-1118
$74.95

Power two HF and/or VHF rigs and six accessories from your main 12 VDC supply. *Built-in 0-25 VDC voltmeter*. Two pairs 35 amp 5-way binding posts, fused and RF bypassed for transceivers. Six pairs RF bypassed binding posts with master fuse, ON/OFF switch, and "ON" LED provide 15 Amps for accessories. 12½x2¾x2½ in.

All PowerPoles®

MFJ-1128
$99.95

12 outlets, each fused, 40 Amps total. Three high-current outlets for transceivers. Nine *switched* outlets for accessories. Mix and match in-cluded fuses as needed (one-40A, one-25A, four-10A, four-5A, three-1A fuses installed). *Built-in 0-25 VDC Voltmeter*. Includes *extra* 12 pairs of *PowerPole®* contacts and *extra* 10 fuses (2 each: 1, 5, 10, 25, 40A) -- *no extra cost*. 12Wx1¼Hx2¾D in.

MFJ-1126
$79.95

8 outlets. each fused, 40 Amps total. Factory installed fuses: two 1A, three 5A, two 10A, one 25A, one 40A. *Built-in 0-25 VDC Voltmeter*. Includes *extra* 6 pairs of *Anderson PowerPole®* contacts and *extra* 5 fuses (1, 5, 10, 25, 40A) -- *no extra cost*. 9Wx1¼Hx2¾ inches.

PowerPoles® AND 5-Way Binding Posts

MFJ-1129
$109.95

The best of both worlds! ***10 outlets, each fused, 40 Amps total.*** Three high-current outlets for rigs -- 2 *PowerPoles®* and 1 versatile high-current 5-way binding post. Seven *switched* outlets for accessories (20A max) -- 5 *PowerPoles®* and 2 versatile binding posts. Mix and match included fuses as needed (1- 40A, 2-25A, 3-10A, 3-5A, 2-1A installed). *Built-in 0-25 VDC Voltmeter*. Includes *extra* 7 pairs of *PowerPole®* contacts, and 10 fuses (2 each,1,5,10, 25, 40A) -- *no extra cost*.12½Wx1¼Hx2¾D in.

MFJ-1124
$59.95

6 outlets, each fused, 40 Amps total. Four *PowerPoles®* and two high-current 5-way binding posts, Installed fuses: 1-40A, 2-25A, 2-10A, 1-5A, 1-1A. Includes 4 pair *PowerPole®* contacts, and 5 fuses -- *no extra cost*.

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MFJ . . . The World Leader in Ham Radio Accessories!

How can you get the benefits of digital signal processing on an older rig that doesn't come equipped with DSP? Try an add-on audio DSP system. WB6NOA reviews Heil Sound's Clearspeech® DSP Speaker System.

CQ Reviews:

The Heil Sound ClearSpeech® DSP Speaker System

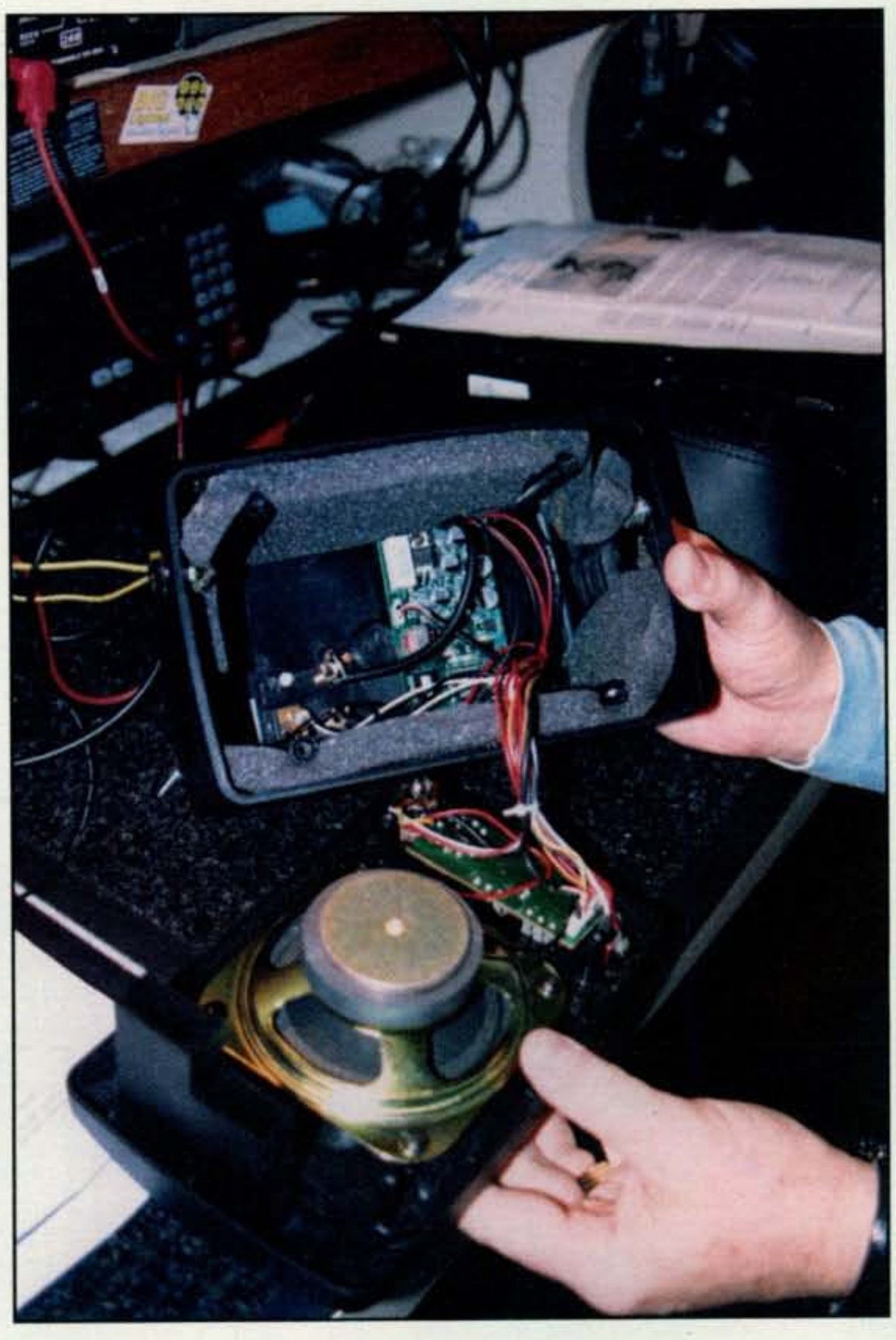
BY GORDON WEST,* WB6NOA

Imagine your old TS-520 or similar vintage transceiver sorting through the QRN and pulling out copyable CW as well as a brand new $1500 HF base station. If you have the powerful capabilities of digital signal processing (DSP), your old rig running DSP in the audio section will give you some remarkable success. Sure, the multi-thousand-dollar new HF rigs with DSP down in the IF can do a better job, but listen for yourself to how well a plug-in DSP speaker system does the job in hushing the rush of constant background noise, notching out heterodyne whistles, and achieving faithful audio output of the desired station as you switch DSP in and out.

The well-known brand name "ClearSpeech" is a trademarked and copyrighted name of DSP technology, owned and patented by Noise Canceling Technologies, NCT Group, in England. The Heil Sound ClearSpeech DSP speaker sys-

*CQ Contributing Editor, 2414 College Dr., Costa Mesa, CA 92626
e-mail: <wb6noa@cq-amateur-radio.com>

The Heil Sound version of the ClearSpeech® audio DSP speaker system features controls for volume, tone, and four levels of digital signal processing. (Photos by the author)



An inside view of the Heil Sound ClearSpeech unit shows a big speaker with a huge magnet to produce very high volume when needed.

tem is built under license agreement with the NCT Group and includes subtle improvements to what has been a popular internal board for other manufacturers' products.

How It Works

The proprietary digital-signal-processing board translates the incoming analog audio from your HF or VHF/UHF SSB transceiver and passes it to the analog-to-digital (A/D) converter. There, the modern DSP microprocessor chip handles up to two billion operations per second, all in one clock cycle real time. The chip has been preprogrammed to include filtering, noise reduction, heterodyne tone near-elimination, and then back out the enhanced signal to the digital-to-analog converter, which will faithfully reproduce the desired audio, such as voice, data, or CW. That is one smart chip. Think about how it can subtract an annoying constant tuner-upper carrier, yet allow an interrupted carrier signal such as CW to freely get scrubbed of noise and passed through to the outboard speaker.

Additional Features

Bob Heil comments, "We wanted to offer hams more technology than what they have heard before in a ClearSpeech system, and with the new Heil ClearSpeech DSP speaker system, there are some dramatic improvements over what we have seen, *and heard,* in the past!" Features of the Heil system include:

- 5-watt audio amplifier
- Dual-color LED level input monitor indicator
- DSP speaker volume level control
- Audio equalizer tone control
- Rotatable switch four-level DSP control
- DSP bypass position
- Stereo headphone jack at DSP output level
- Major-size speaker with ported base response
- Big speaker magnet with 1/2-inch voice coil
- Multiple RFI internal bypass circuits

Bob Heil, K9EID, seen here using his ClearSpeech system (as well as his Classic mic), says his version offers several improvements to the "standard" ClearSpeech system.

The mounting bracket on top doesn't come off easily (even though it looks like it should). Heil says he may consider changes in the mounting system in the future but notes that most customers are happy with it as is.

- External (additional) speaker output
- Common 12-volt DC center-pin-positive power plug
- RFI protected signal input common miniature plug
- Power and audio patch cables supplied

"There are also some secret improvements to the internal DSP circuits I won't divulge, but you'll hear the results when you compare all of the improvements I have made," says Heil, smiling. He was quick to point out that suggestions from ham beta testers have led to even greater audio output for ear-blasting, undistorted reception in noisy diesel cabs, even with the DSP turned off.

"As a base-station DSP speaker, we are talking 110 dB of audio output before the green LED turns red at transceiver volume distortion threshold. All of my speakers now pump out almost twice the volume from the 5-watt, built-in amplifier, long before the green LED begins to flicker red," adds Heil. This was clearly *heard* during our interview, and easily *seen* when monitoring audio out on the Simpson 260 voltmeter on AC, 2.5 volts.

"The enormous volume will make for some great Boy Scout demonstrations of ham radio and DSP noise elimination," comments Brad Russo, KB6GPM, who is heavily into ham radio and Scouting and a lead salesman for Ham Radio Outlet. "The custom-designed speaker, along with the adjustable tone control, really adds punch to a base-station speaker system," adds Russo.

For mobile applications, Bob Heil is considering all suggestions on the supplied top-mounted bracket that currently swivels on top, but does not detach nor allow for tail and bottom speaker mounting. You would think that with the knurled knobs the bracket would come off, but it won't. If you really want to develop your own bracket system, though, take a long-shank Phillips-head screwdriver, remove the four back screws, and the system opens up to where you can get at the back of the knurled knobs to remove the existing bracket.

"I may come up with alternate mobile-mounting techniques, but as it is now, almost everyone seems satisfied with hanging it with the supplied bracket in their vehicle," adds Heil.

When it comes to DSP noise-reduction satisfaction from the ClearSpeech speaker system, our team of testers gave it high marks, with DSP setting #3 (out of four maximum) being the ideal level to reduce constant background crackle, to enhance voice or incoming data, and for the slick beat-tone cancelling capabilities to minimize heterodynes. However, for mobile radio operators new to DSP noise elimination, there may be more education needed on what audio DSP can and cannot do.

"Audio digital signal processing for noise elimination is no match for spark-plug pulses, power-line crackle, and the common ignition noise sounds found in many vehicles," adds Brad Russo. "Any type of digital signal processing—even deep down in the IF—won't help eliminate many types of man-made static. This may be more the job of the transceiver's adjustable noise-blanking and noise-limiting circuits. But for just hushing atmospheric background noise, digital signal processing is at its best, especially with the Heil speaker," adds Russo.

Bottom Line

The new Heil DSP ClearSpeech speaker sells for around $199, and buyers will be very impressed with the rich audio characteristics that come out of the extra-large speaker on the inside. If you already have your own favorite big external speaker, simply plug it into the back and enjoy the added benefits of audio digital signal processing.

For more information or to order, contact Heil Sound Ltd., 5800 North Illinois, Fairview Heights, IL 62208 (telephone 618-257-3000; on the web <www.heilsound.com>). ■

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MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
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	2⅛ x 7 x 9⅝	4.2
SS-30	25	30	3¼ x 7 x 9⅝	5.0

MODEL SS-25M

DESKTOP SWITCHING POWER SUPPLIES WITH VOLT AND AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SS-25M*	20	25	2⅛ x 7 x 9⅝	4.2
SS-30M*	25	30	3¼ x 7 x 9⅝	5.0

MODEL SRM-30

RACKMOUNT SWITCHING POWER SUPPLIES

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

WITH SEPARATE VOLT & AMP METERS

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

MODEL SRM-30M-2

2 ea SWITCHING POWER SUPPLIES ON ONE RACK PANEL

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

WITH SEPARATE VOLT & AMP METERS

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

MODEL SS-12SM/GTX

MODEL SS-10EFJ-98

CUSTOM POWER SUPPLIES FOR RADIOS BELOW

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

CIRCLE 134 ON READER SERVICE CARD

NEW SWITCHING MODELS

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

*ICS – Intermittent Communication Service

Rigs used in portable or mobile settings are subject to greater variations in power supply than those used only in fixed stations, and a greater degree of protection is required but often not provided. AD5X's circuit for his IC-703 can easily be used by virtually any portable radio.

Voltage Conditioner for the IC-703

BY PHIL SALAS,* AD5X

I recently acquired an ICOM IC-703. The close-out sale on them was just too good to pass up (ICOM has dropped the IC-703, but will be selling the IC-703+). Now while the IC-703 is designed for fixed, portable, and mobile operation, like most rigs out there it doesn't have over-voltage or reverse-voltage protection. This isn't that big a deal for fixed-station operation, since the voltage source is changed very infrequently and remains pretty stable. However, portable and mobile applications do require you to be a little more careful of the voltage environment to which you subject your radio. Also, it has been reported that some switching power supplies put out high transient voltage spikes when turned on—spikes that are higher than the maximum voltage allowed by the IC-703. However, for very little outlay in cost and effort, you can do a good job of protecting your IC-703 from unforeseen and unintentional powering accidents that can be very destructive.

ICOM also uses large 1 1/4"-long in-line fuses in the line cord. I felt that I could incorporate this fusing, plus voltage protection, in a small enclosure that would take up no more room than the existing fuses and fuse-holders. Finally, I wanted this voltage conditioning unit to interconnect to my IC-703 and power supply or batteries with Anderson PowerPole connectors.

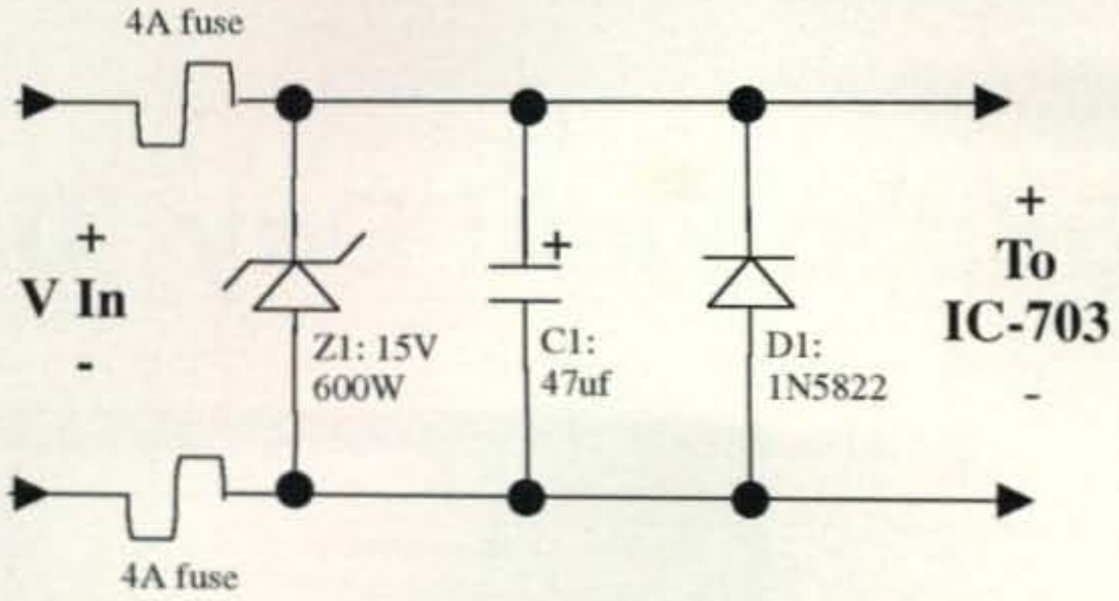
The Electrical Design

Fig. 1 is the schematic of the power-conditioning circuit. The heart of this cir-

Photo A. Internal wiring of the voltage conditioner. The Anderson PowerPole has been pushed aside to allow you to see better.

Photo B. Final assembly of the conditioner, compared with the original fuse-holder and fuse assembly.

*e-mail: <ad5x@arrl.net>



Parts List

Qty.	Description	Source	Price ea.
2	4-amp 5 × 20 mm fuse	Mouser 5765-35004	$0.25
2	5 × 20 mm fuse holders	Mouser 441-R345A	$0.93
1	47 µF 25V elec. capacitor	Mouser 647-UVR1E470MOD	$0.18
1	1.97" × 1.38" × 0.67" box	Mouser 546-1551GBK	$1.03
1	SR-503 5A Shottky diode	Mouser 831-SR503	$0.78
1	15V/600W volt. prot. device	Mouser 511-P6KE15A	$0.32
2 pr	Anderson PowerPole	West Mountain Radio	$1.00

Fig. 1– Schematic of the IC-703 voltage-conditioner circuit.

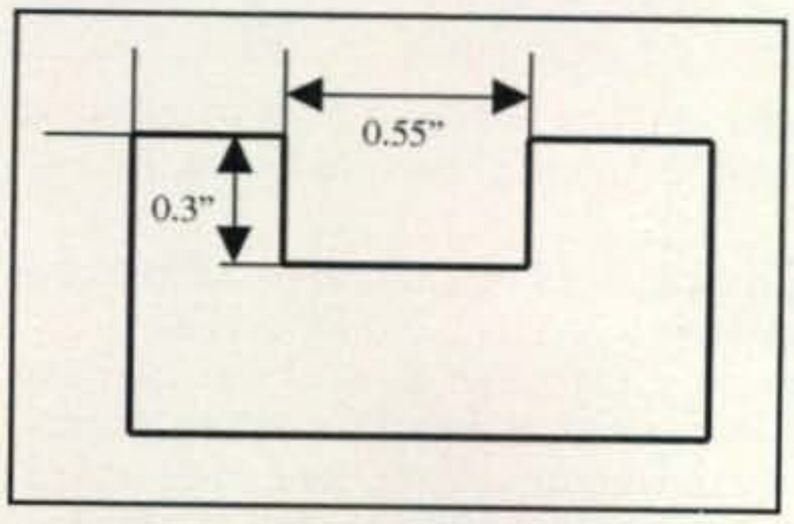


Fig. 2– Side view of PowerPole cutout. (See text for details.)

cuit is the 15-volt 600-watt voltage transient-suppressor diode and the 5-amp Shottky diode. The transient-suppressor diode will take care of any voltage transients above 15 volts (and can sink up to 100 amps of current for 10 milliseconds), and the 5-amp Shottky diode provides reverse voltage protection by blowing the fuse (probably not needed, since reverse voltage on the transient suppressor should do the same thing, but the Shottky diode is cheap insurance). Low-frequency capacitive filtering is also included, and 5 × 20 mm fuses are used because of their small size and availability.

Internal Wiring and Assembly

The circuit is housed in a 1.97" × 1.38" × 0.67" plastic box. A PowerPole connector mounts directly on this box and interfaces to the IC-703 pendant DC cable. A PowerPole terminated DC-input pendant cable connects to the power supply or battery. The PowerPole cutout dimensions (fig. 2) ensure that the connector slides securely in place on the box. The rectangular cut-out is easily made with a hobby knife or nibbling tool.

Using #4 hardware, mount the two 5 × 20 mm fuse holders as close as possible to the box sides (see fig. 3). You must slightly trim the width and length of the fuse-holders so they don't interfere with the box mounting posts and the PowerPole connector. Trimming is easy, as the fuse-holder base is soft plastic. You can also use a larger project box. Wire up everything and snap the two fuses into place. Photo A shows the internal wiring with the PowerPole connector pushed out of the way. Photo B shows the final assembly compared to the original fuse holders provided with the IC-703.

Summary

I've described an in-line voltage-conditioner assembly for the IC-703. This compact assembly provides over-voltage and reverse-voltage protection, fusing, and additional DC power-line filtering. Build one of these units for your IC-703 or similar radio and ensure that your rig is protected from inadvertent power-supply mistakes. ■

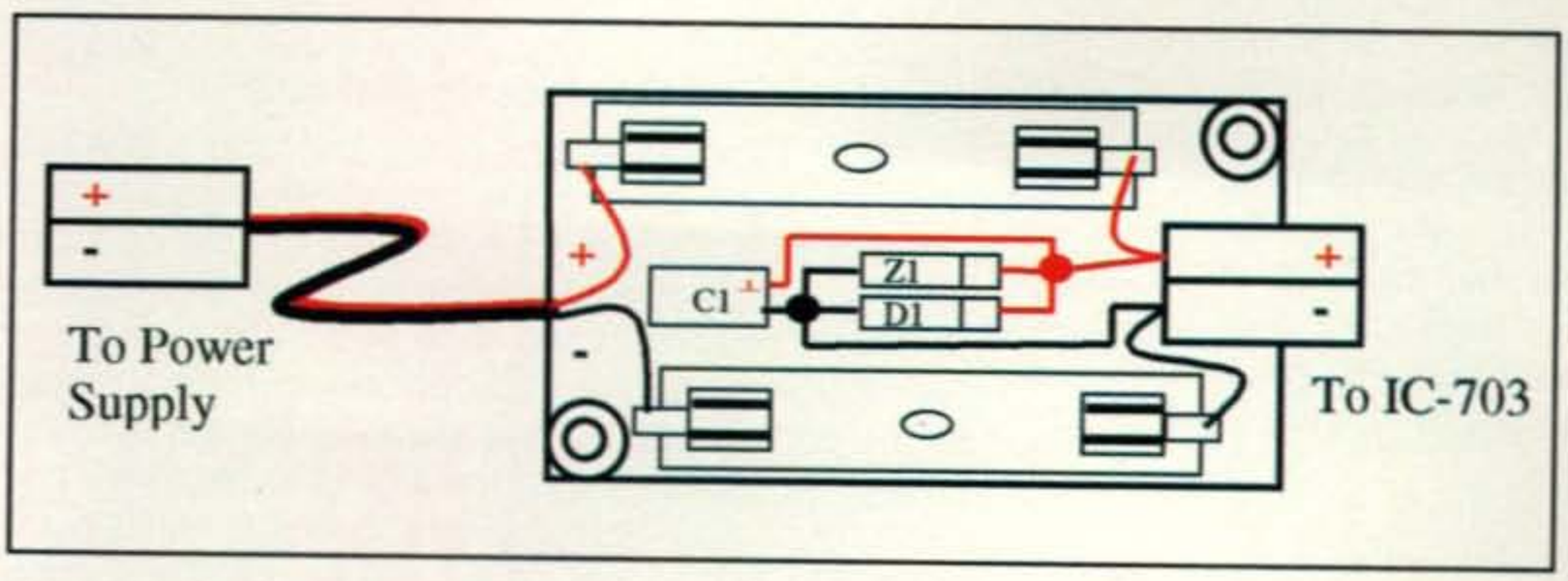


Fig. 3– Internal component mounting.

public service

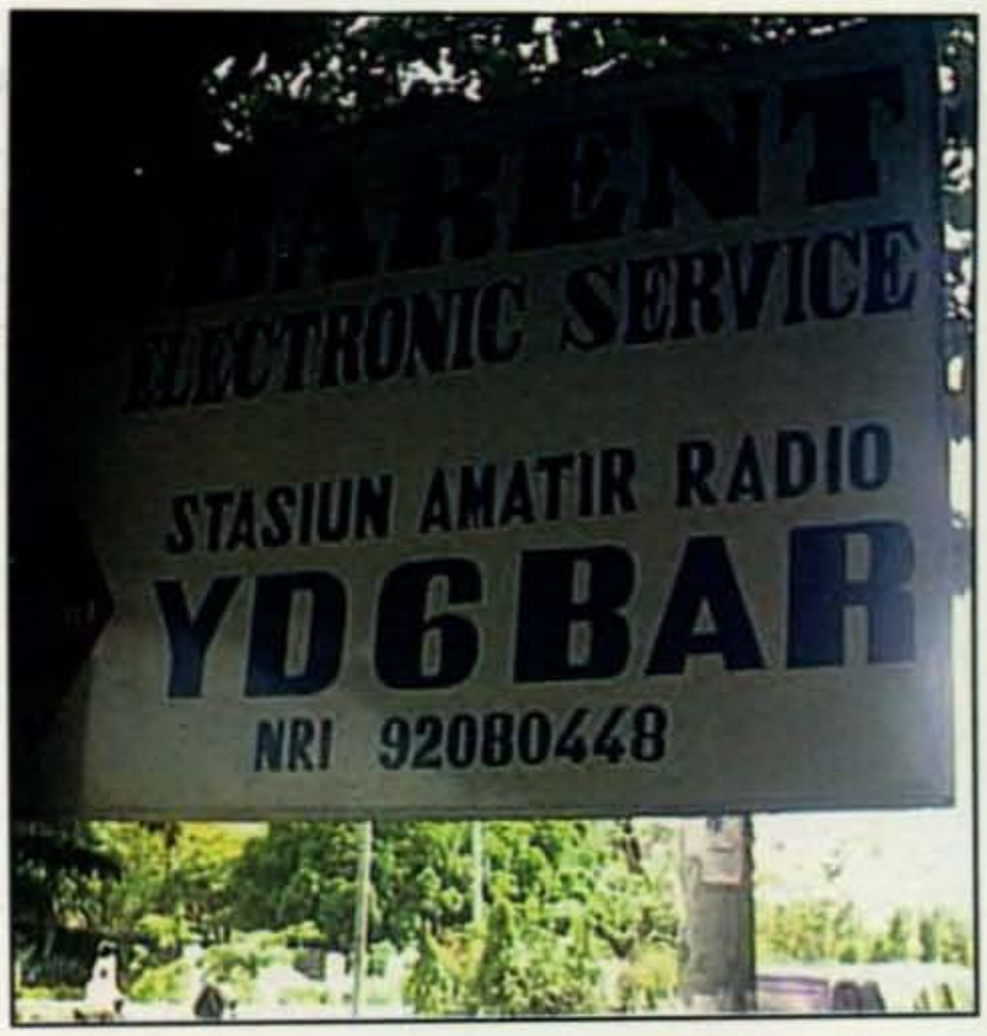
BY BOB JOSUWEIT,* WA3PZO

Tsunami 2? Topoff 3 Leads to Field Day '05

It was late March. If you were tuning across the broadcast bands you couldn't help but hear the latest news on Terri Schiavo and her feeding tube. Yet half a world away, a great 8.7 earthquake struck off of the west coast of Sumatra Island in Indonesia. This region was just barely recovering from the massive earthquake and tsunami that had struck the Indian Ocean less than a hundred days before.

News reports indicated that there was no tsunami this time, but that Nias Island off the coast of Indonesia was devastated by the massive quake. However, as we went to press, we received word that there was an 18-foot high wall of water that hit Nias early on March 29. Within hours, ORARI, the Organization of Amateur Radio for Indonesia, alerted its members to be prepared to help Nias. Nets were established on 75, 40, 20, and 15 meters as well as VHF. The first amateur radio emergency team to move included three hams, one of whom was a doctor. They flew to the island and then took a helicopter to Gunung Sitoli, the largest city on Nias.

This month we'll take a look at amateurs again responding to a hard hit area. We'll also look at some of the early reports of amateur radio participation in the "Topoff 3" terrorism preparedness exercise, and finally, it's June so Field Day is just days away.



Ham radio is found in even the most devastated areas. (Photo courtesy of Earl Campbell, N8TV)

Tsunami 2?

Nearly nine days after the March earthquake struck, the Indonesian Amateur Radio Emergency Services (ORARI-ARES) dispatched Syawaluddin Lubis, YC6ROD, after it was reported that there was no electricity or public communication in the remote area. The area had also been hit with earthquake aftershocks since the main tremor. Using only battery power, Lubis reported via the local VHF linked repeater system that, according to some "local refugees, their coastal village—Tabuyung, Batang Gadis District, Madina County, North Sumatra Province—was swept by 18 foot (6 meter) high sea water" in the early morning hours of Tuesday, March 29. *CQ* was unable to confirm the report independently.

Wyn Purwinto, AB2QV, told *CQ* that Lubis said that as a result of the tsunami, one village resident died, 411 families lost their houses, 30 additional homes were severely damaged, and 71 homes escaped damage. More than 632 refugee families were living in tents about 4 miles away from Tabuyung village. Initial reports indicated that over 300 people were killed by the earthquake.

Purwinto told *CQ* that local hams set up a station at the Indonesian Public TV's tower location near the city of Gunung Sitoli. They were able to use several 2-meter repeaters as well as one that was part of a linked system. The hams maintained contact with the ORARI's District 6 command post in Medan, Sumatra. Reports indicated that the power, telecommunication, and transportation infrastructure was damaged or destroyed. There was a limited supply of fuel at their location. It was decided to limit the ARES contacts to every two hours. ORARI members determined there was a bigger generator at the TELKOM (Department of Public Telecommunication) office that could be used by the ARES team. Once they moved the station, there was plenty of fuel.

Operations Difficult

Not only was fuel a problem, but food and water were in short supply. Several of the ARES teams deployed worked over a day with little or no food. Even radio operators were in short supply. Several reports were received from non-hams who picked up the microphone to report conditions to the net control station. These stations were immediately assigned calls to help with the emergency traffic. Additional arrangements were made to send solar cells for power to the ARES team in Gunung Sitoli, Nias.

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

Members of ORARI provide emergency communications for Nias. (Photo via N8TV)

International Agencies Already in Place

Earl Campbell, N8TV, has been volunteering with the International Red Cross in Banda Aceh, Indonesia since the first tsunami hit. He told Purwinto that he was heading to Simeulue Island to set up ham radio communications for the local government. A few days later, the U.S. Navy hospital ship *USNS Mercy* and the supply ship *USNS Niagara Falls* arrived off the coast of Nias Island. Mark Wolf, N7YMW, a technician with the *USNS Mercy*, contacted Purwinto to get an update on the situation in Nias. Wolf was able to make contact with YB8ZAH in Gunung Sitoli. He also coordinated efforts with YB6ZAO, which was operated by the Global Rescue Network, a mixed group of volunteers from Jakarta. The group included hams, doctors, rescuers, paramedics, environmental conservationists, and others. The GRN has some experience in emergency services, such as post-tsunami relief effort in northern Sumatra.

Topoff 3: Hams Receive High Praise

back in the U.S., the nation's largest terrorism preparedness exercise took place in early April in New Jersey, Connecticut, and Washington, D.C. Homeland Security Secretary Michael Chertoff said there were more than 10,000 participants from 27 federal agencies, plus more than 200 state and local governments and private-sector organizations. He said, "Topoff 3 includes everybody from cabinet secretaries, international partners, governors, mayors, city managers, local fire and police, search-and-rescue personnel, public-health and public-communications officials, and the private sector."

Planning started early in Connecticut. Indications were that operators would be needed at predetermined locations where radios and antennas were already set up, and at temporary fixed locations that would require hams to supply a 25-watt radio. In addition, several operators were needed who would shadow key officials or provide mobile radios that they could operate in a Red Cross vehicle. Power would be taken from a cigarette-lighter jack or straight from the vehicle battery. Operators were reminded that these vehicles had fiberglass roofs. Most people use duct tape to tape a pie pan or some other reasonable-size metal surface to the roof and then put their mag mount on that.

New London, Connecticut was chosen as a location for Topoff 3 because it has a submarine base, a nuclear power plant, an Interstate 95 bridge, and a large corporate headquarters. The exercise confronted "us with real-life circumstances that will allow us to determine if our plans work as well in practice as they do on paper," said Governor M. Jodi Rell.

Communications a Key Test

Communications had been a problem during the earlier Topoff 2 drill. In fact, it was noted that amateur radio had to supply key communications when normal means failed. Drill planners said Topoff was the best laboratory they could have to test communications. "You can look at interoperable communications abstractly," said one official. "It's another thing when you have police officers and firefighters on the ground trying to communicate and not being able to talk." Just prior to the drill there was a threat in Connecticut of severe flooding. While the flooding didn't develop in New England, there was severe flooding in New Jersey and Pennsylvania along the Delaware River. As the drill began, portions of the New Jersey state government complex in Trenton were closed because of high water.

ORARI operator Herman Rangkuti, YC6IQ, operating YB6ZAH in Gunung Sitoli, Nias Island. (Photo courtesy of N8TV)

An unidentified Indonesian amateur radio operator's home was reduced to rubble because of the March earthquake. (Photo courtesy of N8TV)

Connecticut ARES received high praise from the American Red Cross. "Operators were there when we needed them and messages got to where they were needed," said Mario Bruno, Director of Emergency Services. "We have learned a lot about what ARES can really do when things get messy, and Topoff 3 has been a clear example of how complicated a disaster can get, and how ARES is always there to provide the support that is needed so we don't have to worry if those fancy satellite phones or Blackberrys don't work. When the lights go out, I know I'll see someone's radio dial glowing as the messages keep going."

Bruno suggested that participants stop by the New London Red Cross office to see an emergency communications vehicle that "can so well integrate with what you all provided." He concluded his remarks by saying, "Thank you, ARES, for helping us respond to the largest disaster exercise in the history of the United States. We will not forget..."

ARRL CT Assistant Section Manager Brian Fernandez, K1BRF, who served as the liaison to the Red Cross, said he was invited to contribute the communications portion in the daily reports (SITREPS) that went to the Red Cross National Headquarters. The reports highlighted a full accounting of the contribution of hams, including a description of the scale of the ARES response, sites served, character of messages handled, the contributions' importance, etc. The detailed reports precipitated a call from national HQ for additional quantification data on ARES participation for a special report to the Department of Homeland Security on Topoff activities.

Fernandez was also invited to a mid-drill review called "Hot Wash." He said, "Everybody (we even had international observers and participation in that meeting) who mentioned hams, perhaps 50% of those who attended, had positive things to say and they all thought that they should have been used more."

Connecticut ARRL Section Emergency Coordinator Chuck Rexroad, AB1CR, said, "Everyone dealt with difficult situations professionally and positively, and we overcame hurdles wherever, whenever, and whatever they were." He told participants, "We were also recognized by Connecticut Office of Emergency Management as being a vital backup link. This was especially evident form the work that was done by Connecticut Office of Emergency Management (OEM) to add a 2-meter antenna to the Hartford Armory (OEM Headquarters) during the week before the event so that we would have UHF and VHF capabilities from OEM Headquarters, as well as our communications center at the Rocky Hill OEM location."

In supplying communications for the Red Cross, the hams supported 280 Red Cross personnel and 35 vehicles. In just 72 hours the Red Cross provided close to 18,000 meals and snacks. Bruno said, "We can now end the exercise knowing we are better prepared than we were a week ago, and we'll continue to prepare for future disasters."

NJ Hams Respond

While reports were still coming in at our deadline, Cape May, New Jersey hams supplied an additional link for emergency managers. RACES Officer Ed Taylor, N2EWT, said local hams were transmitting operations at various PODs, or Points of Dispensing, in the county. They used Amateur Television to monitor the situation.

A POD is a special clinic designed to rapidly distribute antibiotics or vaccines in an emergency setting. PODs do not offer routine medical care. Their purpose is to widely and quickly distribute medication in a public-health emergency. PODs would be set up if a large number of people needed to receive antibiotics or vaccines rapidly to prevent them from getting sick. It is rare that large numbers of people would need to take antibiotics or vaccines to prevent an illness, but this might happen if an attack took place with biological weapons, such as anthrax, smallpox, or the plague.

Virginia Hams Provide Service

While most of the action for the drill was taking place to the north, other organizations were also participating. In Virginia, Mercy Medical Airlift (MMA) and Angel Flight® Mid-Atlantic (AFMA), two of the seven members of Angel Flight® America (AFA), were taking part in the drill. Angel Flight® America was prepared to provide emergency transport in private planes if it necessary. Angel Flight® America is a charitable volunteer corps of 6200 volunteer pilots nationwide who routinely use their own planes to fly patients and their families to specialized medical facilities free of charge. It also has a homeland security program component known as HSEATS (Homeland Security Emergency Air Transportation System). HSEATS was developed through a three-year federal grant awarded to MMA in 2002 by the Corporation for National and Community Service.

Mercy Medical Airlift, which serves as the National Communications Center for HSEATS, conducted the pilot mobilization drill to test emergency communications capa-

Mark Wolf, N7YMW, a technician with the USNS Mercy, *maintained contact with ham radio operators in Nias and the U.S. (U.S. Navy photo by Photographer's Mate 2nd Class Jeffrey Russell)*

bility throughout the entire national Angel Flight® America organization. The center's radio equipment was tested by volunteers who belong to the Virginia Beach Amateur Radio Club. Calls were relayed from AFA's National Communications Center to the other Angel Flight® regions, including Angel Flight® Southeast (AFSE) outside of Orlando, Angel Flight® Northeast (AFNE) outside of Boston, Angel Flight® South Central (AFSC) in Dallas, Angel Flight® Central (AFC) in Kansas City, and Angel Flight® West (AFW) outside of Los Angeles. No actual planes were flown during the exercise.

Approximately one third of Angel Flight® America's 6200 pilots are already certified as first responders in the HSEATS program. In a national emergency they have the advantage of being able to use smaller airports for take-off and landing, unlike the larger commercial planes, which rely on major airports that could be closed in the event of a major national catastrophe.

Jim Lindsey, AG4XT, VBARC President, said they used IRLP and HF to establish contact in each of the other Angel Flight® regional cities: Virginia Beach, Boston, Orlando, Dallas, Kansas City, and Los Angeles. "Our goal now is to establish a Concept of Operations (CONOPS) for how VBARC will actually support Angel Flight® on a recurring basis. It will probably be along the lines of having a phone tree of approximately ten Angel Flight® 'certified' amateurs from VBARC for Angel Flight® to call to man and operate the station. A watch bill/relief system will need to be developed for long duration operations if required. Further additions planned are WinLink2000 and other modes/methods of 'digital.' Several Virginia Beach amateurs have WinLink2000 stations and are willing to assist."

American Red Cross Connecticut Director of Emergency Services Mario Bruno suggested that ARES participants see an emergency communications vehicle that "can so well integrate with what you all provided." (Photo courtesy of Mario Bruno)

Field Day

Field Day is less than a month away, on June 25 and 26. Many groups will be testing out the equipment from their local Emergency Operations Center or the offices of a served agency. Last year several reports were received in which a local EOC reported that it had worked stations in each of the counties in their states or neighboring states. This provides a service to the emergency management officials. Bonus points are also available for having your site visited by a government official or a served agency official.

With extended periods of operation, such as during Topoff 3, you may be asked to operate a radio or a mode with which you are not familiar. This Field Day make it a goal to operate a new mode or radio.

With Thanks....

This month we continued to cover amateur radio public service around the world. In many cases it can't be done without your help. This month I would like to acknowledge Wyn Purwinto, AB2QV, and Topoff 3 participants for providing information for this column.

While out on Field Day, take the time to learn, have fun, and by all means be safe. Last year we had a few reports of injuries while out in the field.

Do you have a story to tell of hams serving in the public interest? Drop us a note.

73, Bob, WA3PZO

beginner's corner

BY WAYNE YOSHIDA,* KH6WZ

The "Not Field Day" Field Day

I suppose this happens to most groups or clubs every now and then. It is what I call the "ham radio blahs." You know, when meeting attendance dwindles, the number of net check-ins begins to shrink, and even the pizza social events "just aren't the same." What should we do?

Last year I suggested an alternative to the usual ARRL Field Day (FD) exercise: We would turn the traditional summertime emergency preparedness exercise into an "official activation drill" for the City of Huntington Beach Radio Amateur Civil Emergency Service (RACES) team. There were several goals for this ARRL operating event, turned emergency drill:

Huntington Beach (CA) RACES member Mel Goldberg, N6MEL, operates 20-meter phone at the "Not Field Day Field Day" drill in 2004.

- First, to increase the participation and visibility of our RACES group in a nationally recognized emergency communications exercise.
- Second, to test team member readiness in a communications activation, and to inspect participants' "Call-Out Bags" of gear.
- Third, to expose many of the new RACES group members to ham radio communications beyond FM repeater operation with HTs and mobile rigs.
- Fourth, to enable each individual RACES member to contribute or participate in the radio exercise using the gear that he/she owns, from the simplest stations consisting of a single handie-talkie to a complete HF station.
- And last but not least, to have fun.

We succeeded on all five counts.

An additional bonus for this idea is sometimes considered a shortcoming for some Field Day folks: There would be little or no "planning," other than setting the date and time for the event. This is the strange part of the traditional ARRL Field Day: It is billed as an emergency communications drill, but many groups make elaborate plans for this event well in advance. Real emergencies rarely permit significant advance planning. I think the definition of Field Day could be more accurate if it were to be considered a "demonstration" rather than a "drill."

In any case, making no advance plans would mean fewer sleepless nights, less heartburn, and reduced stress for the event planners and would be an even better test of emergency communications readiness.

An Intriguing Concept

Since one of the main goals of any communications exercise or operating event is transferring specific information accurately from one station to another, any radio contest can be transformed into an emergency drill. The contest "exchange" becomes the emergency "traffic," and the information is recorded in the contest log, replacing any official forms used in your organization. Radiowise, contacts may not take place via repeaters, and operations of course are to take place within the rules of the contest. Field Day is probably the best "platform" to do this, since just about any and all frequencies and modes are allowed.

Our "Not FD-FD" drill went something like this:

An activation announcement went out to call all

*16428 Camino Canada Lane, Huntington Beach, CA 92649
e-mail: <kh6wz@cq-amateur-radio.com>

Suggested Field Day FM Simplex Frequencies & Operating Techniques

2 meters: 146.445 MHz, 144.330 MHz (If this is used for FM in your area, check your local band plan.)

DO NOT operate FD on 146.520 National simplex Calling Channel

1.25 meters: 223.460 MHz

70 centimeters: 446.000

Remember, no one "owns" a frequency. As you will see, most stations will make one or two or three contacts and then move to another frequency or even another band—usually telling people where they are going.

Here is an example of a typical FD exchange on 2 meters FM simplex:

K6Z: "CQ Field Day from Kilo Six Zulu."

N6RMJ: "K6Z from November Six Romeo Mike Juliet, 3 Alpha, LA X-Ray."

K6Z: "Roger. Three Bravo, Battery, Orange."

N6RMJ: "Roger. N6RMJ moving to 446.000."

("LA-X-Ray" is an abbreviation for the ARRL Los Angeles section; K6Z's section is Orange. This is part of the Field Day exchange.)

Nice and simple, eh? No wasted words here. Remember that the goal is to contact as many stations as possible!

Huntington Beach RACES Not Field Day Field Day Assignment Sheet

Based on your Grab-n-Go Kit contents, you will be assigned one of the following Field Day Classes:

Class B

One- or two-person portable. You will need 100% emergency power (no AC mains)

Class B—Battery

One- or two-person portable, using battery power and 5 watts or less for all operations. Batteries may be charged while in use, but not from commercial AC. I hope you brought extra batteries! If you are concerned about charging, come to the Net Control Station (K6Z) and charge from the solar panel or the wind generator. If so equipped, you can charge your batteries from your car. If you do not know how to do this, we may need a training session (later) on how to do this.

Class C – Mobile

If you have radio gear installed in your vehicle, you can operate from there. Be safe; you do not have to operate while in motion. The best way to do this is to find a good, high place to park, away from traffic. Make sure you start your engine every now and then so that you do not kill your starting battery.

Class D—Home Station

You can operate from home, using commercial power. *However,* Class D stations may only count contacts made with Class A, B, C, E, and F Field Day stations. In other words, Class D cannot work another Class D station for points.

Class E—Home Station, Emergency Power

Same as Class D, but using emergency power for the radios. May work stations in all classes.

YOUR CLASS IS:

(Number of transmitters) **(Class)** **ARRL Section**

available RACES personnel to go to a local park where the Net Control Station would be set up. I had previously arranged for a special-event callsign, K6Z, for Field Day.

Upon arrival at a "staging area," responders queued up for an inspection of communications response gear and supplies, which was followed up by a quick field briefing. Each participant was then given a frequency band assignment based on his/her equipment capability on-hand. Station setups ranged from just an HT and spare battery pack to fully-equipped portable base stations with HF capability.

Each individual station was on its own, without a supervising "net control station" (see sidebar "Suggested Field Day FM Simplex Frequencies & Operating Techniques"). While there was a net control for the purposes of the drill (K6Z), each station operated using his/her callsign, as would be the case in a real emergency. From the Field Day perspective, it permitted us to have more than one station per band on the air at one time, and it permitted our stations to talk to one another as well as Net Control and outside stations.

All participants were ready for an 8- to 10-hour "shift," just as our RACES training prepared us for. This worked well, since the park we chose to use had a "no overnight parking" rule in place. However, our exercise enabled us to have fun while occupying the park during normal operating hours. At the end of their shifts, personnel were either relieved of their "assignments" and checked out, or were added to a roster for another assignment the next day (Sunday).

There was no need to set up anything elaborate, except for whatever each participant needed to get his/her RACES station on the air. Several members set up portable SSTV or ATV stations, APRS and other modes beyond VHF FM, plus, of course, HF. This gave others a chance to see and learn about these other bands and modes.

The concept proved to be so popular that even individuals who were away from town wanted to participate, and were able to by setting up stations wherever they were at the time of the FD activation call. One husband and wife team made a few FD contacts while watching their son play soccer!

This concept of turning Field Day into an official communications drill could expand and adapt to include virtually any radio operating activity. For example, the ARRL Sweepstakes Contest or the CQ World-Wide DX Contests could be changed by your group—just as easily as Field Day was for us—into an emergency communications drill on the HF bands. So go ahead, get rid of the summertime blahs, do something wild and crazy, and let me know what happened at your event!

73, Wayne, KH6WZ

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DRAWN 6063-T832

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

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

CALL FOR MORE CUSHCRAFT ITEMS.

FORCE 12—MULTIBAND

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

CALL FOR MORE FORCE 12 ANTENNAS.

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SELF-SUPPORTING STEEL TOWERS

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

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

CALL FOR MORE BENCHER/BUTTERNUT.

M2 VHF/UHF ANTENNAS

6M5X/6M7JHV	$209/269
6M2WLC/6M9KHW	$459/499
2M4/2M7/2M9	$95/109/129
2M12/2M5WL	$165/209
2M5-440XP, 2m/70cm	$179
440-470-5W/420-450-11	$139/95
432-9WL/432-13WLA	$179/239
440-18/440-21ATV	$129/149

SATELLITE ANTENNAS

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

ROHN TOWER

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

PLEASE CALL FOR MORE ROHN PRICES.

US TOWER

MA40/MA550	$1099/1699
MA770/MA850	$2799/4349
TMM433SS/HD	$1479/1789
TMM541SS	$1939
TX438/TX455	$1379/1899
TX472/TX489MDPL	$3139/8239
HDX538/HDX555	$1649/2889
HDX572MDPL	$7549

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

COMET ANTENNAS

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

MORE COMET ITEMS IN STOCK—CALL.

HYGAIN ANTENNAS

AV18HT/AV18S	$689/79
AV620/AV640	$259/339
DIS71/72/73K	$269/569/359
DX77A/DX88	$389/319
EXP14/QK710	$519/159
LJ103BA/105CA/155CA	$145/259/379
LJ203BA/204BA/205BA	$289/479/679
TH3MK4/TH3JRS	$399/319
TH5MK2/TH2MK3	$849/319
TH11DX/TH7DX	$995/749
VB64DX/VB66DX	$139/249

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H2, Aluminum Hazer, 12 sq ft	$379
H3, Aluminum Hazer, 8 sq ft	$289
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ALUMINUM ROOF TOWERS

RT424, 4 Foot, 6 sq ft	$169
RT832, 8 Foot, 8 sq ft	$249
RT936, 9 Foot, 18 sq ft	$409
RT1832, 17 Foot, 12 sq ft	$549
RT2632, 26 Foot, 9 sq ft	$919

UNIVERSAL ALUMINUM TOWERS

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

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

DIAMOND ANTENNAS

D130J/DPGH62	$79/139
F22A/F23A	$89/119
NR72BNMO/NR73BNMO	$39/54
NR770HB/NR770HBNMO	$55/55
X200A, 2m/70cm Vertical	$129
X500HNA/X700HNA	$229/369
X510MA/510NA	$189/189
X50A/V2000A	$99/149
CR627B/SG2000HD	$99/79
SG7500NMO/SG7900A	$75/112

MORE DIAMOND ANTENNAS IN STOCK.

MFJ

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

BIG MFJ INVENTORY— PLEASE CALL.

COAX CABLE

RG-213/U, (#8267 Equiv.)	$.45/ft
RG-8X, Mini RG-8 Foam	$.25/ft
RG-213/U Jumpers	Please Call
RG-8X Jumpers	Please Call

CALL FOR MORE COAX/CONNECTORS.

TIMES MICROWAVE LMR® COAX

LMR-400	$.59/ft
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LMR-600	$1.19/ft
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TOWER HARDWARE

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

PLEASE CALL FOR MORE HARDWARE.

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

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

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LAKEVIEW HAMSTICKS

9106	6m	9115	15m	9130	30m
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9112	12m	9120	20m	9175	75m

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

HUSTLER ANTENNAS

4BTV/5BTV/6BTV	$139/179/209
G6-270R, 2m/70cm Vertical	$179
G6-144B/G7-144B	$119/179

HUSTLER RESONATORS IN STOCK.

ANTENNA ROTATORS

M2 OR-2800P	$1249
HAM IV / T2X Tailtwister	$499/569
Yaesu G-450A	$249
Yaesu G-800SA / G-800DXA	$329/409
G-1000DXA	$499
Yaesu G-2800SDX	$1089
Yaesu G-550 / G-5500	$299/599

ROTATOR CABLE

R62 (#18)	$.35/ft.
R81/82/84	$.29/ft./.45/ft./.89/ft.

PHILLYSTRAN GUY CABLE

HPTG1200I	$.45/ft
HPTG2100I	$.59/ft
PLP2738 Big Grip (2100)	$6.00
HPTG4000I	$.89/ft
PLP2739 Big Grip (4000)	$8.50
HPTG6700I	$1.29/ft
PLP2755 Big Grip (6700)	$12.00
HPTG11200	$1.89/ft
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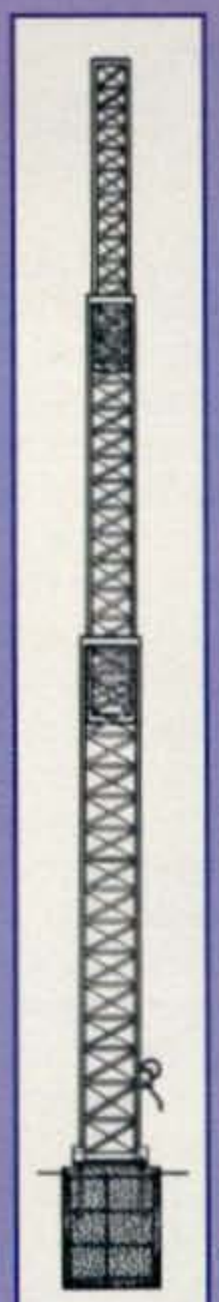
Now shipping from CA for west coast customers, and KS for east coast and midwest customers, to reduce freight cost!

TX SERIES HEAVY DUTY CRANK-UP TOWERS					
TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
TX-438	38'	21'6"	355	$1,523	$1,379
TX-455	55'	22'	670	$2,107	$1,899
TX-472	72'	22'8"	1040	$3,462	$3,139
TX-472MDP	72'	22'8"	1210	$5,571	$5,049
TX-489MDPL	89'	23'4"	1800	$9,034	$8,239



HDX SERIES CRANK-UP TOWERS

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

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

• MDPL models include motor drive

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

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HDX SERIES HEAVY DUTY CRANK-UP TOWERS					
TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
HDX-538	38'	21'6"	600	$1,807	$1,649
HDX-555	55'	22'	870	$3,162	$2,889
HDX-572MDPL	72'	22'8"	1600	$8,281	$7,549
HDX-589MDPL	89'	23'8"	2440	$10,841	$9,899
HDX-689MDPL	89'	23'8"	3450	$20,943	$19,129
HDX-5106MDPL	106'	24'8"	3700	$22,791	$20,799

MA SERIES CRANK-UP MASTS

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

• MDP models include motor drive.

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

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

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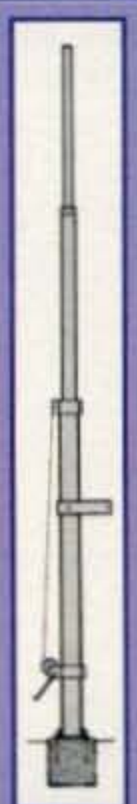
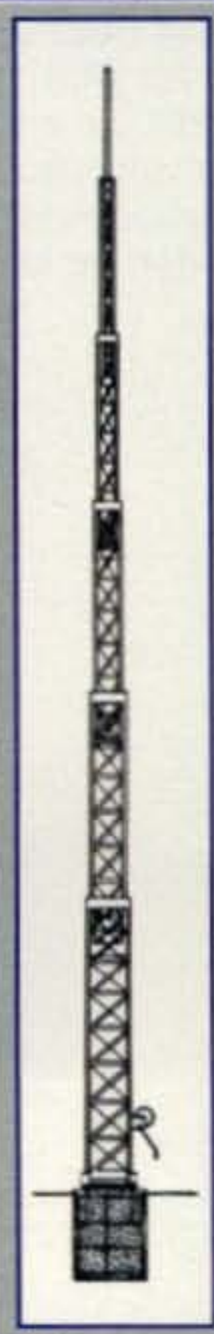


MA SERIES CRANK-UP MASTS							
MAST MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	50 MPH (sq. ft.)	70 MPH (sq. ft.)	LIST PRICE	SALE PRICE
MA-40	40'	21'6"	242	16.5	6.8	$1,209	$1,099
MA-550	55'	22'1"	435	22	9	$1,875	$1,699
MA-550MDP	55'	22'1"	620	22	9	$3,584	$3,249
MA-770	71'	22'10"	645	15.5	5.5	$3,091	$2,799
MA-770MDP	71'	22'10"	830	15.5	5.5	$4,890	$4,449
MA-850MDP	85'	23'6"	1128	15.3	6.3	$6,591	$5,999



TMM SERIES COMPACT CRANK-UP TOWERS

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

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

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

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

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

TMM SERIES COMPACT CRANK-UP TOWERS					
TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
TMM-433SS	33'	11'4"	315	$1,626	$1,479
TMM-433HD	33'	11'4"	400	$1,970	$1,789
TMM-541SS	41'	12'	430	$2,135	$1,939

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math's notes

BY IRWIN MATH,* WA2NDM

Optical Communications Revisited—Part I

From time to time over the past several years we have presented hints and suggestions regarding both free-space and fiber-optic communications systems. In some cases we have also described various circuits as well as suggesting a number of optical communicating techniques. This has always resulted in comments and numerous e-mails, so due to many reader requests, we would like to present the plans for a complete free-space optical communications system that could be used as a starting point to explore this new field. The system is relatively simple to construct but capable of excellent performance, well beyond simple "talking on a light beam" type projects that one might have seen in the past. Also keep in mind that although the carrier is light, it is still electromagnetic energy and is in the THz (terahertz) region.

The modulation method we have chosen for our system is pulse FM, as it is easy to implement and will result in fully recovered audio if any significant signal is detected above the residual noise. AM (modulating the intensity of an LED's output) is the classic "entry level" approach, and we have covered such equipment in the past. AM is subject to interference from shimmering heat waves and stray light reflections, however (not to mention residual noise), so we decided to go a step further with this system. A fully digital approach would be a bit too complex for this endeavor and would not really gain much in overall performance, since our desired signal is, after all, only communications-grade audio.

In the next couple of columns we will describe a matching receiver, and finally a simple lens system for the "antennas" with suggestions as to how to build a higher gain "array." To complete the discussion we will also touch on what types of propagation you might wish to explore.

Fig. 1 is a block diagram of the complete system. The transmitter accepts audio from a microphone, amplifies it, and then drives a 75-kHz (nominal) voltage-controlled oscillator. The oscillator is configured from an LM555 timer chip and produces a 0- to 5-volt logic level output pulse stream that is FM modulated by the incoming audio. The resulting output is then applied to a driver stage which drives an LED light source. At the receiver, a photodiode converts the received light pulses into small current pulses. A current-to-voltage preamplifier stage amplifies these pluses and converts them into voltage pulses which are then applied to a comparator. The comparator produces 0- to 5-volt logic levels and acts as a sort of digital limiter. The output of this stage is of a level that is adequate to operate the FM detector. In this stage the FM-modulated pulse stream is converted back into audio. The resulting audio is then amplified and applied to a speaker.

We will now describe each circuit block in detail, and if you wish to build the system, you may do so one stage at a time, testing each stage as you go along. This should enable most beginners to suc-

*c/o CQ magazine

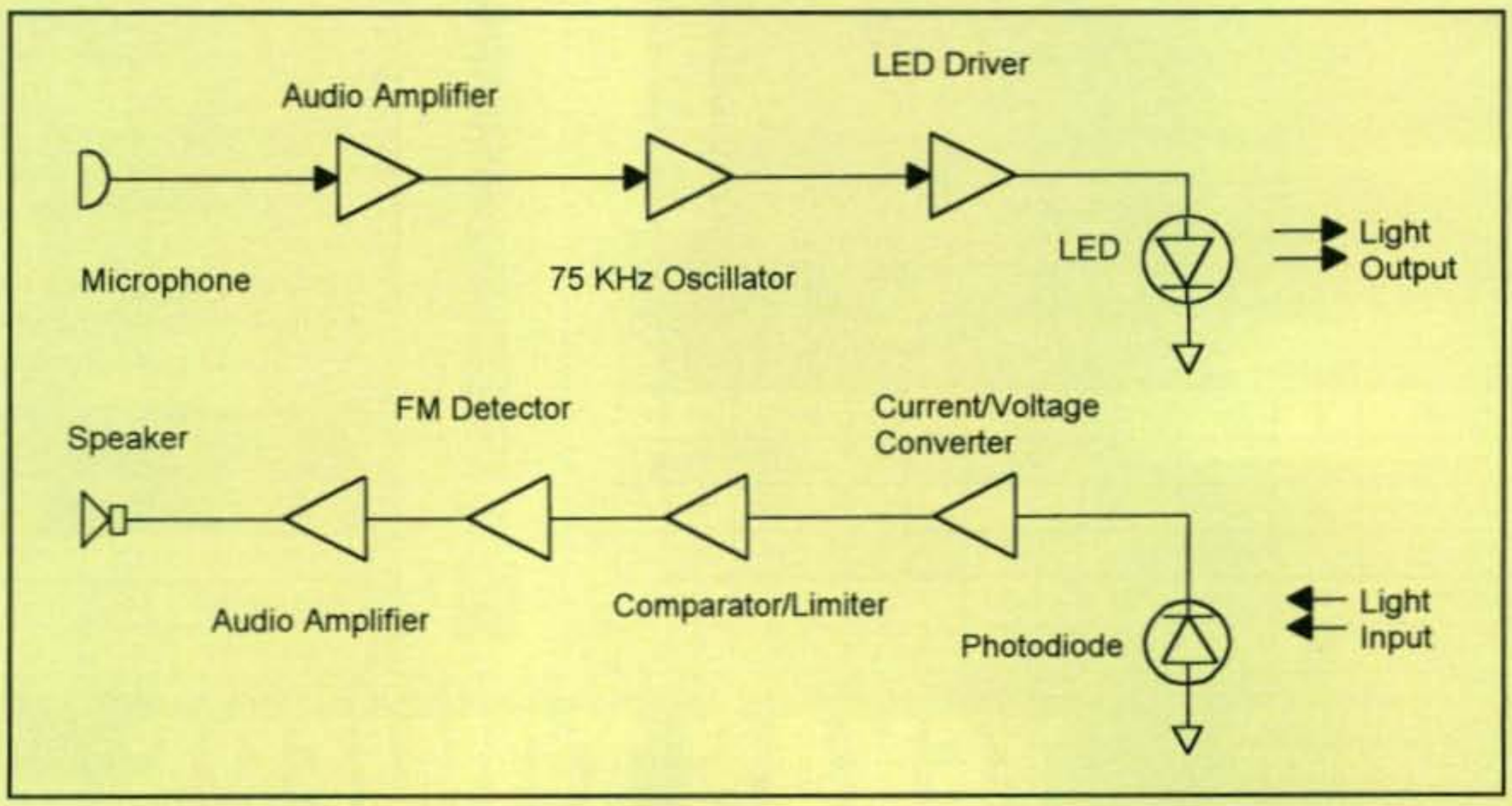

Fig. 1– Block diagram of the FM THz transmitter/receiver.

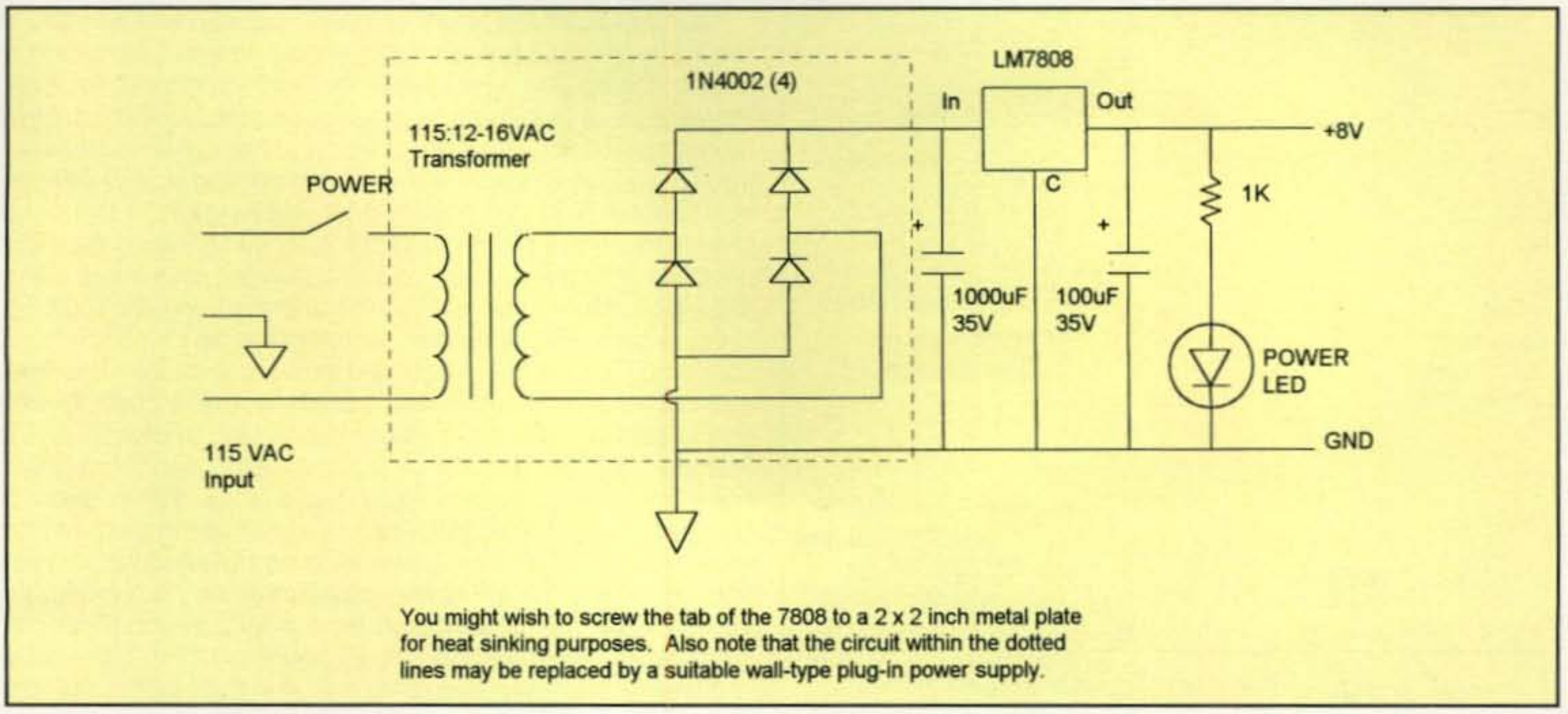

Fig. 2– Regulated 8-volt power supply.

cessfully complete the project. We have left details of the actual circuit board, "cosmetic bells and whistles," and the final enclosure up to the individual builder, since most readers are at least familiar with this part of the project. Keep in mind that although final operation is in the THz region, there is nothing critical about layout, so don't be afraid to use whatever you have on hand or can implement. Wood and plastics are fine, and even the old-fashioned method of soldering components to wire brads partially nailed into a piece of pine should be okay. Also don't be afraid to substitute parts if you wish. We have indicated places where exact values are not critical for that purpose. Now let's get down to business!

Building the System

Since all projects need power, the first step is to build the power supply. The optical transmitter/ receiver operates from 8 volts, and fig. 2 is a schematic of a suitable power supply. The power transformer can be anything from a 12-volt filament unit to a doorbell transformer. The circuit is a full-wave bridge driving a 7800-series, 8-volt, three-terminal regulator. Capacitor values are not critical but should be at least a few hundred microFarads at the input and 50 µF or more at the output. Be careful when wiring the AC line cord, as this is the only point that is dangerous. The 7808 is short-circuit protected and the voltages after the transformer are low enough to not cause any other problems.

After building (and checking the wiring of) the supply, plug it in and con-

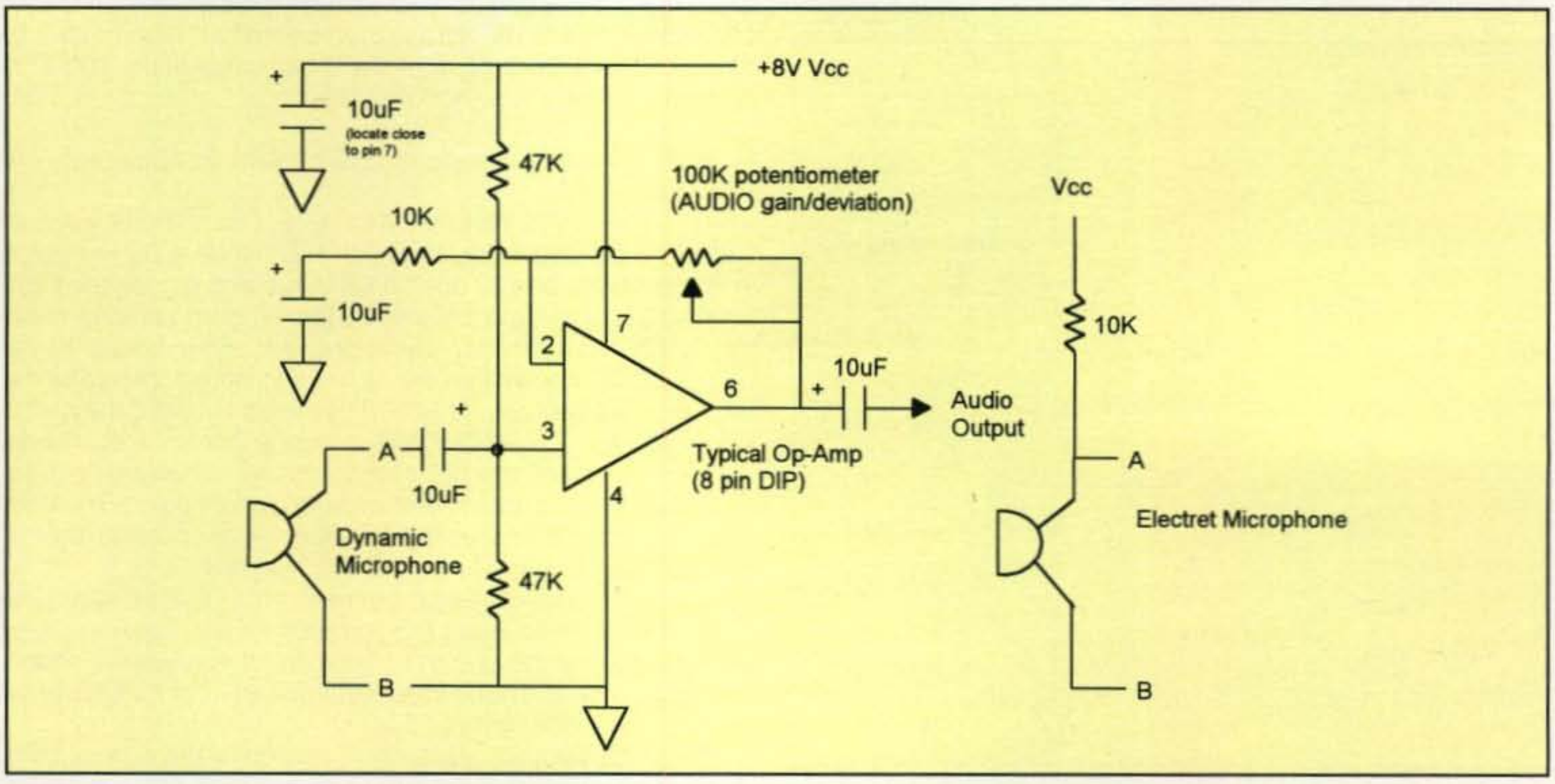

Fig. 3– Microphone preamplifier stage.

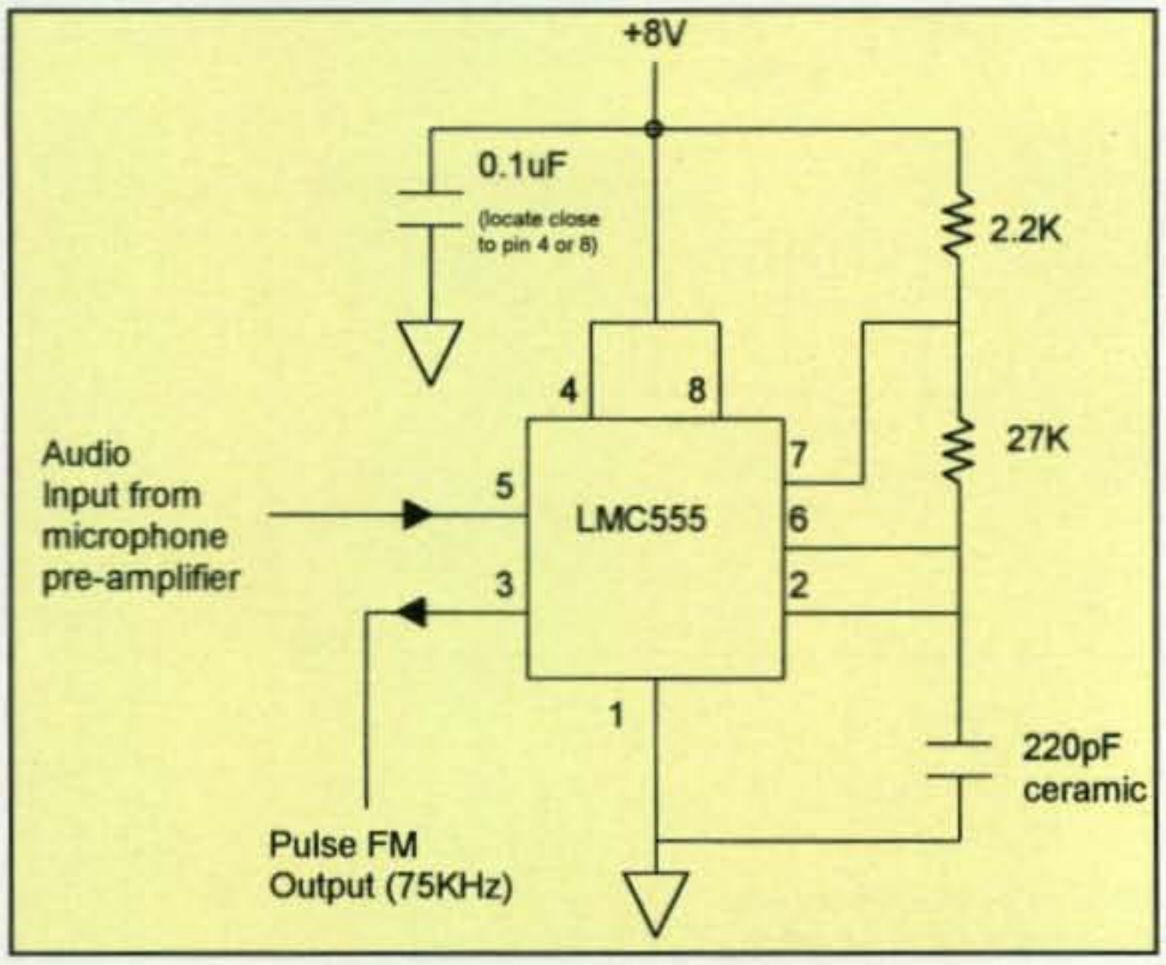

Fig. 4– The FM modulator stage.

nect a voltmeter across the output capacitor. The POWER LED should light and the voltage should be somewhere between 7.9 and 9.1 volts. If this is the case, you are ready to continue. If not, recheck and debug whatever is wrong.

Fig. 3 is the schematic of the microphone preamplifier. You will notice that it is designed to operate with a common dynamic-type microphone, although we have shown how to modify it for use with an electret unit if that is your desire. The stage consists of a simple op-amp that can amplify the microphone level up to about ten times, depending on the setting of the 100K potentiometer, which can be thought of as a deviation control. This level is adequate to drive the next stage. The two 47K resistors bias the op-amp to half of the Vcc voltage so that only a single power supply is needed and just about any common 8-pin DIP-style op-amp (such as the LM741) can be used.

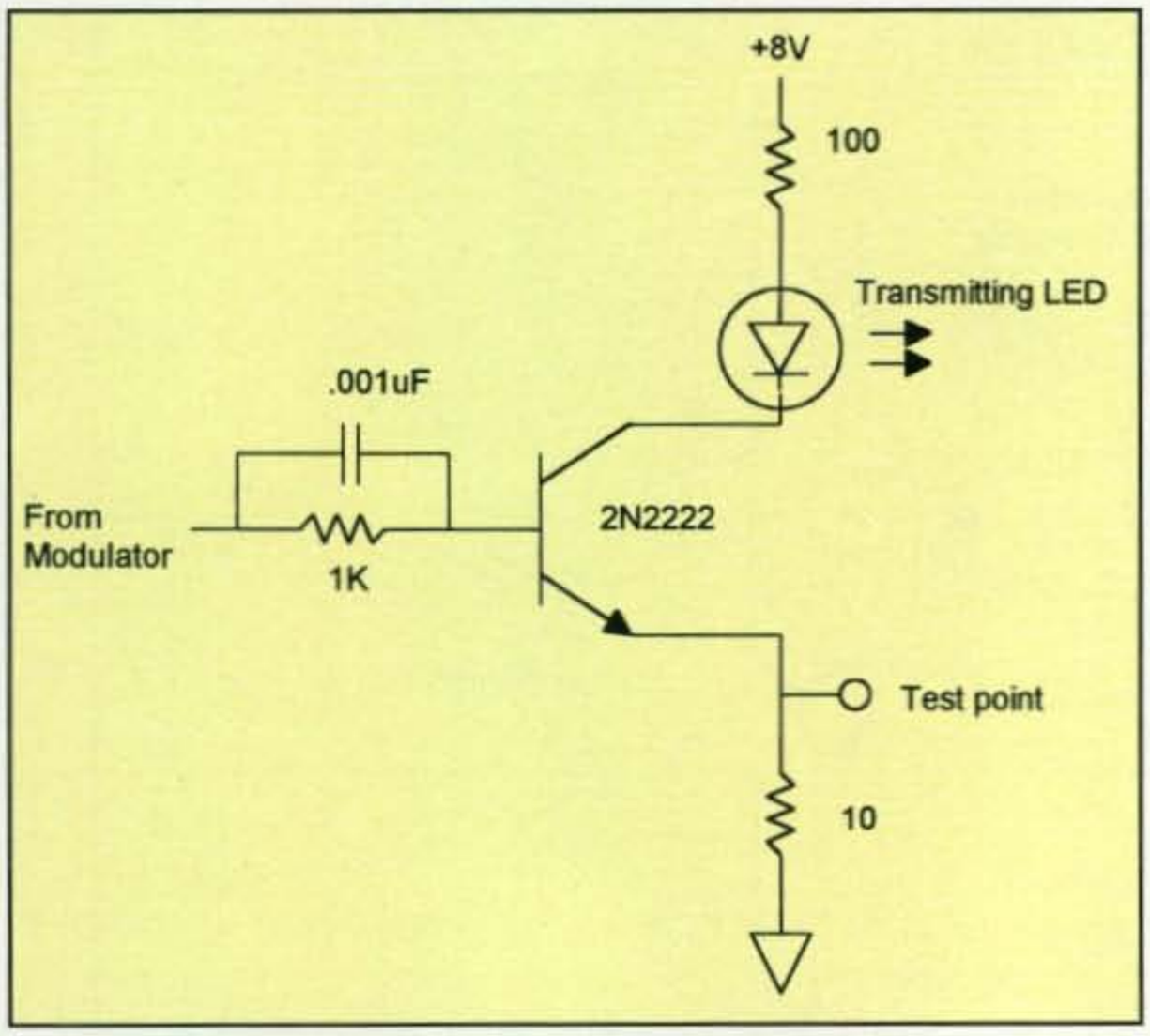

Fig. 5– LED driver stage.

After you build the amplifier stage, you can test it in one of two ways. If you have a scope, simply connect the probe to pin 6 of the op-amp and speak into the microphone. An audio waveshape of about 0.5 to 1 volt pp should be visible. If you do not have a scope, connect a pair of headphones between the 10 µF output capacitor and ground and speak into the microphone. You should hear your voice clearly. If the signal level is too low, you can raise the gain by changing the 100K pot to a 1-megohm pot, but this should really only be as a very last resort. Most microphones will operate fine with 100K.

Fig. 4 is the FM modulator. It consists of an LM555 timer IC connected as an FM-modulated pulse generator. The free-running frequency (no audio) is somewhere around 75 kHz and is determined by the values connected to pins 2, 6, and 7 of the LMC555, and the output is a digital signal (roughly a square wave) that varies from 0 to 5 volts. When audio is applied to pin 5, the output frequency changes in step with the amplitude of the audio. The result is an FM-modulated pulse stream. If close control of the actual frequency is needed, the 22K resistor can be replaced by a 50K potentiometer and adjusted for the exact desired frequency. With the values shown, the operating frequency will be in the neighborhood of 75 kHz. Testing this stage is best done with a scope and frequency counter. With no audio applied you should see a clean waveform. Speaking into the microphone should result in a "blurred" waveform indicating FM modulation.

Fig. 5 is the output LED driver stage. It is nothing more than an NPN switching transistor and one or more LEDs. The choice of this transistor is primarily determined by the current drawn by the LED you plan to use. If a single visible LED is to be your light source, then a 2N2222 or other low-power device will be fine. If you want to drive a multi-LED array, you may need something that can handle more power. Since the maximum frequency of operation is only 75 kHz or so, most low-cost power transistors such as the 2N2222 will suffice.

You will note that there is a 100-ohm resistor in series with the transmitting LED. This is a current-limiting resistor and should be chosen to limit the on current of the LED to slightly below its maximum safe level. There is also a 10-ohm resistor in the emitter circuit. This resistor is used to monitor the LED current. One volt across this resistor will signify 100 ma of LED current. To determine the exact value of the 100-ohm resistor use the following formula:

R (in ohms) = (6.3/maximum LED current (in amperes) – 10

This is simply Ohm's law (R = E/I). The 6.3-volt value of voltage is derived from the 8-volt line minus a 0.7-volt drop in the transistor and an additional 1-volt drop across the LED. The "–10" is the drop caused by the 10-ohm sensing resistor. A 100-ohm resistor, therefore, will allow about 70 ma peak to flow. You will probably have to adjust this value for the LED that you plan to use. If you wish to avoid the calculation, simply connect a DVM or scope across the 10-ohm resistor and adjust the 100-ohm value (while biasing the transistor fully on) until the maximum safe current flows. The transistor can be biased on by temporarily connecting the 1K resistor from its base to the +8-volt supply.

To test the driver stage, connect an inexpensive visible LED in place of the final LED you plan to use. Turn on power and ensure that the visible LED glows. If you have a scope, connect it across the 10-ohm resistor and note that a square wave is present at about 75 kHz.

This completes the transmitter portion of the optical communications station. Next month we will look at the receiver.

73, Irwin, WA2NDM

Keys: The Glamour! Part II

BY DAVE INGRAM,* K4TWJ

Our 2005 Keys Special continues this month with more classy new gems and some remarkable homebrew items you should find interesting to study. This time our photos are compliments of Marshall Emm, N1FN, of Morse Express; Mitch Mitchell, W4OA, of Vibroplex; Edward Biter, Jr., NS3E; and James Butler, KB4LJV. These are good guys with a high enthusiasm for CW at its golden best. As we have mentioned in previous columns, keys (and their use!) represent an art that never fades but only gets better with each day's use. We are proud to support this with a keys series and urge everyone to help ensure more keys columns by sending us details of your own favorite Morse instruments new and/or old. It is a great way to get some well-deserved recognition going your way, too.

Happiness is a New Key

Would you like to rejuvenate your own interest in CW? Nothing does it better than a new key, and some real heartthrobs are available.

First is the attention-grabbing Hi-Mound Serpentine Key, a unique item that qualifies as the most expensive hand key presently in existence (photo 1). The key's round base and skirted knob are carved from serpentine, a precious mineral similar to, but less expensive than, jade (indeed, serpentine is often used as a substitute for jade). Atop the base is a high-precision mechanism with permanently lubricated and sealed bearings, rich chrome plating, and excellent balance. Lavish?

Photo 1– Would you like to own a hand key that definitely makes a positive statement about your appreciation for CW? This Hi-Mound Serpentine Key available from N1FN and Morse Express may be the answer. It sports a high-precision mechanism with full adjustments and great balance and has a base and knob of serpentine, a mineral that is often substituted for jade. (Photo courtesy of N1FN)

You bet. Overkill? Not when you enjoy owning one of the world's most exotic hand keys. Serpentine keys are available from Marshall Emm, N1FN, of Morse Express, 10691 E. Bethany Drive, Suite 800, Aurora, CO 80014; order line 1-877-368-3274 or via <www.MorseX.com>.

Next up is the recently announced Bencher Hex Key, an economy version of the famous N2DAN/Nurkiewitz Mercury twin-lever super paddle (photo 2). As you may recall from previous columns,

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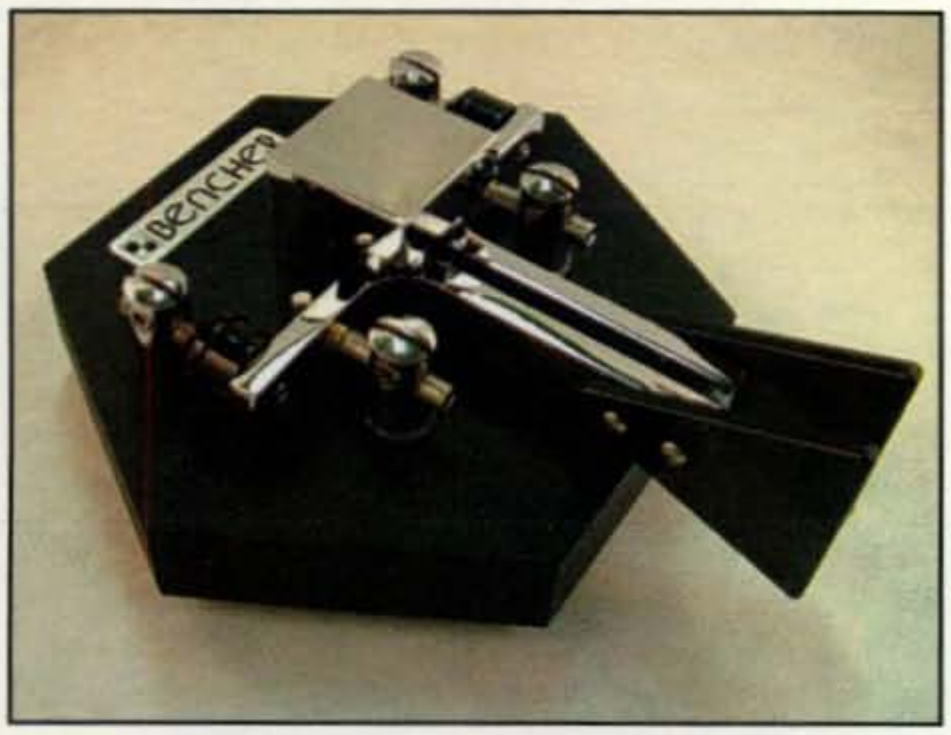


Photo 2– Check out this new Bencher Hex Key. It is a little brother to the famous N2DAN Mercury super paddle and has the same mechanical engineering as a Mercury, but has a less expensive to produce hex-shape and powder-coated steel base and center support. It is available from Morse Express. (Photo courtesy of N1FN)

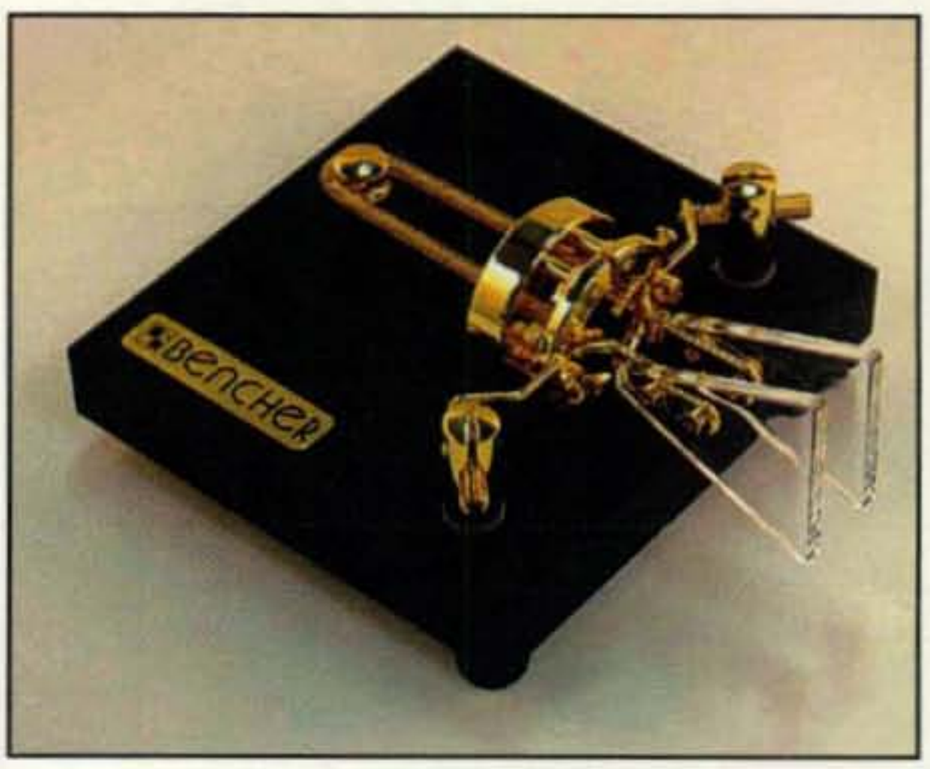


Photo 3– Still remaining as good entry-level items are Bencher's BY Series of double-lever paddles. The little gems are available in black- and chrome-plated and the gold-plated model shown here. They can be described as oldies but goodies. (Photo courtesy of N1FN)

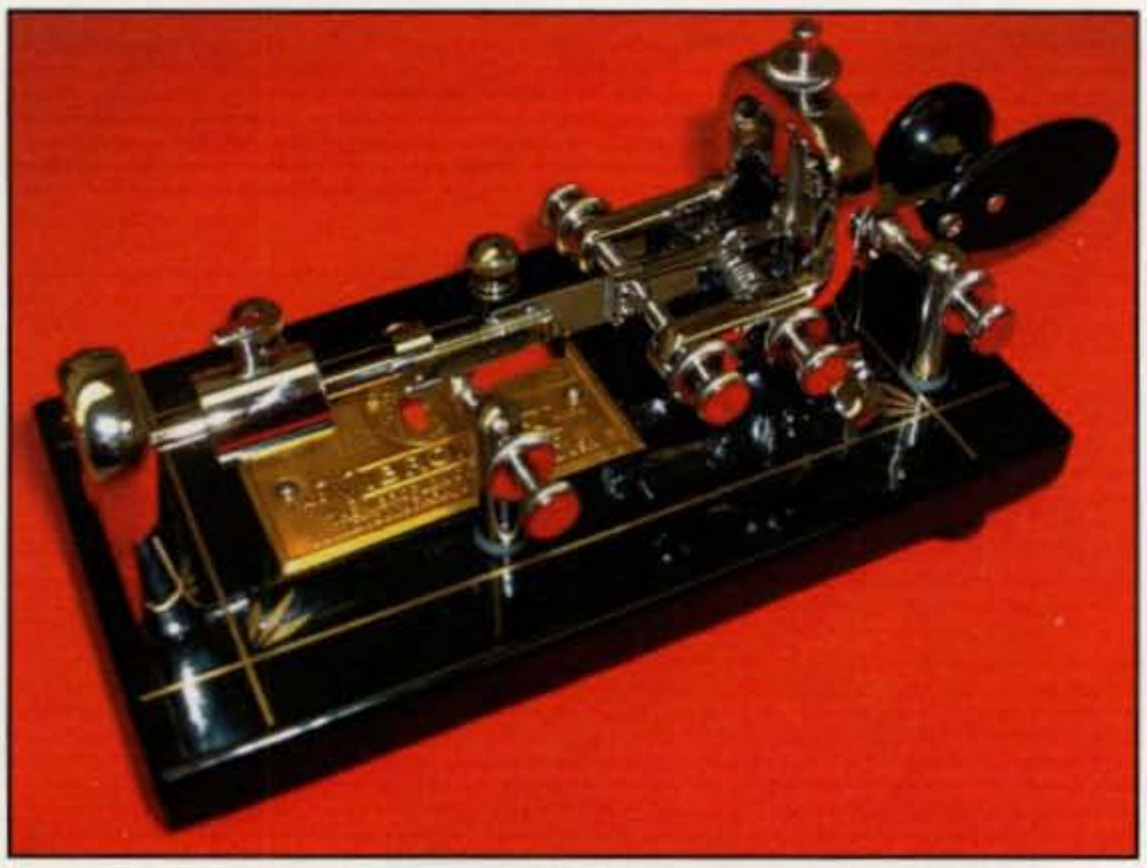


Photo 4– This new Vibroplex 100th anniversary bug sports a dazzling black base with gold pinstriping and gold-leaf designs in each corner, a highly polished chrome mechanism, and more glamour than a new Corvette! (More details at <www.vibroplex.com>)

numerous amateurs near and far consider the original Mercury to be one of the world's best CW paddles. Each one was (and still is!) a telegraphic masterpiece with extraordinarily smooth action. The original round-base and triple-chrome-plated Mercury was slightly beyond the budget of many amateurs, so the Hex Key has a powder-coated steel base and center support plus Bencher-type adjustments to reduce cost. This new key is also available from Morse Express. N1FN also asked us to remind everyone that Bencher continues to make the BY Series of single- and dual-lever paddles (photo 3), which are good general-use items at relatively low cost. BY paddles are also available from Morse Express.

Now looking south, Mitch Mitchell, W4OA, recently introduced a new 100th Anniversary Vibroplex bug that is an absolute show stopper (photo 4). In my opinion, this is the best looking Vibroplex ever made. It has a fantastic glossy black base with gold pinstriping and gold-leaf designs in each corner and a bright chrome mechanism, and it just calls out big-time telegraphy. We understand this is a limited production item, so check with Vibroplex at 1-800-840-8873 or <www.vibroplex.com> for availability.

While highlighting Vibroplex goodies, incidentally, your attention is also directed to the new chrome-base semi-miniature Code Warrior paddle (photo 5). It is trim, agile, and works well at home or on the road. As I have said before, nothing is more enjoyable than working CW with a new Morse manipulator.

Homebrew a Key?

This idea may seem rather unusual, but it holds merit for owning a special item or "retro replica" key you have always wanted but could not find at hamfests or in stores. The homebrew approach is also attractive if you are more mechanical than electronic-minded and still want to express yourself by building some part of your station. Who knows? You might even emerge with a unique key that will be remembered for many years hence. Give it a go!

As further encouragement, and with the assistance of NS3E and KB4LJV, some neat and inexpensive home-assembled keys are shown in photos 6 through 11. Ed, NS3E,

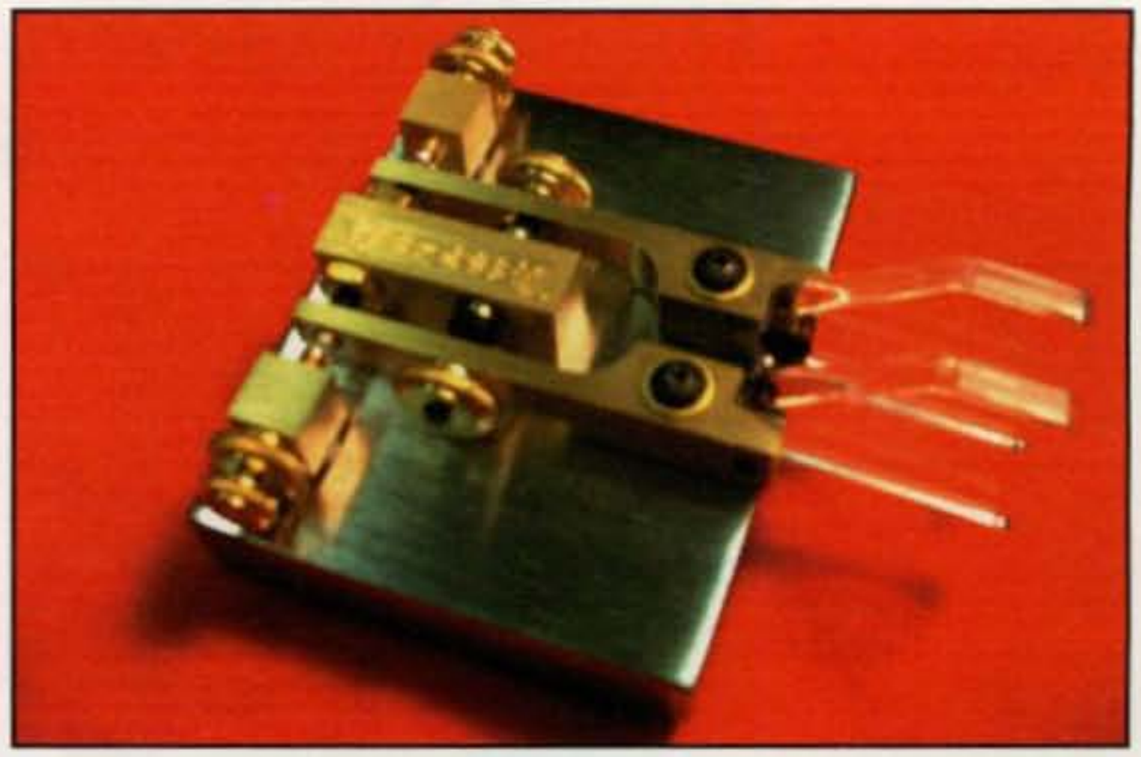


Photo 5– Another appearance-enhanced item from Vibroplex is this upgraded with chrome-base Code Warrior mini paddle. It has a light touch, offers good portability, and is priced right to boot. (Photo courtesy of W4OA/Vibroplex)

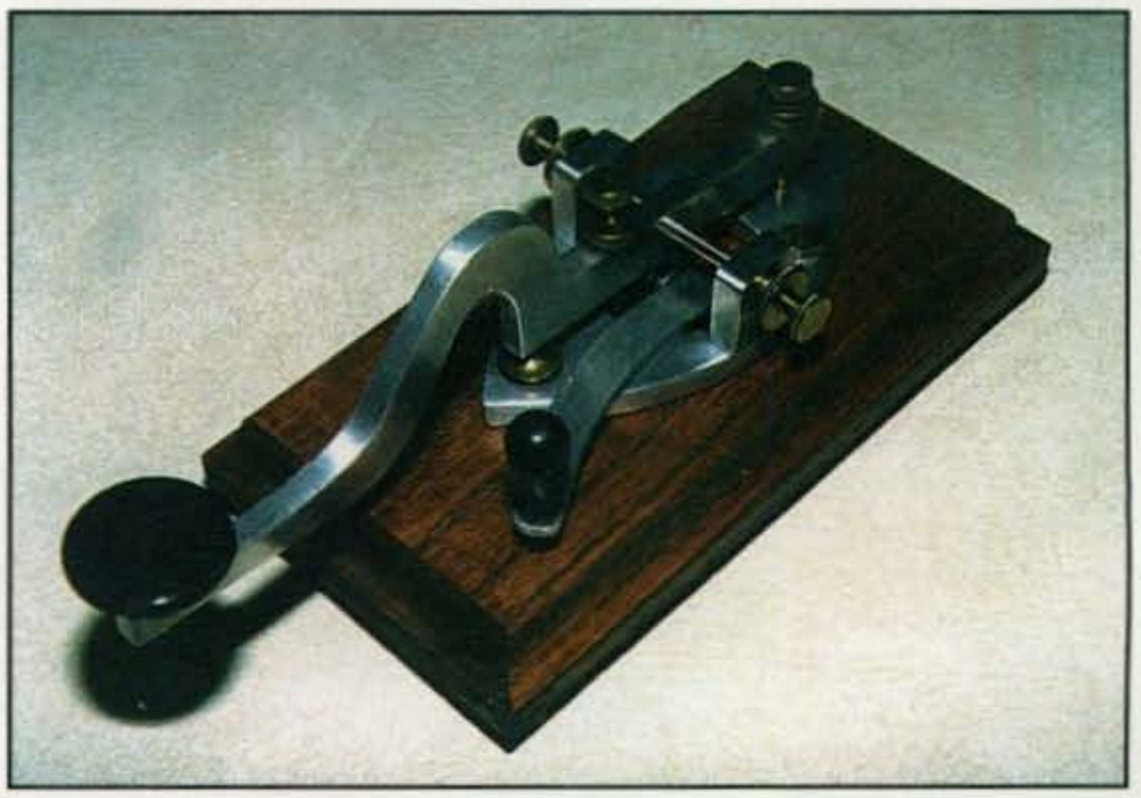


Photo 6– Using simple machine tools and salvaging adjustment screws from other keys, Ed, NS3E, homebrewed this well-detailed reproduction of a famous Phelps camelback key from the mid 1800s. Notice the teardrop-shape metal frame and smooth crafted arm with vintage trunion pin at the fulcrum. Nice! (Photo courtesy of NS3E)

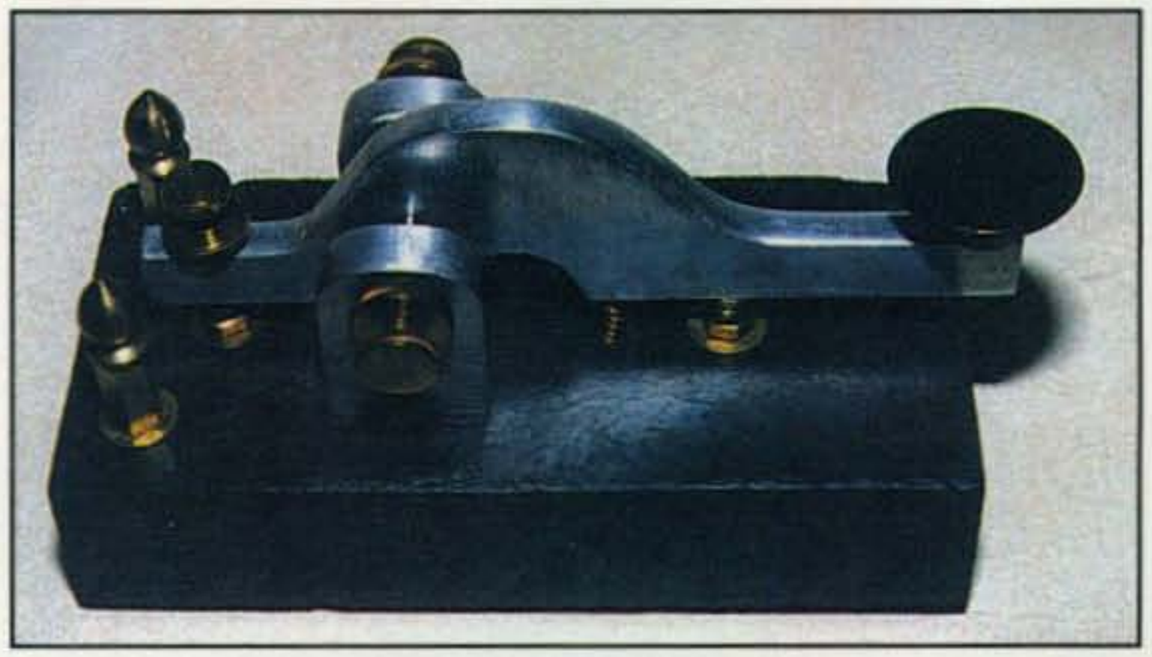


Photo 7– Using scrap aluminum for the arm plus various and sundry other parts, NS3E also homebrewed this smart-looking replica of a classic Chubbock key. Ed uses the key on the air when he wants to add some extra spice to his CW operations. Photo courtesy of NS3E)

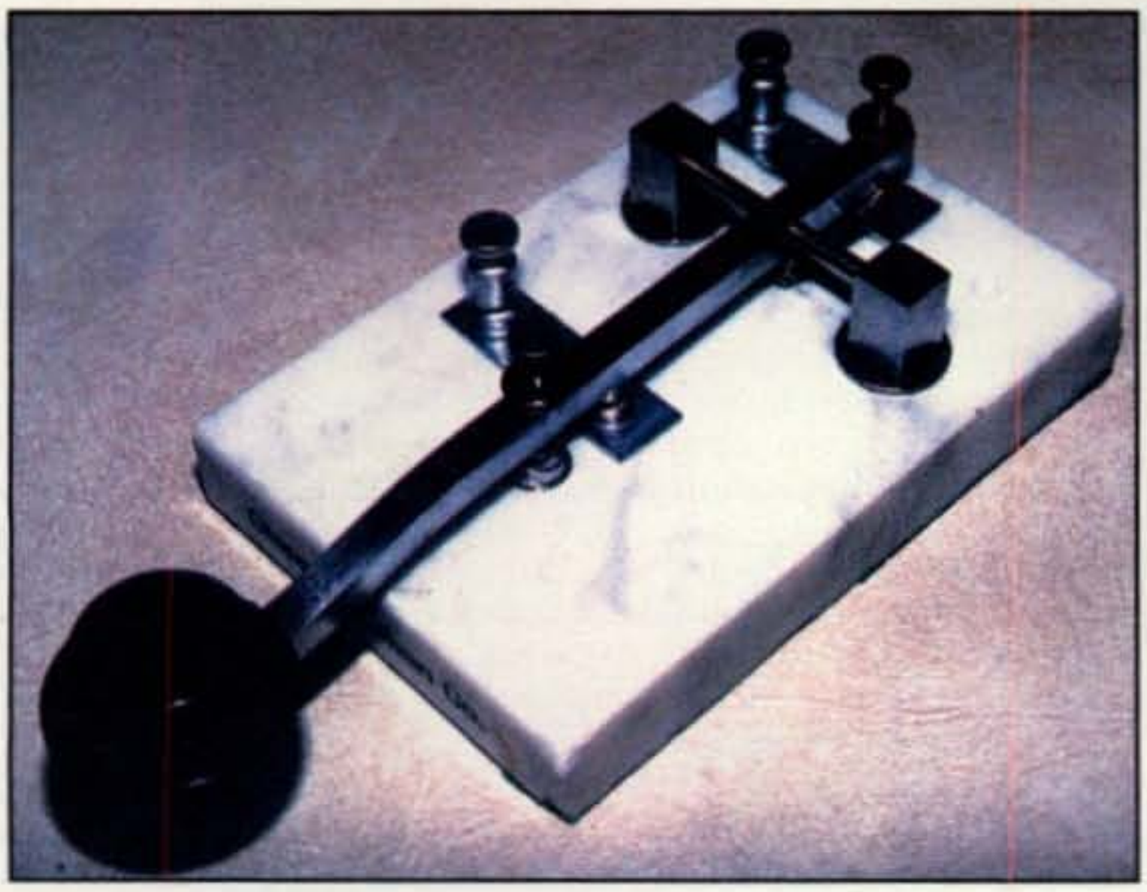


Photo 8– One of the most famous spark keys ever made was the big marble-base Clapp-Eastham Boston Key, and this NS3E-made reproduction with its long arm and large contacts looks just like the real thing. This key also was machined from scrap brass and aluminum. (Photo courtesy of NS3E)

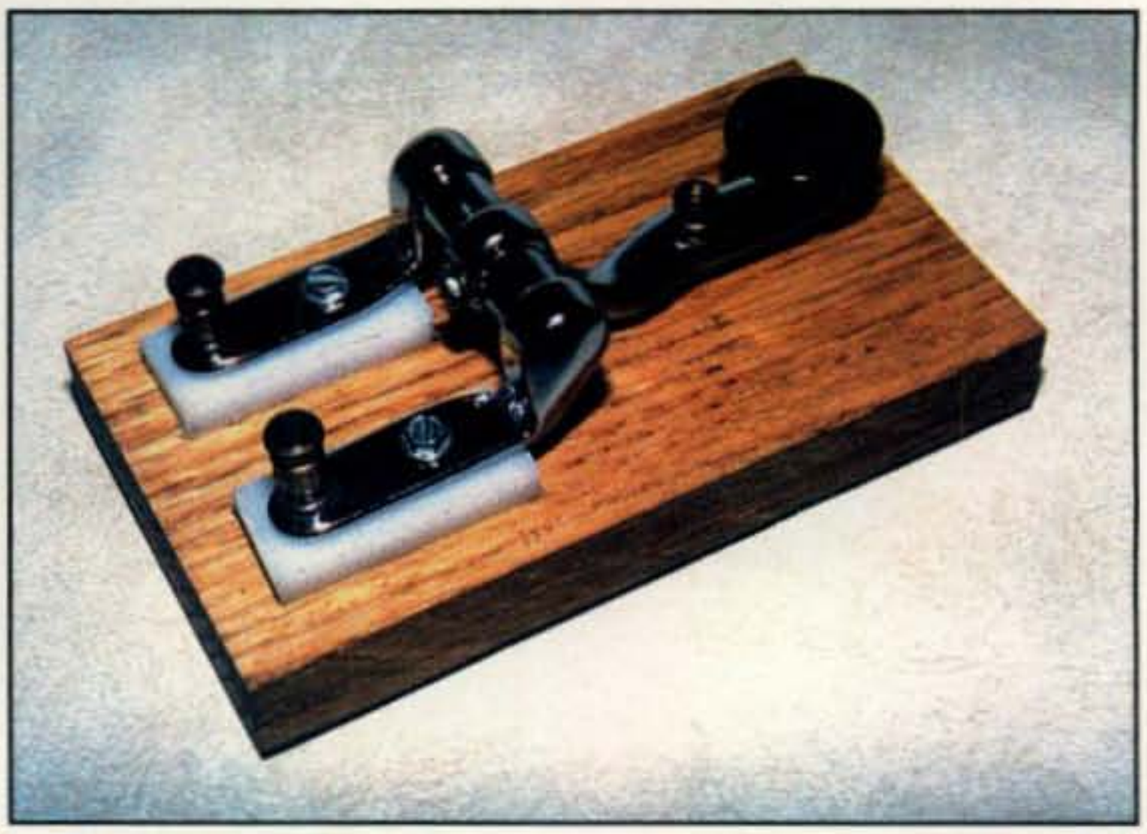


Photo 9– NS3E made this funky Toilet Seat Key from the swinging hardware that attaches a seat to the bowl. This one came from an older seat made with high-grade chrome parts rather than a modern seat made with inexpensive white-plastic parts. No report was available on the feel during use. (Photo courtesy of NS3E)

says he is mainly interested in hand keys, and although he has collected over 150 of the little delights, some highly sought after classics never came his way. As an alternative, he fabricated his own reproductions using only a bench grinder, drill press, dremel tool, hand files, dies, and taps. The keys' main parts are made from scrap brass and aluminum, with difficult-to-make smaller parts such as knurled nuts and screws salvaged from other keys. Ed's "cut some pieces and adapt some pieces" concept is both logical and clever, as much of the personality in hand keys is in their arm and base.

James, KB4LJV, prefers to do more adapting than machining when making his keys. He uses ground-down hacksaw blades and contacts from relays or knife switches for flexible

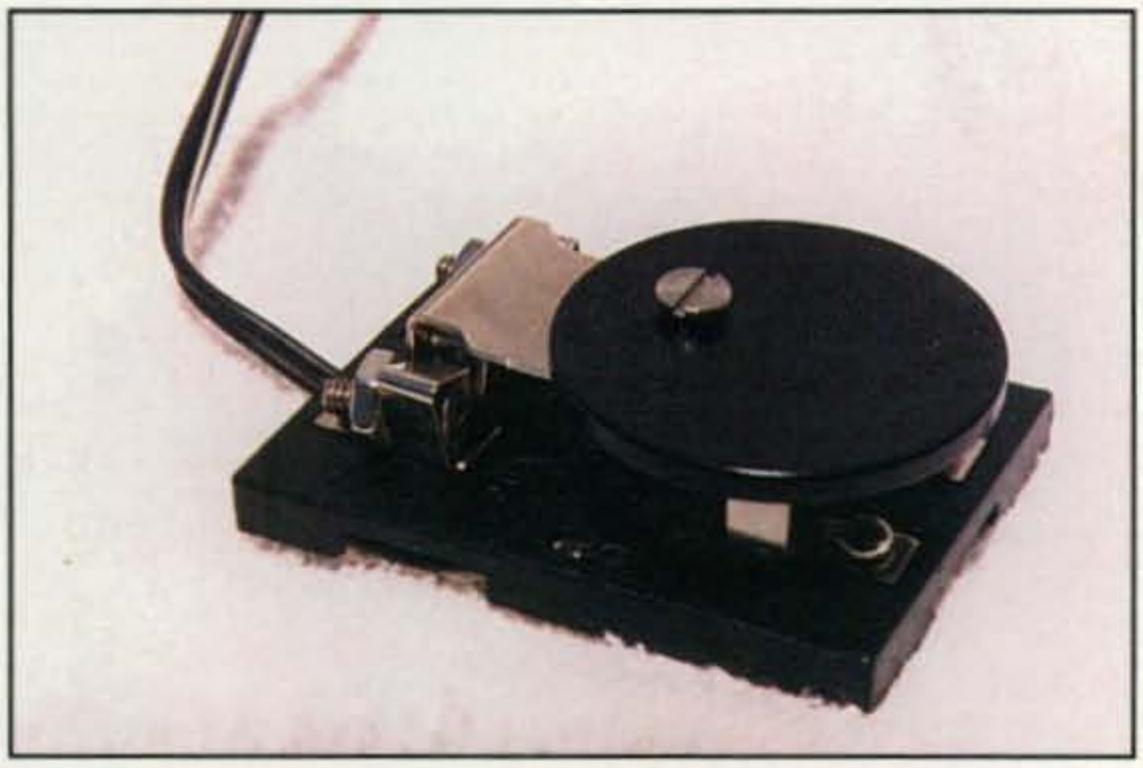


Photo 10– James, KB4LJV, made this tiny tapper from a plastic-base knife switch, half of a PC case rear slot cover, and a wooden disc for a knob. It is simple, but it makes a handy miniature for portable fun. (Photo courtesy of KB4LJV)

arms and contacts; decorative screws, nuts; and cabinet hinges; and even door latches for fulcrum pivot points. Using this approach, one can almost devise one's own kit key!

Both NS3E and KB4LJV use their home-assembled keys on the air and report that they work fine. Jolly good show, guys!

How's Your CW?

Have you noticed how some folks' CW sending is so smooth and readable that it is a genuine pleasure to copy, while others pump out such incoherent code that just deciphering letters and words is a major challenge? Which group of stations would you say enjoy the greatest success DXing, contesting, and/or just conducting casual QSOs?

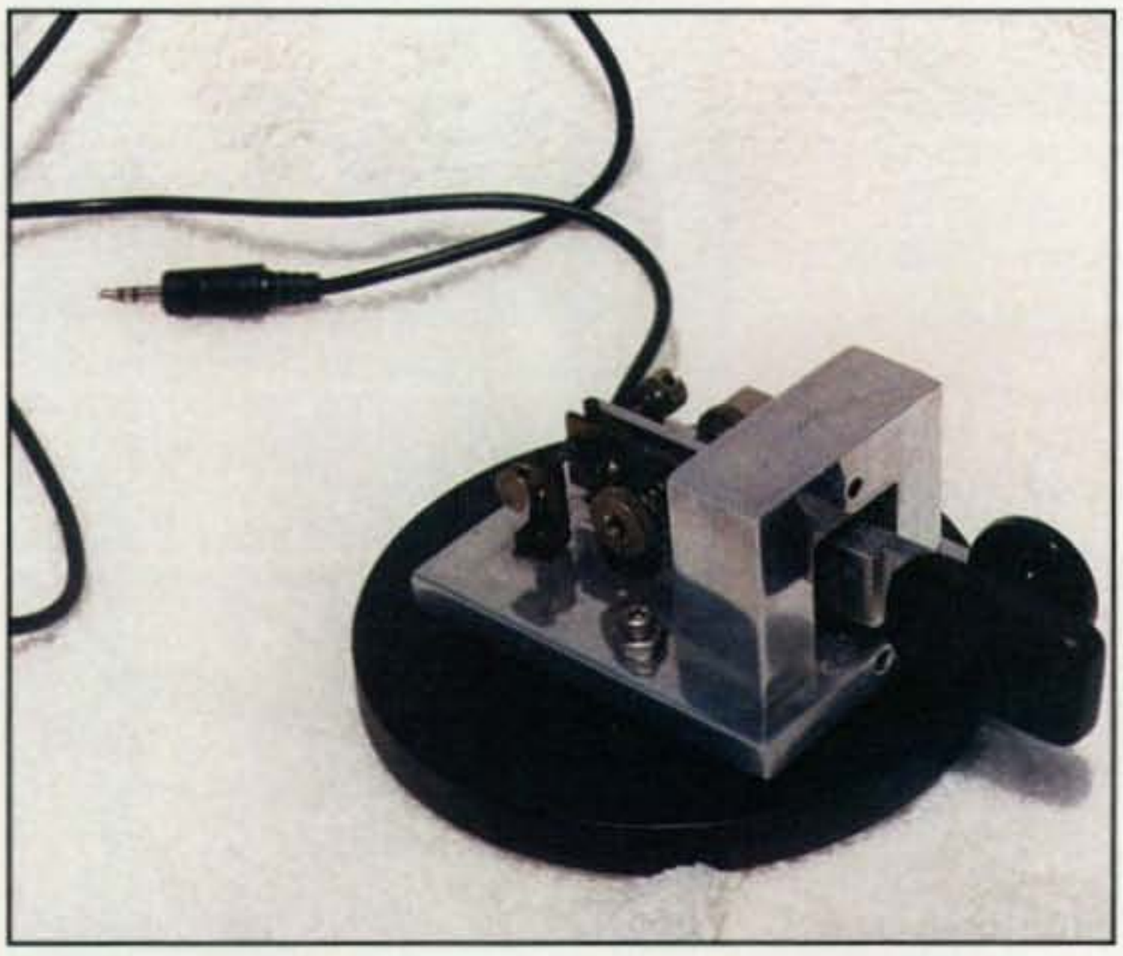


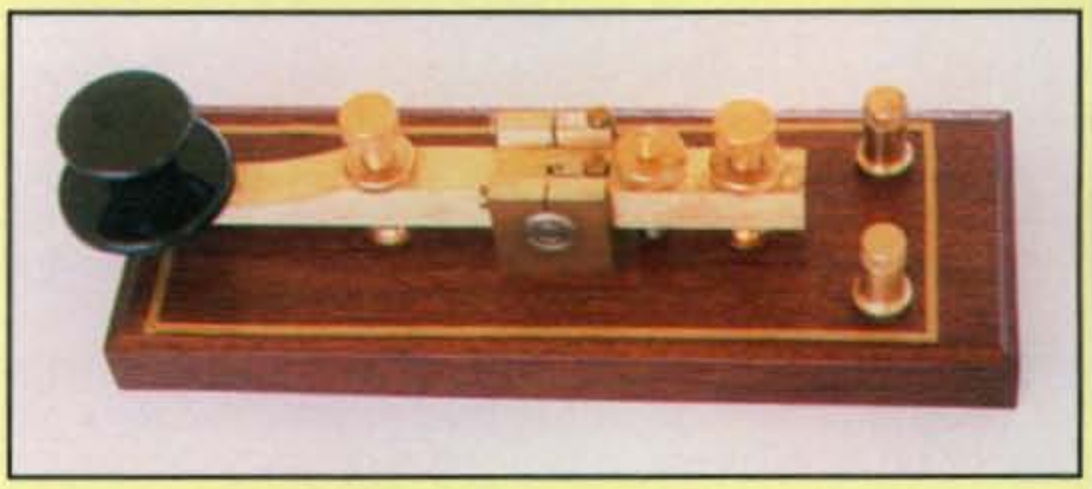
Photo 11– This single-lever paddle, also made by James, KB4LJV, sports a home-devised yoke and arm fitted with a ground-down hacksaw blade for tensioning and a drawer pull for a knob. A metal cat-food can painted black (and removed for this photograph) serves as a dust cover. (Photo courtesy of KB4LJV)

Classy Stripes

Like many of our readers, we have always been intrigued by pinstriped keys, and we also have wondered if those rumors of stripes increasing one's code speed by 5 wpm were frivolous hype. We gave it a good old college try, and by Jove, it's true! Would Doctor Dave jest? Now we reveal our special technique so you too can enjoy big-time telegraphy with your own favorite key or paddle.

Visit your local auto accessories store or Wal-Mart and purchase a small roll of automobile pinstriping tape in a color to complement your favorite key or paddle. The pinstriping is low cost and one roll will usually stripe several keys. Measure four short pieces, remove the adhesive backing, and carefully lay down the stripes in straight lines. If you get the double-line pinstriping, incidentally, just hold down one line/color and peel it from the transparent top coating/carrier before applying it to the key. It's that easy!

As a true life example of how pinstriping dresses up even hand keys, check out the Kent key in our accompanying photograph. Alpha Delta sold it with Kent's solid-wood base and I added the press-on stripes. What a difference!



The Kent key imported by Alpha Delta with stripes added for extra class and flash.

The problem may not be the operator, however, as every hand key, bug, and paddle has its own personality and speed range. Depending on arm length and spring stiffness, hand keys usually "top out" around 15 or 16 words per minute, while bugs start to sound choppy at speeds below 14 or 15 words per minute. Paddles drive electronic keyers that help ensure a 3:1 dot/dash ratio plus insert proper spacing so they are more flexible in use and speed. The drawback, though, is they typically lack the pure CW glamour of a key or bug.

What to do? Try a mix of keys, bugs, and/or paddles over a period of time to determine which ones feel best to your fist. You may emerge with a small collection of keys in the process, but that's fine (no one ever has enough keys!). You then can allocate one key for slower speed, one for medium speed, one bug for higher speed, and one for super-fast contesting. If you would like a real-life analysis on how you are doing, ask a friend to spot-record your transmitted CW at some unexpected time, and then review the tape and consider how you can improve your fist. With practice you may even become a famous CW operator!

Conclusion

That wraps up this keys special friends, but more views and details on additional keys and paddles are already going together for future issues of *CQ*. We aim to please! As I mentioned, too, we would like to include details of your favorite CW instrument(s) in those upcoming columns. Send information directly to me, be sure all photos are clean and clear, and I will take it from there. In the meantime, keep on working CW with those enviable little keys, and here's hoping we meet on 20 or 30 meters soon.

73, Dave, K4TWJ

The (Digital) Circle of Life (and some odds & ends)

BY DON ROTOLO,* N2IRZ

Although the world is analog, more and more of it is being represented digitally. I, personally, am a big fan of the analog world, but as more and more things "go digital," I have come to see the simplicity and, yes, the beauty of digital. Writing this column doesn't hurt my outlook either. This month's column is a bit unusual for me, in that we'll have a look at how so many things in the digital world are intertwined with one another.

The topic idea came to me as I was in the process of renewing my passport, for which two identical photos of a certain size and specification are necessary. Being a ham, I am far too cheap to pay the $8 fee for a pair of passport photos from the local one-hour photo shop, so I decided to do it myself. Driving to a local outlet of a national pharmacy chain that advertises inexpensive prints from digital photos, with the intent of printing out the digital photo I had just taken of myself, a variety of disparate ideas I had been writing about this past year or so came together as a Zen-like whole.

First, I realized that the digital world is no longer encroaching upon our analog world. It has become dominant in everyday life. Tried to activate an AMPS (analog) cell phone lately? They're all digital now. Digital photos, digital TV, e-mail and the internet, even our cars have gone digital, with fiber-optic networks, DSP, and CAN Bus technology. Then I started thinking about my recent columns.

In the past year or so I've written about Digital Radio Mondial (DRM) and the efforts under way to adapt the Orthogonal Frequency Division Multiplexing (OFDM) scheme it uses in HF communications, culminating in the first overseas amateur QSO using that form of digital voice.

I've also written about WinLink 2000, which is essentially an e-mail system that uses the internet for data transport and amateur radio for the "last mile" of the link (which actually can be thousands of miles). The issue there was a recommendation for the use of PacTOR III as an efficient data protocol for data transport over HF. Because of the proprietary nature of PacTOR III, and its relatively high cost, I also mentioned (and will soon write more about) a new high-efficiency data mode being developed—SCAMP.

Before that, I had also written about Digital ATV, for which folks in Europe are essentially deploying terrestrial transmitters that look just like a satellite to a standard digital satellite receiver (think DirecTV or DISH Network), allowing hams to use off-the-shelf receiving hardware for digital ATV signals off the local ATV repeater.

More recently, April's column was about the ARRL's High Speed MultiMedia (HSMM) Working Group. These folks are working toward creating a ham internet, or Hinternet, where data transport becomes ubiquitous. The content of that data—video, image, audio, text, whatever—is (almost) irrelevant, as is the band and specific data rate. What matters to the HSMM folks is that the transport mechanism appropriate for the medium is available and functional.

How does all of this tie together, and what does my passport photo have to do with any of it?

Getting Orthogonal

Okay, let's start with the DRM stuff. OFDM is a fancy way of saying "using a bunch of different fre-

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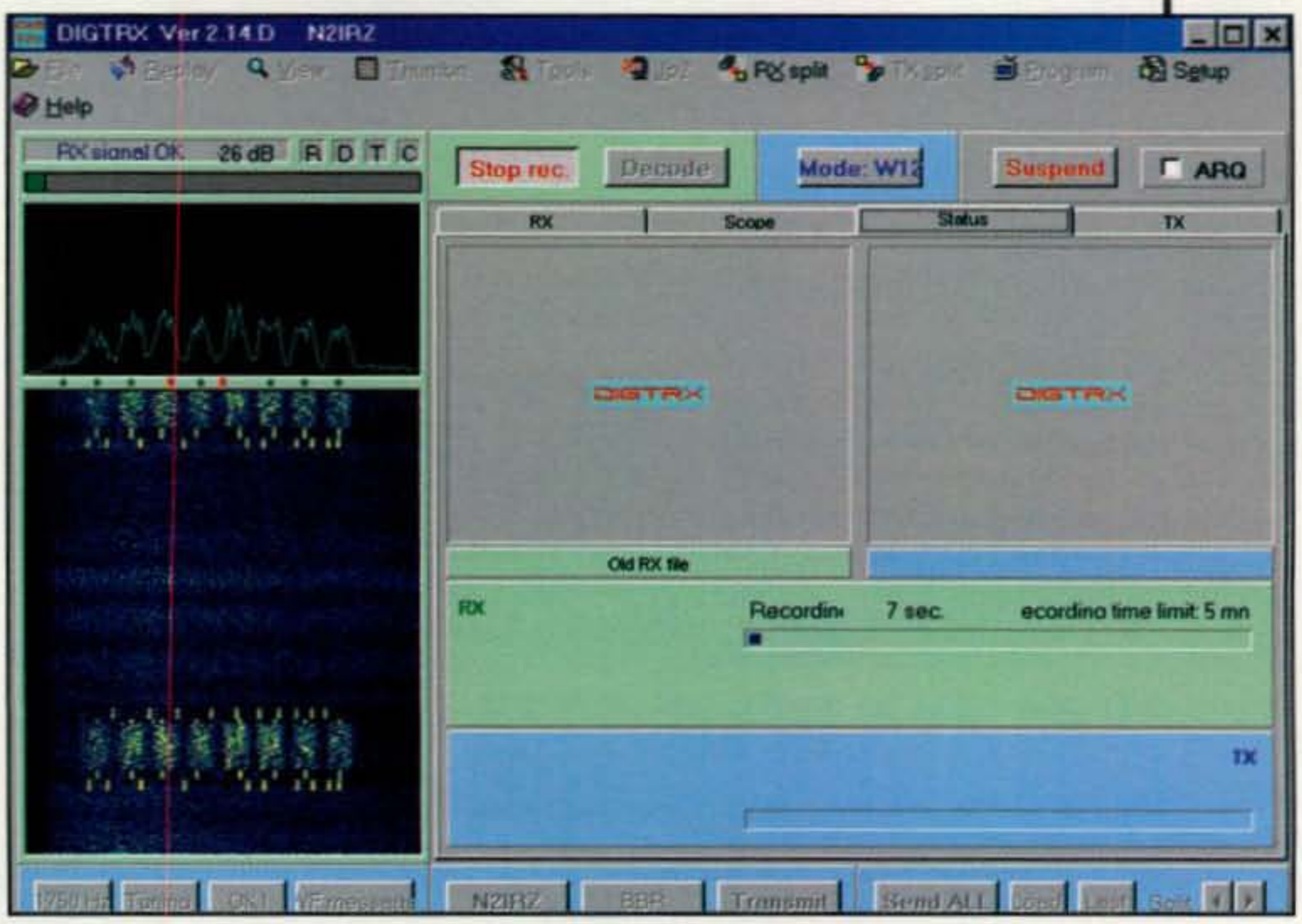


Receiving the "mystery" signals on 14.111 MHz and wondering why my DIGTRX program decoded the file okay but I wasn't seeing any images. As it turns out, I was not seeing DIGTRX digital SSTV signals, but an alpha test of a SCAMP mode. Note the multiple carriers. This is version 2.14; version 3 has already been released. I hope to play with DIGTRX and other DSSTV software, as well as cover SCAMP, in future columns.

quencies at the same time." Think of a PSK31 signal, which can carry about 31 bits per second in about 31 Hz of bandwidth. If we were able to put a hundred of them on the air at the same time, we could (theoretically) send 3100 bits per second of data using just over 3 kHz of bandwidth. OFDM is basically the same idea, but there are redundancies and interdependencies among the different signals which greatly improve the signal's resistance to data loss from (relatively) noisy HF channels. Because TANSTAAFL (There Ain't No Such Thing As A Free Lunch), we lose a bit of the data rate, but the gain in robust quality is well worth it.

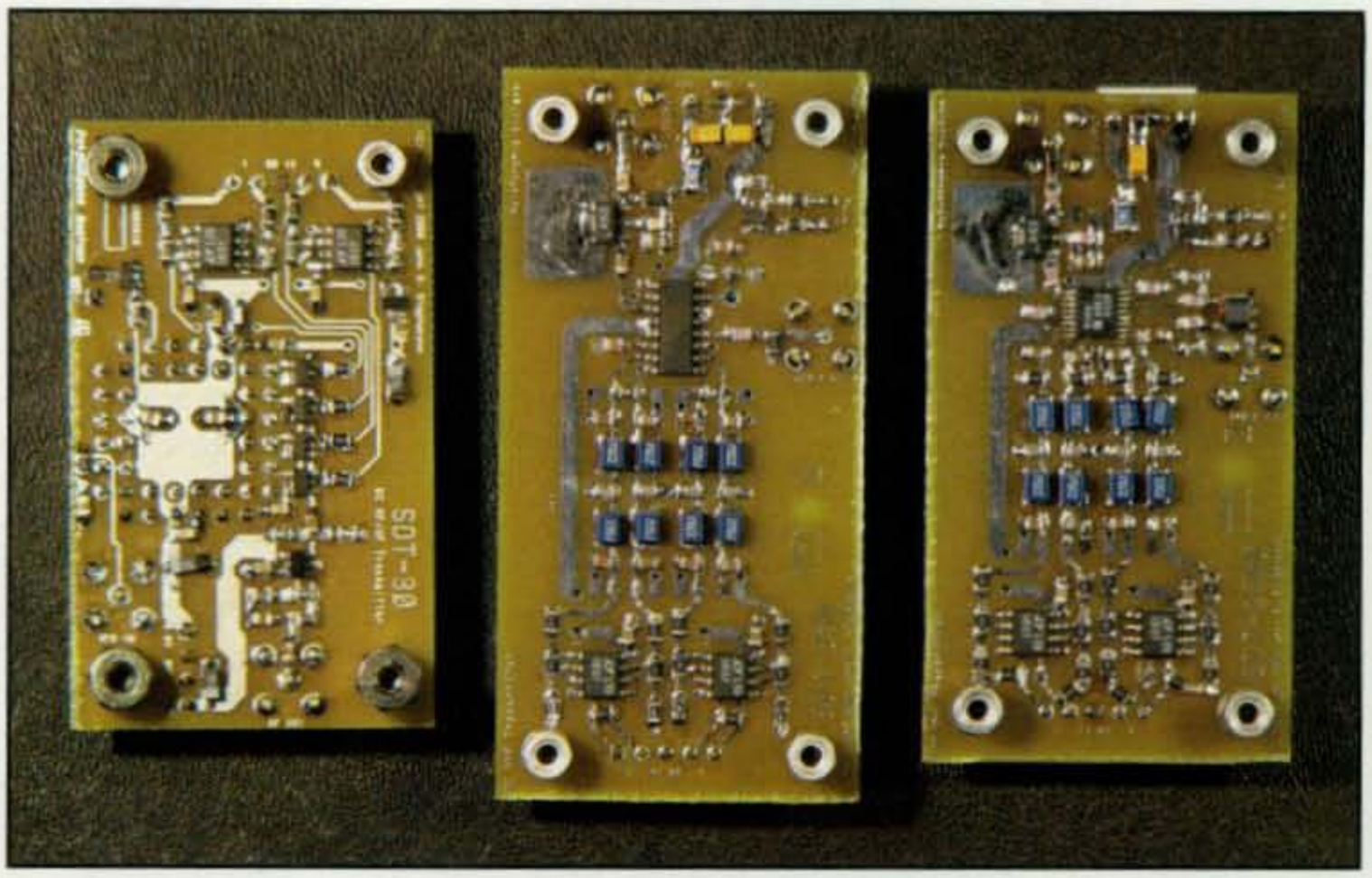
Those redundancies and interdependencies are important to the superior performance of some OFDM methods. Math majors understand the huge value in the term *orthogonal*. It means that we can extract data not only from what is there, but also from what is not there. Do the math right and it becomes very powerful. Similar math techniques are behind the performance of spread-spectrum and PSK31 signals.

Thus, it makes sense to use these techniques if you want a better system. Of course, such things do not exist in the analog world; only digital processors can do the kinds of math necessary. And so it is with SCAMP, which ties in with DRM and OFDM through DIGTRX and HSMM. Allow me to clarify.

A Strange Signal

The HSMM folks have a message reflector where they discuss ideas, and I subscribe to it. After all, HSMM is a big thing in amateur radio, and I'm always looking for new things to write about. Just yesterday someone mentioned a strange signal that appeared on 7095 kHz, one with eight carriers taking up about 3 kHz. Another fellow on the reflector mentioned that it sounded like DIGTRX, a relatively new digital image (think Slow-Scan TV) software for amateurs.

I'll write more about DIGTRX in a future column, but for now understand that it uses OFDM, eight carriers spaced a few hundred Hertz apart, to get data throughput in the few hundreds of bits per second range, depending on the redundancy setting you choose. It is intended and used for image transmission on HF, where a 10-kB JPEG image can be sent in under 2 minutes. It isn't used for data, because data transmissions are limited to 300 bauds below 28 MHz. (It also has a cool feature to display your callsign, or a simple image, on a waterfall display like that used for PSK31).



A view of the quadrature modulator boards for the HSMM modems now in alpha testing. Shown left to right are the HF, VHF, and UHF boards. Add an appropriate local oscillator (LO) and you have a complete HSMM data transmitter, with enough flea power to drive a small RF power-amplifier stage. These are on the air and being tested as you read this. (Photo by John Stephensen, KD6OZH)

After some research, I downloaded DIGTRX and, finding a signal on 14111 kHz, listened in early this morning. I was able to tune in the signal and actually decode it, but I was disappointed that I could not see an image. After all, this is image software and I wanted to play Digital SSTV. (Remember, I still needed to come up with a column at this point, and I had yet to make the "connection" among all these disparate topics.)

After trying every graphics program I had to open the decoded files, I tried WordPad. I have often found that looking at a file in a text editor sometimes gives clues to the file's real format. This was true in this case as well. Right there in the top of the file was the clear text "PaclinkSCD-0.3.2." Not sure what that meant, but something about it sounded familiar.

Cue Simba, Stage Right

At about that time the local pharmacy chain was opening, so I burned the photo of myself onto a CD and hopped into the car. As I drove there, I guess my mind was wandering and thoughts of the photo, Paclink, DRM, OFDM, HSMM, and DSSTV all melted together *(visualize Don's brain resembling a big bowl of alphabet soup—ed.)*. It was then that I realized that it's just a huge circle of life; everything is interconnected with everything else, and it all ties together. I won't bore you with my visions of Gaia, however.

You see, PacLink is what I wrote about in my WinLink 2000 column. It is the software interface between your computer and the WinLink 2000 system via a packet link. What I had been seeing on 14.111 while looking for DSSTV was actually alpha testing of SCAMP. The same basic "DRM" methods of OFDM were also being alpha tested by the HSMM working group (the results of which should be available around the time you are reading this).

The point is all of those very different aspects of amateur radio are related to one another by much more than just being digital, or by being OFDM, or by being something I've written about recently. The critical point is they all are the way of the future—more efficient, robust, easier to use, and (dare I say it?) they bring amateur radio once again to the forefront of technology.

Some years ago I lamented in print that the days of experimentation were over. It was impossible for the radio amateur to develop an integrated circuit, or some other basic building block, because the technology had advanced too far for the average ham to ever catch up. We were slipping towards becoming appliance operators by force, maybe relegated to building some new, unneeded variation of a Yagi or keyer.

That particular column actually ended on a high note, because it rec-

ognized that the new area for amateur experimentation was in software. Regardless of the hardware, there were things that could be done in software that had never been done before, and here we had very powerful, plentiful, and cheap computers on which to do it.

Now, not too many years later, it has come to pass: The one link between all of these many different subjects is software. Variations on a theme, one could say, close enough in implementation for me to see the connection. There, in the software, lies *the basic truth about amateur radio:* It is alive, well, and kicking. Feel free to stay with CW and SSB (modes I enjoy myself), but recognize that we are on the edge of not an evolution, but a revolution in how we use our valuable spectrum. Ride the wave.

Odds & Ends

There are a few subjects I have been meaning to touch upon for some months now. None of them have warranted a column of their own, though, so here they all are together. The first is PSK62.

PSK62

PSK62 is essentially PSK31 doubled. The signal is twice as wide, it runs twice as fast (much faster than I can type!), and it works just great. I have seen fellows trying to respond to a PSK62 signal using PSK31, telling the other operator, "Your signal's too wide; can't decode you OM" (that's a real quote). There is also a PSK124 mode, but I have yet to use it or see it on the air. I guess the point is there are so many new modes coming out these days, whenever you see a new one, it behooves you to take a moment and (try to) learn what it is.

Identifying New Modes

This is where the value of the internet becomes apparent—research. I wish there was one site I could access to help me identify the various modes I might be seeing. One site has many of the digital modes catalogued, with a spectrum display and sound clips, which I found very helpful. Look in the Resources section in this column for the link to "DIG_intro.htm."

Programming

I wish I could write more about programming, but it generally would be far too large a subject, and a bi-monthly column is not the best venue for such a

topic. With my recent robotic dalliances I have been forced to get more and more into software, but not in relation to amateur radio. Since all robots are digital at the start, interfacing with an analog world, there are some valuable lessons to be learned. For instance, I finally found a use for those old packet terminal node controllers (TNCs) I have lying around—moving data to a robot over a flea-power RF link.

No matter what the task, it can probably be done in software. Like the basic point of this column, I urge you to exercise your brain a little, get a microprocessor or a robot kit (such as the ones from Parallax, Inc.), and start learning—err . . . playing.

555 Timers

Despite being a linear circuit, the well-known 555 timer is a boon to digital experimenters seeking a cheap, reasonably stable source of TTL clock signals and other timing signals. I've been using them since before my college days, more than 25 years ago. In my recent forays into robotics, as a mentor for a FIRST team (see Resources) I needed to generate a variable duty-cycle PWM (Pulse Width Modulation[1]) signal to test a motor controller. Looking at the 555 equations, I couldn't see how to get a wide range of duty cycle, so I did what I usually do when I need advice—check the internet.

What I found was a cool freeware/demoware program from Schematica that lets you plug in some basic information (such as frequency and duty cycle) and then out pops a design. I don't want to get too deeply into the (huge) subject of circuit simulation, but as long as you understand the limits of a simulation, it's a lot faster (and cheaper) than soldering together real components. There are plenty of freeware, demoware, and inexpensive costware programs out there that hams will find valuable, and I urge you to learn about them and use them in your next project.

CQ Contest

What I love most about this hobby are its unlimited possibilities. I thoroughly enjoyed my time putting WW2CQ/62 on the air in digital and thank all of you who completed QSOs with me. It really was an odd sensation to have stations calling me, even though I could hardly call it a pile-up. Now I see what it must be like to operate in a contest. I have to try it sometime.

In the coming months I plan on writing more about HSMM, as well as covering SCAMP and Digital SSTV. If there's a special topic that you'd like to read about, drop me a line. I'd love to hear from you. Until next time . . .

73, Don, N2IRZ

Note

1. Pulse Width Modulation (PWM) is used to control direction and speed of remotely controlled objects, such as robots or radio/control models.

Resources

For more information on many of the topics discussed in this month's column, check out the following web links:

The Digital Signals website, which can help you identify a new digital mode you're hearing or seeing, has a large collection of spectrum plots and audio samples for most digital modes. Go to: <http://rover.wiesbaden.netsurf.de/~signals/DIG_intro.htm>.

DIGTRX software can be compared to SSTV, but it is not exactly the same. Like many things digital, either you receive it perfectly or not at all, which is very different from analog SSTV. The homepage of Roland Zurmely, PY4ZBZ, starts out in Portuguese, with English towards the bottom. Explore the various links; it is well worth the time. Go to: <http://paginas.terra.com.br/lazer/py4zbz/>.

WinLink 2000 is found at <http://winlink.org>. If you want more information on SCAMP and the alpha test, review the files at <ftp://winlink.org/scamp/>.

DRM information can be found at <http://www.drm.org>, including links to technical descriptions of the DRM standard and a way to buy the DRM decoder software. I especially like the audio samples; the sound is startling in its clarity and fidelity.

More information on HSMM can be found at <http://www.arrl.org/hsmm/>, and a Google search of "HSMM radio" will yield quite a collection of useful links.

The Official PSK31 homepage is <http://www.aintel.bi.ehu.es/psk31.html>. Almost everything you'll ever need is there, but there are many other sites found with Google that have useful information.

Parallax makes the BASIC Stamp and a bunch of other very fun things to help you get things done and learn programming in the process. Go to: <http://www.parallax.com>.

The 555 timer simulator can be found at <http:www.schematica.com>, and a Google search of "electronic circuit simulation" brings up over a million hits.

For information about FIRST (For Inspiration and Recognition of Science and Technology), a very worthwhile and fun organization that introduces high school kids to science, engineering, and technology, visit <http://www.usfirst.org>.

what's new

BY KARL T. THURBER, JR.,* W8FX

PicoKeyer Kit, HamStuff Website, Discone Antennas, and more

This month we'll focus on some noteworthy radio hamshack accessories, antenna accessories, software, new applications on the net, and other useful items of timely interest.

Accessories for the Radio Shack

New Version of the NØXAS PicoKeyer. Dale Botkin, NØXAS, has announced the newest version of the popular PicoKeyer Kit (photo A). The original PicoKeyer was the subject of a popular construction article that appeared in the December 2003 issue of *QST*.

The PicoKeyer is a compact, ultra-low-power memory keyer with many features. Four 60-character message memories can include programmed pauses and auto-incrementing QSO/serial numbers, and any message can be used as a repeating beacon with a repeat delay up to 99 seconds. Measuring just under 1.5" × 2", the PicoKeyer is ideal for portable operation or for building into rigs. Morse code speed can be controlled by an optional potentiometer or via the easy-to-use, one-button menu system. The PicoKeyer can be used with virtually any single- or dual-lever paddle, straight key, or bug (a paddle is required for message entry, but it's not required for playback).

The newest PicoKeyer incorporates many new capabilities. Besides analog or menu-driven speed control in the last version, Dale has added increased message memories, "Bug" mode, automatic QSO or serial-number insertion, more robust MOSFET keying output, optional voltage regulator for non-battery applications, improved memory message editing and entry, and more.

*289 Poplar Drive, Millbrook, AL 35054-1674
e-mail: <w8fx@cq-amateur-radio.com>

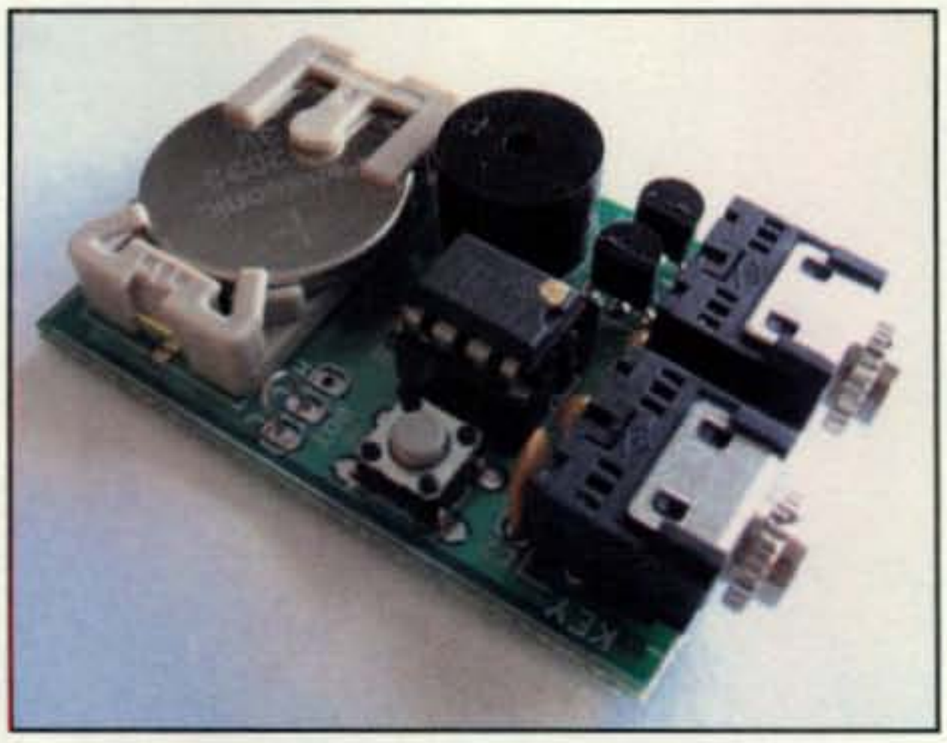


Photo A– Dale Botkin, NØXAS, has announced the newest version of the popular NØXAS PicoKeyer Kit, which adds many new features and capabilities at the same price. (Photo courtesy of NØXAS)

The PicoKeyer complete kit contains everything you need to build a stand-alone Morse code keyer or code practice oscillator. The latest PicoKeyer chip and all parts are included, along with a high-quality, double-sided printed circuit board with plated-through holes and silk-screened component outlines.

The PicoKeyer is available as a full kit for $17.99; just the keyer chip is $6.95. The new chip is a direct replacement for earlier analog PicoKeyers, and it can easily be retrofitted into applications using the original, non-analog chip versions.

For more information, contact Dale Botkin, NØXAS, 16624 Elm St., Omaha, NE 68130 (e-mail: <dale@botkin.org>; on the web: <http://www.HamGadgets.com>). Full details, specifications, and ordering information for the PicoKeyer are available on Dale's website.

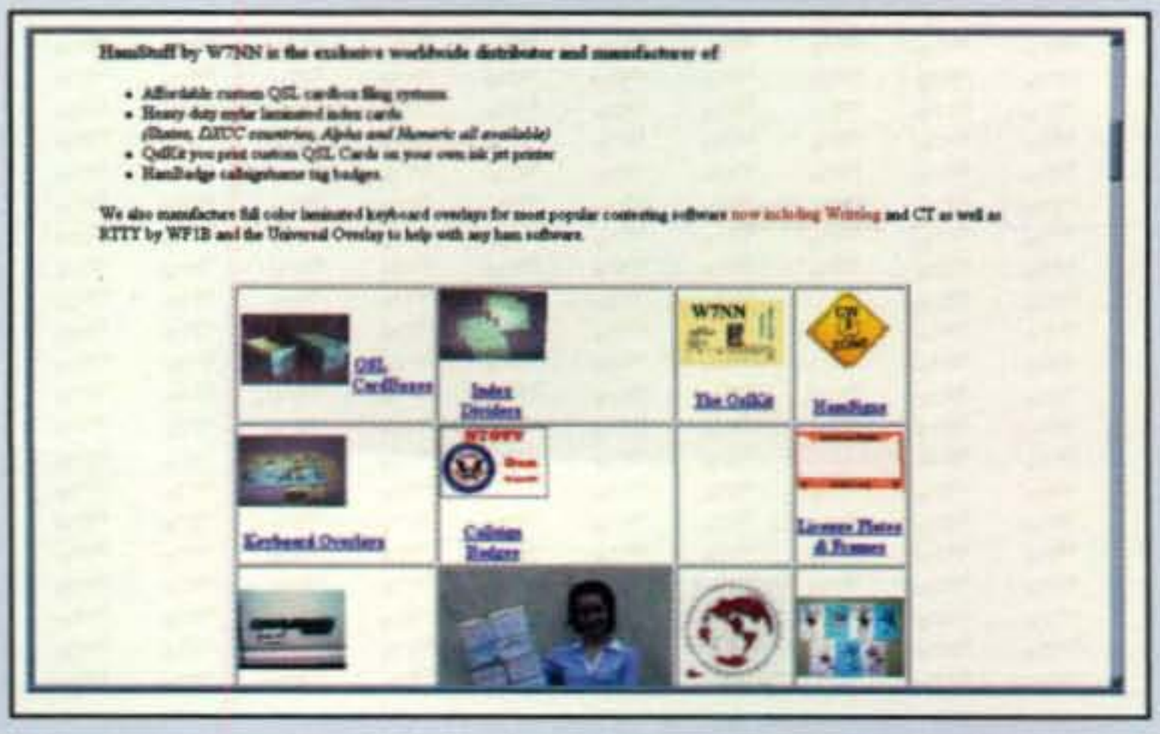


Fig. 1– HamStuff by W7NN offers a wide variety of unique QSL systems, contest, and DX aids for amateur radio operators. HamStuff also manufactures full-color laminated keyboard overlays for most popular contesting software. Check out the HamStuff website at <http://www.HamStuff.com>. (Screen capture from the HamStuff website)

Photo B– The Xuron TK2300 Wire Harness Tool Kit features three critical tools for a wide range of wire-harness and wire-processing applications. See the column for details on this handy tool ensemble. (Photo courtesy of Xuron Corporation)

QSL Systems, Contest, and DX Aids for Amateur Radio Operators. The HamStuff by W7NN website (see fig. 1) is a collaboration of Ronald Hill, W7NN, his wife Grace, and daughters Emily and Gentry. According to Ron, HamStuff is the exclusive worldwide distributor and manufacturer of affordable custom QSL cardbox filing systems; heavy-duty Mylar® laminated index cards (states, DXCC countries, alpha and numeric are all available); the QslKit, in which you print custom QSL cards on your own inkjet printer; and HamBadge callsign/name tag badges. Also available are license frames, DX return envelopes, vinyl QSL wall holders, laminated world projection maps, and more.

HamStuff also manufactures full-color laminated keyboard overlays for most popular contesting software, along with the Universal Overlay to help with any ham software. Ron also notes that HamStuff probably invented the category for "The QslKit" and QSL CardBoxes, as well as the DXCC and State Index dividers. You can place orders using check, money order, credit card, or via PayPal. Please check with Ron on foreign shipping.

Contact HamStuff by W7NN, 10624 Zephyr Lane SW, Olympia, WA 98512 (360-357-7974; e-mail: <W7NN@aol.com>; on the web: <http://www.HamStuff.com>). Ron adds that if you have questions about his products that cannot be answered by viewing the website, feel free to call him toll-free at his real-estate office at 1-888-357-7779 (it's okay; he owns the company!).

Wire Harness Tool Kit Packs into Tri-Fold Canvas Pouch. A compact wire harness tool kit that features an adjustable wire stripper, a utility flush cutter, and precision cable slitter—all of which pack into a handy pocket pouch—now is available from Xuron Corporation of Saco, Maine.

Photo C– Saratoga Amateur Radio Products offers the EZ-PSK USB™, a transceiver to sound card interface that uses the computer's USB port. The new product is for the user who wants to connect to the computer's USB port rather than its serial port. (Photo courtesy of Saratoga Amateur Radio Products)

The TK2300 Wire Harness Tool Kit (photo B) features three critical tools for a wide range of wire-harness and wire-processing applications, all packed into a tri-fold canvas pouch with three pockets to protect each tool. Included are the Model 501 Wire Stripper with a thumb-adjustable cam for wire sizes from 10 to 26 AWG, the Model 2175 Micro-Shear® flush-cutter utility tool, and the Model 440 High Precision Scissors for slitting cable jacketing.

Photo D– AOR USA has announced two new discone antenna systems designed for broad bandwidth. The DA5000, shown here, is a very high-performance, commercial-grade UHF discone antenna that covers frequencies from 700 MHz to 3 GHz. (Photo courtesy of AOR USA)

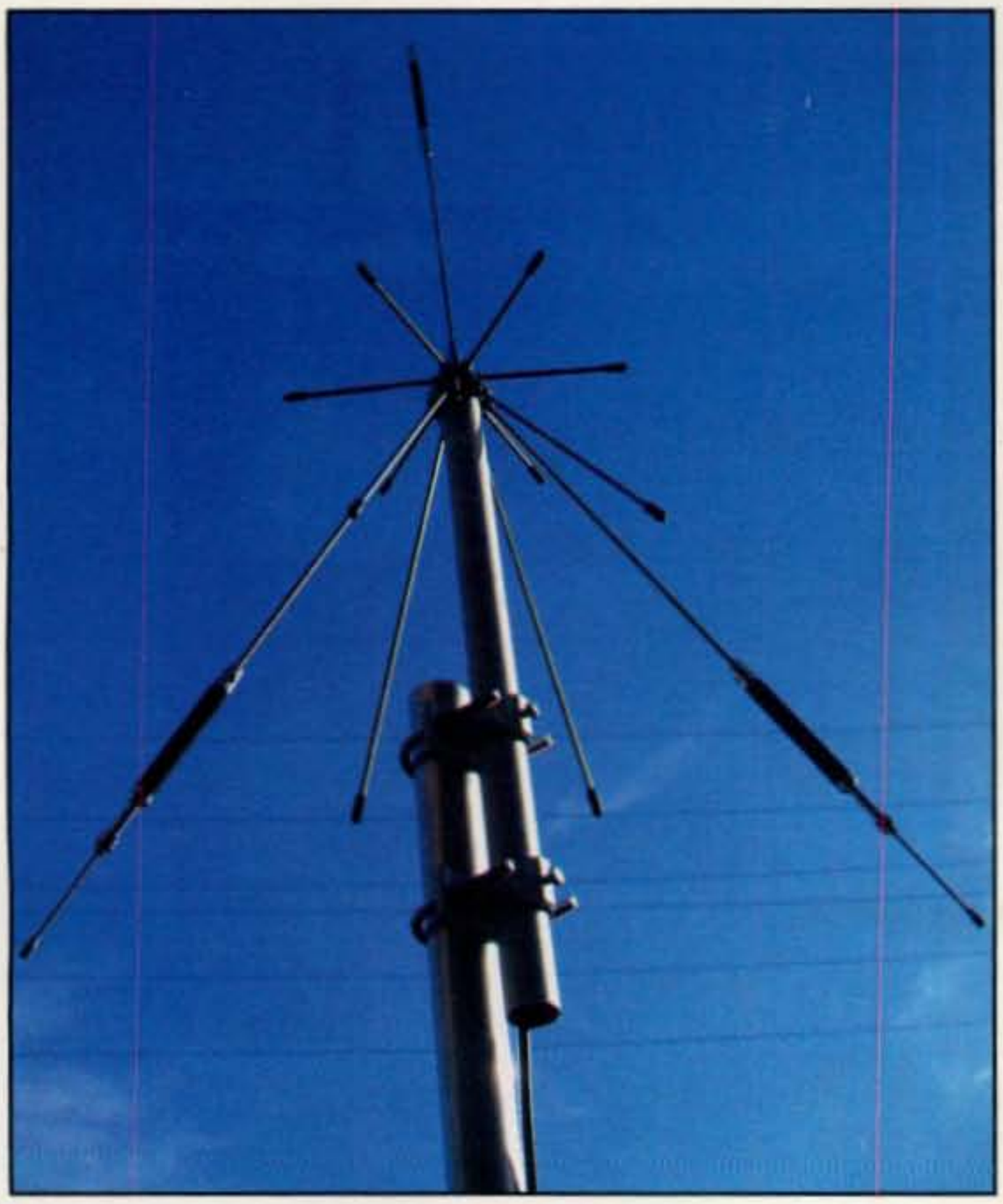


Photo E– The DS3000A discone in this photo can receive from 75 MHz to 3 GHz and can be mounted in confined areas. The DS3000A also can support transmitting on 144, 430, 904, and 1200 MHz, safely handling up to 50 watts. (Photo courtesy of AOR USA)

Designed to fit into a pocket attache, tool box, or field service kit, the Tool Kit has two additional smaller pockets to store rulers, scribes, or scalers, and has Velcro® closures. Each tool is ergonometrically designed for proper leverage and has Xuro-Rubber® cushioned hand grips and a Light-Touch™ return spring. The TK2300 is list priced at $47.99.

Literature is available upon request from Xuron Corporation, 62 Industrial Park Rd., Saco, ME 04072 (207-283-1401; e-mail: <info@xuron.com>; on the web: <http://www.xuron.com>).

Saratoga EZ-PSK USB Transceiver to Sound Card Interface with USB Interface. Saratoga Amateur Radio Products, makers of the EZ-PSK™ and PowerPanel™ family of products, has announced the EZ-PSK USB™, a transceiver to sound card interface that uses the computer's USB port. The new product (photo C) is designed for the user who wants to connect to the computer's USB port rather than its serial port. The EZ-PSK USB uses the computer's USB port for the PTT (push-to-talk) function and to provide rig control. It's designed to meet the demand created by popularity of digital-mode operation and the USB interface.

"By adding a native USB interface and rig control to our EZPSK, we offer customers a one-box solution for CAT control and digital mode operation," said Mitch Cipriano, Saratoga president. "This solution is not only less complex, but also offers better value for our customers."

The EZ-PSK USB uses an integrated USB interface, so no external adapter is required; it makes use of the computer's USB port for the PTT function and rig control. An optional cable is required for rig control.

Some features include universal compatibility, working with all sound card applications and all digital modes; jumperless setup, designed to work with your rig out of the box; dual audio isolation, in which the EZ-PSK isolates the audio from the computer to the transceiver and the audio from the transceiver to the computer; operation with no external power, making it ideal for portable operation; small, lightweight (less than 7 oz.) design; versions available for ICOM, Yaesu, and Kenwood transceivers (Ten-Tec upon request); inclusion of popular digital-mode software on CD; and a one-year warranty. The EZ-PSK USB has a suggested retail price of $75.95 and is widely available at ham radio stores, including Ham Radio Outlet.

For more information, contact Mitch at Saratoga Amateur Radio Products, 467 Reynolds Circle, San Jose, CA 95112 (1-888676-4426; e-mail: <mitch@saratogaham.com>; on the web: <http://www.saratogaham.com>). While visiting the website, also check out the firm's other new products, such as the latest Saratoga Power Panel and the Saratoga PowerMeter.

Antennas and Antenna Accessories

AOR USA Announces Two New Discones. AOR USA has announced two new discone antenna systems that are designed for broad bandwidth and feature professional-grade construction.

"The DA5000 and DS3000A are designed to maximize the operation of newer receivers capable of capturing signals of 2 GHz or more," said Takashi "Taka" Nakayama, KW6I, Executive Vice President of AOR USA. "The new antennas simplify operations for the user, making one antenna do work that often required multiple antennas and feed lines. In addition to reception, the DS3000A also has the capability to handle multiband transmitters."

The DA5000 (photo D) is a very high-performance, commercial-grade UHF discone antenna covering frequencies from 700 MHz to 3 GHz. Only 1 foot high and weighing just 1.6 pounds, the DA5000 presents a small wind load and is built to very exacting tolerances. AOR recommends the use of low-loss cable in order to derive maximum performance from the DA5000. The antenna feed point has a low-loss Type N connector.

The DS3000A (photo E) can receive from 75 MHz to 3 GHz. Built to precision standards, its relatively small size (only 2.9 feet high) and light weight (just 1.55 pounds) present a small wind load. It can also be mounted in confined areas. The DS3000A can also support transmitting on 144, 430, 904,

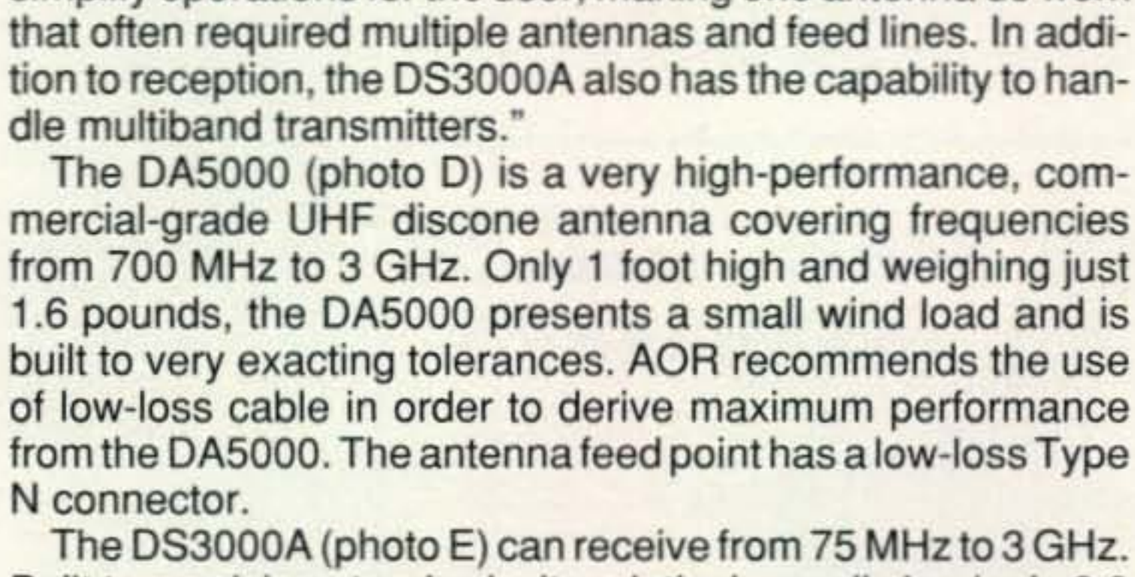


Photo F– Miracle Antenna's QPack Precision Tuner is a deluxe manual portable tuner incorporating exclusive new features. Its design permits an extremely wide range of matching capabilities from 3.5 to 56 MHz. The tuner handles up to 30 watts. (Photo courtesy of Miracle Antenna)

and 1200 MHz, safely handling up to 50 watts. The antenna system includes mounting hardware for standard masts and 10 meters (33.8 feet) of low-loss RG58A/U cable terminated in a Type N connector. Manufacturer's suggested retail price for the DS3000A is $129.00 USD; MSRP for the DA5000 is $339.00 USD; dealers are free to set their own prices.

For more information, contact AOR U.S.A., Inc., 20655 S. Western Ave., Suite 112, Torrance, CA 90501 (310-787-8615; e-mail: <info@aorusa.com>; on the web: <http://www.aorusa.com>).

New from Miracle Antenna. Miracle Antenna has announced the QPack Precision Tuner (photo F), a deluxe manual, portable tuner incorporating exclusive new features. The QPack uses Miracle's own Flatpak variable capacitors, which are sealed, gasketed units that are high-capacity, low-loss, and very compact. The QPack's modified link-coupled design with an exclusive input stage permits an extremely wide range of matching capabilities (reportedly >15:1) at high efficiencies, from 3.5 to 56 MHz.

The Qpack Precision Tuner handles up to 30 watts. It will feed balanced lines, coax, random wires, and whips without any external baluns, and it's built into a tough, extruded-aluminum enclosure. The controls are oversized, high quality, Rogan soft-touch knobs for a silky-smooth, weighted feel without backlash. Those who recognize performance and craftsmanship at its finest will appreciate this tuner. It also is modestly priced at $149.95.

Miracle Antenna also has announced the Ducker family of portable antenna devices (photo G). The Ducker, available in PL (PL-259) and IL (inline) versions, is designed around the Miracle Whip C-VAT (Continuously Variable Auto Transformer) tuning unit. This design permits transmitting with a short whip throughout the entire HF range for convenient portable operations, with the works mounted right on the radio. The Ducker is the Miracle Whip without the whip: simply pop a rubber duck or telescoping whip on top, attach the unit to your radio, and you are set for HF/VHF/UHF operations with a very small footprint.

The Ducker PL version (for PL-259 series connectors) is excellent for use with the Yaesu FT-817, ICOM 703 and 706, and other portables. The Ducker provides a large boost in HF receive sensitivity (up to 30 dB) with a short duck while retaining full VHF/UHF transmit capability, and can even be used for minimalist HF transmitting (25 watts PEP maximum). The Ducker IL (inline version) is said to be excellent for use with handie-talkies such as the Yaesu VX-7 and Kenwood THF-6; general-coverage receivers such as the ICOM IC-10; and handheld scanners.

With the Ducker IL, shortwave and ham signals reportedly come booming in with the standard rubber duck, and VHF/UHF TX on the same antenna is only a click away. As a bonus, either unit can tune a remotely mounted, coax-fed antenna or random wire over most of the HF range (tuning range depends on the antenna). The Ducker (either version) is $129.95.

Order from your local dealer or directly from Miracle Antenna. For more information, contact Miracle Antenna, 2705 Bates Road #303, Montreal, Quebec, H3S 1B4 Canada (1-866-3116511; e-mail: <lebloke@allstream.net>; web: <http://www.miracleantenna.com>).

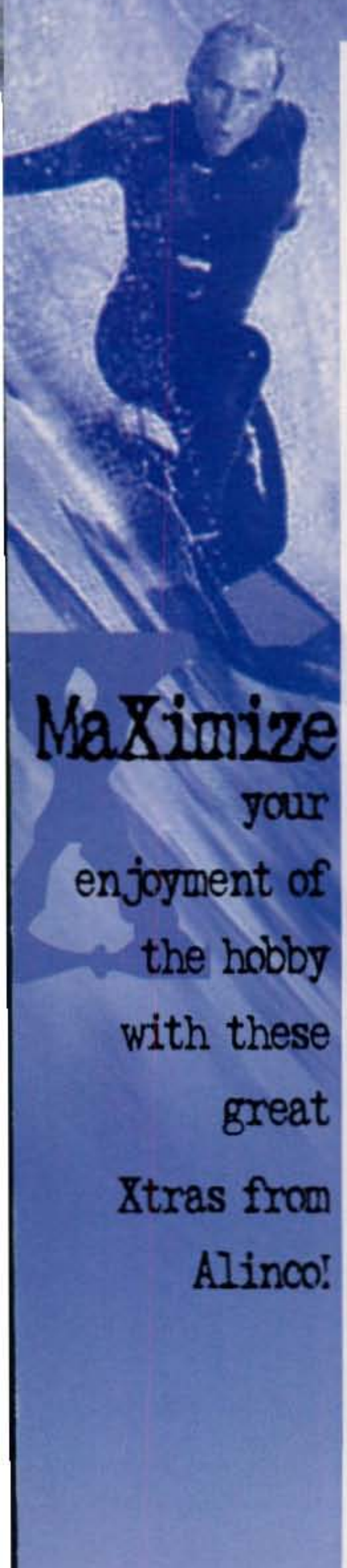
Photo G– Miracle Antenna also offers the Ducker family of portable antenna devices. The Duckers, available in PL (PL-259) and IL (inline) versions, permit transmitting with a short whip throughout the entire HF range for portable operations. (Photo courtesy of Miracle Antenna)

Software and Computers

EasyLog Logging and Contesting Software. The Italian firm Microware Software has announced EasyLog5 (fig. 2), which is a new version of its advanced contact logging, contesting, and awards-tracking software. The

Fig. 2– The Italian firm Microware Software offers EasyLog5, which is a new version of its advanced contact logging, contesting, and awards-tracking software. The latest version features a new user interface that provides options and functionalities not available in previous versions. (Screen capture from the EasyLog5 website)

Extremely Xcellent



Maximize your enjoyment of the hobby with these great Xtras from Alinco!

DM-330 MVT
Communications Grade Switching Power Supply

This "breakthrough" switching power supply packs a lot of features into a compact, lightweight design that features 5 ~ 15 VDC variable output and delivers up to 30 amps continuous, 32 amps peak. Unlike some other "switchers" it's electrically quiet. But if you should find noise, the patented Noise Offset Circuit™ lets you move any noise you might find to another frequency. Other features include a large illuminated Volt/Amp meter, rear panel binding posts (32 A), front panel cigar outlet (10 A), two sets of snap-in terminals (5 A each), front panel voltage adjust, customer-defined output "memory", ripple less than 15mV p-p and triple circuit protection for short circuit, over temperature, and current limiting.

EDX-2 Automatic Wire Antenna Tuner

Tunes 160 ~ 10 meters (amateur bands) in seconds and mates with DX-70 or DX-77 HF transceivers. Can be mounted outdoors and used for base/mobile.

Add to the Xtreme enjoyment of your Alinco radio with these Xcessories!

ERW-4
Programming Cable for use with the software

EME-12
Headset with VOX

EDC-36
Cigar Plug Cable with filter

EMS-47
Mic for Handhelds

EMS-14
Desk Mic

ESC-36
Soft Case for DJ-196 series

EDH-29
Drycell for DJ-V5TH

EDC-91
Rapid Charger for DJ-V5TH

EJ-47U
Digital Board for DR-620

EJ-50U
TNC Board for DR-620

For these and many more Xciting Xtras from Alinco, call or stop by your local Alinco dealer or visit Alinco on the web!

www.ALINCO.com

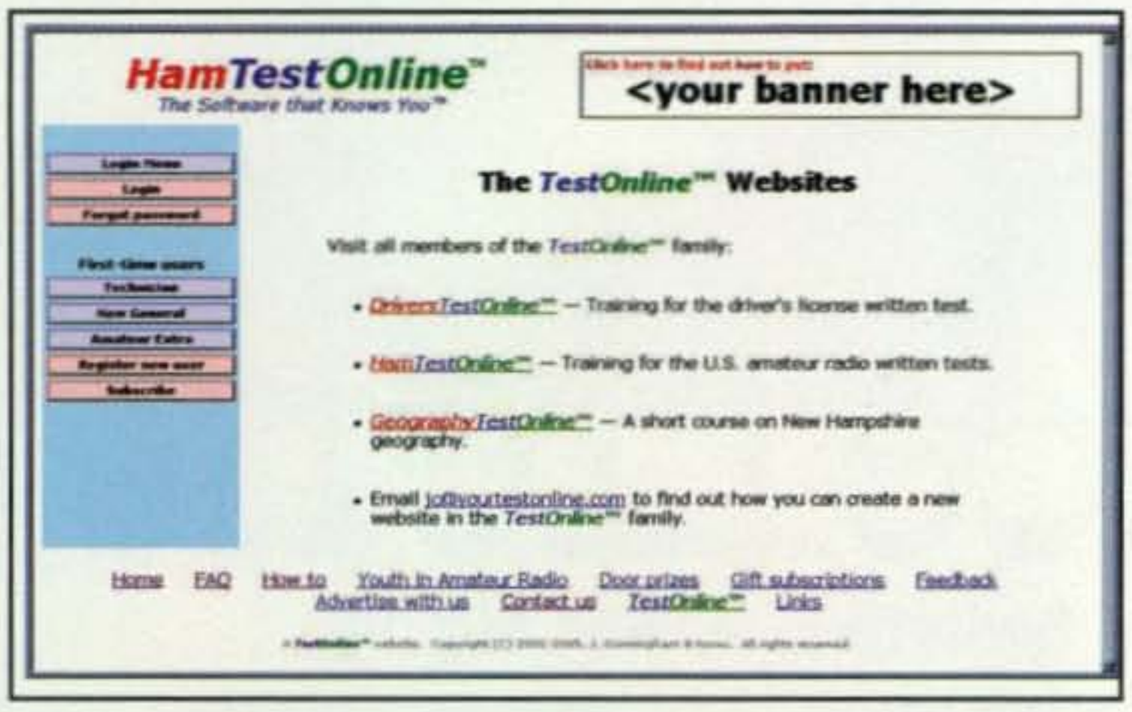


Fig. 3– HamTestOnline™ has added features that reportedly make it the premier website to study for the amateur radio written exams. The site is one of several members of the TestOnline™ family, as this screen shows. (Screen capture from the HamTestOnline website)

newest version features a new user interface that provides options and functionalities that are not available in previous versions of the software. Version 5 also is claimed to offer improved performance during real-time operations, such as DX spot voice announcement and cluster connections.

Features include built-in voice and CW keyers, a new and improved radio control interface, a DX-cluster spot window (with filtering capabilities), and automatic tracking of awards such as DXCC, WPX, WAX, and WAC. There's also a world map with DXCC, IOTA, worldwide locator grid, grayline, and sunrise/sunset indications.

For more information, contact Microware Software, P.O. Box 12, 14019 Villanova d'Asti (AT), Italy (fax: +39.141.946637; e-mail: <sales@easylog.com>; on the web: <http://www.easylog.com>). You can purchase the software or download a trial version from the website. When visiting the website, be sure to click on the flag corresponding to your language.

We also recently found out that EasyLog5 now has a U.S. and Canada distributor: J. B. Sims Services, LLC, P.O. Box 550895, Dallas, TX 75355-0895; web: <http://jbsims_services. home.att.net/>.

New on the Net

New from HamTestOnline™. Several years ago, our column let readers know of a new website, HamTestOnline, designed to help both new and experienced amateur radio enthusiasts prepare for the U.S. amateur radio written exams. The site is said to be the first website to bring computer-based training (CBT) technology online for the amateur radio tests. Unlike other test preparation websites, HamTestOnline (fig. 3), with its special "The Software that Knows You"™ programming, takes on the role of your personal trainer in preparing you for the amateur radio exams. The website operates entirely online; there is no software to download or install.

Now, HamTestOnline has announced a new feature, The Practice Exam with Memory™, reportedly making the premier website to study for the ham written exams even better.

"We have long resisted adding practice exams," explains the website's creator and software developer, John "J.C." Cunningham, W1AI, "because random exams are not a good way to study. They don't present concepts in logical order, and they waste your time repeating questions you have already mastered."

"It's a matter of statistics," continues Harold "Pi" Pugh, K1RV, the website's coursemaster. "After taking 100 random practice exams, you have usually seen some questions a dozen times and others not even once. Because they don't track your answer history, they can't focus your study time where you need it."

The website's operators say that they have solved these issues: The practice exams track your answer history and give you a choice between exams that focus on unseen questions, ones which focus on weak areas, or random ones. When you focus on unseen items, they present new questions in logical order, and when you focus on your weak areas, they use their proprietary, intelligent repetition algorithm to choose the question order.

The website also lets you turn on and off individual subtopics, and its answer tracking is fully integrated with the Study Mode, so you can freely switch between the two modes. After you answer the questions, you are offered explanations, pictures, and links for obtaining more information. Above all, you're encouraged to learn the material, not just memorize answers.

HamTestOnline offers unlimited practice exams that track your answer history at no charge. Advanced features require a subscription, which costs $39.95 for full access to all features and all three exams for two years. Youth subscribers (18 and under) pay $24.95. Gift subscriptions are available, and the operators also say they will give your club a free subscription for displaying the HamTestOnline banner on your website.

For more information and registration particulars, visit the HamTestOnline website, <http://www.hamtestonline.com>, or send an e-mail to K1RV, at <K1RV@hamtestonline.com>. Payment for purchases may be made via PayPal or by check or money order; you'll find details are on the website.

We Get Letters

Before wrapping up things this month, we would like to acknowledge some of the good folks who took the time and trouble to correspond with us in recent months.

In no particular order, a tip of the ol' W8FX hat goes to James Gatlin, N4YB; Tom Hix, W4TH; Phil Anderson, WØXI; Phil Duff, NA4M; Marshall Emm, N1FN/VK5FN; Gerald Youngblood, AC5OG; Anne Dorsey; Jay Terleski, WXØB; Roger Macdonald, KF8OY; M. J. Maloney; Alan L. Weinkrantz; and Christian Barbato. Keep those cards, letters, and e-mails coming!

A special note: If you e-mail us, please be sure to include your full name and amateur callsign, if any. It would be nice to know we're corresponding with a real person, and not just an e-mail address!

Wrap-Up

That's all for this time, gang. Next time, more "What's New." See you then.

Overheard: I've found it's a good and satisfying thing to notice the "little things" people do for you, and to take the time to thank them. 73, Karl, W8FX

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

BY FREDERICK O. MAIA,* W5YI

Your Amateur Radio Callsign Questions Answered

Our mailbag indicates that there is lot of confusion surrounding how the FCC issues station callsigns, especially "Vanity" callsigns. Like vanity automobile license plates, a vanity ham callsign is one which is selected by the user according to certain guidelines rather than from a sequential list of available callsigns.

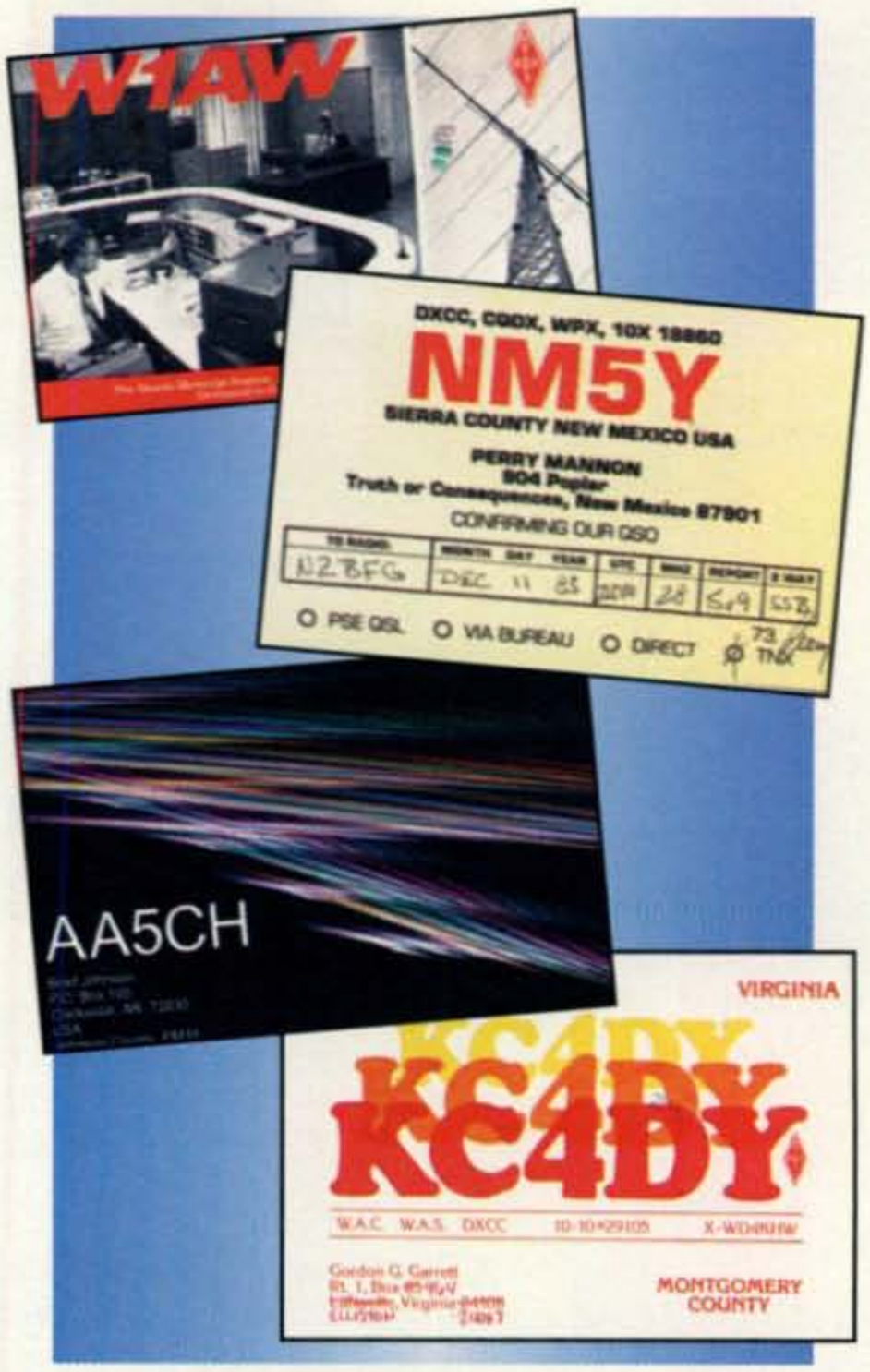
Thirty years ago it was possible to be assigned a preferential ham radio callsign if you knew the right people. Ham clubs, "deserving" amateurs, even FCC officials who were licensed radio amateurs were able to get a specific callsign or format. Back in those days callsigns could be assigned manually. A phone call to the right official frequently resulted in a "good" callsign being issued at no charge. It was this way for years. It all came to a screeching halt in the mid-1970s when an FCC licensing official (who ended up going to federal prison) crossed the line by accepting money in exchange for granting a 1-by-2 callsign.

The Group callsign System

The FCC responded to the scandal by eliminating all past station callsign policies and adopting a new Group callsign Assignment System. Effective March 24, 1978, all amateur radio callsigns would be assigned "systematically"—that is, in strict sequential order from predetermined callsign groups and blocks.

Extra Class amateurs were entitled to Group "A" callsigns, which contained all 1×2, most 2×1, and most "A" prefix 2×2 callsigns (1×2 or 2×3 refers to the number of letters before and after the call district numeral, so W5YI is a 1×2 callsign—one letter before the numeral, two letters after.). Advanced Class got Group "B" callsigns containing most K, N, and W prefix 2×2 callsigns. Generals and Technicians were entitled to Group "C" callsigns—all 1×3 callsigns beginning with K, N, or W. The Novice Class (Group "D") contained most K and W prefix 2×3 callsigns. Group "E" callsigns were to contain WC, WK, WM, and WT prefix callsigns for RACES, club, military recreation and temporary licenses. However, Group "E" callsigns were never implemented, and to this day these prefixes are not issued in a 2×3 format. (Some RACES stations were issued WC callsigns prior to 1978, and a few WCs were issued accidentally last year. These are all valid calls and may be used and renewed, but no new WC calls are being intentionally issued.)

All amateurs were allowed to keep their existing callsigns. A change would only be made if requested by the licensee. Anyone upgrading or changing his/her radio district could either keep his/her present callsign or be assigned the next sequential one from the appropriate group. When all callsigns are assigned from a specific group, the next assignment is made from the next lower group.



"Group A" callsigns include 1×2 (e.g., W1AW), 2×1 (e.g., NM5Y), and 2×2 calls beginning with A (e.g., AA5CH). Group B includes 2×2 calls beginning with K, N, or W (e.g., KC4DY).

These rules applied to the contiguous (lower 48) United States. States and territories located in the Pacific (mostly Hawaii and Guam), Atlantic (mostly Puerto Rico and the U.S. Virgin Islands), and Alaska had different rules. They were assigned callsigns with two-letter prefixes. AH, KH, NH, and WH were allocated to the Pacific area; KP, NP, and WP to the Atlantic area; and AL, KL, NL, and WL to Alaska. The Group "A" 2×1's went to the Extra Class. AH, AL, and KP×2 were allocated to Group "B" (Advanced). KH, NH, WH, KL, NL, WL, NP, and WP×2 went to Group "C" (Technicians and Generals). Group "D" (Novices) got 2×3 calls beginning with KH, WH, KL, WL, KP, and WP.

This answers one of the questions we received: "How come a Technician in Alaska (or Hawaii) can obtain a 2×2 callsign, when only the Advanced and

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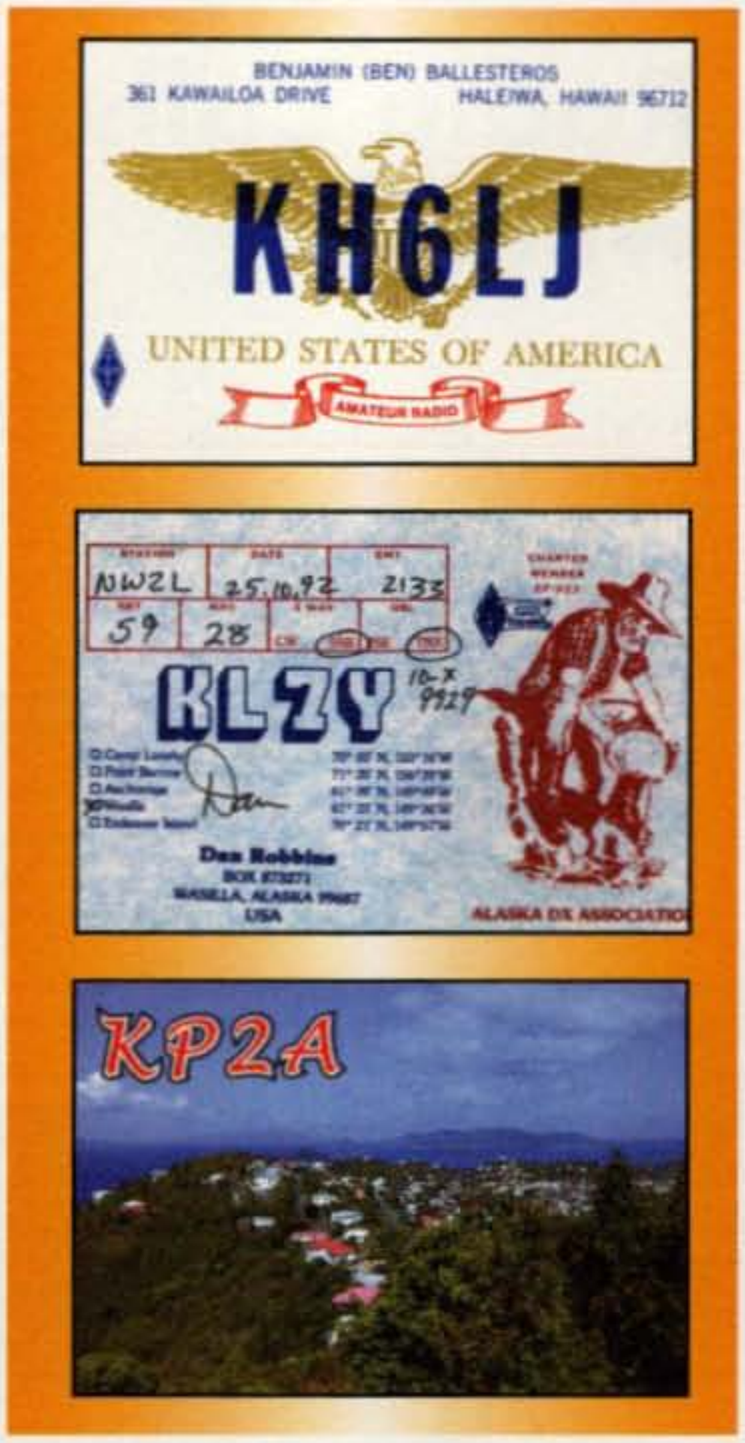
e-mail: <w5yi@cq-amateur-radio.com>



Certain prefixes are reserved for specific geographic areas, such as KH6 for Hawaii, KL7 for Alaska, and KP2 for the U.S. Virgin Islands.

Extra Class amateurs in other states can get a 2×2?" The answer is "That's the way the FCC allocated the various callsign prefixes." Single-letter prefixes are only assigned to radio amateurs in the original 48 states. One-by-three format calls (available to Techs and higher classes elsewhere) are not available, so the FCC made 2×2's available.

Birth of Vanity Callsigns

In June 1990 retired Texas Extra Class amateur Jim Wills, N5HCT, filed a Petition for Rule Making suggesting that radio amateurs be allowed to choose a dormant station callsign upon paying $30. The petition was denied, but that did not stop Wills. He wrote his Congressman concerning the reassignment of unused callsigns. On December 9, 1991 Congressman Ralph Hall wrote back to Wills saying that he had contacted the FCC and that they were determining whether such a fee would collect enough money to pay for itself.

This was all happening at a time when a system was being developed to have the FCC's budget basically paid for by the various beneficiaries of their services. This was finalized when Congress added a new Section 9(a) to the Communications Act authorizing the Commission to collect annual regulatory fees to recover its operating costs. Neither the ARRL nor the FCC had advance knowledge of the short, four-word "Amateur vanity callsigns" that was added to the Schedule of Regulatory Fees at the last minute.

President Clinton signed the Omnibus Budget Reconciliation Act (the official name of his 'Deficit Reduction' Plan) into law on Tuesday, August 10, 1993, and with it the provision for Vanity callsigns became law (Public Law 103-66). A year later (December 23, 1994) the FCC Commissioners adopted final rules implementing vanity callsigns in the Amateur Service.

On June 14, 1995, the FCC adopted a revised Schedule of Regulatory Fees for Fiscal Year (FY) 1995. The fee, which is reviewed and adjusted annually, also takes into consideration the total amount of funding that the FCC needs for its upcoming fiscal year. The first Vanity callsign was issued on May 31, 1996. The cost was $3 a year, or $30 for a 10-year term, just as Jim Wells had proposed.

The ARRL suggested gradually implementing Vanity callsigns through a system of "starting gates." Gate One allowed a previous holder to apply for that callsign, or where the holder is deceased, a close relative could apply. Gate Two would allow amateur Extra Class operators to apply. Gate Three allow Advanced Class operators to apply. Gate Four opened the system to any licensee. A club station license trustee could also apply for the callsign of a deceased former holder.

A Vanity callsign is valid for a 10-year term, after which time another regulatory fee must be paid. The first Vanity callsign renewals will be coming up next year, and the FCC is in the process of developing a program whereby these renewals can be handled by the various VECs (Volunteer Examiner Coordinators).

Questions from Readers

Q: Does an applicant for a Vanity callsign have an advantage in getting a specific callsign if he or she files two or more applications for it?

A: Yes, and the FCC is trying to close that loophole. When more than one amateur applies for the same callsign, the winner is randomly chosen. The more "tickets" (applications) you have in the "lottery" the better your chances of winning.

Q: What are the most popular reasons why an amateur requests a Vanity callsign?

A: Most amateurs want a shorter callsign. It is easer to transmit (especially on CW) and an indication that the applicant has advanced up the licensing ladder. The second most requested Vanity callsign is one in which the suffix contains the applicant's initials. Other popular selections include keeping the same callsign suffix but changing the prefix and/or district numeral when an amateur moves to a new radio district. Obtaining a previously held (but now expired) callsign or one of a deceased family member is also very common.

New ham club stations always get a 2×3 format callsign and most want it changed to something that is shorter and relates to their club. Existing clubs frequently change their club call to that of a deceased member. Also, many newcomers simply want to get rid of their K2×3 callsign, changing it to a more mainstream W or K prefix 1×3, which is generally considered the mark of a more experienced ham.

Q: Is it possible to obtain an exotic callsign prefix (such as KH) without living in Hawaii?

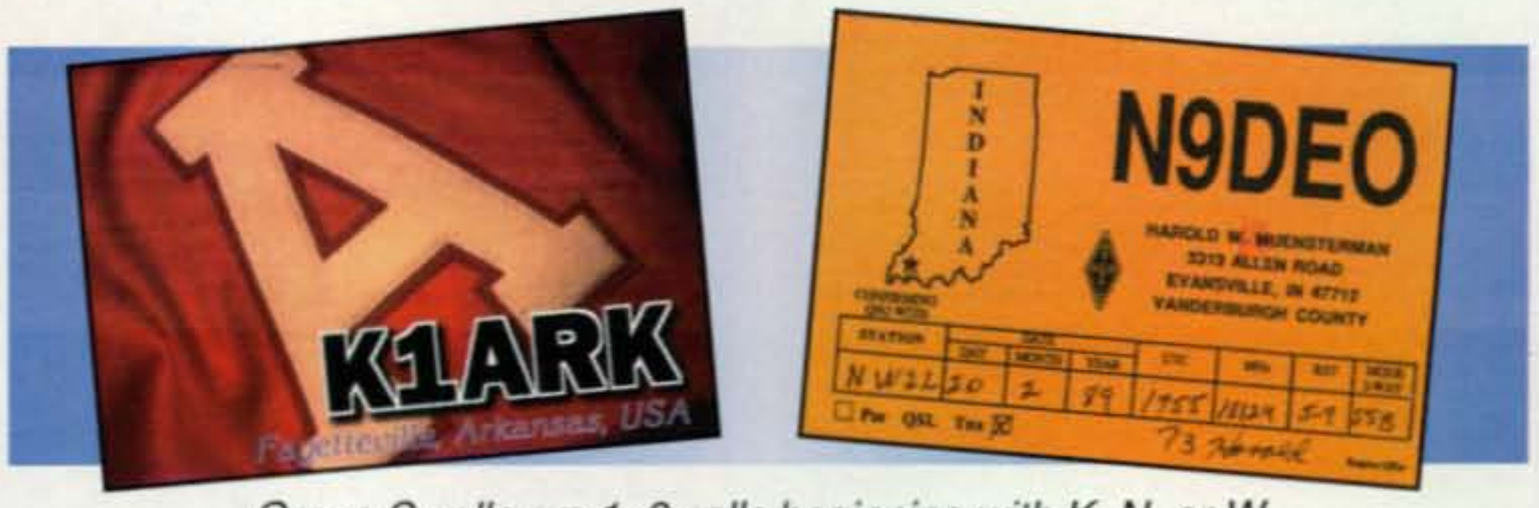
A: Yes, it is. There never has been a requirement that you actually reside in a Pacific/Atlantic area or Alaska in order to obtain a non-contiguous USA callsign prefix. The FCC's Vanity callsign requirement is that you must have a mailing address in the appropriate geographic area—a place where you may receive mail from the FCC.

A private post office box (such as those offered by Mail Boxes, Etc.) in Hawaii will suffice, or you can use the address of a ham friend who will forward your mail to you. Many foreign amateurs have FCC callsigns with their mail going to a U.S. business or friend who forwards their mail to them. There are also commercial mail-drop and remailing services just about everywhere.

Q: The FCC is considering adding a new entry-level ham class that allows HF voice operation without Morse proficiency. What callsigns will they get?

A: Based on how quickly the FCC moves, a new ham class with HF phone and no code is at least a year away. However, the ARRL and the VECs both want it. The FCC could simply grant them Group "D" 2×3's (which would require no computer programming) or implement a new callsign format.

The National Conference of VECs suggested to the FCC that beginning callsigns might come from the allocat-



Group C calls are 1×3 calls beginning with K, N, or W.

ed, but currently unused, NA–NZ×3 letter suffix group. Callsigns are important to amateurs, and the feeling is that many beginners will want to obtain a more traditional call by upgrading. Great Britain (where most callsigns begin with "G") elected to go with a unique, new 2×3 callsign format beginning with "M3" when it implemented its beginning "Foundation" license.

Q: Why does it take exactly 18 days to issue a new Vanity callsign after the application is filed?

A: The FCC allows radio amateurs to file both paper and online (computer-to-computer) Vanity callsign applications. The Commission waits 18 days for paper applications to arrive and then blends them with electronically filed applications submitted on the same day. This way there is no advantage to filing electronically and everyone gets a fair chance at a specific callsign.

Q: How do you obtain the callsign of a deceased amateur whose callsign is still shown as active in the FCC database?

A: The callsign of a deceased amateur is generally available to anyone for reassignment two years after death. When the callsign is still shown in the FCC database of amateurs, it may be canceled from the database by submitting one of three documents to the FCC: a death certificate, a dated obituary, or information from the Social Security Death Index (SSDI) showing the date of death. The SSDI information may be obtained at: <http://ssdi.genealogy.rootsweb.com/>.

To notify the FCC of a licensee's death, submit a signed request for license cancellation accompanied by a copy of the documentation to: FCC—Amateur Section, 1270 Fairfield Road, Gettysburg, PA 17325-7245. File your request promptly after you confirm from the licensee database that the license status has been changed from "active" to "cancelled." The callsign cannot be held for you. Once it is cancelled, it is first come, first serve.

Q: I want to submit an application online for a vanity callsign, but it requires my entering both an FRN and a password. Where do I get them?

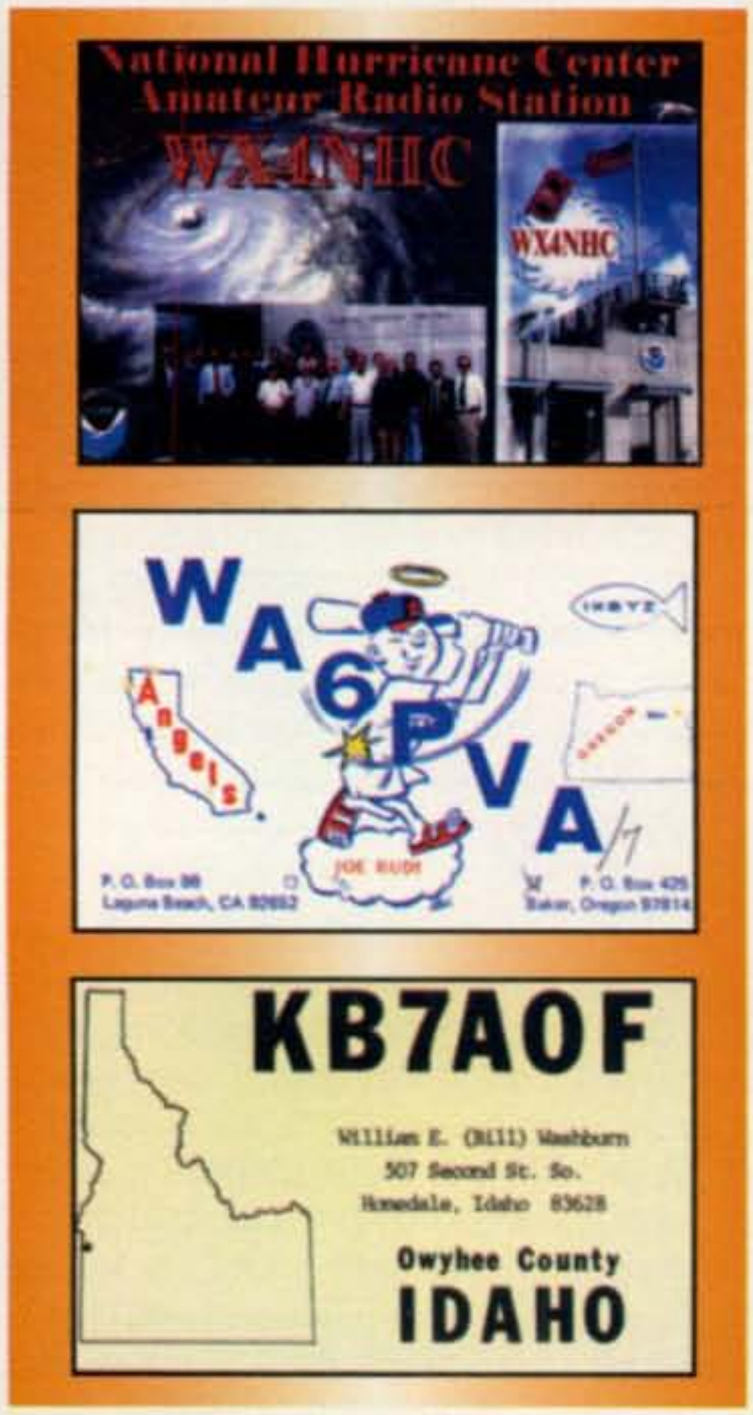
A: You may file an application for a vanity station callsign by going to the FCC's Universal Licensing System (ULS) website located on the web at: <http://wireless.fcc.gov/uls/> and clicking on the "Online Filing" link. The next screen is the "License Manager," which requires that you enter your FRN (FCC Registration Number) and password to access your record.

The FRN is a 10-digit unique identifying number that is assigned to anyone doing business with the Commission, including ham operators. It can be found by doing a callsign search on most amateur radio operator databases, such as those at <www.qrz.com>, <www.wm7d.net>, <www.arrl.org>, or by doing a "License Search" on the FCC's ULS website.

If you do not know your password, click on "Forgot your password?" on the "License Manager." The next page will ask you for your name, Social Security Number (SSN), phone number, and e-mail address. Click on the "Submit" button. You will then be given a 15-character tracking number starting with "HD" followed by seven zeroes and six numbers (write down this tracking number). FCC Technical Support will then e-mail a link where you can enter your 15-character tracking number. The next screen will list your password.

If this proves to be too confusing, you can just telephone (toll free) to FCC Tech Support at 877-480-3201 (push option one) and they will assist you in getting your password.

Click on "Submit" after you have entered your FRN and password. The next screen will be your FCC record and will allow you to apply for a Vanity callsign by clicking on the "Request Vanity callsign" link on the right side of the page. Be aware that there is a regulatory fee when you apply for a Vanity callsign. Unlike all other amateur radio callsigns, Vanity callsigns are not free.



Most new hams start out with 2×3 calls from Group D. However, some such as the amateur station at the National Hurricane Center, get 2×3 vanity calls (top)—in this case WX (shorthand for weather) 4 (in the 4th call area) NHC (National Hurricane Center).

Q: I am a new Technician Class radio amateur and am authorized a 1×3 format callsign. There are plenty of unassigned 1×3 N, K, and W prefix 1×3 callsigns available. Why was I issued a 2×3 Novice callsign?

A: When the FCC began issuing Group "C" callsigns (back in 1978), it began with the "N" prefix, a radio district number, and a three-letter suffix. At the time no N×3 callsigns had been assigned. When the FCC exhausted all N×3 callsigns, it next went to Group "D" (2×3) callsigns because its computer programming did not have the capability of going back and picking up unassigned K and W 1×3 calls. It has been that way ever since. You will have to request a Vanity callsign to get a 1×3 format.

Q: I recently renewed my Tech Plus license, but when my new license arrived it said Technician and not Tech Plus. What happened?

A: We have answered this question before, but it still persists. As part of the

last round of license restructuring the FCC discontinued issuing new Novice, Tech Plus, and Advanced Class licenses effective April 15, 2000. Novice and Advanced Class licenses were "grandfathered" (that is, they could be renewed indefinitely), but all Tech Plus licenses were renewed as Technician. Previous Tech Plus licensees still retain their HF voice and CW privileges, which are authorized by their Certificate of Successful Completion of Examination (CSCE) showing they had previously passed a code test. Technician Class operators who pass a code exam also are given a CSCE by their VE team which shows code credit. They, too, are authorized to operate on 80, 40, 15, and 10 meters CW and 10 meters phone (voice).

Q: What is the best way to tell what callsigns are available for reassignment?

A: The best way is to access the FCC's Amateur Service database located on the web at: <http://wireless.fcc.gov/uls/>. Click on the "Search Licenses" link. Other online databases can tell you if a callsign is unassigned, but they do not tell you if it as been dormant for the minimum two-year period, and in many cases it has not.

Enter the callsign you want into the callsign search box. If your response is "No matches found," then the callsign is available now. An expired or canceled callsign is generally available for reassignment two years (plus one day) after expiration or cancellation. The FCC's License Search will tell you which calls are still in the two-year grace period.

The FCC cancels all dormant callsigns after two years of inactivity. Many times a callsign is cancelled before expiration, such as when an amateur selects a new Vanity callsign. Their previous callsign is also available two years (plus one day) after cancellation.

Q: Why is it necessary to wait two years after the death of a radio amateur to apply for his or her callsign? The person won't be reclaiming it during the two-year grace period for renewal.

A: In 1995 the FCC adopted specific guidelines concerning the reassignment of unused station calls under the Vanity callsign program. These rules were based on comments from the amateur community. Suggestions included starting gates, a two-year period during which a vacated callsign is not assignable, and callsign format availability based on an applicant's license class.

The two-year period was adopted to coincide with the grace period during which an expired callsign can be renewed and to allow former holders and close relatives of deceased former holders a priority period in which to apply for the callsign before it is made available to all other amateurs.

Amateur radio clubs also do not have to wait two years to apply for a deceased member's callsign, providing a close relative of the deceased consents in writing to the callsign reassignment to the club. A close relative is defined as a spouse, child, grandchild, stepchild, parent, grandparent, stepparent, brother, sister, stepbrother, stepsister, aunt, uncle, niece, nephew, or in-law of the deceased. (You do not have to submit this letter to the FCC. Just keep it in your records in case the assignment is challenged.)

Applicants for callsigns of deceased amateurs (including close relatives and club trustees) must hold an amateur operator license of the appropriate class in order to request their callsign. A former holder of a callsign, however, need not be of the same or higher callsign group nor wait two years in order to reclaim his/her previous callsign.

73, Fred, W5YI

Looking Ahead in CQ

Here's a look at articles we're working on for upcoming issues of *CQ:*

- "Is there a 'DXpedition Personality'?" by NEØP
- 2005 Inductees: CQ Amateur Radio, Contesting, DX Halls of Fame
- Results, 2004 CQ WW RTTY WPX Contest
- Rules, 2005 CQ WW RTTY DX Contest

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

QRP: It Fits Any Lifestyle

BY DAVE INGRAM,* K4TWJ

One of the most familiar traits shared by all QRPers is the knowledge that communicating from almost anywhere with low power and a simple antenna really works. It can be done and it works well. That proven true fact is a real confidence builder when vacationing, camping, and/or living in any type of restricted area. QRP gear is small and requires minimal space, thin wire radiators are barely noticeable, and television, telephone, or stereo interference when running only 5 watts CW or 10 watts SSB is basically nonexistent. Ah, but the real joy of QRP is making those special contacts we all remember for a lifetime. That makes it all worth the effort!

The previously mentioned points really came to life when I recently moved from the top of a high hill overlooking half of Birmingham to the flatlands of Dothan, Alabama only a few miles from the Florida state line. Being the new kid on the block, I opted to run low power even for DXing until my tell-tale Hy-Gain vertical (and a small crank-up tower lying beside the house) became transparent to neighborhood eyes.

Then while tuning across 20 meters SSB a few days ago, I heard 9K2MU in Kuwait City calling CQ over the long path with no takers. I called him once at the 10-watt level. "QRZ the K4" came the return. Quickly I cranked up the power to 20 watts and called again (not real QRP, true, but a nice 3-dB boost to avoid being eaten by the descending wolf pack). He immediately replied with an enthusiastic, "K4TWJ you are 5 and 5." Wow—and that was a long-path QSO using the same AV640 vertical used atop the mountain in Birmingham.

Early the following evening I was tuning around on 30 meters with my little Elecraft KX1 (photo A)—also enjoying a new KXer paddle from Richard Meiss, WB9LPU (what a gem!)—and there was OM3SEM calling CQ. I called him once. Nothing. I started to call again and we almost "doubled" as he replied to my first call (oh, the untold benefits of full QSK!). We exchanged information and 73s, and then I looked behind me and discovered the large wall-wart power supply I use with the KX1 had fallen out of the AC socket. The little KX1 had been running on six almost-dead AA cells, and output power was less than one watt and dropping. Life just doesn't get any better than that, friends. QRP romps!

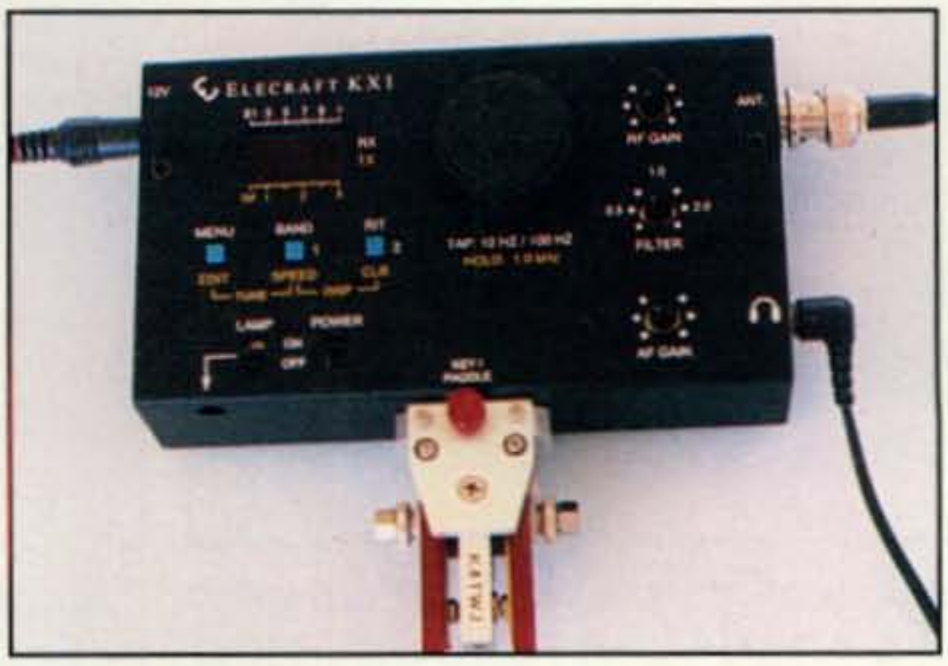


Photo A– The new WB9LPU KXer iambic paddle attached to an Elecraft KX1 transceiver (an outstanding combo). After contacting OM3SEM with my own copy of this "hold-in-your-hand" QRP setup, I discovered its AC power adapter had fallen out of the wall socket, it was running on nearly dead AA cells, and power output was only milliwatts. Truly, QRP romps!

The SGC SG-2020 Revisited

If you have been following our recent QRP columns, you know we have been including brief

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

Photo B– Straight-on/front view of the SG-2020, a super-rugged and feature-packed SSB and CW transceiver especially popular among QRPers interested in portable operations. The little rig covers 160 through 10 meters, and its output of 1 to 20 watts is adjustable using the front knob. (Photo courtesy of SGC)

Photo C– Stepping up as the new CEO of SGC after OM and corporate founder Pierre Goral passed away last year is XYL Pamela Goral (with an SG-2020 on the pedestal). Her dedication to continuing Pierre's production of high-grade and affordably priced products is remarkable. Look for her at an upcoming hamfest and stop and say hello. (Photo courtesy of SGC)

Photo D– SGC's recently announced MAC-200 Automatic Antenna Controller/Tuner covers 1.8 to 60 MHz and handles up to 200 watts. The item differs from a regular auto tuner, as it tunes dipoles, beams, and verticals plus single random-length wires and balanced or ladder-line-fed antennas such as multiband doublets and Zepps. (Discussion in text.)

Photo E– This wood-base beauty was built by Mac Neill, W8ZNX, and uses dual 955 acorn tubes wired in parallel for real vintage QRP glamour. The power supply uses a pair of 6-volt filament transformers wired "back to back," and setup produces slightly over 1 watt output. Note the hand-laced cable and rare classic knob on the tuning capacitor. (Photo by W8ZNX)

Photo F– Another impressive work of art is this single 955 acorn-tube transmitter built by Walt Bullerwell, KF4YJQ. Note the famous 6L6-style wood frame, classy yellow insulated wire, and fancy red pointer knob. Wow! (Photo courtesy of KF4YJQ)

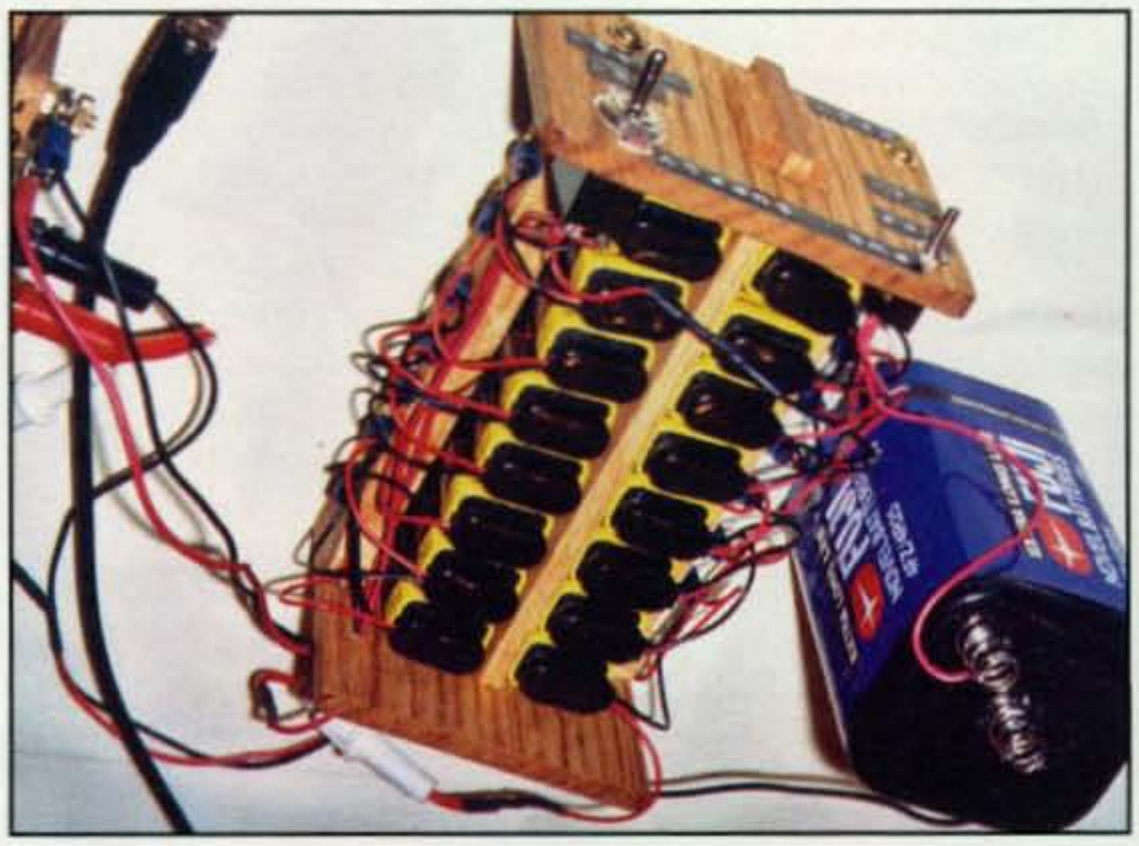


Photo G– Walt, KF4YJQ, uses a large bank of "two-for-a-dollar" 9-volt batteries and a 6-volt dry cell to power his 955 transmitter. Current drain is very light, so battery life is quite good (a big advantage of running QRP).

revisits with several of today's popular QRP rigs as helpful guidance to newcomers. We continue that endeavor with one more time-proven favorite (particularly among SSB QRPers) in the spotlight this month—the SG-2020 (photos B and C). This stouthearted little transceiver could easily be considered the "Big Daddy" of QRP, as it is loaded with features and its output power is fully adjustable from 1 to 20 watts. Needless to say, it will run cool and comfortable all day at 5 watts output, and the reserve power is an extra plus when band conditions are unfavorable for QRP.

The 2020 measures 2.75"H × 6"W × 7"D, covers all nine HF bands, and receives continuously from 1.8 to 30 MHz on SSB and CW (plus AM when tuned for zero beat). It sports 40 memories, RIT, split-frequency operation for DXing, an SSB speech compressor, full CW break-in, an electronic keyer, passband tuning, a sharp seven-pole 2.7-kHz crystal filter, and audio filters with bandwidths of 2.7 kHz to 100 Hz. It also has DSP with three bandpass filters and two levels of noise reduction.

All of this may seem complex and expensive, but the 2020 is actually quite affordable and easy to operate. Rather than using a special menu set, you just select a function with a front-panel button and then adjust it with the main tuning knob. Nice! You change the receiver bandwidth or keyer speed, for example, just by holding down the "BW" or "Speed" button while turning the main tuning knob—and your selection(s) are also shown on the display until you release the button. The transceiver is also battery-friendly, with a receive current of .8 amp and a transmit current (at 20 watts) of 3 amps.

I used a 2020 soon after it was introduced a few years ago and then again more recently after SGC enhanced it with DSP, and both versions performed admirably. Sensitivity and selectivity were very good, tuning was smooth, and transmitter output was as solid as a rock. The only problem I noticed was a mild amount of T/R relay noise on CW. Another amateur might not even notice it. I just operate in an environment where any noise whatsoever is a big issue. I have asked SGC about relay reliability, and they have found that over the years the relays hold up great. The noise is just noise.

Incidentally, while talking recently with SGC's new CEO, Pamela Goral, I learned of another relatively new item worthy of favorable mention: the SGC MAC-200 Master Antenna Controller (photo D). This little gem is a combination automatic antenna tuner and antenna switch in one box. It is unique because unlike other automatic antenna tuners that only work with a single coax-fed and 50-ohm-type antenna, the MAC-200 will switch and match up to five antennas of totally different designs. In addition to matching dipoles, beams, and verticals, it also tunes random-length longwires and ladder-line-fed multiband doublets. Just connect the antenna wire(s), push a button, and you are ready for action. The MAC-200 has front-panel meters for power (up to 200 watts) and SWR.

The MAC, plus the 2020 transceivers and other SGC items, are available from amateur dealers nationwide and more details are available directly from SGC at the SGC building, 13737 S.E. 26th St., Bellevue, WA 98005, telephone 1-800-259-7331 or on the web at <www.sgcworld. com>. Check them out!

Homebrew Mini Rig

Remember the little 955 acorn-tube transmitter we nicknamed "Lil Buddy" and featured in our "World of Ideas" column a few years ago? It is still a popular homebrew item, and a couple of readers recently shared views of the great-looking copies they assembled for 80 and 40 meters (photos E, F, and G). Mac Neill, W8ZNX, built one with a pair of 955s wired in parallel and mounted on a wood board with all wiring below the board to minimize shock potential. Output power is around 1 watt. Walt Bullerwell, KF4YJQ, built a single-tube version on a wood frame similar to the classic 6L6 transmitter we featured in October 2004 *CQ*, and the output is around 600 milliwatts. Both chaps report making solid QSOs in several

On the Cover

If it's June, it's time to get ready for Field Day, the ARRL's combination contest, emergency preparedness drill and social gathering. In our cover photo, Larry Allison, AJ0L (top) and Bill Nesbitt, KG0ZI (bottom) of the Amateur Radio for Youth (ARFY) club in Grand Junction, Colorado, work with a young man as he makes Field Day contacts from a station set up in a tent.

The idea behind Field Day is to provide radio clubs and other groups around North America with an annual opportunity to test their emergency skills by quickly setting up temporary stations independent of commercial power and contacting as many other stations as possible within the event period. The ARRL also promotes Field Day as an opportunity to introduce amateur radio to the public, offering extra points for setting up in a publicly accessible location and sending out news releases about an operation. Over the years, Field Day has also grown into a major on-air contest and club social event.

ARFY was founded ten years ago in an effort to get more young people interested in amateur radio. Over the years, ARFY has helped several teachers set up stations in their schools and at its peak in 2002, had clubs and stations operating simultaneously in four area schools. At that point, says Nesbitt, several of the teachers retired or moved, leaving only one school with an active program at this time. The group is currently rebuilding, trying to generate new interest among teachers at those other schools. It also helps home-schooled children get licensed and on the air and runs the only monthly license exam program in its region. *(Cover photo by Larry Mulvehill, WB2ZPI)*

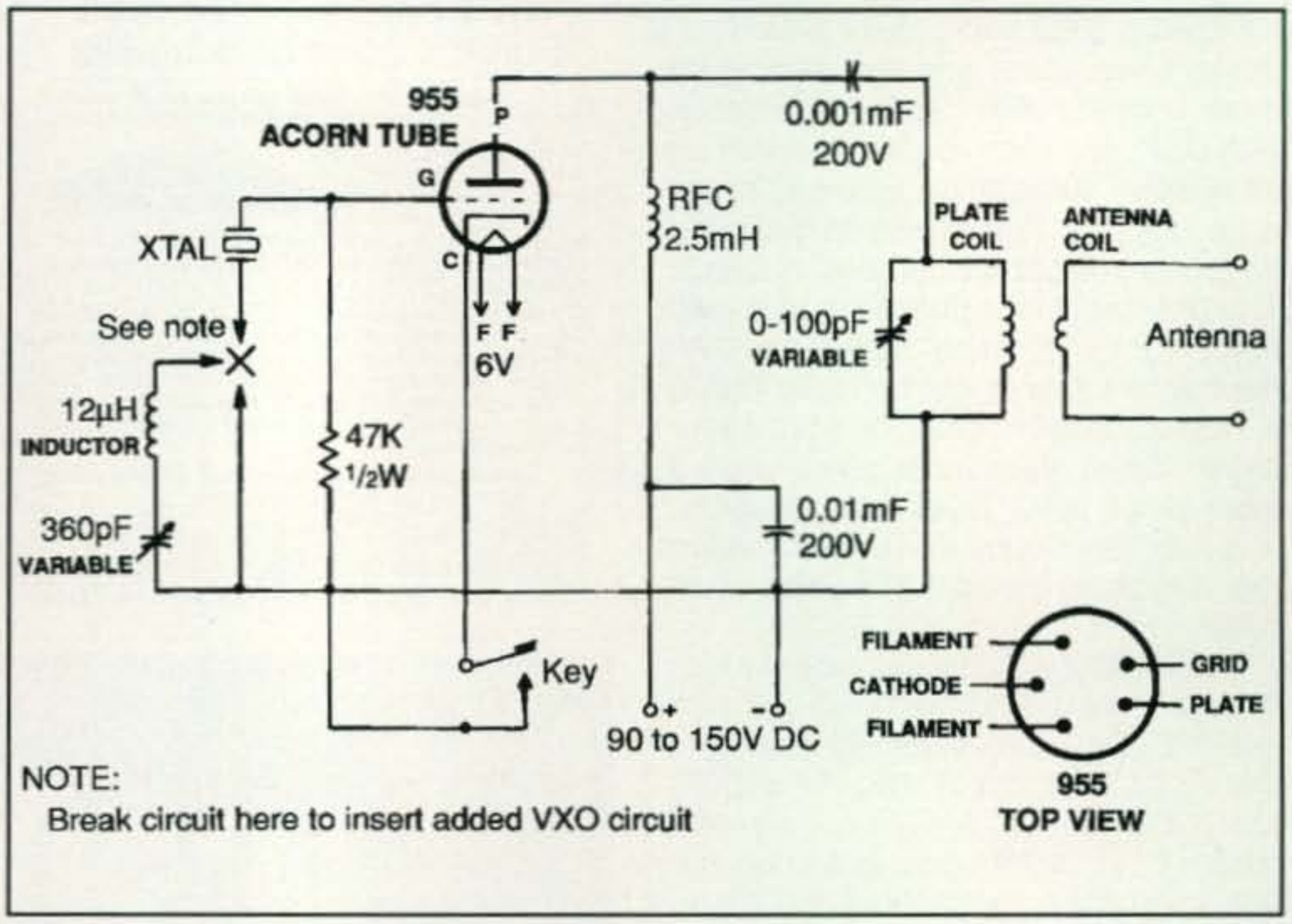


Fig. 1– Circuit diagram of the 955 acorn-tube transmitter with my VXO mod added for extra appeal. The crystal may be a regular ham-band crystal in an FT243, HC18 or HC8 holder. (Discussion in text.)

states while using the low-power rigs—a good endorsement of their performance. Maybe you, too, would like to make one.

As a memory-refreshing update, the 955 transmitter's circuit diagram (with my VXO mod added for extra appeal) is shown in fig. 1. Probably the biggest obstacle in assembly is finding 955 tubes and sockets. Walt found the tubes (and that snazzy red tuning knob) at Antique Electronic Supply in Arizona, and a friend gave him a socket. My original 955 transmitter used a plate coil wound on a small pill bottle form like Mac, W8ZNX, used (30 turns of No. 22 enamel wire wound on a 1.25 form for 40 meters, or 60 turns for 80 meters, and an antenna coil of eight turns for either band). Walt did some experimenting, however, and found a coil of 2 1/8-inch diameter (a PVC pipe form) with 21 turns of No. 18 plastic insulated wire and an antenna pickup coil of six turns (of the same wire) spaced 3/16 inch above it was optimum for 40 meters. Bright yellow is a popular color today, so leftover wire (probably from a 100-foot spool) was used to make a matching 40-meter dipole.

Walt powered his mini rig completely from batteries—a 6-volt dry cell for the filament and fifteen 9-volt batteries in series (135 volts total) for the plate supply. He also used the "two-for-a-dollar specials" from Big Lots (or similar variety stores) and says current (9 or 10 ma maximum) only flows when the key is closed, so battery life is quite good. Yes, and since it is pure DC, signal quality is also nice and clean.

My VXO mod was fully detailed in my August 2004 "QRP" and October 2004 "World of Ideas" columns. Simply explained, the VXO mod uses a 12-volt or 15-µHy coil/inductor and 360-pFd trimmer or small plastic-encased tuning capacitor wired in series with the crystal to act like a 10-kHz VFO. Be sure to get the transmitter perking smoothly before adding the mod so you will know exactly where to check if problems arise. Drop us a note (and a photo!) if you build one of these little marvels, and we will tell others about your work in a future column.

Conclusion

In closing, we wish to thank everyone for the continued support of this column, and we also invite you to share your true tales of QRP success with readers through this column. Just drop me a note (and photo!) with details and I will take it from there.

Finally, that unique kit project I mentioned last time, the "Hamfest Buddy," is still forthcoming. PC boards are almost finished, and this promises to be one terrific QRP project. Watch for it next time!

73, Dave, K4TWJ

BY JOE LYNCH,* N6CL

First 47-GHz EME QSOs

The following April 16th press release regarding the first 47-GHz EME (earth-moon-earth) QSOs comes from RW3BP, AD6FP, W5LUA, and VE4MA:

The team of Sergei Zhutyaev, RW3BP, Gary Lauterbach, AD6FP, Al Ward, W5LUA, and Barry Malowanchuk, VE4MA, would like to announce that the first 47-GHz contacts via the moon have been completed. RW3BP heard the first lunar echoes on 47 GHz back in August 2004. At that time he was heard by AD6FP, W5LUA, VE4MA, and VE7CLD.

Since the receipt of the first 47-GHz echoes via the moon, numerous tests between RW3BP and AD6FP led to improvements by RW3BP, allowing him to copy calls from the lower power signal of AD6FP in January of 2005. As of April 16, 2005 the team of AD6FP, W5LUA, and VE4MA has each completed a CW QSO via the moon with RW3BP.

The station at RW3BP consists of a 2.4M offset fed dish and 100+ watts, while the station at AD6FP consists of a 1.8M offset fed dish and 30 watts. At W5LUA and VE4MA 2.4M offset fed dishes and 30-watt TWTs (traveling wave tubes) were used. Noise figures of all stations are in the 3.5 to 4.7 dB range.

Since the Doppler shift can be as much as 100+ kHz at 47 GHz, one must continuously adjust the receive frequency to keep the station centered in the passband. Precision frequency control was obtained by using GPS-controlled, rubidium-locked, or TV-sync-controlled phase-locked local oscillators. Various techniques were in use to keep the Doppler shifted frequency in the passband of the receivers.

Your editor has received word from Al that he, Gary, and Barry are planning on making a presentation on these historic contacts at the Central States VHF Society conference next month. For more information about the conference, see the organization's website: <http://www.csvhfs.org>.

Contesting Strategy

This month begins the annual contesting season for the VHF+ operator. As you will see later on in this month's column, in the "Current Contests" section, there is at least one contest each weekend throughout June. The following is excerpted and updated from my now out of print book, *The VHF "How To" Book* (CQ Communications, 1994), which is occasionally available via various internet book sellers:

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+ contesting, such as Dave Hallidy, K2DH. Most of the advice that follows applies to the general VHF+ 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 station as the equipment it contains. Have you rested adequately before the contest?

e-mail: <n6cl@sbcglobal.net>

VHF Plus Calendar

June 3–5	Ham-Com Hamfest (See text for details)
June 5	Poor EME conditions
June 3–6	Six Club Contest (See text for details)
June 6	New Moon
June 8	*Arietids* meteor shower predicted peak
June 9	*Zeta Perseids* meteor shower predicted peak
June 11	Moon Apogee
June 11–12	Third weekend of the European Worldwide EME Contest (See text for details)
June 12	Good EME conditions.
June 11–13	ARRL June VHF QSO Party (See text for details)
June 15	First Quarter Moon
June 18–19	SMIRK 6-meter Contest (See text for details)
June 19	Moderate EME conditions
June 21	Summer Solstice
June 22	Full Moon
June 23	Moon Perigee
June 26	Good EME conditions
June 28	Last Quarter Moon
June 29	*Beta Taurids* meteor shower predicted peak

EME conditions courtesy W5LUU

Even though VHF+ contests almost always allow you to get a good night's sleep (because the bands generally 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. Also, don't try any new, especially spicy, foods just before the contest. Your digestive tract may not approve.

Your Goals: Your biggest goal is probably to define what it means to win. Winning for you may involve being tops in the country for 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 purchased a piece of new equipment, use it as much as it takes 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 before the contest.

Make sure every aspect of the station is working to your satisfaction. Check the antenna, coax, rotator, and the rotator lead-in. Also check the radios, power supplies, preamps, amplifiers, and cables used to connect all these items.

Are you operating away from your home QTH? 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 up every-

thing. 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 your station assembly. This, hopefully, will make your 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 that the lay of the land is sufficient to allow enough room for every station.

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. This means 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 pencil erases more easily when you're trying to change an entry).

On the Air: VHF+ contests have an entirely different pace as compared to 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 the HF contest operators experience. Therefore, it is imperative to tune through all the bands that you have available. This isn't as hard as it seems, because the other operator is just as motivated as you are to make multiple contacts.

This is really important: 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 one June VHF QSO Party operators in England were hearing stations as far away as the southwestern portion of the United States, but they could not 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'll find the whole 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 in one of the CQ contests—ed.)*. You may want to work stations only in new grids. 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). For example, there's a group of contesters who gather each year at Dave Olean, K1WHS's QTH for the September contest. While they never run up a big score, they always have fun. (Word has it, however, that during one contest, in spite of their effort to keep a low score, they succumbed to the temptation of the best aurora conditions in years and ran it up.)

Part of the annual tradition is to go out to breakfast at Ding-a-Ling Cafe on Sunday morning. Lauren Libby, WØLD, one of the regulars at the contest site, reports that going to the Ding-a-Ling Cafe is an experience one will never forget!

All of the above being said, take time this VHF contesting season and join in the fun!

Shuttle Restart Clarifications

As this column was being written, the shuttle *Discovery* was being prepared for launch during the May 15 to June 3 launch window. In last month's column I discussed the anticipated launch. Here are a few more details of this launch:

Along with *Discovery* being prepared for launch is the shuttle *Atlantis*. It is scheduled to be launched next month during the July 12 to July 31 window. It is designated as STS 121, and also ULF1.1, or Utilization and Logistics Flight 1.1. The crew is scheduled to include Mission Commander Steven W. Lindsey; Pilot Mark E. Kelly (no relation to *Discovery* Mission STS 114 pilot James Kelly); and Mission Specialists Piers J. Sellers, Michael E. Fossum, Lisa Nowak, KC5ZTB, and Stephanie Wilson, KD5DZE.

Also possibly on board will be a yet unnamed third ISS crewmember who would complement the current Expedition 11 crew of Commander Sergei Krikalev, U5MIR, and Science Officer and Flight Engineer John Phillips, KE5DRY. This ISS crew began its tour on April 17 and is scheduled to rotate back to Earth in the fall, probably on board a shuttle orbiter, assuming NASA gives the clearance for resumption of regular shuttle trips.

The launch windows mentioned above are significant in that in the aftermath of the loss of the *Columbia* shuttle, NASA designated *Discovery* and *Atlantis* as potential rescue vehicles, each for the other orbiter. Therefore, for the foreseeable future neither of these two orbiters will launch without the other being essentially ready to launch as well.

As mentioned in last month's column, *Discovery* is scheduled to dock at the International Space Station during its mission. In actuality, it is required to dock at the ISS, as well as *Atlantis* when it is next launched. One of the purposes of these dockings is as a rendezvous point for a rescue launch of the rescue orbiter, should such a mission be required.

Insofar as ARISS (Amateur Radio on the International Space Station) activity is concerned, it will continue to be handled from the ISS, not from the shuttle, even though, as indicated above, licensed hams will be on board the *Atlantis* for the STS 121 crew. Such ARISS activity from the ISS by non-ISS crew was the case in April when European Space Agency Astronaut Roberto Vittori, IZ6ERU, of Italy accompanied the Expedition 11 crew on the Soyuz taxi flight to the ISS and conducted such activity.

According to the ARRL Space Bulletin 003 (ARLS003, April 18, 2005), during Vittori's stay he conducted an ARISS school group QSO with two technical schools in Italy. "One of the schools was named for wireless pioneer Guglielmo Marconi, and his daughter, Princess Elettra Marconi, assisted in the event and sent greetings to the astronauts."

Concerning further ARISS activities, it is assumed that Krikalev and Phillips will continue the school group QSOs during their tour of duty onboard the ISS. What ARISS activities might take place during the docking of the shuttles at the ISS is unknown and unpredictable. Even so, as sometimes happens with random ARISS QSOs, an eye on the ISS orbits and an ear on their frequencies might yield a surprise QSO for your logbook.

Chiao Logs 170th ARISS School Group QSO

Before leaving the ISS, Expedition 10 Commander Leroy Chiao, KE5BRW, achieved a milestone of sorts in participating in the 170th school group QSO from the ISS since the first crew started making QSOs in June 2000. This particular contact took place on March 29 and was at the Science and Discovery Center at Pecan Creek Elementary School, with the members of the fifth-grade class. Members of the Denton County Amateur Radio Club, W5NGU, handled the setup and operation of the ground-station equipment. The control operator was Jerry Hamon, KC5YRC. As he has done so many times in the past, *CQ VHF* magazine satellite columnist Keith Pugh, W5IU, once again served as the QSO mentor.

Children from the elementary school were able to ask Chiao 15 questions before losing contact with the ISS. Questions asked included what kind of education is needed to become an astronaut, dealing with the challenges of weightlessness (Chiao reported that it was easy to lose things that were not

tied down, sometimes for weeks at a time), how the astronauts measure the temperature of the sun, what the astronauts do for fun, and what interesting experiments the astronauts are doing while on board the ISS. An audio file of the QSO can be listened to on the ARRL website. To listen to the audio file, go to the following link and click on the link that appears on that page: <http://www.arrl.org/news/stories/ 2005/04/06/1/>.

Regarding the last question concerning experiments, Chiao answered that the astronauts are performing ultrasound examinations on one another under direction of a ground-based doctor. He explained that the information gleaned from this experiment will prove useful for a long-duration flight, such as to Mars in a few years. Chiao and fellow crewmember Salizhan Sharipov returned to Earth in mid-April after completing their tour of duty on board the ISS.

On the Air

Julio Medina, NP3CW, reports the following: "The band was not very active this last March 2005. On 1 March I worked K4RX (EM70). On 2 March I worked AC4TO (EM70), K4RX (EM70), N4NN (EM90), W4SO (EL96), LU7YZ (FF51), and LW3WX (GF05). On 7 March I worked PY5CG (GG53). On 8 March I worked LU3EAP and LW3EX (both in GF05). On 10 March I worked ZP6CW, LU2BN, LU9DFN, and LU2DPW (the latter two being in GF05), and heard CX9AE. On 25 March I worked FJ5DX (FK87) and FM5JC."

Fire at RN6MT Destroys Everything

This past March a fire occurred in the home of Gena Sherstkij, RN6MT. According to Bernd J. Mischlewski, DF2ZC, writing in his "144 MHz EME Newsletter," which appears online at <http://www.home.karneval.cz/ok2kkw/eme_newsletter_2005_03.pdf>, in the first week of March Gena's house caught on fire while he was away. The fire was so extensive that Gena lost everything, except the clothes that he was wearing.

In order to help Gena replace what he lost in the fire, monetary collections for him are under way in the U.S. and in Europe. Joe Taylor, K1JT, is acting as the North American collection point, while Bernd is acting as the European collection point. If you would like to be a part of assisting Gena in getting back on the air, please contact one of these two gentlemen. Joe can be contacted at <k1jt@arrl.org> and Bernd can be contacted at <df2zc@web.de>. The logistics of figuring out how to assist Gena in replacing his station are still being worked out. Before this tragedy Gena very was active on both EME and meteor-scatter.

Current Contests

The European Worldwide EME Contest 2005: Sponsored by *DUBUS* and REF, the EU WW EME contest is intended to encourage worldwide activity on moonbounce. Multipliers are DXCC countries plus all W/VK/VE states. This gives equal chances for stations from North America, Europe, and Oceania. The rules reward random QSOs, but do not penalize skeds on 2.3 GHz or above. Winners (1st place) receive a free subscription to *DUBUS* magazine.

The contest dates and bands are as follows: Third weekend—432 MHz and 5.7 GHz, 11–12 June, 0000 to 2400 UTC. Sections and awards include the following: QRP 144 MHz <100 kW EIRP, 432 MHz <400 kW EIRP, 1296

MHz <600 kW EIRP, and >= 2300 MHz; no separate QRP/QRO categories. The QRO category on 144, 432, and 1296 MHz, stations with EIRP equal to or greater than stated above. The PRO category includes non-amateur equipment or antennas. PRO stations will have scores listed separately. There are no separate multi-operator classes. Multi-operator and QRO stations will be highlighted in the general classifications. All QRP/QRO band winners and QRP/QRO multiband winners will receive a one-year free subscription to *DUBUS* magazine. In each band/section certificates will be issued to the top ten entries and to the highest scoring station in the Southern Hemisphere.

For a valid QSO both stations must transmit and receive both callsigns + TMO/RST + R. During a QSO, on any band, liaison by any other means (e.g., DXcluster, internet, telephone) is forbidden. There is no restriction on modes, but entrants must not cause inter-mode QRM.

Contest entries *must* be sent no later than 28 days after the end of the third weekend (i.e., in the mail or e-mail by 10 July 2005). Mail address: Patrick Magnin, F6HYE, Marcorens, F-74140 Ballaison, France. You can also e-mail your contest entry in ASCII format to: <f6hye@ref-union.org>. All e-mail entries will be acknowledged within one week. For additional rules and general questions contact <info@dubus.de>. Complete rules can be found at: <http://www.marsport.demon.co.uk/EMEcont2005.pdf>.

Six Club Contest: The Major Six Club Contest is anticipated to be the first weekend in June, from 2300 UTC, June 3 to 0200 UTC June 6. These dates need to be confirmed by the sponsor. All logs are due 30 days from the ending date of the contest and they go to <w4wrl@aol.com>. For more info go to: <http://6mt.com/contest.htm>.

ARRL June VHF QSO Party: The dates for this contest are 11–13 June. Complete rules are in the May issue of *QST* and 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. This is by far the most popular VHF contest. 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 to introduce the hobby to those who are not presently working the VHF+ bands or who are not hams.

SMIRK Contest: The SMIRK 2005 QSO Party, sponsored by the Six Meter International Radio Klub, will be held from 0000 UTC June 18 to 2400 UTC June 19. This is a 6-meter only contest. All phone contacts within the lower 48 states and Canada must be made above 50.150 MHz; only DX QSOs may be made between 50.100 and 50.150. 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. Send a legal-size SASE for a copy of the log forms. Log requests and logs (sent by August 1) should be sent to Pat Rose, W5OZI, P.O. Box 393, Junction, TX 76849-0393. For more information go to: <http://www.smirk.org>.

Field Day: ARRL's classic, Field Day, will be held June 25–26. Complete rules 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, sporadic-*E* openings can occur. Certainly this is one of the best club-related events with which to involve new people in the hobby.

Current Meteor Showers

June: Between June 3 and 11 the *Arietids* meteor mhower will once again be evident. This is a daytime shower, with the peak predicted to occur on June 8. 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. At its maximum it produces around 40 meteors per hour. On June 28 the *Delta Aquarids S* shower is expected to peak. The *Bootids* are expected to make a showing between June 26 and July 2, with a predicted peak on June 27. On June 29 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 information on these and other meteor shower dates go to: <http://www.imo.net>.

Current Conference

Ham-Com: The annual Ham-Com hamfest will be held June 3–5 in Arlington, Texas. As always, the North Texas Microwave Society will present a microwave forum. For more information, see the Ham-Com website at <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, hardcopy, e-mail, etc., please contact the person listed with the announcement. To date this year the following organizations or conference organizers have announced calls for papers for their forthcoming conferences:

The 39th annual Central States VHF Society Conference will be held July 28–31 at the Sheraton Hotel, Colorado Springs. The deadline for submitting final papers will be around June 7, 2005. Submit your papers and your desire to make a presentation as soon as possible to Technical Program Chair Joe Lynch, N6CL, e-mail: <n6cl@sbcglobal.net>.

TAPR/ARRL Digital Communications Conference: Technical papers

are solicited for presentation at the 24th annual ARRL and TAPR Digital Communications Conference to be held September 23–25 in Santa Ana, California, and for publication in the conference *Proceedings*. Presentation at the conference is *not* required for publication. Submission of papers is due by August 9; they should be submitted to: Maty Weinberg, ARRL, 225 Main St, Newington, CT 06111; or via e-mail: <maty@arrl.org>.

The Mid-Atlantic VHF Conference, sponsored by the Mt Airy VHF Radio Club, Inc., will be held on Saturday, September 24 at the Courtyard Marriott, Bensalem, PA. A call for papers has been issued. Please submit them as soon as possible to: Paul Drexler, W2PED, 28 West Squan Rd., Clarksburg, NJ 08510; e-mail: <pdrexler@hotmail.com>. Paper submission deadline was scheduled to be May 31, but you might be able to submit your piece if you hurry! The deadline for ordering copies of the *Proceedings* is July 31.

Microwave UpDate. The following is via Chip Angle, N6CA, Technical Program Chairman: The 2005 Microwave UpDate will be held this year in the Los Angeles area October 27–31. Interested authors are invited to present a paper(s) for the 2005 conference. You don't have to give a talk to have your paper included in the conference *Proceedings*. Electronic submissions in Word, WordPerfect, or text format accepted by e-mail or CD. Usual drawing formats also accepted with paper(s). Cutoff date for inclusion in the *Proceedings* is September 5. Send an e-mail or write to: Chip Angle, N6CA, P.O. Box 35, Lomita, CA 90717-0035; e-mail: <n6ca@ham-radio.com>. Contact Chip as soon as possible with an abstract or a general idea to help the conference plan activities. Details go to: <http://www.microwaveupdate.org.>

And Finally . . .

It was 14 years ago this month when I penned my first column for the restart of the "VHF Plus" column in *CQ* magazine. It hardly seems possible that so many years have passed. With next month's column I will conclude that 14th year. I am looking forward to many more columns as I continue to cover your activities on the VHF+ ham bands.

Speaking of starts and restarts, it has now been three years since *CQ VHF* magazine was restarted. The Spring 2005 issue, which begins the fourth year, is now available. In that issue are two new columns. A new column entitled "Public Service," edited by April Moell, WA6OPS (wife of Joe Moell, KØOV, *CQ VHF* magazine's "Homing In" column editor), reports on public service activities as they relate to the VHF+ frequencies. April has more than 25 years of experience in emergency and public service communications, particularly in relation to amateur radio assistance at area hospitals in the Orange County area of southern California.

Another new column in the current issue of *CQ VHF* is entitled "VHF+ Beginner's Guide." Edited by Rich Arland, K7SZ, it covers basic concepts in VHF communications. For more than 30 years Rich has been writing for amateur radio and radio hobby publications, such as *CQ*, *QST*, *Monitoring Times*, *The Milliwatt*, and *WorldRadio*. Rich will continue to write the "Homeland Security" column for our sister publication, *Popular Communications*.

Thanks again for keeping me in the loop of your VHF+ activities.Until next month...

73, de Joe, N6CL

awards

BY TED MELINOSKY,* K1BV

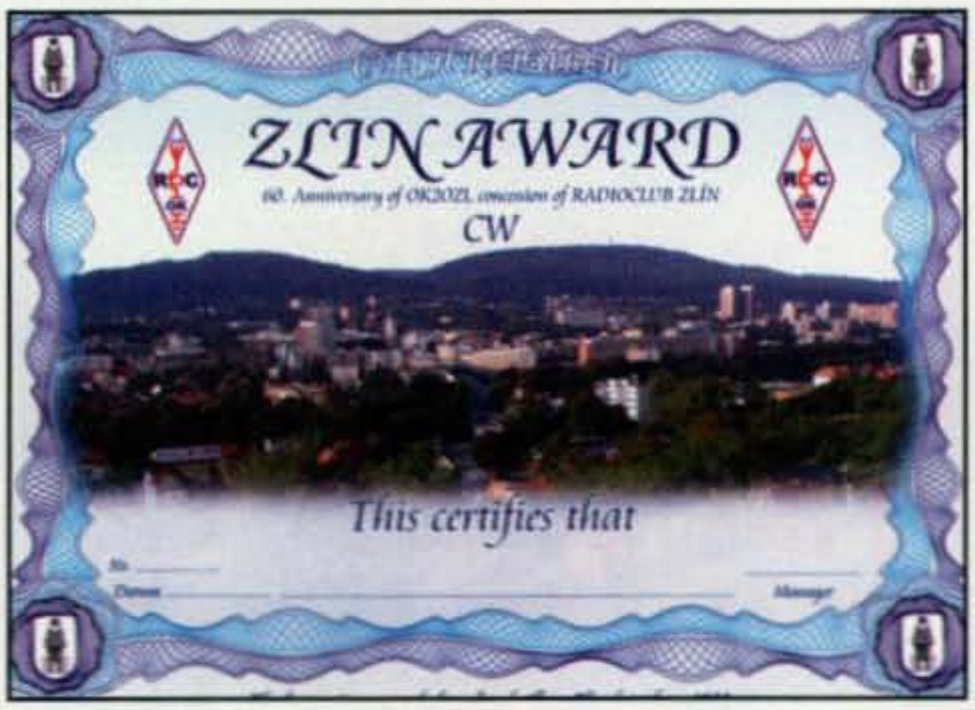
Award Certificates

Recently, JA3BAG and OZ5MJ told me that some interesting awards had been discontinued. They both stated the same reason: The sponsors could not afford to reprint the exhausted supply of certificates. Printing multiple-color certificates is often labor intensive, and the production of the relatively small quantities typically needed for ham awards can be cost prohibitive. This is unlikely to change in the future.

There's no reason why a low-volume printing job such as this couldn't be done by an inexpensive ink-jet printer. Most modern word-processing and photo-editing programs, and programs such as Adobe® Acrobat®, are fully capable of handling a nearly infinite variety of type faces and images in any color sequence imaginable. Office-supply stores offer a wide selection of paper with borders and backgrounds to complement your own design. Digital cameras make using images such as scenery and people literally cost free.

Most clubs or groups have at least one member with the talent to produce attractive awards that will bring favorable attention to the group. The cost will be about 50 cents per certificate at the most. If you're getting a few dollars, Euros, or IRCs for each award, there's plenty of margin to give the applicant a certificate worthy of hanging on the shack wall.

In the case of the Danish Island Award, the story ended happily. The sponsor found another sponsor who is willing to bear the costs of reprinting the certificates.



This award commemorates the 60th anniversary of Radioklub Zlin.

DX Awards

Czech Republic Zlin Award. The end of WW II occurred in 1945. Therefore, it makes sense that we now are seeing quite a few awards that commemorate the 60th anniversary of the 1945 event. *CQ*'s own recent 60th anniversary celebration is representative of the blossoming of ham radio after the war, which saw so many military amateurs returning to operating for fun instead of for their very survival. In some European countries, even those devastated by war, amateur radio clubs formed at that time as well.

The Zlin Award commemorates the 60th anniversary of Radioklub Zlin. Note that this is a "permanent" award. Contacts are permitted going back to 1991, the date of the formation of the Czech Republic.

Contact (SWL okay) at least 60 stations using CW on or after 8 October 1991 as follows:

1. Two QSOs with stations OK2OZL, OK2PO, or OK2BNC (only one contact permitted with each of this stations).
2. 14 QSOs with OK/OL stations.
3. Six QSOs with each of neighboring countries DL, SP, OM, and OE.
4. 20 QSOs with any other EU stations.

Send GCR (General Certification Rule; a list of contacts certified by at least two licensed amateurs)

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

USA-CA Special Honor Roll

Don Wolfe, AA4VN
USA-CA All Counties #1114
March 1, 2005

James Hartwell, KF7CT
USA-CA All Counties #1115
March 2, 2005

Bob Schenck, N2OO
USA-CA All Counties #1116
March 5, 2005

Dan Mulford, KM9X
USA-CA All Counties #1117
March 8, 2005

Bruce Phegley, W4OV
USA-CA All Counties #1118
March 14, 2005

USA-CA Honor Roll

500

AA4VN	3341
KF7CT	3342
JA7IC	3343
N2OO	3344
KM9X	3345
W4OV	3346

1000

AA4VN	1686
KF7CT	1687
N2OO	1688
KM9X	1689
W4OV	1690

1500

AA4VN	1409
KF7CT	1410
N2OO	1411
KM9X	1412
W4OV	1413

2000

AA4VN	1305
KF7CT	1306
N2OO	1307
KM9X	1308
W4OV	1309

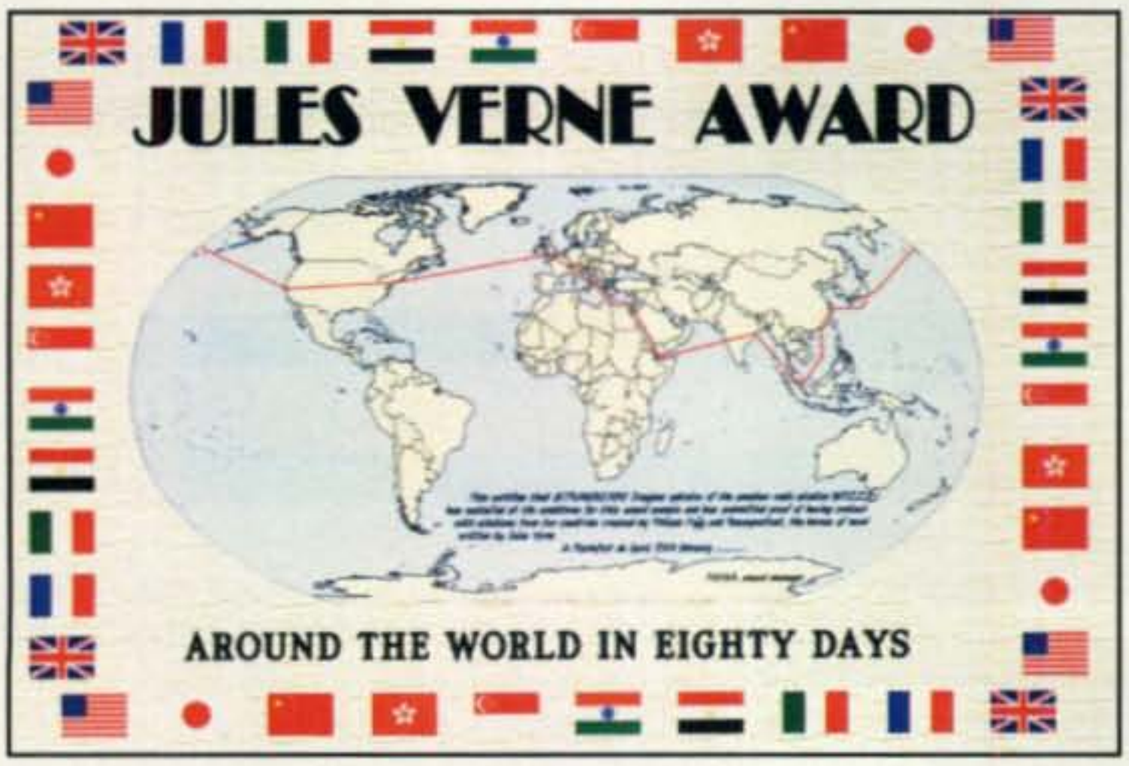
2500

AA4VN	1226
KF7CT	1227
N2OO	1228
KM9X	1229
W4OV	1230

3000

AA4VN	1136
KF7CT	1137
N2OO	1138
KM9X	1139
W4OV	1140

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.



Contact the ten countries crossed by Phileas Fogg and Passepartout, the heroes of the classic book Around the World In Eighty Days *to earn the Jules Verne Award. You are required to make the necessary contacts within an 80-day period.*

Sponsored by the Dolomiten DX Club, this award is issued for confirmed contacts with European countries.

list and fee of 5 Euros or $US10 to: Petr Ohnút, Nad vyvozem 5127, Zlín 76005, Czech Republic.

France's Jules Verne Award. This year also marks the hundredth anniversary of the death of Jules Verne, popular French author and a founding father of science fiction. Dominique Maillard, F6IHA, is sponsoring this award for contacting (SWL okay) the ten countries crossed by Phileas Fogg and Passepartout, the heroes of Verne's classic, *Around the World In Eighty Days*. You are required to make the necessary contacts within an 80-day period. Some of the countries will be a challenge, but that's all part of the fun of award hunting! (See the beginning of this month's column on producing colorful awards at minimal cost. The flags, map, and typefaces used for this award certificate all are available at no cost on the internet.)

Valid contacts using any mode or band are to be made in any 80-day period and only after 25 March 2005 with the following countries: England, France, Italy, Egypt, India, Singapore, Hong-Kong, China, Japan, and the U.S. The sponsor reserves the right to ask for any of the QSL cards. Send your application accompanied by a certified list of contacts with 5 Euros, $US5, or 5 IRCs to: Dominique Maillard, F6HIA, 1726 Chemin du Plan, 30650 Rochefort du Gard, France.

Italy's Dolomiten DX Club Awards. The next two awards are sponsored by the Dolomiten DX Club. Summertime

The Italian Parks Award, also sponsored by the Dolomiten DX Club, is issued for confirmed contacts with stations operating from Italian national parks.

should be a good time to listen for Italians operating from the parks of their country.

General requirements: GCR list is accepted. Refer to the text of each award for fees. Apply to: Award Manager, Tony Mastino, IN3YGW, P.O. Box 159, I-39100 Bolzano, Italy.

European Countries DX Award (ECDA). This award is issued for confirmed contacts with EU countries. All bands and modes, no repeater contacts. Basic award for 40 countries, stickers for 50 and 60 countries, and Honor Roll for 65 countries. Endorsements for CW, Phone, Mixed, RTTY, Single Band, VHF, UHF, 50 MHz, etc. Do not send QSL cards. Send list and fee of 15 Euros or $US15.

Countries list: C3, CT, CU, DL, EA, EA6, EI, ER, ES, EW, F, G, GD, GI, GJ, GM, GU, GW, HA, HB, HBØ, HV, I, IS, JW, JX, LA, LX, LY, LZ, OE, OH, OHØ, OJØ, OK, OM, ON, OY, OZ, PA, R1F, R1M, S5, SM, SP, SV, SV5, SV9, SY, T7, T9, TA1, TF, TK, UA, UA2, UR, YL, YO, YU, Z3, ZA, ZB, 1AØ, 3A, 4U (Geneva), 4U (Vienna), 9A, and 9H.

Italian Parks Award. This award is issued for confirmed contacts with stations operating from Italian national parks (SWL okay) in following classes: Basic 10 QSOs/Hrd, Red 15 QSOs/Hrd, Blue 20 QSOs/Hrd. No date or mode limitations, and each park counts once. Do not send QSL cards. Send list and fee of 10 Euros or $US10.

List of Italian national parks (province and common prefix shown in parentheses):

Parco Nazionale d'Abruzzo (prov. Aquila I6, IK6, IZ6, etc.)

Parco Nazionale dell'Archipelago Toscano (prov. Livorno IA5, I5, IK5, IZ5, etc.)

Parco Nazionale dell'Asinara (ISØ, IMØ Asinara, Sassari, P. Torres, Sorso, Sennori, Castel Sardo)

Parco Nazionale dell'Aspromonte (prov. Reggio Calabria I8, IK8, IZ8, etc.)

Parco Nazionale Calabro (prov. Cosenza I8, IK8, IZ8, etc.)

Jeffrey Napier, AF3X, USA-CA All Counties #1109
and University of Tennessee ARC, AA4UT, #1110
(January 25, 2005)

I was first introduced to county hunting in 2001 by N4EWK. He was giving me a ride to the local radio club meeting and he put his mobile radio on 14.336. I was only a Technician at the time, so hearing QSOs with people across the country was very exciting. I soon upgraded my license, and in September 2001 made my first contact on the net (N8CIJ, Stark County, Ohio) using the University of Tennessee's club station (AA4UT). At the same time, my only access to HF was from the club station. I worked about 1500 counties over the next 18 months using the club's Ten-Tec Paragon and 40-meter V hanging out the window and tied to two trees.

In February 2003 a beam and tower were donated to the club and installed 250 feet above ground on top of Neyland Stadium. The county totals were really increasing then! In spring 2004 I finally bought an ICOM 706 to put in the car. What a difference that made! I was able to get counties from nearly anywhere, and I was able to help others by putting out some counties. Also in 2004 the use of internet spotting for county hunters increased exponentially. Using the spots I was soon able to get alerts sent to my cell phone whenever a county was spotted that I needed. This helped avoid missing any counties that ran while I was in the grocery store or at work.

I was finally down to 100 counties left in October 2004. All of them were on the east coast, so 40 meters became my primary band. I worked lots of new counties while all the mobiles were headed for the county hunter's convention in Murfreesboro, Tennessee.

In mid-December I was down to 14 left. John, W5UGD, had a trip planned for Christmas to see his father in Arkansas. I received an early Christmas present when on his return trip he picked up seven of my 14 counties. N9JF picked up my last county in Illinois the same day, leaving me with six to go—all of them in Georgia. W5UGD immediately started planning a trip to pick them all up for me. I picked up three of them in the early morning hours of January 8, 2005. Two more came around noon. That evening I worked John in Lincoln, Georgia on 40 meters for the last one for "the whole ball of wax."

Special thanks to all those who helped me along the way, including the fabulous net control, KZ2P, all the internet spotters, and all the mobiles and fixed stations that are too numerous to count. As I was closing in on those last few, the special efforts of KB6UF, N9JF, NXØX, W5UGD, N5KGY, N2OCW, and KM9X were all greatly appreciated! Thanks, guys! Now I am going to spend more time helping out others by running counties as well as going for the higher level MARAC awards. See you on the air from the next county!

—AF3X

Jeffrey Napier, AF3X, earned USA-CA All Counties #1109 on January 25, 2005. A companion award was issued to the University of Tennessee ARC, AA4UT.

To earn the YV9 Award, sponsored by the Radio Club of Venezuela, confirm contact with each of the nine Venezuelan call areas.

Parco Nazionale del Cilento (prov. Salerno I8, IK8, IZ8, etc.)

Parco Nazionale del Circeo (prov. Latina IØ, IKØ, IZØ, etc.)

Parco Nazionale delle Dolomiti (prov. Belluno I3, IK3, IZ3, etc., prov. Bolzano IN3)

Parco delle Foreste Casentinesi (prov. Arezzo I5, IK5, IZ5, etc.)

Parco Nazionale del Gargano (prov. Foggia I7, IK7, IZ7, etc.)

Parco Nazionale del Gennargentu (prov. Nuoro ISØ)

Parco Nazionale Gran Paradiso (prov. Torino I1, IK1, IZ1, etc., prov. Aosta IX1)

Parco Nazionale del Gran Sasso (prov. Aquila I6, IK6, IZ6, etc.)

Parco Nazionale do La Maddalena (La Maddalena Archipelago, Olbia, Golfo Aranci, Arzachena, Palau, S. Teresa do Gallura, Loiri ISØ, IMØ)

Parco Nazionale della Majella (prov. Chieti, Aquila, Pescara I6, IK6, IZ6, etc.)

Parco Nazionale dei Monti Sibillini (prov. Macerata I6, IK6, IZ6, etc.)

Parco Nazionale del Pollino (prov. Potenza I8, IK8, IZ8, etc.)

Parco Nazionale dello Stelvio (prov. Sondrio I2, IK2, IZ2, etc.)

Parco Nazionale Val Grande (prov. Verbania/Pallanza I1, IK1, IZ1, etc.)

Parco Nazionale del Vesuvio (prov. Napoli I8, IK8, IZ8, etc.)

Venezuela's YV9 Award. This award is part of the official program of the Radio Club of Venezuela. The certificate image is an outline map of Venezuela showing the nine call areas. Your QSL collection probably will have mostly the YV5 and YV7 prefixes. Some of the other areas will be a great challenge, but note that you can use a YVØ card to substitute for one of them.

Confirm each of the nine Venezuelan call areas using any band or mode. The YVØ prefix (Aves Island) may be used as a substitute for any missing call area. Send GCR list and fee of $US5 to Radio Venezuelan Club, Commission of Aids and Diplomas, P.O. Box N.2285, Caracas 1010-A, Venezuela. It's recommended that Registered Mail be used to send money.)

Should your club or group need publicity for its new or existing awards program, please send me the details via letter or e-mail. Publicity is the key to success for any awards program.

73, Ted, K1BV

CQ DX Field Award Rule Clarification

It has been pointed out to us that Rule 11 for the new CQ DX Field Award is not clear on whether location information printed on a QSL card, other than a grid field or grid locator, may be used to determine a station's grid field. In nearly all cases, standard address information and an atlas will be sufficient to determine a station's grid field if it is not clearly indicated on the QSL card, and we encourage people to do this. Therefore, to clarify our intentions, we are amending Rule 11 to read as follows:

11. For QSLs from fixed stations that do not indicate a grid field, grid locator or station location information sufficient to determine grid field, determination of the grid field will be based on the licensed location of the station as shown in online callsign databases. In these cases, the field may be added, in pencil only, on the address side of the card, or on the electronic confirmation printout. If locator information is not available online or from the station contacted, the contact may not be used for credit toward this award. It is the responsibility of the applicant to collect this information, subject to verification by the card checker and/or CQ DX Awards Manager.

The official rules posted on the CQ website are being changed to reflect this clarification as well.

dx

BY CARL SMITH,* N4AA

Navassa, KP1 and Desecheo, KP5

A major project is under way to allow American citizens to legally go to Navassa (KP1) and Desecheo (KP5) islands. These two have been very high on the Most Wanted lists for some time now, but no one has been allowed to "legally" go there. The KP1/KP5 Project group is working with members of the U.S. Congress to pass legislation that would make it possible. Please see the accompanying photo of the leaders of this group. They were in Washington, D.C. in April. The following announcement comes from them:

Hams representing the KP1-5 Project took their case to Washington, D.C. on April 8, making the point that the U.S. Fish and Wildlife Service (FWS) has wrongly closed Desecheo (KP5) and Navassa (KP1) islands, both National Wildlife Refuges in the Caribbean, to law-abiding American citizens while turning a blind eye to trespassers and aliens who use the islands at will and leave garbage and start fires in these wildlife habitats.

It has been just over ten years since the last authorized DX operation from either of these entities. No wonder they are listed at number 7 (KP1) and number 8 (KP5) in N4AA's Most Wanted world survey of needed entities!

The biggest challenge facing the KP1-5 Project team now is to motivate ham radio operators to contact their Congressmen or Congresswomen. The very difficult goal of getting a bill introduced with bi-partisan sponsorship has been reached with H.R. 1183. However, that is not enough. Although several representatives have signed on as co-sponsors for H.R. 1183, some members of Congress have not heard from a single amateur radio operator about the bill. If H.R. 1183 comes to a vote before hams have contacted their Congressional representatives, we cannot expect it to pass.

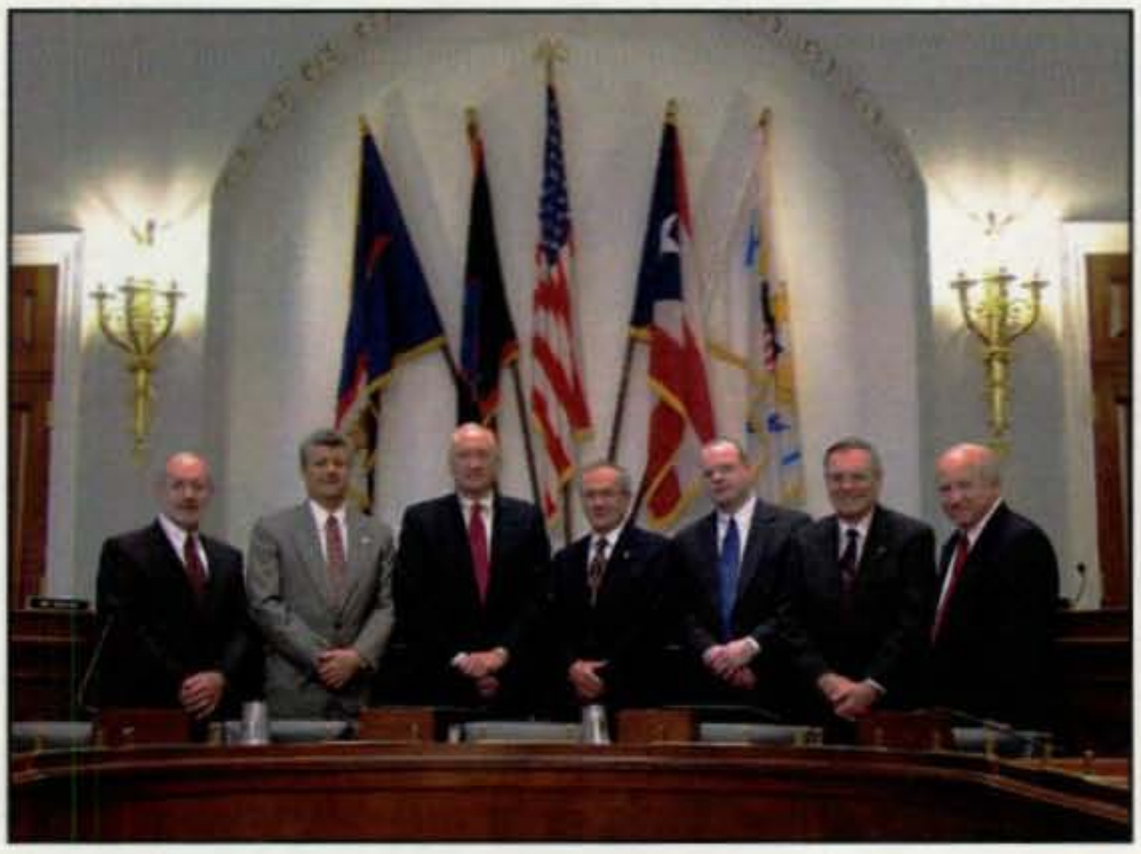
The FWS has an important mission in preserving wildlife habitat. However, the agency wrongly claims that the National Wildlife Refuge System Improvement Act of 1997 (NWRSIA) allows only wildlife-dependent recreation activities on Navassa and Desecheo. It has additionally cited unsubstantiated safety reasons. H.R. 1183 would require FWS to open Desecheo and Navassa islands to limited, lawful, public use which would be restricted by existing FWS regulations, which are designed to protect wildlife in the nations' refuges. H.R. 1183 is related only to the islands of Desecheo and Navassa in the Caribbean. The bill would not change the law; it would simply require FWS to do what it is required to under NWRSIA. It is worth noting that no federal agency that previously managed the Desecheo and Navassa refuges has ever, to our knowledge, authorized amateur radio on these islands except under the most stringent guidelines described in Special Use Permits intended to protect wildlife.

What are the purported dangers? FWS claims that Navassa's habitat is so fragile that humans should not go there because of danger to the eco-system, and Navassa's lack of a beach makes sea landings dangerous. However, the facts, taken from the FWS's own records, reveal that Navassa has one of the healthiest refuge habitats in the world. Haitian fishermen have fishing camps on the island with primitive cooking and sanitation facilities in use year-round. Government employees on Navassa for field work do not tell the trespassers to leave. There are recent photos of government personnel visiting with Haitian fishermen taking shelter in the former U.S. Coast Guard Lighthouse building, which is off-limits to American citizens. FWS has even recommended a permit program for unsupervised, Haitian trespassers while barring Americans who seek to obtain permits to visit the refuge under existing laws and stringent FWS regulations! Haitians and FWS personnel make safe sea landings regularly, so why can't Americans, hams?

Desecheo has been declared unsafe by FWS for American citizens to visit because of alleged drug smugglers, illegal aliens, and because it was a bomb practice range during WW II and a few years thereafter. Again, FWS records reveal that FWS personnel have hiked and camped all over Desecheo for a quarter-century. There is no evidence that anyone has ever been threatened or harmed by drug smugglers, or anyone else. The last report of drug smugglers was 15 years ago! In 2002 the U.S. Army Corps of Engineers visited the island looking for any remains of unexploded ordnance and a U.S. Navy explosives demolition team followed. All the old bombs they found were destroyed by the Navy demolition team—all three of them! Yet as recently as March of this year, an application for a Special Use Permit for Amateur Radio on Desecheo was denied for these very reasons.

How can you help? Go the KP1-5 Project website (www.kp1-5.com) for complete background information and step-by-step instructions on how to contact your Congressman. The Lone Star DX Association, which has been granted 501(c)(3) status by the Internal Revenue Service, accepts donations for a legal/education fund. Your participation is critical to saving these DX entities, and others that might become victims of overzealous

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>



The leaders of the KP1/KP5 Project met in Washington, D.C. to plead their case to Congressmen last April. Shown here (left to right) are Glen, WØGJ; Glenn, KØJGH; Bob, K4UEE; Jim, WØNB; Brad, K4RT; Garry, W8OI; and Mike, NA5U. (Photo courtesy of Bob Allphin, K4UEE)

5 Band WAZ

As of April 1, 2005, 673 stations have attained the 200 zone level and 1444 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:

WØOU W4TO DU9RG

The top contenders for 5 Band WAZ (zones needed, 80 meters):

N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
WØPGI, 199 (26)
W2YY, 199 (26)
VE7AHA, 199 (34)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40m)
IK1AOD, 199 (1)
DF3CB, 199 (1)
GM3YOR, 199 (31)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W6SR, 199 (37)
W3NO, 199 (26)
HB9DDZ, 199 (31)
RU3FM, 199 (1)
HB9BGV, 199 (31)
N3UN, 199 (18)
OH2VZ, 199 (31)
W1JZ, 199 (24)
W1FZ, 199 (26)
SM7BIP, 199 (31)
PY5EG, 199 (23)
SP5DVP, 199 (31 on 40)
W8AEF, 199 (40)
K8RR, 199 (26)
UU5JR, 199 (4)
W8GF, 199 (22)
N4NX, 199 (26)
N4MM, 199 (26)
EA7GF, 199 (1)
N4PQX, 199 (26)
JA5IU, 199 (2)
N6HR/7, 199 (37)
CT3DL, 199 (26)
NØIJ, 199 (21)
VE3XN, 199 (26)
EA5BCX, 198 (27, 39)
G3KDB, 198 (1, 12)
KG9N, 198 (18, 22)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
K5PC, 198 (18, 23)
K4CN, 198 (23, 26)
G3KMQ, 198 (1, 27)
N2QT, 198 (23, 24)
OK1DWC, 198 (6, 31)
W4UM, 198 (18, 23)
US7MM,198 (2, 6)
K2TK, 198 (23, 24)
K3JGJ, 198 (24, 26)
W4DC, 198 (24, 26)
N4XR, 198 (22, 27)
RU3DX, 198 (1, 6)
OE2LCM, 198 (1, 31)
W7SX, 198 (18, 23)
HA1RW, 198 (1, 31)
WK3N, 198 (23, 24)
HA9RT, 198 (1, 31)
W9XY, 198 (22, 26)
KZ2I, 198 (24, 26)
RX9TX, 198 (2, 6)
F5NBU, 198 (19, 31)

The following have qualified for the basic 5 Band WAZ Award:

N5GH (176 zones)
N2SU (160 zones)
VO1CV (170 zones)
JA1FGB (190 zones)
F5NBU (198 zones)
S51DX (170 zones)
DU9RG (200 zones)
ON4CAS (154 zones)

****Please note: Cost of the 5 Band WAZ Plaque is $80 ($100 if airmail shipping is requested).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

government bureaucrats. *Every single e-mail to Congress makes a difference!*

We can make a difference just by spending a few minutes sending an e-mail to our respective Congressmen. If you don't need to work these islands for yourself, consider your friends who may not have had the chance to do so. If we don't do something now, they may never have that chance.

Glorioso, FR/G and Kerguelen, FT5X

There hasn't been a lot to "brag about" the past several months. It seems most

The WPX Program

CW

3151 ..... JH5OXF 3152 ..... RZ6AE

SSB

2930 ..... JH5OXF 2931 ..... WA4EEZ

Mixed

1954 ..... RW9F

CW: 350 RZ6AE. 650 CN2PM. 1350 JH5OXF. 1850 JH5OXF.
SSB: 350 SV1EOS. 400 SV1EOS, WA4EEZ. 500 EA3FYD. 2400 I3ZSX.
MIXED: 450 RW9RF. 1100 W9BOK. 2050 JA6GWU. 2200 JH5OXF.

10 Meters: WA4EEZ
15 Meters: W9BOK
20 Meters: W9BOK
40 Meters: WAØWAO
Asia: SV1EOS, RW9RF, EA3FYD
So. America: JH5OXF
Europe: RW9RF

Award of Excellence: RA1AOB

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.

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, 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.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if airmail desired) to "CQ WPX Awards," P.O. Box 593, Clovis, NM 88101 USA. *Note: WPX will not accept prefixes/calls which have been confirmed by computer-generated electronic means.*

Please Note: As of February 2004, the price of the 160 meter bar for the Award of Excellence is now $6.50.

The Micro-Lite DXpedition Team on Kerguelen Island as FT5XO. (Photo courtesy of Floyd, N5FG)

This group of Russian DXers got together to activate a new IOTA (AS-170). Left to right are Nickolai, UA3DX; Lenoid, UA6CW; Alexander, RW3DTB; Sergey, RW6HJV; Igor, RK6CZ; and Mikhail, RL3AA. (Photo courtesy of Mikhail, RL3AA) →

Bharathi Prasad, VU2RBI, signs QSLs for last December's VU4RBI operation from the Andaman Islands at April's International DX Convention in Visalia. (Photo courtesy of Paul, W7PEB)

DXers are just waiting out the solar cycle. DXpeditions have been down by my calculations. We still have some folks making trips here and there, but those are not to the top Most Wanted countries. Also, lately it seems that when I write about an upcoming DXpedition, it turns out they either have to postpone or cancel the trip.

This time it's Glorioso. Everything was progressing fine, and then the team got word they would not be able to land on the island in May as they had planned. Therefore, that one has been

delayed to the October/November time period. Hopefully it will happen then.

The one that did happen was Kerguelen, FT5XO. The Micro-Lite DXpedition Team made it to the island, and did they ever make some noise from down there! Even with their "lightweight" power and vertical antennas, they were very workable on most bands. They were especially active on 160, 80, 40, and 30 meters, making a lot of folks happy to finally add that one to their worked list. After wrapping up the operation, the team boarded the ship *Braveheart* and sailed all the way to Australia, landing at Freemantel. The local VKs put together a welcome-home barbecue for them, and I'm sure they enjoyed that.

Kure Atoll, KH7

There is a trip to Kure, KH7 planned for the September/October time frame. Here's the word on that one from organizer Bob Schmeider, KK6EK:

"We are pleased to announce a DXpedition to Kure Atoll, at the extreme northwestern end of the Hawaiian Islands, during Sept.–Oct. 2005. The callsign for the operation will be K7C. Kure is currently #10 on *The DX Magazine*'s Most Wanted List and #1 on the German DX Foundation's list.

The radio team includes Bob, KK6EK (expedition leader); Garry, NI6T (co-organizer); Alan, AD6E (co-organizer); Mike, N6MZ; Ward, NØAX; John, N7CQQ; Charlie, W6KK; Franz, DJ9ZB; Max, I8NHJ; Alan, K6SRZ (expedition doctor); and Kathryn, K6DZL (educational program); plus two more radio operators to be selected. The team will be QRV with four stations on all bands/modes, including 6 meters and RTTY.

In addition to the radio operations, the group is developing an innovative real-time interactive web-satellite-based system called "DXA." This system will enable the DXer to see and interact with activities of the operation as they happen, using any web browser. The group also will be carrying out several scientific projects in collaboration with naturalists on the atoll to help restore and protect its fragile ecosystem.

Finally, the group is developing an educational program that will utilize the DXA

CQ DX Awards Program

SSB

2452 .....EW1ABF

SSB Endorsements

320 .....WS9V/334
320 .....K5UO/331
320 .....KD5ZD/321

CW Endorsements

320 .....N6AW/330
320 .....K5UO/329
310 .....UA9SG/310

The basic award fee for subscribers to *CQ* is $6. For nonsubscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 335 active countries. Please make all checks payable to the award manager.

The WAZ Program

10 Meter SSB

570.....CT1EKY

12 Meter SSB

36 .....W9RPM
37 .....I4EAT

15 Meter SSB

617 .....YBØJIV
618.....DU9RG

17 Meter SSB

39 .....W9RPM

20 Meter SSB

1135.....UA1ZKF
1136.....YBØAI

10 Meter CW

191.....JA2DCN

12 Meter CW

47.....I4EAT

15 Meter CW

325 .....JA2EPW

17 Meter CW

57 .....JA2EPW

20 Meter CW

550 .....HL1AV
551 .....JF1MTV
552 .....JA2EPW

30 Meter CW

64 .....NW4N

40 Meter CW

244 .....JA2EPW

6 Meters

70 .....VR2XMT (33 zones)

160 Meters

205 .....OH2EE

All Band WAZ

SSB

4955.....K4QVK
4956 .....7K3QPL
4957 .....S51DX
4958 .....EA1IO
4959.....ON4CAS

Mixed

8349 .....DJ1QK
8350.....LY1FW
8351 .....W4TO
8352 .....PA2ALF

All CW

454 .....DL4XU
455.....ON4CAS

RTTY

156 .....S51DX

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>.

THE WPX HONOR ROLL

The WPX Honor Roll is based on the current confirmed prefixes which are submitted by separate application in strict conformance with the CQ Master Prefix list. Scores are based on the current prefix total, regardless of an operator's all-time count. Honor Roll must be updated annually by addition to, or confirmation of, present total. If no up-date, files will be made inactive.

MIXED

5264 9A2AA	4038 N4NO	3703 I2UIY	3325 KØDEQ	2705 W9IL	2426 W6OUL	1773 W7CB	1556 W2OO	803 VE3NQK
4792 W2FXA	3900 VE3XN	3437 I2MQP	3191 IK2ILH	2704 K2XF	2142 I2EAY	1741 AB5C	1242 K6UXO	742 K5IC
4257 W1CU	3938 YU1AB	3395 S53EO	2795 9A4W	2518 OZ1ACB	2100 VE6BF	1705 W2EZ	1016 RA1AOB	648 KWØH
4241 EA2IA	3890 I2PJA	3332 WB2YQH	2790 W9OP	2457 JN3SAC	1804 KØKG	1560 KX1A	825 KL7FAP	

SSB

4583 IØZV	3160 N4NO	2711 LU8ESU	2209 IK2QPR	1716 W6OUL	1458 JN3SAC	1215 W3LL	805 IK8OZP
3867 I2PJA	3151 I2UIY	2588 EA1JG	2076 K2XF	1716 W2FKF	1386 IK4HPU	1143 EA3EQT	755 VE6BF
3765 F6DZU	3122 CT1AHU	2563 KF7RU	2045 N6FX	1615 KI7AO	1340 I2EAY	978 EA7HY	674 K7SAM
3292 EA2IA	3046 I4CSP	2432 IN3QCI	1993 W9IL	1580 DL8AAV	1256 VE7SMP	934 KX1A	668 AE9DX
3266 I2MQP	2830 4X6DK	2325 CX6BZ	1830 K3IXD	1480 AB5C	1238 LU4DA	851 KU4BP	

CW

4413 WA2HZR	3339 VE7DP	2437 EA7AZA	2167 N6FX	2036 IK3GER	1863 W6OUL	1362 AC5K	1171 WA2VQV
3655 K9QVB	3294 EA2IA	2380 KF2O	2120 JN3SAC	1958 VE6BF	1769 I2MQP	1352 WO3Z	1048 KX1A
3610 N4NO	2688 I2UIY	2348 I7PXV	2089 K2XF	1907 W9IL	1767 I2EAY	1227 K6UXO	

Mike, N6MZ, looks "homeward" from Kerguelen. It's only 11,858 miles to Bellevue, Washington, but he wouldn't see home for awhile. In the background are Wes, W3WL, and James, 9V1YC, with the ship Braveheart *in the distance. (Photo courtesy of Mike, N6MZ, and Tom, N4XP)*

Andrea, IK1PMR, and Silvano, I2YSB, make the first QSO from 6OØCW (Somalia) on 30-meter CW on February 3, 2005. They made many more contacts, finishing up with 24,187 almost evenly split between SSB and CW, with 1062 Qs on RTTY. (Photo courtesy of Andrea, IK1PMR)

resource to enable students to learn from and interact with the onsite team. The project is being strongly supported by ICOM and the Pacific DX Group (Kimo, KH7U, and Patrick, KH6UY). The team and project was visible at Visalia and Dayton.

QSL Manager is Tom N4XP, c/o K4TSJ, Box 1, Watkinsville, GA 30677. The team welcomes comments and suggestions, pilots, programmers, and contributions.

The project is being managed by Cordell Expeditions, a nonprofit research organization with a 25-year history of successful expeditions to remote oceanic sites.

For more information, e-mail <info@cordell.org> (use "Kure7Cordell" in the Subject line) or any member listed above, and look at the full description at <www.cordell.org> (click on the 2005 Kure Expedition link). "

Until next time, enjoy the operating activities of the season: ARRL Field Day, IARU HF Championships, etc.

73, Carl, N4AA

QSL Information

3B8/HB9IRP via HB9IRP
3B8/IZ2DPX via IZ2DPX
3B8/IZ7ATN via IZØCKJ
3D2IZ via N6IZ
3DAØRN via G4IRN
3F6V via HP2AT
3V8SM via DL1BDF
5B4AGM via W3HNK
5W1VE via DL9HCU
5Z4DZ via PC1A
6Y6Y via WA4PGM
8Q7DV via UA9CLB
8R1EA via AH8DX
9AØMDC via IT9DAA
9H3IC via M5AAV
9H3JAG via OE3JAG
9H3LEO via IK1PMR
9H3MR via IK1PMR
9H3RN via G4IRN
9H3SH via DL4HG
9M6BG via VR2BG
9Q1D via SM5BFJ
9Q6MGK via ZR5MGK
9V1NC via W3HNK
9Y4/CX6VM via W3HNK
9Y4/N3BNA via KA2AEV
9Y4/ZP5AZL via ZP5MAL
A4/DL5AXI via DL5AXI
A61Q via EA7FTR
AC4TT via K4VUD
BW2/JA9BV via JA9BV
BX2/JA3DYU via JA3DYU
C21DL via DJ2EH
C38JM via C31JM
C6AYM via K9GY
CA8WCI/9 via CA8WCI
CE9/R1ANF via RK1PWA
CN8NK via EA5XX
DA2WI via WB5ZAM
DX1PHG via DU1BP
EA8/SM6DYK via SM6DYK
ED3MDC via IT9DAA
ED4MDC via IT9DAA
ED8MDC via IT9DAA
EG1SIS via EA1EG
ES1924L via ES6PZ
ES6ØL via ES6PZ
ES6YK via ES6PZ
ES6YY via ES6PZ
ES7ØL via ES6PZ
ES75L via ES6PZ
ES8ØL via ES6PZ
ES96L via ES6PZ
EX9A via DF8WS
EY/RX3APM via RX3APM
EY/UA4CC via UA4CC
EY/UA4LU via UA4LU
EYØR via UA4CC
EY8/RX3APM via RX3APM
EY8/UA4CC via UA4CC
EY8/UA4LU via UA4LU
FG/F5NHJ via F5NHJ
FG/F5NHJ/P via F5NHJ
FG/F6GWV via F6GWV
FG/F6HMQ via F6HMQ
FJ/N1DL via N1DL
FM/F5TGR via F5TGR
FOØ/FO5RN via F5NQL
FP/K9OT via K9OT
FP/KB9LIE via KB9LIE
FR/F5SGI via F5SGI
FS/KR7X via KR7X
FT5XO via VE3XN

(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>.)

This is My Frequency—Really!

June's Contest Tip

It may seem like a simple task, but you'll increase your score by taking the week before the next major contest and studying propagation patterns. A good list of assignments can include noting the times of key band openings, researching solar information on the internet, noting WWV propagation trends, and being aware of the previous year's openings and times. A little homework can give you an edge in the next one!

Calendar of Events

May 21–22	EU PSK DX Contest
May 21–22	His Majesty of Spain CW Contest
May 28–29	**CQ WW WPX CW Contest**
June 4–5	IARU Region 1 CW Field Day
June 4–5	RSGB National Field Day
June 11	Portugal Day Contest
June 11–12	ANARTS WW RTTY Contest
June 11–13	ARRL June VHF QSO Party
June 18	Kid's Day Contest
June 18–19	All Asian CW DX Contest
June 18–19	SMIRK Contest
June 18–19	West Virginia QSO Party
June 18–19	Quebec QSO Party
June 25–26	ARRL Field Day
June 25–26	Marconi Memorial HF Contest
June 25–26	His Majesty of Spain SSB Contest
July 1	RAC Canada Day Contest
July 1–2	Venezuela Independence Day Contest
July 9–10	IARU HF Championship Contest
July 16–17	**CQ WW VHF Contest**

The long-standing debate about who should be using what frequency in ham radio is about as old as deciding the outcome of squatters' rights over land ownership in the Colonies. Well, maybe the question hasn't been on the table for quite that long, but most active hams have experienced the challenge at one point or another when getting on the air.

Fortunately, as a group, hams are amazingly civil towards one another when it comes to sharing our most precious asset—our frequency allocations. Indeed, with millions of hams around the world, the potential for pure bedlam is there, yet somehow it all seems to work out.

Clearly, one of the stress points when considering this topic is contest operating. By their very nature, contests help populate the bands with tremendous waves of activity, viewed by many to be a strength of our hobby, while others consider it to be the "Coming of the End Times."

In fact, the issue of frequency usage can be thought of in many different ways. In its most basic form comes the challenge of two (or even more) stations claiming rights to the same frequency. Sometimes these situations emerge due to propagation changes. In other cases, the inevitable ebb and flow of the band results in an operator ever-so-slightly touching his VFO in the wrong direction for some folks. Unfortunately, yet other examples exist where someone simply decides that a selected frequency would be better served by his callsign at the expense of someone else.

For the most part, you know in your gut which scenario applies to you when this situation emerges in a contest. More important, you generally know how to resolve it. That said, it amazes me how many times two stations will battle it out (sometimes for 30 minutes or more), both being convinced that they were on a certain spot first. Reality says that no one wins with that scenario.

When unpacking this subject a bit more, the next category of "users" that emerges are those who utilize gentlemen's agreements or common convention. Three examples that come to mind are (1) SSTV users, (2) partakers of "DX Windows," and (3) digital mode users. In all cases, one would think that certain frequency sub-bands have been assigned exclusively by the FCC, especially when they conflict with contest activity. Perhaps the most rabid group is the SSTV crowd. Now far be it from me to propose that contesting have a higher priority than any other form of radio activity. However, I have to admit that the category of greatest challenge has been when I and others have unintentionally landed around 14230, only to be chased off by an aggressive SSTVer. Before I get flame-enriched mail from the television crowd, contesters have to bear some burden in this particular area as well. Operating etiquette and common sense, though, tell me that the resolution of the problem does not come about by hitting the transmit button first or yelling at another amateur regardless of what side of the aisle you are on.

Following on with the other areas suggested above, we have our ever-so-sacred DX Windows. How many times have you been yelled at on 3795 when operating the ARRL Sweepstakes and told to "push off" and move away from the DX Window. Then there is that perfectly clear run frequency on 14062 you have managed to obtain with your small station which is instantly annihilated by sharp buzzing sounds from another planet.

Finally, we have the most notable of all frequency challenges—net operations. When you look at frequency usage, there is no more passionate group than the net operators. For logistical reasons, they often do need to fire up on a certain frequency at a particular time. It's the nature of the beast. While some of you may question the value of these operations (and frankly, some of them truly are nothing more than social clubs hiding under the agenda of a topic that sounds important), many net operations do good work. More important, they have just as much right to use an amateur frequency as a multi-multi contest operation.

In recent weeks there has been endless debate on the CQ-Contest e-mail reflector regarding the legitimacy of the 14300 group, otherwise known as the Maritime Mobile Service Network (see <www.mmsn.org>) and others like them. Frankly, at times the internet banter was not becoming of amateur radio. This particular group has a challenge in that it is attempting to keep a clear fre-

*2 Mitchell Pond Road, Windham, NH 03087
e-mail: <K1AR@contesting.com>

quency during high usage times such as contests. Their difficulty comes from the fact that the net only adds meaningful value when it is assisting a real emergency at sea—not a common event. Frankly, too, I can see from the group's point of view why it is important to keep a valuable slice of 20 meters free from contest QRM. In an attempt to help dispel the rumors about the net's value to real-life emergencies, I asked one of the control operators to provide me with some examples of how traffic of this nature was handled on the net. By clicking on the following internet URL addresses, you'll get a taste of some of this net's fine accomplishments:

<http://www.arrl.org/news/stories/2000/03/29/1/>
<http://www.arrl.org/news/stories/2001/03/26/2/>
<http://www.arrl.org/news/stories/2002/02/07/1/?nc=1>
<http://www.arrl.org/news/stories/2002/03/27/101/?nc=1>
<http://www.remote.arrl.org/news/features/2002/04/09/1/?nc=1>
<http://www.remote.arrl.org/news/stories/2004/06/09/3/?nc=1>
<http://www.remote.arrl.org/news/stories/2004/07/30/4/?nc=1>

As it turns out, when you have some of the facts in front of you, it's possible to form a more balanced opinion on topics such as 20-meter net operations. However, as with anything else, flexibility must be part of the conversation, and that includes recognition that contest weekends are going to stress the net operation system.

Thus, at the end of the day, regardless of what you think about nets, SSTV, contests, or scores of other on-the-air activities, the fact is that we all must co-exist. The health of our hobby, and contesting in particular, begins by ensuring that nobody and no one group take themselves and their interests too seriously. If you begin with that basic premise, we will continue to live well together for another 75 years—not without conflicts, but certainly with a little more mutual respect for one another.

Can You Please QRS?

My good friend Roger Western, G3SXW, raised a good point in a recent e-mail to me, something that we should be thinking about—the impact of new hams (and contesters) who are entering CW contests.

From the serious contesters' point of view, any new blood is clearly welcome. That is certainly a topic that has been discussed at length in this column and elsewhere. The challenge comes when you acknowledge the fact that most new contesters lack experience with high-speed CW. By the way, this is a problem that is not limited to the new guy. How many times have you sent something that didn't begin with a call-sign to a fellow contester, only to confuse him and have to repeat the text? Another example is when you send "W1XYZ? 59905" only to have the question mark ignored, resulting in yet another busted call brought into the world.

Clearly, the proper answer is for all of us to slow down. It has been suggested in the past that varying one's code speed is actually a good operating technique, as it provides the potential for attracting more QSOs in the long term. The problem is who is really going to slow down on a sustained basis to accommodate newer contesters or experienced hams who are still trying to master high-speed CW skills?

I guess the bottom line on this one is that the situation is largely self-correcting. Not every contester sends at 50 wpm. Indeed, there are many stations to work at all speeds in a CW contest. Therefore, with practice comes improvement for all, new and experienced. In any event, be considerate to your fellow contester. If you sense someone is struggling with the CW speed you are using, slow it down. In many ways, it's not unlike the need to speak slower on phone. For those of you who struggle with CW, my advice *is simple:* Keep banging away at it. You may never reach the heights of the fastest operators (very few do), but you will improve over time. I guarantee it!

Final Comments

As you're reading this, some of you have survived another Dayton Hamvention® or are digging that climbing belt out of the back of your garage. The spring/summer season is a great time for contesters as we begin our latest quest for that killer antenna or perfect rig. In any event, enjoy the time and make the most of it!

That's it for this month. See you on the bands.

73, John, K1AR

2004 CQ WW 160 Meter Contest Corrections

The following are corrections to the 2004 CW results published in the December 2004 issue of *CQ:*

Single Operator, Asiatic Russia—RG9A (op. UA9AM) moves from third place to second place (score 379,254).

Single Operator, British Columbia, Canada—VE7JKZ moves from seventh place to fifth place (score 9,270).

Field Day

BY TOMAS HOOD,* NW7US

A Quick Look at Current Cycle 23 Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, March 2005: 25
Twelve-month smoothed, September 2004: 38

10.7 cm Flux
Observed Monthly, March 2005: 90
Twelve-month smoothed, September 2004: 104

***Ap* Index**
Observed Monthly, March 2005: 12
Twelve-month smoothed, September 2004: 14

This year's ARRL Field Day is June 25 and 26. The official Field Day 2005 rules state that the goal is to "work as many stations as possible on any and all amateur bands (excluding the 60-, 30-, 17-, and 12-meter bands) and in doing so to learn to operate in abnormal situations in less than optimal conditions. A premium is placed on developing skills to meet the challenges of emergency preparedness as well as to acquaint the general public with the capabilities of Amateur Radio."

The best tool available 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 the 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 poor to fair, with moderate geomagnetic activity due to coronal-hole 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 May 29 and 30, 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.

If you wish to maximize your on-the-air efforts, you'll want to check out the Last-Minute Forecast and the DX Propagation charts. In addition, this month I have prepared charts based on locations in each region of the United States, from WØ to W9. These are rough guides that might help you plan your operation. Refer to the Short-Skip charts in the May issue and this month's DX Propagation charts for more detailed forecasts, using the Last-Minute Forecast if you wish to get specific details of possible openings.

June Propagation

June marks the changeover from equinoctial to summertime propagation conditions on the shortwave (HF) bands. Solar absorption is expected to be at seasonally high levels, resulting in generally

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LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for June 2005

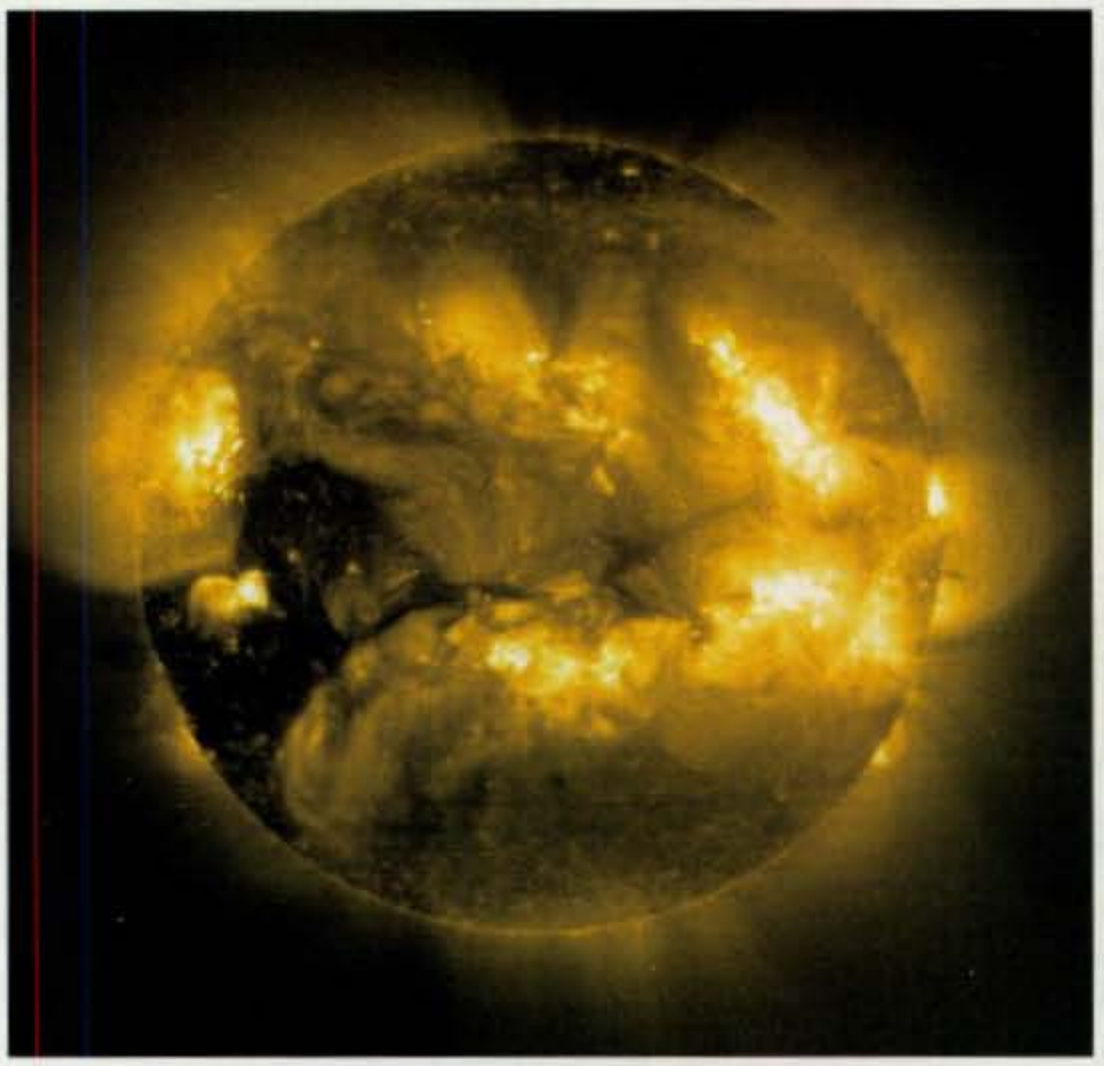
	Expected Signal Quality			
Propagation Index.....	**(4)**	**(3)**	**(2)**	**(1)**
Above Normal: 2-4, 10-14, 18-19, 23-24, 29-30	**A**	**A**	**B**	**C**
High Normal: 1, 5, 9, 17, 20-22, 27-28	**A**	**B**	**C**	**C-D**
Low Normal: 8, 15-16, 25	**B**	**C-B**	**C-D**	**D-E**
Below Normal: 7	**C**	**C-D**	**D-E**	**E**
Disturbed: 6, 26	**C-D**	**D**	**E**	**E**

Where expected signal quality is:

A—Excellent opening, exceptionally strong, steady signals greater than S9.
B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing on the following pages.
2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 3 will be good (B) on June 1st, excellent (A) on June 2–4, good (B) on the 5th, etc.



Coronal holes are regions where the sun's corona is dark. (The corona is one of the sun's atmospheric layers.) These features were discovered when X-ray telescopes were first flown above the Earth's atmosphere to reveal the structure of the corona across the solar disc. Coronal holes are associated with "open" magnetic-field lines and are often found at the sun's poles. The high-speed solar wind is known to originate in coronal holes. When coronal holes occur near the sun's equator, they can rotate into "geo-effective" position, where they can most directly cause disturbances in the Earth's geomagnetic field. This image shows a very large coronal hole rotating from the left side of the image toward the center, where it will become geo-effective. (Source: SOHO/NASA)

weaker signals during the hours of daylight when compared to reception during the winter and spring months.

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 in the decline of this cycle, I don't expect to see much on 10, except via sporadic-*E* short-skip propagation. The flux just won't support a high-enough MUF (maximum usable frequency) on most DX paths. North and south paths on 10 meters still present opportunity for DX, especially around sunrise and sunset, but these openings will be of short duration.

Seventeen and 15 meters will be just a bit more reliable than 10, holding some promise. However, these will still be a challenge with the decreased solar activity. Watch for days when the flux peaks high. During those peaks 15 meters may support short EU/USSR openings during much of the day and during some evening or early morning hours (check the DX charts for possible opening times from your location).

Twenty meters is fair to good during the hours of darkness but will be a bit weaker during daylight hours. The best openings on 20 will be the hours around sunrise. MUFs during the daytime hours are considerably lower during June and the summer months than during the other seasons. However, they are considerably higher during the hours of darkness in June than during the same hours of darkness in the winter.

Recurring coronal holes will cause occasional periods of geomagnetic storminess during June, degrading higher latitude signal paths more than middle- and low-latitude paths. In addition, thunderstorm and other natural static noise increases considerably during June and the summer months. These higher static levels will make DXing on 40, 80, and 160 meters more of a challenge.

The 30- and 40-meter bands should offer good DX conditions during the night, despite higher static levels. 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.

Expect some openings on 80, 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.

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* (*Es*) 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 in *Es* propagation occurs at mid-latitude. Through June, you can expect

U.S. to U.S. Propagation Table—Field Day (June) 2005

About the table and how to use it: These charts were calculated with a SNR >= 24, with a required reliability of 90%. The power level used was 100 watts, with an isotropic antenna. All times are the local times in the zone of each area as follows:

W1 - Eastern
W2 - Eastern
W3 - Eastern
W4 - Eastern
W5 - Central
W6 - Pacific
W7 - Pacific
W8 - Eastern
W9 - Central
WØ - Mountain

The charts are estimates. In the real world, conditions might be better, or they might be very bad. It is my prediction that the 20-meter predictions are too optimistic for 2005. I expect 20 meters to be a poor band this year, especially given the Last-Minute Forecast outlook for Field Day weekend.

By selecting your region at the top of the chart (if you are in Seattle, choose W7; if you are in Arizona, use the W6 area) and band, you can see what times you might be successful in working into the region listed on the left. Check the Short-Skip charts in the May issue and the Last-Minute Forecast this month for additional help in scheduling your Field Day operation.

80 Meters SSB

From:	W1	W2	W3	W4	W5	W6	W7	W8	W9	WØ
To:										
WØ	N/A	N/A	N/A	N/A	02-12	03-13	05-12	08-10	06-11	00-23
W1	00-23	00-12, 22-23	00-12, 23	02-04, 07-09	N/A	N/A	N/A	00-11 22-23	01-10	N/A
W2	00-12, 21-23	00-23	00-23	00-11, 23	09	N/A	N/A	00-13, 22-23	00-11	N/A
W3	00-11, 23	00-23	00-23	01-03, 06-10	09	N/A	N/A	00-15, 19-23	00-12, 23	09
W4	N/A	02, 06-09	01-02, 05-10	00-23	06-10	N/A	N/A	02, 05-10	07-09	N/A
W5	N/A	08-09	06-09	02-10	00-23	04-11	N/A	04-10	03-10	02-12
W6	N/A	N/A	N/A	N/A	03-11	00-23	04-12	N/A	07-09	02-13
W7	N/A	N/A	N/A	N/A	08-09	04-12	00-23	N/A	09	04-12
W8	00-11	00-13, 22-23	00-15, 19-23	02, 08-10	09-10	N/A	N/A	00-23	00-14, 21-23	09-10
W9	06-10	01-11	00-12	N/A	09-10	N/A	N/A	00-14, 21-23	00-23	07-11

40 Meters SSB

From:	W1	W2	W3	W4	W5	W6	W7	W8	W9	WØ
To:										
WØ	10	03-11	02-11	02-11	00-14	00-15	02-14	02-12	01-13	00-03, 16, 18-23
W1	00, 22-23	00-03, 11-23	00-05, 10-23	00-10	01, 08-10	09	08-09	00-07, 09-13, 21-23	00-12, 23	10
W2	00-03, 11-23	00-01, 22-23	00-01, 22-23	00-11, 23	01-11	N/A	09-10	00-04, 12-23	00-13, 22-23	02-11

to see 20 to 24 days with some *Es* activity. Usually these openings are single-hop events with paths up to 1000 miles, but June's *Es* is often double-hop. Europe can generally be worked from the east coast 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 openings is during the after

40 Meters SSB *(continued)*

W3	00-05, 10-23	00-01, 22-23	00-01, 22-23	00-12, 23	00-11	N/A	09-10	00-02, 17-23	00-06, 11-23	02-11
W4	00-10	00-11, 23	00-12, 23	00-03, 13-23	00-12	N/A	N/A	00-12, 23	00-12, 23	02-11
W5	08-10	01-11	00-11	00-12	00-04, 14-23	01-14	03-12	00-12	00-12	00-14
W6	08-09	07-10	07-10	05-10	01-14	00-04, 15-23	02-14	N/A	02-12	00-15
W7	08-09	08-10	07-10	N/A	03-12	02-14	N/A	11	03-11	01-14
W8	00-07. 09-13, 21-23	00-04, 12-23	00-02, 17-23	00-12, 23	00-12	N/A	N/A	00-01, 23	00-03, 13-23	02-12
W9	00-12, 23	00-13, 22-23	00-06, 11-23	00-12, 23	00-12	04-12	09-11	00-14, 21-23	00-01, 23	01-13

20 Meters SSB

From:	W1	W2	W3	W4	W5	W6	W7	W8	W9	WØ
To:										
WØ	04-05, 12-13, 22-23	00-05, 12-15, 21-23	00-05, 13-23	00-06, 11-14, 22-23	00-02, 16-21	18-21	02-03, 16-23	00-04, 13-23	00-03, 15-22	N/A
W1	N/A	N/A	N/A	00-04, 11-23	03-05, 11-13, 22-23	02-03	N/A	N/A	00-01, 14-21	04-05, 12-15, 22-23
W2	N/A	N/A	N/A	00-03, 12-23	00-05, 12-23	01-03	N/A	N/A	16-18	00-05, 12-15, 21-23
W3	N/A	N/A	N/A	00-03, 13-23	00-05, 12-23	01-02	N/A	N/A	N/A	00-05, 13-23
W4	00-04, 11-23	00-03, 12-23	00-03, 13-23	N/A	00-05, 12-23	01-03, 08-10	03	00-03, 13-23	00-04, 12,23	00-06, 12-14, 22-23
W5	03-05, 11-13, 22-23	00-05, 12-23	00-05, 12-23	00-05, 12-23	N/A	00-06, 14-23	00-07, 13-15, 23	00-04, 13-23	00-03, 14,23	00-02, 16-21
W6	N/A	N/A	N/A	00-03, 08-10	00-06, 14-23	N/A	00-05, 15-23	06-07, 12-14	00-06, 13-15, 22-23	18-21
W7	N/A	N/A	N/A	03	00-07, 13-15, 23	00-05, 15-23	N/A	06, 03-14, 23	00-06, 14-23	02-03, 16-23
W8	N/A	N/A	N/A	00-03, 13-23	00-04, 13-23	06-07, 12-14	06, 13-14, 23	N/A	N/A	00-04, 13-23
W9	00-01, 14-20	16-18	N/A	00-04, 12-23	00-03, 14-23	00-06, 13-15, 22-23	00-06, 14-18, 23	N/A	N/A	00-03, 15-22

HOW TO USE THE DX PROPAGATION CHARTS

1. Use chart appropriate to your transmitter location. The Eastern USA Chart can be used in the 1, 2, 3, 4, 8, KP4, KG4, and KV4 areas in the USA and adjacent call areas in Canada; the Central USA Chart in the 5, 9, and 0 areas; the Western USA Chart in the 6 and 7 areas; and with somewhat less accuracy in the KH6 and KL7 areas.

2. The predicted times of openings are found under the appropriate meter band column (10 through 80 meters) for a particular DX region, as shown in the left-hand column of the charts. An * indicates the best time to listen for 160 meter openings.

3. The propagation index is the number that appears in ( ) after the time of each predicted opening. The index indicates the number of days during the month on which the opening is expected to take place as follows:
(4) Opening should occur on more than 22 days
(3) Opening should occur between 14 and 22 days
(2) Opening should occur between 7 and 13 days
(1) Opening should occur on less than 7 days
Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

4. Times shown in the charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M.; 13 is 1 P.M., etc. Appropriate *daylight* time is used, not GMT. To convert to GMT, add to the times shown in the appropriate chart 7 hours in PDT Zone, 6 hours in MDT Zone, 5 hours in CDT Zone, and 4 hours in EDT Zone. For example, 14 hours in Washington, D.C. is 18 GMT. When it is 20 hours in Los Angeles, it is 03 GMT, etc.

5. The charts are based upon a transmitted power of 250 watts CW, or 1 kw, PEP on sideband, into a dipole antenna a quarter-wavelength above ground on 160 and 80 meters, and a half-wavelength above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the *propagation index* will increase by one level; for each 10 dB loss, it will lower by one level.

6. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept of Commerce, Boulder, Colorado 80302.

June 15–August 15, 2005
Time Zone: EDT (24-Hour Time)
EASTERN USA TO:

	15 Meters	*20 Meters*	*40 Meters*	*80 Meters*
Western & North Africa	13-18 (1)	06-07 (1) 07-09 (2) 09-14 (1) 14-16 (2) 16-17 (3) 17-18 (4) 18-19 (3) 19-20 (2) 20-22 (1)	19-21 (1) 21-22 (2) 22-00 (3) 00-01 (2) 01-02 (1)	21-22 (1) 22-00 (2) 00-01 (1) 22-00 (1)*
Northern & European CIS	*Nil*	06-07 (1) 07-09 (2) 09-15 (1) 15-18 (2) 18-19 (3) 19-22 (2) 22-00 (1)	20-21 (1) 21-23 (2) 23-00 (1)	21-23 (1)
Eastern Mediter-ranean & Middle East	11-13 (1) 16-17 (1)	13-15 (1) 15-17 (2) 17-19 (3) 19-20 (2) 20-22 (1) 22-00 (2) 00-06 (1) 06-08 (2) 08-09 (1)	20-22 (1) 22-00 (2) 00-01 (1)	22-00 (1)
Western Africa	11-14 (1) 14-17 (2) 17-18 (1)	05-06 (1) 06-07 (2) 07-15 (1) 15-17 (2) 17-18 (3) 18-20 (4) 20-21 (3) 21-23 (2) 23-01 (1)	20-22 (1) 22-01 (2) 01-02 (1)	21-01 (1)
Eastern & Central Africa	11-16 (1)	16-18 (1) 18-20 (2) 20-21 (1)	22-00 (1)	22-00 (1)
Southern Africa	11-13 (1)	01-03 (1) 05-07 (1) 15-16 (1) 16-18 (2) 18-19 (1)	20-21 (1) 21-01 (2) 01-02 (1)	22-01 (1)* 23-01 (1)*
Central & South Asia	*Nil*	07-10 (1) 20-23 (1)	05-07 (1) 20-22 (1)	*Nil*
Southeast Asia	*Nil*	07-10 (1) 19-23 (1)	*Nil*	*Nil*
Far East	*Nil*	07-08 (1) 08-10 (2) 10-12 (1) 20-23 (1)	04-06 (1)	*Nil*
South Pacific & New Zealand	19-22 (1)	19-21 (1) 21-01 (2) 01-07 (1) 07-10 (2) 10-12 (1)	02-03 (1) 03-06 (2) 06-07 (1)	03-06 (1) 03-05 (1)*
Australasia	19-22 (1)	06-08 (1) 08-09 (2) 09-12 (1) 17-19 (1) 21-23 (1) 23-01 (2) 01-04 (1)	03-04 (1) 04-06 (2) 06-07 (1)	03-06 (1)
Caribbean, Central America & Northern Countries of South America	15-17 (1)** 09-12 (1) 12-15 (2) 15-18 (3) 18-20 (2) 20-21 (1)	06-07 (1) 07-08 (2) 08-10 (4) 10-12 (3) 12-16 (2) 16-18 (3) 18-21 (4) 21-23 (3) 23-00 (2) 00-02 (1)	20-22 (1) 22-23 (2) 23-03 (3) 03-05 (2) 05-07 (1)	22-00 (1) 00-04 (2) 04-06 (1) 02-05 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	14-17 (1)** 09-12 (1) 12-15 (2) 15-17 (3) 17-19 (2) 19-20 (1)	06-08 (1) 08-09 (2) 09-15 (1) 15-17 (2) 17-19 (3) 19-20 (4) 20-22 (3) 22-00 (2) 00-04 (1)	21-23 (1) 23-03 (2) 03-06 (1)	00-05 (1) 01-04 (1)*
McMurdo Sound, Antarctica	*Nil*	20-22 (1) 22-00 (2) 00-02 (1)	00-03 (1) 03-06 (2) 06-07 (1)	03-06 (1)

Time Zones: CDT & MDT
(24-Hour Time)
CENTRAL USA TO:

	15 Meters	*20 Meters*	*40 Meters*	*80 Meters*
Western Europe & North Africa	13-17 (1)	06-07 (1) 07-09 (2) 09-14 (1) 14-16 (2) 16-18 (3) 18-19 (2) 19-21 (1)	20-22 (1) 22-00 (2) 00-02 (1)	21-00 (1)
Northern & European CIS	*Nil*	06-07 (1) 07-09 (2) 09-14 (1) 14-17 (2) 17-20 (1) 20-22 (2) 22-23 (1)	20-23 (1)	21-23 (1)
Eastern Mediter-ranean & Middle East	*Nil*	07-09 (1) 14-15 (1) 15-17 (2) 17-19 (1) 19-21 (2) 21-22 (1)	20-23 (1)	*Nil*
Western Africa	14-16 (1)	06-08 (1) 13-15 (1) 15-17 (2)	20-00 (1)	21-23 (1)

		17-18 (3) 18-19 (2) 19-21 (1)		
Eastern & Central Africa	*Nil*	16-18 (1) 18-20 (2) 20-21 (1)	20-23 (1)	*Nil*
Southern Africa	10-12 (1)	05-07 (1) 14-15 (1) 15-17 (2) 17-18 (1) 22-00 (1)	21-23 (1) 23-00 (2) 00-01 (1)	22-00 (1)
Central & South Asia	*Nil*	09-11 (1) 18-20 (1) 20-22 (2) 22-00 (1)	05-07 (1) 19-21 (1)	*Nil*
Southeast Asia	19-21 (1)	08-10 (1) 20-21 (1) 21-23 (2) 23-00 (1)	05-07 (1)	*Nil*
Far East	20-22 (1)	07-08 (1) 08-11 (2) 11-21 (1) 21-23 (2) 23-01 (1)	04-07 (1)	04-06 (1)
South Pacific & New Zealand	15-19 (1) 19-21 (2) 21-22 (1)	17-19 (1) 19-22 (2) 22-00 (3) 00-02 (2) 02-07 (1) 07-10 (2) 10-14 (1)	01-03 (1) 03-04 (2) 04-06 (3) 06-07 (2) 07-08 (1)	01-04 (1) 04-05 (2) 05-06 (1) 03-05 (1)*
Australasia	16-18 (1) 20-22 (1)	06-07 (1) 07-09 (2) 09-11 (1) 15-17 (1) 20-22 (1) 22-00 (3) 00-02 (2) 02-04 (1)	01-03 (1) 03-06 (2) 06-07 (1)	03-06 (1)
Caribbean, Central America & Northern Countries of South America	15-18 (1)** 09-13 (1) 13-15 (2) 15-18 (3) 18-19 (2) 19-20 (1)	06-07 (1) 07-08 (3) 08-10 (4) 10-12 (3) 12-16 (2) 16-18 (3) 18-20 (4) 20-22 (3) 22-00 (2) 00-02 (1)	20-22 (1) 22-23 (2) 23-03 (3) 03-05 (2) 05-06 (1)	22-00 (1) 00-04 (2) 04-05 (1) 00-04 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	14-17 (1)** 09-12 (1) 12-14 (2) 14-17 (3) 17-18 (2) 18-19 (1)	06-07 (1) 07-09 (2) 09-15 (1) 15-17 (2) 17-18 (3) 18-20 (4) 20-21 (3) 21-23 (2) 23-02 (1)	21-23 (1) 23-03 (2) 03-05 (1)	22-04 (1) 00-03 (1)*
McMurdo Sound, Antarctica	*Nil*	18-21 (1) 21-23 (2) 23-01 (1)	22-04 (1) 04-06 (2) 06-07 (1)	04-06 (1)

Time Zone: PDT (24-Hour Time)
WESTERN USA TO:

	15 Meters	*20 Meters*	*40 Meters*	*80 Meters*
Western & North Africa	*Nil*	06-07 (1) 07-08 (2) 08-14 (1) 14-17 (2) 17-19 (1) 22-00 (1)	20-23 (1)	*Nil*
Northern Europe European CIS	*Nil*	06-07 (1) 07-09 (2) 09-14 (1) 14-16 (2) 16-18 (1) 21-23 (1)	20-22 (1)	*Nil*
Eastern Mediterranean	*Nil*	06-08 (1) 14-16 (1)	20-22 (1)	*Nil*

& Middle East		19-20 (1) 20-21 (2) 21-22 (1)		
Western Africa	10-14 (1)	07-09 (1) 14-16 (1) 16-17 (2) 17-19 (3) 19-20 (2) 20-21 (1)	20-23 (1)	*Nil*
Eastern & Central Africa	*Nil*	14-16 (1) 16-18 (2) 18-19 (1) 06-08 (1)	*Nil*	*Nil*
Southern Africa	*Nil*	06-08 (1) 13-16 (1) 22-00 (1)	20-21 (1) 21-22 (2) 22-23 (1)	20-22 (1)
Central & South Asia	*Nil*	07-08 (1) 08-10 (2) 10-11 (1) 18-20 (1) 20-22 (2) 22-23 (1)	05-07 (1) 18-20 (1)	*Nil*
Southeast Asia	19-23 (1)	07-09 (1) 09-11 (2) 11-12 (1) 21-23 (1) 23-01 (2) 01-03 (1)	03-05 (1) 05-06 (2) 06-07 (1)	04-06 (1)
Far East	14-16 (1) 20-23 (1)	07-10 (2) 10-13 (1) 21-23 (1) 23-00 (2) 00-02 (3) 02-04 (2) 04-07 (1)	02-03 (1) 03-04 (2) 04-05 (3) 05-06 (2) 06-07 (1)	03-06 (1)
South Pacific & New Zealand	13-15 (1) 15-17 (2) 17-19 (3) 19-20 (2) 20-21 (1)	02-07 (1) 07-10 (2) 10-16 (1) 16-18 (2) 18-19 (3) 19-22 (4) 00-02 (2)	23-01 (1) 01-02 (2) 02-06 (3) 06-07 (2) 07-08 (1)	00-02 (1) 02-06 (2) 06-07 (1) 02-05 (1)*
Australasia	15-18 (1) 18-21 (2) 21-22 (1)	19-21 (1) 21-22 (2) 22-00 (3) 00-01 (2) 01-07 (1) 07-09 (2) 09-13 (1) 13-15 (2) 15-16 (1)	00-01 (1) 01-04 (2) 04-06 (3) 06-07 (2) 07-08 (1)	02-05 (1) 05-06 (2) 06-07 (1) 04-06 (1)*
Caribbean, Central America & Northern Countries of South America	15-18 (1)** 10-13 (1) 13-15 (2) 15-18 (3) 18-19 (2) 19-20 (1)	06-07 (1) 07-10 (3) 10-15 (2) 15-18 (3) 18-21 (4) 21-22 (3) 22-23 (2) 23-02 (1)	19-21 (1) 21-22 (2) 22-03 (3) 03-05 (2) 05-06 (1)	20-21 (1) 21-03 (2) 03-05 (1) 23-04 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	12-16 (1)** 10-12 (1) 12-13 (2) 13-15 (3) 15-17 (2) 17-18 (1)	05-07 (1) 07-09 (2) 09-15 (1) 15-17 (2) 17-18 (3) 18-19 (4) 19-20 (3) 20-22 (2) 22-00 (1)	20-21 (1) 21-23 (2) 23-01 (1) 01-03 (2) 03-04 (1)	22-03 (1) 00-02 (1)*
McMurdo Sound, Antarctica	16-18 (1)	17-20 (1) 20-22 (2) 23-01 (1) 07-09 (1)	21-23 (1) 02-03 (1) 03-06 (2) 06-07 (1)	04-06 (1)

*Indicates best time for 160 meter openings.
**Indicates best time for 10 meter openings.
For 12 meter openings interpolate between 10 and 15 meter openings.
For 17 meter openings interpolate between 15 and 20 meter openings.
For 30 meter openings interpolate between 40 and 20 meter openings.

Propagation charts prepared by George Jacobs, W3ASK.

noon hours, especially when conditions are High Normal or better.

There is usually a seasonal decline in transequatorial propagation (TE) 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 Royal Observatory of Belgium reports that the monthly mean observed sunspot number for March 2005 is 24.8, with 7 being the lowest daily sunspot value recorded on both March 1 and March 30. The highest daily sunspot count was 43, on March 11. The 12-month running smoothed sunspot number centered on September is 37.6, down from August's 39.3. A smoothed sunspot count of 18, give or take about 12 points, is expected for June 2005.

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 90.0 for March 2005, down a bit from February's 97.3. The 12-month smoothed 10.7-cm flux centered on September 2004 is 103.7. The predicted smoothed 10.7-cm solar flux for June 2005 is 81, give or take about 16 points.

The observed monthly mean planetary *A*-index (*Ap*) for March 2005 is 12, up just one point from February. The 12-month smoothed *Ap*-index centered on September 2004 is 13.6, about the same as for both August and July (13.8). Expect the overall geomagnetic activity to be quiet to active during most days in June, with some isolated periods of stormy activity. Refer to the Last-Minute Forecast for the outlook on what days this might occur.

In Closing

Please come and participate in my online propagation discussion forum at <http://hfradio.org/forums/>. You can get live, up-to-the-minute solar weather and terrestrial data by visiting my Space Weather and Radio Propagation center at <http://prop.hfradio.org>. These resources may also be viewed on a cell phone or other wireless device that has WAP/WML features by browsing to <http://wap.hfradio.org>.

Drop me an e-mail or send me a letter if you have questions or topics you would like to see me explore in this column. I would also love to hear any feedback you might have on what I have written. Until next month . . .

73, Tomas, NW7US/AAAØWA

our readers say

Oops....

We're not sure how we managed to pull this one off, but in May's "How it Works" column figure 5 appeared backwards. In case you don't have ready access to a mirror, here it is again.

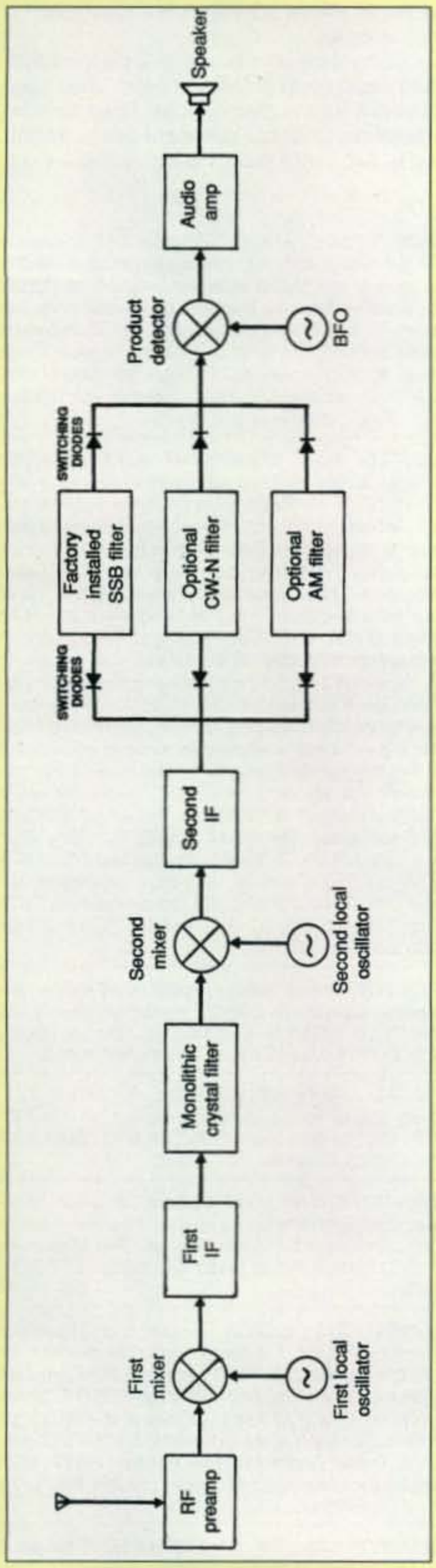


Fig. 5– Streamlined block diagram of a modern double-conversion receiver showing electrical position of circuits and crystal filters. The upper crystal filter is factory-installed and used for transmitting on both SSB and CW, while owner-installed filter(s) in "optional" slot(s) are used for receiving SSB and/or CW.

Ham Radio Instruction in Public Schools

Editor, *CQ:*

"Ham Radio was Calling Me Back," Magic in the Sky, January 2005 *CQ*, is the most outstanding article I have ever read of instruction in public schools relating to amateur radio. Did Sean let the parent enroll? I sure hope so ,as I want to also.

I was getting more and more excited as I read the article and could see myself learning things and their importance to radio and how things work. If this gentleman doesn't get an award of some kind for this great work I will be very disappointed indeed. Of course, I'm 72 years old, but I still like to learn and Sean could surely teach me much I would treasure knowing.

I was wondering, with his knowledge and obvious ability to teach, if he had given any thought to creating a course that could be completed on the internet, and then some of us old F . . . uh oh–gentlemen . . . could actually participate in learning some genuine physics.

This story is amazing and Sean makes it sound so easy. I'm going to write him a note also and thank him for his interest and contribution to the continuation and education of young people interested in amateur radio.

All the best, Rich. Keep these kind of articles coming. They will generate interest and enthusiasm, as I said, among us older hams as well.

George Lee, KR5C

"CQ 76 from W4XYZ"

Editor, *CQ:*

Allow me to comment on the "Ten Commandments of Repeater Operating Techniques" ("Beginner's Corner," January 2005 CQ) and other common procedures.

Where did this idea of not calling CQ on a repeater come from? CQ is short, only two syllables, and everyone knows that it means "I want to talk to someone." This is unlike the silly "monitoring" or "listening." When I first got on 2 meter FM in early 1970, the major repeater in Atlanta was the Stone Mountain machine on .34/.76 (yes, that was before the 600 kHz spacing was adopted). The printed procedure from the club said to call, "CQ 76 from W4XYZ." It is still a good idea to give the frequency that you are listening on, because many transceivers have scanning features. A mobile operator in heavy traffic may not have time to look at his readout before the set resumes scanning, so he won't know where to go to answer the call.

The same applies to simplex. I always call, "CQ 52, this is W4LNG mobile on I-85 at the Georgia-South Carolina line" (or something similar). Giving your location allows a station with a beam antenna to know where to point it.

I would also like to know why so many still use the outmoded term "base" station? That may have gotten started in the early days of FM, when many used modified commercial base stations. Except for some repeaters, I doubt that many are presently using commercial base stations. Hams are licensed to operate Fixed, Portable, and Mobile, not base. A base station is a commercial station licensed to communicate with a number of mobiles *all under one license.*

One more thing: The terms "aeronautical mobile" and "maritime mobile" are to be used only over international waters. You are not aeronautical mobile when flying over Kansas or maritime mobile on Lake Michigan or the Intra-Coastal Waterway.

"Ruddy" Ellis, W4LNG

Ruddy: You've hit on one of my favorite "hot button" topics. I sometimes call CQ on a repeater just to see if someone will come on and yell at me (it's better than the usual silence). Most likely, the idea originally was to discourage the long CQs normally used on HF, which are unnecessary on a repeater. However, I agree that a short "W2VU calling CQ and listening" is not only appropriate but more accurate than "listening" (if you're saying it, you're talking, not listening) or "monitoring."

Use of the term "base" station is most likely a carryover from the earlier days of CB, when it was a licensed service and a single license and callsign covered a base and associated mobiles. Actually, the FCC rules are silent on fixed, portable, etc., for amateur stations. Today, "base" is most commonly used to describe equipment rather than a location, and there really is no better term I've seen for a radio intended primarily to be used at a fixed location.

Finally, you are absolutely correct about the misuse of "aeronautical mobile" and "maritime mobile." Correct terms when flying or boating within the territory of the US are "air mobile" and "marine mobile."

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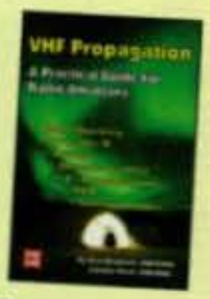

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- Wideband Receiver (Cell Blocked)

Call Now For Your Low Price!

FT-1000MP MKV HF Transceiver

- Enhanced Digital Signal Processing * Not including 60M band
- Dual RX
- Collins SSB filter built-in
- 200W, External power supply

NEW Low Price!

FT1000MP MKV field unit 100w w/built-in power supply in stock

VX-7R/VX-7R Black

50/2M/220/440 HT

- Wideband RX - 900 Memories
- 5W TX (300mw 220Mhz)
- Li-Ion Battery
- Fully Submersible to 3 ft.
- Built-in CTCSS/DCS
- Internet WIRES compatible

Now available in Black!

NEW Low Price!

FT-2800M 2M Mobile

- 65w • Ruggedly Built
- Alpha Numeric Memory System
- Direct Keypad Frequency Entry
- Bullet-proof Front End

Call Now For Low Intro Pricing!

FT-8800R 2M/440 Mobile

- V+U/V+V/U+U operation
- V+U full duplex • Cross Band repeater function
- 50W 2M 35W UHF
- 1000+ Memory channels
- WIRES ready

Call Now For Low Pricing!

VX-6R

2M/220/440HT

- wideband RX – 900 memories
- 5W 2/440 , 1.5W 220 MHz TX
- LI-ION Battery - EAI system
- Fully submersible to 3 ft
- CW trainer built-in

NEW Low Price!

NEW!

VX-150

2M Handheld

- Direct Keypad Entry
- 5w output
- 209 memories
- Ultra Rugged

Call Now For Special Pricing!

FT-8900R Quadband Transceiver

- 10M/6M/2M/70CM • Wires capable
- 800+ memories • Built-in CTCSS/DCS
- Remotable w/optional YSK-8900

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HF/50 MHz Transceiver

FT DX 9000D 200W

The Masterpiece

The radio... YAESU

FT DX 9000D 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

Photograph depicts FT DX 9000D version with Umber display; Light Blue display also available at the time of purchase. Modification from 200- to 400-Watt version not available. Display image simulated; actual appearance may differ.

The Ultimate, "All Options Installed" Version. With three μ-Tune modules for the pinnacle of receiver performance!

Three μ-Tuning Modules Factory Installed

The FT DX 9000D is equipped, at the factory, with three high-Q, permeability-tuned RF filters known as μ -Tuning Modules. Covering the 160, 80/40, and 30/20 meter bands, these ultra-sharp, precision-tuned filters provide a degree of RF selectivity not found on any other Amateur transceiver, making FT DX 9000 operation a truly special experience.

Large, Easy-to-Read TFT Display

The wide-screen 6.5" TFT display is an 800 x 400 dot configuration, for high resolution; the FT DX 9000D is also configured with a rear-panel port allowing connection of an external display. Included in the available displays on the TFT are a World Clock, Spectrum Scope, Transceiver Status page with band-swept SWR indication, Audio Scope and Oscilloscope, Rotator Control page including a Great Circle Map, Memory Channel List, and Menu List. With a number of customization possibilities, as well as a choice of up to five different illumination colors, the TFT display is both a functional and attractive centerpiece on your FT DX 9000D!

■ **Log Book Feature**

■ **Band-Swept SWR Indication**

■ **World Clock Feature**

■ **LBWS Panadapter, Dual RF Scope**

● Single Display

● Dual Display

● LBWS Display

■ **Audio Scope/Oscilloscope Feature**

● Spectrum Display

● Waterfall Display

■ **Great Circle Direction-Indicating Map**

Bold Dignity

FT DX 9000MP

400 W

Special Order Version

Two Pairs of Meters, plus LCD Window; Large TFT, 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

Be Creative. . .

FT DX 9000 Contest

200 W

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

To request the FT DX 9000 Catalogue, please call (714) 827-7600, Ext. 2272.

HF TRANSCEIVER LINE-UP

DSP 200W

MARK-V FT-1000MP

HF 200 W All Mode Transceiver

DSP

MARK-V FT-1000MP Field

HF 100 W All Mode Transceiver

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TCXO DSP 60 m Band

FT-897D

HF/50/144/430 MHz
100 W All Mode Transceiver
(144 MHz 50 W/430 MHz 20 W)

DSP 60 m Band

FT-857D

HF/50/144/430 MHz
100 W All Mode Transceiver
(144 MHz 50 W/430 MHz 20 W)

60 m Band

FT-817ND

HF/50/144/430 MHz
5 W All Mode Transceiver
(AM 1.5 W)

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Superior transmit power, selectable in three steps!

IC-V82 • 7W/4W/0.5W
IC-U82 • 5W/2W/0.5W

DIGITAL

Traditional 2M or 70CM operation combined with optional UT-118 D-STAR format digital unit for voice and data communication! Includes the following features:

CALLSIGN CALLING. In digital mode, your callsign and receiving callsign (or CQ message) are included in each transmission. Callsign squelch lets you choose incoming calls by callsign. Received callsigns are stored in the memory automatically!

POSITION EXCHANGE. When connected to an external GPS receiver, position information can be exchanged.

MORE DIGITAL. 20 character text message - up to 6 messages can be pre programmed, Digital code squelch, Emergency communication, and more!

D-STAR READY! with optional equipment

MEMORY

Store up to 200 regular memory channels with 6-character name, tone, & duplex settings.

ACCESS

Get on the repeater fast! CTCSS/ DTCS codes help gain you quick repeater access. With pocket beep & tone scan.

MORE

NOAA weather alert (IC-V82, US version only)
Auto repeater function
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