45241

Amateur Radio

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COMMUNICATIONS & TECHNOLOGY

JUNE 2006

CQ

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Heading home: The final helicopter flight ferrying operators and equipment off Peter I Island at the end of the 3YØX DXpedition. At right, FM5CD operates 3YØX. Details on page 82, article on page 13.

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On or off the road, Kenwood's new TM-271A delivers powerful mobile performance with 60W maximum output and other welcome features such as multiple scan functions and memory names. Yet this tough, MIL-STD compliant transceiver goes easy on you, providing high-quality audio, illuminated keys and a large LCD with adjustable green backlighting for simple operation, day or night.

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TM-271A

▮ 200 memory channels (100 when used with memory names) ▮ Frequency stability better than ±2.5ppm (-20~+60°C) ▮ Wide/Narrow deviation with switchable receive filters ▮ DTMF microphone supplied ▮ NOAA Weather Band reception with warning alert tone ▮ CTCSS (42 subtone frequencies), DCS (104 codes) ▮ 1750Hz tone burst ▮ VFO scan, MHz scan, Program scan, Memory scan, Group scan, Call scan, Priority scan, Tone scan, CTCSS scan, DCS scan ▮ Memory channel lockout ▮ Scan resume (time-operated, carrier-operated, seek scan) ▮ Automatic repeater offset ▮ Automatic simplex checker ▮ Power-on message ▮ Key lock & key beep ▮ Automatic power off ▮ Compliant with MIL-STD 810 C/D/E/F standards for resistance to vibration and shock ▮ Memory Control Program (available free for downloading from the Kenwood Website: ***www.kenwoodusa.com***)

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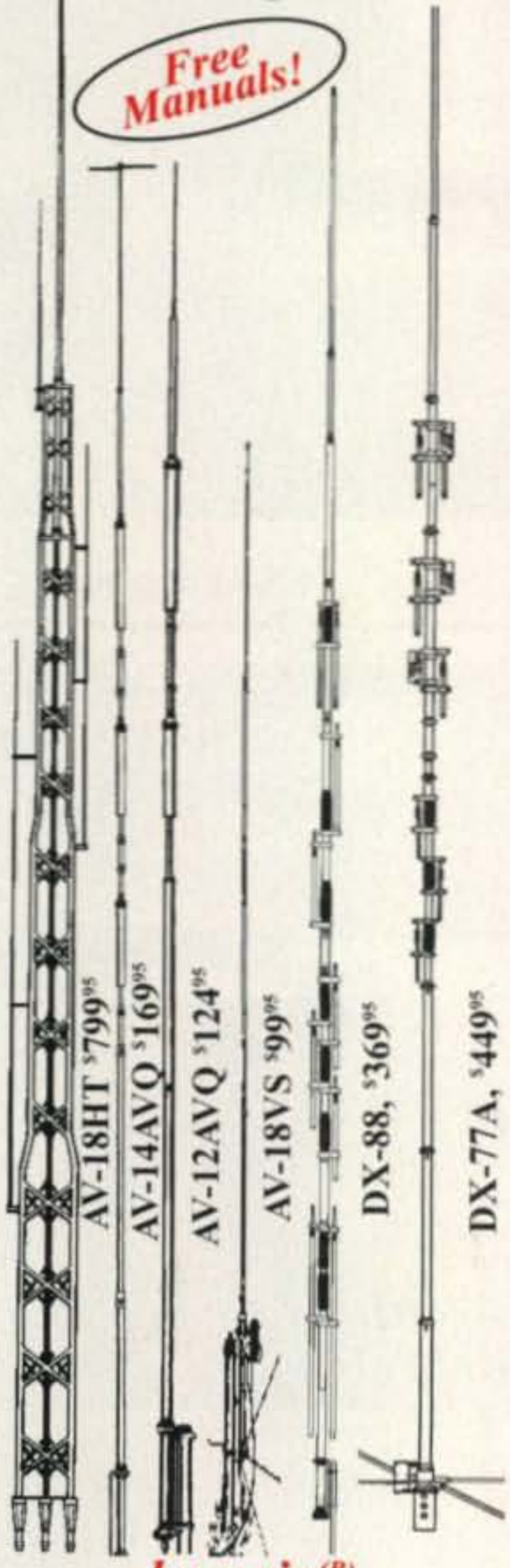


hy-gain(R)

Classics

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

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

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

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

AV-18HT, $849.95. (10,12,15,20,40,80 M, 160, 17 Meters optional). 53 ft., 114 lbs.

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

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

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

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

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

All bands are *easily* tuned with the DX-88's *exclusive* adjustable capacitors. 80 and 40 Meters can even be tuned from the ground without having to lower the antenna. Super heavy-duty construction. DX-88 OPTIONS: 160 Meter add-on kit, KIT-160-88, $189.95. Ground Radial System, GRK-88, $99.95. Roof Radial System, RRK-88, $99.95.

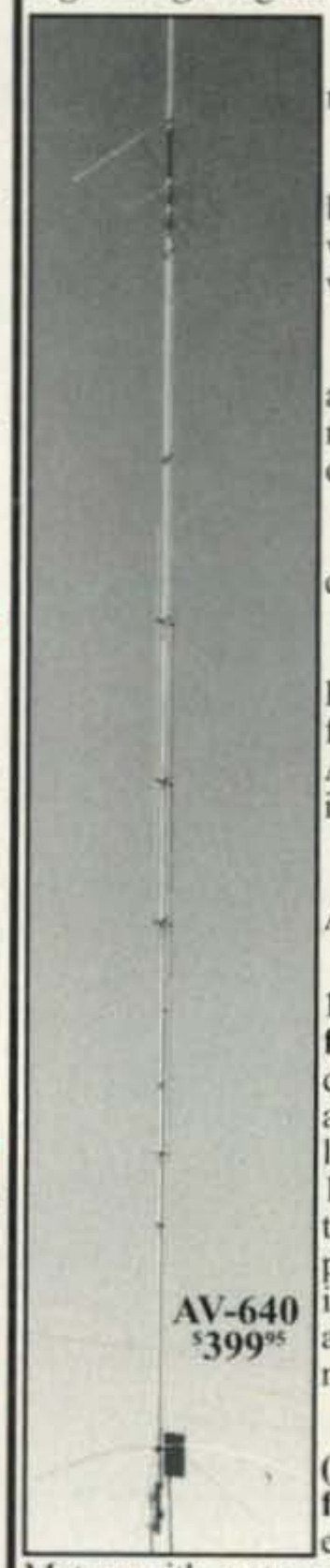
DX-77A, $449.95. (10, 12, 15, 17, 20, 30, 40 Meters). 29 ft., 25 lbs.

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

Model #	Price	Bands	Max Power	Height	Weight	Wind Surv.	Rec. Mast
AV-18HT	$849.95	10,15,20,40,80	1500 W PEP	53 feet	114 pounds	75 MPH	------
AV-14AVQ	**$169.95**	**10,15,20,40**	**1500 W PEP**	**18 feet**	**9 pounds**	**80 MPH**	**1.5-1.625"**
AV-12AVQ	$134.95	10/15/20 M	1500 W PEP	13 feet	9 pounds	80 MPH	1.5-1.625"
AV-18VS	**$99.95**	**10 - 80 M**	**1500 W PEP**	**18 feet**	**4 pounds**	**80 MPH**	**1.5-1.625"**
DX-88	$369.95	10 - 40 M	1500 W PEP	25 feet	18 pounds	75 mph w/o guy	1.5-1.625"
DX-77A	**$449.95**	**10 - 80 M**	**1500 W PEP**	**29 feet**	**25 pounds**	**60 mph w/o guy**	**1.5-1.625"**

hy-gain® PATRIOT

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



No ground or radials needed

Effective counterpoise replaces radials and ground.

Automatic bandswitching

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

Sleek and low-profile

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

Full legal limit

Handles 1500 Watts key down continuous for two minutes.

Built-to-last

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

hy-gain® warranty

Two year limited warranty. All replacement parts in stock.

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

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

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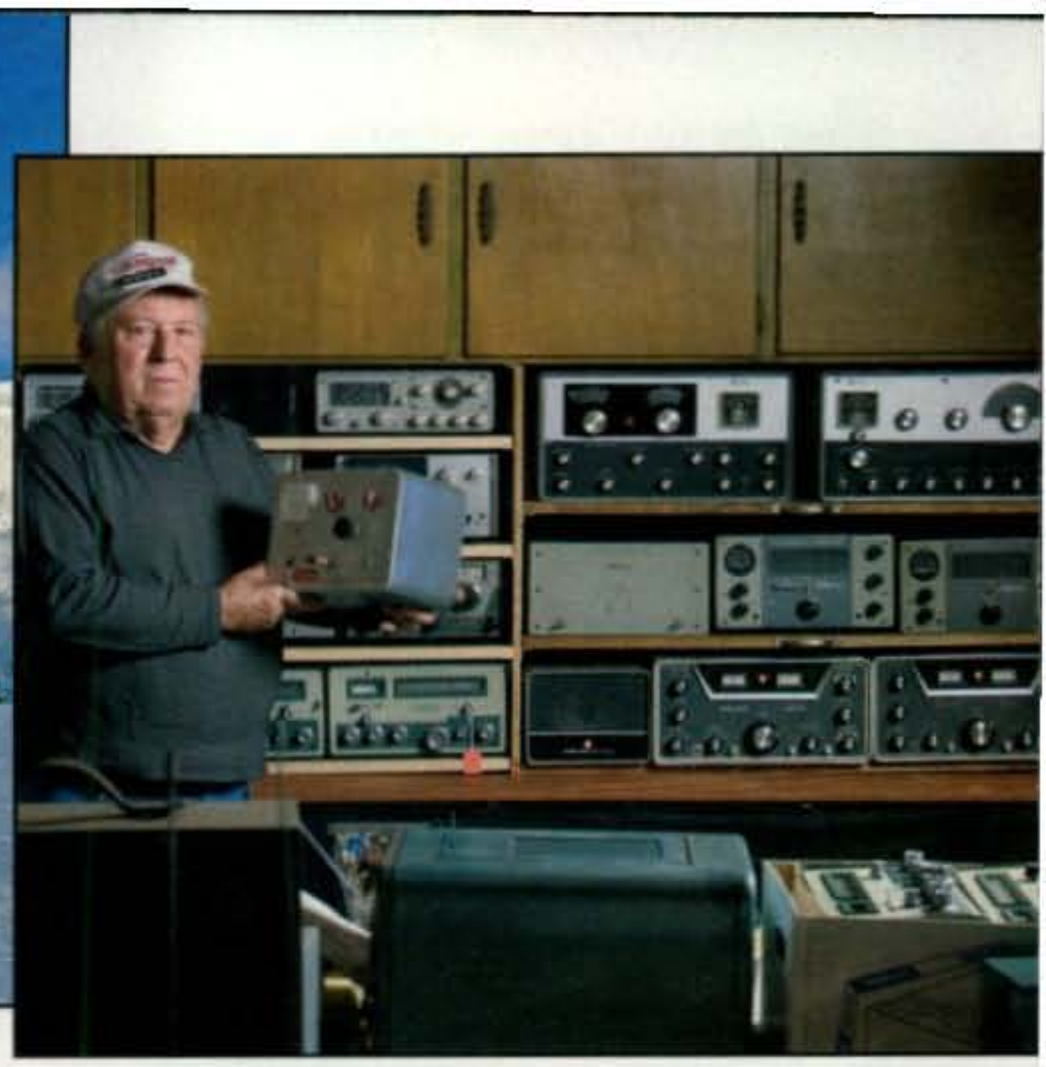

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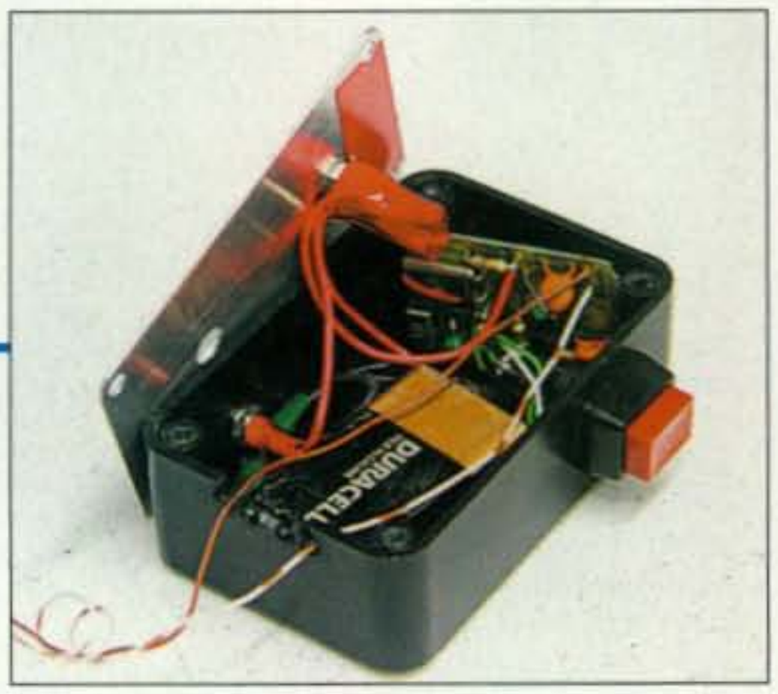

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departments

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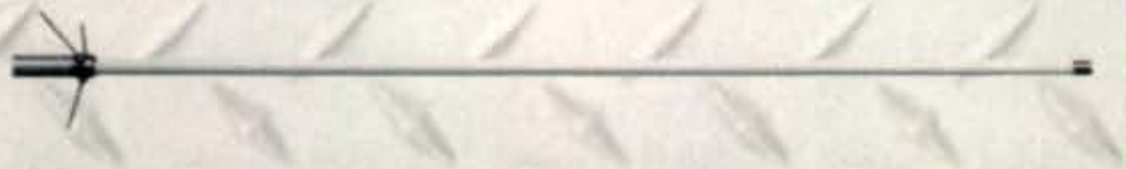
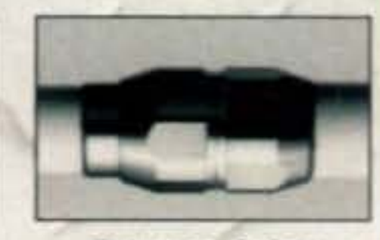


Coax Connection at Base End

Heavy Duty Base/ Radial Assembly



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DIAMOND ANTENNA

Virginia BPL Operator Says It Doesn't Interfere (Maybe)

The operator of a Broadband over Power Lines (BPL) system in Manassas, Virginia says that "rigorous FCC-mandated testing" by an independent laboratory showed that BPL was not responsible for the interference that has been the subject of complaints by area hams. However, in a letter to the FCC, COMTek acknowledged that, "after subsequent review, it appears the testing methodology used by the lab was not fully compliant with the FCC's new measurement guidelines" and that a second study would be conducted. ARRL Executive Vice President Dave Sumner, K1ZZ, said the initial testing was "like using an oven thermometer to check for a fever."

COMTek also told the FCC that even though it could find no evidence of interference from its equipment in Manassas, it is in the process of replacing all of that equipment with second-generation devices "based on the HomePlug chip set." HomePlug has worked closely with the ARRL to make sure its equipment used inside houses does not cause interference to amateurs.

Most-Active Ham in Space Back on Earth

Astronaut Bill McArthur, KC5ACR, is back on terra firma after a six-month stint on the International Space Station as commander of Expedition 12. During his time in orbit, according to the *ARRL Letter*, McArthur became the most active ham ever on the ISS, making more than 1750 contacts on all continents (including Antarctica), 130 countries, and all 50 U.S. states during his 190-day mission. He also made dozens of school contacts. The *Letter* notes that McArthur's DXCC, Worked All States, and Worked All Continents awards will be honorary, as none of the programs provide for contacts made from space.

ARRL Continues to Push for Shutdown of NY BPL System

The ARRL has again called on the FCC to shut down a BPL system in the suburbs of New York City because of unresolved interference complaints. In a March 29 letter to the Commission, the League said that Ambient Corporation has "defiantly and consistently" denied the existence of a problem with its BPL system in Briarcliff Manor, New York, even though, according to the *ARRL Letter,* FCC Enforcement Bureau staff "personally witnessed and confirmed" the interference. The letter also takes the FCC to task for failing to act, saying "the Commission's inaction has implicitly validated Ambient's inaction and repeated misrepresentations." At press time, the FCC had not responded or taken any action.

Plug Pulled on Two BPL Tests

BPL field trials in Arizona and Maryland have been shut down. The *ARRL Letter* reports that the company running a trial in Cottonwood, Arizona, that had been the subject of interference complaints from area hams decided not to restart the system after taking it offline for a firmware upgrade. Instead, according to the *Letter*, officials told the local ham club they were moving the system, possibly to Phoenix, where the company is headquartered.

Across the country, Bill Leavitt, W3AZ, reported on the Potomac Valley Radio Club reflector that the Southern Maryland Electric Cooperative had concluded its tests and wa "putting BPL on the shelf." According to Leavitt, the company cited a variety of reasons for deciding against sticking with BPL, including lineman safety, impact on its standard construction practices, the lack of a proven method of delivering BPL via underground power lines, and its conclusion that "BPL signals and bandwidths are not competitive with other technologies available."

FCC Affirms Fine Against K1MAN

The FCC has issued a forfeiture order in the amount of $21,000 against controversial amateur Glenn Baxter, K1MAN, for repeated rules violations regarding interference, station control, and other infractions. Baxter, in a posting on his website, claims the FCC is violating his due-process rights by denying him a hearing, and says he will refuse to pay the fine and will continue to operate even if the FCC refuses to renew his license, "until the renewal application is finally decided including all appeals to the D.C. Court of Appeals and the U.S. Supreme Court."

Vanity Fees Likely to Drop in Fall

The FCC is proposing a slight reduction in its fee for issuing or renewing vanity callsigns. The current cost is $21.90 for the ten-year license term, and the proposal for the fiscal year that begins this fall is to reduce the fee to $20.10.

On the subject of vanity calls, the ARRL has joined the W5YI Group in offering to handle the paperwork for vanity call renewals, as the first of the current crop of vanity callsigns come up for renewal this month. The cost will be whatever the FCC fee is, plus an additional amount for processing the renewal. The fee will be lower for ARRL members than for non-members.

Miner Randy McCloy, KC8VKZ, Back Home

Randy McCloy, KC8VKZ, returned home on March 30 after three months of treatment and rehabilitation following the West Virginia mine disaster that claimed the lives of all 12 of his fellow miners. McCloy told the Associated Press that he will not return to mining work and doesn't understand how or why he survived when none of the other miners trapped with him did. The *ARRL Letter* notes that hams and other well-wishers have been sending McCloy cards and QSLs. The address is P.O. Box 223, Philippi, WV 26435. In addition, donations to help cover financial burdens as a result of the mine accident are being accepted by The Randal McCloy Jr. Fund, c/o Clear Mountain Bank, 1889 Earl Core Rd., Morgantown, WV 26505.

New Frequencies for Hams in Hungary and Monaco

Amateurs in Hungary and Monaco have been granted operating privileges on 6 meters for the first time. The 6-meter band until recently has been part of a TV channel in Europe. According to *Newsline,* hams in both Hungary and Monaco now have access to 50–52 MHz. In addition, Hungarian hams have been given early access to 7.1–7.2 MHz on the 40-meter band, and Monaco has allocated 1.810 to 2.000 MHz for amateur use, giving that country's hams access to 160 meters.

UK Exhibit Features Original Marconi Gear

An exhibition at Oxford University's Museum of the History of Science is putting Marconi's original radio gear on public display for the first time. According to the Southgate Amateur Radio Club, the exhibit also features Marconi's original patents and experimental notebooks, "Marconigram" messages sent from the *RMS Titanic,* and early radios and broadcast equipment. The exhibit opened on April 24, with Princess Elettra Marconi, daughter of Guglielmo Marconi, on hand and is scheduled to run through October 1. For more information, see the museum website at <http://www.mhs.ox.ac.uk/>.

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

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HAM-IV

HAM-IV
$559.95

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

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

TAILTWISTER SERIES II

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	1000 in.-lbs.
Brake Power	**9000** in.-lbs.
Brake Construction	Electric Wedge
Bearing Assembly	**Triple race/138 ball brngs**
Mounting Hardware	Clamp plate/steel U-bolts
Control Cable Conductors	**8**
Shipping Weight	31 lbs.
Effective Moment (in tower)	**3400 ft.-lbs.**

CD-45II

CD-45II
$389.95

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

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

HAM-V

HAM-V
$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	350 in.-lbs.
Brake Power	**450 in.-lbs.**
Brake Construction	Disc Brake
Bearing Assembly	**Dual race/12 ball bearings**
Mounting Hardware	Clamp plate/steel bolts
Control Cable Conductors	**5**
Shipping Weight	14 lbs.
Effective Moment (in tower)	**300 ft.-lbs.**

HDR-300A

HDR-300A
$1379.95

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

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

Digital Automatic Controller

DCU-1
$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
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NEW! Automatic Rotator Brake Delay

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

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FT-1802M

Actual Size

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FT-2000

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- 100 W Version with Internal Power Supply

Shown with after-market keyer paddle, keyboard, and monitor (not supplied). Optional Data Management Unit (DMU-2000) and monitor are required for viewing of Audio Scope and other display features.

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zero bias – a CQ editorial

BY RICH MOSESON,* W2VU

QSL Cards: Here to Stay

Last summer, I finally got all the confirmations I needed to qualify for single-band DXCC on 15 and 10 meters, and this past April, I finally got around to putting the QSL cards for those countries into a book I could actually show people (rather than my usual shoebox). Note that I said "confirmations," because nowadays you no longer need physical QSL cards in your possession to qualify for the ARRL's DXCC (for confirmed contacts with at least 100 DX "entities") or Worked All States awards. The League's online Logbook of the World (LoTW) system can provide you with needed confirmations even if you don't have a traditional QSL card, as long as the logs of both stations involved in a contact have been uploaded to the system and contain matching info about the contact. (By the way, our discussions with ARRL about LoTW support for CQ awards are going well and we hope to be able to announce something soon.)

As I filed the cards in the book, however, sometimes replacing a plain card with another, prettier, card from a different station in the same country on the same band, I realized that, for me at least, the ham radio sub-hobby of QSLing will never be replaced by online confirmations. Yes, I'll use LoTW credits to qualify for awards, but you can't show your credits list to someone the way you can show them a collection of QSL cards and get the same response. QSL cards are more than proof of contact to qualify you for an operating award.

QSL cards are special. They tell stories. They may remind you of a special contact. They may give you a glimpse of the country from which they're sent or the person you contacted. They have personality, and they may reflect the personalities of the people who sent them. Some have photos, some have drawings, some have only text, but they all represent a special part of what ham radio is all about—our unique ability to make personal connections with other people all over the world. It's a special part of who we are and what we do, and it would be a great loss for amateur radio should the art of QSLing ever be lost to the more efficient and less expensive electronic means of confirming contacts. Yes, it's slow; yes, it's expensive, and yes, it's worth the time and money to have a tangible collection of cards from other hams around the world. A few years ago, Danny Gregory and Paul Sahre published a book based on the QSL card collection of a Silent Key that they'd bought at a flea market. Their title really says it all: *Hello World: A Life in Ham Radio.* Your QSL cards are a record of your life in ham radio. A credit listing just isn't the same.

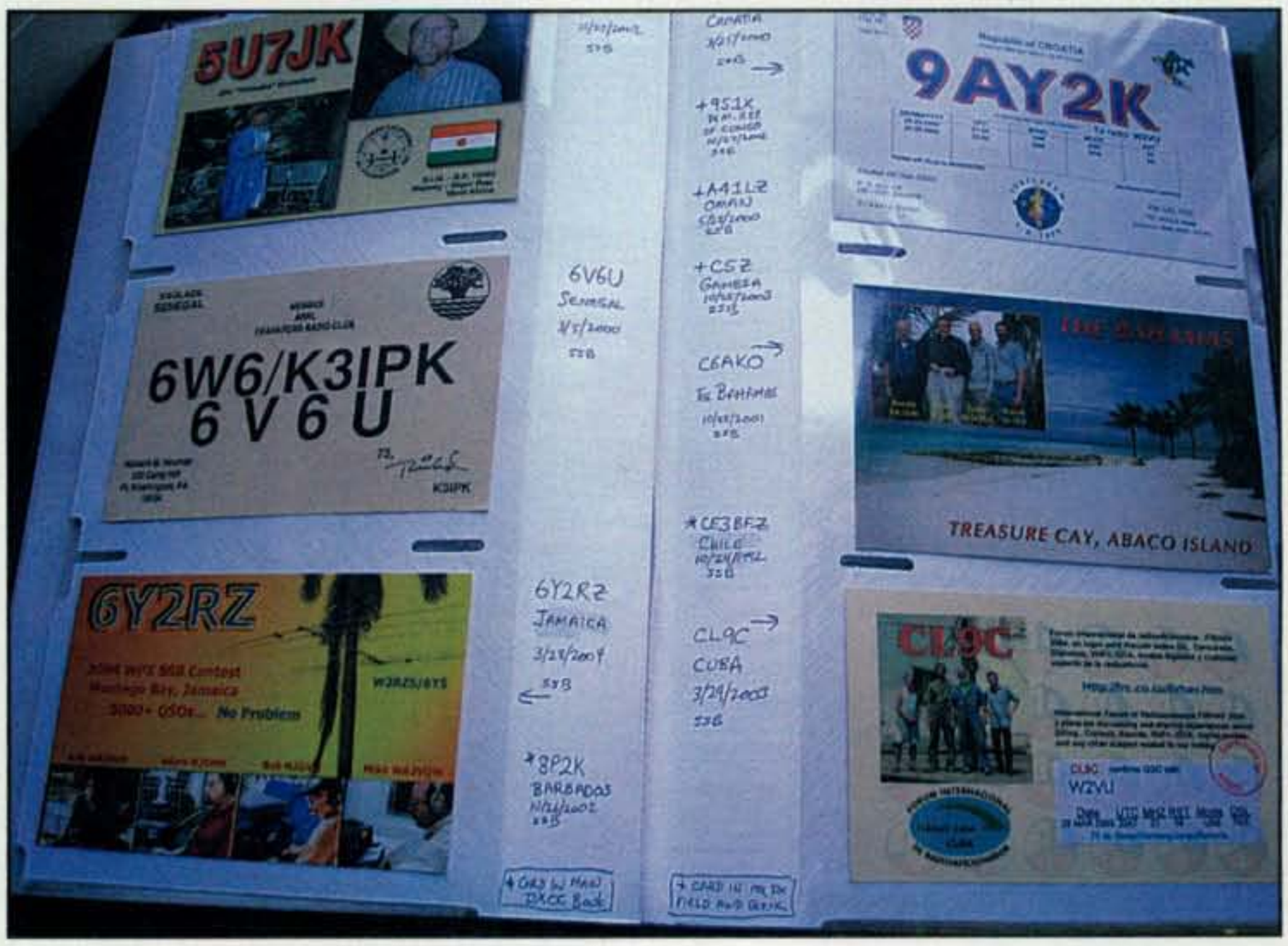
When All Else Fails ... Say Hello!

The ARRL has recently rolled out two major programs to promote amateur radio. The "Hello" campaign is tied to this year's centennial of the first voice broadcast over radio. It consists of a mix of radio and TV public service announcements and an excellent website at <www.hello-radio.org>. And in a rare departure from the League's consistent message that amateur radio is "a service, not a hobby," this website actually refers to "ham" radio and acknowledges that "the main purpose of Amateur Radio is fun." Of course, the public service and emergency communications aspects of ham radio are featured as well, but the hobby portion is finally given its due, as the website states, "This unique mix of fun, public service and convenience is the distinguishing characteristic of Amateur Radio." For more information, see the hello-radio.org website. To view/hear and download the "Hello Radio" public service announcements, go to <http://www.arrl.org/pio/> and follow the prompts. There is also a variety of "Hello"-logo products available.

The second promotion effort focuses entirely on amateur radio's unique ability to keep operating in disasters and emergencies when regular communications either fail or get overloaded. The "When All Else Fails ... Amateur Radio" campaign features a wide variety of goodies carrying the distinctive logo. There's also

(Continued on page 11)

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



Online QSO credits may be useful for earning operating awards, but they can't compare with the visual impact of a QSL card collection, which can be an excellent way to introduce your hobby to non-hams.

Visit Our Web Site

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Hold near your receiver -- it instantly displays CW in English!

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

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4. Both top and bottom lines scroll.

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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.

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announcements

• The following special event stations are scheduled for June:

The Triple Crown – The Carroll County Contesters (of Sykesville, MD) and the Long Island ARC (LIMARC) will be operating special event stations for The Triple Crown (The Kentucky Derby [call K4D] and The Preakness [K3P] by the Carroll County Contesters; and The Belmont Stakes by LIMARC [K2B]). Operation will be in the General class band segments, most likely 20 through 40 meters, on or near 21.365, 14.265, 7.265, and 3.865. Confirm frequencies by going to <www.wy3p.net> and <www.limarc.org>, respectively. QSL cards will be available for contacting each individual station. Include an SASE and a "green stamp" (foreign stations an IRC). In addition, anyone who contacts all three stations will be eligible to receive a "Triple Crown" certificate. For the certificate include a 9×12 SASE and a green stamp (IRC for foreign stations). Send QSL and certificate requests as follows:

For The Derby and The Preakness: Carroll County Contesters, c/o John F. King, W3ADC, P.O. Box 64, Hampstead, MD 21074 (Att: Derby Event or Preakness Event as appropriate).

For the Belmont Stakes: LIMARC, P.O. Box 392, Levittown, NY 11736 (Att: Belmont Event).

For Triple Crown certificate: Michael D. Fisher, N3VOP, 715 Robinwood Dr., Mount Airy, MD 21771 (Att: Triple Crown Event).

If there is a club or group of ops in Kentucky interested in activating the Derby event, please contact the Carroll County Contesters at e-mail: <wy3p@hotmail.com>.

W2W, from the commemoration of the use of electronics during D-Day, Historic Electronics Museum ARC, Baltimore, MD; June 3–11 on or near 7.266 or 14.266 MHz SSB (CW operation may also be conducted in or near the DX windows on 7 and 14 MHz. For certificate and QSL send 8^1/$_2$×11 SASE, for QSL only send small card-size SASE to HEMARC, P.O. Box 1693 – MS 4015, baltimore, MD 21203 (www.hemarc.org).

K8DAC, from the 50th anniversary of the Saginaw Valley ARA, Saginaw, MI; 1600–2200Z June 3 on 146.58, 14.250, 14.050, 7.250 MHz. Send QSL to Saginaw Valley ARA, P.O. Box 1783, Saginaw, MI 48605-1783 (contacts may request a certificate).

NØB, from150th anniversary of North bend, NE; June 23–26, 1300–0500Z daily in General and Novice/Tech 10, 15, 20, 40, 80 meters SSB, CW, RTTY. For certificate send SASE to KØJFN, Pioneer ARC, 2411 County Road 15, Colon, NE 68018 (http://home.alltel.net/jlhoffman/index.htm).

VE3VM, from the Friendly Foes Above the Falls Air Show, Niagara Falls, Ontario, Canada; June 10–11, 1400–2000 hours each day on SSB 7.265, 7.065, 14.270 MHz ±QRM; CW 7.025 and 14.025 MHz. For QSL send SASE and $1.00 to Dave Digweed, VE3FOI, 2575 Rosedene Road, St. Anns, ON Canada L0R 1Y0 (www.nparc. on.ca).

YM125ATA: Berkin Aydogmus, TA3J, will be QRV on 160, 80, 40, 20, 15, 10, and 2 meters and the WARC bands from now until November 10, 2006 at 2359Z from Antalya for the 125th anniversary of the Mustafa Kemal Ataturk's birthday, the founder of the Turkish Republic. QSL via Nilay Mine Aydogmus, TA3YJ, direct (only SASE and 1 IRC, no green stamps) or via the bureau (no eQSLs). SWL okay.

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

June 2–4, **Rochester Hamfest**, Monroe County Fairgrounds, Rochester, NY. Go to <info@rochesterhamfest.org>. (Exams Sat. 9 AM, preregistration no later than May 25 to guarantee place) ***See us at the CQ Booth.***

June 4, **Hall of Science ARC Hamfest**, NY Hall of Science parking lot, Flushing Meadow Corona Park, Queens, New York. Contact Stephen Greenbaum, WB2KDG, 718-898-5599 (evenings only), e-mail: <WB2KDG @arrl.net>, <www.hosarc.org>. (Talk-in 444.200, PL 136.5, 146.52 simplex; exams 10 AM)

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

June 9–10, **Ham-Com 2006**, Plano Centre, Plano, TX. Call 214-732-2086, or <wwwhamcom.org>. (Exams Fri. 10 AM to 5 PM, Sat. 9 AM to 4 PM) ***See us at the CQ Booth.***

June 10, **Franklin Amateur Radio Repeater Assn. Hamfest**, Bronco Club, Franklin, VA. Contact Chris Hanslit, W4VX, e-mail: <w4vx@ charter.net>; 757-242-9570. (Talk-in 147.300, 131.8 Hz; exams)

June 11, **Six Meter Club of Chicago Hamfest & Antique Radio Club of Illinois Swap Meet**, DuPage County Fairgrounds, Wheaton, IL. Contact Joseph Gutwein, WA9RIJ, <WA9RIJ@mc.net>; <www.qsl.net/k9ona> or <www.antique-radios>. (Talk-in K9ONA, 146.52, 146.37/97 [107.2 Hz]; exams 9 AM to 11 AM)

June 16–18, **Central Alberta ARC Annual Picnic & Hamfest**, Pine Lake Agricultural Campground, Pine Lake, AB, Canada. Contact Tom Smethurst, VE6TRS, <president@caarc.ca>; <www.caarc.ca>. (Talk-in VE6QE, 147.150 +600, 146.52 simplex)

June 17, **Raritan Valley RC Hamfest**, Piscataway High School, Piscataway, NJ. Contact Eric Lund, NW2P, 908-753-6153 (before 8 PM), e-mail: <elund@att.net>; <www.w2qw.org>. (Talk-in 146.025/625, 447.250/442.250, PL 141.3, 146.520 simplex)

June 17, **Midland Hamfest**, Midland County Fairgrounds, Midland, MI. Contact Bill, N8FUZ, 989-835-4142, e-mail: <N8FUZ@arrl.net>; <www.qsl.net/ w8kea>. (Talk-in W8KEA 147.000+; exams 9 AM, registration 8 AM)

June 17, **Silver Point Hamfest/Tailgate Party**, Silver Point Community Center, Silver Point, TN. Contact Dale Upchurch, W4SRX, 931-520-7612, e-mail: <hamfest@ucara.org>. (Talk-in 145.27, PL 123.0)

June 18, **Monroe Hamfest**, Monroe County Fairgrounds, Monroe, MI. Contact Fred VanDaele, KA8EBI, 734-242-9487 (after 5 PM); e-mail: <ka8ebi@arrl.net>; <www.mcrca.org/hamfest.htm>.

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The ARRL's "Hello" campaign promoting ham radio is tied to this year's centennial of the first wireless voice broadcast. (Logo courtesy ARRL)

Hams' emergency communications skills are the focus of a second ARRL publicity effort, built around the catch-phrase, "When all else fails ... Amateur Radio." (Logo courtesy ARRL)

a little bit of a Freudian slip in there ... the "When All Else Fails..." T-shirts are Hanes "Beefy Tees," a presumably unintentional comment on the tendency of far too many of us (present company included) to be a little too "beefy."

Nonetheless, it's good to see the League actively promoting both the service and the hobby aspects of amateur radio. As the "Hello-Radio" website correctly says, it is that unique mix that makes ham radio what it is.

Compensation

Another unique aspect of amateur radio is our general willingness to share our knowledge and experience without being paid for it. This, of course, goes beyond the FCC mandate that hams may not be paid for providing communications services and that ham radio may not be used for conducting business. But it is a long-established part of our culture. But there is some occasional compensation that can be even more valuable than cash. For example, I just finished helping out with a licensing course. After the test session, one of our newest amateurs sent a note to the class coordinator, which he, in turn, shared with his fellow instructors. "I wanted to take a moment to thank you again for helping me to earn my license," the student wrote. "After 34 years I have become a ham, fulfilling a childhood dream. I certainly look forward to getting on the air." Course book: $20; exam fee: $14; knowing you've helped someone fulfill a childhood dream: priceless. 73, Rich, W2VU

Oops...

In last month's editorial, I wrote about contacting TI5C during the ARRL DX Contest. That was a typo. It was actually TI1C. As far as I know, there is no TI5C. Lo siento mucho, Carlos!

Alpha Delta Broadband (HF thru 3 GHz) Coax Surge Protectors

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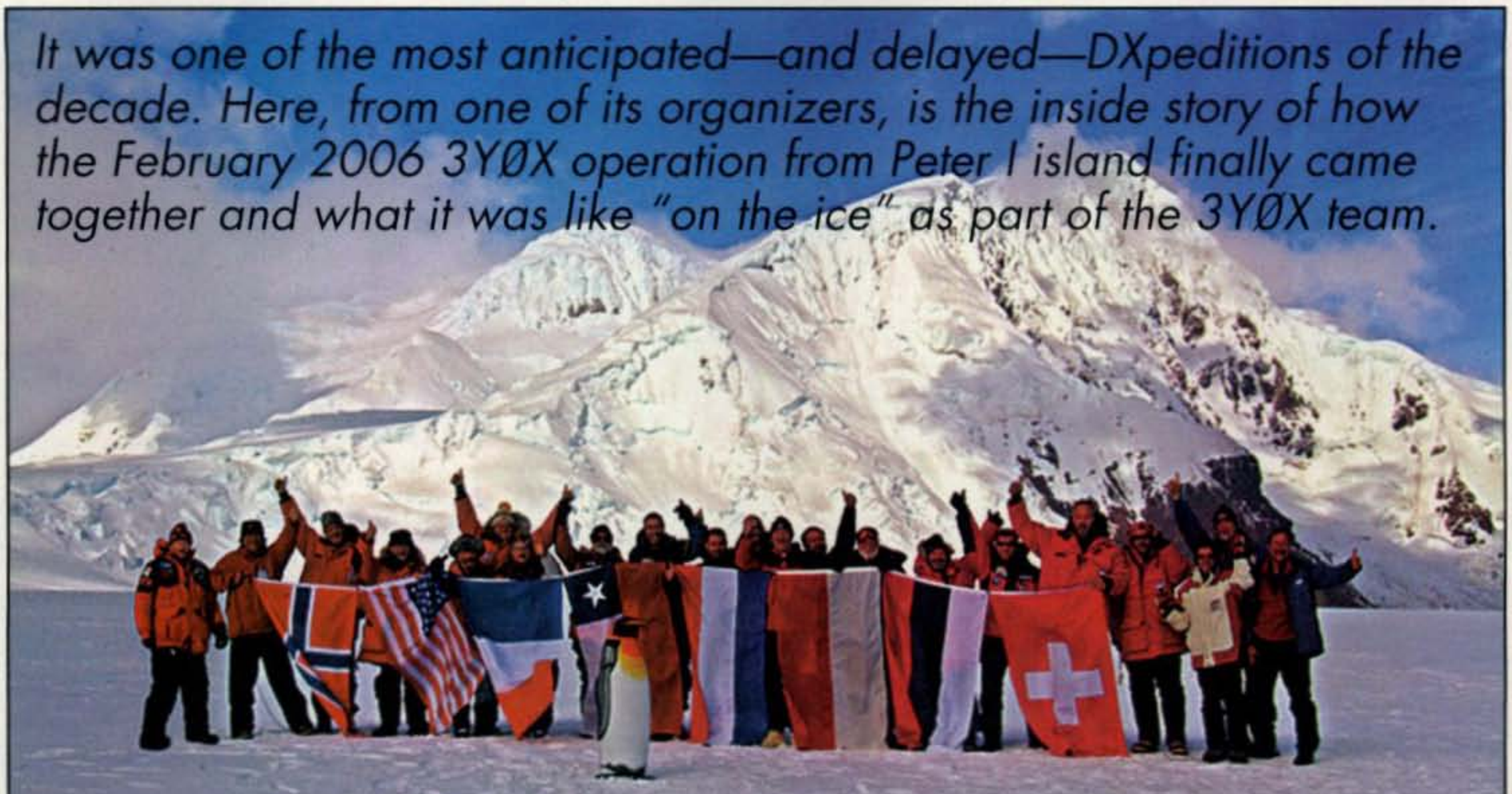
It was one of the most anticipated—and delayed—DXpeditions of the decade. Here, from one of its organizers, is the inside story of how the February 2006 3YØX operation from Peter I island finally came together and what it was like "on the ice" as part of the 3YØX team.



3YØX—The Peter I Story

BY RALPH FEDOR,* KØIR

In 1994, after completing the 3YØPI DXpedition to Peter I, I stood on the rear deck of the Russian ship *Academik Fedorov* as it sailed away from the remote island off the coast of Antarctica. I tried to burn the image of the island into my mind, because I was sure that I would never see Peter I again. However, on February 24, 2006 I stood on the rear deck of the ship *DAP Mares*, once again watching Peter I fade into the fog of the Bellingshausen Sea as we sailed away from the island. I had returned to Peter I, and once again survived a stay there. My team and I had again experienced the howling winds, blowing snow, cold temperatures, fog, and rare days of sun.

The idea for the return trip came three years earlier while sailing home from a South Sandwich/South Georgia DXpedition. The predictable question "Where do we go next?" was asked. The logical answer seemed to be Peter I. My partner, K4UEE, and I began working on the project.

Getting to Peter I a second time was not an easy journey. In the last three years, three ships had assured us that they could take us to the island. Each failed to be able to do so. Last year we got as far as assembling the team in Ushuaia, Argentina, only to once again be disappointed with the proposed ship. Thousands of hours had been spent in obtaining permits, acquiring and configuring equipment, logistical planning, packing and shipping equipment, and recruiting funds and people to complete the task. After last year's disappointment the temptation to "forget it" was very real.

Then one evening in Punta Arenas, Chile on my way home last year, I met with four men. Their company had been providing air support to Antarctica for 23 years. They had just purchased a ship, the *DAP Mares*, and wanted to talk about the possibility of using it and one of their helicopters to land our team on Peter I. We talked for many hours that night, and the Peter I DXpedition again became "possible."

I say "possible" because there were still hurdles. Several team members were unable to continue with us, all permit applications had to be re-written, and the cost of this capable ship and its helicopter was very high.

The "Right Stuff"

Then there was the human factor. We needed at least 20 men to do the project, each contributing heavily toward the cost of the DXpedition. Each of the 20 would have to be away from home for six weeks. Each had to be screened and interviewed so that we could be reasonably certain that we all could live together in close quarters in a stressful situation for a long period of time. We needed men who could shovel snow, tolerate harsh weather, tie knots, improvise, and remain calm when disaster threatened. Everyone had to understand that this was truly a team project. Everyone's strength would come from the team. The strength of the team would come from each of its members. Then, after all this, everyone had to possess reasonable radio skills—pile-up management, an understanding of propagation, and a good understanding of our equipment and antennas. Humility, a willingness to learn, and respect for other team members' rights and feelings were critical. An excellent operator without a willingness to work hard on non-radio projects, who would not be courteous toward fellow team members, or who would choose only to sleep, eat, and operate would not make a good Peter I team member. Rather, a less-experienced

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The main part of the voyage began at King George Island, where team members took a Zodiac out to their ship, the DAP-Mares. *(All photos courtesy of the author)*

team member who openly shared his uncertainties, was not too proud to accept help and counsel from others, and who constantly and openly tried to improve his performance was a better choice.

It was difficult to find 20 men on the planet with all the right talents and attitudes. Now that I can look back on the experience, though, I can breathe a sigh of relief and say, "We found them." Some were naturals; others were willing to learn. The learning and team building occurred during a fall meeting in Atlanta, Georgia and while we sailed from King George Island to Peter I. In the end, all of our team members gave it their all and did their jobs.

Those jobs were doing whatever was necessary to maximize the number of QSOs from 3YØX. The jobs may have been refueling or repairing generators, clearing snow away from the shelters and generators, preparing a meal, washing dishes, managing our waste, repairing shelters and antennas, carrying fuel and supplies between camps, or changing propane tanks. Less often it meant actually getting on the air to hand out the QSOs. The time on the air and operating the stations of 3YØX represented a fraction of the total daily effort involved.

So Close and Yet So Far

On February 5, 2006, our ship arrived at Peter I and anchored about two miles offshore. We could see the icy cliffs and the glacier on which we would camp. However, the fog and low clouds were too dense to begin our helicopter landing operations. Finally, after 41 hours of waiting, the weather cleared enough for us to begin our helicopter landings. We flew for eight hours and landed our shelters, our food, most of our men, one-third of our fuel and propane, half of our generators, and half of our radio equipment on the island. Then the weather closed-in again and flights had to stop. We had enough equipment ashore to put four of our nine stations on the air and to feed and shelter everyone who made it to the island. Three of our team members, five of our stations, several generators, and two-thirds of our fuel and propane were still on the ship. It would be three more days before the weather would improve enough so that we could resume our helicopter flights and get the rest of our men and equipment ashore.

Our first priority ashore was to establish a camp where everyone would have a safe shelter, a heat source, and a supply of food. We then turned our attention to setting up the operating shelters, the antennas, and the generators and power distribution systems. All this took place in foul weather with high winds, blowing snow, freezing temperatures, and poor visibility.

I recall six of us gripping a 24- by 20-foot piece of tent fabric, trying to maneuver it over the framework of an operating shelter. The fabric was flapping in the wind, sounding like machine-gun fire, and it took the weight of six of us to stabilize it. We roped ourselves to it, positioned it carefully, and waited for just the right wind gust. We released one end and let the fabric slam over the framework of the shelter so our coworkers on the opposite side could grab it and secure it. With a man at each tie point, we had it secured in moments and breathed a sigh of relief. An operating site was secure.

We divided ourselves into a number of work teams. I was a member of the antenna team. This group assembled and maintained the antennas. The CW stations used vertical dipoles (SVDAs) for 20 to 10 meters and quarter-wave verticals on the other bands. The SSB stations had two-element SteppIR beams for 20–10 and verticals on the other bands. The SteppIRs seemed to outperform the verticals and held up very well. We once again constructed a three-element 160-meter wire beam which was suspended a few feet above the ice. It and the Battle Creek Special served us on 160.

Other teams among us included: shelter construction and maintenance, generator maintenance, power distribution, kitchen assignments, waste management, environmental monitoring, medical and safety, computers and networking, and log updating.

My operational responsibility was operator scheduling–the man, the mode, the band, and the geographical area to be worked. Initially the schedules were based on predictions. Later actual data from observed openings

The on-the-air action began before arriving at Peter I. Here NP4IW, W8MV, LA6VM, and N4GRN operate maritime-mobile while sailing to the island.

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The camp on Peter I. While there's sunshine in this photo, most of the setup work was done in weather similar to what you see in the next photo.

and patterns was available to assign operators to their positions. We made every effort to be on the air when openings occurred. Ten- and 12-meter openings were not expected, but when they did occur I think we were there. I really don't think we missed any. Unfortunately, there were no good 10- or 12-meter openings to Asia.

On the Air at Last

Initially the QSOs were made with a "wall of sound" emanating from the receivers. At times I think there were ten stations per Hz. On CW, calls had to be separated by speed, cadence, and timing. The density of the signals made it difficult to maintain a rate of 150 per hour. On SSB, signal strength and audio punch ruled. During the first three days we suffered the most—we only had half our stations available to us, we were short three team members who were stranded on the ship, and we were concerned about running out of fuel and propane. Still we managed to keep our stations on around the clock and worked every opening we could.

Then, after three long days, the weather cleared and the rest of our men, equipment, and fuel could be flown ashore. Now we were able to operate all of our stations, eat better meals, and not have to worry about our fuel and propane supplies. With time, the pileups thinned, but there were stations to work until the end.

I spent probably 95% of my time on CW, and most of the time I worked Europe, Oceania, and Asia. I am always happy to do this. It feels as if I am paying back the hams in these parts of the world for the contest QSOs they give me at home. My most memorable moments from 3YØX occurred when I worked my friends from around the world. Hearing their familiar callsigns come through was a real thrill. I also enjoyed sharing our adventure with the photos and videos on our website, <www.peterone.com>.

Moonbounce: A New Dimension

EME (Earth-Moon-Earth) added a new dimension to 3YØX. WØRUN and PA5M made 114 EME QSOs on 2 meters. We were not successful with EME on 6 meters or 432 MHz. Other side adventures included traveling with the world's most traveled man, Charles Veley (see sidebar), hosting a German research team while they placed a weather station on the island, rendezvousing with a small Russian sailboat circumnavigating

LA6VM and F2JD walk through blowing snow on a typical blustery day on Peter I. Note that you can barely see the two other team members in the background.

Selected 3YØX Statistics

The 3YØX team made 86,888 contacts from Peter I with 26,449 different hams. The greatest number of contacts were with North America, followed by Europe, Asia, South America, Oceania and Africa. Twenty meters was by far the most productive band, accounting for 25,468 QSOs, nearly double the number for the second-place band, 17 meters, which accounted for 13,842 contacts. A complete summary is available on the DXpedition website, <http://www. peterone.com/stats.htm>.

Editor's note: One of the more fascinating sets of statistics on the Peter I website is a "histogram" of how many callsigns were contacted how many times. While more than 11,000 hams worked the DXpedition only once, there were 38 stations that contacted 3YØX more than 22 times, and 16 who had more than 25 QSOs! There were only 25 band/mode combinations possible, and with daily updating of the log online, there was no question of whether you had actually made it into the log. So assuming that a station made contact on every possible band/mode combination (highly unlikely), that means that at least 16 stations—probably many more—did nothing by making repeat contacts other than denying other stations the opportunity to perhaps make their one and only contact. Those people, and all the others who misbehaved on the air, should be ashamed of themselves.

—W2VU

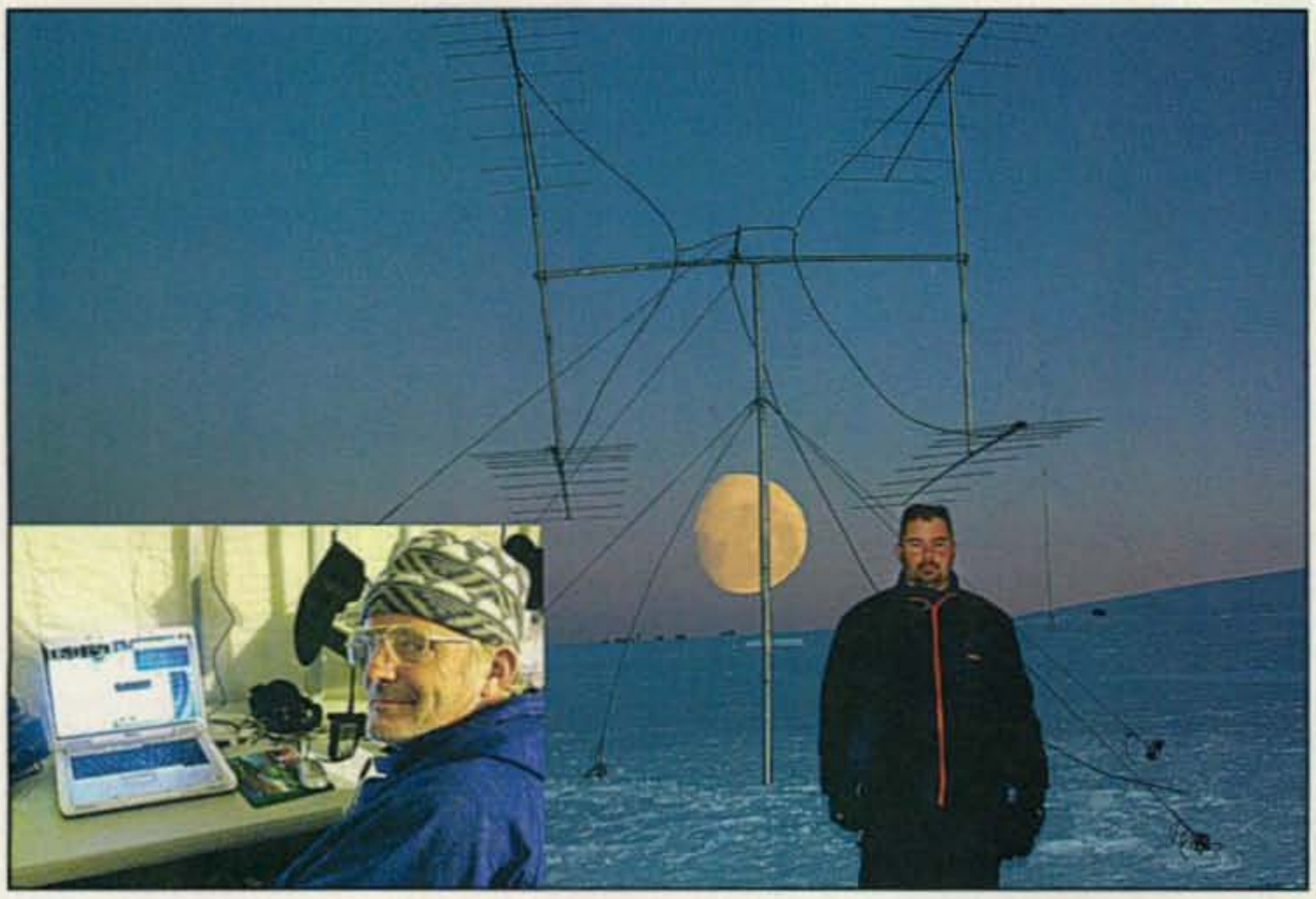
The "Op A" operating shelter at 3Y0X. This was the main CW operating site. Operators, from left, are K3VN, UA3AB, SP5XVY, PA5M, W8MV, and LA6VM.

Antarctica, stopping at Deception Island, and operating from the R1ANF shack in the South Shetland Islands.

Oleg at R1ANF met us as we passed through King George Island on our way to Peter I and when we returned. He gave us access to the R1ANF station for casual and contest QSOs. We, in turn, were able to help him with some antenna work at his station.

Weather prevented us from getting everything on the air as quickly as we had hoped. We also began our teardown two days early when we learned of approaching bad weather. The weather moved in quickly and it took us five days to get everything off the island. Still, we managed nearly 87,000 QSOs and distributed them pretty much in line with the world's ham population.

If you were to ask me, "What would I do differently?" I'd probably try to decrease the complexity of our infrastructure. However, this would be difficult. In



EME, or moonbounce, added a new dimension to the 3Y0X operation, with 113 contacts made off the moon. Here W0RUN is at the EME operating position (inset), while PA5M stands outside with the 2-meter EME antenna array, plus, of course, the moon.

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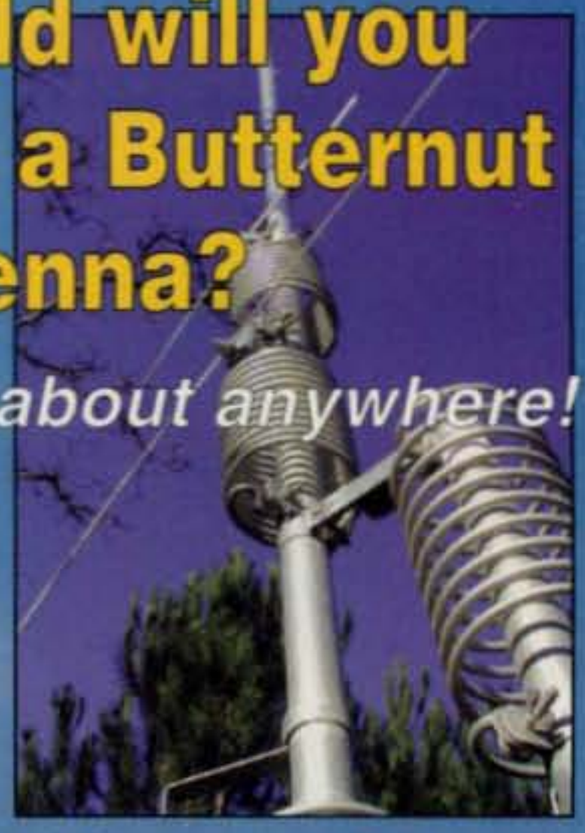

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Of course, an army travels on its stomach . . . especially an army of hams! Here chef N4GRN gets a round of applause from fellow team member for what must have been a particularly good meal!

The only way to get people and equipment onto or off the island is by helicopter. Here the copter from the support ship is ferrying equipment back to the ship for the voyage home.

a place such as Peter I, you need a solid infrastructure of support. There are no second chances. You learn quickly that you are not in charge. Nature is in charge and dictates what you can and cannot do.

I'd also think about having some additional SteppIR antennas. They are lightweight, go up quickly, and have little wind resistance; the SteppIRs always held the band longer than our vertical antennas.

Almost everything else was out of our control: the wind, sea swells, fog, ceiling, precipitation, and courage of our helicopter pilot. We tried to control what we could and calmly accept what we could not.

This was a team effort. On the ice my teammates were: K4UEE, F2JD, FM5CD, HB9BXE, K3VN, K4SV, KI4NFF, KU4V, K9SG, LA6VM, N2WB, N4GRN, N6JRL, N6OX, NP4IW, PA5M, SP5XVY, UA3AB, W8MV, and WØRUN. Off-the-ice team members included our pilots: JA1ELY, N1DG, DL1XX, ZL2AL, and W7GJ. Our pilots were a huge help to us and our link to

3YØX team members assisting Oleg (inset) with some antenna work at R1ANF at Bellingshausen Station. Oleg hosted the team as they passed through King George Island on their way to Peter I and again upon their return.

thousands of radio amateurs around the world. W4GKF was our webmaster and K4SSU offered logistical support. Then there were our friends from around the world who offered suggestions, help, and encouragement with their e-mails. Every member of this extended team devoted time and energy to the 3YØX project and the 86,888 QSOs we made. Every one of them helped those of us on the ice do the best job that we could.

Despite having to crawl out of a sleeping bag with snow drifted across it, put on boots whose inside temperature was below freezing, wonder if the wind would ever stop blowing, and having a primal fear of having to go the bathroom, it was a good trip. Would I do it again? Absolutely!

There are many stories to tell about 3YØX. They will be told at meetings and conventions where DXers gather in the coming months. To all of you who contacted us, visited us on the web, and offered advice, thank you for sharing the adventure with us. Thank you all for being a part of the team. ■

The World's Most Traveled Man

When KØIR met Charles Veley, he was listed on the "World's Most Traveled People" website (http://www.mosttraveledman.com) as the world's most-traveled person, having visited 589 of the world's 672 "countries, territories, autonomous regions, enclaves, geographically separated island groups, and major states and provinces..." Veley, age 40, still held the top spot when we checked the site just before deadline. However, when we returned later that same day, he'd been knocked off his pedestal by 105-year-old William Wallace-McDougall, who claims to have visited 615 of the world's 672 "entities."

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BY BOB JOSUWEIT,* WA3PZO

Are You Ready for Alberto?

Experts Predict Another Bad Hurricane Season

It's the beginning of June. Many hams are making plans for Field Day or that vacation getaway, but if you are along the Atlantic or Gulf Coast of the United States, there is a chance that an unwelcome guest, named Alberto, may appear in your neighborhood sometime soon. Alberto is the first of the named storms for the 2006 Atlantic hurricane season, which begins June 1. Are your Field Day preparations solid enough to handle a real emergency? This month we'll take a look at what some of the experts are saying about this year's hurricane season and the preparations that are being made.

What the Experts Say

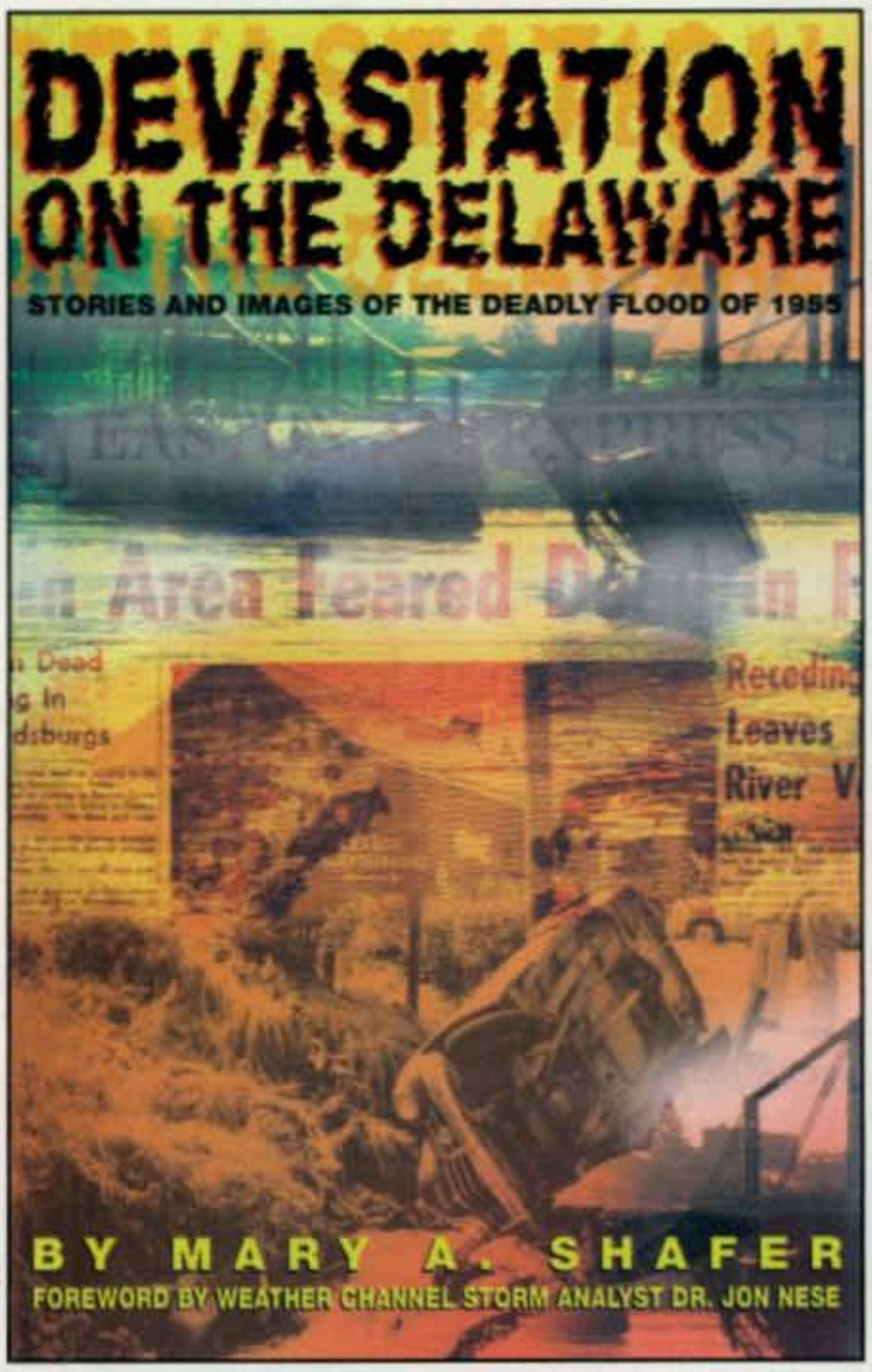
In April we turned our attention to noted scientist and hurricane forecaster Dr. William Grey of Colorado State University. Dr. Grey recently has turned *his* attention to global-warming issues, so the familiar Grey report will be issued by the team led by Phil Klotzbach. Grey says he will continue "to be closely involved in the issuing of these forecasts for the next few years."

According to their report, "information obtained through March 2006 continues to indicate that the 2006 Atlantic hurricane season will be much more active than the average 1950–2000 season. We estimate that 2006 will have about 9 hurricanes (average is 5.9), 17 named storms (average is 9.6), 85 named storm days (average is 49.1), 45 hurricane days (average is 24.5), 5 intense (Category 3-4-5) hurricanes (average is 2.3), and 13 intense hurricane days (average is 5.0)."

The report went on to say that there is an 81% probability that a major hurricane (Category 3 or above) will strike the U.S. and that the U.S. East Coast, including Florida, has a 61% chance of being hit by a major hurricane. The Gulf Coast of the U.S. is at a 47% risk and the Caribbean is at an "above-average major hurricane landfall risk."

Will History Repeat?

In 1955 hurricanes struck the central and Mid-Atlantic coasts of the United States. When comparing the mild winter that occurred then with this year's weather, the similarities raise concern as to whether a hurricane is due to hit somewhere between the Carolinas and New York. Mary Shafer, author of *Devastation on the Delaware,*, writes about a dozen days in February with temperatures above 50 degrees. March even had a 73-degree day mid-month. The second half of May would see high temperatures above 70 degrees. In August 1955 the Delaware River valley was hit with record-breaking rainfall from Hurricanes Connie and Diane. The heavy rains caused flooding on the Delaware and its tributaries. Reports indicated that in some areas water heights rose 30 feet in just 15 minutes.



Author Mary Shafer, a certified Skywarn weather spotter and a self-described "weather weenie," follows the true stories of survivors and eyewitnesses to bring the events to chilling life in Devastation on the Delaware. *For further information on her book and about the flood, visit <http://www.55flood.com>.*

The book covers the important role amateur radio and MARS played in providing emergency communications. Nine amateurs working at the Tobyhanna Signal Depot (PA) kept the MARS and club station, K3WCQ, on the air around the clock handling emergency messages. In the book, Shafer details the beginning of storm warnings and how the National Weather Service was upgraded following these deadly storms.

Field Day—This is a Drill

This year the Tampa Amateur Radio Club's ability to be called out in a time of emergency and deploy to a location away from the operation-center

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Ready to go right out of the box! No extra cable to buy.

AH-4 and AH-3 compatible. Includes over 2,000 memories, uses latching relays, tuning range is 4-800 ohms, powered by your radio. Includes ICOM interface cable.
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Z-11Pro The Return of a Legend.

The original portable Z-11 was one of LDG's most popular tuners, accompanying adventurous hams to their backyards, or to the ends of the earth. Now meet the Z-11Pro, everything you always wanted in a small, portable tuner designed from the ground up for battery operation.

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The 200 watt AT-200Pro Covers 6 Meters

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List price $249

Names of 2006 Atlantic Hurricanes/Tropical Storms

Alberto	Leslie
Beryl	Michael
Chris	Nadine
Debby	Oscar
Ernesto	Patty
Florence	Rafael
Gordon	Sandy
Helene	Tony
Isaac	Valerie
Joyce	William
Kirk	

(Courtesy National Hurricane Center)

Note: The World Meteorological Organization has "retired" the names of five storms that caused massive damage in 2005: Dennis, Katrina, Rita, Stan, and Wilma. After the 2004 hurricane season, Charley, Frances, Ivan, and Jeanne were also "retired" by the WMO.

The Tampa Amateur Radio Club goes all out for Field Day. Here they are set up at a remote location. (Photo courtesy of Jim Gerhart, WA3DIT)

grounds in an extremely short time frame will be tested. The exercise will show club members' capabilities, pre-planning skills, and ability to improvise.

The Tampa club had experience deploying members in response to Hurricane Katrina as well as other hurricanes that struck the Gulf Coast and Florida. During the Katrina deployment, members already in position along the Gulf had to radio back for another unit to bring antennas for a unit already on the scene.

This year club members will use Field Day to train and prepare for a call-out to deploy. The drill will be similar to what would happen if they were requested to offer communications assistance to a neighboring county in the event of emergency. This could include a hurricane response, flooding, and so on.

The exercise is presented in the hopes that other groups might use it as a training exercise for their club or emergency-preparedness group. Our thanks to the Tampa Amateur Radio Club for sharing their training exercise with us.

Tampa Amateur Radio Club 2006 Field Day Training Exercise

Preliminary activities (prior to June 23rd): Field Day crews will inventory required equipment at the clubhouse to ensure the necessary parts are on hand. No RF-related equipment can be utilized that is constructed prior to the notification of a potential need to deploy on June 23rd, 1900Z.

Step 1: The Hillsborough County Director of Emergency Management will notify the RACES Officer of a need for emergency communications. The RACES Officer will issue a callout on the 147.105 N4TP repeater at 1900Z Friday, June 23rd of a need to deploy. All interested TARC members should monitor the 147.105 repeater for further instructions and prepare to deploy when requested on the repeater.

Upon notification of a potential need to deploy, all TARC members planning to be deployed should muster at the clubhouse as needed to prepare to be deployed.

Step 2: The RACES Officer will announce on the 147.105 N4TP repeater, shortly after 1900Z, Friday, June 23rd , the decision to deploy the TARC club membership. At that time, the location of the deployment (Field Day) site will be announced and all members deploying should muster at the clubhouse to pick up the equipment they need. Between 1900Z Friday and Saturday, June 24th at 1800Z, all members should

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Major Shakeup at MARS

With budgets being cut and leadership being trimmed, will MARS still be able to fulfill its obligations?

Two top MARS officials stepped down this spring. Robert Sutton, who served as Chief Army MARS for 16 years, stepped down due to illness, and Air Force Chief Ray Collins announced his retirement. Collins said, "It is with mixed emotions that I end a career that has spanned more than five decades." He cited "recent developments" and apparent criticism of MARS management from within the membership as reasons for his stepping down.

"It is my hope that Air Force MARS will continue to prosper, grow, and become an important entity recognized in the emergency communications arena." In the interim, Collins said, regional MARS directors will take over issuing and signing MARS licenses for new and renewing members, as well as many other duties. Collins noted that a moratorium on all equipment issues went into effect April 1 because that element of the MARS program cannot be delegated.

Equipment requests already received will be processed, however. Action on SHARES applications also will be deferred. According to Collins's announcement, his position will remain vacant for a while.

Replacing Sutton as Chief Army MARS is Kathy Harrison. While not a ham radio operator, her immediate past position was Training Team Leader for the Network Enterprise Command/9th ASC G3 Training & Exercise Division. She previously served in MARS as Eastern Area Coordinator from 1995 to 2000.

In a prepared statement, Harrison said she is "hitting the ground running." She continued, "We will have many new challenges in the next year to meet our mission with directed budget cuts, but I feel our NETCOM/9TH ASC MARS staff and volunteer membership will meet those challenges."

MARS's Role Changing

Army MARS facilities have been steadily reduced over the last decade. Most recently, the MARS European Gateway Station which had provided a link with troops in Afghanistan and Iraq was closed. Previously, the three area commands (Eastern, Central, and Western) were reduced to two by merging the central area with its neighbors. Similar reorganizations have occurred in Navy MARS.

The cutbacks paralleled the replacement of MARSgram "morale and welfare traffic" by e-mail and satellite-phone connections but ignored the membership's drastically expanded mission of emergency communications backup. MARS members provided important communications during the 9/11 terrorist attacks and Hurricane Katrina. Many MARS members are wondering whether they will be able to meet their expanded role in emergency communications. *CQ* will keep an eye on this developing story.

gather, transport, and build the needed communications stations and prepare for operations by Saturday, June 24th at 1800Z .

As soon as the first club members arrive at the site, they should establish comms (HF and FM) back to the clubhouse. This link should remain active until 1800Z to assist other club members in locating the site, and to request needed equipment be brought in as required.

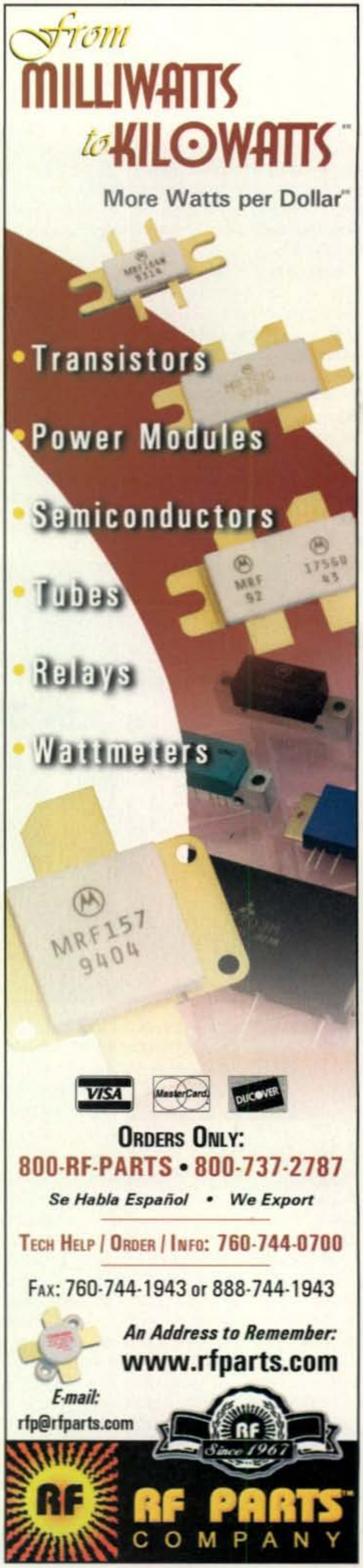
Note: Once members have left the muster area (clubhouse or home), they may NOT bring any additional RF related gear (radios, cables, connectors, antennas, or equipment required to support the stations). Any additional equipment brought in must be requested via communication back to the clubhouse, and brought with members who have not yet arrived at the deployment site.

To better simulate the longer drive times required in a real deployment, those leaving with additionally requested gear will only leave the muster area on the hour.

Step 3: Operations will commence at 1800Z on the 24th with whatever equipment is onsite and operational at that time. All stations MUST be operational by then. If the more substantial gear is not ready by then (COWS [Cell on Wheels], trailers, etc.), the station MUST be activated and operational via whatever means is available. This includes mobile stations, wire, back-packer gear, etc.

It is asked during the setup that each station team be prepared to operate mobile or via wire until their station is erected. During actual emergencies, the unexpected occurs and we must be prepared to deal with it.

Be prepared for the unexpected. There could be a late arriving COW, or possibly a missing coax, nut, washer, rotor control box, power cord, generator that won't start, beam part, antenna mast, etc. Expect something



to happen, and be prepared. Motto: A failure to plan is a plan to fail.

Note: In order to properly simulate a dispatch to a devastated area, once someone has left the clubhouse for the deploy site, NO items necessary for antennas, cables, or radios may be obtained by going back to the clubhouse or home for it. Remember you are operating in an area that is devastated and has very little, if any, infrastructure in operation.

Suggestion: Since we are going to utilize this as an Emergency Communications training exercise, it is suggested that each station be prepared and build an emergency half-wave dipole for use at their station. During this activity, be sure to have relatively new hams work on this pursuit under the guidance of a more experienced ham. In an actual emergency, you will likely operate from wire, not beams. The whole purpose of this exercise is to train and be better prepared....

Thanks to Larry Gispert, KR4X, Bill Bode, N4WEB, and Gary Sessums, KC5QCN, for supplying an exercise that for many of us will only be a drill, but for those who get deployed, a valuable experience.

Another Month....

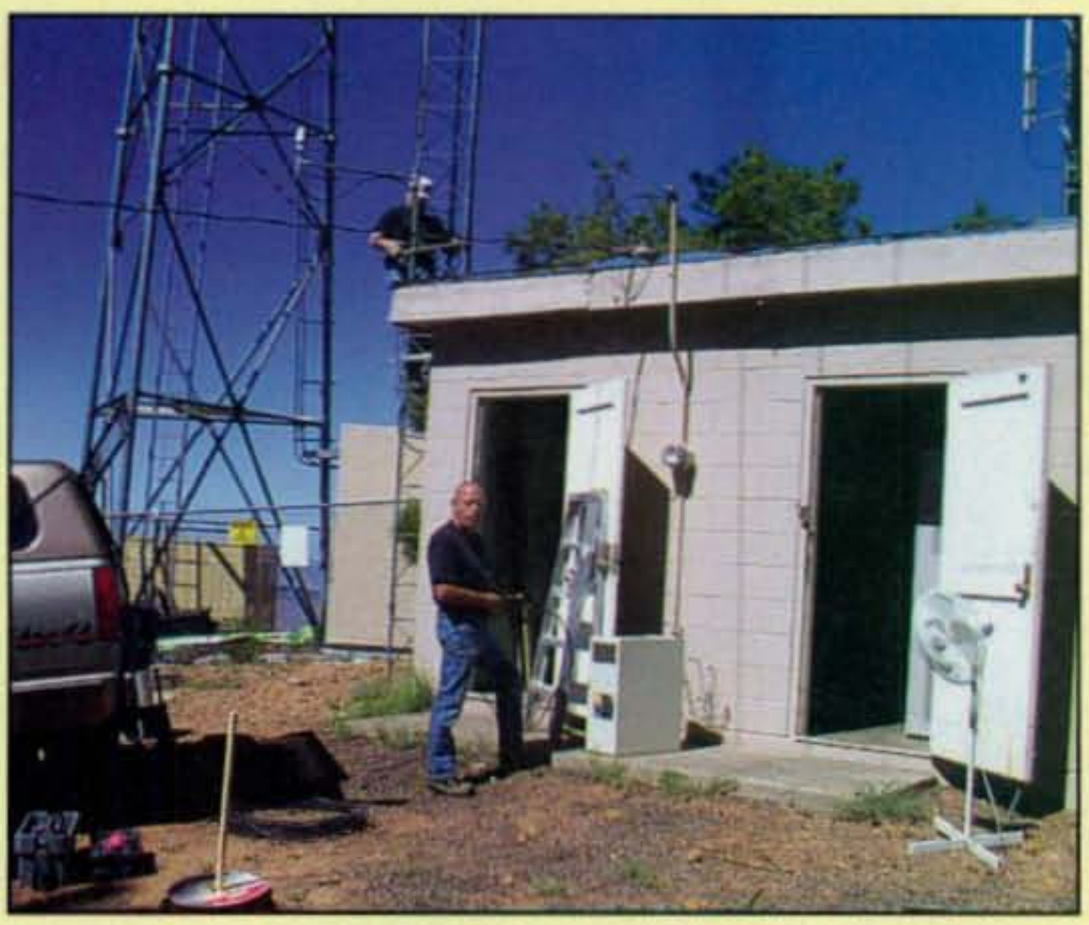
Well, the 2006 hurricane season is here. Many of us will get an opportunity to practice emergency communications on Field Day. Others will have already been deployed at least once this year to supply emergency communications.

Each month we enjoy bringing your story to the attention of others. At the same time we appreciate getting feedback indicating that the column provides information that is helpful for a particular group. This month we want to thank Charlie Christmann, K5CEC, Jay Miller, WA5WHN, and the Tampa Amateur Radio Club for their input.

If you're out on Field Day, be at a safe location and also keep safety in mind when handling radios and power sources. We're there to train for communications, not to have to request the services of paramedics. Have a great time, and remember that "Field Day is Not Enough."

I hope to meet some of you at the Rochester, NY hamfest this month, too. Until next time... 73, Bob, WA3PZO

New Mexico Hams Get Emcomm Grant



At 9600 feet above sea level, Bill Kauffman, W5YEJ (NM ARRL SEC), works on the ground while Gary Bonebrake, W5BI, is on the tower of the Pajarito Mountain Repeater, which is owned by New Mexico Sandoval County Amateur Radio Emergency Service. (Photo courtesy of Jay Miller, WA5WHN)

When New Mexico Governor Bill Richardson signed the 2006 Budget Bill into law, it contained a $500,000 allocation to design, construct, and install a state-wide emergency communication network. Although the money will be allocated to the New Mexico Department of Public Safety, the purpose is to purchase amateur radio equipment for hams to use in a disaster. All of the equipment will be state owned. Preliminary plans for the state-purchased equipment call for the installation of strategically located, interlinked VHF and UHF repeaters. Both voice and digital packet data will flow across this network from one side of the state to the other.

State Representative Tom Anderson, R-Bernalillo, who is a licensed amateur radio operator (KB5YSG,) sponsored the bill in the 2006 New Mexico legislative session. "After hurricane Katrina, we've seen first-hand just how valuable amateur radio can be in a disaster," Anderson said. "The Gulf Coast hurricanes destroyed communications infrastructure and overwhelmed government resources. It was amateur radio operators who helped to save the day by providing vital communications ... This money is an investment by New Mexico for the protection of lives, property, and public lands in the event of a catastrophe here."

The New Mexico Emergency Management Association, State Department of Homeland Security Director Tim Manning, and many of the amateur radio associations around the state worked very hard to make sure that the emergency network funding made it past the governor's desk. New Mexico is lucky in that hurricanes and tsunamis are not a threat to the state. However, the potential for disastrous wildfires, tornadoes, and flooding is ever-present. Because of the lack of moisture this winter, the forests and grasslands are extremely dry; hence, the 2006 fire season is predicted to be the worst in many years. Through the middle of March 2006, more than 100,000 acres had already been burned in a very early start to the fire season.

When major fires strike the state, hams are there alongside the emergency responders. This year, when range fires broke out near Hobbs and communications were needed, it was hams who provided that service. During the Cerro Grande Fire in 2000, more than 130 ham radio operators volunteered their time and personal equipment. Over the 14-day period they logged 2500 hours at 15 different locations, including Red Cross shelters and Emergency Operations Centers.

Profile: Rep. Tom Anderson, KB5YSG

New Mexico State Representative Tom Anderson, who has had an interest in amateur radio since age 9, holds a General Class amateur radio license. He retired to New Mexico from the U. S. Navy in 1977 after 20 years of service. Tom is a graduate of the USN Communications Officer's School, and the Navy also certified him as a "Naval Ordnance Engineer (Nuclear)." While in the Navy, Tom served a tour of duty as the Communications Officer of the *USS Bexar* (APA-237). He has been involved with the Sandoval County Amateur Radio Emergency Service for more than five years. Currently, Tom represents Bernalillo County's District 29 in the State House of Representatives.

New Mexico State Representative Tom Anderson, KB5YSG. (Courtesy of Rep. Anderson's office)

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The *Heart and Soul* of the MFJ-9982 is its roller inductor and variable capacitors.

MFJ's high power, high-Q *continuous current AirCore™* roller inductor is no ordinary roller inductor! It's edge wound from thick .06-inch *silver-plated* solid copper strap.

It can carry huge circulating RF currents and withstand tremendous heat that'll melt or burn up ordinary roller inductors.

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New *TrueActive™* circuit reads *true* peak or average power on all modes. *Cross-Needle* meter reads SWR/forward/reflected power.

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1500 Watt air-cooled non-inductive 50 Ohm resistor. 100W/10 min., 1.5kW/10 sec.

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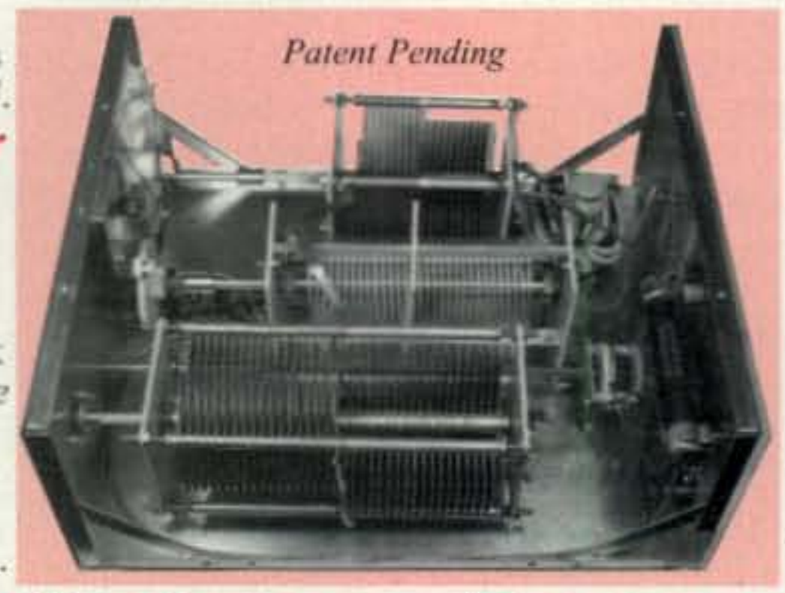
New roomy cabinet maintains high Q. Vent holes. Heavy gauge, .08 inch aluminum braced chassis. Vinyl cover, non-stripping PEM nuts, heavy 10-gauge and copper strap wiring throughout. 13¾Wx7Dx16¼D inches. 15 pounds.



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You get *superb* current balance, very wide matching range (12-2000 Ohms) and *continuous* 1.8-30 MHz coverage including all WARC bands. Handles *full* 1500 Watts SSB *and* CW.

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MFJ . . . The World Leader in Ham Radio Accessories

GAM Electronics is a name that's well-known in the marine and land mobile industries, but not to most hams. WB6NOA takes a look at using these commercial-grade antennas for field use where a high-gain vertical is needed.

CQ Reviews:

GAM Electronics TG-Series VHF Vertical Antennas

BY GORDON WEST,* WB6NOA

Emergency communicators running net control from their mobile stations well know the importance of a high-gain, omnidirectional 2-meter antenna. Local repeaters may be down and out, and the mobile net controller needs to sound like a big base station. One solution is to take popular high-gain base antennas from Diamond, Comet, and other collinear manufacturers, strap them to a pole, and get them up high. That's a good solution, but valuable time may be consumed getting the whole affair up in the air.

I recently tested the GAM Electronics TG-series of 2-meter mobile antennas, well noted for good performance and easily identified by the aluminum shunt-fed matching network at the base (see photo A). There are three models in the series:

TG-3—42 inch, 6 dBd gain

TG-3 Base—96 inch, 9 dBd gain

TG-5 Base—approximately 12 foot, 10.5 dBd gain

All three antennas are self-supporting, and each threads onto a common 1 1/4-inch pipe thread (see photo B). The antenna terminates in a standard SO-239 connector and is designed for you to run the feedline up through the pipe on which the antenna will be mounted. The little 42-inch mobile may be used in motion, but the taller 96-inch and the big 12-footer are intended for base station use, as well as *absolute* mobile at rest.

WARNING: Mounting any tall metal antenna to your mobile unit absolutely requires the ignition key be hidden by the antenna base. This makes sure you don't accidentally hop in the mobile and head off with a 12-foot metal antenna on the roof.

We tested the TG-5 on our communications van out in Quartzsite, Arizona, and it was impressive in its performance on 2 meters. The gain of the antenna is achieved by taking wasted energy radiated up and concentrating it down close to the horizon. This is how a collinear works, and works well. The 12-foot mast consists of three radiating elements, interconnected by 2 1/2-inch wave phasing sections, which are

Photo A– GAM VHF antennas are easily recognized by their distinctive shunt-fed matching network at the base.

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e-mail: <wb6noa@cq-amateur-radio.com>

Photo B– The GAM verticals screw onto a standard 1 1/4-inch pipe fitting. Run your coax up the pipe and connect it to the SO-239 connector at the antenna base before attaching the antenna to the pipe.

covered in a black sleeve. The antenna is designed for base station use with a rated wind load of 1/2 inch of ice at 75 miles per hour, and it weighs only 3 1/2 pounds. This makes the 12-foot antenna manageable on a strong mobile 1 1/4-inch pipe thread on the rear hitch.

The tall TG-5 features strong aluminum construction with a stainless-steel whip at the tip. A tuning chart accompanies the antenna, and with the supplied Allen wrench, you first set the lower 1/2-inch diameter special alloy aluminum rod, and then set the upper 3/8-inch diameter aluminum rod, and then finally tune by adjusting the stainless-steel whip. You pretune the antenna using the chart which covers frequencies 144 MHz to 160 MHz, and there is no physical cutting required, just sliding the sections to their listed length. Finally, slide everything into the shunt-fed base coil and tighten down the final section. Run your SWR checks, and you'll probably find the suggested lengths for a specific spot on the 2-meter band (or any higher frequency) will be a perfect match.

The shunt-fed base coil dissipated wind static when the desert winds were blowing, so the antenna is relatively quiet in almost any weather. However, keep in mind the DC shunt-fed coil will look shorted to an ohmmeter, so rely only on your SWR analyzer or an SWR meter for performance checks.

Another word of caution: The shunt-fed coil will look like a virtual short at any band other than VHF high band. This means don't try for a second to transmit into this antenna on 440 MHz. This is a 2-meter antenna, and 2 meters *only*! Yet the antenna is broad enough to cover all of VHF high band in case you need to transmit on an authorized frequency above 148 MHz (up to 160 MHz).

The manufacturer includes a zinc chromate grease coating on some of the elements, applied at the factory to prevent corrosion. This corrosion inhibiting grease has excellent dielectric properties, repels water, and resists the effects of salt spray and other airborne corrosives. Don't clean it off when you begin to insert the elements together.

When we operate from the van while in motion, we screw on the short, 42-inch GAM antenna. For longer range capability, we can even use the 96-inch antenna while in motion. Also, when we park and need the ultimate range, we take the keys out of the ignition and screw on the relatively lightweight 12-foot antenna for much longer range 2-meter capability. Again, though, if you screw this antenna into a pipe on the hitch, take your ignition key and hide it near the base of the antenna, making absolutely sure you don't actually drive off with this 12-foot metal antenna still up in the air.

For base station use, the GAM antennas may be side mounted to an existing mast using a pair of hose clamps.

GAM antennas are available from many marine dealers. For more information, on the web visit <http://www.gamelectronicsinc.com/tg.html>, or contact GAM Electronics at 191 Varney St., Manchester, NH 03102 (phone 603-627-1010, fax 603-622-4738). ■

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Once a mainstay of VHF/UHF weak-signal and satellite operators, the Yaesu FT-736R is often found today at bargain-basement prices on internet auction sites ... often sold as "not working" because of a failed power supply. W8DX offers tips on repairing and/or replacing the supply and bringing a "champion" transceiver back to life.

Rescue the Champion

BY HARVEY LAIDMAN,* W8DX

Photo A– The Yaesu FT-736R has long been a favorite of VHF/UHF weak-signal enthusiasts, particularly satellite operators.

The Yaesu FT-736R is a retired champion, a versatile VHF/UHF desktop jack-of-all-trades no longer in production. It comes with two meters and 440 installed, and allows you to install up to two more "band units" of your choice, for 50, 222, or 1200 MHz. It operates CW, FM (wide and narrow), and SSB. It can track satellites and may be computer controlled using the "CAT" system. It has dual VFOs and QRM-fighting features similar to HF transceivers (IF Shift and Notch). Options include a keyer, CTCSS encoder/decoder, voice synthesizer, 600-Hz CW filter, TV 736 fast-scan interface, etc.

It's big as any HF transceiver (see photo A) and runs about 25 watts on 144, 222, and 440 MHz; around 20 watts on 50 MHz; and about 25 watts on 1200 MHz.

**22918 Crespi Street, Woodland Hills, CA 91364-2807*
e-mail: <hsl@sbcglobal.net>

Biggest Problem— The Power Supply

A fair number of these are being sold on eBay. They are no longer supported by Yaesu, and the internal switching power supply often fails. When it was possible to get a replacement from Yaesu, the cost was nearly $300. FT-736Rs can also run on an external supply. You simply unplug the jumper in the rear and install the DC cable. However, the internal power supply has always been one of the radio's strong points.

A symptom of a failing power supply is the need to cycle the off-on switch several times to coax the switcher to start oscillating. In most cases, this is due to a capacitor (C9) on the power-supply board becoming inductive (see photo B). If you examine the power supply, you probably will notice that the board is charred in the vicinity of the two large resistors, R17 and R18. C9 is adjacent to these two resistors. The components are well marked on the board. In one of my radios, I replaced C9 with a 220-µF, 50-volt unit, and the problem was fixed. (Don't test the supply without a load, and be careful of voltages on the board.) My other FT-736R didn't do as well!

It's also possible that excessive heat has caused joints to become unsoldered and other components to fail, most often C12 and D6. I put the supply on the shelf to work on later. Then I started thinking: We've come a long way in switcher technology since the early '90s. This little switcher gets very hot with a 6- to 7-amp load. It's not particularly quiet, either.

Today's switchers are smaller, quieter, and more powerful. Many are made for the demanding medical field. The switching power supply I selected to replace the Yaesu supply is the V-Infinity VSBU-120-12 (photo C). It's a 12-volt, open-frame switcher rated at 10 amps, well over the 736's 6–7-amp load, and eureka! It's smaller. It has an internal EMI filter, surge, over-voltage, and overload protection. I purchased the supply from Digi-Key at a cost of around $88.

Replacing the Power Supply

Remove the retaining screws holding the Yaesu supply, and the three screws that pass through the heat sink. Wipe off the thermal grease with a paper towel. Do this first, or you'll get the stuff all over. Unsolder the AC and DC wires. When you unscrew and remove the Yaesu supply from its aluminum "sled," you will be able to drill four mounting holes in the "sled" to mount the new supply on 1/2-inch spacers. I originally used

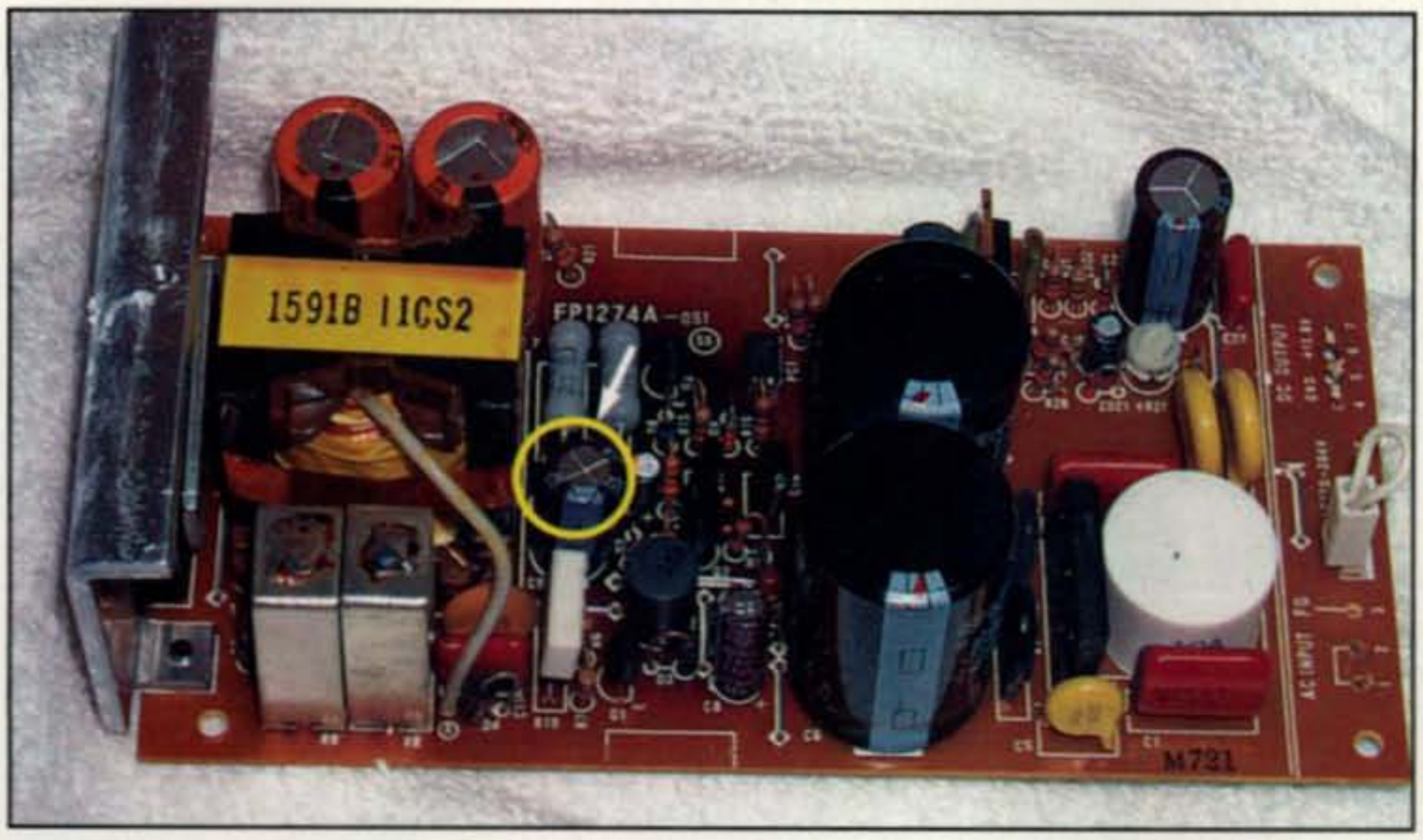

Photo B– The FP127RA stock power supply. Capacitor C9 (highlighted) often fails with age. Sometimes replacing the capacitor will bring the unit back to life. Other times you may need to replace the entire power supply, as explained in this article.

flat-head screws and countersunk the holes, but then I realized that there's some play in the way the little "tongue" fits into the chassis slot. Regular, pan-head screws should take up this slack, and the "sled" is secured with the original mounting screws (see photo D). The 10-amp supply has its own heat sink and runs quite cool at 60% of its rated power.

The two white AC wires and the DC wires connect to the supply using Molex™ connectors. Since you are purchasing an OEM unit, you'll just receive the bare supply. I suggest downloading the data sheet from the Digi-Key site.

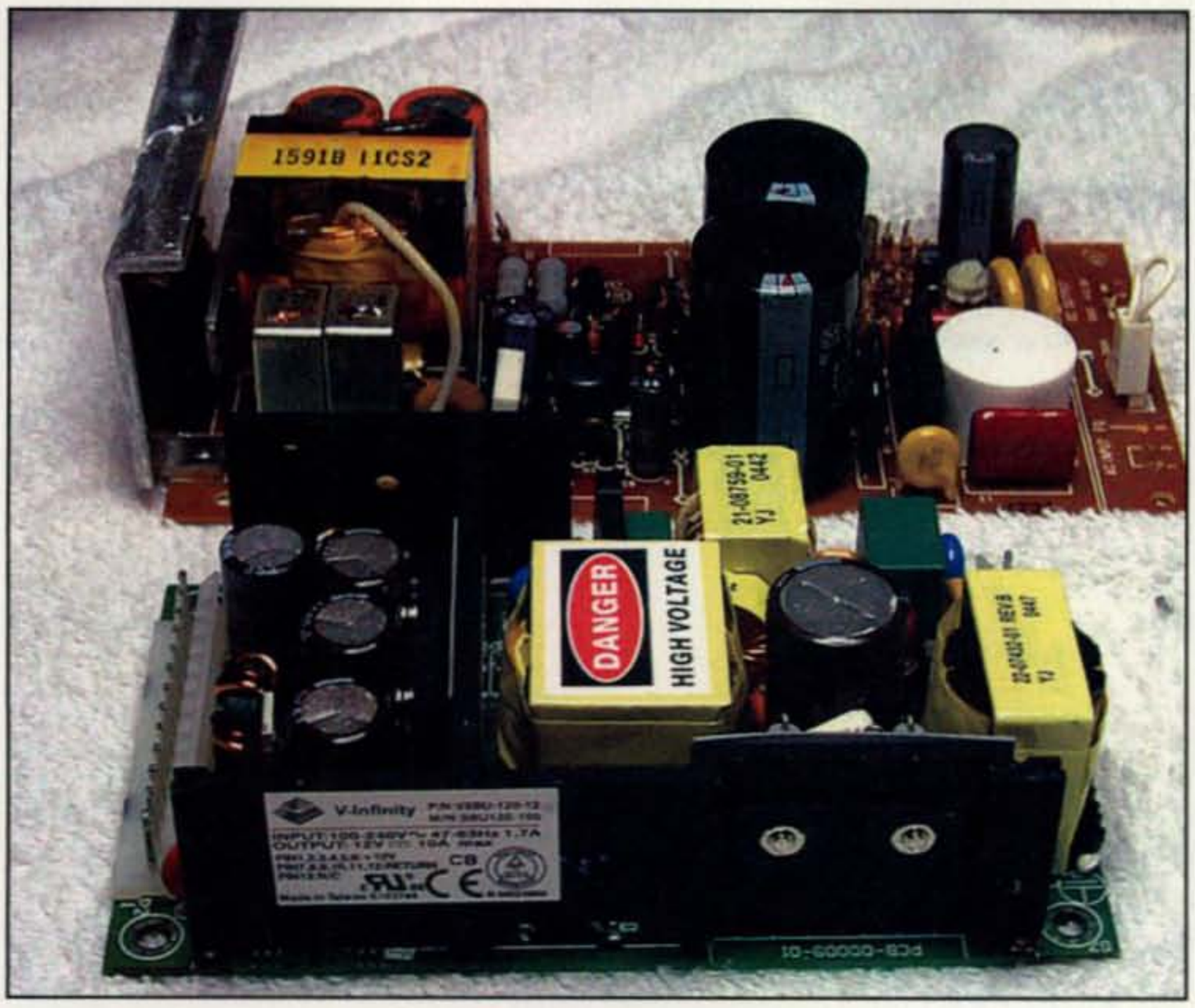

Photo C– The V-Infinity VSBU-120-12, in the foreground, was used as a smaller, quieter, and more reliable replacement for the '736's original FP127RA power supply.

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Photo D– The FT-736R with the new switching power supply (top) installed.

You'll need Molex™ housing 09-50-3051, and 2878 crimp terminals. This is a five-pin housing and you can use three of them—one for the AC side, two for the DC side. Just be careful to slip them over the proper pins! AC goes to the two outer pins of the three-pin connector. Positive DC comes from pins 1–6 and negative from 7–12 of the 13-pin connector. Pin 13 is a power-fail detect input, and unused. As you look directly at the 13-pin connector, pin 1 is on your right.

Other Fixes and Improvements

If you obtain a '736 without the FTS-8 CTCSS encoder-decoder, PIEXX Electronics makes an exact drop-in replacement, the FTS-8px, for $79. The original, Yaesu FTS-8, sold for nearly $200! The meter lights have a very short life. They are accessible by folding down the front panel and slipping them out of the rubber grommets. Replace them with T-1 14-volt lamps with insulated leads, All Electronics cat# LP-6, $1.20 for two. Behind the panel, the lights are very dim but definitely there!

My FT-736R runs all day, and I can monitor two different bands. State-of-the-art advances in switching power supplies can bring new life to a champion radio! ■

Resources

Digi–Key Corporation, on the web <http://www. digikey.com/>; phone 1-800-DIGI-KEY.

PIEXX Company, 13 Main Street, Hillsboro, NH 03244; phone 603-464-5625.

All Electronics, on the web <http:// www.allelectronics.com>; phone 1-800-826-5432.

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

ALS-600 Amp with Switching Power Supply
***New!* ALS-600S, $1428.** ALS-600 amplifier with 10 lb. ALS-600SPS switching power supply combo.

Switching Power Supply

ALS-600SPS **$629** suggested retail

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

From QST Magazine, March, 2005

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

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

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

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

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

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

ALS-500M **$849** Suggested Retail

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

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

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RCS-8V Remote Coax Switch. . . $159.95

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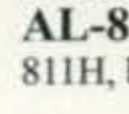
RCS-10 Remote Coax Switch. . . $169.95

Replace **8** coax with 1! SWR<1.3 to 60 MHz.**RCS-10L, $209.95** with lightning arrestors.

New! RCS-12C Fully Automatic Remote Coax Switch Controller. . . $229.95

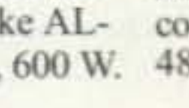
Band data from transceiver auto selects antennas. Antenna memories. No hotswitching. Rig-to-amp interface. For 3/4 BCD, 1 of 8 relay boxes. **RCS-12, $299.95**, auto controller with 8 coax relay box, to 60 MHz. **RCS-12L, $339.95**, with lightning arrestors.

AWM-30 Precision SWR Wattmeter..$149.95



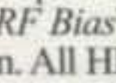
Active circuit gives *true* peak/average readings on lighted cross-needle meter.3000/ 300 Watt ranges, Remote sensor.

AWM-35 Flat Mobile SWR Wattmeter . . $159.95



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

ATP-100 Tuning Pulser . . . $59.95



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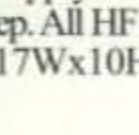

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If you're at all active on HF, you've no doubt experienced conditions in which signals fade and then come back full strength. However, if you've ever had fades so deep—especially on AM or CW—that the voice or CW tone becomes distorted, then you're experiencing a different phenomenon known as "selective fading." W6BNB explains...

Selective Fading

BY BOB SHRADER,* W6BNB

When listening to an amplitude-modulated (AM) signal from an amateur station, or from WWV, or some lower powered broadcast station that is some distance away, the signal may not only fade up and down in strength, but may sometimes distort to the point where it is almost unintelligible. The distortion may be so bad at times that speech is not understandable for several seconds and sometimes even up to a minute or so. This is known as *selective frequency fading*, or just *selective fading*.

Even if selective fading does not cause too much distortion of the received speech, it may produce a varying of the strength of the higher and lower audio frequencies (AF). This was a problem for amateurs in the early days when AM was the only radiotelephone mode and remains a problem for those who still use it. While usually unrecognized, selective fading also causes short-term fade-outs for CW and other digital modes. Two questions are: What is the cause of such selective fading and can anything be done about it?

The Ionospheric Layers

First let's consider what happens to radio-frequency (RF) signals transmitted on the medium-frequency (MF, 300–3000 kHz) and high-frequency (HF, 3–30 MHz) portions of the electromagnetic spectrum. We radiate such frequencies up into the ionosphere, the electronically active or ionized "Kennelly-Heaviside" layers of air that range from about 60 to several hundred miles above the Earth. From these layers signals can "reflect" directly back down to Earth to within a few miles of the transmitting point. They may also eventually come down after having traveled along the ionospheric layers for long distances, before "refracting" or bending back down to Earth.

Between where the reflected signals end and where refracted signals show up may be a *skip zone*, or no-signal zone. Because these Heaviside layers are always in motion, signals returning to Earth at any point will continually be varying in strength and will even drop out completely at times. Receiving stations near the edge of the skip zone may receive weak and deeply fading signals. Signals in the VHF, UHF, and SHF bands may not return to Earth at all, being either absorbed by atmospheric layers or piercing the ionosphere and being radiated into outer space.

The Heaviside layers are clouds of gas atoms, molecules, and ions billowing around high above the Earth in varying strata. The ionized layers are thinner during night hours when there is no sun energy to ionize them. At this time MF and HF signals may travel long distances before refracting back to Earth. During daylight hours the sun ionizes the layers closer to Earth, making them much denser and resulting in more immediate reflection and refraction for lower frequencies, as well as absorption of many signals traveling through them. All of this limits the range of lower frequencies during daylight hours.

During the hours near sunset and sunrise the Heaviside layers are undulating wildly as they shift between their lower and higher densities and levels. This is a time when unusual things can happen, as you will see. . .

The Bandwidth of an AM Signal

Consider the representation of a 100% amplitude-modulated 100-watt carrier by a 3-kHz sine-wave ac, shown in fig. 1. It consists of three parts:

1. A 100-watt central RF carrier signal

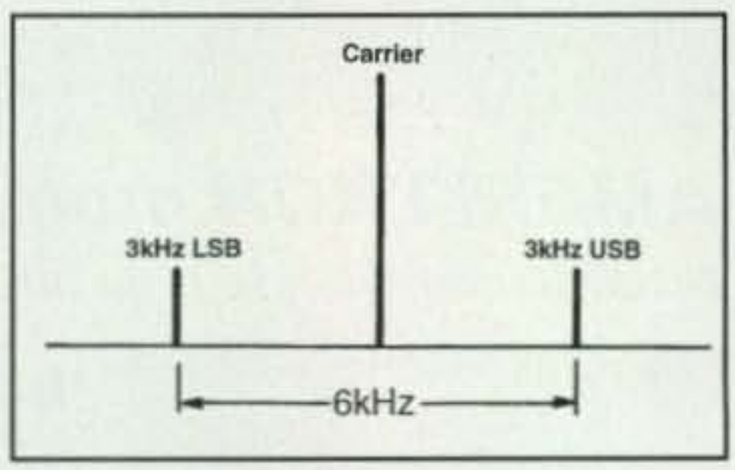

Fig. 1– A typical AM signal consists of a carrier and two sidebands, each of which extends approximately 3 kHz out from the carrier frequency for a total signal bandwidth of about 6 kHz.

2. A 25-watt lower sideband (LSB) RF signal
3. A 25-watt upper sideband (USB) RF signal . . .

for a total radiated power of 150 watts. The difference in frequency between the USB and the LSB signals is 6 kHz, so the transmission "bandwidth" of a 3-kHz broad AM signal is 6 kHz. To receive all of this emission a receiver's bandwidth must be at least 6 kHz.

AF signals developed in microphones usually range from about 200 to 3000 Hertz. When used to modulate an AM transmitter, they also produce SB signals about 3 kHz out on both sides of the carrier, again a bandwidth of about 6 kHz. A representation of the possible sidebands of a voice modulated AM carrier over a short period of time is shown in fig. 2.

At 100% voice modulation, the power output of the carrier plus both sidebands might be thought to be 150 watts, as with the single 3-kHz sine-wave frequency 100% AM above. Although a 200- to 3000-Hz voice ac may have some AF sideband peaks that produce 100% modulation, usually somewhere in the 400–1000 Hz range, most of the voice frequency sidebands will be considerably lower in amplitude. The actual aver-

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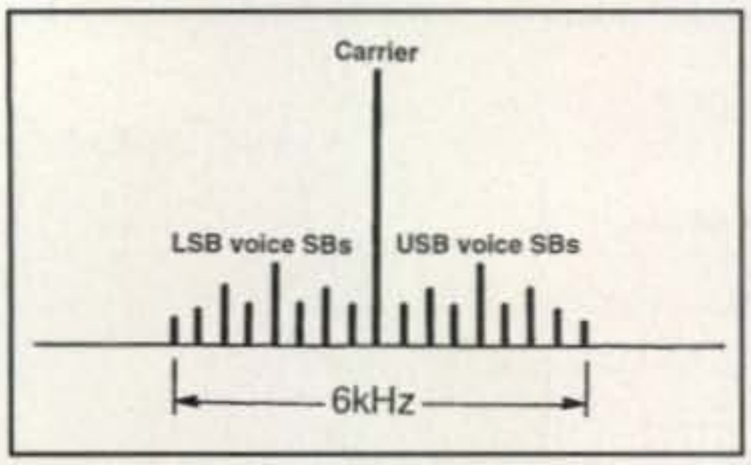

Fig. 2– Multiple signals arriving at a receiver from different directions and at slightly different times may briefly cause the carrier to be partially or completely cancelled out, resulting in deep fades in signal strength, known as "selective fading." In an AM receiver, the information in the sidebands will not be understandable if the carrier is lost.

age power output of a 100-watt, 100% peaking AM voice emission is probably only 120 to perhaps 135 watts, depending on the voice characteristics and how much carrier control is being used. None of the voice SB peaks should be over 25 watts in amplitude. Most will be in the 1- to maybe 15-watt range.

How Received Signals May Vary

Because different radio frequencies are refracted differently by the Heaviside layers, any signals coming from a remote transmitting station may arrive at a receiving antenna from slightly different directions and therefore have different distances of travel and arrival times because of the billowing of the Heaviside layers. If such multiple signals coming at slightly different times happen to arrive in phase, they will increase the received signal strength. However, if the signals arrive about 180 degrees out of phase, they will tend to cancel each other and the received signal strength will decrease, or possibly go out completely. When a signal returning to Earth from the ionosphere is moving around over the Earth's surface, somewhat like a wide beam of a flashlight, it may not only vary in strength at any receiving antenna, but sometimes may not cross the antenna at all for a period of time. Amateur radio operators recognize such fading as QSB.

Usually fading of an RF signal occurs over a rather wide band of frequencies. Near sunrise and sunset hours, though, the canceling of reflected signals often occurs over a narrower band of frequencies. This is when selective fading becomes most noticeable. If a narrow band of canceled frequencies is passing through only the upper or lower side-

TECH TALK

HF Remote operation made simple (part 2)

Continued from last month...

For the audio, we suggest the free VOIP service from www.skype.com. Skype™ is simple to install and set-up. You'll need a separate account for the host and the client (the computer you use to access the station). You will also want a headset for the client. We have used the Heil BM10 with reports of great audio.

Last – you need the host to be able to control all the functions of the station that you want to control remotely. Icom transceivers are a natural for this. Some, like the 746, 756 PRO series and the 7800 have multiple antenna outputs for built-in antenna switching. Want QRO? Add a PW-1 for a seamless 1 KW remote station with switching for 4 antennas. There are also a variety of band decoders/antenna switches available from suppliers catering to the contest operators that will automate antenna selection.

For controlling the radio itself, one of the best applications is Ham Radio Deluxe (HRD) available free of charge from Simon Brown, HB9DRV, at http://hrd.ham-radio.ch/. It not only controls all the functions available on your radio with a control screen that you configure to your liking, it also includes Internet DX cluster, support for the WinKey keyer, built-in log, and more...

Did we say more? Here's ANOTHER approach to remote operation: Ham Radio Deluxe includes a remote server function and audio interface. If you are comfortable dealing with network configurations such as port forwarding, and have a fixed IP or use an IP locator service such as available from no-ip.com or dyndns.com, this might be a better solution, especially if bandwidth is limited, as only the commands are sent back and forth instead of full screen information as with GoToMyPC®. But you WILL have to be a bit more computer savvy to get it working. See the HRD on-line manual for more information.

You will run HRD Server on your host computer, and then run HRD as a client application on your computer. HRD will also create virtual com-ports on your PC to pass to the real com-ports on the host computer data for rotor control and other applications running on the client.

The capabilities are only limited by available hardware, your imagination and available bandwidth. Have a 7800? You can use Simple-Link from ThinkLogical™ (www.thinklogical.com) to send the VGA video output over the internet.

So that's it. To read this article in it's entirety, visit www.icomamerica.com/remote.

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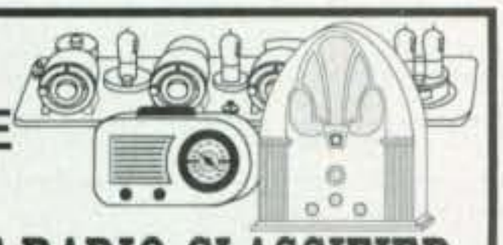

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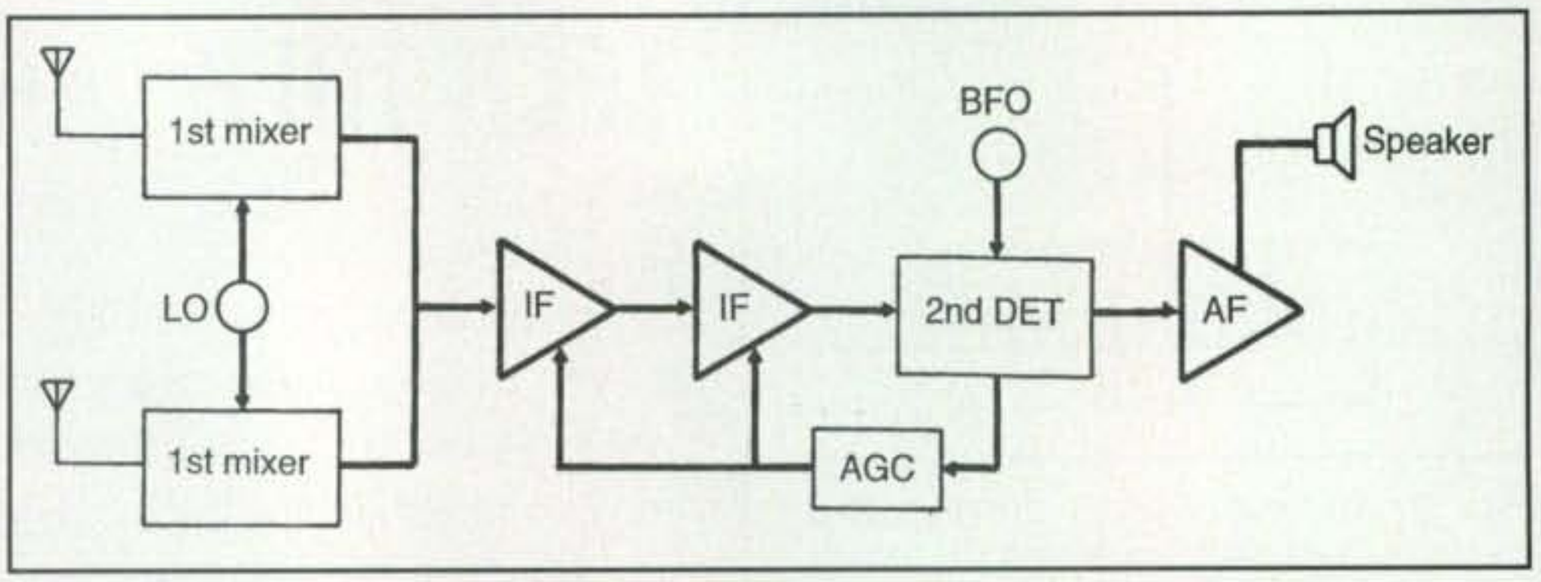

Fig. 3– One effective solution to selective fading is the use of a diversity-reception system. Its expense makes it more common in commercial applications than in amateur applications. This block diagram is of a superheterodyne diversity receiver. (See text for details.)

bands of an AM signal, it may somewhat affect the tone of the voice frequency signals. However, if it happens to cancel the carrier frequency, the receiver will be receiving only sidebands. Sidebands with no carrier in a receiver set for AM reception will sound like single-sideband (SSB) signals do—completely distorted, no intelligibility at all!

Some kind of a carrier ac signal is required to mix in a diode detector circuit of a receiver, with either an upper or a lower sideband, or both, to make such transmissions understandable. As the narrow band of canceled frequencies moves off the carrier frequency, the readability of the signal returns to more normal voice sounds. Of course, music is similarly affected. Selective fading is one reason why music always can be counted on to sound better with FM—because no constant-frequency carrier is present in FM.

Selective Fading with SSB Receivers

In fig. 2, if only the carrier were canceled, it would leave two sideband groups. At the left would be the LSB voice sidebands, then the canceled carrier (the vertical line would not exist), and at the right would be the USB voice sidebands, resulting in a double-sideband (DSB) signal. Both sideband groups contain identical voice information. If the receiver is switched to receive SSB voice signals, selective fading may weaken upper or lower voice frequencies, but readable voice signals should always be present.

Since a carrier frequency ac is needed to mix with, or beat against, received SSB signals to produce readable voice signals in an SSB superheterodyne receiver, this carrier RF ac is provided by a separate beat-frequency oscillator (BFO) circuit. It mixes with received sideband signals to provide a "sidebands-with-carrier" signal to the receiver's detector, producing an essentially AM signal for the detector to demodulate. SSB signals may be a little difficult to tune in, because the received sidebands must be tuned to almost the exact frequency where they will mix with the BFO signal to properly produce an AM carrier-with-sideband signal.

If selective fading is distorting an AM signal on an amateur-type superheterodyne receiver, the receiving mode can be switched from AM to either USB or LSB reception. When the received SSB signal is tuned to mix properly with the BFO in the receiver, the voice signals sound normal, although with only half the sideband signals they will be at half the audio signal volume. Now selective fading will no longer be such a problem, and voice signals should be readable all of the time there are sidebands being received.

This is only one reason why SSB took over almost all of the MF and HF AM communications in the amateur bands when it was introduced back in the 1950s. Another reason is that an SSB signal takes up less than half as much bandwidth as an AM signal (about 2.8 compared to 6.0 kHz), allowing at least twice as many QSOs to operate in the same amateur band at the same time. Furthermore, if an AM transmitter requires about 125 watts of carrier and sidebands power for 100% modulation, the same voice signal with an SSB emission only requires 25 watts or so of RF SSB power. These are three pretty good reasons why SSB rather than AM is used most often!

The big advantage of AM for the amateur is still the relative simplicity of building transmitters and receivers. Today, putting together an SSB transmitter from scratch is difficult not only because of its complexity, but because the nec-

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essary parts are not easily available anymore. Parts to build an AM transmitter are still possible to find and may be reasonably priced.

Listen for Selective Fading

Try tuning in a lower powered AM broadcast station about 75 miles away, or WWV on 2.5, 5, 10, 15, or 20 MHz, for ten minutes or so around noon time. If your receiver has an S-meter, see how much normal fading is going on and listen for any selective fading. (Incidentally, when an AM station is operating properly, you should see no S-meter variation when it is being voice or music modulated!) Then listen for a few minutes around sun-down and/or sun-up to see if there is any selective fading being developed and how it registers on your S-meter. It may not occur to a great degree every day. The readings should drop drastically if the received carrier frequency is being wholly or partially canceled. At the peak of a selective fade (no carrier being received) two thirds of the transmitted signal power is missing and the S-meter should drop drastically.

Selective Fading with CW

Under any receiving condition there is always a normal fairly slow up and down fading, or "QSB" on any MF or HF signals due to the never-ending fluctuation of the ionospheric layers. Whenever a selective fade crosses a CW carrier frequency, the received signal may greatly decrease or disappear completely for a short period of time. The result may be the loss of one or a few letters.

Some fading may occur on local received stations, particularly if they happen to be out near the end of the transmitting station's ground-wave range. There, when out-of-phase reflected signals combine with the now weak ground-wave signals, fading will occur. A lot of fading may not be too noticeable to the ear if the receiver has a good automatic-gain-control (AGC) circuit. With the AGC circuit is turned on, as the received signal decreases, the gain of the receiver automatically increases, holding the output level of the received signal relatively constant. Of course, if selective fading cancels the carrier, there can be no intelligibility for AM, CW, or many digital signals. When rapid deep fading is occurring, it is probable that it is being caused by selective fading.

Diversity Reception

Selective fading can be greatly reduced by using two physically separated receiving antennas coupled to two sepa-

TECH TALK

Safety in numbers?

Is it safe to assume more is better? When judging modern, IF-DSP radios, in comparison to older analog radios this is not always true.

Take a recent review of the IC-7000. Some comments were heard as to how the '7000's specifications were not as good as those of its predecessor, the IC-706MKIIG, or of some of the other manufacturers' offerings in this category. While the facts indicated that the front end of the receiver was not as agile as some expected, the power of the IF-DSP was overlooked! Granted, the receiver's Blocking Dynamic Range came in lower, but the IC-7000's DSP is able to do things never seen in a mobile HF radio.

For example, the Dual Manual Notch Filters allow the elimination of two interfering signals. Rather than mask the audio like in the AF-DSP units, the IC-7000's IF-DSP eliminates the interfering signals from the AGC. Thus, the AGC could focus on the weaker signal.

In addition to the Dual Manual Notch Filters, the IC-7000's IF-DSP incorporates the Digital IF-Filters. These filters are adjustable from 3.6kHz down to 50Hz. For you CW enthusiasts, once you go below 600Hz, the '7000's DSP inserts a Band Pass Filter whose shape factor is ideal for CW operation. This feature is found also on the IC-756PROIII and IC-7800.

As we saw with the Notch Filters, almost any interfering signal can be eliminated by making adjustments to the Digital Filters. This includes both IF-Shift as well as narrowing the Band Pass Filters with the Twin Pass Band Tuning controls.

So let's compare the IC-7000 to the IC-706MKIIG. Imagine you are trying to complete a Q with a weak signal from a rare DX location... all of a sudden a NET just started, UP 2 kHz. The signal is lost on both radios due to the 20-over signal just up the band. What are your options, ask the NET to wait so you can log the Q? Deal with the QRM and try to complete the Q? Give up?

With the IC-706MKIIG, you can switch in the 1.8kHz SSB filter and try the IF-shift. While this is a great radio, and some people would be able to complete the Q, all too often we have to log the Q as incomplete.

Now, let's take a look at the IC-7000. This rig offers extra tools to make your log book grow! The first step would be to tweak the Digital Filters to 1.6 – 1.8kHz. If there is just too much signal from the NET, tweak the IF-Filters down. Since these filters are part of the AGC, as you reduce the interfering signal, the AGC will adjust to the weaker signal. Once we have reduced the signal that is UP 2 kHz, then a simple adjustment to improve the tone quality of the weaker signal by making an adjustment to the second PBT control.

To put the finishing touches on cleaning up the incoming signal, it is time to use the IC-7000's Dual Manual Notch Filters. Place one MN Filter just above the desired signal and the other just below. Depending on the interfering signals, select either a Wide, Mid, or Narrow MN Filter setting. Then, by making minor adjustments to both MN Filters, the weaker signal will rise above the noise level.

Rather than rely just on the numbers, see why so many IC-7000 owners are saying, "My '7000 is much better than my_____!" (You fill in the blank)

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rate receiver mixer or "first detector" stages using a common local oscillator (LO) stage of a superheterodyne receiver. Fig. 3 is a simplified block diagram of such a receiver. Even if the two antennas are only separated a relatively short distance, the signals from them rarely will be going through the same fading depths at the same time. When one signal is in a deep selective fade, the signal from the other antenna may be at some other part of the fade and be producing a reasonably good signal. The two differing amplitude, but same frequency in-phase signals from the two mixers are fed to the same intermediate-frequency (IF) amplifiers as indicated. A relatively steady output signal from the receiver's second detector can result. The second detector's AGC biasing voltage may also aid in keeping the received signal at a more or less constant value by properly shifting the bias values fed to the IF amplifiers. This whole system is known as a *diversity reception* receiver.

Selective-fading distortion may not be completely eliminated by diversity reception, but the readability of voice, CW, and digital signals is greatly improved. For hams, it is probably easier just to bite the bullet when using these modes and live with slightly impaired reception. However, for commercial systems operating in the LF, MF, and HF bands, where as near as possible to 100% reception of signals is necessary, a diversity-reception system is a must!

It's interesting that our longer center-fed 160- and 80-meter dipoles or double-Zepps may actually be producing a certain amount of diversity-reception effect because of the relative distance between the centers of the two quarter- or half-wave end sections. While explained as a two-receiver system, commercial diversity-reception receiving systems often utilize three antennas feeding three first detectors to still further improve their reception.

Try listening for selective fading when operating MF and HF voice, CW, or most digital signals on the ham bands. You will find it if you know what you are listening for and when to do it. Note the variation of higher and lower audio frequencies with SSB reception at times indicating selective fading. Actually, there is some selective fading going on much of the time. Don't blame a station for having poor equipment when you are getting audio distortion caused by selective fading on received AM signals! And the loss of one or several dots and dashes when receiving CW may not always be poor keying by the sending operator!

A Non-Selective-Fading Receiver

It is possible to produce a broadcast-band receiver that will minimize selective-fading distortion almost completely. Remember, it is the loss of the carrier frequency signal that causes the distortion. If the last IF stage of a superheterodyne has a notch filter that completely cancels the carrier, the signal would be completely unreadable. If the second detector circuit is *also* fed a DSB signal from a low-power local IF AC oscillator that is exactly on the frequency that was notched out, the detector now has a non-fading carrier frequency signal to beat against and to produce undistorted AM signals. Since both sidebands are present, the signal will not be as weak as with an SSB signal. The presence of the second sideband will produice a stronger signal, especially when one sideband may be faded down. Reception would be maximized with a good AGC circuit controlling the gain of the RF and IF stages. ■

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SS-10	7	10	1⅛ x 6 x 9	3.2
SS-12	10	12	1⅝ x 6 x 9	3.4
SS-18	15	18	1⅝ x 6 x 9	3.6
SS-25	20	25	2¼ x 7 x 9¾	4.2
SS-30	25	30	3¼ x 7 x 9¾	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	2¼ x 7 x 9¾	4.2
SS-30M*	25	30	3¼ x 7 x 9¾	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 9¾	6.5
SRM-30	25	30	3½ x 19 x 9¾	7.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M	20	25	3½ x 19 x 9¾	6.5
SRM-30M	25	30	3½ x 19 x 9¾	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 9¾	10.5
SRM-30-2	25	30	3½ x 19 x 9¾	11.0

WITH SEPARATE VOLT & AMP METERS

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SRM-25M-2	20	25	3½ x 19 x 9¾	10.5
SRM-30M-2	25	30	3½ x 19 x 9¾	11.0

MODEL SS-12SM/GTX

MODEL SS-10EFJ-98

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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
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SS-18EFJ
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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

It's time for Field Day, and if you're looking for an all-purpose portable antenna to get you on 80, 40, and 20 meters, W6FZA's variation on the good 'ol dipole may be just what you need.

A Three-Band Field Day Dipole

BY ALAN MARGOT,* W6FZA

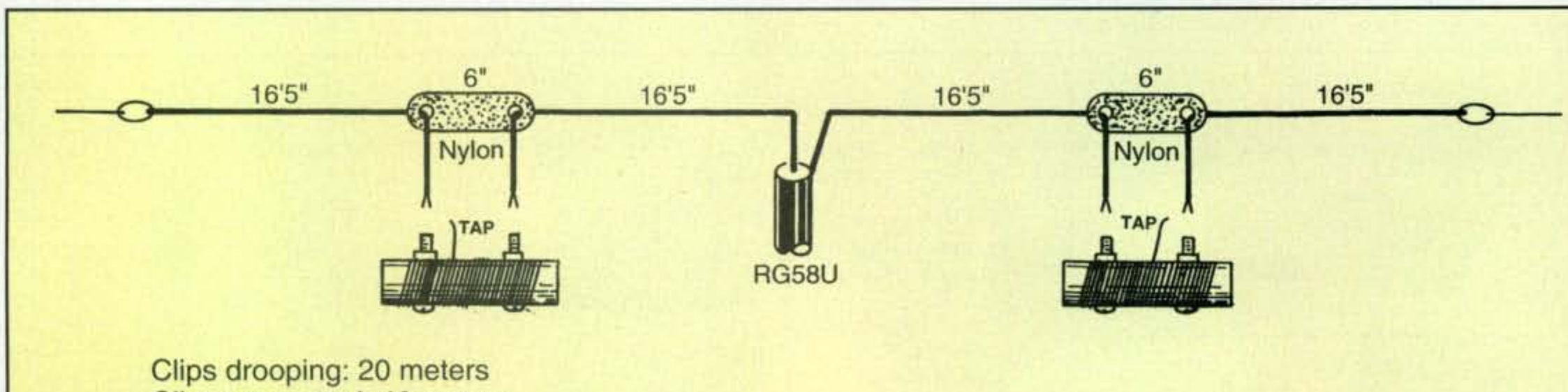
The old-fashioned dipole is hard to beat for portable and Field Day work. Just tie twine to the ends, throw them over a branch, and you're on the air! If the ends are lower, push up the middle and call it an inverted Vee. It is also a forgiving antenna, both mechanically and electrically. No tuner is necessary. Just put it up and talk!

The antenna I started with was a two-band 20/40-meter dipole that has been used for years on Field Day, and then coiled up and put away in my garage. It has been responsible for thousands of contacts. Now, however, with the sunspot cycle bottoming out, 80 meters is an important consideration for Field Day contacts.

In its original state, the antenna was a 40-meter dipole with a 6-inch break at the center of each side, secured by 6-inch nylon loops (heavy fishline could also be used). At each end of the break the wires are terminated in clips, with 1- or 2-inch clip leads. The clips can be

*P.O. Box 12106, Palm Desert, CA 92255
e-mail: <radioham1932@aol.com>

Photo A– Test setup in the author's back yard. The antenna is barely visible above the trees (look for the coil) as it climbs toward the top of the PVC mast.



Clips drooping: 20 meters
Clips connected: 40 meters
Coils clipped in: 80 meters
Outer clip to tap: 75 meters
See "Coil Data" table for tap location

Fig. 1– The set of coils that resonates on 80 meters with a tap for 75.

Photo B– The 80-meter coil as installed in the 20/40-meter dipole. (This may help you find the antenna in photo A.)

left to droop for 20 meters or be clipped together for 40. Lowering the antenna and changing the clips takes only a few minutes. Thus, I figured, why not make loading coils to put between the clips to make the antenna resonant on 75 and 80 meters?

Not So Fast . . .

The answer was not quite as easy as it appeared it would be. After spending more than 70 years making wire antennas, this old sliderule engineer estimated that a coil of around 30 µH would be about right. However, after many pleasant hours spent experimenting with coil diameter, length, and number of turns, I found that about 43 µH of inductance per coil would be necessary to bring the antenna to resonance on 80 meters, and about 31 µH for 75. Several sets of coils have been made, including one set (see fig. 1) that resonates on 80 meters with a tap for 75. For someone anticipating using both 75 and 80, the latter set could be ideal. Performance of all coils has been remarkably consistent when the following specs are observed.

The coils are wound on 4-inch-long sections of 1 1/4-inch (I.D.) thick-wall PVC pipe, which has an outer diameter of 1.7 inches. Holes were drilled at each end, about 3 1/2 inches apart, and 1-inch screws were put through to terminate the coils and provide studs for attaching the clips. RadioShack #22 insulated hookup wire was used for the coils. This wire comes in a packet of three little spools with about 25 feet per spool (RadioShack part #278-1224). This wire turns snugly at 16 turns per inch so that the 48-turn, 80-meter coils have a length of about 3.1 inches. It is important that no substitutions be made here, as a #22 wire with slightly thicker insulation would make a longer coil and a new set of parameters would be required. (Several other types of wire were tried, but this was by far the neatest and easiest to handle.)

The coils do their job beautifully on both 75 and 80 meters, although the bandwidth is a little narrower than expected, with the 2:1 SWR points about 30 kHz on either side of the resonant frequency (as shown, the resonant frequencies are 3580 kHz for 80 meters and 3900 kHz for 75). A small tuner

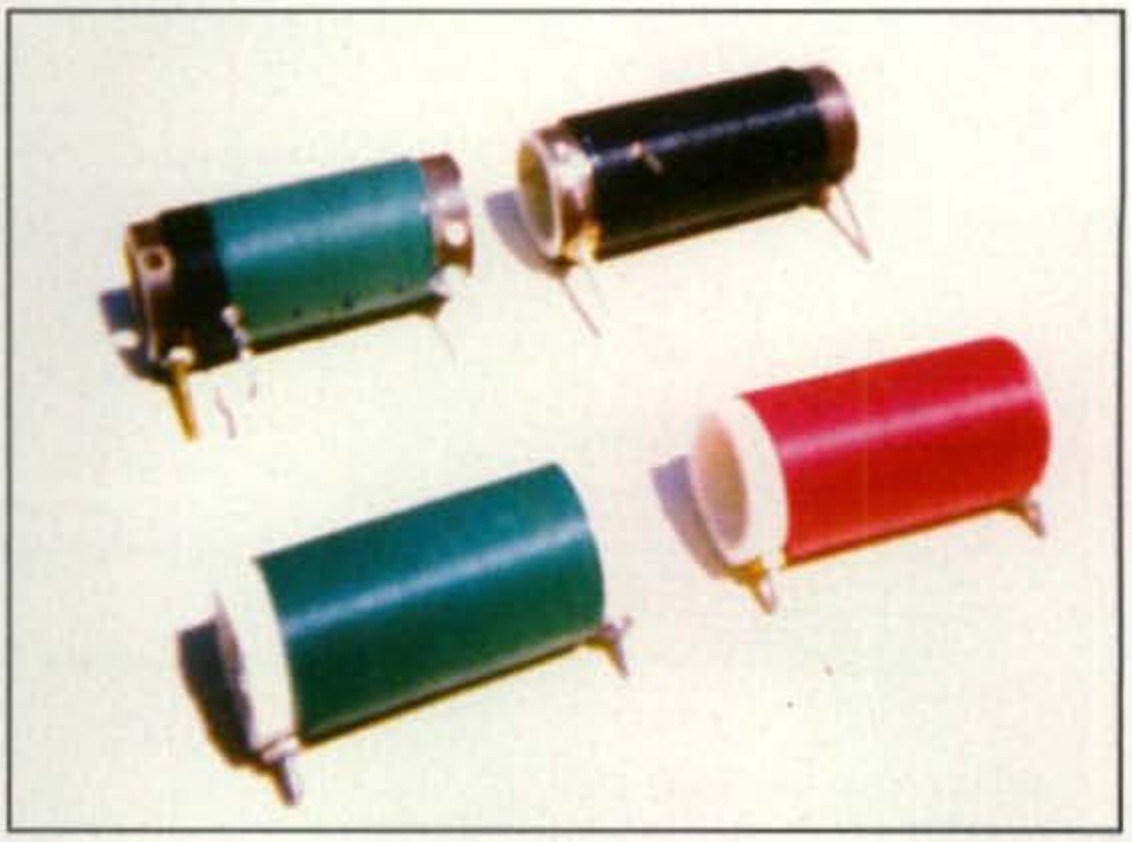


Photo C– Close-ups of the loading coils. The two in the foreground are for 80 meters only. The two in the rear are for 80 meters, with taps added for 75 meters.

Frequency	Turns	Length	Diameter
3580 kHz	48	3.1"	1.7"
3900 kHz	39	2.6"	1.7"

Wire: RadioShack #278-1224 #22 insulated hookup, 16 turns per inch

Table I– Coil data.

can easily allow the antenna to cover the entire 3.5–4-MHz band. As a side note, staggering the coil inductances did not widen the bandwidth, but did send the SWR skyward!

A Winner on the Air

The three-bander is a winner on 20 and 40 meters and a very satisfactory compromise on 75 and 80. It outperforms many 80-meter configurations in the field, because the high-current portion is up high, free and clear. At portable setups such as Field Day, many other 80-meter antennas of less than 70 feet in length often have their maximum current points in among the obstacles or even in the tuner!

Although the higher the better, as with all antenna installations, the three-bander performs well at lower installations as well. Tests showed that lowering the ends to within a foot of the ground made only small changes in SWR and frequency response. For 80 meters, this antenna would be unquestionably better if the loading coils were nearer the ends, but that is impossible here without losing the 20/40-meter combo. Occupying a temporary location in my back yard with the center up about 25 feet and the ends at 10 feet (a typical Field Day installation), the 80-meter performance was a happy surprise, with contacts up and down the coast yielding good reports.

There are also some possibilities for permanent installations for users with limited space. The three-band antenna described here requires only 64 linear feet when pulled wide, and much less when the ends are dropped vertically. Up to 10 feet at each end could be allowed to drop vertically with no effect on 20-meter operation and very little effect on 40, meaning that it's possible to squeeze this antenna into a 45-foot linear space, as long as 10-foot vertical drops are possible. ■

What You've Told Us...

Our March survey on the ARRL's "regulation by bandwidth" proposal suggests that this might be an idea whose time has not yet come. Those who responded are well-informed on the subject—77% are familiar with the discussions on replacing mode-based subbands with ones based on a signal's maximum bandwidth, and 71% are familiar with the ARRL's specific proposal to the FCC (RM-11306). Readers are pretty well split on whether the *concept* of bandwidth regulation is needed at this time, with 40% opposed, 32% favoring it and 24% undecided. There's much less indecision regarding some of the more controversial aspects of the ARRL proposal, with 60% either disagreeing or strongly disagreeing with the League's suggestion to allow SSB-sized signals on band segments currently reserved for CW and data, while 19% agree or agree strongly and 18% neither agree nor disagree. On the ARRL proposal to permit "semi-automatic" digital stations virtually anywhere in the HF ham bands, 71% oppose or strongly oppose, only 9% agree or strongly agree, and 19% neither agree nor disagree.

Among respondents to the question on how "voluntary" compliance with voluntary band plans should be, 28% feel that adherence to band plans should be a component of "good amateur practice," 21% believe bandplan compliance should be made mandatory, 20% say bandplans should be like repeater coordination—if there's interference, then the non-compliant station would have to resolve the problem; 17% believe there should be no bandplans beyond what is required by FCC rules, and 14% feel bandplan compliance should remain totally voluntary.

Regarding a separate proposal to drop all required subbands and rely exclusively on bandplans to separate different modes, 54% disagree or strongly disagree, 26% neither agree nor disagree, and 18% either agree or strongly agree. Finally, 22% said they have filed or plan to file comments with the FCC on the two proposals, 56% have not and do not, and 20% are undecided.

This month's free subscription winner is Jack Kesterson, W8PP, of Riverview, Michigan.

Reader Survey
June 2006

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 know how ham radio figures into your summer vacation plans.

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

1. Is ham radio generally a consideration in your summer vacation plans?
   - Yes....28
   - No....29

2. Do you generally take a ham rig with you on vacation?
   - Always....30
   - Sometimes....31
   - Never....32

3. If you do bring a ham rig along on vacation, do you use it?
   - Always....33
   - Sometimes....34
   - Never....35

4. What kind of rig(s) do you generally bring on vacation?
   - HF Mobile....36
   - HF Portable (for fixed operation)....37
   - HF QRP (for hiking—e.g., "HFPack")....38
   - VHF/UHF Mobile....39
   - VHF/UHF Handheld....40
   - Shortwave receiver....41
   - VHF/UHF Scanner....42
   - None....43

5. Where do you do most of your vacation operating?
   - In the car....44
   - At hotel/motel/vacation house....45
   - While hiking, boating, etc....46
   - Other....47
   - Do not operate while on vacation....48

6. What is your family's attitude toward operating while on vacation?
   - They enjoy it....49
   - They tolerate it....50
   - They don't like it....51
   - They don't let me operate....52

7. When operating on vacation, what is your primary goal?
   - Meeting local hams, getting directions, etc....53
   - Rag-chewing....54
   - DXing....55
   - Contesting....56
   - Other....57
   - None....58

8. Have you ever taken a "ham radio vacation," in which the destination and/or timing are dictated by a ham radio event or activity?
   - Yes....59
   - No....60

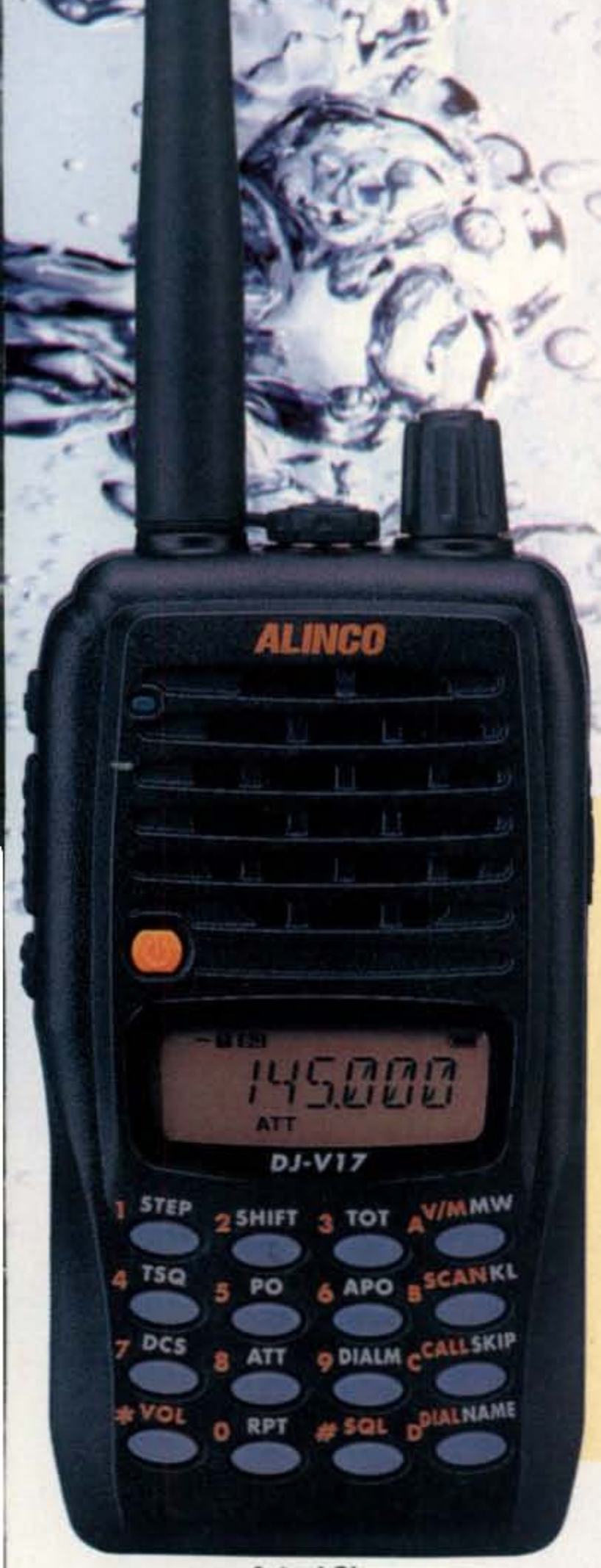
Thank you very much for your replies. We will be back next month with more questions.

New DJ-V17 makes a SPLASH

with great audio and high grade waterproof design!

Alinco is proud to introduce a new 5-watt full power 2M HT that makes a perfect companion for outdoor activities like fishing, camping or snow-sports.

The rugged polycarbonate materials are compatible to IPX7* so it's submersible 1m/3ft. for 30 minutes! And unlike water-resistant radios you may have looked at before, the DJ-V17 has a large 40mm internal speaker so its audio is clean and crisp, not muffled. You can enjoy 500mW max audio-output, new two-touch repeater access, and over 200 memories. A special battery-drain function helps avoid battery memory-effect. Other features include an ergonomic design, ultra-flexible antenna with SMA connector, 39 CTCSS settings, split function, two-level attenuator and more. Whatever your idea of outdoor fun, Alinco's DJ-V17 is ready to take on the challenges of rain, dirt and dust and come back for more.



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- Direct frequency input through illuminated keypad
- 200 Memories, plus one call channel and one repeater access parameter memory
- VFO, Memory and Scan modes
- Ultra-flexible antenna with SMA connector avoids breakage
- 39 CTCSS tone squelch (encode+decode) settings
- Tone burst function (1,000, 1450, 1750 and 2100Hz)
- Battery-drain function avoids memory-effect
- Cloning feature
- Ni-MH standard also uses optional Lithium-ion and NiMH battery packs or AA dry cell case
- SMA antenna port
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If you've ever needed to recharge a bunch of different-size batteries at the same time, MAHA may have the answer for you. Contributing Editor WB6NOA takes a look at the company's latest offering.

CQ Reviews:

MAHA Eight-Slot Multiple-Cell-Size Professional Battery Charger

BY GORDON WEST,* WB6NOA

MAHA Energy Corporation (MEC) has just introduced an eight-cell rapid battery charger/conditioner designed for rechargeable nickel metal hydride (NiMH) and nickel cadmium (NiCD) battery packs. The charger will take AAA, AA, C, and D size batteries. The AA/C/D batteries must be rated at 2000 mAh to accept the one-hour fast-charge mode, and AAA batteries must be rated at over 700 mAh for the one-hour fast-charge. If you should have batteries rated under these specifications, you can still recharge them, but you must use the slower "soft charging" mode.

The new MAHA battery-charging system has eight independent charging slots for any tube-size NiMH or NiCD battery, one battery per slot (see photo A). Although it looks as if you might load into a single slot an AAA cell, followed by an AA cell, with a C or D cell on top, you cannot! One slot, one cell only! However, you *can* mix up different size cells for each individual charging slot. You load them in going from left to right, and you don't necessarily need to load all slots to make the equipment charge.

"Always insert the batteries from left to right, leaving no empty slot in between each cell, and we recommend loading a mix of batteries with the bigger batteries starting first," indicates a MAHA technical representative.

If the unit is already plugged into the wall, you will watch the crystal-clear LCD display come to life, indicating charging action on those with a battery inserted (see photo B). The best viewing angle for this ultra crisp and clear LCD display is from 45 degrees off top to 90 degrees. In other words, the display is polarized so it is easily seen when the battery-charging system is placed on a shelf near eye level. I loaded the batteries in looking straight down at the MAHA charger, and at first I couldn't see the display other than the backlight. I realized the display was pur-

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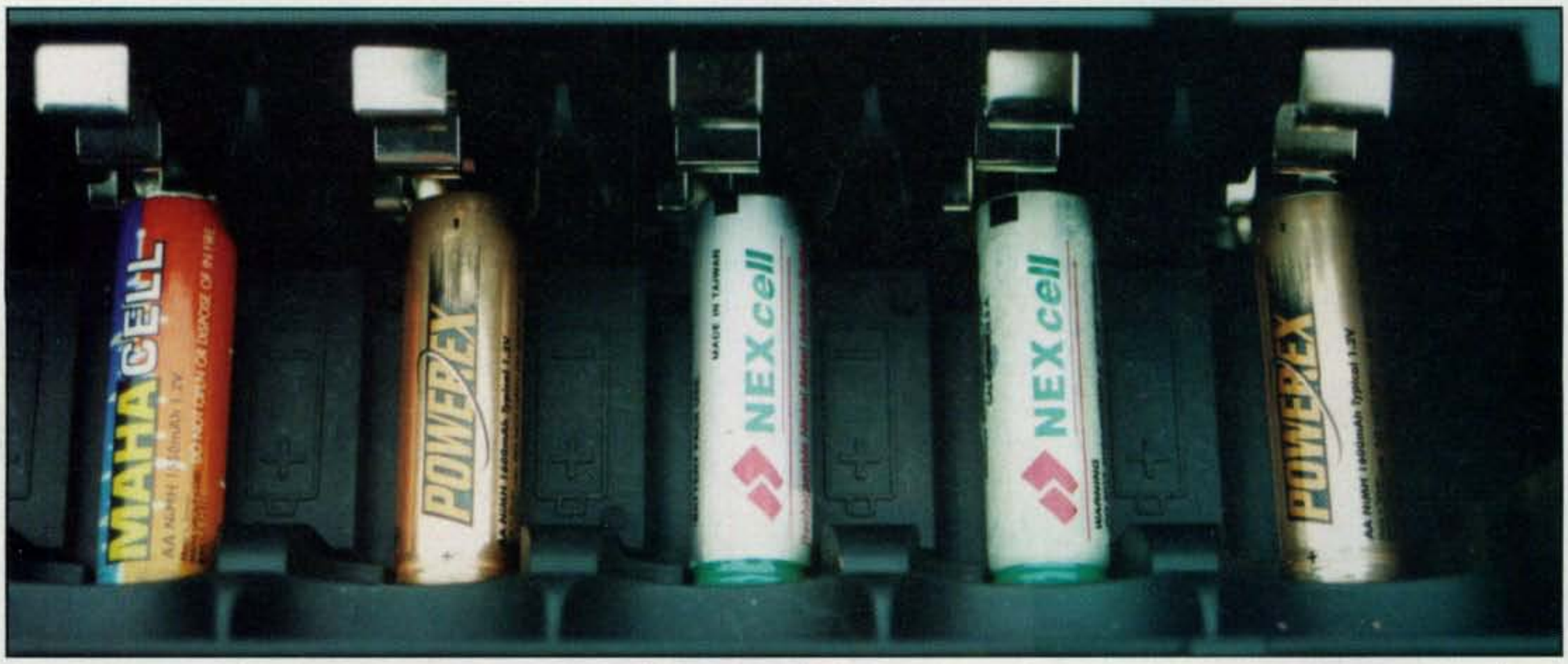

Photo A– The MAHA multi-cell-size charger will accept up to eight batteries to be charged at once. While only AA cells are seen here, the charger will also accept AAA, C, and D cells, and you may charge different sizes at the same time. See text for precautions.

Photo B– The LCD display screen on the charger indicates the status of each cell being charged. It's best viewed at about a 45-degree angle and is hard to photograph clearly. See text and fig. 1 for details on what the different indicators mean.

posely polarized to be seen at an angle, and once I understood this, everything was clear.

A flashing empty battery icon on the display indicates an aged battery needing conditioning—which this unit can do (see fig. 1). A flashing icon with level bars illustrates that the battery is accepting a charge. When the battery is noticeably warm and has received and accepted a full charge, the battery icon will fill up and indicate "charge done." If the unit detects a cell that is shorted or absolutely dead, the LCD battery icon will simply indicate "battery fault."

The "soft charging" mode eliminates the heating that you'll get from the one-hour fast charge, and experts agree that a slower charging rate is better for the longevity of your battery. You hold a soft charging button in until "soft charging" is displayed on the LCD screen.

You can also condition rechargeable batteries in the "conditioning" mode, sometimes taking up to 20 hours to electronically zap a battery back to life. Charging, discharging, and recharging icons show up on the screen for each battery in each slot. This way you can identify which rechargeable batteries are going to make the grade and which ones you will need to properly dispose of because they absolutely won't come back to life.

The MAHA battery-charging system is relatively intuitive. It knew which batteries would take a charge, which ones were toasted, and even indicated when I had inserted a battery backwards. It even rejected an alkaline battery I attempted to charge, indicating "battery fault."

If you have a mug full of rechargeable batteries, the MAHA 8 cell charger can bring them back to life in as little as 1 hour in the rapid mode or 2 hours in the soft mode. Larger C and D cells will take a little longer.

For more information, contact MAHA at <http://www.MAHAEnergy.com>. ■

CHARGE *Flashing*	**Extremely low charge.** Typically indicates abnormal or aged batteries. Conditioning is recommended.		
CHARGE *Flashing*	CHARGE *Flashing*	CHARGE *Flashing*	CHARGE *Flashing*
0-50% charge	50-80% charge	0-50% charge	50-80% charge
CHARGE DONE *Flashing*	**Battery Fault**		

Fig. 1– An excerpt from the MAHA charger manual explains the meaning of the different things you might see on the LCD status screen. See text for further explanation.

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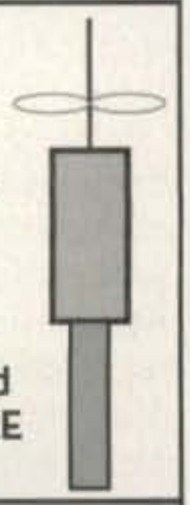

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Here's an innovative approach to putting together a multiband HF antenna that's portable, doesn't take up too much space, and can be built by combining readily available (and reasonably priced) commercial antenna components.

Build a Hustler/Hamstick Combo Antenna

BY HUGH R. PAUL,* W6POK

Over the past 15 years work assignments have forced me to live a rather itinerant lifestyle. As a result, amateur radio operations have required portability, both in equipment and antennas. Anticipating one or two new short-term assignments in Africa, it was decided that there had to be some improvement in the antenna department.

The criteria for improvement were quick assembly/disassembly, automatic multi-band switching, and ability to handle at least 500 watts. Plus, the antenna had to mount in a small area and perform well when mounted close to the ground or on a high roof top.

Having used a number of "no radial" antenna designs from each of the major manufacturers, the performance reviews were mixed. While they all have worked to one degree or another, some were so ground dependent that they seemed to barely function at all when mounted on multi-story apartment buildings. Most did have two things in common: a myriad number of components requiring extensive time to assemble/disassemble and the need for guying, even in moderate wind conditions.

The solution came as a result of perusing an older 17th edition of the *ARRL Antenna Book*. In the section dealing with verticals there is a short section entitled "Combining Vertical and Horizontal Conductors." It describes an antenna constructed of a 30-foot vertical mast insulated at the base, with a 30-foot horizontal wire extending from the other side of the insulator. This combination is basically an L-shaped dipole. Fed with 450-ohm ladder line and matched to the transceiver through an antenna tuner, it functions on all bands, 80 through 10 meters.

I had used this very antenna, with quite good results, for an extended period of time some years ago. In fact, the mount from a Hustler 4-BTV vertical was used as the base mount. The thought then struck that my Hustler 4-BTV, which had been stored in the rafters of the garage for a number of years, might be suitable for duplicating a four-band version of the L-shaped dipole. Instead of a horizontal wire, four 1/4-wave mobile antennas, each one resonant on a different band, could be used.

The 4-BTV is a rugged design that has been around for at least 30 years (see photo A). Having owned three of them, none of which was ever guyed, they are capable of surviving wind gusts in excess of 60 mph. A pair of them can also make an excellent multi-band rotating dipole when hooked up to a simple mount fabricated from aluminum channel.

Both Hustler and Lakeview Hamstick 1/4-wave mobile antennas have proven to be good performers. However, the Hamsticks—with their slim, less bulky, and lighter weight design—result in a lower wind-load factor. Rated at 600 watts PEP, they are also easy to tune and are quite broadbanded, not to mention reasonable in cost.

Photo A– The Hustler/Hamstick Combo antenna mounted on a test pole in the author's yard. The horizontal elements are difficult to see, but they're there.

Putting the Pieces Together

For this arrangement to function as a dipole, it is necessary to RF isolate the Hustler mount from the supporting structure. The solution for providing RF isolation is to be found at the local hardware store. Obtain a section of a 1 1/4-inch inner-diameter semi-rigid PVC, used for buried water lines. Available under a variety of brand names, it is black in color and comes in large rolls from which the store will cut any length desired. It can be straightened by applying heat, but in the length required for this task that is not required. A 20-inch length can easily be force fit over a 1 1/4-inch outer-diameter steel mast (see photo B).

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e-mail: <Radiow6pok@cs.com>

Photo B– A closer look at the base of the antenna clearly shows the Hamstick whips—each tuned for a different band —used as horizontal elements. Note the PVC tubing over the top of the mast to electrically isolate the antenna from the mast.

To accommodate two of the Hamstick antennas, it was merely a matter of enlarging the two 1/4-inch holes near the base of the Hustler mount, normally used for attaching the usual wire radials, to 3/8 inch in size. The Hamsticks were then inserted, one on each side, and secured with 3/8" × 24 nuts. Depending on the thickness of the material, it may be necessary to compress the PVC a bit with a pair of Channel Lock pliers prior to inserting and securing the Hamsticks. An alternative is to cut a notch in the PVC to provide the necessary clearance.

To mount the remaining two Hamsticks, a bracket was fabricated utilizing 1/16" × 1" aluminum bar stock that had been cut to 5.5 inches in length. This material is readily available in the "do it yourself" section of most chain hardware stores. Two 1/4-inch holes were drilled in the middle of the bar stock to accommodate a standard TV antenna U-bolt and bracket assembly. A 3/8-inch hole was then drilled at each end of the bar stock to accommodate the Hamsticks. The entire assembly was attached to the mast and positioned about two inches below the base of the antenna mount. The clamp was rotated to position the Hamsticks at right angles to the two attached at the base of the mount, as shown in photo B. A short jumper will be required to connect the lower Hamstick mounting bracket to the Hustler mounting bracket, thus forming a common feed point. A length of braided copper shield from RG-8U, with an eyelet-type cable connector soldered at each end, makes a good low-loss connection (see photo C).

Tuning and Testing

Hustler provides a dimension chart for each section of the antenna, with variations depending on whether the antenna is to be ground-, tower- or roof-mounted. However, years of experience with this model Hustler in a ground-plane configuration have shown that due to the Q factor of the traps, the dimensions when mounting the antenna above ground are not that critical. I chose to use the dimensions for tower mounting as a compromise. For initial test and evaluation purposes, the antenna was mounted on a 10-foot section of steel mast 1 1/4 inches in diameter, strapped to a wood post in the back yard.

The Hamsticks were then adjusted to achieve resonance in the middle of each band as determined by an SWR bridge. The SWR at resonance and the 2:1 bandwidth values were as follows:

Band	Min. SWR	2:1 Bandwidth
40m	1.15:1	85 kHz
20m	1.25:1	195 kHz
15m	1.0:1	402 kHz
10m	1.05:1	800 kHz

A slight adjustment in the length of the telescoping section below the 20-meter trap reduced the SWR at resonance to 1.15:1 on 20 meters and 1.10:1 on 40 meters.

In a ground plane, the angle of the radials determines the feed point impedance. A temporary bracket was constructed to place the Hamsticks at an angle of 135 degrees below the vertical, as opposed to the original 90 degrees. There was absolutely no shift in the resonance points of the antenna or in the 2:1 bandwidth points. This indicates there was no change in feed point impedance; thus, the antenna is functioning as a basic vertical dipole, even though only one half of the dipole is vertical.

An antenna tuner serves to provide full band operation on 20 meters, where SWR without the tuner never exceeded 3:1, an acceptable figure given the relatively short 50-foot run of RG8/U. On 40 meters, the 3:1 bandwidth is 140 kHz, which still demands that one make a choice with regard to SSB or CW operation if reasonable feed-line losses are to be maintained.

Performance comparisons were made with a horizontal dipole cut for 40 meters, fed with 450-ohm ladder line, and used on all bands, 40 through 10 meters. It is mounted broadside to Europe at a height of 30 feet, nearly a half wave on 20 meters. Since both antennas were connected through an antenna tuner, it was easy to switch between the dipole utilizing the tuner and the direct feed to the Hustler via the bypass switch position. Numerous A/B tests were run, with the majority being on 20 meters. On 40 meters the horizontal dipole was better on both transmit and receive out to a distance of several hundred miles. Beyond that the Hustler was often better by one or more S units. In one instance, working Australia, my signal could not be heard on the horizontal dipole, but readily was on the Hustler vertical dipole.

On 20 meters tests were run primarily with western European stations. Again the signal reports received while on the vertical dipole averaged about one to two S units better than the horizontal dipole. Working eastern European and Middle East stations, the difference was even more noticeable, with the vertical often providing as much as two to three S units improvement.

Initially, the 15- and 10-meter bands were virtually dead at my available operating times. In subsequent weeks a number of openings on these bands did occur and some performance evaluations were possible. Again, signal reports received from European, African and Middle East stations favored the vertical dipole. However, at times the horizontal dipole yielded a one to two S-unit improvement on receive versus the vertical dipole.

As a test, the vertical was elevated above my garage roof for a feed-point height of about 25 feet, which required some retuning of the Hamsticks. On 40 meters reports from stations out to about 500 miles more closely approximated the horizontal dipole.

To determine whether the antenna exhibited directional characteristics, it was necessary to rely on a less-than-scientific approach. With a bit of assis-

tance, the antenna was rotated through 360 degrees while in contact with a number of cooperative stations in the U.S. and Europe. Signal reports consistently indicated that the direction in which the Hamstick pertinent to the band in use was pointed made no difference, so for all intents and purposes the antenna is omnidirectional.

Bridging Theory and Reality

This article does not present any new design theory, but it does describe a unique alternative to the need of many amateurs for a reasonably priced multiband antenna that lends itself to portability and/or limited-space installation. There are, however, several factors one should be aware of when evaluating the performance of this antenna versus a standard half-wave dipole.

Antenna theory, supported by computer-modeling programs, indicates that over "average" ground, vertical antennas suffer greater ground-return losses and far-field losses than do horizontal antennas. The former can be mitigated by increasing the elevation above ground. The latter is dependent on the conductivity and dielectric constant (capacitive effect of the earth) well beyond the antenna site. In practical terms, to mitigate the latter one might consider moving to another area. Ground conductivity in my part of Michigan is very poor at about 2 ms/m. The dielectric constant is between 5 and 10, also quite low, together well below what would be considered "average" ground.

What these modeling programs do not consider is the height and ionization level of the *F*-layer, that portion of the ionosphere that varies from hour to hour, day to day, and season to season. This is the layer by which most of our higher HF signals propagate. Couple that with the differences in height above ground of the two antennas, plus various near-field obstacles distorting radiation patterns, and the performance comparisons cannot be considered definitive.

For the majority of tests, the vertical dipole was mounted on the 10-foot section of steel mast noted earlier. It was felt that this would most likely represent the typical installation in a portable operation. All of the data presented earlier, with regard to resonance and bandwidth on each band, were compiled during a period of relative drought. Subsequent to gathering the data, we were blessed with a heavy and extended rainstorm. Due to past experiences with other low-mounted antennas, it was decided to run the SWR and bandwidth tests again, both during the heavy rain and shortly after, with the ground heavily saturated.

The results obtained during heavy rain showed there was a shift downward in the resonant frequencies for each band. There was little change in SWR at the new resonant frequencies and little change in the 2:1 bandwidth. This resonant-frequency shift was most pronounced on 15 meters, with a shift of 171 kHz. Next was 10 meters with a shift of 150 kHz, followed by 20 meters with a shift of 84 kHz and 40 meters with a 26-kHz shift. Within two hours of the rain ceasing, but with the ground still well-saturated, the measurements were repeated. There was indication of the resonant frequencies starting to shift back upward; however, it was nearly two days before the antenna resonated at its original frequencies on 15 and 10 meters.

This supports conventional antenna theory for a dipole, either of the horizontal or vertical variety, at less than optimum heights. While the amount of shift in resonant frequency on 15 meters and 10 meters is excessive compared to the other bands, I would theorize that this is

Photo C– The antenna base, showing feedline connection and other details.

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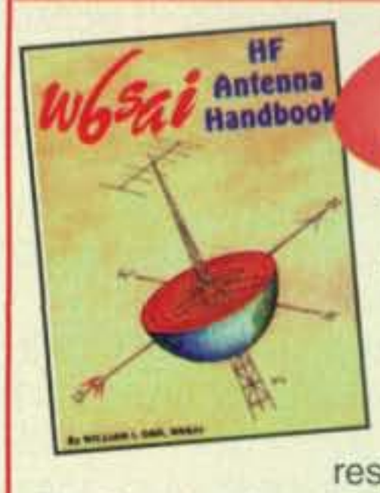

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due to the feed-point height above ground being closer to a quarter wavelength on these two bands. Lending support to this theory was an upward shift in the resonance point on these bands when the antenna base was raised to 15 feet. Heavy rain saturation of the ground, in effect, temporarily increased the ground conductivity, resulting in increased ground reflection. This in turn impacted on the resistance component of the feed-point impedance.

Your Mileage May Vary

Depending on your location, you may experience somewhat different results in tuning the antenna. One could use an antenna analyzer to optimize the Hustler dimensions on each band, prior to attaching the Hamstick components, but the Q factor of the Hustler traps is such that in most cases dimensions are not that critical. Instead, depend on adjustment of the Hamstick components to achieve resonance at the desired operating frequency for each band. Then if the SWR is too high at the resonant frequency, adjust the appropriate section on the Hustler, as per the factory instructions.

Since the mount for the Hustler antenna is factory assembled, there are only eight additional components required for its assembly. The six-element spider, which provides some top loading, utilizes six bolts. Screw-type hose clamps secure the balance of components. The antenna does not require complete disassembly for packing. To facilitate re-assembly, sequentially number each section or component with a felt marker. Similarly, mark the telescoping components where they join. With careful packing, the use of two 72" × 6" PVC tubes will allow enough room to include two 5-foot mast sections and 50 feet of RG-8X coax.

New-Tronics Antenna Corporation (see "Resources") manufactures five- and six-band versions of this antenna. Probably this same approach could be used on those models as well. Since it would not be possible to mount more than four Hamsticks at 90-degree angles to one another, tests were made using reduced separation angles. There clearly was *interaction* among them; however, it was possible to retune them to compensate for the reduced separation angles, with no change in overall performance being discerned.

Am I pleased with the performance of this antenna? Very much so! In six weeks of testing and casual operating with 100 watts of power, I worked 45 countries on all continents, including Antarctica, with the majority being on 20 meters. It is a simple solution to my requirement for a small-footprint, easily portable antenna that delivers performance equal to the best of the "no radial" verticals I have used. It is certainly superior to some more expensive verticals that have demonstrated high ground dependence. The higher this antenna is mounted, the better it should perform. ■

Resources

For more information on Hustler and Hamstick antennas, respectively, contact:

New-Tronics Antenna Corporation, Mineral Wells, TX; phone: 877-994-9499; web: <http://www.new-tronics.com>.

Lakeview Company, Inc., Anderson, SC; phone: 864-226-6990; web: <http://www.hamstick.com>. Lakeview also offers a similar antenna in prepackaged form.

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Math's notes

BY IRWIN MATH,* WA2NDM

Modification of the Kenwood SM-220 Panoramic Adapter Module

Although we usually try to keep this column as general as possible, this month I would like to make an exception, so please bear with me. From time to time, we have tried to introduce you to the many bargains available on the used equipment market, and this month is sort of a continuation of that.

There is a unique piece of equipment available on the various used amateur radio equipment markets that should be of interest to many of us who are on a limited budget. I recently acquired one, thus the reason for this column. It is the Kenwood SM-220 station monitor. The SM-220 is a combination of a 10-MHz single-channel oscilloscope, a two-tone audio source (for SSB testing), and an elementary panoramic adapter (called a "Bandscope" by Kenwood). The panoramic adapter allows you to see what signals are present 20 kHz or 100 kHz on either side of your operating frequency. The SM-220 is completely solid-state (other than the CRT) and usually goes for around $175 or so. The panoramic adapter is a self-contained "module" that sometimes comes with the unit and at other times is available separately for another $50 to $100. While the use of the unit for SSB testing and oscilloscope applications is covered at length by publications such as *The Radio Amateur's Handbook*, the panoramic adapter is worth additional mention.

Although originally designed for use with the Kenwood line of transceivers, the unit can be easily modified for use with almost any IF you prefer, from a couple of MHz up to and including 10.7 MHz. There are two "standard" versions of panoramic-adapter modules that were manufactured by Kenwood, and both were sold as separate items that were to be installed by the user as needed. One was the BS-5, designed for an IF of 3.395 MHz, and the other, the BS-8, designed for an IF of 8.830 MHz, the most common Kenwood IF frequencies of the time. Both usually can be obtained from the same swapfest sources, and the modifications that follow can be done with either, so get the best buy you can and if at all possible be sure to get an instruction manual as well!

Fig. 1 is a block diagram of the panoramic-adapter module. As can be seen, it consists of a logarithmic amplifier and two oscillators. One is a fixed-frequency crystal oscillator used as a marker, and the other is a variable-frequency voltage-controlled oscillator (VCO) used as a sweep generator. The fixed crystal oscillator operates at the chosen IF frequency and is lightly coupled to the input by means of a 1-pF capacitor. Its output, when turned on, appears as a narrow "spike" and is used to center the display on the screen of the oscilloscope section. The variable oscillator then sweeps either ±20 kHz or ±100 kHz on either side of the IF frequency. It is then mixed with the incoming signal to produce a sum and difference signal. The result is then displayed on the oscilloscope portion of the unit. In operation, the user first turns on the marker (crystal oscillator) and adjusts the scope's horizontal centering control so that the display is centered. Then the marker is turned off and the received signals observed. The logarithmic amplifier allows small signals as well as strong signals to be seen without constant adjustment of the vertical gain of the scope.

Converting the unit for any desired IF frequency from 2 MHz to 11 MHz is pretty straightforward. First you need to obtain a crystal for the IF fre-

*c/o CQ magazine

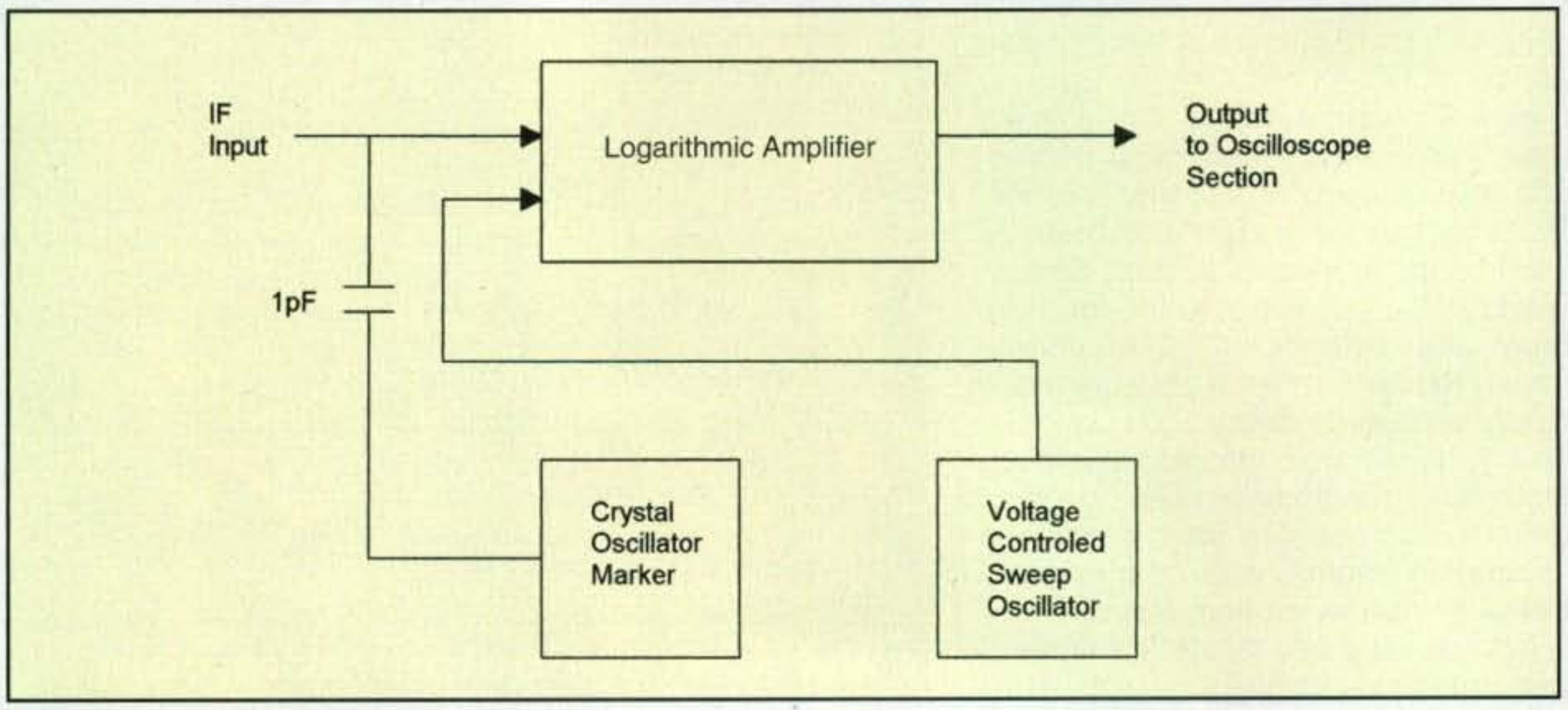

Fig. 1– Block diagram of BS-5 or BS-8 module.

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quency to be used. This can either be a unit with 0.5-inch pin spacing or a miniature version with 0.192-inch spacing, since the circuit board is drilled to accommodate either size. Unsolder the old crystal, clear the holes in the circuit board, and then carefully solder in the new one. The rest of the oscillator components should work up to at least 10.7 MHz, so replacing the crystal is all that is usually needed.

Next the VCO has to be modified. This is a bit more complicated, but fortunately the circuit board is clearly silk-screened with component designations so locating parts is fairly easy. As shipped, the BS-5 (3.395 MHz) pan-adapter module uses a 20-µH inductor in the VCO oscillator tuned circuit, while the BS-8 (8.830 MHz) uses a value of 4.7 µH. If your IF range will be in the vicinity of 4 MHz, use 20 µH. If you are in the 9-MHz area, use 4.7 µH. The inductor is labeled L204 on the circuit board and should be changed to a good-quality leaded inductor intended for RF operation if necessary. Next change C231 through C237 as needed per Table I. Be sure to use good-quality ceramic capacitors, as these will affect the overall stability.

Once the changes have been made, it is time to align the unit. For this step it would help to have a copy of the SM-220 operating manual. If you cannot beg or borrow one, there are a couple of internet sites that will let you download a copy. Simply search for "SM-220 user manual." You will also need a signal generator that will cover the desired IF range, as well as a frequency counter. Now connect the cables, but do not physically mount the unit yet.

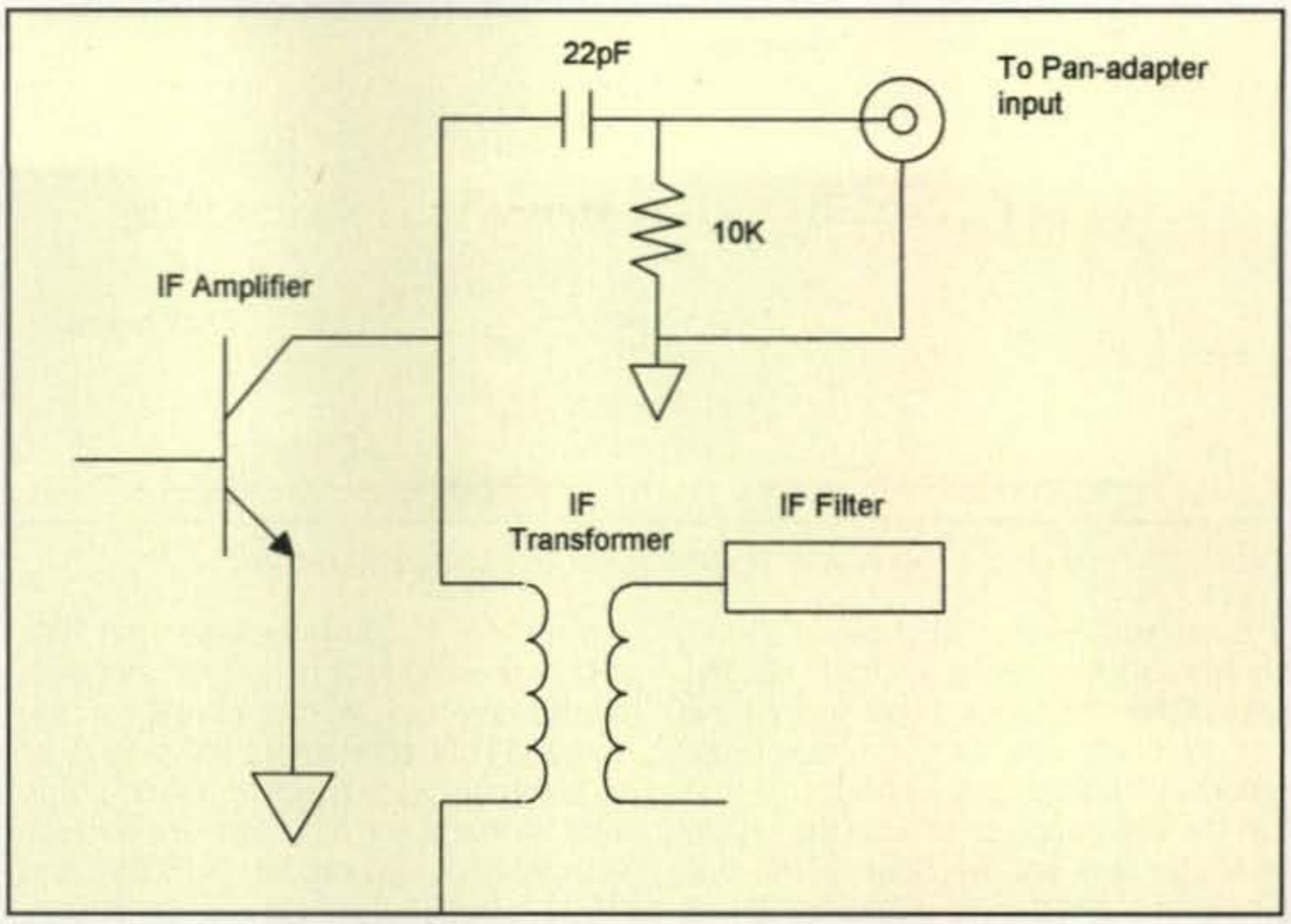

Fig. 2– Typical IF take-off point for pan-adapter signal.

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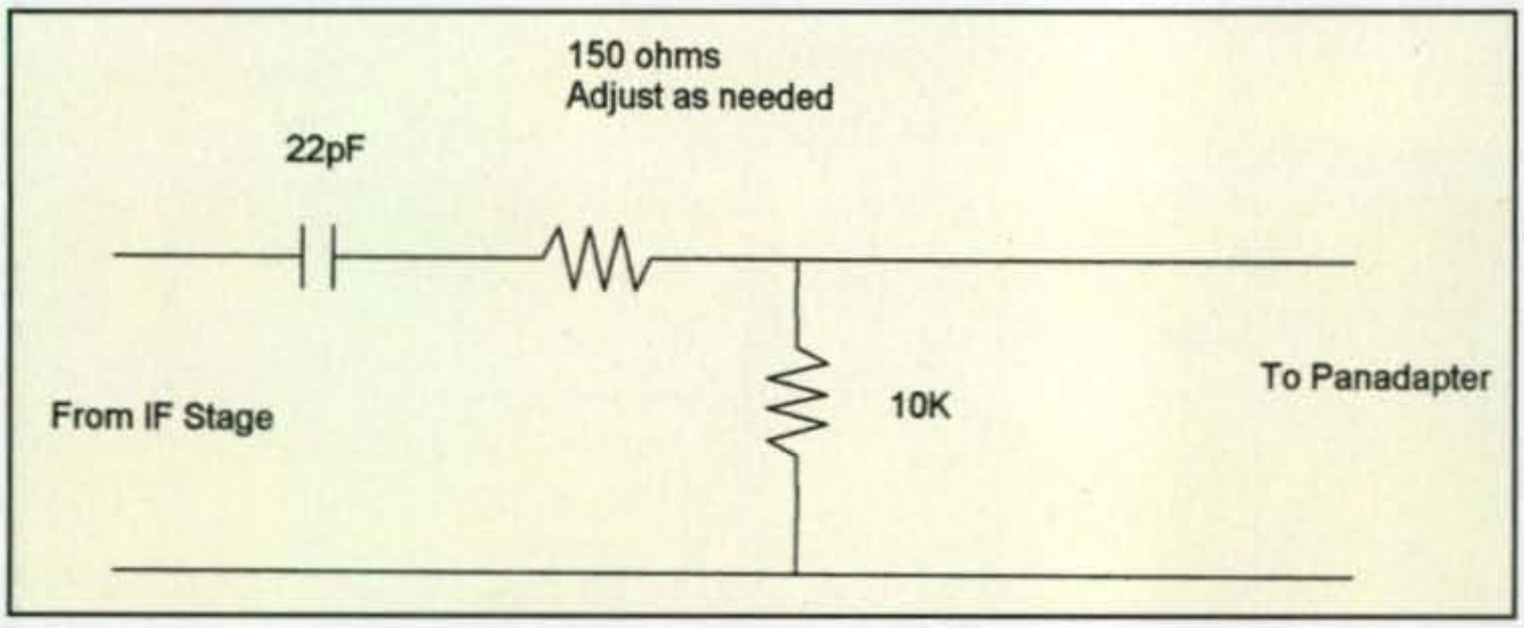

Fig. 3– The simple IF attenuator discussed in the text.

Capacitor	IF Freq.	Capacitance
C231	~4 MHz	.001 µF (1000 pF)
C232	~4 MHz	.01 µF
C233	~4 MHz	not used
C234	~4 MHz	100 pF
C235	~4MHz	not used
C236	~4 MHz	47 pF
C237	~4 MHz	680 pF
C231	~9 MHz	68 pF
C232	~9 MHz	.001 µF (1000 pF)
C233	~9 MHz	33 pF
C234	~9 MHz	22 pF
C235	~9MHz	not used
C236	~9 MHz	22 pF
C237	~9 MHz	100 pF

Table I– VCO modification capacitor values.

V Gain and horizontal position ("< >") controls to the center of their ranges. Adjust the horizontal trace so that it is on the lowest line of the scope bezel graticule and roughly centered. Press the Marker switch to turn on the crystal oscillator and set the Scan Width button to the ±100-kHz position. Slowly adjust VR202 until the marker signal "spike" moves to the center of the screen. If you cannot find the trace, slowly adjust both VR202 and TC201 until you do. Be sure to adjust each control slowly. The trace should be at least one box or more in amplitude. Now set the Scan Width button to the ±20-kHz position. Adjust VR201 so that the resulting trace is also at the center of the screen. Alternate between the ±20-kHz and ±100-kHz positions until both traces overlap at the center of the screen. This adjustment will take a lot of patience, so expect to spend some time at this point. You can use a metal screwdriver to adjust VR201 and VR202, but you should use an insulated tuning tool to adjust TC201. In an extreme case, you may have to change the value of C231 or C233 one value higher or lower, but don't attempt this unless all else fails.

Now turn off the Marker switch and using the frequency counter, set the signal generator as close as you can to the IF frequency to be used. Position a short lead from the signal generator near the IF input connector of the pan-adapter. The trace from the signal generator should be apparent and in the same place that the marker signal was. If you now vary the frequency of the signal generator to correspond to the Scan Width range selected, you can determine the calibration of the unit. For example, if you are in the ±20-kHz position, move the signal generator 20 kHz higher in frequency and note the position of the trace. Then move the generator 20 kHz lower in frequency and again note the position of the trace. You

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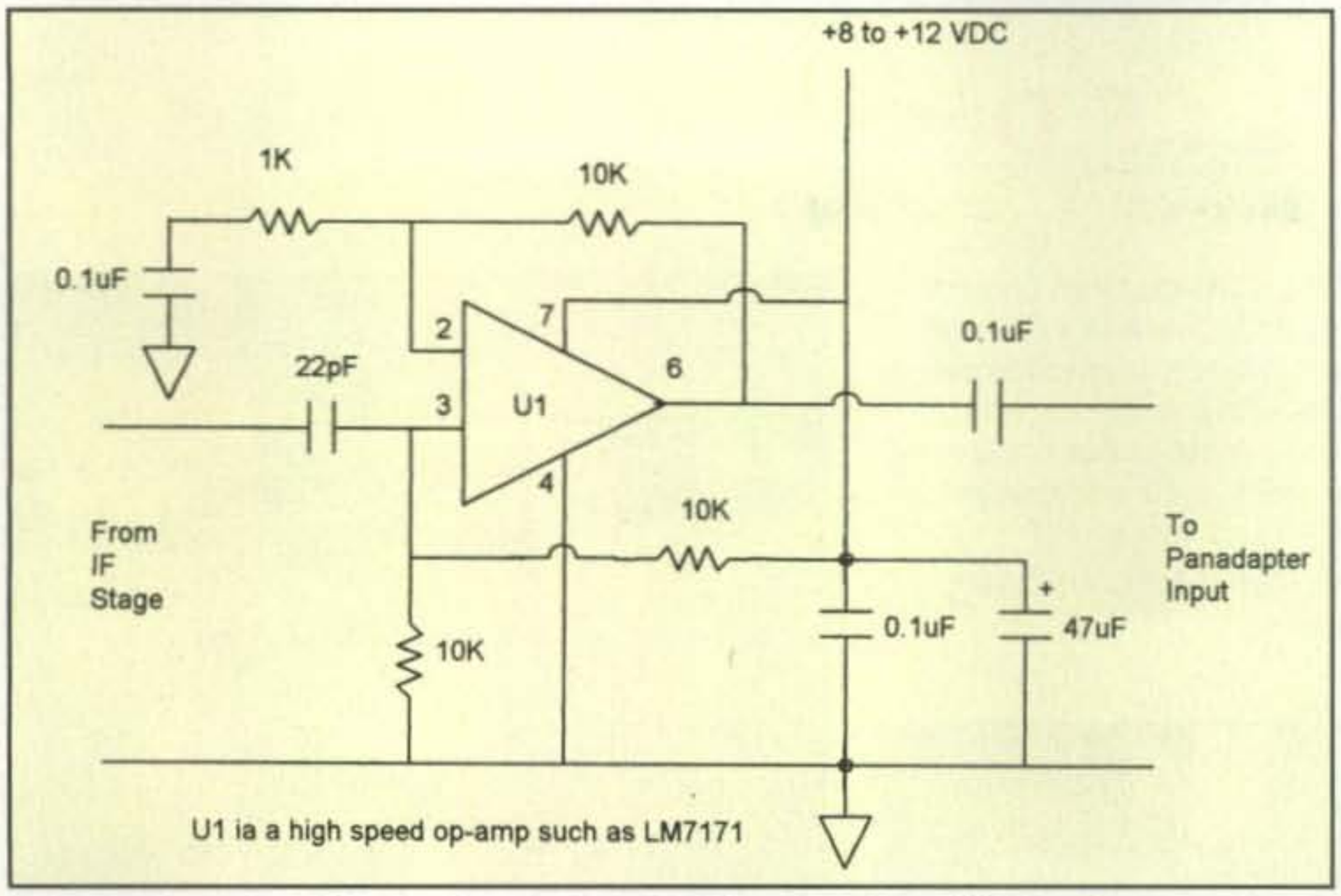

Fig. 4– Simple 10× wide-band pre-amplifier.

can repeat this procedure for the ±100-kHz position as well. Fine-adjust VR201, VR202, and TC201 until all is as you want it.

When the unit is operating properly, you can complete the final mounting of the BS unit in the SM-220 in accordance with paragraph 8.3 the instruction manual. Access holes in the side panel of the SM-220 will allow "touch up" when required. The BS-5 and BS-8 panoramic-adapter kits originally came with a special graticule for bandscope operation, which you can now install if you have one. However, if you do not, don't worry, as the normal one is more than adequate.

All that is now needed is to connect the SM-220 station monitor to your transceiver. Basically, you will have to provide an IF signal from your receiver for the panoramic adapter. The proper point to obtain such a signal is from the last IF stage in the receiver, but before any internal band-limiting IF filters. The SM-220 instruction manual shows exactly how and where to do this for the Kenwood TS-520, which is a fairly good general example of how to do it for any receiver. Fig. 2 shows the method Kenwood recommends, and this should be adequate for most other receivers as well. Since the IF take-off point is capacitor coupled, you do not have to worry about loading any DC circuitry. You should "touch up" the tuning of the IF stage transformer to which you connect the takeoff capacitor, as well as peak T201 in the BS unit for maximum signal amplitude.

It should be noted at this point that the overall sensitivity of the panoramic adapter to weak signals will be directly proportional to the gain of the receiver from the antenna up to the point where you take off the actual IF signal. If for some reason sensitivity is too high, simply attenuate the IF signal as shown in fig. 3. If the signal is too weak, a small pre-amp will be necessary. An example of such a pre-amp is given in fig. 4. Note that any high-speed op-amp with a final bandwidth of at least 10× the IF frequency you plan to use should work in this circuit.

That's about it. We personally converted a "bargain" ($25) non-operating 3.950-MHz BS-5 unit into a "perfect" 8.830-MHz BS-8 unit and all went quite smoothly. We did have a defective transistor in the crystal marker oscillator circuit (thus the bargain), but a 2N2369 replacement worked quite well with no other component changes. We also had to reduce the value of C233 to 22 pF in the VCO circuit instead of the recommended 33 pF to properly center the trace. No other changes in this circuit were necessary. With all components on hand, the entire job took us about 1 1/2 hours. The total cost for the SM-220 and BS-5 unit (for us) came to just about $200 (including shipping), a real bargain compared to the cost of purchasing a separate panoramic adapter. I might also add that looking at signals on either side of my operating frequency is quite interesting and informative, especially during contests or when chasing DX. The rest of the SM-220 is also useful to analyze and optimize the rest of our station.

73, Irwin, WA2NDM

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the weekender

BY PHIL SALAS,* AD5X

A Simple RF Detector

This month I'll address an idea that came from reader Al Bell, W4IKV. Here is Al's suggestion: "Weekender projects and ideas will be interesting to us retirees with a soldering iron. How about a sensitive RF detector to check hand-helds and possibly cell phones? Maybe a simplified version of figure 4 on page 51 ("Math's Notes") in the March 2006 issue of *CQ* might be a start?"

*1517 Creekside Drive, Richardson, TX 75081
e-mail: <ad5x@arrl.net>

Photo A– A simple 1.8–500-MHz RF detector.

Photo B– The actual inside-wiring view of the simple RF detector.

Interesting idea, Al. I came up with a very simple go/no-go RF detector. It is easy to build and the parts are inexpensive. Unfortunately, it won't detect 2-GHz cell phones, but it sure works well from HF through about 500 MHz.

Fig. 1 is the schematic of the simple RF detector circuit. Almost any RF energy detected by the 1N34A diodes will forward bias the junction of the PN2222A transistor, which lights the super-bright LED. No on/off switch is required, since no current is drawn from the battery unless the transistor is biased on.

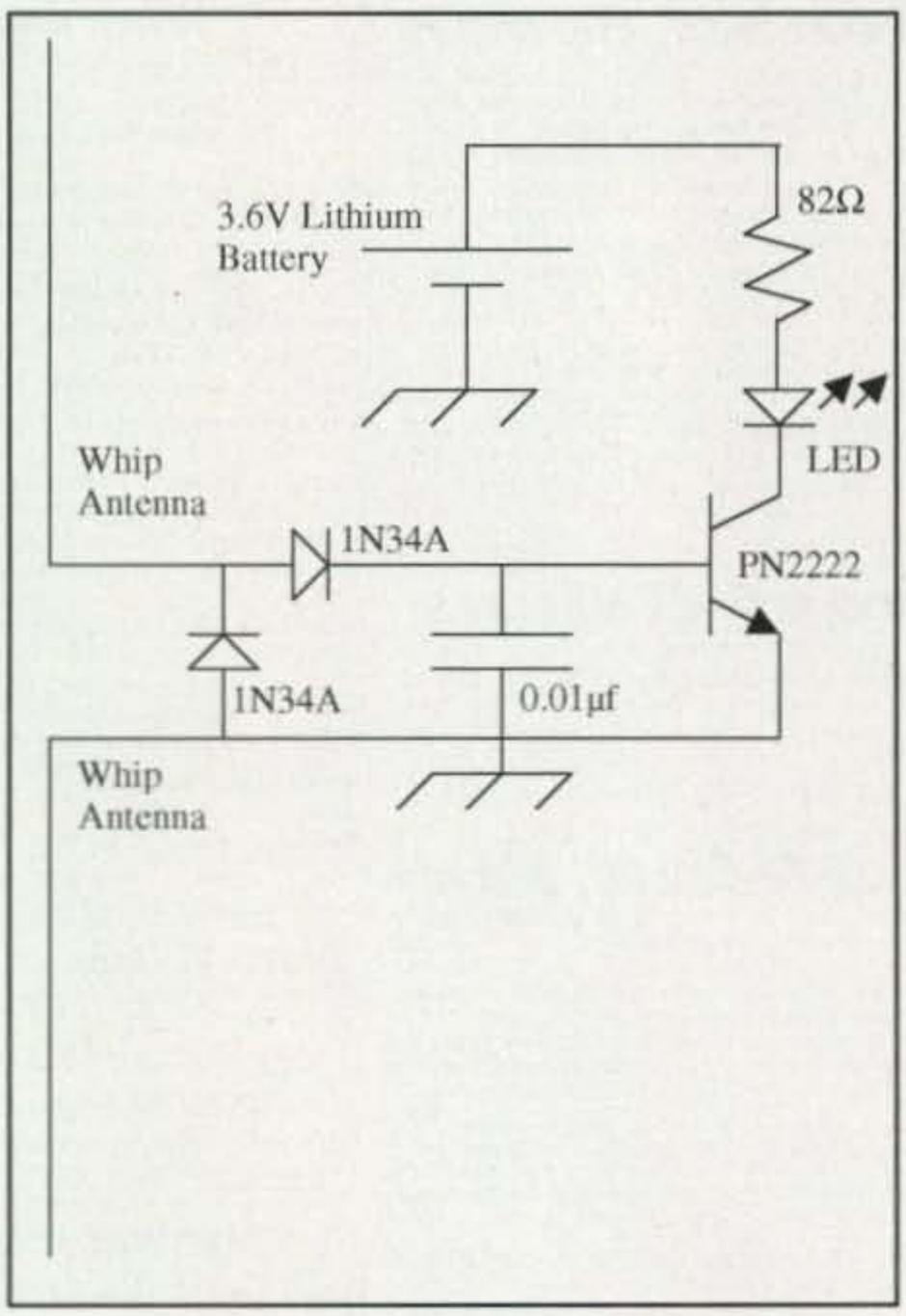

Fig. 1– Schematic of the simple RF detector.

Table I is the parts list with recommended supplier sources. I built everything into the small (2.36" × 1.38" × 0.8") plastic box called out in the parts list. Fig. 2 shows the hole sizes and dimensions I drilled in the box for mounting the telescoping antennas and LED. You can just drill mounting holes for the screws and mount the antennas on the outside of the box. However, mounting them the way I did provides extra support for the antennas, and it also makes the package more compact, since a portion of the antennas are inside the box. All wiring is point-to-point, and the battery is held in place with a piece of double-sided tape. Fig. 3 is a pictorial of the wiring, while photo B shows the internal view of the actual wiring. I labeled the RF detector case using Casio "White on clear" labeling tape (Casio XR9-AX-s).

The 6000-mcd LED called out in the parts list is very bright and can easily be seen in sunlight. For best sensitivity, extend the telescoping whips to their full 19-inch length. However, you'll find that this unit will still do a good job of sensing RF even with the whips collapsed.

That's it for this month. Remember, your input will help make this column a success, so send your ideas, projects, and questions to me at <ad5x@arrl.net>. Until next month . . . 73, Phil, AD5X

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QTY	Description	Source/Part Number	Cost Each
2	6-section 19" antenna	Mouser 43AR106	$1.38
2	2.6-mm screws	Mouser 48SM026	$0.12
2	#4 solder lugs	Mouser 534-909	$0.15
1	3.6V lithium battery	Mouser 667-TL2150P	$5.51
2	1N34A germanium diode	Mouser 526-1N34A	$0.41
1	6000-mcd red LED	All Electronics LED-94	$0.75
1	82-ohm 1/4-watt resistor	All Electronics 82-1/4	10/$0.50
1	PN2222A transistor	All Electronics PN2222A	5/$0.80
1	Small plastic box	All Electronics 1551-HBK	$1.20

Table I– Parts list (parts purchased from Mouser Electronics <www.mouser.com> and All Electronics <www.allelectronics.com>).

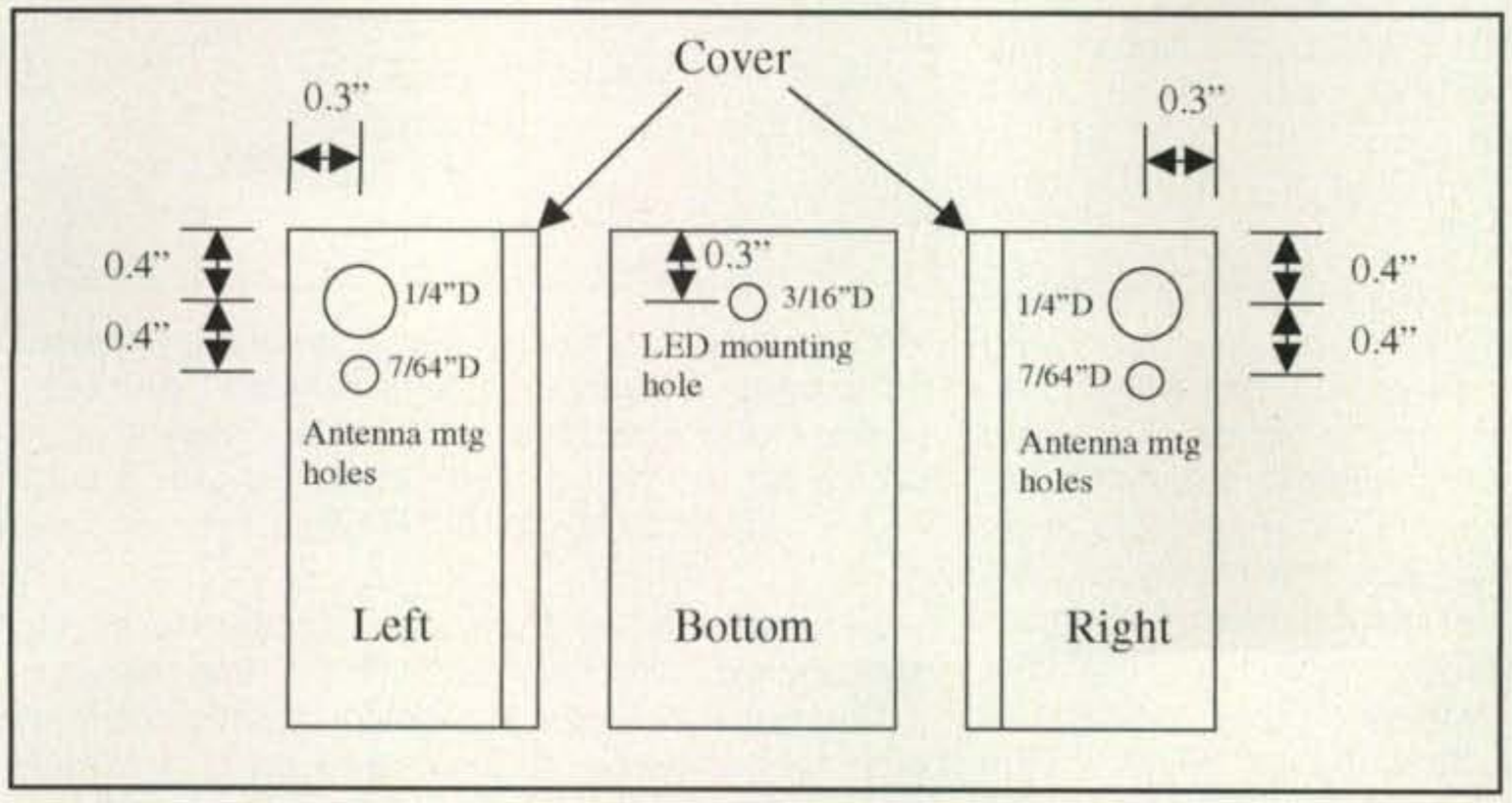

Fig. 2– Drilling pattern for case.

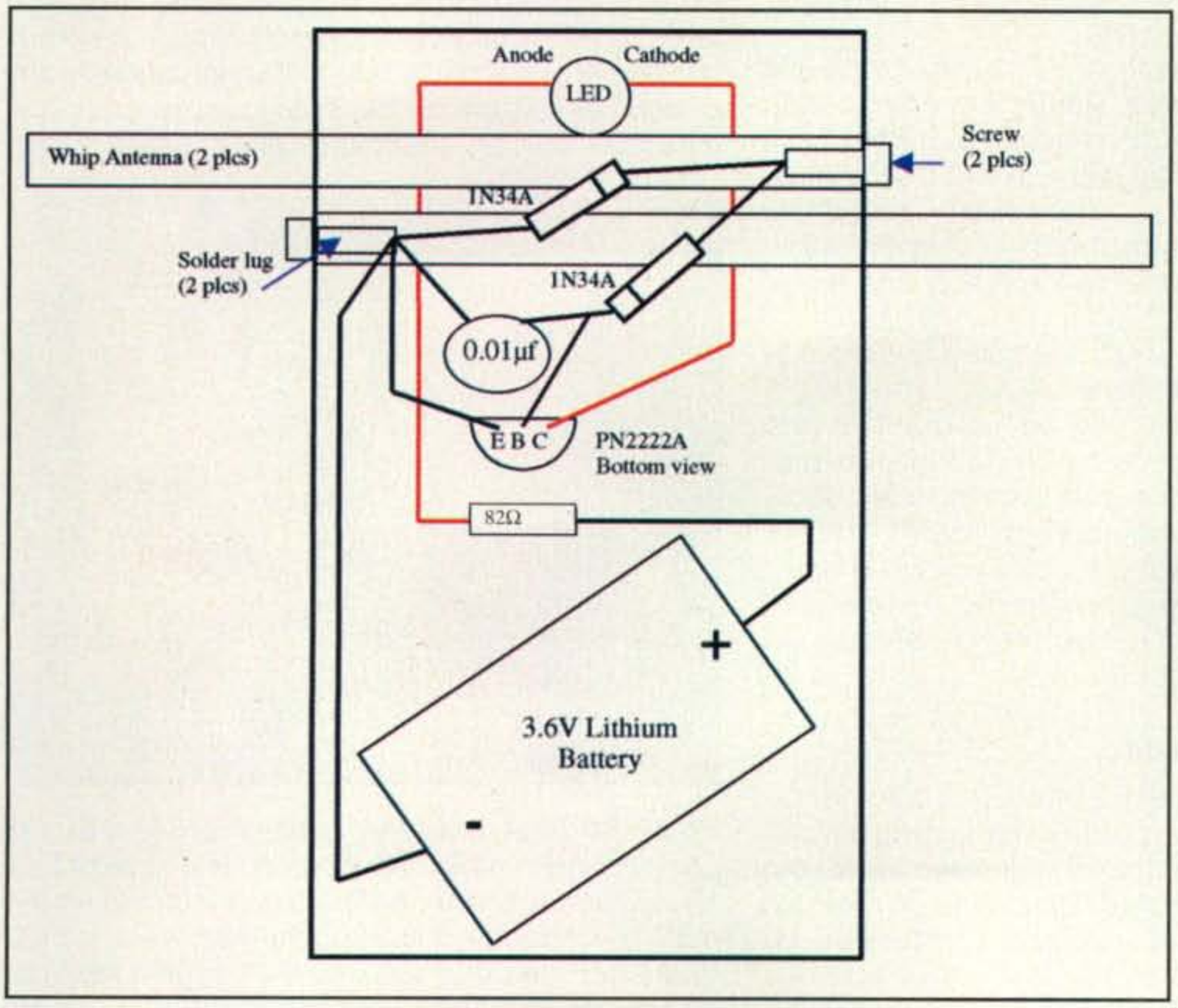

Fig. 3– Wiring layout of the RF detector.

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Typical SWR--1.5 or less
Weight--8 lbs

NEW 3" COIL

Pigs, Buddies, and 'Tennas

BY DAVE INGRAM,* K4TWJ

The headline of this month's column may sound rather unusual, but it is an accurate description of what's presently hot and happening in QRP. How so? First, there is the rapidly growing Flying Pigs QRP Club International, with free membership, on-line newsletter, goodies galore, and a monthly "Run for the Bacon" two-hour QRP contest. Fun! Second, folks have gone "hog wild" over my little Hamfest Buddy QRP transmitter and wireless receive/BFO converter featured in the October 2005 "QRP" column. Third, Barry Johnson, W4WB, has some exciting "build it" details of a high-performance wire antenna to share with readers. Let's begin with the question . . .

Photo A– The Flying Pigs website, <www.fpqrp.com>, offers certificates, key fobs, patches, coffee mugs, and more. "Piggies" are easy to spot on the air, as they typically conclude QSOs with "73 & OO" for Oink! Oink!

Do Pigs Really Fly?

Would you like to add some extra fun and enjoyment to your QRP activities? Check out the Flying Pigs Club at <www.fpqrp.com>. You will find an intriguing mix of humor, on-the-air activities, build 'em projects, and pig stuff suitable for wearing, framing, or even eating (photo A). You can also apply for membership on the spot and start your own squeals of delight. When I joined during November 2005, membership was up to 1200—and climbing. Compare that number with new "Piggy" numbers on the club's home page, and you have an up-to-date account of the group's growth during the last seven months. One hint: Be sure to supply a good "head and shoulders" photo of yourself when applying for membership. Those club-assigned mug shots for non-conformists are frightful!

Check out the Flying Pigs nets that meet at 9 PM EDST on 7.0440 MHz Sunday evenings with WB8ICN or Wednesday evenings at 9 PM EDST with KE1LA, and take a peek at the club's latest on-line newsletter, too. You will find everything from DX notes and a recipe for Flying Pig Party Dip to circuits for quick-brew projects and more. It's a trip!

Incidentally, if you would like some real inspiration on QRP going the distance, look over the DX success notes of N2JNZ as reported in the February/March issue of the Flying Pigs newsletter. The list is quite extensive, and includes S9SS and TZ6DX while running 90 milliwatts, JY9NX while running 50 milliwatts, JHØZHQ while using 700 mw, UN7QX also while running 700 mw, and more. We have said it before, friends, and we will say it again—QRP rocks!

The Buddy Revisited

Reader response to our October 2005 column featuring details of the Hamfest Buddy proved delightfully overwhelming, and we thank everyone for the widespread acceptance. A fair number of folks also passed along comments and photos of their Buddy after assembly, and we are delighted to briefly share some of those views with you this month.

Surely the most often-noted comment came from amateurs who said the Buddy was their first home-assembled project. Building it took about an hour, and thanks to easy-to-follow directions, it worked great at first fire-up. Terrific! Nothing beats a successful start in homebrewing! Several folks also asked about solar powering the Buddy, and we are working on a couple of hopefully even better energy sources suitable for the Buddy and several other mini rigs—tomato power and lemon power. Don't

Photo B– Check out this snazzy Hamfest Buddy Larry Johnson, WB4LKI, installed in a tic tac® box. Key socket is on left, antenna connector is on the right, 9-volt battery clip is on the bottom, and VXO frequency switch is accessible through a flip door on top. Ponder how Larry installed the PC board in the box without bunched up wires, and then read the answer in the text. (Photo via WB4LKI)

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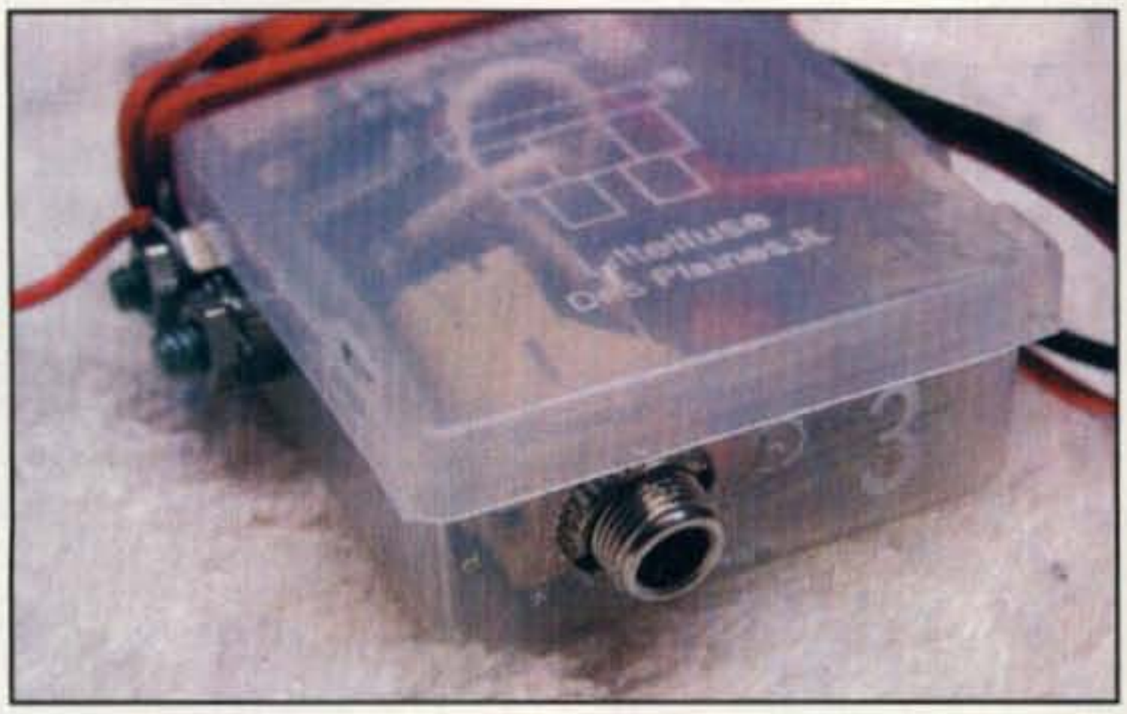

Photo C– With a special focus on small size, Vern Anderson, N7GTW, installed his Hamfest Buddy in a plastic 1.5-inch Littlefuse® box. He also made an earphone plug key as described in our October column, and he says, "The little rig works well for spotting and joining QRP activities around motels at hamfests." (Photo via N7GTW)

smirk! These tart little fruits really put out the juice, especially when wired in a series-parallel configuration.

Digging slightly deeper into the mailbag, we noted Larry Johnson, WB4KLI, was the first of several homebrewers to install a Buddy in a tic tac® mint box (photo B). Studying his rig with its short wires to out-of-box connectors reminds us of the old ship-in-a-bottle trick. (How did you do that?) Larry explains: "First I used Goo Gone (from Wal-Mart) to remove paper from the box, and then I chose 9-volt battery clips for both power and antenna connectors. I drilled two tiny holes in the tic tac® box bottom, and then snaked the battery clip's 6-inch long wires through the holes and box and soldered them to the PC board. Then while mounting the PC board in the box, I fished the wires out of the bottom holes, and cut and resoldered them to the clips.

Cool! Larry lives in Kentucky, and his first contacts using the Buddy (on 20 meters) were Utah, New Mexico, Arizona, and Colorado—all while running only 50 mw. Jolly good show, Larry!

Vern Anderson, N7GTW, made his Buddy super small by installing it in a tiny Littlefuse® plastic box (photo C). He says, "It was somewhat challenging to squeeze everything into the little box, but it was worth the effort." Yes, indeed, and that is what makes his transmitter something special.

Bill, KC4PAR, and Kayla, KC4PAQ, Johnson built a Buddy as a father and daughter project and then installed it in their own unique box (photo D). Bill said Kayla did all the soldering and fine work, as she studied electronics at school and has previous kit-building experience. Bill says his work has mainly been limited to larger gear. No problem. The team still emerged as winners.

If you missed reading about the Hamfest Buddy in our October 2005 "QRP" column, the little rig is comprised of 12 components you install on a 1" ×1.5" PC board to produce a two-frequency 50-mw QRP transmitter (fig. 1)—with a unique second function. When the rig's key is up, it radiates a weak (0.5 mw) signal on its transmit frequency to a nearby AM-mode shortwave receiver, so it acts like a wireless BFO for copying CW. Closing the key then increases output to 50 mw for transmitting. This power level is high enough for QRP QSOs, yet low enough so you can use any length of wire—from 6 inches to 66 feet—for an antenna without worry of damage from high SWR.

Photo D– Taking a slightly different approach, Kayla Johnson, KC8PAQ, shows us the Hamfest Buddy she and father, Bill Johnson, KC8PAR, made and installed in a "Mountaineer" tin popular in their area of West Virginia. Impressive! (Photo via KC8PAR)

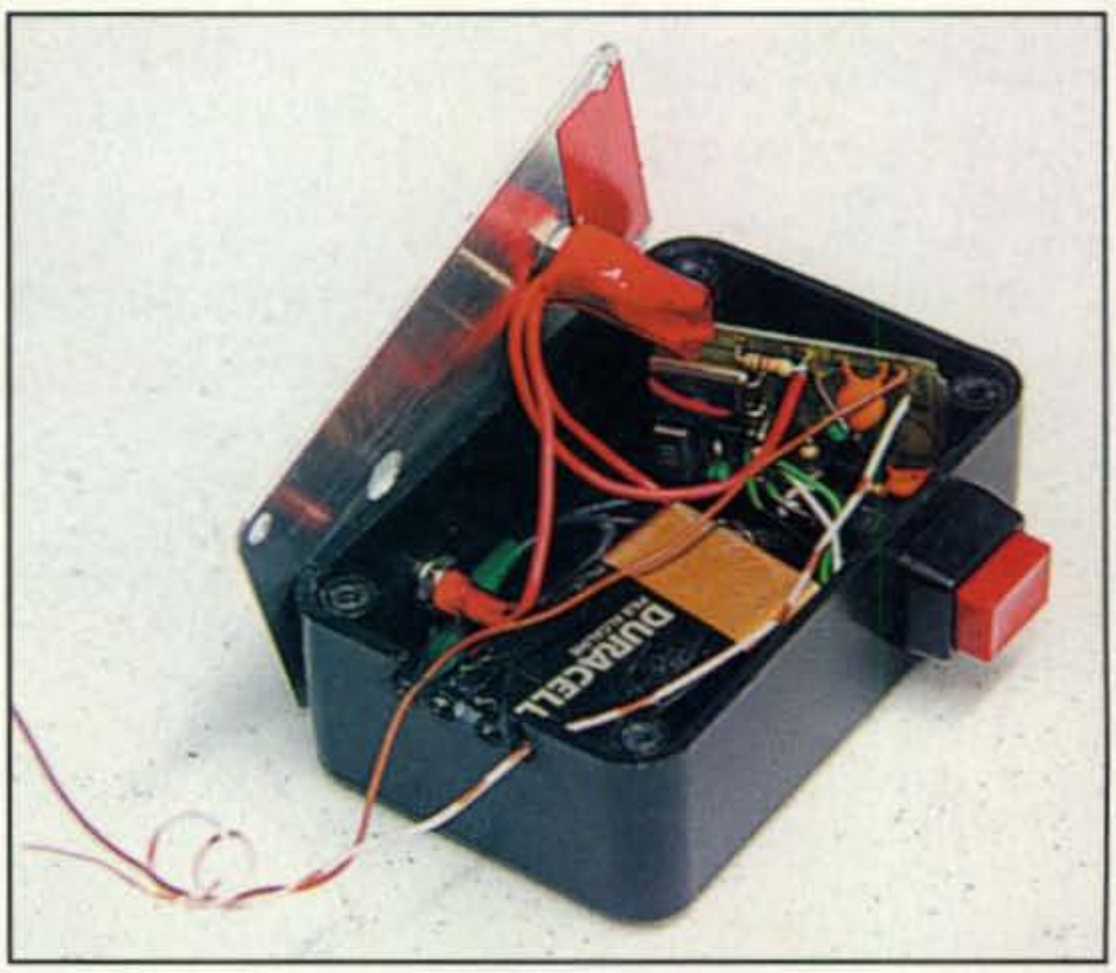

Photo E– Going for everything in one box, Walt May, KA7STK, mounted Buddy, battery, and a pushbutton key in a 1" x 2" x 3" plastic box. The pushbutton is positioned so Walt can hold the case in his hand and send CW with the rig in his pocket for covert QSO fun at club meets. (Photo via KA7STK)

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1.000	$1.30/ft	1.875"	$2.85/ft
1.125	$1.45/ft	2.000"	$3.10/ft
		2.125"	$3.60/ft

EXTRUDED 6061-T6

.250" rod	$.50/ft	.188" rod	$.35/ft
2"x.125"	$4.50/ft	4"x.375" bar	$6.50/ft
		2"x.250"	$8.00/ft

6' OR 12' LENGTHS. 6' LENGTHS SHIP UPS.

ANTENNA ROTATORS

M2 OR-2800PDX	$1379
Hygain HAM IV	$499
Hygain T2X Tailtwister	$569
Yaesu G-450A	$249
Yaesu G-800SA/G-800DXA	$329/409
G-1000DXA	$499
Yaesu G-2800SDX	$1089
Yaesu G-550	$299
Yaesu G-5500	$599

ROTATOR CABLE

R62 (#18), HD 6 conductor	$.39/ft.
R81/82/84, 8 cond.	$.29/ft./.49/ft./.99/ft.

ROHN TOWER

25G/45G/55G	$99/209/259
25AG2/25AG3/25AG4	$119/149/129
45AG2/45AG4	$249/249
AS25G/AS455G	$49/109
BPC25G/BPC45G/BPC55G	$89/119/129
BPL25G/BPL45G/BPL55G	$99/189/219
GA25GD/GA45GD/GA55GD	$99/139/159
GAR30/GAS604	$39/49
SB25G/45/55	$59/109/149
SB25G5/SBH25G	$79/139
TB3/TB4	$139/159

PLEASE CALL FOR MORE ROHN ITEMS.

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GP3, 2m/70cm Vertical	$99
GP6, 2m/70cm Vertical	$149
GP9 2m/70cm Vertical	$189
GP15, 6m/2m/70cm Vertical	$159
GP98, 2m/70cm/23cm Vertical	$189

DIAMOND ANTENNAS

X50A, 2m/70cm Vertical	$109
X200A, 2m/70cm Vertical	$149
X510MA 2m/70cm Vertical	$195
X500HNA 2m/70cm Vertical	$259
X700HNA 2m/70cm Vertical	$399
V2000A 6m/2m/70cm Vertical	$172

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
LMR-400DB Direct Bury	$.74/ft
LMR-400 Ultraflex	$.89/ft
LMR-600	$1.19/ft
LMR600 Ultraflex	$1.95/ft

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SELF-SUPPORTING STEEL TOWERS

T200-64	64', 15 square feet	$1489
T200-72	72', 15 square feet	$1819
T200-80	80', 15 square feet	$2169
T200-88	88', 15 square feet	$2529
T200-96	96', 15 square feet	$2969
T300-88	88', 22 square feet	$2869
T400-80	80', 34 square feet	$2759
T500-72	72', 45 square feet	$2629
T600-64	64', 60 square feet	$2499
T700-56	56', 80 square feet	$2349

MORE TRYLON TOWERS AVAILABLE.

M2 VHF/UHF ANTENNAS

6M5X/6M7JHV	$259/319
6M2WLC/6M9KHW	$549/589
2M4/2M7/2M9SSBFM	$119/129/149
2M12/2M5WL	$209/249
2M5-440XP, 2m/70cm	$219
440-470-5HD/420-50-11	$169/119
432-9WL/432-13WLA	$219/299
440-18/440-21ATV	$159/179

M2 SATELLITE ANTENNAS

2MCP14/2MCP22	$209/299
436CP30/436CP42UG	$299/349

CALL FOR MORE IN-STOCK M2 ITEMS.

TOWER HARDWARE

3/8"EE/EJ Turnbuckle	$15/16
1/2"x9"EE/EJ Turnbuckle	$21/23
1/2"x12"EE/EJ Turnbuckle	$24/26
3/16"/1/4" Big Grips	$5/6
3/16"EHS-500'/1/4"EHS-500'	$119/149

PLEASE CALL FOR MORE HARDWARE.

HIGH CARBON STEEL MASTS

5 FT x .12" / 5 FT x .18"	$45/59
11 FT x .12" / 11 FT x .25"	$80/199
12 FT x .18" / 17 FT x .12"	$159/149
20 FT x .18" / 22 FT x .12"	$249/199
23 FT x .25" / 24 FT x .18"	$369/299

UNIVERSAL ALUMINUM TOWERS

4-40'/50'/60'	$569/809/1149
7-50'/60'/70'	$1039/1499/1969
9-40'/50'/60'	$809/1149/1619
12-30'/40'	$599/949
15-40'/50'	$1069/1529
16-60'/80'	$2219/3389
21-50'/60'/70'	$1759/2339/2929
23-30'/40'	$959/1419
35-40'	$1649

BOLD IN PART NUMBER SHOWS WIND LOAD CAPACITY. SHIPS DIRECT FROM THE FACTORY TO SAVE YOU MONEY!

HYGAIN ANTENNAS

AV18HT Hightower	$739
DIS71/72	$269/569
TH3JRS/TH3MK4	$319/399
TH5MK2/TH2MK3	$849/319
TH7DX/TH11DX	$749/995

MFJ

259B/269, Analyzers	$219/319
948/949E, Tuners	$129/149
969, HF–6m Tuner	$179
986, 3kW Tuner	$299
989D, Deluxe 3kW Tuner	$319
991/993 Autotuners	$199/229

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HPTG1200I	$.45/ft
1200 END KIT	$3.60
HPTG2100I	$.59/ft
PLP2738 Big Grip (2100)	$7.00
HPTG4000I	$.89/ft
PLP2739 Big Grip (4000)	$9.50
HPTG6700I	$1.29/ft
PLP2755 Big Grip (6700)	$13.50
HPTG11200	$1.89/ft
PLP2758 Big Grip (11200)	$16.00

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US TOWER CRANK-UPS

MA40/MA550	$1099/1699
MA770/MA850	$2799/4349
TMM433SS/HD	$1479/1789
TMM541SS	$1939
TX438, 38' Crankup Tower	$1379
TX455, 55' Crankup Tower	$1899
TX472, 72' Crankup Tower	$3139
TX489MDPL, 89' Motorized HD	$8239
HDX538, 38' Extra Heavy Duty	$1649
HDX555, 55' Extra Heavy Duty	$2889
HDX572MDPL 72' Motorized	$7549

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• MDP & MDPL models include motor drive

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

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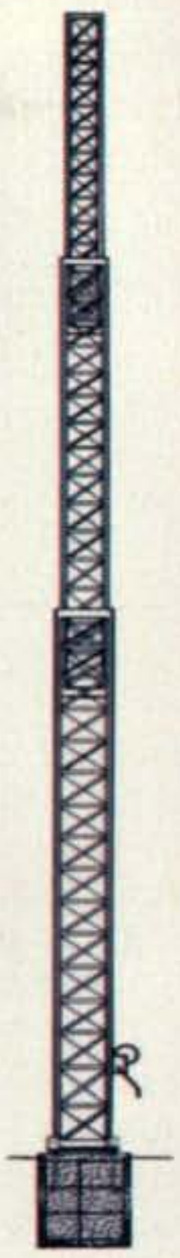

TX SERIES HEAVY DUTY CRANK-UP TOWERS					
TOWER MODEL	MAX. HT.	MIN. HT.	WT. (LBS.)	LIST PRICE	SALE PRICE
TX-438	38'	21'6"	355	$1,523	$1,379
TX-455	55'	22'	670	$2,107	$1,899
TX-472	72'	22'8"	1040	$3,462	$3,139
TX-472MDP	72'	22'8"	1210	$5,571	$5,049
TX-489MDPL	89'	23'4"	1800	$9,034	$8,239

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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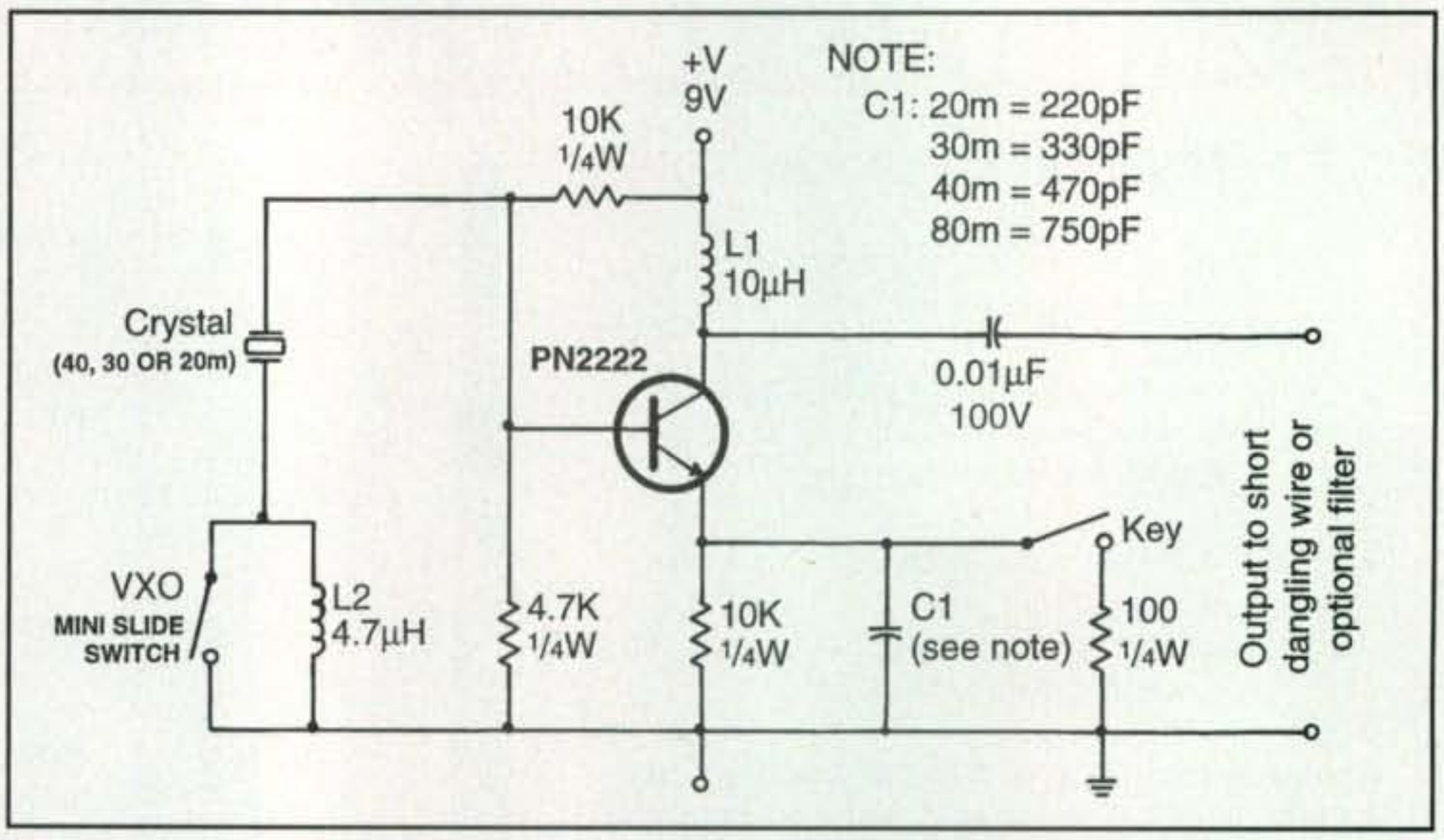


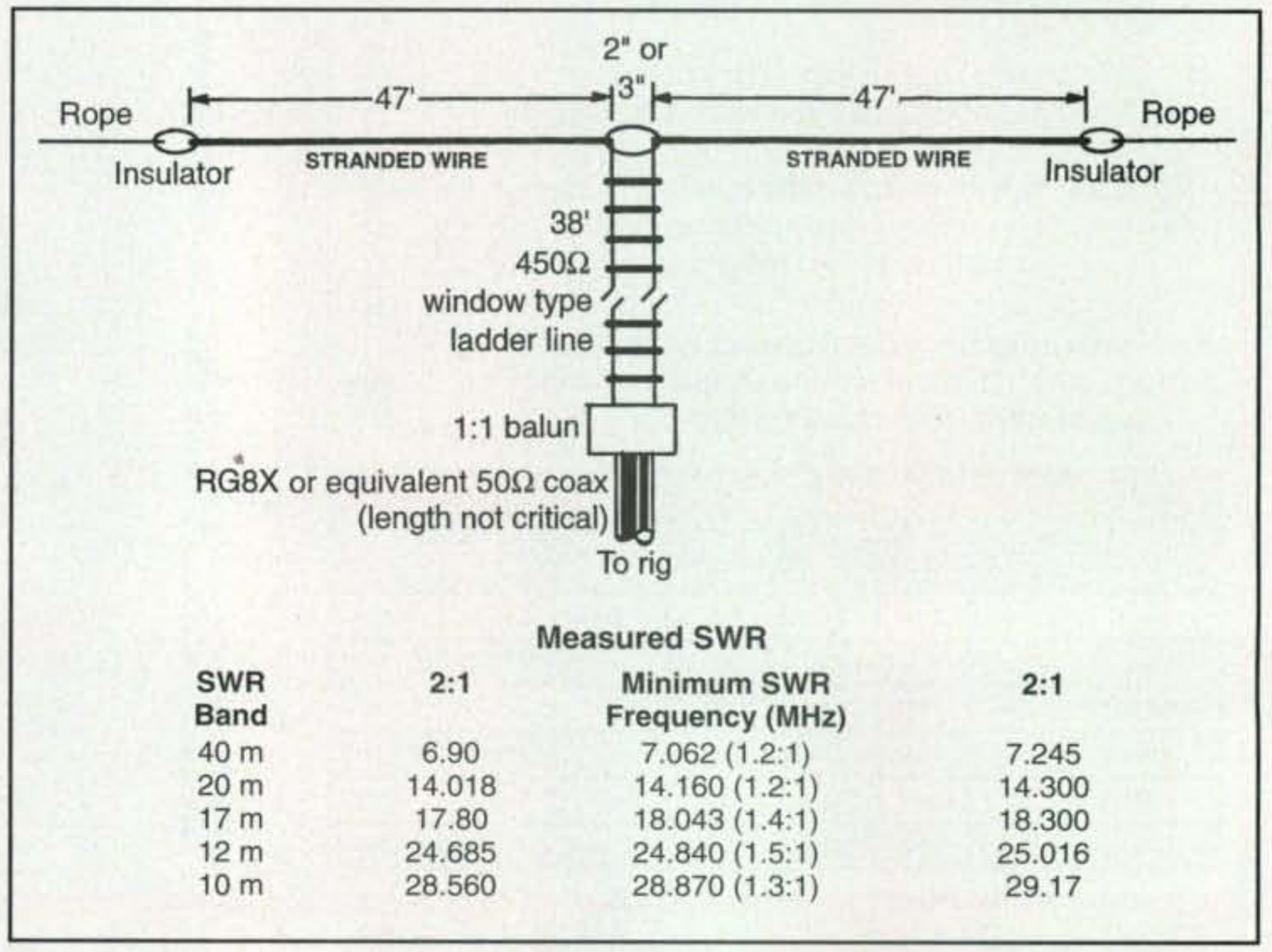
Fig. 1– Circuit diagram of the Hamfest Buddy double-function QRP rig. (Discussion in text.)

I still have some Hamfest Buddy kits available for $16 plus $2.50 postage (Dave Ingram, K4TWJ, 3994 Long Leaf Dr., Gardendale, AL 35071). Specify if you want a crystal for 7.040, 10.106, or 14.060 MHz in the kit, and I will zip one to you. If you are concerned about lost mail, drop me an e-mail before putting your order in postal mail.

The "P5" Tunerless Five-Band Antenna

Looking for a new multiband wire antenna to boost your odds for success with QRP? (Aren't we all?) Check out the clever "no tuner required" five-band doublet (fig. 2) designed by Bill Wright, GØFAH, and passed along to us by Barry Johnson, W4WB. The antenna is a spin-off of the popular G5RV; it is low in cost and has a history of surprisingly good performance. It covers 40, 20, 17, 12, and 10 meters with an SWR below 2:1 and a wide bandwidth.

Barry nicknamed this antenna the "P5 Dipole" after he made one for Dave Bornstein to use during his operation as P5/KA2HTV from North Korea. Dave recently visited North Korea to do med-



Measured SWR

SWR Band	2:1	Minimum SWR Frequency (MHz)	2:1
40 m	6.90	7.062 (1.2:1)	7.245
20 m	14.018	14.160 (1.2:1)	14.300
17 m	17.80	18.043 (1.4:1)	18.300
12 m	24.685	24.840 (1.5:1)	25.016
10 m	28.560	28.870 (1.3:1)	29.17

Fig. 2– Outline of the P5 Dipole described by Barry Johnson, W4WB, in the text. Skywire covers 40, 20, 17, 12, and 10 meters without requiring a tuner, exhibits an SWR below 1.5:1, and radiates an impressive signal to boot. It is a clever way to operate multiple bands without using a tuner.

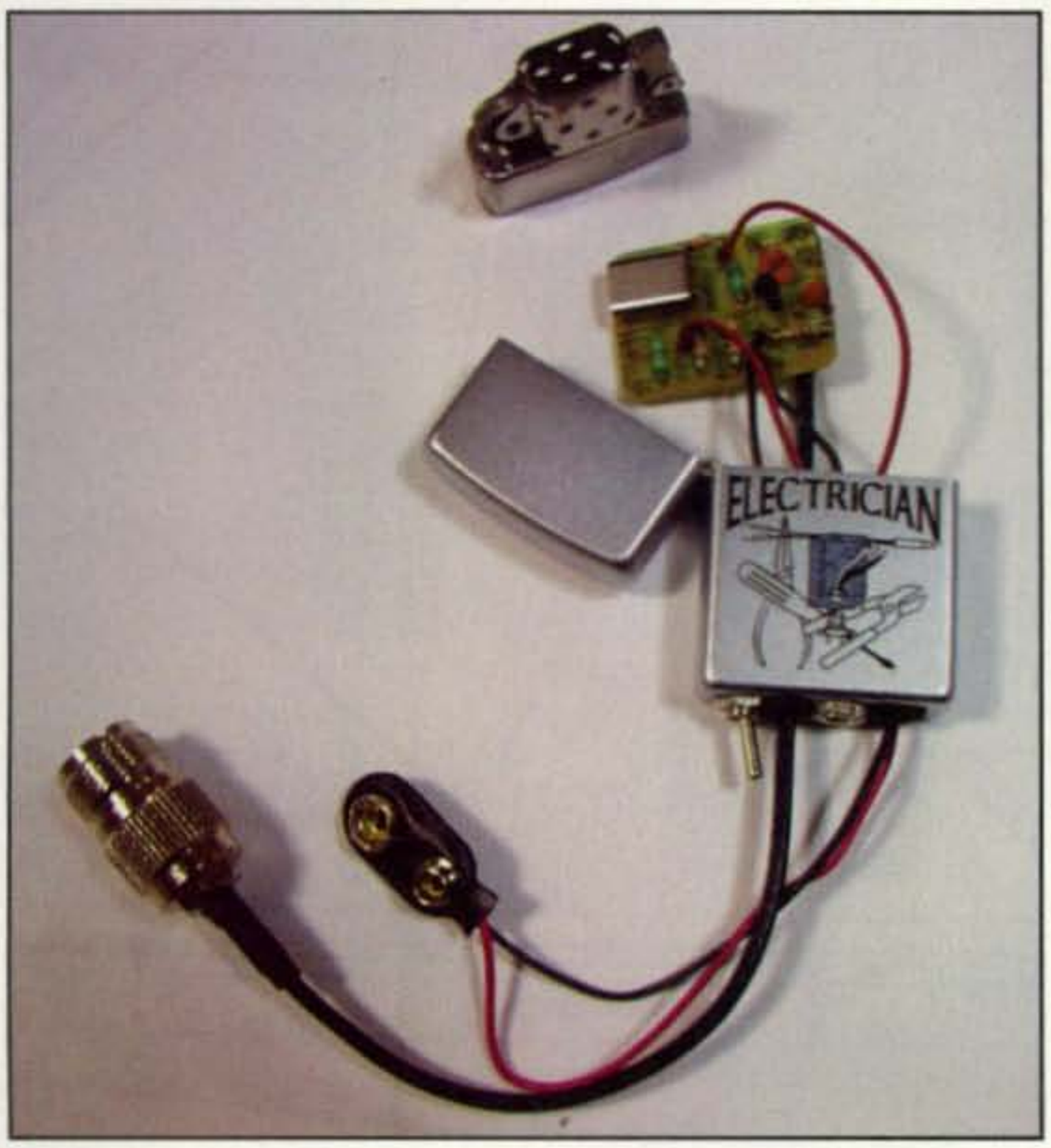


Photo F– Thanks to John Beltz, WB9JWB/N9IIF, this world-famous Zippo lighter enjoys a new lease on life as a unique case for a Hamfest Buddy. The toggle switch on the bottom turns the Buddy on/off and the frequency-shift/VXO switch is accessed from the top. Neat!

ical work, but he was not granted amateur radio privileges during his brief stay. However, he is going back soon, and his chances of getting on the air with a rare P5 call look good at this time. As Barry told Dave, "If you want to get on the air—on several bands—with a reasonably good signal, and you do not have an antenna tuner readily available, this low-cost skywire may be the ideal answer."

As you will notice in fig. 2, the P5 Dipole is center-fed with a 38-foot length of window-type 450-ohm ladderline, which in turn connects to a 50-ohm balun. A random length of RG-8X or equivalent cable then connects between the balun and your transceiver. Wire, ladderline, baluns, insulators, coax cable, etc., to make the antenna are readily available from Jim Thompson at The Radio Works (www.radioworks.com; telephone 1-800-280-8327, or check the company's ad in *CQ*).

Try to install the antenna at least 40 feet above ground so the ladderline can hang horizontally and the balun will be outdoors (remember to weatherproof its connections with CoaxSeal®, not just all-weather tape). Incidentally, you can fine-tune SWR by initially cutting the 450-ohm ladderline section to 40 feet and then trimming its length until reaching the SWR specs listed in fig. 2. If you have additional questions or comments about the antenna, check with Barry at <W4WB@arrl.net> or on the web at <www.w4rt.com>.

Conclusion

That winds down the views for this time, friends, and once again we encourage you to share photos and tales of your QRP life with *CQ* readers. Don't worry about grammar or spelling; just tell me (K4TWJ) the facts and I will take it from there. Your efforts and achievements are worthy of recognition!

Check my address on the first page of this column, and you will notice I recently moved to a new QTH. Simultaneously, CQ changed e-mail systems (it does not affect my e-mail address). I am sure a large number of e-mails were lost in the interim, but things should be returning to normal (?) by the time this column appears in print. Please understand and try again if I have not answered you. I strive to please everyone!

73, Dave, K4TWJ

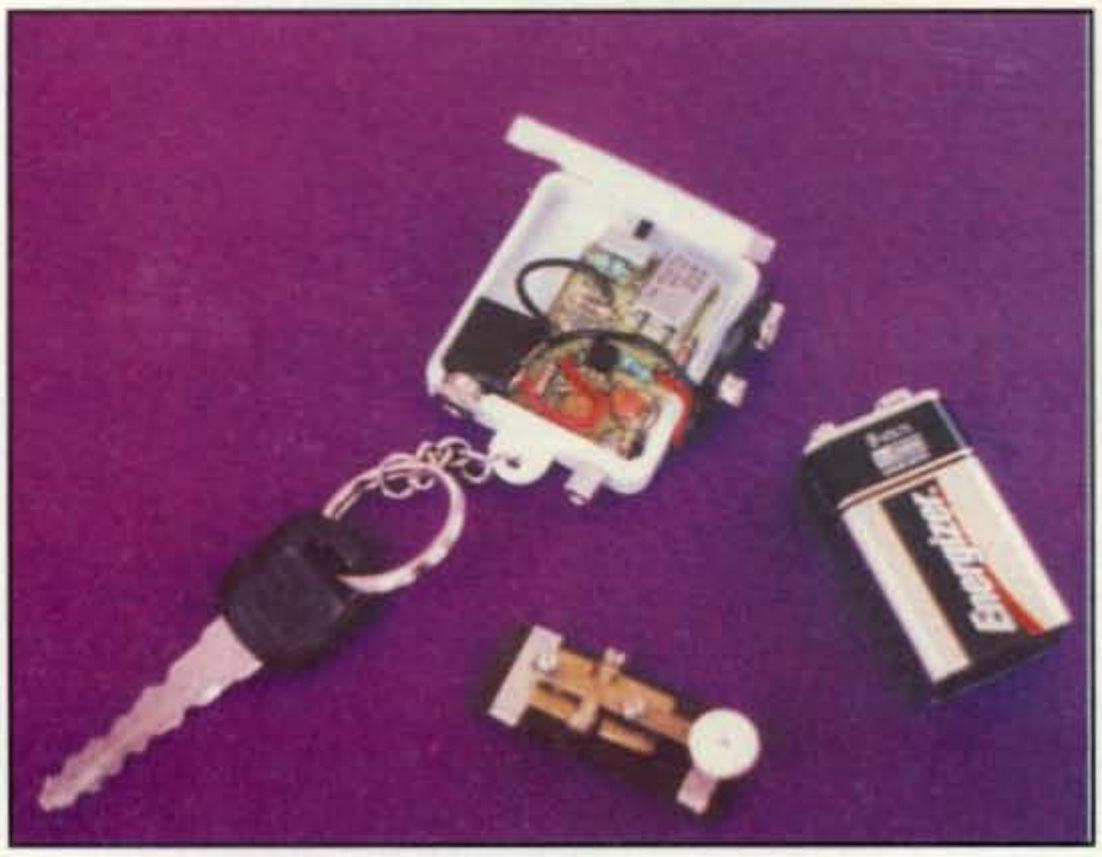


Photo G– If you missed details of our Hamfest Buddy in October 2005 CQ, to reacap, it is a 12-component QRPp transmitter and wireless receiver converter/BFO for impromptu QRP fun. The little rig is easy to assemble and fits in a key-fob pill box or tic tac® case. Several amateurs have also made cross-country QSOs using the Hamfest Buddy.

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BY FREDERICK O. MAIA,* W5YI

Why is it Taking So Long to Finalize the Morse Code Proceeding?

We get more inquiries about the status of abolishing Morse Code testing in the U.S. Amateur Service than anything else. Many radio amateurs want to know why some countries were able to discontinue the need for code proficiency right after WRC-2003.

World Radiocommunication Conference 2003 made optional the requirement to prove the ability to send and receive Morse signals to operate below 30 MHz. Some three years later, however, the United States is still going through the bureaucratic motions of "considering" the elimination of code exams.

The need for demonstrated telegraphy knowledge in the Amateur Service is a very controversial matter, especially among longer licensed hams who had to pass the code exams to obtain their radio operating privileges.

The reason it is taking so long is because of the procedures U.S. government agencies are required to follow in order to change laws—and FCC regulations carry the force of law. Sixty years ago, Congress enacted the Administrative Procedure Act, which, along with the Communications Act of 1934 as amended, set forth specific steps that administrative agencies must follow in order to assure that the public has the opportunity to participate in the rulemaking process.

The FCC is guided by Title 47 of the Code of Federal Regulations, which covers "Telecommunication" matters. Part 1, Subpart "C"—Rulemaking Proceedings, of Title 47 details the administrative procedures that the FCC must follow. It requires public notice of proposed rule changes in the *Federal Register* and provides for interested persons expressing their opinions on proposed new regulations. These views must be taken into consideration by the regulators. This is called "notice and comment" rulemaking.

This month let's discuss the various steps that new proposed rules must go through before they may become law.

FCC Organization

The FCC is directed by five Commissioners appointed by the President and confirmed by the Senate for five-year terms, except when filling an unexpired term. The President designates one of the Commissioners to serve as Chairperson. The current FCC Chairman is Kevin J. Martin. Only three Commissioners may be members of the same political party.

Next down the organizational ladder are the various bureaus. There are six of them, each handling a major FCC area of interest. A number of other offices provide additional administrative support.

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

The Wireless Telecommunications Bureau consists of six divisions. WTB administers all FCC two-way domestic wireless telecommunications services, including their licensing, enforcement, regulatory, and rulemaking functions. The Personal Radio Services—which includes amateur radio—fall under the jurisdiction of the Public Safety & Critical Infrastructure Division. Unfortunately, amateur radio rulemaking is not a high priority effort at the FCC. The Commission is necessarily more concerned with the economy of the nation, and telecommunications plays a major role.

FCC Rulemaking

Suggested changes to FCC rules and regulations may originate from sources inside or outside the FCC. They are contained in a Petition for Rulemaking when they are submitted from outside the Commission. Any interested person, company, or organization may petition the Commission. Petitions for Rulemaking set forth a general solution to a perceived problem, propose a new regulation or amendment, or specify a current rule that should be revoked or amended.

All petitions are sent to the FCC in Washington, DC and are forwarded by the Commission's Secretary to the appropriate bureau or office for review and consideration. The first petitions seeking to amend the Morse testing rules in the U.S. Amateur Service began rolling into the FCC around mid-July 2003, less than two weeks after the international Amateur Service regulations were changed in Geneva at WRC-2003.

Petitions that have merit are assigned a sequential rulemaking (RM) file number and a new FCC proceeding begins. The first six Morse code petitions were assigned rulemaking numbers beginning with RM-10867.

The Commission regularly issues a brief News Release (NR) listing the petitions that have been accepted by the FCC. The public then has 30 days to submit preliminary comments stating why a Petition for Rulemaking should go forward to the next rulemaking stage or be denied. The FCC News Release listing the Morse petitions went out in August 2003.

The FCC then has four options. After reviewing the early comments, the petition may be denied, further information may be solicited, or notice may be given setting forth the proposed new rules. If a proposed rule is non-controversial—such as just an insignificant wording change—the Commission has the option to simply adopt the changes without further comment.

A Memorandum Opinion and Order (MO&O) denies a petition; a Notice of Inquiry (NOI) gathers additional information from the public about a broad subject or a specific issue; a Notice of Proposed Rulemaking (NPRM) states new pro-

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posed regulations; and a Report & Order (R&O) adopts new rules without further public comment. A formal public comment and reply comment period always follows a NOI or NPRM.

On July 19, 2005 (two years after acknowledging the first Morse petitions) the FCC proposed dropping the 5-wpm Morse code element as a requirement to obtain an amateur radio license of any class, along with proposals for various additional changes contained in another dozen petitions filed after WRC-2003. The Commission recommended the changes in a Notice of Proposed Rule Making (NPRM) it designated as WT Docket 05-235.

Rulemaking proceedings at the Commission are given docket numbers. Each docket number lists a bureau, a year, and a specific number assigned to that proceeding (e.g., WT #05-235 = 2005 Wireless Telecom Proceeding Number 235). If you are submitting a comment that pertains to a docketed proceeding, you must put the docket number at the top of your filing. There is no required format for informal comments, but they should state who you are, your interest, and your position on the matter as briefly as possible.

After initial comments are filed, there is an additional period for responding to the first set of comments. During this second phase, you can file *R*eply Comments. Reply comments also are what their name implies. You review what others have said in their initial comments, and then support or disagree with a point and file a reply.

A 60-day public-comment period after publication in the *Federal Register* was set with an additional 15 days for reply comments. Comments closed on WT Docket No. 05-235 on October 31, 2005; replies on November 14.

The Public's Role

Everybody can get involved in the comment period. You don't need to be an attorney or hire one. You simply tell the FCC your feelings about the subject topic. Most people submitted their informal comments on WT Docket 05-235 through the FCC's online Electronic Comment Filing System (ECFS). Nearly 3900 individual comments were filed.

If paper documents are filed with the FCC, you must file one (1) original plus four (4) copies of comments or reply comments. If you want all the Commissioners to receive copies, file one (1) original plus nine (9) copies. Send to: Marlene H. Dortch, Secretary, Federal Communications Commission, Office of the Secretary, 445 12th Street SW, Washington, DC 20554. Be certain all comments clearly contain the Docket number.

FCC rulemaking is never fast, and often painstakingly slow. Depending upon the Commission's workload or priorities, several months—or even years—may elapse between the submission of a Petition for Rulemaking and the issuance of a Notice of Proposed Rulemaking, or between an NPRM and a Report & Order. Copies of all Amateur Service related NPRMs and R&Os can usually be found on the FCC or American Radio Relay League website.

Report and Order

Just when a Report & Order will be adopted on WT Docket 05-235 is not known, but we predict that it will be fairly soon. A three-year trip appears fairly typical—two years to the NPRM stage plus another year to the R&O. However, it can be longer. All FCC Report & Orders analyze and respond to the comments that have been filed and explain why the rules are being amended, or why a decision has been made not to do so.

After reviewing the comments on the NPRM, it is possible that the FCC might issue a Further Notice of Proposed Rule Making (FNPRM) to provide an opportunity for the public to comment further on a related proposal. However, we doubt this will happen.

The Commissioners consider, discuss, and vote on items before the FCC at Open Commission Meetings held once a month. As the name implies, these meetings are open to the public. Rulemaking of lesser importance is acted upon by "Circulation," a process by which documents are circulated to each Commissioner's office for signature. The NPRM in WT Docket No. 05-235 was handled by circulation.

Summaries of Reports & Orders are published in the *Federal Register* and state when a new rule or amendment will be effective. That may not be the end of it, though. Issuance of a Report & Order automatically triggers a 30-day period from the date the R&O appears in the *Federal Register* for Petitions for Reconsideration.

A written Petition for Reconsideration may be submitted to the FCC if you are not satisfied with the way an issue is resolved in the R&O. The petitioner must state specifically why the Commission's action should be changed. It will usually be forwarded to the same bureau that issued the Report & Order. The FCC will then review the action it has taken. It is very difficult to reverse a Report & Order unless convincing new facts are presented. An Opposition to a Petition for Reconsideration must be filed within 15 days

In response to the Petition for Reconsideration, the FCC may issue a Memorandum Opinion and Order (MO&O) or an Order on Reconsideration amending the new rules or stating that the rules will not be changed. The agency will consider public comments, replies, and concerns before finalizing its initial decision.

If a petitioner is still not satisfied with the FCC's decision, the matter can be appealed to the courts. The U.S. Court of Appeals for the DC Circuit is the proper venue for reviewing actions of U.S. government agencies.

As you can see, FCC rulemaking is an involved, complicated, and very time-consuming process. However, it is designed to assure that "we the people" have ample opportunity to express our opinions and make our arguments before final decisions are made.

73, Fred, W5YI

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beginner's corner

BY WAYNE YOSHIDA,* KH6WZ

Showing Off—
Ham Radio Meets the Public Eye

Summer is here, and that means Field Day (FD)! Every fourth weekend in June, amateur radio operators all over the U.S. and Canada participate in one of North America's largest operating events, called Field Day. Organized by ham radio's national membership organization, the American Radio Relay League, FD is an on-the-air event designed to encourage ham radio operators to practice their emergency communications skills and to increase public awareness about ham radio's public-service capability. It is also a great time to show your neighbors, friends, and family members what ham radio is all about.

As a beginner in ham radio activities, you should be excited about this event and training exercise, since it will help you become prepared to offer emergency service if "something bad" were to happen. Of course, FD is a way to have fun setting up your station and operating in a non-normal setting, too.

A long time ago, the FCC recognized the importance of creating a team of trained, volunteer communications experts to provide emergency communications during an emergency. We must continue to carry on the mission of being the savior when normal communications modes fail. Even in this age of instant and reliable communications worldwide, the news is filled with stories about how ham radio communications played some role in a crisis.

As you and your club group prepare for the event, always keep in mind that one of the main objectives of FD is to publicize what ham radio is and why it is good for the community. With this visibility comes the responsibility of portraying ham radio and what hams do in the most positive way. In these days of antenna restrictions, television and radio interference issues, and the fear of terrorism, we must always be viewed as a valuable community resource, rather than a real-estate eyesore or neighborhood nuisance.

When we demonstrate ham radio to the everyday citizen, remember that we are making a "first impression" on many people. Also remember that they probably are non-technical people, and may see you as a strange person doing something strange or even sinister. In a recent contest, one of my friends had to explain to a passer-by that he was not listening for whales, but was instead participating in a radio communications contest, and was trying to talk to someone in Mexico using his ham radio set. In another contest (my friend tends to attract these sorts of questions), he was approached by an angry parent, since he thought his kids were in some kind of danger, as there was all this equipment all over the place, and he did not want his kids to get electrocuted from the wires coming out of his car. I was operating by the side of a road in a "very nice" hilltop neighborhood, and within three minutes a policeman showed up and said that the police station was getting complaints of some "strange activity" going on.

One of the "tools" I keep with me during any radio activity in a public place is a short hand-out of information on what ham radio is and what I am doing (see the sidebar). This actually is not a new idea. I got the inspiration years ago when I went to a local park to watch radio-control planes. One of the model pilots had a similar document pasted onto his flight-gear box. It was very informative, and I was able to watch him fly his plane and not bother him with questions as he concentrated on keeping his model in the air.

However, when the spectators are bold enough to ask questions, I always take the time to educate them and invite them to take a closer look at the equipment. I will even invite them to say a few words to the voice on the other side of the radio. It is always fun to see their reactions when I explain what is going on, and they are usually impressed by the capability of having instant communications "for free" and not having to pay "roaming charges" or something like that.

When explaining ham radio to a non-ham, use everyday words and phrases to explain what is

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When explaining ham radio to the non-ham public, avoid jargon and technical terms as much as possible. Focus on the benefits of what ham radio operators can do in case of a natural disaster such as an earthquake or tornado, or a telephone or cell-phone outage. In the photo Larry Henderson, KF6ZB, explains what we are doing at a recent Field Day operation at a local park.

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going on. Thus, if you are operating 10-meter single side-band, with your new all-solid-state radio connected to a 10-element Yagi antenna with the digital signal processor enabled on the receiver, you can simply explain that your radio is connected to this directional antenna, and all the aluminum tubes in the air help increase the radio signal's strength in a certain direction. Also explain that you have to "point" the antenna properly to make the radio station on the other side come in stronger. You can demonstrate the DSP feature by enabling and disabling it, pointing out the differences in what the signals sound like.

It is especially fun when the inquisitive person has a kid or two in tow, since kids may be more curious than grown-ups. I always mention the educational aspect of ham radio to the parents, as all parents (well, most parents should) worry about what their kids are going to grow up to be.

I give them a short synopsis of the social aspects of ham radio, too, including the breaking of barriers and finding things in common with strangers. Age, race, handicaps, geography, and even language do not get in the way of having a two-way conversation when using ham radio to communicate.

If you are affiliated with a public-service-oriented group such as the Amateur Radio Emergency Service (ARES), Radio Amateur Civil Emergency Service (RACES), or the Red Cross, this is another great opportunity to expose the onlookers to your organization. You also may be able to convince them to join.

Making the Most Out of the Outdoor Event

One thing you may want to do to further increase the positive exposure you can get while operating in a public venue is write a news release (this also means a 100-point bonus for Field Day). A news release is essentially a "short story" that contains the "who, what, where, when, and how" details of a newsworthy event, and it is used by reporters to begin a news story. In some cases, the release can be used as-is by a reporter, but most of the time the news release is used as a source of background information on the event.

For Field Day, it is a good idea to prepare a news release a few days before the event and send it out to your local newspaper offices. The ARRL Field Day Kit contains a sample news release you can use as a model. Make sure to

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A Helpful Hand-Out

This question-and-answer hand-out from Huntington Beach RACES is a useful item to have on-hand when operating in a public place. You should adjust the text of this hand-out to suit your own radio group and operating event.

Who are we and why are we here?

We are licensed amateur radio operators ("hams") and members of Huntington Beach Radio Amateur Civil Emergency Service (RACES) communications volunteers. The goal of this drill is to talk to as many other ham radio stations as possible under simulated emergency conditions for 24 hours.

Is this like CB?

No, this is not Citizens' Band radio (CB). Ham radio requires a license issued by the Federal Communications Commission (FCC), and licensees are required to successfully pass a written test involving electronics theory, radio regulations, and operating procedures.

How far can you talk?

The frequencies we are using enable communications from as close as a few city blocks to many hundreds or thousands of miles away.

Is this legal?

Yes. The Amateur Radio Service was created to encourage development of radio communication technology and establish a public-service communications force at no charge to citizens or the government.

How much does this equipment cost?

Like any other hobby, people spend as much or as little as they can afford. Most people involved in ham radio spend as much as any serious stereo enthusiast, amateur photographer, or woodworker.

Where can I get more information?

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

City of Huntington Beach
Radio Amateur Civil Emergency Service (RACES)

If you are a licensed amateur radio operator over the age of 18, and a resident of Huntington Beach, you may wish to join HB RACES. The Huntington Beach Fire Department Emergency Services Office administers the RACES team. RACES is not a club. It is a volunteer group within a government agency. To learn more about HB RACES, go to <http://www.hbraces.org>.

Field Day is not the only opportunity to "show off" ham radio capabilities to the public. During a recent demonstration at the Orange County (California) Red Cross chapter, Gordon West, WB6NOA, explained the basics and benefits of "transmitter hunting" to Red Cross disaster-relief volunteers.

include the important details and facts that reporters are always looking for. The ARRL website has plenty of details and a sample press kit for Field Day. Go to <http://www.arrl.org/contests/forms> and download the "Field Day Package."

You also want to try to get as much specific information as possible into the first sentence, in case the reader never moves on any further. For example, instead of saying "A group of city residents gathers at a local park each year to demonstrate ham radio emergency communications," say something like this instead: "Every fourth weekend in June, over a dozen volunteers from the Surfside Radio Club set up ham radio communications equipment near the softball field in Central Park to demonstrate their disaster communications readiness for the city."

Although both sentences are okay, the second version contains specific details needed for a decent news story. We know when and where the event takes place; we know who is involved, and what they are doing.

Expand the details with a quick and simple explanation of what Field Day is. Move on to explain what ham radio is, and follow-up with a short profile about the club and its officers.

Operating outdoors (or even indoors) and in front of the public is a great way to reinforce the value of ham radio to everyday citizens. Positive ham radio publicity is also a great way to recruit people, especially children, into our ranks.

73, Wayne, KH6WZ

Looking Ahead...

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

- "Rack-Mount Your Station," by John Ellis, NP2B
- "More Cheap Antenna Improv," by George Ewing, WA8WTE
- "Using the BASIC X-24 Microcontroller," by Dennis Nendza, W7KMV
- "Another Ham Radio Family Story," by Jimmy Walker, WA4ILO

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

our readers say

The Wisdom of Professor Heisseluft

The following letters were written in response to the article "A CQ Exclusive: The Next-Generation 'Heathkit®,' Biologically-Based Self-Assembly Kits for the Radio Amateur," by Professor Emil Heisseluft, in the April 2006 issue of CQ.

Dear Professor,

Please don't wait a whole year to publish again, though news of your self-assembly kits in the April issue of *CQ* was certainly worth the wait. It's an amazing coincidence that you have chosen the 241 GHz band for the introductory product. My wife and I have been experimenting on that band with wall-bounce communication from within the handball court at our gym. It has taken some experimentation, since certain alti-azimuth combinations aren't returnable.

We would like to be the first to order the MDBE-241 kit and hope you can accommodate us with a suitable time-payment schedule. While the introductory price is rather steep, we believe we can use the MBDE lab equipment as an espresso maker on weekends. If so, the machine will soon pay for itself.

Might it be possible to enhance the kit to accommodate digital operation for those of us who are willing to lift a finger?

Ken Roger, KE7EAP

Editor, *CQ*:

You have hit the jackpot again, OM. Not since the mid-fifties when I first subscribed to *CQ* have I had an issue so complete in terms of current interests, program content for my club meetings, subjects just talked about by several local clubs, and finally the "cherry on top" feature on "Next Generation 'Heathkit.'" I'm still laughing.

Jim Sipprell, K2HYQ

Editor, *CQ*:

Just wanted to drop you a line and let you know how much I appreciated the article. This shows why your publication is a leader in the amateur radio field.

However, I do have one point of contention, since you said the project was originally funded through three well-known high-scoring DXers; I believe this was a stealth funding on their behalf. I believe one of the "three" was actually passing "laundered" Lauton money which can be traced to the FISTS group on behalf of one FISTS member who wants to extend his/her life so that he/she can petition the FAA for eternity to keep the 5 wpm code requirement for General Class and higher licenses.

Victor Panzica

Victor: You raise an intriguing possibility, especially regarding the FAA's code requirement.

Cracked Corn?

Editor, *CQ*:

With each successive April, I look forward to the latest shenanigans *CQ* magazine and its columnists muster up in the way of April Fool's pranks. But has this nonsense created a sense of paranoia in some of us?

Example: Tomas Hood's Propagation column featured a photo of the sun...supposedly...I thought. (Well, maybe not.) It looked an awful lot like cracked corn! Was Tom practicing some foolery in April? I looked at the website addresses in the caption. Yes, they looked legitimate. But Tom could have easily faked them!

So I went to the sourced websites. Sure enough, they were for real! And so was the photo...I think...well, maybe. OK, I'm still not sure.

Bill, WA8MEA

Transatlantic Backscatter

Editor, *CQ*:

Congratulations to Emil Pocock, W3EP, on his brilliant article ("Backscatter Over the Atlantic," April 2006 *CQ*). It is great to see a ham who is doing original scientific investigation, using amateur radio. An article like this, based on his brilliant underlying work, would likely be welcomed in any peer-reviewed scientific publication. Congratulations, too, to *CQ* for publishing it.

Preston Douglas, WJ2V

Those Cover Shots...

Editor, *CQ*:

I just had to write to compliment *CQ* on the wonderful job you folks always do on your covers. Larry (Mulvehill, WB2ZPI) does a great job and the *CQ* cover photos impart feelings and stir emotions unlike the photos appearing on any other amateur radio journals, and I get a lot of them, from all over the world.

The January *CQ* cover shot of KAØWTX by his "Flagpole" antenna in North Dakota made me feel cold, just looking at it. The shot shows exactly how cold and almost barren the terrain feels in the wintertime. It's a "black and white" feeling, devoid of color. And Larry's photo shows that. Although it's a color photograph, other than Mark Jensen's red jacket, there are almost no colors to be seen, typical of a winter day in North Dakota and enough to remind me why I don't live there!

These cover shots are great, and I just thought I'd remind you how good they are, and how talented WB2ZPI is behind the lens. I had the privilege of meeting Larry when he took the photo for my own *CQ* "cover shot" more than twenty years ago.

Keep up the good work! I always look forward to those covers.

Steve Katz, WB2WIK/6

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BY DAVE INGRAM,* K4TWJ

More Helpful Notes for Newer Amateurs

Once or twice a year, I strive to highlight a variety of always useful notes and tips for newer amateurs in this "World of Ideas" column. In my opinion, the purpose, or concept, here is similar to an old pro taking a newcomer under his wing and explaining the finer (and often unwritten) points of our great hobby/service. Usually my notes relate to the technical and operational intricacies of amateur radio. This time, however, they relate more to general amateur radio knowledge and traditions—those special traits some folks assume new radio amateurs magically know because they have a license.

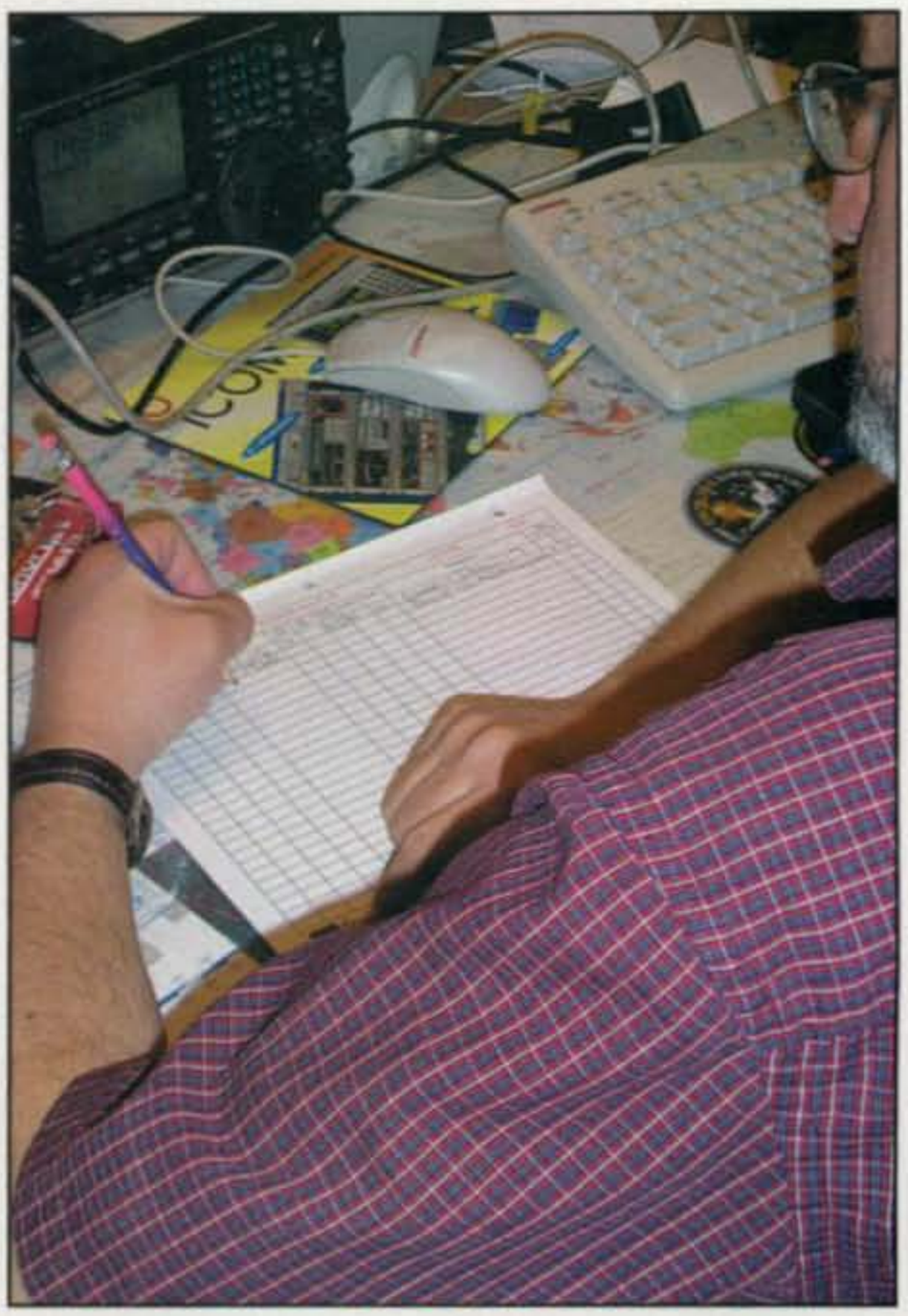
I trust you will find our notes beneficial, and ask you to continue amateur radio's proud legacy and traditions by passing these and/or similar "helping Elmer" notes on to the next generation of amateurs. We will move fast, so read carefully to avoid whiplash! Let's begin with a couple of background notes.

Habits and Traditions

My first full-time job was working in an electronics parts store and selling ham gear to fellow amateurs (a kid in a candy store, for sure!). The first two lessons I learned (from a dear old pro radio amateur, Clarence Lovell, W4MSF) were radio amateurs are traditionally honest and reliable, and yes, they are always bargain oriented. Over time, Clarence's words have proven very true. As an example, I have self-published and sold books on HF'n, QRP, DXing, Mobiling, Keys, and more to radio amateurs worldwide, and I have never had an experience with dishonesty on the part of a ham. I also have never attended a club meeting or hamfest event that was distasteful or off-color for an amateur of any age or sex. Simply stated, there is a special pride in being a radio amateur that stands above the crowd and shines even in the dark.

Radio amateurs are not without their special idiosyncrasies, however. We often haggle insistently over prices—of gear and everything else imaginable. Cheap and proud of it, you might say. If faced with a choice of used gear or new clothes, many of us opt for the gear—naturally! Next subject...

Several years ago, the FCC relaxed station-logging requirements for radio amateurs. Most of us, however, still prefer to keep an accurate log/account of our on-the-air activities. Actually, many amateurs keep records of everything imaginable in their logs—SWR measurements for multiband antennas, QSL routes for DX, postal and e-mail addresses plus telephone numbers of friends, even dates and times of doctor appointments. Try it! You will find that regardless of confusion in a house, your logbook will remain intact and accurate. Keeping a station log is more than a habit. It



While FCC rules no longer require amateurs to keep a station log, many hams continue to do so, either on paper or on a computer. Logging is useful for award tracking and exchanging QSL cards, another long-standing ham tradition.

is a proud tradition destined to continue for many years hence!

Then and Now

In comparing past and present times, historians and analysts consistently point out that every generation of our society differs in some unique way—usually becoming more technically advanced and less stouthearted in nature. Yes, and that fact applies to radio amateurs. Our founding forefathers, for example, delved fearlessly into extreme amounts of static electricity with fire-breathing spark-gap transmitters, large Tesla coils, and blazing-hot hand keys. Gear of the early 1900s was as frightful as it was fun (scary?) to use.

Our next generation (1920s, '30s, and '40s) lived almost as dangerously, using open-air transmitters with large vacuum tubes and fully exposed high voltages. One slip of a finger easily resulted in a tooth-rattling shock one remembered for many years to come (affectionately referred to as acquiring creditable respect for high voltage!).

Today's amateurs—those joining our wondrous world of global communications within the last 10

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or 15 years—typically "grew up" using all-solid-state and fully enclosed gear. As a result, they may understandably feel intimidated by tube-type gear and more comfortable around transistorized gear. That intimidation could actually help keep them safe. Accidentally coming in contact with several thousand volts used with large vacuum tubes in high-powered linear amplifiers could prove fatal. Fortunately, modern amplifiers are fully enclosed in cabinets with dozens of screws plus interlocks and high-voltage disconnects, so getting electrocuted is nigh impossible—unless you purposely defeat those safety devices.

Personally, I always prefer to take safety measures two steps further. How? First, be sure any gear using high voltage has been off and disconnected from the AC power line several hours before openings its cabinet. Second, use a long and well-insulated screwdriver to discharge any residual voltage (to chassis ground) after removing a cabinet. Never "dink" inside "live" (with high voltage) equipment, and never assume a unit is safely disconnected from external power until you actually see and confirm the position of its connectors and/or plugs.

Please understand that these precautions are not intended to discourage you from using and enjoying vacuum-tube gear (it is tremendous fun!). I am simply encouraging you to handle the gear with respect (and safely!).

High Voltage vs. Low Voltage

Although seldom realized, the low-voltage and high-current power supplies and power sources used with solid-state gear also have their dangerous points. If you wear jewelry, such as a ring, when working around 13 volts DC at 20 amps or greater (and bear in mind that a good automobile battery can deliver 150 or 200 amps for a short time) and your hand slips, high current passing through the ring can turn it into a red-hot welding rod. Resultant heat can sever a finger rather quickly. You may know to avoid potentially dangerous points, but there is always the possibility of forgetting or of your hand accidentally slipping. The obvious precaution is always remove jewelry (watch, ring, etc.) before working on any electronic equipment. An ounce of prevention is always worth a pound of cure.

Basic Troubleshooting

During eras past—when station gear was relatively simple and easy to understand—radio amateurs took special pride in troubleshooting and repairing their own equipment. Indeed, such maintenance was both a tradition and a necessity (hams were the only folks with a general knowledge of how their gear worked!). Modern gear is significantly more complex and compact, however, so delving into unfamiliar circuitry with little more than a half-labeled schematic diagram and a magnifier can seem like taking wild shots in the dark.

Fortunately there are some encouraging aspects in this bewilderment—namely the fact that modern electronic circuits are quite reliable and many equipment problems are now more mechanical than electrical in nature. You may thus be pleasantly surprised at how many problems and idiosyncrasies you can quickly solve through simple "look and check" procedures.

Close inspection of a rig in distress often reveals a loose ground lug, a broken cable wire, or a defunct connector that can be repaired quickly and at a lower cost than sending the unit out for service. Would you like to take that troubleshooting a step further? Consider your rig's particular problem, and then study its block diagram to determine what circuit stages might be associated with the problem. Let the resultant tips lead you to the ailing area. If physical defect is not immediately apparent, notice if the problem seems confined to one particular circuit board. Removing the board and cleaning its gold-plated edge connectors with a few light rubs from a rubber pencil eraser may clear up things admirably. Don't laugh! This technique proves its merit time after time—on ham gear, computers, and more. I have even used it to quickly fix anti-lock brake and traction-loss sensors on my dear Chevy Camaro.

There is another comforting spin-off here, too. If after some mild-mannered troubleshooting you are unsuccessful in finding what's wrong, you have the consolation of knowing your expenditure of funds for repairs were well justified. You also acquire a good appreciation for repairs performed by a service technician. They get the "rough stuff"!

Bands and Sunspots

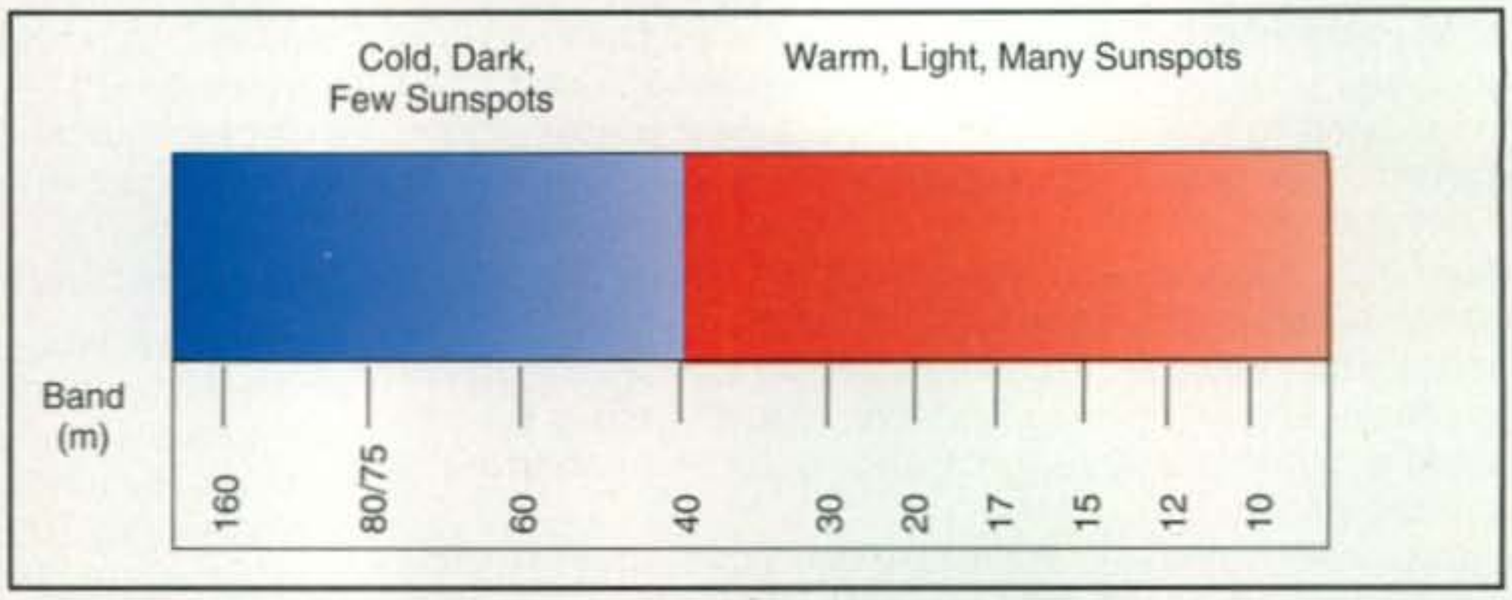
Have you occasionally overheard old pro HFers discussing band conditions, sunspot counts, and solar flares and wondered if there was a simple explanation of how such complex phenomena influence radio communications? Sure there is, and we will condense the details for easy understanding.

Long-distance (DX) communications on the 160- through 10-meter bands depend on skipping or reflecting radio signals/waves off the Earth's ionosphere—a layer of gases 50–250 miles above the Earth. When sunspot counts are high (typically above 100), increased ultraviolet energy from the sun enhances signal reflectivity of the ionosphere—mainly for frequencies above 7 MHz and mainly during the hours of daylight (when UV energy is at a maximum). When UV energy is less (such as during years of low sunspot activity or during night hours), signal reflectivity of the ionosphere is best for frequencies below 7 MHz. Get it?

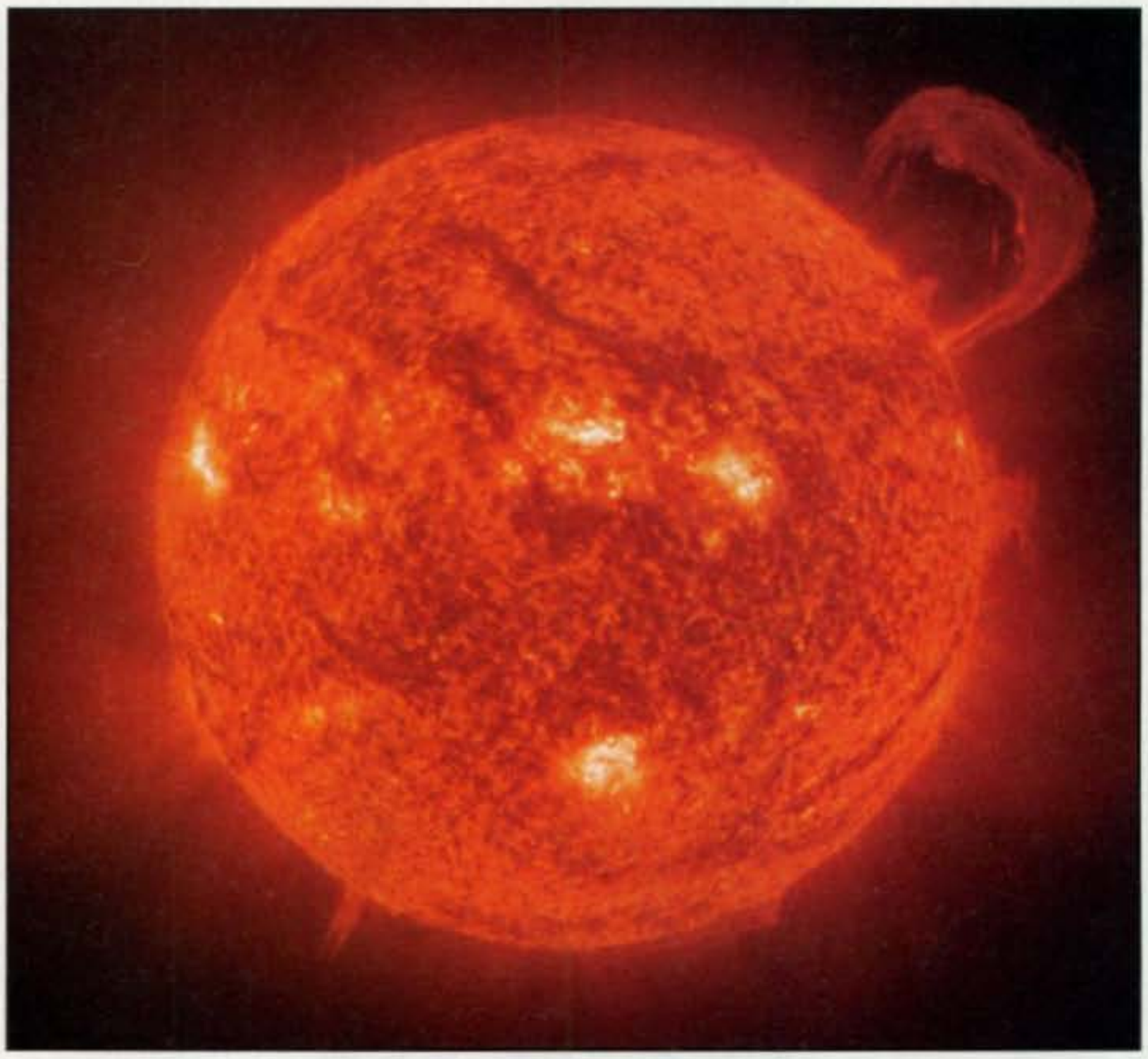
A hot ionosphere enhances communications on upper bands and a cool ionosphere enhances communications on lower bands. Add to those facts that we are presently near a

sunspot minimum, stir in some common "radio reasoning" such as there is more UV energy during summer than winter, etc., and the general concept of HF operation falls into place. That is, 10, 12, and 15 meters are ideal for DXing the world during daytime hours and during warm summer months, especially when sunspot activity is high. Similarly, the 160-, 80-, and 40-meter bands are grand for nighttime DXing during cooler months, especially when sunspot activity is low.

How can you quickly determine sunspot activity? Listen to reports from WWV on 5.0, 10.0, or 15.0 MHz at 18 minutes after each hour. Learn to associate the reports with actual band conditions, and over a period of time you can devise your own means of evaluating and predicting band conditions. In particular, notice how the bands above 7 MHz go flat (or dead!) during solar flares and how they come back to life with a vengeance immediately after flares or magnetic storms cease (a grand time for DXing, regardless of sunspot counts!). Most solar flares and/or magnetic storms, incidentally, last only a few days.



The ability to work DX (faraway stations) on different HF bands varies with time of day, season, and the 11-year sunspot cycle. This is a rough guide as to which bands are best when, although there are frequent exceptions. Right now, we are at the low point of the current sunspot cycle, so look for good DX on the lower HF bands, along with occasional summertime openings on the higher frequency bands.



Solar flares can occur at any point in the sunspot cycle (although there are fewer at the bottom than at the peak). They can disrupt HF radio communications here on Earth, but are often followed by periods of better-than-usual propagation. (Photo courtesy NASA/SOHO Observatory)

Conclusion

Our helpful notes for newcomers could continue for several more pages, but we have once again reached the closing wire and must bow out for another month. A creditable amount of always useful information was included in this month's column. If you have read this far, congratulate yourself on absorbing that "hidden knowledge." I also will look for your comments regarding whether we should present future installments of this "helping Elmer" series.

73, Dave, K4TWJ

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On the Air with D-STAR

BY DON ROTOLO,* N2IRZ

QRT is a boring place to be. Although my tower is still off the air, I managed to find some solace on 23 cm. This month I'm going to share with you the trials, tribulations, and immense satisfaction of working digital voice on 1.2 GHz with the D-STAR system. Before we get into that, though, I'd like to get back to the notion of privacy, encryption, and the law.

In my April column, I stated that hams need to be permitted some form of encryption so they can pass medical data during emergencies without running afoul of HIPPA (the Health Insurance Portability and Accountability Act of 1996), the federal law designed to protect privacy of personal medical information. This is not exactly true, as kindly pointed out by Tim Gorman, ABØWR. To quote from Tim's e-mail: "HIPAA only restricts the transmission of patient data for parties that bill the patient for first aid or other medical services. These parties are considered to be 'covered agencies' for HIPAA. Even covered parties may send patient data to others if it is for treatment in emergency situations. Transmitting patient data for non-covered parties (e.g., the American Red Cross) or for covered parties in emergency situations does not require adherence to privacy rules for patient data."

This statement is backed up by some web references, all of which are in agreement: The privacy rules of HIPAA apply only to those entities that bill the patient for medical services, and even then only to specifics. Patent location and general condition are not "specifics." (One web reference: <http://www.hhs.gov/ocr/hipaa/consumer_summary.pdf>)

Clearly, this information dramatically changes the argument for permitting encryption on the amateur bands. Such permission is not necessary, and any drive to permit it should be abandoned, at least if it is based on federal privacy regulations.

Of course, this doesn't change the long-observed practice of discretion when communicating over the air. Anyone can be listening, and a misheard or misinterpreted statement made by a ham could lead to considerable distress or embarrassment. Think about what you're saying, use simple codes when appropriate, and discuss this point in your regular preparedness meetings.

My sincere thanks to Tim for taking the time to write to me. It is my pleasure to set the record straight.

D-STAR

Last time I wrote about my excitement over the loan of an ICOM ID-1. This month I'm going to tell you all about my experiences getting it on the air, and about some of the different kind of fun digital voice has in store for you.

After unpacking the radio, the first thing I noticed was that you can't really get it to work without reading the manual. The ID-1 is more like a packet terminal node controller (TNC) than an FM radio—in more ways than one. In particular, the first thing you need to do, after connecting power and antenna, is to program in your callsign.

Programming your callsign on the ID-1 using the (included) RC-24 remote-control head isn't difficult, being similar to programming an alphanumeric name for your favorite repeater. However, it's definitely not something you want to do while driving. The manual is very clear on this multi-step procedure, but that doesn't make it any less tedious. On the K2DIG repeater here in New York City, one fellow admitted that he had programmed everything through the RC-24, not yet having installed the ID-1 software.

Installation

Installing the ID-1 driver and application software is as easy as can be. To start, you connect the ID-1 to a USB port and switch it on, causing the "New Hardware Found" wizard to start up. The user manual walks you through the steps to install the driver under Windows® XP, 98, and Me, with clear illustrations of the screen and text explaining

Photo A– The ID-1 1.2-GHz digital transceiver next to my computer. While the computer isn't essential to operating the ID-1, it comes in handy during setup. Since my commute is only a few miles, I operate mostly from home.

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

Photo B– My 17-element loop Yagi for 1.2 GHz. Note the computer (seen in photo A) visible through the window. The feedline is only about 7 feet, since it's RG-58. Also note the fancy antenna-positioning system, which uses a stick jammed into the base as a rotator brake.

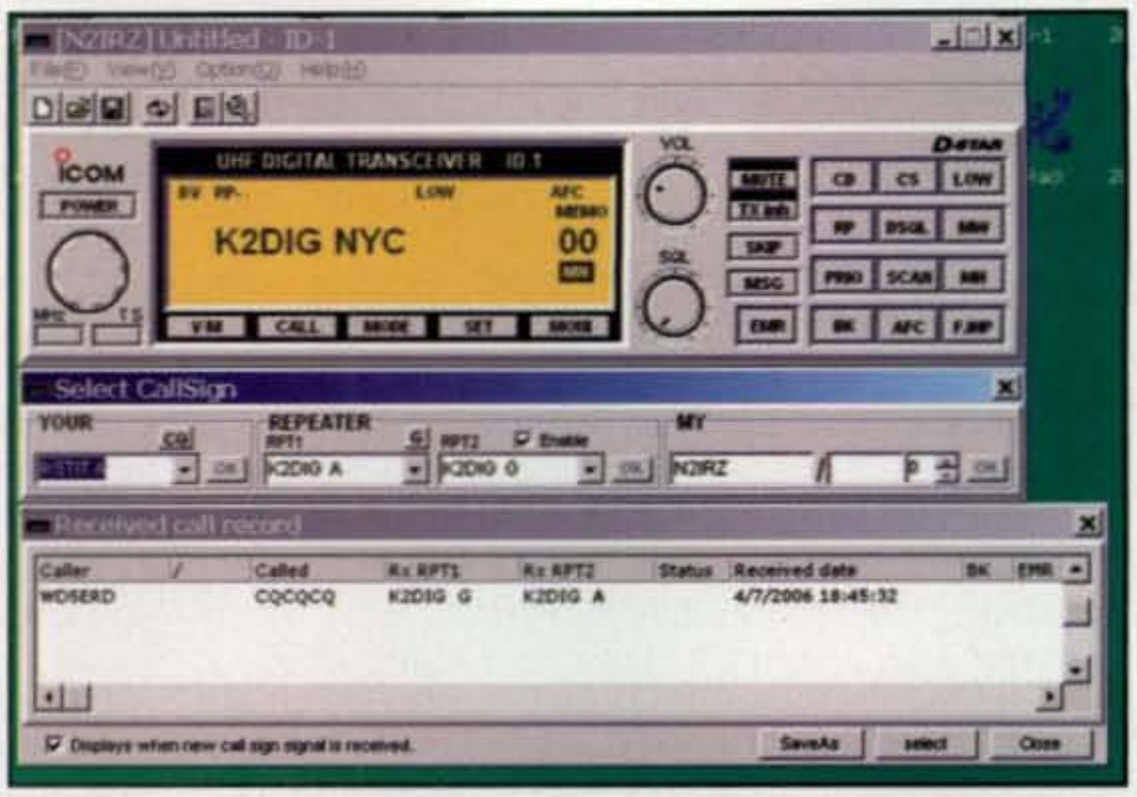

Fig. 1– The ID-1 software application, with the callsign selection screen and received call record windows active. All of the settings are very easily accomplished with the software. Settings can also be made through the front panel, but that's a little more time-consuming.

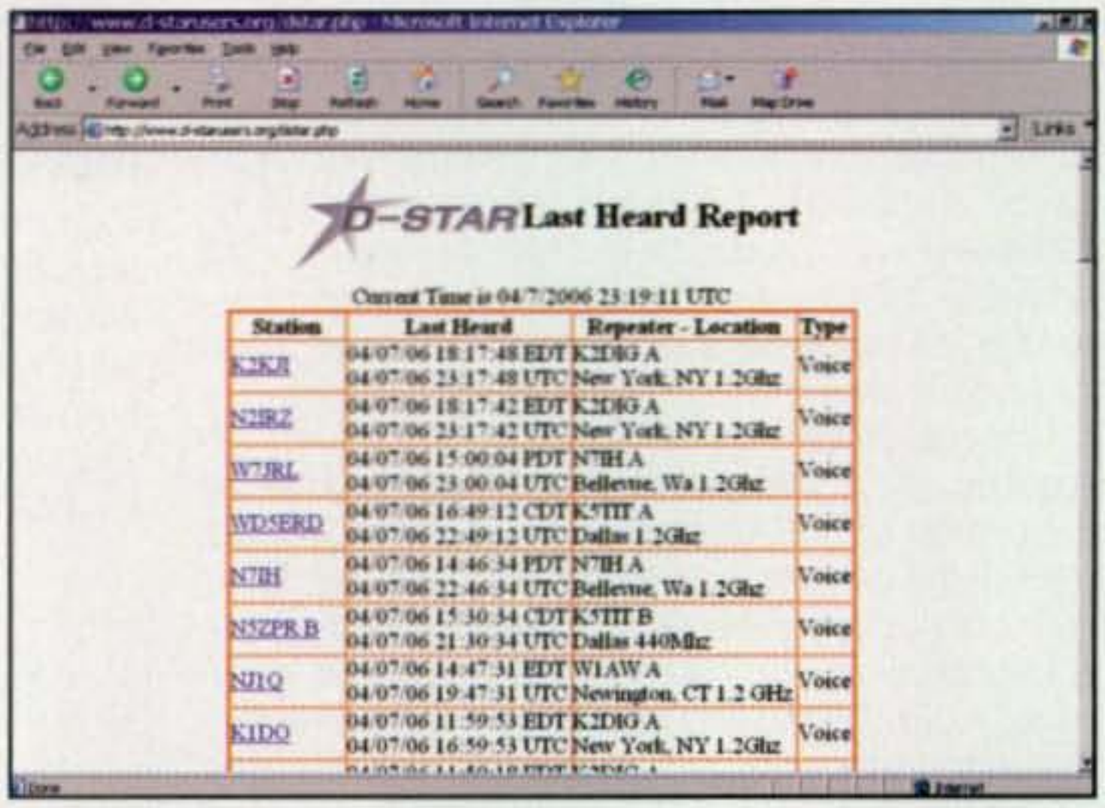

Fig. 2– The D-STAR Last Heard Report, found at <www.d-starusers.org>. Note that this is not the same as the master server's internal user list, which can be used to find someone automatically based on the last place they were heard. This list is handy for seeing where the activity can be found, as D-STAR still has a relatively small group of users.

exactly what to do. Installing the control application is even easier. In total, it took about 6 minutes to install both, including a reboot.

One important point to remember during installation is to select the correct COM port. Your USB port is acting like a serial COM port with the ID-1, and selecting the wrong COM port designation will cause problems. The manual walks you through identifying the COM port, but keep in mind that it is a required, not optional, part of the set up process.

Yagi

Before we get into the details of setting up for your first QSO, I want to talk about the antenna. After pricing out some decent Yagis, I decided to build one instead. Using the loop yagi design from the *ARRL Handbook*, I built a 4-foot version with 17 elements. Although I had most of the materials on hand, I did stop at the hardware store for a 4" × 10" piece of 0.032 aluminum sheet and some #4-40 screws and nuts. I carefully cut the aluminum sheet into 1/4-inch wide by 10-inch long strips with a pedal shear, and found that 10 inches was almost too short for the two reflectors. I built the 1284-MHz version, half way between transmit and receive. For the copper driven element, I slit open a piece of 3/8-inch soft plumbing tubing, hammering it flat before cutting off a 1/4-inch strip by hand. I happened to have some UT-141 hardline lying around—a long-ago hamfest purchase for just such a contingency—and modified a Motorola-type mini-UHF connector to fit. I ran that from the driven element to the feedpoint and used a short piece of RG-58 with the correct connectors attached to run between the antenna and the rig.

After cutting and drilling the elements, I drilled out the boom, a 3/4-inch piece of aluminum scrap I had in the junk pile. I didn't have the specified #27 (0.113-inch) drill bit, so I just used 1/8 inch to no negative effect. For the Driven Element, construction is very critical, so I went and bought the required #33 drill bit and a brass 1/4-20 bolt and nut from the hardware store. Soldering the hardline to the driven element was tricky, since the insulation was polyethylene and not Teflon® and had a tendency to melt.

Assembling the antenna was not difficult, but I had to do it twice, since I forgot to clean the aluminum contact surfaces the first time. I clamped it in a vise in the basement and spent about a half hour lining up all the loops by eye so it looked nice.

I really couldn't measure the VSWR when I was done, since none of my test equipment goes above 1 GHz, but using a low-power 400–1000-MHz element in my Bird wattmeter allowed me to stretch and squash the driven element so that the reflected power was at a minimum. In reality, the adjust-

ment range was so small, I decided to forego the very slight improvement and left the driven element as close to round as I could. During testing in my basement, the antenna happened to be pointing south, the general direction from my house to New York City. I was surprised to see the K2DIG callsign appear on the RC-24 display. I was hearing the repeater from my basement!

The next day, I mounted the antenna to a 5-foot piece of antenna mast, stuck it into the patio umbrella stand, connected it to the radio through a window, and pointed it south-ish. It was time to make a QSO.

QSO

Since my callsign was already set, I only needed to set the callsign of the local repeater, K2DIG, in the RPT1 field. I added the letter "A" in the eighth position to specify the 1.2-GHz port; other port letters include "B" (440 MHz) and "C" (2 meters). I then set the "Your" callsign (whom you are calling) to "CQCQCQ"—this is how you call for a general QSO—with a single click on the "CQ" button and announced myself to the world.

When nobody came back, I rechecked the settings and connections. All was OK. Thus, I tried using some of the gateway functionality. With this, you can go into the system at your local repeater, and go out over the air at another D-STAR repeater, linked via the internet (or, if equipped, the D-STAR 10-GHz backbone link). To do this, you have to first enable the RPT2 field, and in it set your local gateway; for me, it's K2DIG G. The G in the 8th position specifies the local gateway. The last thing to set is the "Your" callsign. Instead of CQCQCQ, I needed to set the distant repeater's callsign, preceded by a slash. The slash is important, as it tells your radio and the network that *you're* calling another repeater, rather than a specific station. I'd been told that the Dallas repeater was fairly active, so I set "Your" to "/K5TIT A" and tried again.

Having no success, and suspecting my settings, I played around with them for a while. I was reading the manual and puzzling over the Monitor function when a voice boomed out "N2IRZ this is WD5ERD." I scrambled to the mic and tried to call him back, but it didn't appear I was being heard. After a few minutes of calling, a new voice (W7JRL) came out and said, "I think he's in Dallas, but you're coming out on the Bellevue, WA repeater." After a brief panic, I realized that W7JRL was hearing me just fine, so I decided to start a conversation and, maybe, get some help . . . any QSO in a storm, as it were.

It turns out that Kevin, W7JRL, works for ICOM, and we spent quite some time talking about the ID-1 and some of the finer points of digital operations. I learned that I'd had everything set correctly for a QSO on the New York City repeater. There just wasn't anyone listening. I also saw that I had the "Your" set to "/N7IH A," and so learned that you need to be aware of the settings, or you might transmit a signal from an unintended location. I proceeded to have a few more QSOs over the next days, and all went as expected, save for one particular incident:

I was having a nice long ragchew with Tim, N2OVA, on the New York City machine, when a voice came up and told me I was coming out the 1.2-GHz output of the Dallas machine. I checked the settings using the computer, and to my surprise, "Your" was set to /K5TIT and "RPT2" was enabled—neither of which was desirable for a local QSO. I thanked

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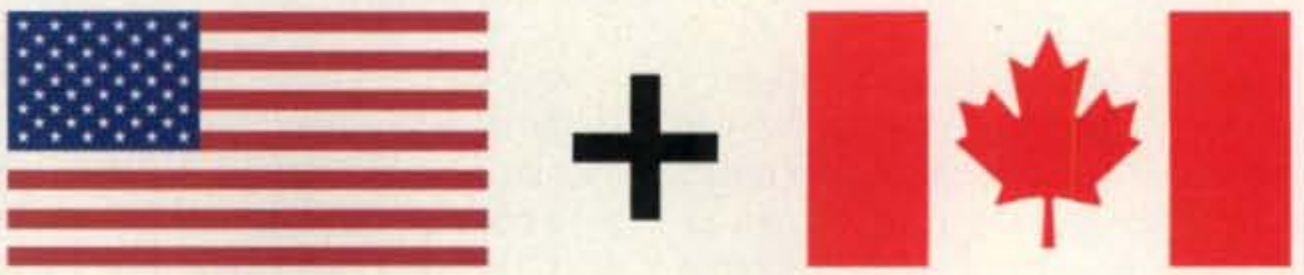

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Photo C– The contents of the ID-1 package. Note the USB and ethernet cables, along with the CD-ROM. Take a few minutes to read the manual. This is one of those rare cases where you'll need it.

him, changed the settings, and went back to Tom, who hadn't heard a word of it all. I'm still not sure what happened there, but I'm guessing I somehow changed something while I was fooling with the text message functionality.

Text Messages

Speaking of text messages, superimposed on the ID-1's voice channel is a low-speed (1.2 kb/s) data channel, which can be used for a variety of things, one of the coolest being the ability to send a brief text message which will appear on the other station's display. I haven't explored this fully, but I'll bet it can be used for a lot of things, such as APRS or packet-radio-like operations. *(It's often used to indicate a station's name, location, or even e-mail address.—ed.)*

Doubling on DV

One other thing happened: I found out what it sounds like when two digital voice stations transmit at the same time. It's hard to describe, but it's a kind of musical noise, with muted bleeps and blorks popping out of the speaker beneath a bunch of pink noise. It had me wondering why a digital repeater couldn't deal with that better, perhaps storing the second data stream until the first one finished.

Thus went my first foray into D-STAR. While the system seems to work flawlessly, you definitely need to learn just a little before getting on the air, and mind those settings to make sure your signal isn't coming out somewhere unintended. One other point to remember is that, at least right now, the D-STAR club in the United States is still small. Keeping in mind that there are four repeaters linked (at the time of writing, K2DIG, K5TIT, N7IH, and W1AW), you might go for hours without hearing another voice. *(There are some additional repeaters on the air, including one in the Philadelphia area and one in northern New Jersey, that are not yet linked to the others via the internet. However, they have some other features active. For example, the K2KJI repeater in New Jersey has linked inputs on 2 meters, 70 cm, and 23 cm, and as long as you have the right inputs and outputs programmed into memory, you can talk to any other user on any of the three bands.—ed.)*

One valuable resource is the D-STAR Users "Last heard" page, found at <http://www.d-starusers.org>, a web page that keeps a list of who was heard, where, and when. You can also join the D-STAR forum at <http://www.k5tit.org>, where you'll find a friendly and welcoming group.

Give It a Try!

I urge you to give D-STAR a try. If the ID-1 is out of reach, you can add digital voice to many other radios with an add-on board. Other than paying attention to a few settings, and having to read the manual, there's really not much to it. However, if you think of what it means to amateur radio overall—spectrum efficiency, instant and flexible linking, data capabilities—this is huge. Also, the best part is that we're still on the ground floor: Now's the time to get involved.

I'm hoping to get my antennas back up in time for the August issue, and between now and then I'll be playing around with some new, and old, digital modes. Until then . . .

73, Don, N2IRZ

Additional D-Star Observations

W2VU here . . . I've been using D-STAR for a few months now and share most of Don's experiences. I have found that trying to program the ID-1 via the remote head is mostly an exercise in frustration (and certainly not something you'll want to try while driving). On the other hand, using the computer and the ID-1 control software is a pleasure. Programming the memories this way couldn't be easier. One of the things that isn't a problem now but could be down the road is that you need to separately program each possible combination of repeaters, such as "/K5TIT A K2DIG G" for getting to Dallas from New York City, and a separate memory— "/N7IH A K2DIG G"—for Bellevue. I'm within range of two D-STAR repeaters, K2DIG in Manhattan and K2KJI in northern New Jersey. Each combination has to be programmed twice, once for each repeater I might be accessing. The ID-1 has plenty of memories, so this won't be a problem until there are a whole lot of D-STAR repeaters on the air.

For me so far, the best part of operating the ID-1 has been the opportunity to learn firsthand about propagation at 1.2 GHz. My favorite experience so far has been talking with W1AW from *inside the Lincoln Tunnel* in New York City. The opening of the tunnel tube is line-of-sight to the K2DIG repeater in the Empire State Building, and the wavelength is short enough that the signals just bounce off the walls and travel a good distance inside the tunnel. A couple of people have also speculated that the air shafts providing ventilation inside the tunnel are also wide enough to serve as a waveguide for these signals. I've covered some amazing distances in winter; I'm waiting to see how that's affected as the trees get their leaves for the summer. As with all aspects of ham radio—and particularly those which have only a small group of "pioneers"—the friendliness and helpfulness of fellow hams in getting up and running and figuring things out is the icing on the cake. I'm having fun and learning a lot, and I can't wait for one of the two repeaters in my area to bring their data channel online so I can get to experience the full range of what D-STAR has to offer.— *W2VU*

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BY JOE VERAS,* K9OCO

Seeing Double

Many vintage-radio enthusiasts are also collectors. In my travels, I have seen a number of different collecting themes. It is common to specialize in equipment from one manufacturer. Some collections feature gear from a particular era, while others are organized by mode—AM or early sideband, for example. Military surplus is another popular collecting theme.

Harold Smith, W4PQW, became interested in collecting twin sets when he acquired a McMurdo Silver Model 701 transmitter and discovered the company also had made a matching receiver, the Model 802. This pair appears in photo 1, joined by a homebrew power supply made to match the transmitter and receiver in size and appearance. Take a look at the innovative way Harold prepared the sets for both display and use. Each set of twins in his collection is mounted on a shelf-size board, along with any necessary accessory items and connecting cables. Only connection to an antenna is needed to get on the air.

Each set of twins and its mounting board slides into a rack located in the workshop area, just outside the W4PQW shack. The shelved twins are visible in the background of photo 2. Harold is holding one of the Conar pair, a Model 400 transmitter. His shelf system is perfect for showing off the radios or getting them on the air quickly.

The 701/802 twins that started his collection are part of the last product line produced by McMurdo Silver, the brilliant designer and manufacturer of premium quality receivers in the pre-war years. At the close of World War II, Silver started a company to manufacture test equipment and basic ham gear. The transmitter and receiver pictured were introduced in 1947. Silver died by his own hand at 45 years of age the following year.

The 701 transmitter covered 80 through 6 meters on both CW and AM using plug-in coils. It was available in kit form ($24.95) or factory wired ($36.95) and ran 75 watts input on CW, 30 watts AM phone. The prices did not include coils, tubes, crystal, or power supply. The 701's companion five-tube 802 receiver claimed "8 tube performance" and also covered 80–6 meters. A regenerative 735-kHz IF provided variable selectivity for both CW and phone. The 802 sold for $38.95, less tubes, power supply, and plug-in coils.

The Conar twins (photo 3) have an interesting background. The Model 500 receiver and Model 400 transmitter were part of a home study course in electronics offered by National Radio Institutes in 1965. The Washington, D.C. correspondence school supplied kits that were built by its students as they worked their way through a course leading to an amateur license. The Conar twins covered 80, 40, and 15 meters, the Novice bands of the day.

The Model 500 receiver was a simple superhet using four tubes and a germanium diode detector. Its 455-kHz IF had no filters, but the receiver contained an internal speaker and power supply. A BFO gave the 500 CW capability in addition to AM; Harold even demonstrated that it could copy SSB by judicious use of the RF gain and volume controls and careful adjustment of the BFO and main tuning. The transmitter was basic fare as well. Its one-tube (6DQ6B) circuit ran 25 watts, CW only. The Conar 400 featured band switching and a pi-network output. The prices of the Conar receiver and transmitter were considered part of the home study school's tuition, but the kits could be purchased apart from the NRI course. The transmitter sold for $33.00 and the receiver for $37.50.

In the 1950s and early '60s, the Morrow Radio Manufacturing Co. marketed a line of HF mobile equipment. The Salem, Oregon company's first products were mobile converters and accessories, but in 1955 it introduced the MB-5 and MB-560, a receiver and transmitter, respectively. They matched closely in appearance, creating a pair of compact twins. The duo in photo 4 has a Falcon receiver, a nine-tube set introduced in 1957, rather than an MB-5. The receiver pictured has an optional BC tuner, which gave the Falcon broadcast-

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Photo 1– Although he was better known for his elaborate receivers of the 1920s and '30s, McMurdo Silver sold a line of basic ham equipment in the late 1940s. The Model 701 transmitter is on the left, the Model 802 receiver on the right, and the homebrew power supply, center) (Photos © Joe Veras, 2006, all rights reserved)

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Photo 2– Harold Smith, W4PQW, holds a Conar 400 transmitter from one of the twin sets he has collected. Others behind him can be quickly removed from their specially constructed rack and put on the air.

band coverage for either Conelrad or entertainment purposes. The double-conversion set covered 80 through 10 meters and sold for $169.00. The BCT broadcast tuner was an additional $19.95. Morrow also marketed its transmitters and receivers as a compact fixed station. The company sold a custom-made end table to put Morrow gear within easy reach of the op's arm chair. The table was available in a variety of constructions and finishes, including solid mahogany. The station was hidden by a sliding panel when not in use. The MB-560 transmitter sold for $189.50 and required either an AC or DC power supply. Power input to the 6146 final was 90 watts CW, 60 watts AM phone with a pi-network on the output side. The equipment is compact: 4" high, 11.75" wide, and 6.5" deep (7.125" for the receiver).

Hallicrafters offered a set of twins in 1963 (photo 5). The SX-117 and HT-44 had similar front-panel designs. They could be slaved together and used as a transceiver. The SX-117 receiver was the first born, followed by its transmitter sibling later in the year. The 13-tube, triple-conversion receiver was ham band only, although it could tune most of the 3- to 30-MHz range with auxiliary crystals. The optional HA-10 tuning unit provided coverage from 85 kHz to 3 MHz. L/C circuits in the SX-117's 50.75-kHz IF provided selectivity. The receiver sold for $379.95. The HT-44 used phasing to generate single sideband. This method was common among companies active in the early days of SSB,

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Photo 3– The Conar transmitter and receiver kits were part of the hands-on instruction provided in National Radio Institute's home study course.

Photo 4– Morrow made a series of matching mobile transmitters and receivers that could also be configured for use as a home station. (The MB-560 transmitter is on left, the Falcon receiver on the right.)

such as Lakeshore and Central Electronics, before the tide turned in favor of filter-type rigs as SSB gained in popularity. I believe the HT-44 was one of the last of the phasing transmitters to hit the market (technically, some current transceivers use phasing generation, but we are talking vacuum tubes here, not computer chips). It sold for $395.00 and required the PS-150-120 power supply ($99.50) shown next to the transmitter in the photograph.

Not all of Harold's twins are identical. The Multi-Elmac pair in photo 6 were made and marketed to be used together, but favor each other in neither size nor appearance. The Multi-Products Company of Hazel Park and Oak Park, Michigan made amateur CW and AM mobile equipment under both the Elmac and Multi-Elmac names in the 1950s. This business continued up until 1962, although there was an SSB transceiver (the ATR-4) proposed in 1963. Only a few samples were produced, and it never became a true production item.

The transmitter and receiver in the photo both date from 1960. Elmac's AF-68 mobile transmitter operated AM and CW on 80 through 6 meters with VFO control. The company termed it a "Trans-citer," suggesting it could also be employed to drive a larger home station transmitter, using the AF-68's VFO as well as speech amp and audio circuits. Input power to the 6146 final was 60 watts. Forty watts of audio was available when the transmitter was used as a driver. It sold for $205.00. The PMR-8 receiver covered 80 through 6 meters plus the broadcast band. It used eight tubes and was double conversion, with IFs at 2238 and 262 kHz. L/C filters were used in the lower frequency IF for selectivity. The receiver's BFO control was marked for upper and lower sideband reception. It sold for $189.50. Both the AF-68 and PMR-8 required an external power supply.

For the past several years, Harold has collected and restored matching transmitters and receivers, a process he prefers to call *resurrection*. Among the twins in his collection are radios from McMurdo Silver, Conar, Drake, Elmac, Gonset, Hallicrafters, Harvey-Wells, Heath, Knight, Morrow, Kenwood, Yaesu, and the military TCS set from Collins. There are other sets of twins he doesn't have, but when reminded of this, he says, "I'm not dead yet, either!"

The Spark Burns for a Lifetime

Harold's interest in radio began in a way familiar to many of us: He was seduced by its magic. In his case, this magic predated twin sets, ham radio in general, and even vacuum tubes. His first radio had at its simple core a piece of galena crystal and a cat's whisker.

To set the scene . . . Harold was born in 1928 on a hillside farm in Neshoba County, Mississippi, the youngest of 11 children. In those days life on a farm was hard and the work day long. An older brother, Horace, raised Bantam chickens. Wait a minute, Joe; this is a radio magazine and you are writing about chickens? Yes. Please be patient, as it all relates. Anyway, Horace's buddy, Basil, lived nearby and tinkered with things, including radios. One day Horace went to Basil's house with a Bantam rooster and returned with the basic components for a crystal set. By the way, this was not his best trade (more about that later).

Along with the galena-crystal, cat's-whisker assembly, single-earpiece headset, a spool of 24-gauge wire, and some Fahnstock clips, Basil furnished a magazine picture illustrating how the completed crystal set should look. Using the picture as a guide, the Smith boys wound a coil on an oatmeal-box form and mounted all the components on a breadboard. Today, breadboard describes a style of construction. Back then, it most likely pressed mom's actual breadboard into alternate service.

The next order of business was an antenna. Even back then, Harold and Horace realized that *higher is better* when it comes to antennas. They set off for the nearby pine woods, cut two long, thin trees, trimmed their branches, and peeled off the bark. The end result was a pair of 40-foot masts. When Harold told me this, I had the thought that technology has come full circle. Now some cellphone companies make towers disguised as pine trees. Wire for the antenna was salvaged from an abandoned automobile. The insulators were fashioned in a way that would still work today. Harold and his brother broke off the tops of gallon glass jugs and then passed the wire through the neck of the bottle and the support rope through the handle.

The first few nights' listening attempts brought in a few stations as they tried picking around on the crystal with the

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cat's whisker, looking for its *sweet spot*. Even with the good, high antenna, the received signals were not strong and were accompanied by loud crashes of static. Someone told them they needed a better ground to improve the set's performance, so that initiated the next project. An old Ford donated its radiator, and the boys buried it in the ground just outside the window where the crystal set was located. Thereafter, Harold's late-afternoon chore was hauling water from the bottom of the hill and filling the radiator. He still isn't sure the radiator helped, but it *did* seem to improve reception and the listening began in earnest. It was the first radio Harold had seen or heard. He was six years old and the radio bug had bitten him.

Skeptical neighbors doubted the simple breadboard setup was actually pulling faraway radio signals out of the air, but Horace's buddies would stop by to listen when they came over to pick him up to go possum hunting. His friends, all in their early teens, would smile and laugh with pleasure as they heard pioneering broadcast stations such as WCKY, WOAI, WLW, and KDKA.

Horace's next trade was more complicated than the Bantam rooster/crystal set deal. He swapped a goat for a calf, then turned around and traded the calf for an Atwater Kent radio. Unlike the crystal set, the tube radio required a power source, and Harold remembers batteries placed on the floor with wires running up to connections on the radio. The early sets with the regenerative detector required a practiced hand on the tuning controls . . . three hands would have been better. Harold soon mastered the technique.

I mentioned earlier that farm life was not easy. There was a tendency, maybe even a necessity, to be self-sufficient. Harold's dad had a blacksmith shop on the farm so that he could keep his tools and agricultural implements in good repair. When not occupied with other chores, Harold spent his time in the shop building and inventing things such as water- or windmill-powered generators. In the process, he learned to think through problems, use tools, and work with his hands. All of these things would pay off later in life. When Harold was old enough to earn money working in the fields, he saved up his pennies and mail ordered a one-tube receiver housed in a little wooden box.

The family's six boys left home at an early age; all but one of them made their way into electrical or electronic professions. Harold left home at 16 during World War II. He applied for, and was selected to serve, a four-year apprenticeship at the Naval Air Station in

Photo 5– The SX-117 receiver and HT-44 transmitter from Hallicrafters could be slaved together for transceive operation. The unit on the left is the PS-150-120 AC power supply.

On the Cover

The last of the supplies from the 3YØX DXpedition to Peter I Island is ferried by helicopter to the ship, *DAO Mares,* as the group prepares to head for home. As author and group co-leader Ralph Fedor, KØIR, explains in his article (p. 13), the operation shut down two days early because of impending bad weather, but even that wasn't quick enough.

"We had gotten all our men and equipment off the island, except for about 10% of our camp gear," Ralph told *CQ.* "Suddenly, the weather closed in and we had to wait offshore on the ship for more than four days, waiting for the weather to clear enough for the helicopter to fly again and retrieve the last of our equipment that remained ashore … The terms of our (permits) dictated that we left nothing behind on the island."

Peter I lies at 68º 50' south latitude, 90 º 35' west longitude and, according to the 3YØX website, is the only oceanic island in the extreme South Pacific zone of the Southern Ocean. The island is surrounded almost year-round by dense pack ice, and the nearest land is Antarctica itself, some 280 miles (450 km) away. Because it is south of 60ºS latitude, Peter I is covered by the provisions of the 1959 Antarctic Treaty, which provides for international governance and prohibits military activities in the region.

For Mike Brunelle, FM5CD, seen in the inset photo operating on 75-meter phone, being on a glacier was a big change from the tropical beaches he's used to in Martinique. Mike was one of 20 operators from eight countries who comprised the 3YØX team. To learn more about the DXpedition, see KØIR's article on page 13 and visit the DXpedition website at: <http://www.peterone.com>.

(Cover photos by Ralph Fedor, KØIR)

Photo 6– Elmac's PMR-8 (left) and AF-68 (right) were not identical twins, but the company marketed them together for mobile station use in 1960.

Pensacola, Florida. Thanks to the time spent in the farm's blacksmith shop, Harold was familiar with wheels, pulleys, gear ratios, and the tools of the trade. This knowledge enabled him to place in the top 10 out of 500 applicants.

The next several years found him busy in several different academic disciplines. He graduated from the apprenticeship in 1948 as an aircraft electrician, finishing high school at the same time. He had also been studying for the amateur license, receiving the callsign W4PQW when he passed the Class C exam. Success on the Class B and Class A exams followed, leading to the Advanced Class ticket he holds today.

The next five years found Harold working as an avionics flightline trouble shooter. He says, "This is where I really learned my trade." He was then promoted to apprentice school instructor and, after a couple of years, to production supervisor in avionics.

By the early 1960s, government work was slowing down, with little chance for promotion or advances in pay. Harold resigned from that job and went into business for himself, opening up a marine electronics and two-way radio shop on the waterfront in downtown Pensacola. His earlier radio studies had yielded a First Class FCC commercial license with radar endorsement. This enabled him not only to perform the communications work, but also to serve as the chief engineer at a nearby AM broadcast station.

Fifteen years later, Harold returned to a government job, working until retirement from the Meteorology Engineering Center's Measurements and Standards division. Even though his professional life embraced one form of electronics or another, he has remained keenly interested and active in ham radio from 1948 until the present. The W4PQW signal is heard on a variety of modes on all bands from 160 meters through 440 MHz. His off-air ham time is spent working on equipment or antennas. One project I saw at his place is a large Collins AM broadcast transmitter being modified for the amateur bands. In addition to the twins, Harold also collects early transceivers from companies such as SBE, Hallicrafters, National, and WRL.

Thinking back on Harold's early involvement with broadcast radios, it is possible to see how the spark of magic generated by that crystal set lit the fire that has burned for a lifetime. It led to the world beyond Neshoba County, Mississippi, to both profession and hobby, and to friends everywhere.

Part of my own past dwells in the Pensacola area, too. When I visited with Harold last fall, he offered to buy dinner and asked what I like to eat. On the Gulf coast, the natural choice is seafood; that area has some of the finest available anywhere. We drove across town, ending up at a busy restaurant right on Bayou Texar. When we got out of the car, I realized we were only a block or two from the house where I had lived from age 4 to 7.

My visit prompted me to become interested in collecting twins, too. So far, though, I have managed to acquire only half of one set. Thanks to Harold Smith for a couple of wonderful visits and great meals. I don't know if he will buy you lunch or not, but you might get a little something off the grill he frequently fires up at hamfests all over the Southeast. Even if he doesn't feed you, I guarantee the conversation will be worth your time.

Speaking of hamfests, we are well into the season now. I look forward to seeing many of you at shows attended by CQ and others as well. I am working on wrapping up the vintage-radio book project and will have information on the project with me. Stop by the CQ booth and say hello, or catch me in the flea market.

73, Joe, K9OCO

Announcing:

The 2006 CQ World-Wide VHF Contest

Starts: 1800 UTC Saturday, July 15, 2006
Ends: 2100 UTC Sunday, July 16, 2006

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 plaque sponsorship, click on "Plaque Program" on the contest website at <http://www.cqww-vhf.com>.

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

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

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

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

Aeronautical mobile contacts do not count.

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

UTC is the required logging time.

X. Log Submissions: Log entries must be submitted by September 1, 2006 to be eligible for awards. Submit your electronic log in the Cabrillo format created by all major logging programs. Send via e-mail attachment to <cqvhf@cqww-vhf.com> *(note this is a change from previous years).* Subject line: Callsign [used in the contest] only.

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

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

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

what's new

BY KARL T. THURBER, JR.,* W8FX

Micro Repeater Controller, Morse Code Keyer, FT-Meter, and more

This month we again shine *CQ*'s bright product spotlight on a wide variety of items for the radio shack, antennas and accessories, and candidates for your bookshelf, taking a close look at "what's new" in our great radio hobby. Are you ready to proceed? Well, then, let's dig right in.

Accessories for the Radio Shack

NHRC-Micro Repeater Controller Available. Recently, NHRC LLC, a major supplier of repeater controllers for the amateur and commercial radio communities, introduced the NHRC-Micro Controller (photo A). It's one of the latest in the company's series of repeater controllers and accessories.

NHRC is a good source for high-value, low-cost repeater controllers. The firm designs, develops, and markets repeater controllers and related accessories especially for the amateur radio and land-mobile radio sectors. Its goal is to advance the state-of-the-art in repeater controller design, while at the same time providing powerful but cost-effective products.

The controllers range from the NHRC-2 partial kit, an inexpensive repeater controller with real stored speech, to the top-of-the-line NHRC-10 Advanced Repeater Controller. The firm currently sells ten different repeater controllers, as well as three repeater accessory products.

The company provides several products as partial kits, for experimenters and hobbyists. Partial kits include the printed circuit board, difficult-to-obtain components, and complete assembly guides. There are over 1500 satisfied customers, and thousands of repeaters worldwide operating with NHRC products.

Of the new controller, Peter Gailunas, one of the NHRC partners, says: "The NHRC-Micro is a compact repeater controller designed for easy installation in close quarters. It can be used as a conventional repeater controller, IDer for repeaters, or beacon controller."

Approximately 40% of the size of a business card, measuring only 2.0" × 1.25", the unique Micro can be installed in almost any equipment when mounted with double-sided foam adhesive tape and connected with flying leads. The Micro includes a pre-wired connector and fits anywhere; the unit can function as an IDer to make existing repeaters comply with government regulations.

The $109 NHRC-Micro is programmable by sending DTMF sequences over the air, or by computer with a serial-port connection and the free NHRC-Micro programming software. The user can program the CW ID, hang time, and courtesy tone beeps. All programming is stored in nonvolatile EEPROM memory.

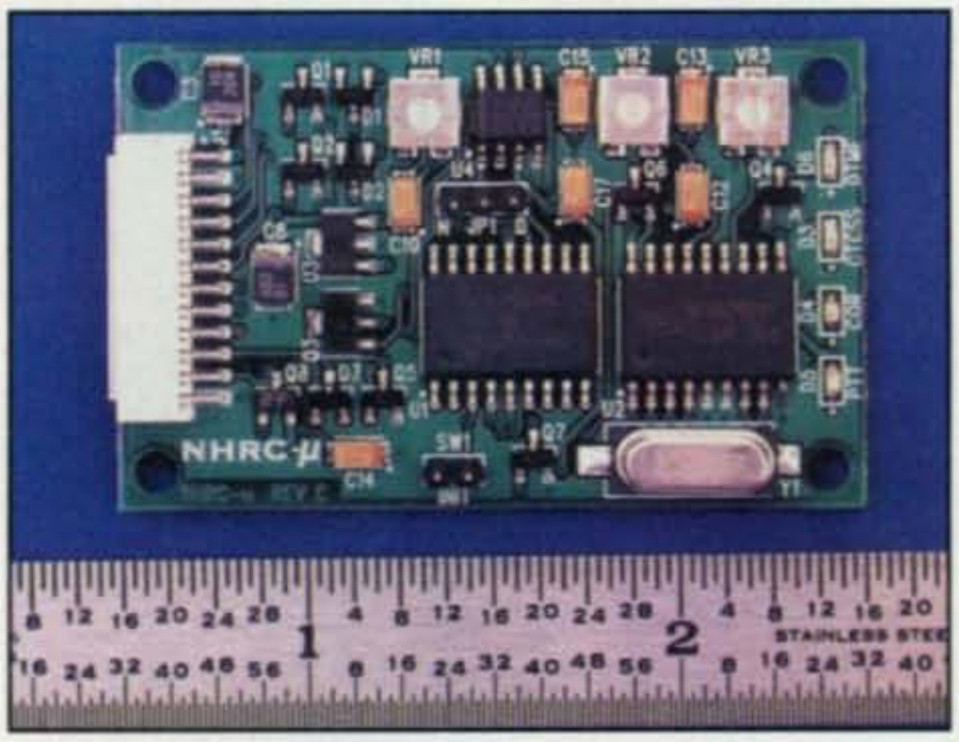

Photo A– NHRC LLC has introduced the NHRC-Micro Controller, one of the latest in the company's series of repeater controllers and accessories. Details are in the text of this month's column. (Photo courtesy of NHRC LLC)

For more information, contact NHRC LLC, 415 Fourth Range Road, Pembroke, NH 03275 (603-485-2248; e-mail: <information@nhrc.net>; on the web: <http://www.nhrc.net>).

Idiom Press Logikey K-5 Morse Code Keyer. Idiom Press supplies some of the world's finest Morse Code keyers, computerized antenna rotator controls, audio filters, books of interest to DXers, and more. Recently, Bob Locher, W9KNI, of Idiom Press, announced the availability of the new Logikey K-5 Morse Code Keyer (photo B).

Photo B– Idiom Press has announced the new Logikey K-5 Morse Code Keyer. This fully iambic memory keyer is an updated and improved version of the famous Logikey K3 keyer. See the column text and the firm's website for details. (Photo courtesy of Idiom Press)

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Photo C– The LDG FT-Meter is a low-cost, plug-and-play solution to your FT radio metering needs. The meter presents a highly readable 2.5-inch meter face with calibrated scales for signal strength and discriminator reading on receive, and power output, SWR, modulation, ALC action, and supply voltage on transmit. (Photo from the LDG Electronics website)

This fully iambic memory keyer is an updated and improved version of the famous Logikey K3 keyer, offering an unmatched feature list, reportedly with the best and most user-friendly operator interface available. The ease of sending perfect CW that is the hallmark of Logikey keyers remains unchanged.

New features include greater protection against voltage spikes, static discharges, and lightning; all stainless hardware; an internal volume control; and a sleeker, updated enclosure design. The new keyer includes a built-in battery pack that accepts three AAA cells, which will run the keyer for months, or the keyer can be powered by an external 9- to 12-volt DC power source. The keyer will key all solid-state and grid-blocked tube rigs. Bob says the keyer offers an extensive and unmatched feature list, and full details are available on the Idiom Press website.

Contact Idiom Press, P.O. Box 1985, Grants Pass, OR 97528 (541-474-0293; e-mail: <Sales@IdiomPress.com>; on the web: <http://www.idiompress.com>).

LDG Electronics FT-Meter Solves a Big Problem for Yaesu FT-857 and FT-897 Owners. LDG Electronics has announced the FT-Meter (photo C), a large, easy-to-read meter for Yaesu's popular FT-857 and FT-897 transceivers. "The small, built-in meter on these radios is just too hard to read," said LDG President Dwayne Kincaid, WD8OYG. "A little known feature of the radios is the small meter jack on the front panel," added Dwayne. "And we thought we would put it to good use by developing a large, easy- to-read meter to help hams measure important radio functions."

The new FT-Meter presents a highly readable 2.5-inch meter face with calibrated scales for signal strength and discriminator reading on receive, and power output, SWR, modulation, ALC action, and supply voltage on transmit. Each function is selectable from the radio's menu. Easily visible from anywhere on your desk or dash, the FT-Meter is illuminated by any external 12-VDC source. The FT-Meter comes fully assembled and ready to go; just plug it into the radio. It lists for $49.

The FT-Meter is one of several new products introduced by LDG in the past year. These new products include two "talking" wattmeters, the DTS Series antenna switches, and several automatic tuners. All LDG Electronics products feature LDG's new two-year warranty.

Fig. 1– The new VersaTee™ from Buddipole™ is said to be a revolution in design for any type of portable dipole. The VersaTee is rugged and made to withstand extended outdoor use. Check out the column and the Buddipole website for more details. (Graphic from the Buddipole website)

Photo D– Timewave offers the new TZ-900 AntennaSmith™ Antenna Analyzer. The device is said to be a bright and colorful window to your antenna system; the transreflective TFT LCD color display is brilliantly visible even in direct sunlight. (Photo courtesy of Timewave)

LDG Electronics is a 14-year-old St. Leonard, Maryland based amateur radio equipment manufacturer. Its products are available from distributors in 13 countries throughout the world.

Contact LDG Electronics, 1445 Parran Road, St. Leonard, MD 20685 (410-586-2177; e-mail: <ldg@ldgelectronics.com>; on the web: <http://www.ldgelectronics.com>). *Note:* Check out the LDG website, which offers an instructive "time saver test" to calculate the amount of time an LDG tuner will save you.

Antennas and Accessories

New VersaTee™ from Buddipole™. Buddipole Antennas, guided by proprietor Budd Drummond, W3FF, is a manufacturer of lightweight, versatile HF portable dipole antennas and vertical antenna systems for amateur radio. The HF portable dipole antenna is instantly configurable as a vertical dipole or any one of several other shapes, including a Vee dipole, sloper, or L shape.

The Buddipole dipole antenna is directional and can be

converted to an effective single-element vertical antenna, the "Buddistick"™, by using either one of the dipole antenna arms and a counterpoise. The Buddipole and Buddistick are said to be excellent choices for space-restricted applications, such as use as an apartment or hotel antenna, a backup marine antenna, a compact DXpedition antenna, or even a backpack antenna.

The new VersaTee (see fig. 1) is said to be a revolution in design for any type of portable dipole. Manufactured from a custom-made injection mold with fiberglass reinforced materials that are UV resistant, the VersaTee is ruggedly built to withstand extended outdoor use in all types of conditions.

The VersaTee contains standard 3/8" × 24 threads for mounting Buddipole antenna arms or other elements (such as Hamsticks) securely. The addition of molded pin placements allows for the use of rotating arms which lock securely into place. You can now create any dipole configuration you desire (sloopers, Vees and inverted Vees, L-shapes, vertical dipoles, and more) in a matter of seconds and without fear of slipping. In fact, the folks at Buddipole say that the sky is the limit when it comes to available antenna configurations. The standard model VersaTee VTE is $45; with rotating arm kit and locking pins, add $39.

For details, contact Buddipole Antennas, 2390 Templeton Drive, Redding, CA 96002 (530-226-8446; e-mail: <sales@buddipole.com>; on the web: <http://www.buddipole.com>). *Special note:* On the well-appointed website you can sign up for the free "Buddipole Email Newsletter," as well as subscribe to the Buddipole User's Group (B.U.G.).

New Handheld Vector Antenna Analyzer Displays VSWR, Complex Impedance, Smith Chart, and Reflection Coefficient. Timewave Technology, Inc. is now shipping the TZ-900 AntennaSmith™ Antenna Analyzer to customers and dealers worldwide. The handheld TZ-900 quickly measures complex antenna and feedline characteristics of high-frequency antenna systems and immediately displays all the data graphically on its sunlight-visible color display. The installer or user can make adjustments to an antenna and graphically compare it to previous data stored in the TZ-900 reference memories. The AntennaSmith displays graphs of VSWR, complex impedance, Smith Chart, and reflection coefficient over the frequency range from 200 kHz to 55 MHz. The easily adjustable analysis bandwidth covers from 1 kHz to 55 MHz.

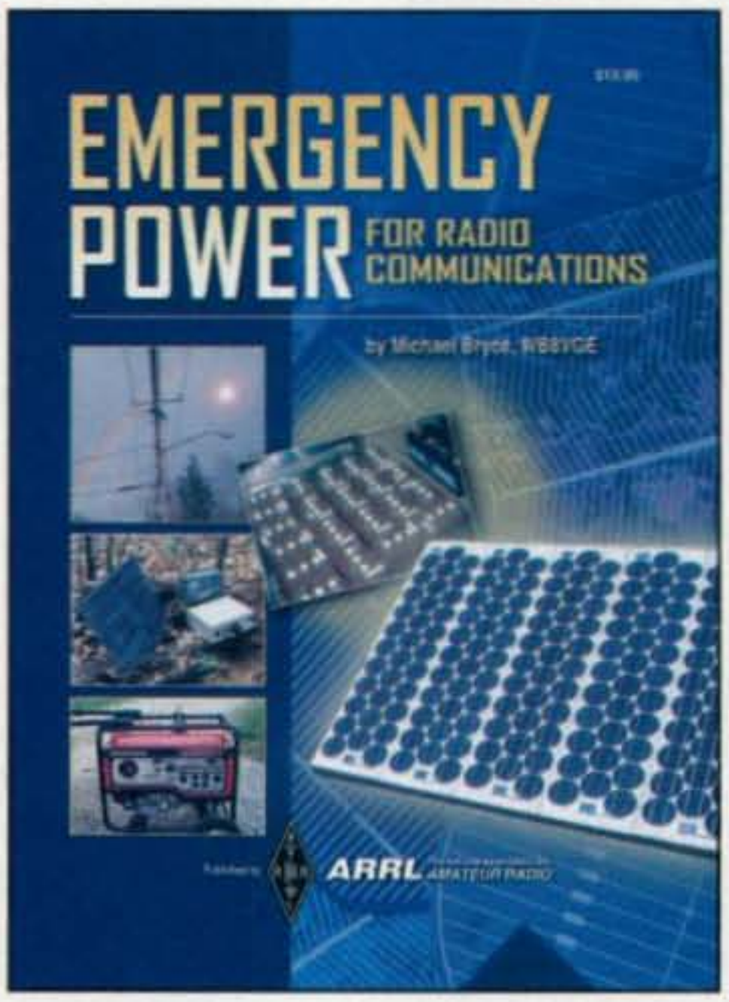

Fig. 2– The new ARRL book Emergency Power for Radio Communications, *by Michael Bryce, WB8VGE, asks an important question: When all else fails, how will you communicate? The book also presents some answers to that often difficult question. (Graphic courtesy of the ARRL)*

The user can upload and download new or stored TZ-900 data to and from a computer before, during, or after a measuring session, but the TZ-900 does not require a computer to display its data or set its operating parameters. The Timewave AS-1 program for the Windows® operating system features real-time and reference memory analysis, multiple data file comparison, and data export, archive, and retrieval. The TZ-900 kit includes the software at no extra charge.

Timewave's president, Randall Gawtry, KØCBH, proudly adds: "Extensive field trials of production prototypes in both military and amateur radio applications have already proven the value of the AntennaSmith in the design and installation of real antennas."

We should mention that Timewave designs, manufactures, and sells leading-edge digital and voice communications and instrumentation products to the worldwide military, government, industrial, and amateur radio marketplaces. Timewave's cost-effective communication products are designed to enhance and upgrade the efficiency of new and existing radio and digital systems to the latest technology levels. The instrumentation products combine the firm's extensive signal processing technology with its communication technology to measure and monitor RF and acoustic signals, devices, and systems. Timewave was established in 1984 in St. Paul, Minnesota.

For more details and product pricing, contact Timewave Technology, Inc., 1025 Selby Ave., Suite 101, St. Paul, MN 55104-6533 (651-489-5000; e-mail: <sales@timewave.com>; on the web: <http://www.timewave.com>).

From the Bookshelf

***Emergency Power for Radio Communications* from the ARRL.** The new ARRL book, *Emergency Power for Radio Communications,* by Michael Bryce, WB8VGE (fig. 2), asks an important question: When all else fails, how will you communicate? The book presents some good answers to that often difficult question.

With WB8VGE's book you explore the various means of electric power generation—from charging batteries to keeping the lights on. The book also covers the foundation of any communications installation—the power source.

You can use the book to plan ways to stay on the air when weather or other factors cause a power outage. With its help, you can find ways to reach beyond the commercial power grid. You also can identify methods for alternative power generation that work best in your particular situation.

The $19.95 book covers topics such as keeping your signal on the air, keeping the ham shack lights on with emergency power, solar power sources, charge controllers for photovoltaic systems, generators, load sizing, battery systems and storage, systems for emergency power, inverters, station instrumentation, safety, emergency practices, and more.

For more information, or to order, contact the American Radio Relay League, 225 Main Street, Newington, CT 06111-1494 (1-888-277-5289; e-mail: <pubsales@arrl.org>; on the web: <http://www.arrl.org/shop>). Orders may be placed online, and the paper-based ARRL Publications Catalog is available upon request.

New *Fire the Phone Company* Book from Peachpit Press. Are you longing to break free from the phone company's tethers and free yourself from your current long-distance bill? This book may be just the place to start.

Realizing that VoIP (Voice over Internet Protocol) still is just an intimidating acronym to many, author Dave Field speaks squarely to consumers, demonstrating that you don't have to be

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

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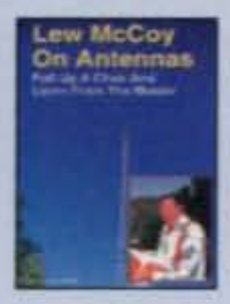
VHF Propagation
A Guide For Radio Amateurs

by Ken Neubeck, WB2AMU & Gordon West, WB6NOA
A comprehensive source-book on VHF propagation by two great authors! Here's a sampling of what's inside: Tropo Ducting, Aurora, Meteor Scatter, TEP, Sporadic-E, Combo Modes.

Order No.VHFProp $15.95



McCoy on Antennas

by Lew McCoy, W1ICP
Unlike many technical publications, Lew presents his invaluable antenna information in a casual, non-intimidating way for anyone!

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Heathkit - A Guide to the AR Products

by Chuck Penson, WA7ZZE
This greatly expanded Second Edition is a must for collectors and Ham history buffs! Pick up this 328-page volume and you won't be able to put it down!

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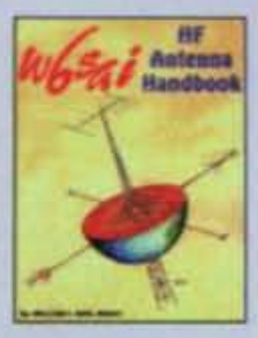
W6SAI HF Antenna Handbook



by Bill Orr, W6SAI
Inexpensive, practical antenna projects that work! Guides you through the building of wire, loop, Yagi and vertical antennas.

Order No. W6SAI $19.95

The Short Vertical Antenna and Ground Radial

by Jerry Sevick, W2FMI
This small but solid guide walks you through the design and installation of inexpensive, yet effective short HF vertical antennas. Antenna restrictions a problem? This book could keep you on the air!

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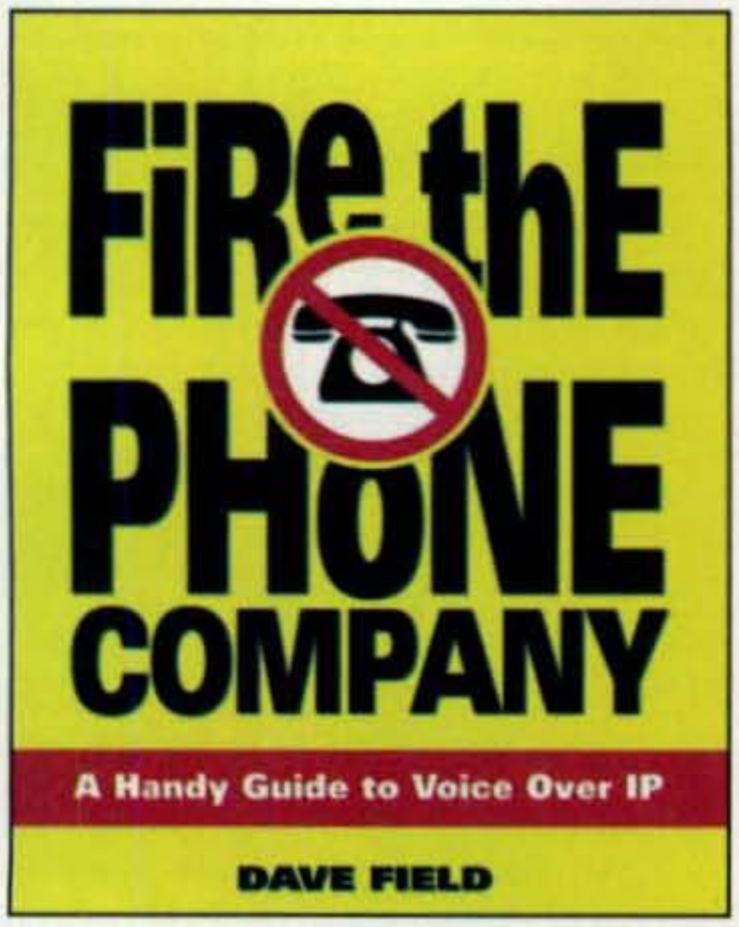


Fig. 3– Are you longing to break free from the phone company's tethers? The Peachpit Press book Fire the Phone Company: A Handy Guide to Voice Over IP, *is the place to start. Author Dave Field demonstrates that you don't have to be a technologist to start achieving significant savings through Internet phone services. (Graphic from the Peachpit Press website)*

a technologist to start achieving significant savings and even realize better phone quality through internet phone services. Keeping acronyms to a minimum, introducing important terms in sidebars, and using anecdotal accounts of real-world installations to personalize the subject, the new $24.99, 200-page book *Fire the Phone Company: A Handy Guide to Voice Over IP* (fig. 3) provides almost everything you need to know to evaluate, select, and install VoIP systems. After learning just what VoIP is and how it came into being, you'll quickly get down to the nitty-gritty with chapters on choosing a phone service, planning for VoIP, installing the equipment, setting up service, common VoIP problems and their solutions, security, getting the best value from VoIP, traveling with VoIP, and the future of the protocol. You'll find plenty of useful tips and good advice.

Visit your local bookstore, or for more information, contact Pearson Education, 200 Old Tappan Road, Tappan, NJ 07675 (1-800-283-9444 or 1-800-922-0579; e-mail: <info@peachpit.com>; on the web: <http://www.peachpit.com>).

***World Radio TV Handbook* (WRTH) 2006.** Are you (like me) an enthusiastic shortwave listener (SWL)? If so, the *WRTH* (fig. 4) may be for you, as a sort of "SW bible," an ultimate guide for the serious radio listener. The book is an authoritative, encyclopedic station adjunct that long has been recognized as the most up-to-date publication covering the world's long-, medium-, and shortwave radio and television stations.

The *WRTH* is divided into several sections. These include the Features section, containing reviews of receivers and ancillary equipment, articles on topical issues such as digital radio, interviews with broadcasters, reception conditions, color maps showing the location of SW transmitters, and more. There also is a National Radio section, which covers the world's domestic radio services. The listings are by country and include all stations broadcasting on long-wave (LW), medium-wave (MW), and shortwave (SW), together with contact details, as well as most stations broadcasting on FM.

The International Radio section includes details of all broadcasters transmitting internationally, listed by country. The schedules shown in the book are the "A" or "winter" SW frequencies as supplied by the broadcasters and confirmed by monitoring, together with any LW or MW frequencies used. The section also contains a new subsection showing clandestine and "other target broadcasters," arranged by country. The "B" or "summer" schedules, along with broadcaster updates, are available as a PDF file download from the WRTH website.

A Frequency Lists section contains MW frequency lists grouped by frequency within regions; lists of international and domestic SW broadcasts in frequency order; and international SW broadcasts in English, French, German, Portuguese, and Spanish, in UTC. A Television section has details of the main national broadcasters and large regional networks, arranged alphabetically by country. Also, a Reference section has tables and listings of transmitter sites, standard time and frequency transmissions, DX club information, internet resources, and other information.

The *World Radio TV Handbook* is issued annually. The 2006 edition is available from booksellers and electronic retailers, or it can beordered directly from the United Kingdom based publisher.

For more information, contact WRTH Publications Limited, P.O. Box 290, Oxford OX2 7FT, UK (tel. +44 (0) 1865 514405; e-mail: <sales@wrth.com>; on the web: <http://www.wrth.com>). The publisher's website notes that since their phone lines are very busy, they recommend using e-mail to contact them. WRTH is also published in the USA by Watson-Guptill Publications under their Billboard imprint, and is available at bookstores and through online merchants. For more information, contact the Watson-Guptill Publications Distributions Center, 575 Prospect St., Lakewood, NJ 08701 (732-363-4511; e-mail: <info@watsonguptill.com>; on the web: <http://www.watsonguptill.com>).

New Book and CD Updates from Klingenfuss Publications. For some 38 years, Klingenfuss has been one of the world's leading publishers of books and CDs for professional shortwave (HF) radio monitoring. On the firm's impressive website you'll find a large number of sample pages from its comprehensive list of products, plus a number of fascinating radio monitoring screenshots. A German firm, Klingenfuss is an international publisher, and all of its wares are published in English.

Klingenfuss offers a number of products, including popular offerings such as the *2006 Super Frequency List* on CD, *2006 Shortwave Frequency Guide*, *2005/2006 Guide to Utility Radio Stations* (with updated supplement), *Encyclopedia of Intelligence and Secret*

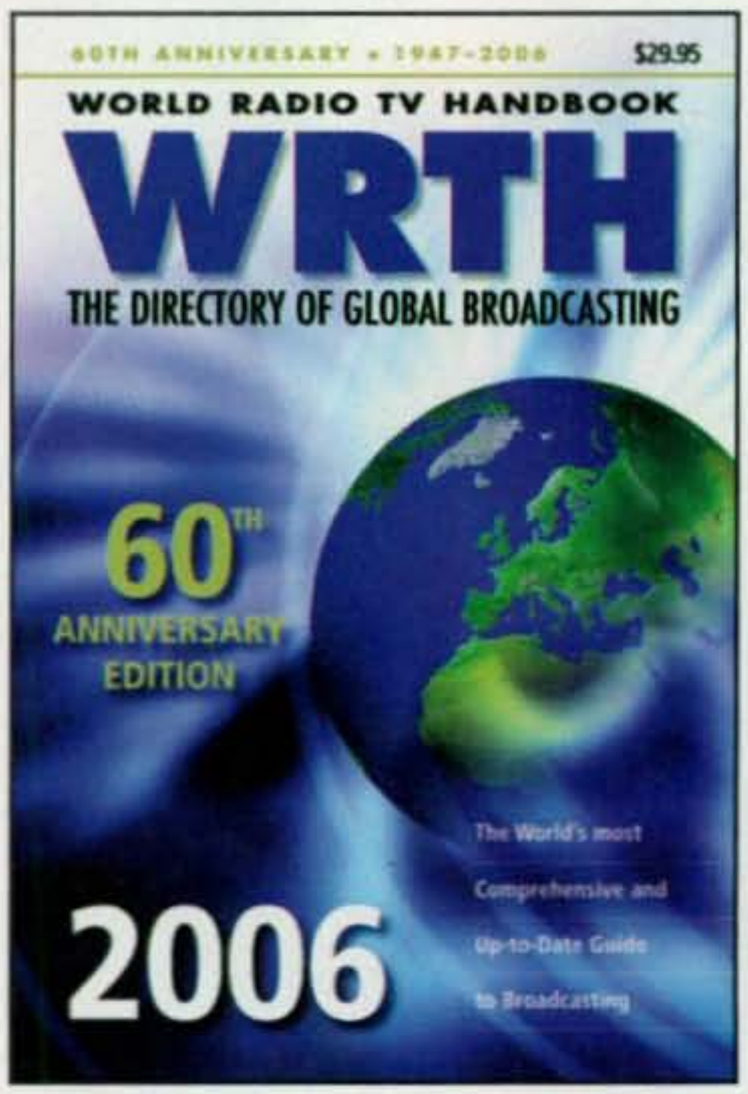
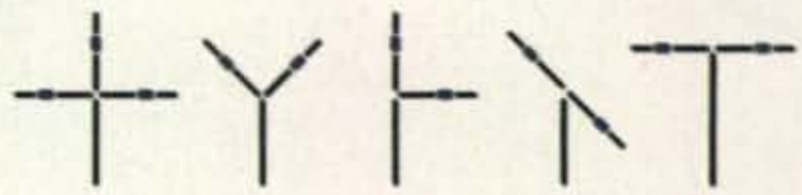


Fig. 4– The World Radio TV Handbook, *or* WRTH, *is celebrating its 60th anniversary. The highly respected annual publication is said to be the most accurate and complete guide to the world of radio on LW, MW, SW, and FM available in any form. (Graphic from the WRTH website)*

What is the Buddipole™?

The Buddipole Portable Dipole fits in your travel bag and assembles in minutes. The Buddipole is more than an antenna, it's a versatile system for launching your signal. Optimized for transmit power and proven for DX work, the Buddipole is the secret weapon used by HF portable operators all over the world.



The new VersaTee™ with rotating arm kit allows users to instantly change antenna configurations in the field.

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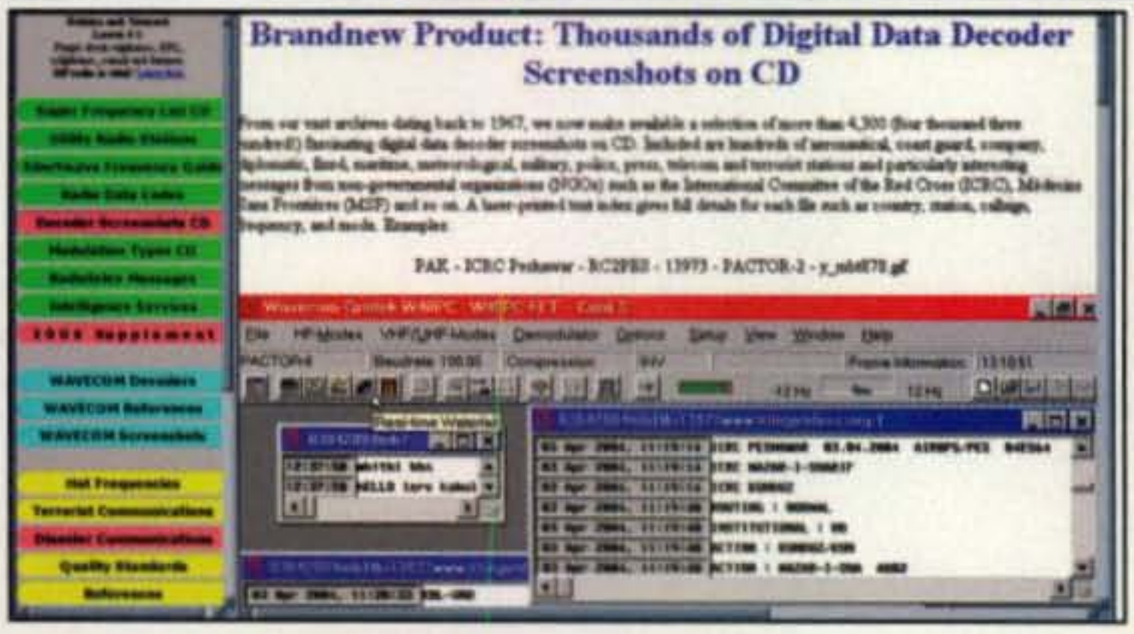

Fig. 5– A brand new Klingenfuss offering is the Digital Data Decoder Screenshots 1997–2006 *on CD, a selection of more than 4300 digital data decoder screenshots. A text index gives full details for each file. (Graphic from the Klingenfuss website)*

Services, Radio Data Code Manual, Radiotelex Messages guidebook, and considerably more.

A brand new offering is the *Digital Data Decoder Screenshots 1997–2006* on CD (fig. 5). From the company's vast archives dating back to 1967, Klingenfuss makes available more than 4300 fascinating digital data decoder screenshots. Included are hundreds of aeronautical, coast guard, company, diplomatic, fixed, maritime, meteorological, military, police, press, telecom, and even terrorist stations, plus particularly interesting messages from various non-governmental organizations (NGOs). A text index gives full details for each file, such as country, station, callsign, frequency, and mode.

The standard graphic files in GIF or JPG format are easily readable with any standard software package; or, as an alternative, just execute the convenient "slide show" on your Windows®-based PC. Klingenfuss stresses that all screenshots were directly supplied by cooperating intelligence units, equipment manufacturers abroad, and foreign radio monitoring experts.

For more information, including product pricing and various package deals, contact Klingenfuss Publications, Hagenloher Str. 14, D-72070 Tuebingen, Germany (tel. +49 7071 62830; e-mail: <info@klingenfuss.org>; on the web: <http://www.klingenfuss.org>). A detailed catalog is available upon request, either in English or in German.

Note: The 2006 Shortwave Frequency Guide and the *2006 Super Frequency List* on CD also are available domestically from the American Radio Relay League (ARRL) at <http://www.arrl.org/shop>.

Wrap-Up

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

Overheard: I have found that for the most part, nothing that's easily done ever started out that way.

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.*

vhf plus

BY JOE LYNCH,* N6CL

"It's a Wrap!" Says KC5ACR

Bill McArthur, KC5ACR, the most active operator from the International Space Station to date, is now back on Earth. Among his accomplishments are 37 ARISS QSOs, including two back-to-back orbit QSOs, the first on February 7, with Dale Schools in Dale, Oklahoma and DeGolyer Elementary School in Dallas, Texas. The second back-to-back QSOs took place on March 17, with Bowie High School in Maryland and Cleveland Heights High School in Ohio.

During his stay on board the ISS, Bill completed WAS and DXCC, as well as numerous other random QSOs around the world. The most active amateur radio operator from the ISS, he announced that this mission would be his last space mission. His future plans include assisting other astronauts who will be preparing for the U.S. return to the moon later this decade or the next.

Quadruple ISS Contact Sessions for Hawaii Hams

Among the many QSOs that Bill, KC5ACR, completed from the ISS were a number of Hawaii contacts. The following comes from Paul Perretta, KH6/G3SEA:

Enthusiasm generated by Ron Hashiro, AH6RH, at a local club meeting lecture on Space Communication's produced a record number of ISS contacts. Expedition 12 Commander Bill McArthur exchanged warm greetings of aloha with both veteran and newer hams across the islands of Kauai, Oahu, Maui, and Hawaii during all four sessions.

Sunday, March 5, 2006 saw the following active stations on a 19-deg pass: AH6RH, AH7E, KH6W, KH7GN, KH6CQ, NH6RZ, NH7L, AH6NM, KH6DT, AH6NF, KH7FR, NH6XQ, WH6GS, WH7O, AH6J, and WH6FC.

Saturday, March 25, 2006 found the following hams active on a 61-deg pass: WØCXX/MM, KH6DT, AH6RH, AH6SH, G3SEA/KH6, NH7NM, AH6RH, and NH6RZ.

Sunday, March 26, 2006 found three more hams active on a 17-deg pass: AH6RH, NH7PU, and KH6DT.

Finally, on Thursday, March 30 one ham made it in the wee hours on an 18-deg pass: KH6DT.

Power levels and antennas varied, but all participants were very happy to have had a short contact with the ISS. The author lashed together a "Bamboo Special" 3-element Yagi with 14G wire for his VX5R at 5 watts.

All wish Bill a big *mahalo*. No doubt there will be some gifts of macadamia nuts and other Hawaiian goodies on the way to Houston soon.

Paul adds: "When I obtained my G3SEA license as a young lad, the very thought of contacting a space station from Hawaii, of all places, would have seemed absurd, but on March 25, 2006 it happened!"

The WØCXX/MM QSO on March 25 was as a result of the members of the Collins Amateur Radio Club being aboard the research vessel *Davidson* and active as WØCXX/mm in the Pacific Ocean near Western Kiribati, according to "The Daily DX" reports for March 9. Rod Blocksome, KØDAS, and Tom Vinson, NYØV, were assisting in an expedition that is trying to find Amelia Earhart's Lockheed Electra E10 aircraft. Two years ago the same pair operated in the same vicinity on the same expedition.

*e-mail: <n6cl@sbcglobal.net>

VHF Plus Calendar

June 3	First Quarter Moon.
June 4	Moon Apogee. Moderate EME conditions.
June 7	*Arietids* meteor shower predicted peak.
June 9	*Zeta Perseids* meteor shower predicted peak.
June 9–10	Ham-Com Hamfest, Plano, Texas. See text for details.
June 10–12	ARRL June VHF QSO Party. See text for details.
June 11	Full Moon. Very poor EME conditions.
June 16	Moon Perigee.
June 17–18	SMIRK 6-Meter Contest. See text for details.
June 18	Last Quarter Moon. Good EME conditions.
June 21	Summer Solstice.
June 24–25	ARRL Field Day. See text for details.
June 25	New Moon. Poor EME conditions.
June 29	*Beta Taurids* meteor shower predicted peak.

—EME conditions courtesy W5LUU.

Project Eagle and Phase 3 Express: AMSAT's Future

Those of you who attended the Dayton Hamvention® last month and were able to stop by the AMSAT booth were able to see firsthand the software-defined transponder that will be the heart of the Eagle-class satellite program. Sometime in 2009, the first of these satellites is scheduled to be launched into a high-earth orbit (HEO). The second satellite is slated to be launched in 2012.

In cooperation with AMSAT and the *AMSAT Journal, CQ VHF* magazine is tentatively scheduled to reprint a series of articles on the Eagle-class satellite beginning with the Summer 2006 issue. Details of what articles will be published and when they will be published will be announced in a future column.

These satellites are being designed to be user friendly to those who previously operated HEO satellites, such as AO-40. Combining these satellites with AMSAT-DL's commitment to Phase 3 Express, amateur radio operators will have continuous worldwide satellite communications possible by 2012.

The Phase 3 Express satellite also is an HEO satellite. It is designed to act as a communication platform for radio amateurs worldwide. More information on the P3E program should be forthcoming later this year.

Other possibilities Eagle will offer include:

• Multiple operators using the satellite simultaneously and conducting independent contacts thanks to the use of wide-band transponders.

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• Assets that are valuable for support of emergency communications around the world at all times using both analog and digital modes.

• Capabilities to attract new operators to the Amateur Satellite Service and build a foundation for future support for amateur radio in space.

To build and launch Eagle requires *your* generous financial support. AMSAT has embarked on a project that will require funding each year through the end of this decade. Please help them to hatch Eagle and turn this vision into a reality. To be successful, they are counting on continuing donations to the AMSAT Eagle Fund. AMSAT is hoping to raise $150,000 per month for the remainder of this year and the next three years. To date, AMSAT has raised about $65,000 toward this year's goal.

You may donate online by going to the following URL: <http://www.amsat.org/amsat-new/eagle>. There you can pay via Pay-Pal. Other ways you can donate include calling AMSAT toll-free at (+1) 888-322-6728 within the United States and Canada, or call (+1) 301-589-6062 from the rest of the world. You may also mail your check directly to AMSAT.

Your generous contribution will help ensure that our common dream will indeed become a reality. For more information, please see AMSAT-NA's website at: <http://www.amsat.org> or AMSAT-DL's website at: <http://www.amsat-dl.org/p3e/index.htm>. Information for this piece courtesy of AMSAT-NA and AMSAT-DL.

AMSAT-NA Announces New Education Director

AMSAT-NA president Rick Hambly, W2GPS, recently announced the appointment of Dr. Paul Shuch, N6TX, as AMSAT's new Director of Education. The following is from the March 15, 2006 *ARRL Letter:*

Shuch received his doctorate from the University of California-Berkeley and has an extensive background in teaching, curriculum development, communications, and engineering. AMSAT says Shuch's highest priority will be integrated curriculum development at all educational levels, with an emphasis on using satellites in the classroom to enhance the teaching of science, math, geography, social studies, technology, and the social sciences. "I will invite all teachers within AMSAT to share with me their current, past, or planned use of satellites in the classroom, their instructional materials, and their desires in terms of future curricular development," Shuch said.

AMSAT already participates in the Amateur Radio on the International Space Sta-

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AR305 (300W) AR347 (1000W)

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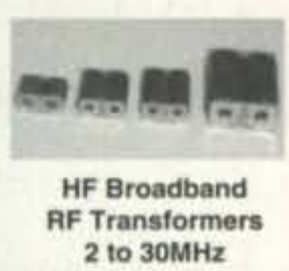

HF Broadband RF Transformers 2 to 30MHz

RF Transformers 2 to 300MHz Type "U"

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tion (ARISS) program, which helps to educate about human spaceflight and offers youngsters a chance to speak with the ISS crew via ham radio. Shuch says he'll seek ways to encourage ARISS schools and teachers "to take the next step, with programs to leverage that enthusiasm into an ongoing interest in math, science, and Amateur Radio." Among other initiatives, he also wants to bring satellite builders and satellite users together in an educational setting and get satellite developers "fired up about supporting the classroom use of their creations."

Paul will be looking to publicize and facilitate educational aspects of AMSAT's satellite programs. His duties include publishing a column in the *AMSAT Journal,* which is being reprinted almost simultaneously in *CQ VHF* magazine. For more information about Paul's tasks, please see the Spring 2006 issue of *CQ VHF*.

AO-51 and Field Day

The following is from AMSAT-NA regarding the configuration of AO-51 for this year's ARRL Field Day contest:

2006 AO-51 Field Day Configuration

This year, AO-51 will be set up in dual FM repeater mode, allowing for two usable FM repeaters from the satellite. The FM repeater utilizing the transmitter on 435.300 MHz will be open to all users. The FM repeater utilizing the transmitter on 435.150 MHz (normally reserved for BBS operations) will be reserved during Field Day for QRP stations only, as has been the common practice when this mode runs on AO-51. Please note the information on the mode configurations and QRP requirements.

FM Repeater #1 for all Users:
Downlink: 435.300 MHz FM
Uplink: 145.920 MHz FM

FM Repeater #2 for QRP Users *only:*
Downlink: 435.150 MHz FM
Uplink: 145.880 MHz FM

AO-51 ECHO Low Power Station (QRP) requirements:

To attempt to keep this simple, a low-power station will be defined as a station which can deliver no more than 10 watts to a vertical or handheld antenna. These are some examples of low-power stations:

• Using an HT (barefoot, no amplifier) with 10 watts or less output into any type of vertical whip antenna (rubber duck, etc.) or handheld beam antenna (arrow type).

• Using a mobile station with 10 watts or less output into car-mounted mobile whip antenna(s).

• Using a base station at 10 watts output into a vertical omni-directional antenna on the side of the house.

Examples that are *not* low-power stations:

• Any type of high-gain beam antenna, KLM, M2, Cushcraft, etc.

• Any station transmitting over 10 watts into any type of antenna.

Transatlantic QSOs and JT65

In response to my suggestion that JT65 be used for completing the 144-MHz transatlantic QSO, I received the following e-mail from Peter Sundberg, SM2CEW:

In reading your excellent VHF column in *CQ,* you mention the Brandon Trophy. I made a QSO between NA and EU on 144 MHz in 1992, August 12 between 1905– 1920 UTC when I worked OX3LX (HQ90xl) on meteor scatter. We used high-speed CW. In listings, OX counts as NA, so I guess this could be a first. I just wanted to let you know this.

On a related matter, I think your suggestion to use JT65 to make a transatlantic QSO is unfortunate. In my opinion, using JT65 is not going to validate a contact, as JT65 is heavily relying on known information available in a database on the computer. And recent findings (by DJ5HG in an article in *Dubus* magazine) have proven that only 10 bits of info (equivalent to 2 characters) is needed to be transferred via the airwaves in JT65 for the program to print two full calls, grid and report. All other info is reproduced from data available on the computer hard drive in the Call3.txt file. Reports via the K1JT invented "shorthand message system" are not more than 2 bits of info.

Shorthand messages in WSJT are abandoned for meteor-scatter contacts in Europe because they are treated as invalid due to lack of integrity, but for some reason they are treated as good enough for EME. This is puzzling.

So, in my opinion JT65 is stretching it too far, and not really constituting valid radio contacts. It would be sad if eventually a transatlantic contact is made using this protocol, because we would never know if signals were heard both ways via the radio waves or created within the computer program.

At the bottom of this e-mail I copy a recent e-mail from K1JT (sent to one of the EME-reflectors), where he answers some questions on this topic, revealing how little is actually transferred via the airwaves. The paragraph at the end about the operator gaining confidence in how accurate the decoded message is is not true, and this can be seen on my web page: <http://www.sm2cew.com/jt65.html>.

—73, Peter, SM2CEW

The following is from Joe Taylor, K1JT, as quoted by Peter:

I am sure that you understand the distinctions well, but to avoid any possible misunderstanding:

1. The shorthand messages in JT65, which can easily be decoded by eye or ear, convey just a few "bits" of information. (Is RO being sent? Is RRR being sent? Is 73 being sent? Yes/No on each possibility.) Two bits actually suffice; that's all the information needed to convey the sense of these almost-trivial messages. Dashes of different lengths would also suffice, but with less security than the JT65 shorthand messages provide.

2. On the other hand, the Koetter-Vardy Reed Solomon decoder in JT65 produces a full 72 bits of information whenever it succeeds: 28 bits for each callsign, 15 for the transmitting station's grid locator or portable DXCC prefix, and one bit to indicate whether a "plain text" message was sent. None of this information is known to the receiving station in advance; any standard callsigns and any grid locator can be in the message and will be decoded as sent. The "EME-transferred information content" is precisely 72 bits.

The following goes beyond the point raised by Peter, but for completeness I will continue one step further:

3. If the KV decoder fails, the JT65 Deep Search decoder is invoked. It can succeed only for callsign/locator combinations derived from the user's callsign database. In the language of information theory, the DS decoder therefore yields fewer than 72 bits of "new" information—that is, information actually received over the EME communication channel. The remainder is supplied from what was available in the callsign database.

In effect, the DS decoder says: "I already know my own callsign, so I just need to check whether it was part of the message. I don't know who is calling me; but it's probably one of the calls in my database, so I'll see if any of those match."

If a match is found, the DS decoder reports it along with a numerical reliability rating. The attentive operator can learn to have very

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high confidence in messages decoded this way. The DS decoder is a computer-aided version of what any experienced operator does when trying to copy a marginal signal on a favorite band.

To be correctly copied, an unfamiliar call-sign requires stronger signals (and transfers much more information) than a well-known call.

There you have it, both sides of the JT65 issue. If anyone else wants to weigh into the controversy, please send me an e-mail and I will give space here for the debate.

New 6-Meter EME World Record

According to Dennis Motschenbacher, K7BV, Joel, F6FHP, and Rod, ZL3NW, made a complete 6-meter EME QSO for a new world distance record of approximately 19440 km on March 3, 2006. Because of the continually lowering sunspot numbers, these days any type of long-range QSO on this band is problematic. Therefore, more and more serious 6-meter operators are considering the use of EME for completing their goals of DXCC on this band, or simply going for the distance, such as Joel and Rod did in setting their world-record DX contact. For more information on the considerations for successful 6-meter EME contacts, please see Lance Collister, W7GJ's article entitled "Considerations for Successful 6-Meter EME DXpeditions," which appears in the Spring 2006 issue of *CQ VHF* magazine.

The IC-7000 and TV Reception

In the aftermath of Steve Hicks, N5AC, publishing a modification for the ICOM IC-7000 that enables it to receive VHF TV channels, I received a few comments. One person took me to task for irresponsibly publishing the mod, because of the dangers it presents to hams who might use the rig mobile and be inclined to watch TV.

Another e-mail I received was from Steve Finberg, W1GSL, who presents what is the most likely reason why the TV feature of the IC-7000 was removed from it. He states that it was probably removed at the FCC type cert stage due to a 1962 era All Channel Legislation. His URL reference is: <http://www.museum.tv/archives/etv/A/htmlA/allchannel/allchannell.htm>. Steve goes on to state: "Since 1964 all TVs sold in the US must be equally capable of receiving all the broadcast channels. This was done to assure the economic survival of the UHF TV stations, which at that time were rapidly failing."

Whatever the reason may be for the function not being available off the shelf is somewhat immaterial compared to the safety aspect of driving and watching TV. It is illegal in a number of states and is unsafe in any circumstance. This caveat was stated in the February column and is restated here: *If you watch TV, don't drive! If you are operating mobile while on television then you need to stay away from the radio and leave its operating with another ham.*

Silent Keys

I regret to report the following three Silent Keys: Paul Flaherty, N9FZX, Jimmie Doyle Stewart, WA4MVI, and Bev Cavender, W4ZD. Paul was instrumental in establishing the VHF-plus e-mail reflector list in 1992. This list continues today as one of the most active sources of information for the VHF weak-signal operator. It continues be handled via Stanford University, where Paul earned a PhD degree in electrical engineering in 1997. Paul was active in the digital arena, inventing the AltaVista search engine. Paul died suddenly on March 16, at his home. He is survived by his wife, Natasha, N6YBV.

Jimmie was a pioneer EME enthusiast, holding 144-MHz WAS number 6

and 432-MHz WAS number 10. Active on these bands, he supplied many with their South Carolina WAS state. In recent years Jimmie explored the new digital modes, being worked most recently on JT65B. He also contributed to the VHF-plus community by authoring a book on operating procedures. Jimmie passed away on March 26, at the age of 59.

Bev was active on EME and meteor scatter from his QTH in Lake Placid, Florida. Bev was also licensed in Costa Rica as TI2BEV. An avid DXer and DXpedition operator, Bev operated from more than 30 countries during his ham radio career. A bit of trivia about Bev was that he was a witness of sorts for the first Cuba to US EME QSO in February 1992. He was able to hear Arnie Coro, CO2KK, by pointing his EME array toward Cuba and then hear Gary Crabtree, KB8RQ, by pointing his array toward the moon.

Current Contests

Six Meter Marathon: The 6 Meter Marathon, which is sponsored by Seppo, OH1VR, began on May 6 and continues through August 6 at 2400 UTC. For more information, please see the following URL: <http://www.50mc.tk/>.

ARRL June VHF QSO Party: The dates for this contest are 10–12 June. Complete rules are in the May issue of *QST*. Rules can also be found on the ARRL website (<http://www.arrl.org>). Many are making plans to activate rare grids. For the latest information on grid expeditions, check the VHF reflector (vhf@w6yx.stanford.edu) on the internet. This is a very popular VHF contest. For weeks during the run-up to the contest postings are made on the VHF reflector announcing rover operations and grid expeditions. It is a contest that will create plenty of opportunities for you to introduce the hobby to your friends who are not presently working the VHF plus bands or those who are not hams.

SMIRK Contest: The SMIRK 2006 QSO Party, sponsored by the Six Meter International Radio Klub, will be held from 0000 UTC June 17 until 2400 UTC June 18. This is a 6-meter-only contest. Exchange SMIRK number and grid square. Score 2 points per QSO with SMIRK members and 1 point per QSO with nonmembers. Multiply points times grid squares for final score. Awards are given for the top scorer in each ARRL section and country. Please note that the rules have been changed for this year's contest. In particular, the .150 rule has been eliminated. Additionally, the person to whom you send your logs has changed. Please send a legal-size SASE for a copy of the log forms. Logs and log requests should be sent to: Dale Richardson, AA5XE, 214 Palo Verde Dr., Kerrville, TX 78028. Entries must be received by August 1. For more information go to: <http://www.smirk.org> and click on the SMIRK Contest link at the top of the page.

Field Day: ARRL's classic, Field Day, will be held on June 24–25. Complete rules for this contest can be found in *QST* and at: <http://www.arrl.org>. In years past, tremendous European openings have occurred on 6 meters during Field Day. Also, as happened in 1998, tremendous sporadic-*E* openings can occur. Certainly, this is one of the best club-related events in which to involve new people in the hobby.

Current Conferences

The annual **Ham-Com** hamfest will be held June 9–10, in a new location in Plano, Texas. As always, the North Texas Microwave Society will present a

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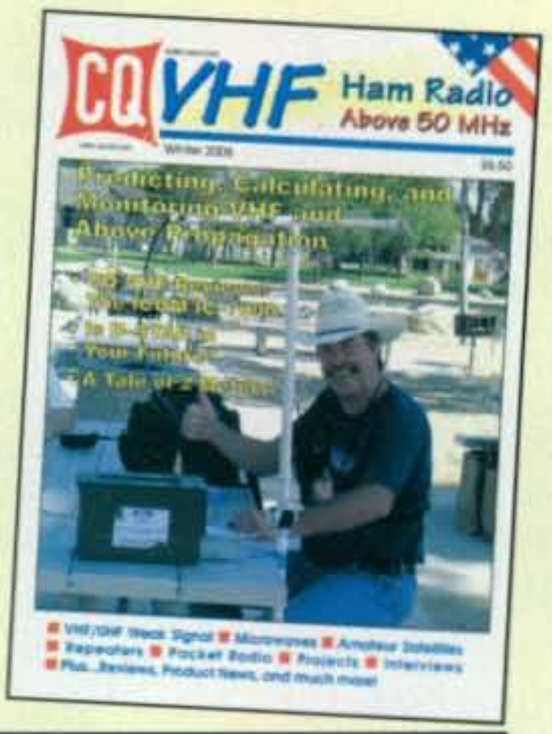

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Calls for papers are issued in advance of forthcoming conferences either for presenters to be speakers, or for papers to be published in the conferences' *Proceedings,* or both. For more information, questions about format, media, hardcopy, email, etc., please contact the person listed with the announcement. The following organizations or conference organizers have announced a call for papers for its forthcoming conference:

EME Conference 2006: The EME Conference 2006 will be held in Wuerzburg, Germany on August 25 to 27. Interested authors are invited to present a paper(s) for the conference. Electronic submissions in Word®97, Wordr2000, Acrobat®5 (PDF), or text format will be accepted by e-mail or CD. Please ask if you are using another format.

If you are interested in writing and/or presenting a paper, send an e-mail to Rainer Allraun, DF6NA, at: <df6na@df6na.de>. Please contact him as soon as possible with an abstract or even a general idea. This will help the conference team with its planning activities. For more information go to: <http://www.eme2006.com>.

ARRL and TAPR Digital Communications Conference: Technical papers are solicited for presentation at the 25th Annual ARRL and TAPR Digital Communications Conference to be held September 15–17, in Tucson, Arizona. These papers will also be published in the conference *Proceedings* (you do *not* need to attend the conference to have your paper included in the *Proceedings*). The submission deadline is July 31, 2006. Please send papers to: Maty Weinberg, KB1EIB, ARRL, 225 Main St., Newington, CT 06111, or you may make your submission via e-mail to: <maty@arrl.org>. Papers will be published exactly as submitted and authors will retain all rights.

Current Meteor Showers

Between June 3 and 11, the *Arietids* meteor shower will once again be evident. This is a daytime shower with the peak predicted to occur on June 7 at around 1600 UTC. Activity from this shower will be evident for around eight days, centered on the peak. At its peak, you can expect around 60 meteors per hour traveling at a velocity of around 37 km/sec (23 miles per second).

On June 9 the *Zeta Perseids* is expected to peak at around 1600 UTC. At its maximum, it produces around 40 meteors per hour. The *Boötids* are expected to make a showing between June 26 and July 2, with a predicted peak on June 27, around 1400 UTC. 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 the above meteor shower predictions see Tomas Hood, NW7US's propagation column. Also visit the International Meteor Organization's website: <http://www.imo.net/calendar/2006/>.

And Finally . . .

As I did last month, I will again state about my concerns about our health. Years ago, when I was the editor of the *QCWA Journal,* I published a column entitled "Ham's Health." I don't know why some of the readers objected to it, considering the subject matter benefited all of the readers.

In writing about the Silent Keys this month, I noticed that two of them were young men, less than 60 years old. This is way too young to go permanently QRT. While we simply cannot deal with all health issues, we can work on prevention of many issues that affect us today, namely obesity and cholesterol, both of which have an effect on our cardiopulmonary system. We hams have to take better care of ourselves.

The saying is that there is nothing like a reformed drunk. Probably the same goes for those who are reformed overeaters, which probably includes me. Call me what you will; it doesn't matter. What does matter is that I want to continue to write about your VHF and above exploits, and I cannot do it if you are not around for me to write about them. Therefore, in pursuit of your hobby, please take time to be healthy!

Until next month...

73, de Joe, N6CL

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BY TED MELINOSKY,* K1BV

Another All Counties Award!

A few months ago, I commented on those states which still lacked an all-counties award. Since then, interested county hunters and clubs from Massachusetts and Utah have developed awards for those states, and this month I'm pleased to announce the addition of Indiana.

Worked All Indiana Award

Mark Musick, WB9CIF, is an active member of the Hoosier DX and Contest Club, and he convinced the members to sponsor a counties award.

Most clubs have someone with artistic talent, and the HDXCC is no exception; the award certificate is a handsome one. As a nice touch, the border of the certificate lists the 92 counties of Indiana in very small type. The club also prepared a set of rules that allows the applicant to earn the award by contacting at least 60 of the 92 counties. Endorsement stickers are available for higher levels.

All bands and modes are permitted. There are no date restrictions. The initial award is issued for contacting 60 counties, with endorsements at 75, 85, and all 92 counties. No endorsements are available for band and mode. No repeater or cross-mode contacts are allowed. Electronic confirmations also are not allowed. Applicants must use the Hoosier DX and Contest Club application form and GCR list, which are available on the club website listed below.

Submit the completed application, GCR list, fee of $US5, and a 9" × 12" SASE for certificate. Endorsement stickers are $US2. The award manager reserves the right to request any cards to verify validity. Apply to: Worked All Indiana Award Manager, Mark E. Musick, WB9CIF, P.O. Box 575, Plainfield, IN 46168; e-mail: <markmusick@sbcglobal.net>; <http://www.hdxcc.org>.

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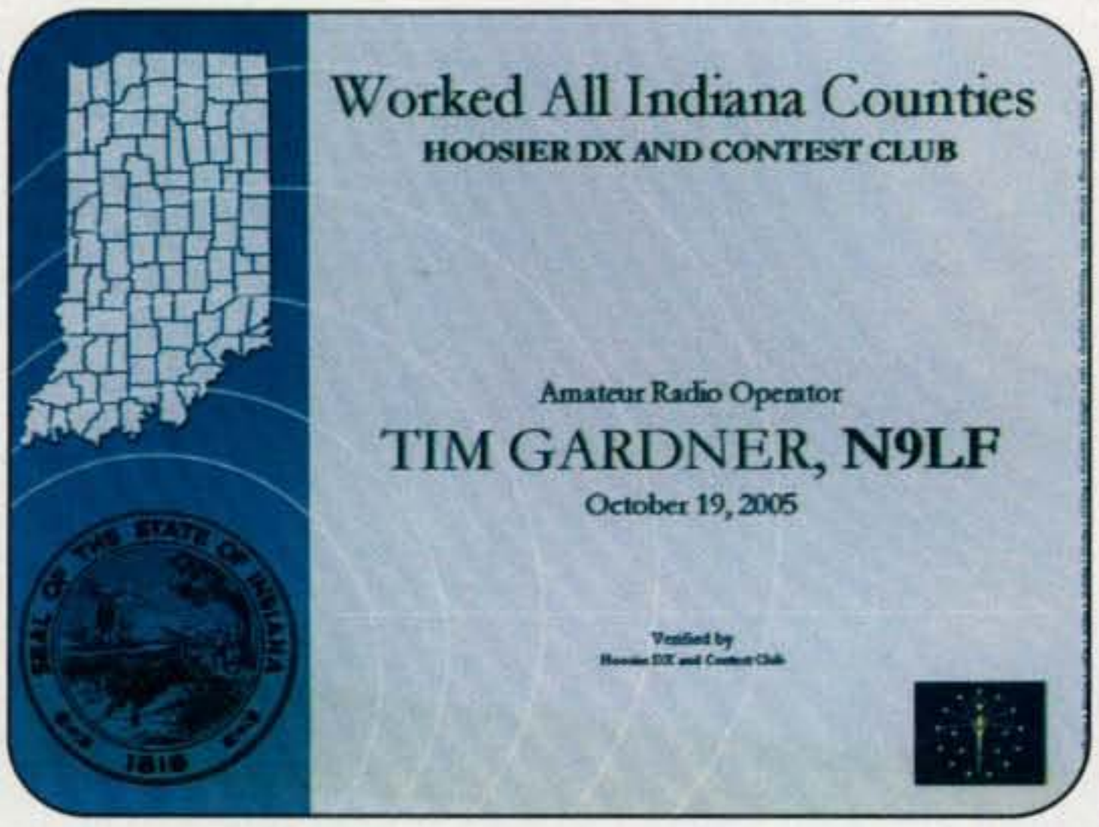

The new worked all Indiana counties award sponsored by the Hoosier DX and Contest Club.

USA-CA Special Honor Roll

Ed Elkin, K8ZZ
USA-CA All Counties #1134
February 27, 2006

USA-CA Honor Roll

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K4IJQ	1435	SM6DHU	1247

2000		3000	
K8ZZ	1327	K8ZZ	1156
SM6DHU	1328	SM6DHU	1157

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.

DX Awards

Cleddau Amateur Radio Society & GB3AE Series Region I Award. The awards series offered by the Cleddau Amateur Radio Society has been featured before in this column. This is a radio club that takes full advantage of the power of desktop publishing and graphic design to eliminate the mass printing of certificates, and at the same time it provides a colorful award.

IARU Region I is made up of 89 different countries, each with a distinctive flag. The award is given for making contacts with the countries of this region. The certificate you receive features the images of the flags of the countries you contact for a particular level. Thus, for the two lower levels of the award, each certificate is likely to be unique, since most of us will work one or two more rare countries along with the common ones. This is an interesting concept that might be copied by other award sponsors, such as those of large states with many counties, or countries with many administrative subdivisions.

The Region I award is available in four classes: Class 4—30 countries, Class 3—50 countries, Class 2—70 countries, and Class 1—all 89 Region I countries. The list of valid Region I countries is shown at the website listed below. All bands and modes may be used, including EchoLink via the internet. Contacts must be on or after 1 January

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Attenuation 3.9dB @ 2 GHz at 100ft.
Usage 450 MHz and Higher.

CNT400 (LMR type)
Connector: **N, PL259, TNC, SMA, BNC & QMA** RG8U SIZE SHOWN
Burial: **Yes**, UV Resistant: **Yes**.
Shields: **2** (100% bonded foil +90% TC Braid) **VP 85%**.
Attenuation 6.0dB @ 2 GHz at 100ft.
Usage 450 MHz and Higher.

CNT240 (LMR type)
Connector: **N, PL259, TNC, SMA, BNC & QMA** RG8X SIZE SHOWN
Burial: **Yes**, UV Resistant: **Yes**.
Shields: **2** (100% bonded foil +90% TC Braid) **VP 84%**.
Attenuation 3.0dB @ 150 MHz at 100ft.
Usage 1 MHz and Higher.

CNT195 (LMR type)
Connector: **N, PL259, TNC, SMA, & BNC** RG58U SIZE NOT SHOWN
Burial: **Yes**, UV Resistant: **Yes**.
Shields: **2** (100% bonded foil +90% TC Braid) **VP 80%**.
Attenuation 0.45dB @ 2 GHz (3ft Jumper).
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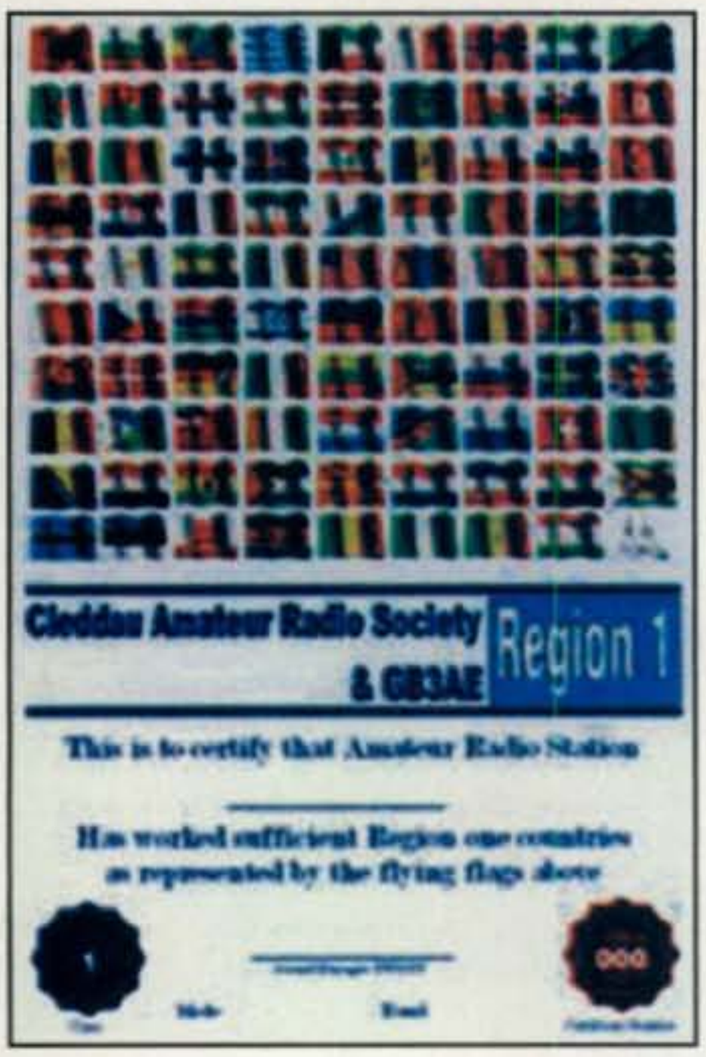
2005. Since each class of certificate is customized with the flags of the countries worked, it is very unlikely that the certificate of anyone claiming class four or three will match any other person's certificate.

Send GCR list and fee of £4:00 UK, $US8, 7 Euros, or 12 IRCs to: Mr. John Rees, GWØJRF, Caerleon, Picton Road, Tenby, SA70 7DP, UK (www.region-one-award.co.uk).

The Polar Ship Award. The Italian fascination for awards commemorating contacts with the polar regions of the world continues with the introduction of the Polar Ship Award. The principal method of bringing supplies to expeditions and research facilities at the South Pole continues to fall upon these specialized vessels.

The Formia Section of the ARI and "Gaeta Gulf" ARMI Section sponsor this award for contacts (or SWL cards received) made with amateur stations



The Cleddau Amateur Radio Society & GB3AE Series Region I Award is available for contacting countries in IARU Region I.

The Polar Ship Award is sponsored by The Formia Section of the ARI and "Gaeta Gulf" ARMI Section.

aboard at least two Antarctic polar ships, oceanographic ships, coast guard vessels of any nation, or ice-breakers operating in the Antarctic seas. The groups' website (http://www.ariformia.it) contains a comprehensive listing of all known ships that will count as valid contacts for this award, and the list goes back to 1945. It's interesting reading. Many countries have sent their vessels to the Antarctic. This award provides an incentive to make a contact with a lonely operator at the bottom of the world as a ship approaches the rugged Antarctic ice pack.

All bands and modes okay. Endorsements will be available for each additional two such ship contacts. The website contains an official application. Send application, photocopies of the QSLs, and fee of 10 Euros or $US15 for the basic award and 5 Euros or $US5 for the endorsement stickers. Apply to: A. R. I. Sezione di Formia, P.O. Box 33, I-04023 Formia (LT), Italy (internet: <http://www.ariformia.it>; via e-mail: <segreteria@ariformia.it>.

This award was established by the regional department of the Union of Wireless Enthusiasts of Russia from the republic of Komi to increase the activity of amateurs in Komi, a republic of Russia.

Diploma of the Republic of Komi. Located at about the latitude of Sweden and Finland, and stretching from the Barents Sea and west of the Ural Mountains, lies the Russian Komi Republic. It includes the infamous Vorkuta gold-mining region, a part of the extensive prison system called the Gulag Archipelago, described by Alexander Solzhenitsyn, who won the Nobel Prize for literature in 1970.

Times change, and when I was preparing this column, I did a Google search on the city of Syktyvkar, located in the Komi Republic, and followed one of the links to an English-language site from a real estate agency in that city. I viewed some apartments for rent which actually looked very modern and well constructed. However, all of the pictures of the homes and apartments included snow. I guess you would expect that in Siberia!

This award was established by the regional department of the Union of

Ed Elkin, K8ZZ
USA-CA All Counties #1134, February 27, 2006

My interest in ham radio began with chasing DX on SSB, CW, and RTTY. I did a lot of contesting on all three modes for many years. I still like a good contest for a change of pace.

I started giving out counties in 1994, but was not serious about working them all myself. It was just fun giving them out to pass the time while driving. It was like a contest rush, having a pile-up for 10 minutes in every new county. I remember getting all those cards and MRCs and could not figure out what all the concern was about. I remember the nice notes attached to the cards in appreciation for the counties.

In 1995 I received some Last County Awards from KG7GV, WB3IET, WA6OCI, and others. At the time it did not mean much to me, but I was always amazed at how nice county hunters are. Chasing DX in the pile-ups can be brutal! I then got burned out in the hobby and put away all the gear for about five years.

It was in 2001 when I began to get excited about radio again. I am not sure what got me back into county hunting. I bought a new ICOM 706 and started mobile, found the county hunter's net, and the rest is history. Boy, did I get hooked! My son Tim, W8JJ, got hooked at about the same time. We both look forward to our Dayton Hamvention® trip every year so we can run counties together.

I had not done any CW for many years and never was real good at it. At Dayton in 2002, Bob, N4CD, told me I had to get a paddle in my vehicle because I was always going through good counties for the folks on CW. I told Bob I had not done CW in years, and mobile CW was out of the question. He kept insisting that I at least try it, and if I didn't like it, I could go back to SSB. My son also encouraged me to give it a try. I did get set up for mobile CW, and it was awful. It it had not been for the patience of CW net controllers such as N4CD, WØGXQ, WØQE, K8MFO, K8CW, and KN4Y, to name a few, I would have given up. I now have gotten to enjoy CW even though it still can be a struggle mobile at times.

A quick way to get my wife to drive is do CW on the fly! Speaking of my wife, Gail, she is not a ham, but she does my logging when I run on the fly. She knows a lot of the calls and does a great job. She even reminds me after some long CW runs on three bands that I didn't go to 40 phone yet! She claims to be as sick as I am about this hobby. My wife and I went to our first convention in Chattanooga last October and had a great time.

I want to thank John, W5UGD, and Jeff, AF3X, for all the time and hard work getting the new mini convention up and running. It was a pleasure meeting those great county hunters and being able to put a face with a call. My wife and I have already made arrangements to attend the national convention in Wisconsin this July. We also will have attended the Michigan Mini in April by the time this is printed.

I enjoy putting out counties on our travels. I have transmitted from 485 counties to date. I want to thank all the net controls on SSB for their help on my runs. A special thanks to Jim, K2JG, for all his help during the poor band conditions. I have had runs where Jim had more relays than I had on the run.

I have 685 counties to go to finish on CW. I did not intentionally save it, but Montmorency, Michigan was my last one, and my son, W8JJ, gave it to me.

It has been a long haul since 1994, and the paperwork is a lot of work but worth it. Now I guess I have to finish up Bingo and CW. A big thank you to all the mobiles out there running, because without you I could not have gotten this award.

73, Ed, K8ZZ

Wireless Enthusiasts of Russia from the republic of Komi to increase the activity of amateurs in Komi. Contact stations in the republic of Komi using all bands and modes. Look for UA9X, RA9X, etc. The basic award is earned by achieving any of the nine levels listed below. The other levels are then available as endorsements, and a plaque is available when all nine levels have been earned.

Endorsements/Requirements: Contact different stations in Komi—30, 40, 50. Contact different municipalities in Komi—5, 7, 9. Contact different regions of Komi—10, 15, 19. After earning all nine endorsements/levels, you are eligible to apply for the Komi plaque.

SWL okay. Cards must be in the possession of the applicant. GCR list okay. Contacts on or after March 1, 2003 count for the award. Apply to: Leonid anatol'evich, P.O. Box 841, Syktyvkar, 167000, Republic of Komi, Russia (internet: <http://srr.komi.ru/awards/award_rk/rk_e.htm>; e-mail: <ra9xf@qsy.ruInternet>.

Fee schedule: Basic—Russians 100 roubles, CIS countries $US4 or 8 IRCs, all others $US5 or 10 IRCs; Endorsements Russians 30 roubles, CIS countries $US2 or 4 IRCs, all others $US2 or 4 IRCs; plaque—Russians 1000 roubles, CIS countries $US39, all others $US42.

Municipalities: Syktyvkar, Vorkuta, Inta, Usinsk, Pechora, Ukhta, Sosnogorsk. Vuktyl, Yemva, Mikun.

Regions: Syktyvkarskiy, Vorkutinskiy, Vuktyl'skiy, Intinskiy, Pechora, Sosnogorskiy, Usinskiy, Ukhtinskiy, Izhemskiy, Knyazhpogostskiy, Koygorodskiy, Kortkerosskiy, Priluzskiy, Syktyvdinskiy, Sysol'skiy, Troiqko, Pechora, Udorskiy, Ust'-Vym6ski, Ust'- Kulomski, Ust'-Qilemskil.

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Second Class Operators Club

There are serious certificates representing great accomplishment, years of effort, and the expenditure of serious amounts of time and postage. There are also "joke" or amusing certificates that honor dubious or limited achievement. The Second Class Operators Club certificate belongs in the latter group.

Many of us are familiar with the First Class Operators Club (FOC), which confers membership only via an invitation process to those masters of the electronic key who glide over the bands at flawless, blinding high-speed CW. The ranks include those DX chasers who have "worked 'em all" and contesters who can work stations that I just cannot hear.

Then there are the rest of us. A membership in the non-exclusive Second Class Operators Club is available for the modest sum of $US1 simply by applying to James Bates, W8ERV, 1470 Harper Rd. 38, Mason, MI 48854. There are no specific rules for such membership, nor are there any specific benefits of membership, other than to enjoy amateur radio in whatever form we choose, and as often as we can. According to the group's website, Jim will send you the certificate just as soon as he can find out where the blank ones are located.They also promise that any excess funds will be contributed to Handiham. The website is worth checking out: <http://www.qsl.net/soc/>.

On the lighter side is membership in the Second Class Operators Club.

Correction: In the March 2006 column, K8XF was mistakenly identified as K8XP in the 1500 counties level. Sorry, Mike. We'll definitely get it correct by the time you are listed in the USA-CA Special Honor section.

Are you looking for some help in publicizing your group or club's award? *CQ* magazine can help. Please send all details and samples to me. My snail-mail and e-mail addresses are on the first page of this column.

73, Ted, K1BV

dx

BY CARL SMITH,* N4AA

More on Operating the Pile-Ups

Well, the feedback from my April column on operating the pile-ups is still coming in. Some agree with the suggestions. Others disagree to one degree or another. That's good . . . I think! At least we have people talking about the problem of poor operating practices.

One positive note, although it was already in process when my column came out, was an e-mail I received from Mark, ON4WW. Many of you may remember Mark. He's been active from a number of rare and semi-rare places through his work with the UN. It was interesting that Mark said, "After the Peter I DXpedition, I decided to write an article on operating practice." Obviously I wasn't the only one disturbed by what happened during the 3YØX operation. One of Mark's proof-readers suggested incorporating the article in the ham courses given in Belgium. It has now been published as part of the new UBA (Union of Belgian Radio Amateurs) ham courses. Mark is contemplating an attempt to convince the presidents of all European national ham organizations to incorporate the article, or something similar, in their ham courses.

I recommend that everyone take a look at the article on Mark's website: <http://www.on4ww.be/op.html>. It is long, but well worth the time it takes to read it. Here's just a sample of his article:

8. PILE-UPS

Once bitten by the DX chasing bug, you will frequently enter pile-ups. When a rare DX station appears on the bands he quickly will raise a large group of amateurs wanting to work him. At the end of a QSO the crowd starts calling the DX station instantaneously and all stations call on top of each other. This is called a "pile-up."

Not only rare resident DX stations generate pile-ups. Quite often DXpeditions are organized to activate countries (entities) where ham radio is almost non-existent or uninhabitated islands. The purpose of these expeditions is to contact as many hams as possible worldwide in a short timespan. Obviously contacts with these expeditions should be *as short as possible* in order to give as many people as possible a shot at a new one. Hence, the expedition operator is not interested in your QTH, equipment or name of your dog.

What is the best way to get as quickly as possible in the log of a rare DX station or DXpedition? **LISTEN . . . LISTEN . . . and then LISTEN again.**

And, why should I listen? Because those not listening won't be as successful. Indeed, by careful listening an operator will have more success in breaking through a pile-up and log the rare DX faster.

By listening, one gets acquainted with the behavior of the DX station and the rhythm in which he works. Also, you will find out if the DX works *split*. During the listening period you have ample time to check and double-check the send and receive parts of your station:

• Correct choice of antenna?

Antennas atop the ICOM factory in Japan. The photo was taken during the Asia-Pacific DX Convention. (Photo courtesy of Cheryl, NØWBV)

• Split function activated?

• Transmitter (and amplifier) correctly tuned on a *clear* frequency?

Often this last part is done *on* the frequency of the DX station! Bad! This results in a reaction by the so-called "cops" (see chapter 12) and spoils the pleasure of many because the DX station can't be heard anymore.

• Before making any attempt to transmit, be sure you heard the DX station's callsign correctly.

We often enter a pile-up following a spot from a DX Cluster. Often the spot is incorrect! Make sure you heard the callsign of the DX correctly. This will prevent you from receiving the much-feared return QSL card with the message "Not in Log," "Non-existent Call," or "Not Active That Day."

An experienced DX station will turn to split operation if he perceives too many stations are calling and the pile-up becomes unmanageable. By working split his transmit frequency stays clear and the callers will hear him well.

Tom, HBØ/DL2OBO, likes to go to Liechtenstein, where he spends a lot of time working the low bands. He has logged over 1100 Q's on 160 meters from there. (Photo courtesy of DL2OBO)

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>

Visit Our Web Site

5 Band WAZ

As of March 1, 2006, 692 stations have attained the 200 zone level and 1485 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:
N4BAA

The top contenders for 5 Band WAZ (zones needed, 80 meters):

N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
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)
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)
SP5DVP, 199 (31 on 40)
K8RR, 199 (26)
W8GF, 199 (22)
N4NX, 199 (26)
N4MM, 199 (26)
EA7GF, 199 (1)
N6HR/7, 199 (37)
JA5IU, 199 (2)
CT3DL, 199 (26)
NØIJ, 199 (21)
RU3DX, 199 (6)
N4XR, 199 (27)
WØPGI, 199 (26)
W6XK, 198 (17, 34)
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)
F5NBU, 198 (19, 31)
OE2LCM, 198 (1, 31)
HA1RW, 198 (1, 31)
WK3N, 198 (23, 24)
W9XY, 198 (22, 26)
KZ2I, 198 (24, 26)
WA5VGI, 198 (34, 37)
K7BG, 198 (17,22)
W7VJ, 198 (34, 37)

The following have qualified for the basic 5 Band WAZ Award:

RA9AB (170 zones)
9H1SP (170 zones)
W3LL (165 zones)
WØCP (158 zones)

****Please note: Cost of the 5 Band WAZ Plaque is $100 ($120 if airmail shipping is requested).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

The WPX Program

CW

3170 .....UV1OO

SSB

2951 .....IK7TOE

Mixed

1963 .....UA9MC 1964 .....UA9CIM

CW: 1000 IZ3ETU. 1600 IK2ECP. 3150 KF2O. 3500 W4VQ.
SSB: 500 IK7TOE. 2700 KF2O.
Mixed: 1300 K6UXO. 2250 JA6GWU. 3700 KF2O.

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, IØJX, WA1JMP, KØJN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBF, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B.

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, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ.

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: The price of the 160 meter bar for the Award of Excellence is $6.50.

A not-so-experienced DX station will continue working simplex and finally go QRT because he can't control the pile-up anymore. In such a situation, you yourself can play an important role during your QSO with the DX station. Gently suggest to him the time has come to switch to split operation (of course, only if there are too many callers!). The other DXers will be grateful if you manage to persuade the DX station to change to split mode!

For those of you not familiar with Mark, check these URLs for stories and pictures of his travels: <http://www.on4ww.be> and <http://www.qslnet/ on4ww>.

Going back to my comments in the April column, there were some who didn't totally agree with my assertion that Europe was the culprit. I said that "a *large part* of the *bad* behavior was coming from Europe,..." I still contend that this is true, with the understanding that every country has its share of *bad* on-the-air behavior. It is not limited to one country or one continent. I fully understand that "most" DXers anywhere are not among the bad boys. I just think we need to weed out those who are causing most of the problem, no matter where they are.

Major Upcoming DXpeditions

As I write this column, we are looking at two major upcoming DXpeditions. One is Aves Island (YXØA). The last operation from Aves was cut short due to weather, so many were not able to work YVØD.

The other DXpedition is the activity related to the Andaman Hamfest, which was April18–20. As of the beginning of April, literally dozens of stations were authorized to operate for the eight days during and following the hamfest. All of those authorizations were for "VU4AN," followed by a unique VU3 call assigned to each individual. By the time you read this, we will have seen how all this worked out, with so many stations operating—or trying to operate—in such close proximity to one another.

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Dayton . . . that one word says a lot. I have not been to Dayton for a few years now, and as I write this I'm looking forward to being there again. No, I won't

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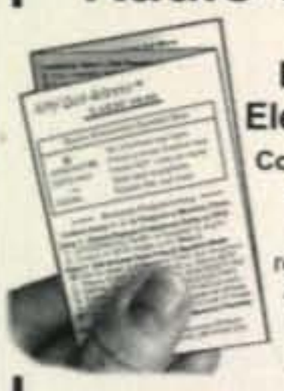

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THE WPX HONOR ROLL

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MIXED

5264 .....9A2AA	3980 .....I2PJA	3520.....I2MQP	3262.....IK2ILH	2873 .....W2ME	2426 ....W6OUL	1897 .....KØKG	1643 .....N1KC	825.....KL7FAP
4846.....W2FXA	3968 .....YU1AB	3475 ..YU7BCD	3227 .....K9BG	2752.....W9IL	2399 .....K5UR	1773.....W7CB	1556.....W2OO	742.....K5IC
4554 .....W1CU	3956 .....VE3XN	3457.....KF2O	3019 .....W9OP	2704 .....K2XF	2172.....VE6BF	1741.....AB5C	1242.....K6UXO	648 .....KWØH
4343.....EA2IA	3703 .....I2UIY	3421.....KØDEQ	3011.....W2WC	2637...OZ1ACB	2142.....I2EAY	1705.....W2EZ	1141.....K5WAF	
4111 .....N4NO	3621 .....S53EO	3375 .WB2YQH	2897 .....9A4A	2457 ...JN3SAC	2024.....AE5B	1651.....KX1A	1016 ..RA1AOB	

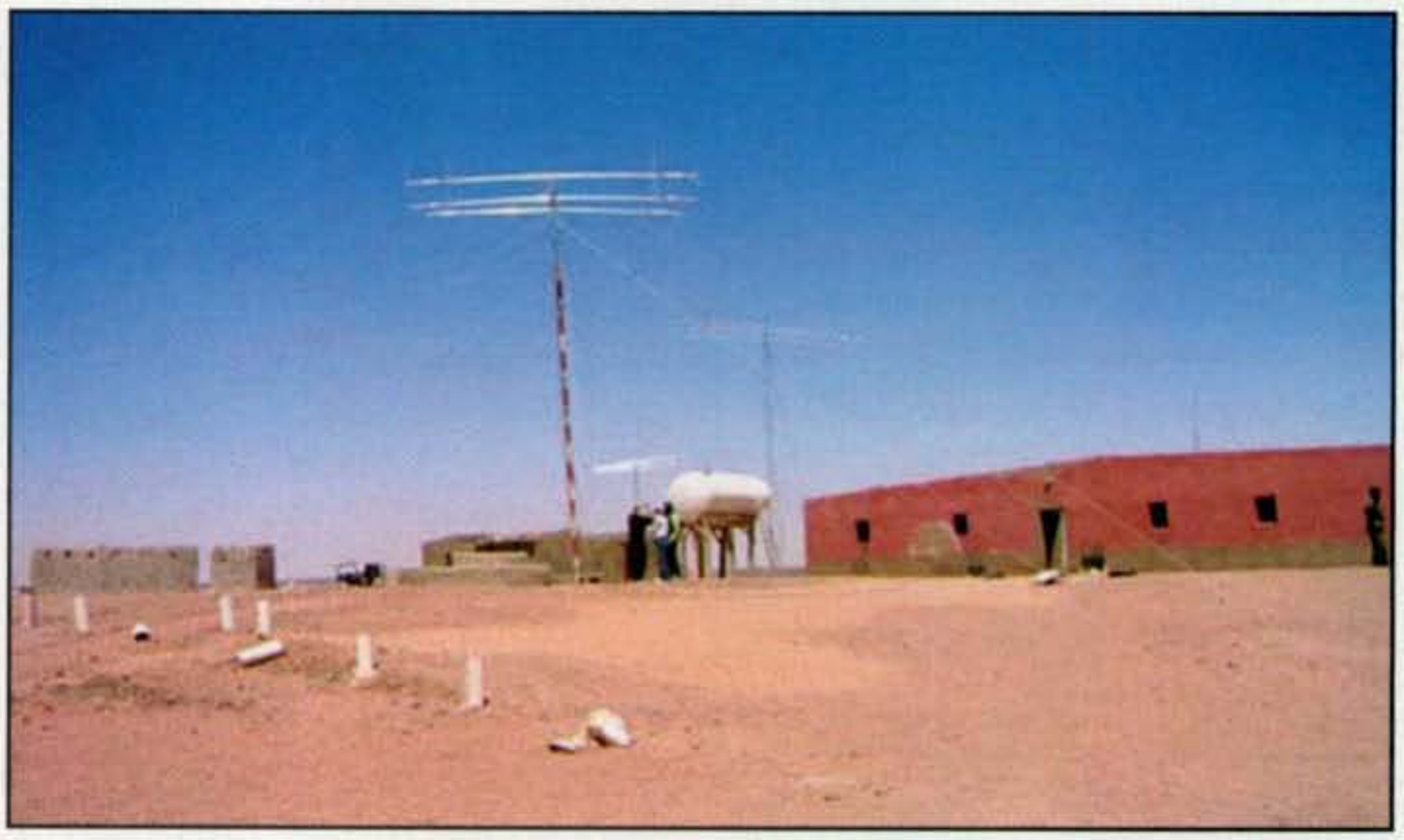
SSB

4710 .....IØZV	3365.....I2MQP	2734...OE2EGL	2235 .....NQ3A	2042.....W9IL	1688.....KI7AO	1386 ....IK4HPU	1059 .....AE9DX	729.....K7SAM
4266.....VE1YX	3225 .....N4NO	2711 ...LU8ESU	2227...YU7BCD	2038.....K5UR	1611 .....W2ME	1340 .....I2EAY	1042 ....IZØBNR	
3956.....I2PJA	3155 .....I2UIY	2609 .....KF7RU	2209 ....IK2QPR	1848.....K3IXD	1591...SV3AQR	1330...VE7SMP	984 .....KX1A	
3765.....F6DZU	3142...CT1AHU	2595.....EA1JG	2196.....W2WC	1827.....AE5B	1580 ...DL8AAV	1305...SV1EOS	978 .....EA7HY	
3532.....9A2NA	3069.....I4CSP	2479 .....IN3QCI	2082 .....I3ZSX	1763.....W2FKF	1565.....W3LL	1258.....N1KC	901 .....KU4BP	
3492 .....OZ5EV	2930.....KF2O	2431 .....G4UOL	2076 .....K2XF	1719 .....KQ8D	1480.....AB5C	1202.....AG4W	895 .....IK8OZP	
3395 .....EA2IA	2857.....4X6DK	2326.....CX6BZ	2073 .....N6FX	1716 ....W6OUL	1458 ...JN3SAC	1145 ...EA3EQT	816.....VE6BF	

CW

4524..WA2HZR	3339 .....VE7DP	2632 .....W2ME	2440.....I7PXV	2167.....N6FX	2017.....VE6BF	1821.....I2MQP	1386.....AC5K	1109.....KX1A
4229.....K9QVB	3094 .....LZ1XL	2523.....KF2O	2437 ...EA7AZA	2120 ...JN3SAC	1987.....W9IL	1767.....I2EAY	1334.....RUØLL	1042 .....VE1YX
3674.....N4NO	3078.....9A2NA	2503.....KA7T	2401 ..YU7BCD	2093....IK3GER	1939 .....K5UR	1744 ..EA7AAW	1227.....K6UXO	947.....K5WAF
3374.....EA2IA	2688.....I2UIY	2476.....W2WC	2213.....OZ5UR	2089.....K2XF	1863 ....W6OUL	1402.....WO3Z	1202..WA2VQV	915 .....N1KC

be standing behind a table in my own booth. I'll be a "tourist" this time, just walking around looking at all the things I never had a chance to see when I did have a booth. For those who have not had the experience of manning a booth at Dayton, let me tell you, it is not easy. It is a task that wears on you before, during, and after the event itself. All the little details in preparing for the event, getting there, setting up, and then all the time spent standing, talking, etc., ovwr the three days . . . Whew! I'm tired just thinking about it. Anyway, hopefully I'll see a lot of you at Hara Arena.



The location of the recent operation by SO1R in Western Sahara. (Photo from the SO1R website)

DX Ahead. . .

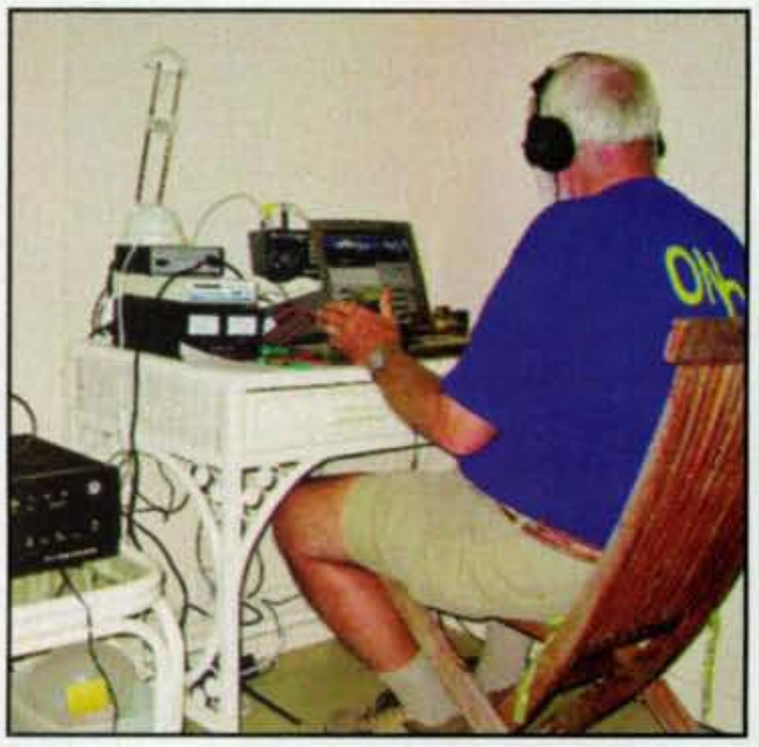
We have some good DX to look forward to later this year:

FO French Polynesia, with Austral and Marquesas by Yves, F6CTL, will be coming up June 18 – July 18.

C9 Mozambique: Frosty, K5LBU, will be taking another of his DX safaris to Africa June 29 to July 13.

5W Samoa: A group of five will be giving Samoa a workout from July 25 to August 10.

In the October/November time frame we find FR/G Glorioso, TN Congo, and VK9 Cocos Keeling. Then in November the 5A7A DXpedition from Libya will give us a lot to look forward to. It's been quite some time since we've seen activ-



Charlie, WØYG, fights the noise and the pile-ups from Christmas island, where he operates almost every year. This photo was taken during his 2005 trip. (Photo courtesy of WØYG)

The WAZ Program

20 Meter SSB

1145 .....W3LL

20 Meter CW

562 .....K8VFV

30 Meter CW

73.....W3DRY 74.....HA5AGS

160 Meters

222.....UT7UW 224.....DK5WL
223.....HB9DDO 225.....EA8PP

All Band WAZ

SSB

4989 .....K5CR 4991 .....KBØFHP
4990 .....KB9YGF

Mixed

8402 .....K5CR 8403 .....S52R

CW

479 .....US7IID 482 .....WVIK
480 .....JI8XLD 483.....IK4OMU
481 .....LU1BW

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>.

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CQ DX Awards Program

SSB Endorsements

320 .....K3JGJ/333

CW Endorsements

150....K5HQV/QRPp/162

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 335 active countries. Please make all checks payable to the award manager.

ity from Libya, and many still need it for band/mode fillers.

Conventions

The summer will be relatively quiet for conventions. The W9-DXCC in Chicago (http://www.w9dxcc.com) comes up September 15–16. It's always a great event with good attendance. Just two weeks later the 2nd Annual SEDCO gathering in will take place in Gatlinburg, Tennessee, along with the Ten-Tec Factory Hamfest. That's quite a weekend in Tennessee, and you won't want to miss it. The first year showed great promise, and we look forward to bigger attendance and a super presentations again this time. Keep checking the website <http://sedco.homestead.com> for the latest on the program.

Hope to see you at Dayton. Until next time, enjoy the chase and Have Fun!

73, Carl, N4AA

CQ DX Field Award Honor Roll

The CQ DX Field Award Honor Roll recognizes those DXers who have submitted proof of confirmation with 175 or more grid fields. Honor Roll lisiting is automatic upon approval of an application for 175 or more grid fields. To remain on the CQ DX Field Award Honor Roll, annual updates are required. Updates must be accompanied by an SASE if confirmation is desired. The fee for endorsement stickers is $1.00 each plus SASE. Please make all checks payable to the Award Manager, Billy F. Williams. Mail all updates to P.O. Box 9673, Jacksonville, FL 32208.

Mixed

K2TQC.....229
VE3XN.....217
HAØDU.....217
KØDEQ.....207
N8PR.....200
JN3SAC.....194
N4MM.....194
W4UM.....193
BA4DW.....188
F6HMJ.....182
K2SHZ.....182
N4NX.....182
KØCA.....181
OK1AOV.....181
W5ODD.....177
K2AU.....177
NØFW.....176

SSB

VE7SMP.....182
KØDEQ.....180
W4ABW.....177
NØFW.....176
N4MM.....176
W4UM.....176

CW

KØDEQ.....198
W4UM.....184
JN3SAC.....181
KØCA.....175
N4MM.....175

The CQ DX Field Award Program

Mixed

70.....JH5OXF

SSB

41.....JH5OXF

CW

40.....SM2YIZ
41.....K6UXO
42.....JH5OXF

Digital

6.....JH5OXF
7.....NEØP
8.....KK6T

Endorsements

Mixed

225.....K2TQC/235
150.....JH5OXF/156
150.....KE3D/151
100.....HB9DDO/112
100.....PY2DBU/121
1.8 MHz.....HB9DDO
3.5/7 MHz.....HB9DDO
28 MHz.....SM5INC
28 MHz.....HB9DDO
50 MHz.....PY2DBU

SSB

100.....JH5OXF/123
100.....KE3D/148
100.....PY2DBU/121
28 MHz.....SM5INC

CW

100.....JH5OXF/145
100.....K6UXO/116
28 MHz.....SM5INC

The basic award fee for subscribers to *CQ* is $6. For non-subscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Please make all checks payable to the award manager.

QSL Information

3D2NB via W7YAQ
3D2OU via N7OU
3D2RO via N7OU
3D2RX via W7YAQ
4D2X via 4F2KWT
4JØAUM via UA3FDX
4JØDX via UA3FDX
4X4DX via 4Z4DX
4X7AZ via 4Z5LA
4Z5DX via 4Z4DX
5B/HB9AII via HB9AII
5B4XX via 4Z4DX
5Z4/OM2DX via OM3JW
5Z4/OM2NW via OM2NW
6W/HA3AUI via HA3AUI
6W/HB9DTE via HB9DTE
6W/RW3TN via RW3TN
6W1RW via F6BEE
6Y5/LY1DF via LY1DF
8Q7SH via DJ2BC
8R1EA via AH8DX
8R1ZUM via K7ZUM
9A/VE3ZIK via DL3PS
9AØIARU via 9A6AA
9A8K via 9A7K
9H3DX via W5PF
9H3KD via W5PF
9H3PF via W5PF
9H3RY via W5PF
9H3UO via W5PF
9H3V via W5PF
9H3W via W5PF
9H3WF via W5PF
9M2/HA5TAA via HA5TAA
9M6DXX/P via 9M6DXX
9N7DX via 4Z4DX
AX6ANC via VK6NE
BPØP via BV2KI
C6/W2IRT via W2IRT
C6ANM via WA2IYO
C91VB via UA4WHX
CN2R via W7EJ
CN2SD via K7ZSD
CT3/DL3KWF via DL3KWF
CT3/DL3KWR via DL3KWR
DT8A via HL2FDW
DXØK via 4F2KWT
DZ1JP via JA1HGY
EA6/9A3AXX via 9A3AXX
EA6/9A3RE via 9A3RE
EA6/9A6XX via 9A6XX
EA6/9A8MM via 9A8MM
ED1EA via EA1DGZ
ED8IWD via EA8BHD
EF8CLL via EF8CLL

(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>.)

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BY JOHN DORR,* K1AR

Has Contesting Become Too Popular?

June's Contest Tip

At a recent Yankee Clipper Contest Club meeting we had the pleasure of learning about the effects of RFI/EMI interference. In fact, the biggest generator of QRN that you hear on the bands is likely to originate from our own homes. If you want a tangible way to improve your contest scores, check out the noise sources in your house. Whether it's a laptop power supply or your electric toothbrush, a combination of ferrite and aggressive testing will pay dividends in your ability to hear the weak ones this upcoming contest season. Give it a try!

As you read this month's topic, you may be thinking that senility has finally caught up with me. After all, when thinking about the state of contesting, we spend the majority of our time considering how we can attract new contest blood, right? Put another way, we want more contests, more activity . . . more, more, and even more.

Conventional wisdom tells us that ham radio is experiencing an unprecedented decline, and contests are part of that. When you consider this claim from the perspective of the average age of participants, I have to agree. All you need to do is go to any club meeting or ham radio convention and you'll be convinced that the advanced age of radio amateurs as a group has arrived. However, this month I submit that we may be suffering from over-popularity of contesting at the same time. Has our promotion of contests around the world created *too* much success? It's a strange dichotomy that is worthy of consideration.

There are a Lot of Contests!

Before I go on, there is one baseline consideration that I'd like you to keep in mind as we continue the discussion: Contest activity equals "on-the-air" activity, and that is a good thing for the hobby. That being said, as contest lovers, we may have pushed the envelope a bit too much. Take a look at Table I. Over the past 12 months, there were over 400 radio contests, or an average of nearly 34 per month. In other words, on any given weekend, you have more than eight contests from which to choose on an average basis. In April alone, there were 47 sponsored events, or nearly 12 per weekend! It's only during the winter holidays that activity slows to a paltry 25–30 contests per month or so. It would seem there are so many contests that we are diluting their very purpose. Can it be that there are so many that they are competing against each other for critical mass and thus are doomed to failure? Is contesting too popular?

Activity Abounds

Let's consider the topic from another point of view—on-the-air activity. Given our position in the current sunspot cycle, one could reasonably assume that the hyper-activity we experience on 20 meters will likely dissipate when 15 and 10 meters come back to life. On the surface, I'm inclined to agree. However, take a stroll down memory lane and recall what the activity levels were like in major DX contests during the last solar peak. On 10 meters, for example, during the CQ WW DX Contest you could find activity well above 29.000 MHz on SSB. On CW, it was very common to work stations as high as 28.150 MHz. The same was true for 15 meters. Essentially, the 15-meter band was full from the bottom to the top on SSB. On CW, Novice band operators above 21.100 MHz now had something to do besides talking to one another. The bands exploded with activity. All of this is hardly building a case that sunspots are the cause of our current state of activity on 20 meters.

The low bands are no different. Discussing the IARU band plan dynamics is a subject for another column. However, many will argue that one of the

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e-mail: <K1AR@contesting.com>

Calendar of Events

All year	**CQ DX Marathon**
May 20–21	King of Spain CW Contest
May 20–21	Baltic DX Contest
May 20–21	U.S. Counties SSB QSO Party
May 27–28	**CQ WW CW WPX Contest**
June 3–4	SEANET Contest
June 3–4	RSGB National Field Day
June 3–4	IARU Region 1 Field Day
June 10	Portugal Day Contest
June 10	Asia-Pacific SSB Sprint
June 10–11	ANARTS RTTY Contest
June 10–12	ARRL June VHF QSO Party
June 17	Kid's Day Contest
June 17–18	All Asian CW DX Contest
June 17–18	SMIRK Contest
June 17–18	West Virginia QSO Party
June 17–18	Quebec QSO Party
June 24–25	ARRL Field Day
June 24–25	King of Spain SSB Contest
July 1	RAC Canada Day Contest
July 1–2	Venezuela Ind. Day Contest
July 8–9	IARU HF World Championship
July 8–9	World Radio Team Championship
July 15–16	**CQ WW VHF Contest**

Month	No. of Contests
June	34
July	26
August	29
September	39
October	40
November	22
December	27
January	29
February	43
March	33
April	47
May	35
Total	**404**

Average/Month = 33.7

Table 1 – Contest activity by month.

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reasons why the 40-meter band plan (i.e., cooperative agreement that recommends no SSB operating below 7.040 MHz) is ignored is simply a result of contest activity itself. In other words, "I operate there sometimes because there is just nowhere else to go or to listen."

Have you listened to the bands during the ARRL Sweepstakes contest? Be reminded that this is a U.S. domestic contest in which stations can only work each other on one band, which in theory should provide some measurable governor on the amount of activity and spectrum use. That being said, the CW contest usually occupies the majority of each CW sub-band. On SSB, the bands are packed as well. Is contesting too popular?

Are We Having Fun Yet?

Like some of you, I have the advantage of experiencing contesting from both ends of the station spectrum. There is my New Hampshire home QTH, which currently has nothing more than a few wires up in the trees. In sharp contrast, I spent a few selected weekends operating at K3LR's QTH on 20 meters during last year's contest season. Maybe I've been spoiled over all the years of guest operating at big stations, but frankly, operating a major contest with a mediocre station is challenging at best and not that much fun for many. Clearly, given record activity levels, the appeal of contesting to the "little pistol" is still there. However, as a recurring theme of mine, are we having fun yet?

During the 2006 WPX SSB contest, I operated from my home station and worked about 400 guys. Frankly, it was painful. I found it nearly impossible to run anyone on 20 meters; the band simply was too crowded. Maybe I've just had it too easy over the years and a dose of reality is in order, but it does make one ask the question again, "Is contesting too popular?" Being required to dial around and only call the loud guys seems to be outside of the sport's intent. Yet by virtue of current contesting activity, most of its participants are forced into doing just that. It's a strange dynamic indeed.

Now What?

Well, to be honest, there is no clear answer to this one. It's silly to promote the idea that we should somehow turn down the promotional knob on contesting. While there are quite possibly too many contests and the major ones suffer from potentially too much activity, the bottom line is that interest in contest activity is at an all-time high. I'd say that's a pretty good result for the bottom of a solar cycle.

Let me suggest a few things to consider as we wrap up the discussion. For starters, the key issue in contesting is not the amount of activity, but the age of its participants. That being said, we should be introspective about the contests we sponsor. Do they have a meaningful purpose and a clear mission? Can you obtain economies of scale by combining events? The New England QSO Party is a great example of multiple state parties bring combined into one blockbuster contest that now has great interest and activity.

Indeed, contesting as we know it today has been overwhelmingly popular—maybe too popular for our own good. However, don't be lulled into thinking that all is well. As with the broader amateur radio hobby, we have our challenges. Whether it's the way we behave on our sometimes over-crowded bands or the manner in which we attempt to recruit new participants, activity and long-term health are not a guarantee. Is contesting too popular? What do you think?

Final Comments

I hope I made you think a bit this month. We often can be lulled into a sense of complacency based on perceived success. Contests occupy the bands every weekend. Therefore our future must be bright, right? Sadly, enormous on-the-air activity does not guarantee a bright future for ham radio. Give it some thought.

In just a week from now, my family and I will be headed to a warm southern climate for some overdue rest and relaxation. I hope you fit a healthy dose of fun into your summer schedule this year. Maybe a new antenna or two will be in the mix as well. See you next time!

73, John, K1AR

2005 CQ 160 Results Errata

The following corrections apply to the results of the 2005 CQ WW 160 Meter Contest published in the December 2005 issue of *CQ*.

CW

4L2M was correctly listed as a Low Power entry but was left out of the Low Power Top 5 box. His score is the World High Low Power entry.

N2WN was a Low Power entry (Tennessee) not QRP. He is the Low Power winner. W6UB thus is the Tennessee QRP winner.

NO2D was listed as a New Jersey entrant. He was actually a Colorado entrant.

RA6YP has been removed as a bogus entry.

NZ1U, Multi-Operator, was KB1H and packet.

VE3CSK was correctly listed as a Low Power Entry and ON winner, but was left off the World High Low Power entries list. He should have been listed as 4th World High Low Power.

SSB

N1WI was a Tennessee entrant, not Connecticut.

K2NNY, Multi-Operator, team member K2VJB is N2VJB.

AB2DE, Multi-Operator, team member KB2JT is KB2YJT.

S75M was actually a High Power Single Operator entry. Thus, 4L2M is the World High Low Power entry.

Note: 4L2M is World High Low Power on both CW and SSB!

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BY TOMAS HOOD,* NW7US

Field Day 2006

A Quick Look at Current Cycle 23 Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, March 2006: 11
Twelve-month smoothed, August 2005: 45

10.7 cm Flux
Observed Monthly, March 2006: 76
Twelve-month smoothed, August 2005: 89

***Ap* Index**
Observed Monthly, March 2006: 8
Twelve-month smoothed, August 2005: 12

This year's annual ARRL Field Day is June 24 and 25. The official Field Day 2006 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.

One of the best available methods to predict HF propagation conditions in advance is the 27-day recurrence tendencies of geomagnetic, solar, and ionospheric conditions. It is not an absolute method, but it does give a very good indication of what is expected. This column is being written in April, about three 27-day solar rotation cycles away from the start of 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 good to fair, with low 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 28 and 29, since this would be one rotational period before the 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 this column. Use these charts, as well as a good forecasting and analysis software tool such as ACE-HF (<http://www.acehf.com>; see last month's column for a review) or WinCAP Wizard (see <http://www.taborsoft.com/>, to help you prepare operating guides for your Field Day operations.

Remember, short-skip propagation (often by sporadic-*E*, or *Es*, mode) is a big part of Field Day on-the-air activity, especially on the higher HF bands and even on low VHF bands. Refer to the Short Skip Charts in last month's issue for possibilities. Take a look at this month's DX Propagation Charts for more detailed long-skip (via *F*-layer mode propagation) forecasts. Use these along with the Last-Minute Forecast if you wish to get specific details of possible openings. For the very latest update on conditions, take a look online at my up-to-the-day Last-Minute Forecast chart available on my Space Weather and Radio Propagation Center website at: <http://hfradio.org/lastminute_propagation.html >.

*P.O. Box 213, Brinnon, WA 98320-0213
e-mail: <cq-prop-man@hfradio.org>

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for June 2006

Propagation Index.....	Expected Signal Quality (4)	(3)	(2)	(1)
Above Normal: 1, 6-7, 14, 20-24, 28	A	A	B	C
High Normal: 2, 5, 12-13, 15-19, 25, 27, 29	A	B	C	C-D
Low Normal: 4, 11	B	C-B	C-D	D-E
Below Normal: 8, 10, 26	C	C-D	D-E	E
Disturbed: 3, 9, 30	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 2 will be fair to good (B) on June 1, fair (C) on the 2nd, with no opening expected on the 3rd. Conditions will be poor to fair (D-C) on the 4th, and poor on the 5th, etc.

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 weaker signals during the hours of daylight when compared to reception during the winter and spring months.

When using the Last-Minute Forecast along with the long-distance charts (both in this column), realize that the column you should use is either the (2) or (1) column, as we are in the very bottom of the solar cycle. Use the (2) column if the flux is averaging around 80 or higher for a few days or more, but to be conservative, use the (1) column for the rest of the period.

Ten-meter propagation to DX locations far to the east and west is a rare event during the peak of summer. With the low solar activity at this stage in the decline of the cycle, I don't expect to see much on 10, except via sporadic-*E* (*Es*) 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 may yet present opportunity for DX, especially around

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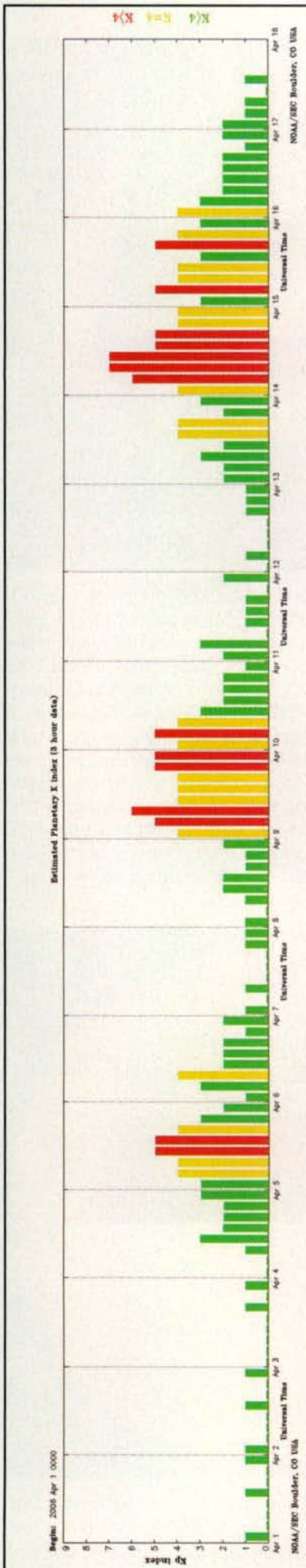

sunrise and sunset, but these openings will be short.

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. Check the DX charts for possible opening times from your location.

Twenty meters is poor to fair during the hours of darkness, and signals are weak even 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. Coronal holes and the associated high-speed solar winds containing clouds of plasma released by the coronal holes are the bane of propagation during the solar minimum. We saw examples of this during April 2006, when the *Kp*-index rose to at least 7, triggering G3-level geomagnetic storms and aurora. These geomagnetic storms will play rough on HF propagation. In addition, noise from electrical storms increases considerably during June and the summer months. These higher static levels will make DXing on 40, 80, and 160 meters more of a challenge.

The 30- and 40-meter bands should offer good DX conditions during the night, despite higher static. Look for Europe and Africa as early as sunset. After midnight, start looking south and west for the Pacific, South America, and

← *As expected, even during the solar minimum, there are periods of geomagnetic storms triggered by coronal holes on the surface of the sun. This graph shows the* Kp *(planetary* K*) index, a measure of Earth's geomagnetic activity, from April 1 to April 17, 2006. Note that the* Kp*-index reached 7 for two reporting periods (6 hours total). Because April is the first of the two equinoctial seasons each year, such elevated geomagnetic activity typically triggers aurora, and indeed, aurora was reported. Many VHF enthusiasts look forward to periods of auroral activity, because it may be possible to beam a VHF signal off the highly ionized curtains caused by the aurora at the E-region level. (Source: NOAA)*

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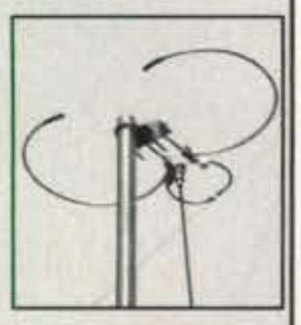

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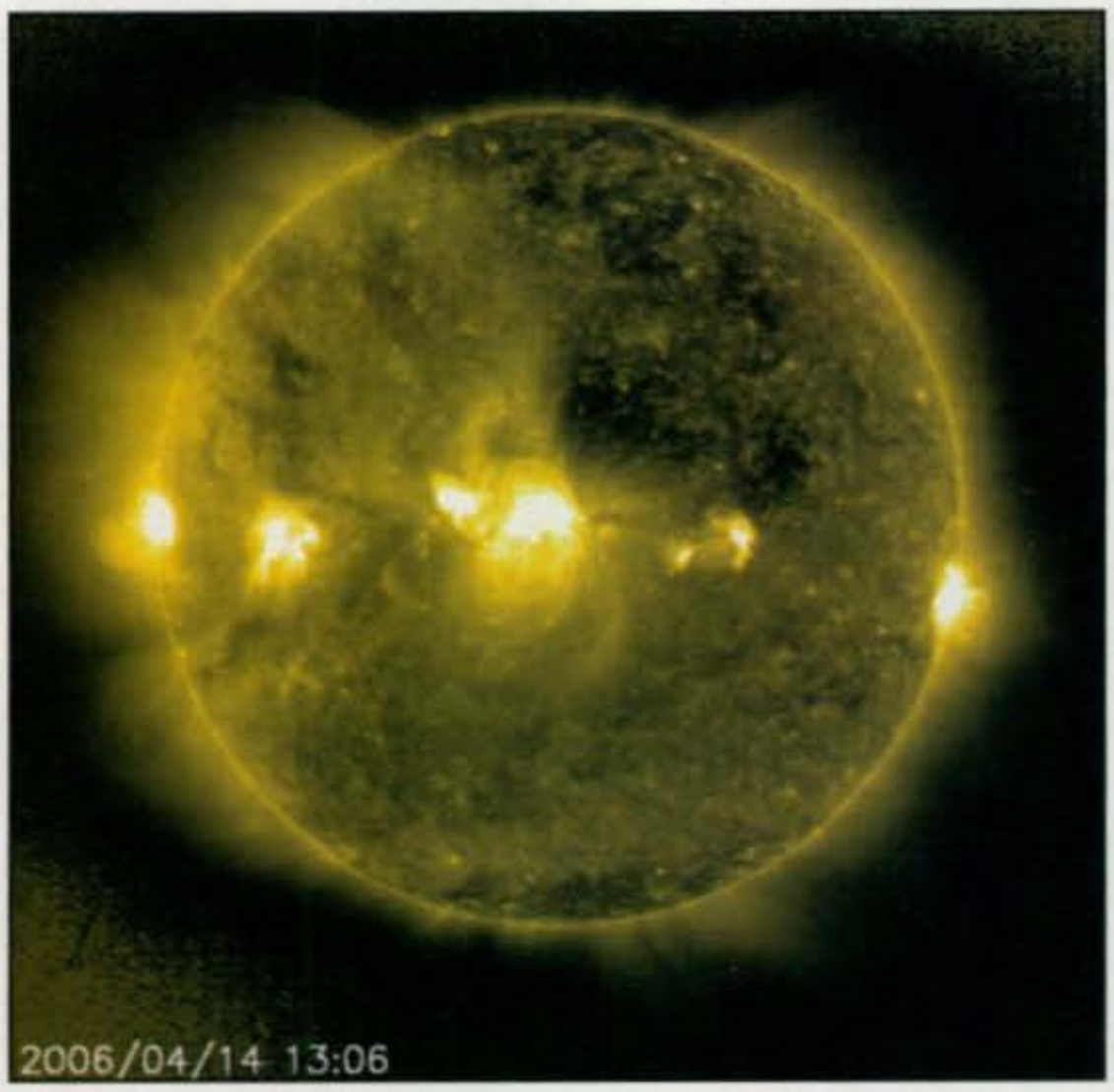
A look at the sun on April 11, 2006, showing the coronal-hole activity (the darker regions slightly to our left, and mostly in the upper half of the disc) that triggered the geomagnetic storms on April 9 and 10, 2006. Coronal holes are areas on the sun's corona where plasma may spew out onto the solar wind. That escaping solar plasma rides the solar wind out into the solar system. If the Earth is in the path of the high-speed solar wind and plasma, geomagnetic activity and aurora are triggered. (Source: SOHO)



Another look at the sun, this time on April 14, showing continued coronal-hole activity that triggered even stronger geomagnetic activity on April 14, 2006, when the Kp-index reached 7. The bright spots are sunspot activity. During the first half of April there were 15 flares, two of which were moderately powerful M-class X-ray flares (April 6). The sunspot count reached 105 on the same day. The 10.7-cm solar flux on April 3 and April 4 reached 100. This is an expected "flare-up," as we've seen such quick periods of activity during the last months of the last several solar cycles. Such solar activity is welcomed by DXers on HF, although the coronal-hole activity is the bane of HF propagation, though a possible blessing to VHF activity. (Source: SOHO)

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.

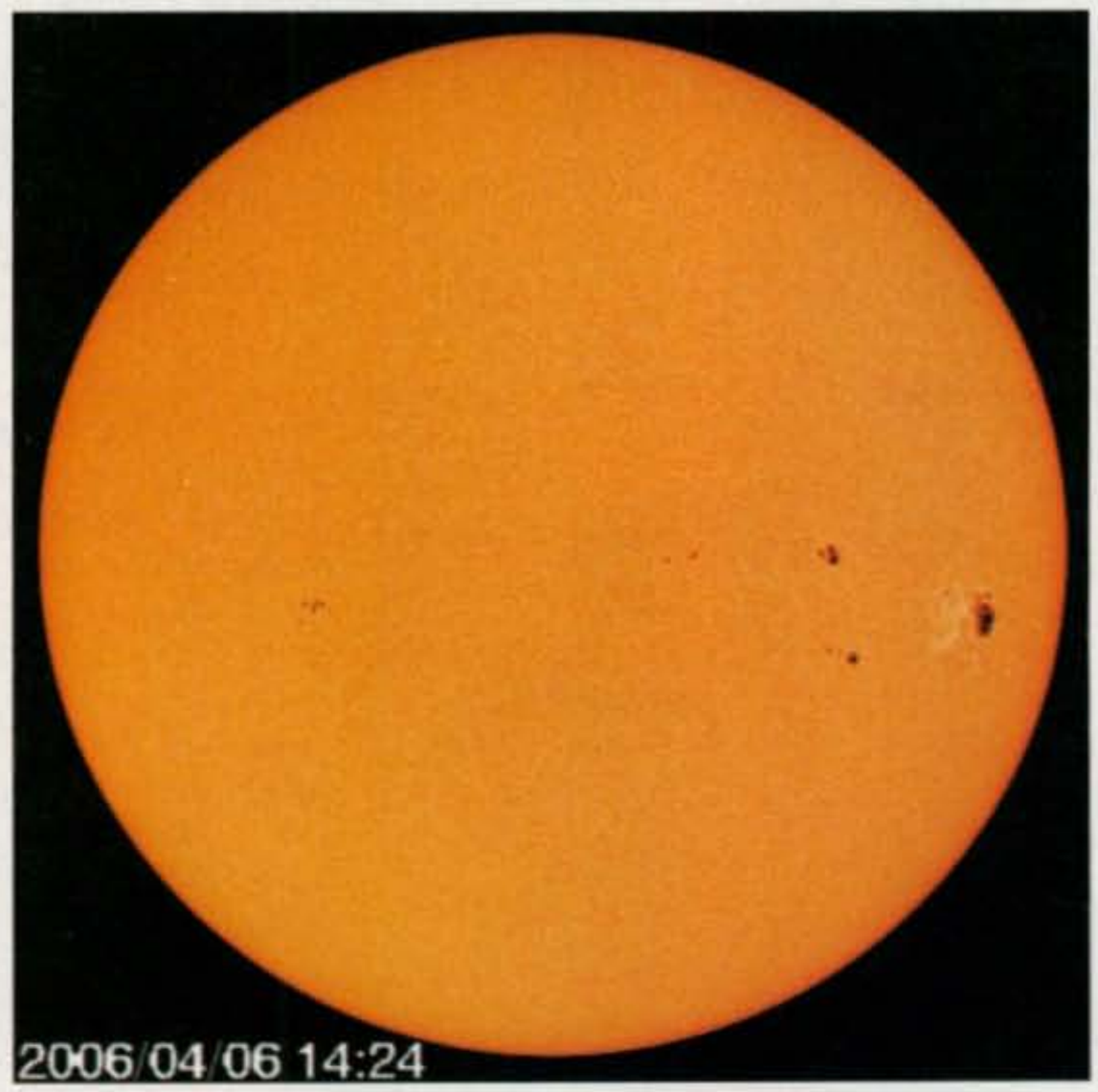
Sporadic-*E* propagation starts to peak during June. Expect an increase in the number of short-skip openings on HF, and often on 6 and 2 meters, with paths open between 50 and 2300 miles.

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 of *Es* propagation occurs at mid-latitudes. Through June, you can expect 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* are 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 is during the afternoon hours, especially when conditions are High Normal or better.

There is usually a seasonal decline in TE (transequatorial) propagation during the summer months, but some 6-meter openings may still be possible during June. The best time to



The sunspot image of April 6, the day when the sunspot count reached 105. Remember, just prior to this burst of activity the sunspot count was zero (March 25–27, 2006)! (Source: SOHO)

catch an opening across the geomagnetic equator is between 8 and 11 PM local daylight time.

Current Solar Cycle Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 75.5 for March 2006. The 12-month smoothed 10.7-cm flux centered on August 2005 is 89.3. There was some confusion in the reporting of the figure from July 2005; the figure on record for July is 87.8. The predicted smoothed 10.7-cm solar flux for June 2006 is about 71, with a range from a high of 94 to a low of 60.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for March 2006 is 10.8, a nice bump up from the lowest figure since solar cycle maximum, February's 4.7. Still, March's figure is down from January's 15.4. The lowest daily sunspot value during March, recorded on March 1–3, 7–11, and 26–27 was zero (0). The highest daily sunspot count was 24 on March 31. The 12-month running smoothed sunspot number centered on August 2005 is 45.4, and the final figure on record for July 2005 is 42.9. A smoothed sunspot count of 8 is expected for June 2006, but can be anywhere from a high of 23, down to zero, which is more and more likely as we near the very end of solar Cycle 23.

The observed monthly mean planetary *A*-index (*Ap*) for March 2006 is 8. The 12-month smoothed *Ap*-index centered on August 2005 is 12.2, with the final July 2005 figure recorded as 11.8. Expect the overall geomagnetic activity to be quiet to active during most days in June, with one or two possibly stormy periods; check the Last-Minute Forecast for those days likely to see geomagnetic storms.

Please come and participate in my online propagation discussion forum at <http://hfradio.org/forums/>. I've also enhanced my Space Weather and Radio Propagation center at <http://prop.hfradio.org>, so take a look at that, too. 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'd also love to hear any feedback you might have on what I have written. Until next month . . .

73, de Tomas, NW7US

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, 2006
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 Mediterranean & 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)	20-21 (1) 21-01 (2)	22-01 (1)* 23-01 (1)*
Southern Africa		15-16 (1) 16-18 (2) 18-19 (1)	01-02 (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 Mediterranean & 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) 17-18 (3) 18-19 (2) 19-21 (1)	20-00 (1)	21-23 (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	15-18 (1)** 09-13 (1) 13-15 (2) 15-18 (3) 18-19 (2)	06-07 (1) 07-08 (3) 08-10 (4) 10-12 (3) 12-16 (2)	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)*
of South America	19-20 (1)	16-18 (3) 18-20 (4) 20-22 (3) 22-00 (2) 00-02 (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 & Middle East	*Nil*	06-08 (1) 14-16 (1) 19-20 (1) 20-21 (2) 21-22 (1)	20-22 (1)	*Nil*
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.

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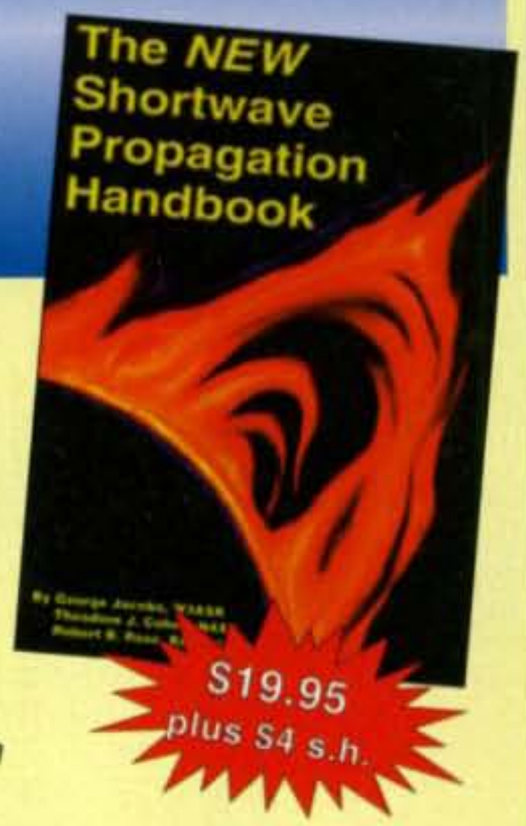

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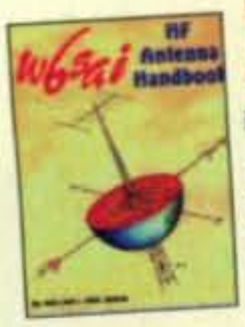

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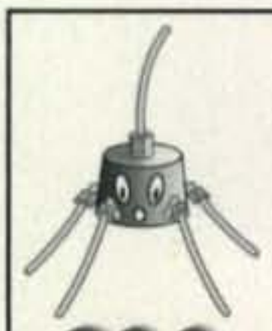
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