45241

Amateur Radio

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

COMMUNICATIONS & TECHNOLOGY

OCTOBER 2008

CQ

- One-Element Rotary for 18 MHz, p. 13
- Rookie's Guide to Contesting, p. 18
- *CQ* Reviews: FlexRadio FLEX-5000A Transceiver, p. 26

On the Cover: The "Hamming Haleys"—an all-ham family from Santa Fe, Texas. Details on page 112.

KENWOOD

Listen to the Future

AIRWAVE SUPERIORITY

Never before has a compact HT offered as many features, and such high powered performance as the TH-F6A. Arm yourself with one today and gain your own airwave superiority.

- Triband (144/220/440 MHz)
- Receives 2 frequencies simultaneously even on the same band
- 0.1~1300MHz high-frequency range RX (B band)[1]
- FM/FM-W/FM-N/AM plus SSB/CW receive
- Bar antenna for receiving AM broadcasts
- Special weather channel RX mode
- 435 memory channels, multiple scan functions
- 7.4V 1550mAh lithium-ion battery (std.) for high output[2] and extended operation
- 16-key pad plus multi-scroll key for easy operation
- Built-in charging circuitry for battery recharge while the unit operates from a DC supply
- Tough construction: meets MIL-STD 810 C/D/E standards for resistance to vibration, shock, humidity and light rain
- Large frequency display for single-band use
- Automatic simplex checker
- Wireless remote control function
- Battery indicator • Internal VOX • MCP software

[1]Note that certain frequencies are unavailable. [2]5W output

TH-F6A
TRIBANDER

www.kenwoodusa.com

JQA-1205 ISO9001 Registered

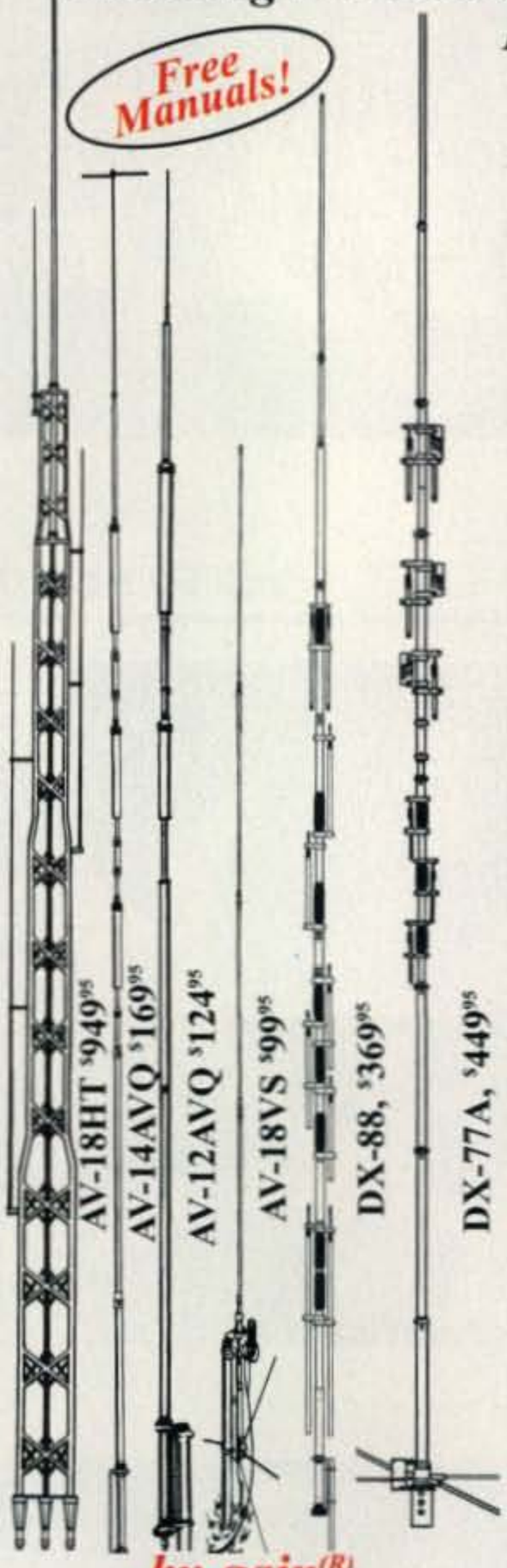
KENWOOD U.S.A. CORPORATION
Communications Sector Headquarters
3970 Johns Creek Court, Suite 100, Suwanee, GA 30024
Customer Support/Distribution
P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745
Customer Support: (310) 639-4200 Fax: (310) 537-8235

ADS#31608

hy-gain® HF VERTICALS

Self-supporting -- no guys required . . . Remarkable DX performance -- low angle radiation, omnidirectional . . . Handles 1500 Watts . . . Low SWR . . . Automatic band switching . . . Aircraft quality aluminum tubing . . . Stainless steel hardware . . . Recessed SO-239 connector . . . Two year limited Warranty . . .

Free Manuals!



hy-gain® 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 band-switching (except AV-18VS) and include a 12-inch heavy duty mast support bracket (except AV-18HT).

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

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

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

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

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

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

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

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

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

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

Model #	Price	Bands	Max Power	Height	Weight	Wind Surv.	Rec. Mast
AV-18HT	$949.95	10,15,20,40,80	1500 W PEP	53 feet	114 pounds	75 MPH	------
AV-14AVQ	**$169.95**	**10,15,20,40**	**1500 W PEP**	**18 feet**	**9 pounds**	**80 MPH**	**1.5-1.625"**
AV-12AVQ	$124.95	10,15,20 M	1500 W PEP	13 feet	9 pounds	80 MPH	1.5-1.625"
AV-18VS	**$99.95**	**10 - 80 M**	**1500 W PEP**	**18 feet**	**4 pounds**	**80 MPH**	**1.5-1.625"**
DX-88	$369.95	10 - 40 M	1500 W PEP	25 feet	18 pounds	75 mph no guy	1.5-1.625"
DX-77A	**$449.95**	**10 - 80 M**	**1500 W PEP**	**29 feet**	**25 pounds**	**60 mph no guy**	**1.5-1.625"**

Hy-Gain HyTower-Jr™

Stands 39 feet tall . . . Full 1/4 Wave on 40, 20, 15, 10 Meters . . . Cage loading on 80 Meters

New!

AV-18HT-Jr. **$349.95**

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

Stub-decoupling is used to give *full-size* quarter wave radiators on 40, 20, 15, 10 Meters with super efficient cage loading on 80 Meters.

The *HyTower-Jr™* has almost no losses -- your ground system determines your efficiency.

It is automatic bandswitching, fed with 50 Ohm coax and has low SWR over an exceptionally wide bandwidth. SWR is less than 1.2 at resonance on all bands.

The main radiator is aircraft high-strength, heavy walled, 2-inch aluminum tubing swedged at the top. Self-supporting in winds up to 40 MPH (use guy wires for higher winds). Mounts on 1¼ inch plumber's pipe. Heavy duty components will give you years of trouble-free operating pleasure. UPS Shippable.

Requires good ground system for optimum performance.

***The** famous 53 foot *Hy-gain HyTower™* is legendary. It's the premier, best performing vertical in the world -- bar none! At less than half the price with nearly the *same* performance and based on the *same* principles, the *HyTower-Jr™* is the poor man's version of its father *HyTower*. Of course, *Junior™* doesn't have its father's rugged hot-dipped galvanized steel tower and construction!

Free Hy-Gain Catalog
and Nearest Dealer . . . 800-973-6572
Call your dealer for your best price!

hy-gain®

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

CQ contents

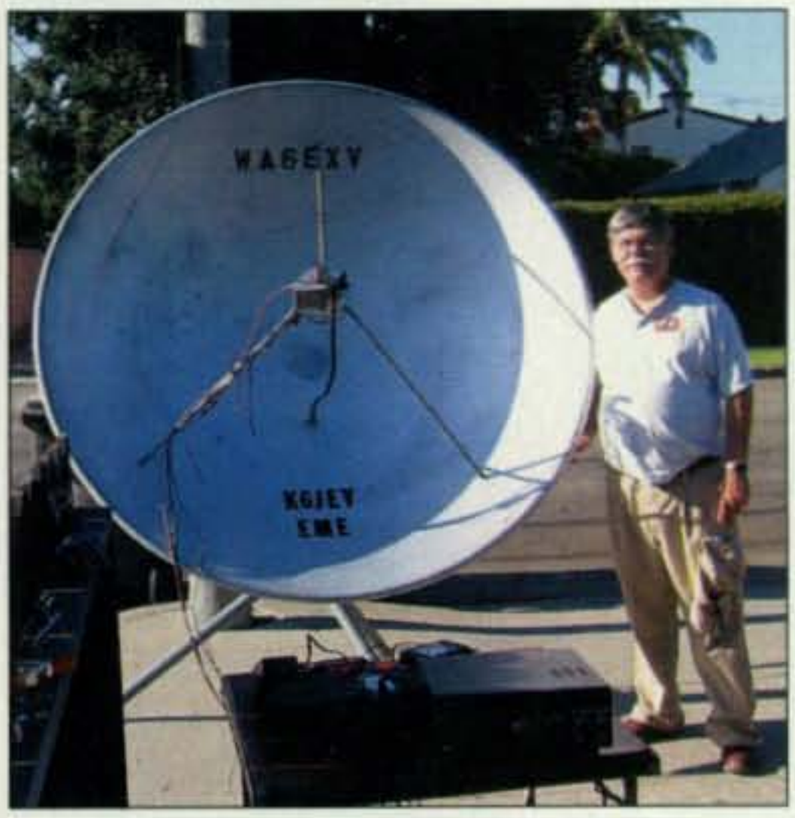
OCTOBER 2008

p. 106

features

p. 18

Vol. 64 No. 10



p. 68

p. 56

departments

KENWOOD

Listen to the Future

TS-480

The Perfect Remote Base Transceiver

Straight Out of the Box!

- The perfect internet base transceiver - straight out of the box!
- Easy to operate.
- The size makes it great for base, mobile or portable operation.
- Free VoIP/Control software downloads at Kenwoodusa.com.
- Incredible RX specifications.
- No expensive sound card interface needed.

KENWOOD U.S.A. CORPORATION
Communications Sector Headquarters
3970 Johns Creek Court, Suite 100, Suwanee, GA 30024
Customer Support/Distribution
P.O. Box 22745, 2201 East Dominguez St., Long Beach, CA 90801-5745
Customer Support: (310) 639-4200 Fax: (310) 537-8235

www.kenwoodusa.com
ADS#31508

JQA 1205 691 A
ISO9001 Registered

ham radio news

Georgian Hams Cut Off Russian Contacts

The president of the National Association of Radio-amateurs of Georgia has told QRZ.com that Georgian hams are refusing to contact their fellow amateurs in Russia, due to the current hostilities between the two countries, and are calling on hams worldwide to do the same. The boycott appears to be self-imposed, rather than mandated by the government, and—in *CQ*'s view—goes against the amateur radio spirit of international goodwill, even (especially) between individual amateurs in countries whose governments are at odds.

Smithsonian Ham Station Shuts Down

NN3SI, the ham radio station that has been active from the Smithsonian Institution in Washington, DC since 1976, is off the air for the foreseeable future, victim of a major renovation and change of exhibits at the National Museum of American History. The museum has been closed to the public since 2006, and the Information Age exhibit, NN3SI's home since 1990, will not be reinstalled, according to the *ARRL Letter and Newsline*. Station trustee John Johnston, W3BE, told *Newsline* efforts were being made to find an appropriate new location, including inconclusive negotiations to move it to the National Air and Space Museum's new facility in Virginia. For now, says Johnston, the station equipment will remain in storage, but he will maintain the license in hopes of getting the station back on the air in the future.

FCC Calls for Tightening Up Club Trustee Transfers

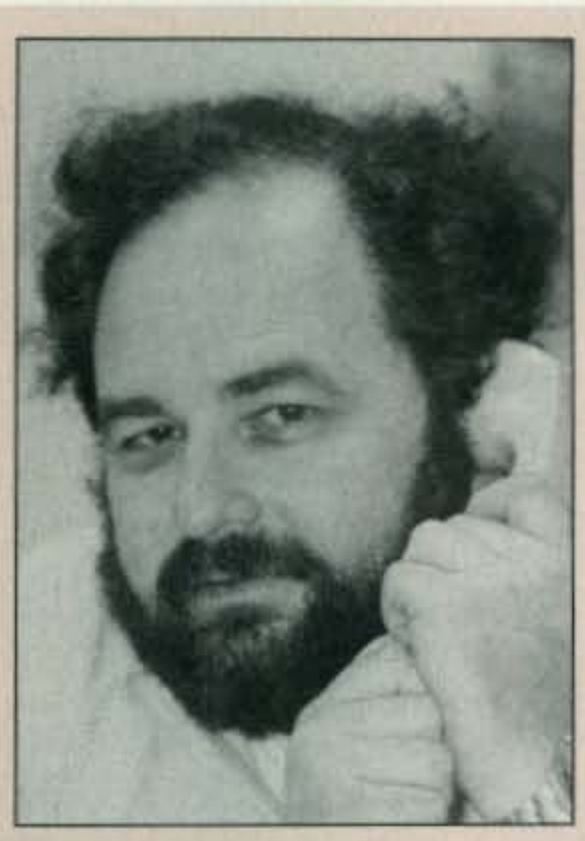
Bill Cross, W3TN, the "public face" to hams of the FCC's Wireless Telecommunications Bureau, has called on Club Station Call Sign Administrators to tighten up their procedures for making changes in club licenses. Speaking by phone with the National Conference of Volunteer Examiner Coordinators (many of which are also CSCSAs), Cross said the FCC is getting an increasing number of applications for changing the trustee of a club station submitted by hams who are not authorized to make any changes. According to the *ARRL Letter*, he suggested that the CSCSAs adopt new procedures to assure that the person requesting the change is actually the new club trustee and is acting with the club's authority.

Hilberling Discontinues PT-8000

German manufacturer Hilberling announced on its website in late July that it was discontinuing production of its high-end PT-8000 transceiver. According to a translation by VA7OJ, the company cited constant design changes required in order to maintain compliance with European Union regulations imposed on manufacturers. While it was possible to achieve compliance in prototypes, the company said that "guaranteeing this high standard without limitations in a series production program ... runs into difficulties which cannot be overcome at a cost level which is still acceptable." The PT-8000 series was marketed in the U.S. by Array Solutions. Retail prices varied, depending on features, between $12,000 and $16,000.

HF Digital Voice Programs Again Available

Updating last month's story on legal issues clouding the use of certain HF digital voice (DV) modes, versions of WinDRM and FDMDV using different "codecs" have been released to permit the modes' continued use on the ham bands. For details, see this month's Digital Connection column on page 82.



Tommy Kneitel, W4XAA (ex-K2AES), SK

Radio monitoring icon "Tommy" Kneitel, W4XAA (ex-K2AES), passed away in Florida on August 22 at age 75. He had been in poor health for the past several years. Tommy was Senior Editor and founding Editor of our sister magazine, *Popular Communications*. The grandson of animation pioneer Max Fleischer and son of animator Seymour Kneitel, Tommy preferred the print media, writing for *Popular Electronics* and *Electronics Illustrated* in the 1950s and '60s. He started the *Popular Electronics* registered shortwave monitor program, which issued unofficial "WPE" callsigns to active SWLs.

His association with CQ began when he became founding Editor of *S9*, a CB magazine started by then-*CQ* publisher Cowan Publishing. When *S9* folded, Kneitel and current *CQ* Publisher Dick Ross, K2MGA, launched *Popular Communications* in 1982. Tommy was Editor of *Pop 'Comm* until 1995, when he gave up day-to-day responsibilities for the magazine and became Senior Editor. He served as an advisor and resource to his successors until illness prevented him from doing so. He was also the author of a multitude of books on CB, scanning, and other radio-related topics.

ARRL Establishes LoTW-Only Award

A new ARRL award is the first to require that all confirmations be made via the League's online Logbook of the World (LoTW) database. According to the *ARRL Letter*, the Triple Play Award, which recognizes contacts with all 50 states on voice, code, and digital modes, will be limited to contacts made in January, 2009 or later, *and* confirmed via LoTW. Traditional paper QSLs will not be accepted.

ARRL Drops DXCC Rule on Publicly-Posted Logs

Saying it is impossible to enforce, the ARRL Board of Directors voted in July to eliminate a rule from the DXCC program that called into question the admissibility of contacts for which the logs of one or both participating stations had been made public. The issue developed with the growing practice of many DXpeditions of posting their logs online. It came to a head when the CQ World-Wide DX Contest Committee decided to post CQ WW logs publicly in an effort to increase transparency and hold contesters more accountable to their peers for maintaining accurate logs. In place of "Rule 5," the League board directed the staff to create resources and "best practices" guidelines for QSLing.

(Continued on page 92)

TOKYO HY-POWER

Two of the LIGHTEST and MOST COMPACT Amplifiers in the Industry!

NEW!

600W OUT, Weighing only 22.5lbs.

Outstanding for Field Works and DX-peditions!

HL-1.1KFX

Lightweight HF Linear

This world-class compact HF amplifier has built-in switching mode power supply to save the weight. It is compatible with wide AC line of 100 to 250V, and is best suited for DX-peditioners.

Features

- The amplifier allows operation in full break-in CW mode due to the use of the amplifier's high speed antenna relays.
- The amp utilizes a sophisticated circuit to run the various high speed protection circuits such as overdrive, high antenna SWR, DC overvoltage, band mis-set etc.
- An analog multimeter allows the operator to monitor Pf (Forward output power), Pr (Reflected power), Vd (Drain voltage of power FET), Id (Drain current) etc.

Specifications

Frequency:
1.8 ~ 28MHz all amateur bands including WARC bands
Mode:
SSB, CW, RTTY
RF Drive:
75 ~ 90W
Output Power:
SSB 600W PEP max.
CW 600W.
RTTY 500W (5 minutes)
Final Transistor:
SD 2933 x 4
(MOS FET by ST micro)
Circuit:
Class AB parallel push-pull
Cooling Method:
Forced Air Cooling
Multi-Meter:
Output Pf 1kW, Reflected Power 100W, Drain Voltage Vd 60V, Drain Current Id 50A
Input/Output Connectors:
Type M-J (UHF SO-239)
AC Power:
1.4kVA max. when TX
AC 100 ~ 250V (Auto Select)
Dimensions:
9.1 x 5.6 x 14.3 inches (WxHxD)
Weight:
Approx. 22.5 lbs.

Available Now with 12m & 10m Built-In

HL-2.5KFX

HF Linear Amplifier

NEWEST and MOST POWERFUL Full Legal Limit!

The HL-2.5KFX is the lightest and most compact self-contained 1.5kW output HF LINEAR amplifier in its class. The amplifier's decoder changes bands automatically with most modern ICOM, Kenwood, and Yaesu HF transceivers. It also has a built-in AC power supply – selectable for 220/230/240/250 VAC input, 3kVA max, and a multifunctional LCD display for instant readout of operating parameters. The HL-2.5KFX is equipped with a control cable connection socket for the HC-1.5KAT, automatic antenna tuner by Tokyo Hy-Power Labs for seamless auto tuning operation.

Specifications

SOLID STATE
Freq. Band:
1.8~28 MHz all HF amateur bands
Operation Mode:
SSB, CW, RTTY
Exciting Power (RF Drive):
100W max. (85W, typical)
Output Power (RF Out):
1.5kW min. SSB/CW
(1.2kW on 28MHz)
1kW RTTY (5 minutes key down)
Auto Band Set:
With most modern ICOM, Kenwood, Yaesu HF Transceivers
Antenna Tuner:
Compatible with external Tokyo Hy-Power HC-1.5KAT
RF Power Transistors:
ARF 1500 by Microsemi x 2
Antenna Relay:
QSK (Full break-in compatible)
Power Supply:
Built-in 220/230/240/250VAC, 3kVA max.
Dimension and Weight:
12.8 x 5.7 x 15.9 inches (WxHxD),
Approx. 57.3lbs.

More Fine Products from TOKYO HY-POWER

HC-1.5KAT
HF 1.5KW Auto Tuner

HL-350VDX
VHF 330W Amplifier

HC-200AT
HF/6m 200W Auto Tuner
Lightning Tuning Speed

TOKYO HY-POWER

TOKYO HY-POWER LABS., INC. – USA
Technical Support
28301 Tomball Parkway, Suite #500-210
Tomball, TX 77375
Phone 713-818-4544
e-mail: thpsupport@airmail.net

TOKYO HY-POWER LABS., INC. – JAPAN
1-1 Hatanaka 3chome, Niiza Saitama 352-0012
Phone: +81 (48) 481-1211 FAX: +81 (48) 479-6949
e-mail: info@thp.co.jp
Web: http://www.thp.co.jp

A radio For Every Need - Yaesu VHF/UHF Mobiles and Handhelds

Imagine the Future of the Mobile Radio ...
It's Now All Yours ! ... YAESU FTM-10SR

DUAL BAND DUAL RECEIVE

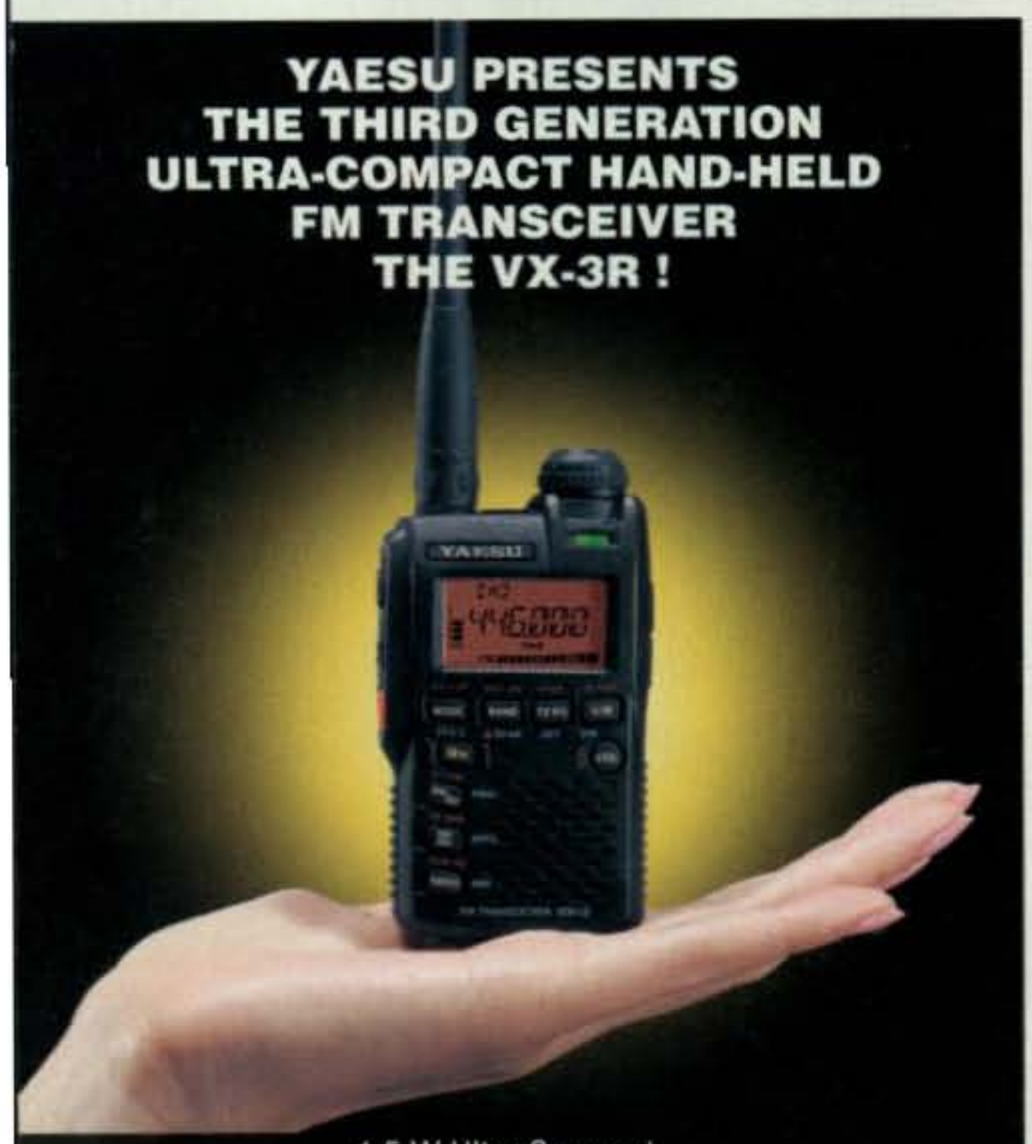
10 W 2 m/70 cm*
Dual Band FM Mobile
FTM-10SR *70 cm 7 W

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

DUAL BAND DUAL RECEIVE

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

YAESU PRESENTS THE THIRD GENERATION ULTRA-COMPACT HAND-HELD FM TRANSCEIVER THE VX-3R !



2 m / 70 cm Dual Band

1.5 W Ultra Compact
2 m/70 cm Dual Band FM Hand held
VX-3R

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

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

QUAD BAND DUAL RECEIVE

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

DUAL BAND DUAL RECEIVE

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

DUAL BAND

50 W 2 m/70 cm*
Dual Band FM Mobile
FT-7800R *70 cm 35 W

5 W Ultra-Rugged, Submersible
6 m/2 m/70 cm Tri-Band FM Hand held *6 m / 2 m / 70 cm Tri-Band*
VX-7R/VX-7RB

5 W Heavy Duty Submersible
2 m/70 cm Dual Band FM Hand held
VX-6R

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

(8 key)
(16 key)

5 W Heavy Duty Submersible
2 m FM Mono Band Hand Helds
VX-120 (8 key Version) **VX-170** (16 key Version)

70 cm FM Mono Band Hand Helds
VX-127 (8 key Version) **VX-177** (16 key Version)

Ultra-Rugged 5 W Full Featured
2 m FM Hand helds *2 m Mono Band*
VX-150/VX-110

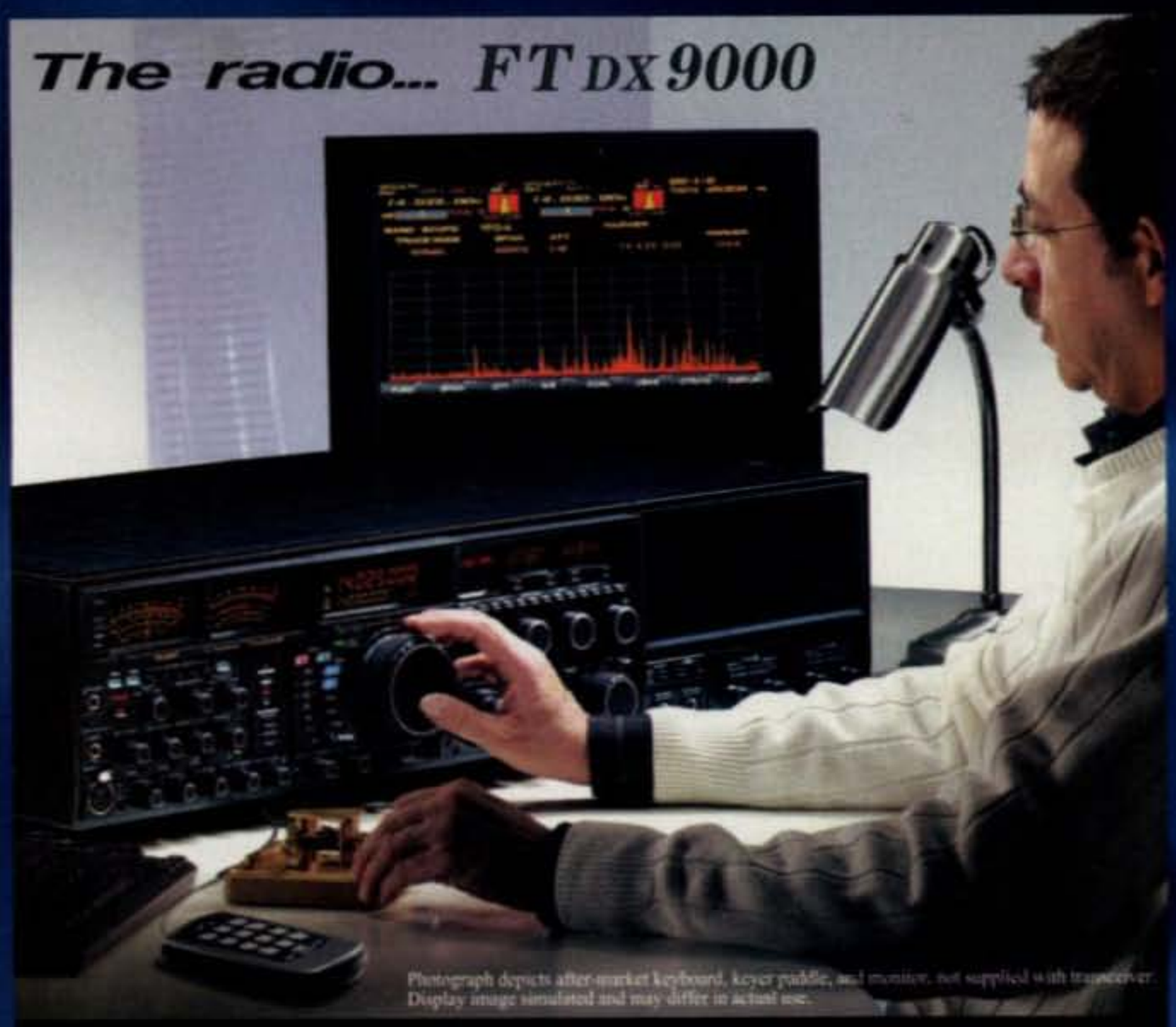
YAESU
Choice of the World's top DX'ers℠

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

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

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

Ride Cycle24 to the Top with Yaesu



Photograph depicts after-market keyboard, keyer paddle, and monitor, not supplied with transceiver. Display image simulated and may differ in actual use.

HF/50 MHz Transceiver
FT DX 9000MP
Two Pairs of Meters, plus LCD Window, Data Management Unit and Flash Memory Slot Built In, Main/Sub Receiver VRF, plus Full Dual Receive Capability, External 50 V/24 A Switching Regulator Power Supply and Speaker with Audio Filters

Display color (Umber or Light Blue) may be selected at the time of purchase. Modification from 400 to 200 W not possible.

HF/50 MHz Transceiver
FT DX 9000D 200 W Version
Large TFT, Data Management Unit and Flash Memory Slot Built In, Main/Sub Receiver VRF, plus Full Dual Receive Capability, Three μ-Tuning Modules for 160 - 20 M, 50 V/12 A Internal Switching Regulator Power Supply

HF/50 MHz Transceiver
FT DX 9000 Contest
Custom-Configurable Version
Two Pairs of Meters, plus LCD Window, VRF Input Preselector Filter, Three Key Jacks, and Dual Headphone Jacks, 50 V/12 A Internal Switching Regulator Power Supply

Display color (Umber or Light Blue) may be selected at the time of purchase. Modification from 200- to 400-Watt version not available.

Loaded with Leading-edge Performance Capabilities. . .
The First Triumph in the 2nd Generation of the FT DX 9000 Lineage:
The Powerful FT-2000!

Shown with after-market keyboard, and monitor (not supplied).
Optional Data Management Unit (DMU-2000)

HF/50 MHz Transceiver
FT-2000D
200 W Version (External Power Supply)

HF/50 MHz Transceiver
FT-2000
100 W Version (Internal Power Supply)

"The Best of the Best Just Got Better"

Contact Dennis Motschenbacher K7BV at k7bv@vxstdusa.com for details

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

Specifications subject to change without notice. Some accessories and/or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

YAESU
Choice of the World's top DX'ers

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

zero bias – a CQ editorial

BY RICH MOSESON,* W2VU

97.1 (b)

Section 97.1 of the FCC's rules and regulations sets forth the basis and purpose of the Amateur Radio Service in the United States. The second item, after public service and emergency communications, is:

(b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.

Ever since the first commercially-built receivers came onto the market in the 1930s, many hams have been worried that we have collectively been losing our edge in the technical arena. The hand-wringing has increased in recent years, as transistors replaced tubes, integrated circuits replaced discrete components, and surface-mount technology made everything too small to handle without magnifying glasses and special tools. When it comes to building state-of-the-art equipment, the worriers say, the average ham is out of his league.

In fact, the technical talents of hams today are so often downplayed that the ARRL felt it necessary to focus on them not only in this year's "We do that" public relations campaign (see <http://www.wedothat-radio.org/wedothat/>, but by making technology a "fifth pillar" of the organization's primary purposes, something that should be obvious to all, but often, apparently, is not.

Technical Evolution

Regardless of popular perceptions, something curious is happening as we take the next steps along the path of technological evolution we've been on since the days of spark. That next phase of evolution, of course, is digital technology. More and more, our rigs rely on microprocessors and software routines to perform functions traditionally handled by analog circuits and components. The ultimate transition from analog to digital is the software-defined radio, or SDR. We're reviewing one of them—the FlexRadio Flex-5000A—in this issue. But as noted above, something curious is happening here. Rather than driving another nail into the presumed coffin of amateur radio technical expertise and innovation, the Flex-5000A and the mindset of its designers are opening new doors and creating new opportunities for "continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art."

Before I explain exactly what I mean, though, I want to back up 25 years or so, to the early days of the computer revolution. The common lament in the mid-1980s was that computers were drawing away potential hams and that onerous code test requirements were creating an unreasonable obstacle for otherwise interested computer types who had little interest in traditional HF hamming where code knowledge was most important. This theory led to Novice Enhancement in 1987, the code-free Technician license in 1991, and ultimately, the removal of all code test requirements last year.

There was only one problem with this theory: Even though we made lots of changes to the *rules* to encourage computer and software folks to join our ranks, little was done to change the *technology* of ham radio to really entice them to become active hams. To be sure, there have been tremendous strides in making the computer an integral part of most ham shacks and in developing software to enhance our operating. Logging software, contesting software, digital mode software (including many new digital modes), and station control software all come to mind. But software-savvy hams have been all but shut out of developing and enhancing the software that increasingly determines the features of our radios themselves. This has now changed.

A Technical Revolution

Traditionally, amateur radio manufacturers have felt that they were the experts on determining (with customer input), designing, and implementing various features on their models. For many years, they were correct. We're not all engineers, after all. Recently, though, three companies in particular have made special efforts to seek out customer input and suggestions. Elecraft, Ten-Tec, and Flex Systems have established very active online user communities, in which company engineers and executives often play active roles along with their customers. Among other things, group members make suggestions that often end up being included in the next software release for a particular radio.

The folks at Flex Systems have now gone a step further, writing the software for the Flex-5000 with open-source computer code. Software-savvy users are invited and encouraged not only to suggest new features but to actually write software routines to make those features work. Their code is then shared with other users who play with it, tweak it, try to break it, and generally make it even better than originally envisioned. Once it reaches a point of general acceptance, it often ends up in the next official software release for all Flex-5000 users. So far, though, most of those users appear to be programmers, downloading constantly-updated developers' versions and happy to finally have found a place in ham radio where they can apply their considerable skills to "advancing the radio art." They are also gaining invaluable experience in blending the digital world of software and computers with the analog world of RF transmission, reception, and propagation —skills that are in high demand and short supply.

In a sidebar to our Flex-5000 review, Lee Crocker, W9OY, says he feels that SDR represents such a paradigm shift in amateur radio technology that all traditional radios are now obsolete. We are not ready to go along with that point of view just yet. There are many, many hams for whom clicking a mouse will never replace pushing buttons and turning dials. However, what we *do* feel represents a paradigm shift is opening up the development of radio operating software to the amateur community and making it a collaborative process.

It has taken 25 years, but the "software guys" (and gals) we've been courting for so long finally have a home in ham radio where they can fully contribute to advancing the radio art. We welcome this change and encourage other manufacturers to consider following Flex's lead into the world of open-source ham radio operating software.

73, W2VU

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

hy-gain® ROTATORS

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

HAM-IV

HAM-IV
$649.95

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

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

TAILTWISTER SERIES II

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

T-2X
$799.95

T-2XD
$1229.95
with DCU-1

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

CD-45II

CD-45II
$449.95

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
$1099.95
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
$349.95

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
$1499.95

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
$749.95

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

AR-35 Rotator/Controller

AR-35
$89.95

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

RBD-5
$29.95

NEW! Automatic Rotator Brake Delay

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

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

hy-gain®

Antennas, Rotators & Towers
308 Industrial Park Road,Starkville, MS 39759, USA
Prices/specs subject to change without notice/obligation ©2008 Hy-Gain.

announcements

The following Special Event stations are scheduled for October:

K1W, from National Wildlife Refuge Week, 105 Years of Service, Parker River NWR, Newburyport, Massachusetts; Pentucket Radio Assn.; 1500–200Z Oct. 11–19 on 21.130, 14.265, 7.240, 3.880 MHz. For QSL send QSL and SASE to Larry Caruso, K1LGC, 77 Whittier Rd., Haverhill, MA 01830. <www.pra625.org>

K4BV, from the 50th anniversary of the Daytona Beach Amateur Radio Association, Daytona Beach, Florida; 1400– 2200Z Oct. 4 & 5 on 14.270, 14.070, 7.270, 7.070, 3.970, 3.570 MHz. For certificate and QSL send QSL and SASE to DBARA, P.O. Box 9852, Daytona Beach, FL 32120-9852. <http://dbara.org/>

N4J, from Archeology Open House at Thomas Jefferson's Poplar Forest, Bedford Country, Virginia; Lynchburg ARC; 1400–2299Z Oct. 4 on 7.260, 14.260, 14.070 PSK, 21.360, 28.460. QSL to Dick Hiner, W4HMK, 3977 Waugh Switch Rd., Big Island, VA 24526.

NA4CC, from 228th anniversary of the Battle of Kings Mountain, Kings Mountain Battleground, North Carolina; Cleveland County Amateur Radio Service; 10 AM to 5 PM local time on Oct. 4 on 10 and 20 meters. QSL to Cleveland County ARS, P.O. Box 864, Shelby, NC 28151. <www.ccarsnc.org>

W9JOZ, from "the town that never existed," Radioville, Indiana; Starke County ARC; 0800–1500 CDT on 14.250, 7.225, 21.350, 146.520 MHz. For QSL send QSL and SASE to W9JOZ, Starke County ARC, 7495 South 500 West, North Judson, IN 46366. <www.w9joz.org>

WØCWP, from 20th Annual Anamosa Pumpkinfest, Anamosa, Iowa; Jones County ARC; 1300–1700Z Oct. 4 on 14.260 ±QRM. For certificate send QSL and business-size SASE to JCARC, 304 South Ford St., Anamosa, IA 52205. <http://pumpkinfest.anamosachamber.org>

The following hamfests, etc., are slated for October and early November:

Oct. 11, **Bozeman Hamfest**, Sacajawea Middle School, Bozeman, Montana. Info via e-mail <mail@gallatinhamradio.com>; <www.gallatinhamradio.com>. (Talk-in 146.88– [100.0 Hz], 447.70– [77.0 Hz], 146.52; exams)

Oct. 10–11, **NEAR-Fest IV**, Deerfield Fairgrounds, Deerfield, New Hampshire. For information e-mail <info@near-fest.com>, <http://www.near-fest.com/>. (Talk-in 146.700 PL 88.5; exams)

Oct. 10–11, **Paris Texas Hamfest**, Coliseum at Red River Valley Fairgrounds, Paris, Texas. Contact Richard Lenoir, KI5DX, e-mail: <KI5DX@yahoo.com>, phone 903-783-0968; <www.paristexasradio.com/hamfest>. (Talk-in 147.040+ PL; exams)

Oct. 12, **Maysville Hamfest**, Community Center, Maysville, North Carolina. Contact K4BMH at 252-753-2895. (Talk-in 146.685 PL 88.5)

Oct. 12, **Nutmeg Hamfest & ARRL Connecticut State Convention**, MountainRidge Resort, Wallingford, Connecticut. For more information e-mail: <infor@nutmeghamfest.com>, <www.nutmeghamfest.com>. (Talk-in 147.36)

Oct. 19, **RF Hill ARC Hamfest**, Sellersville Fire House, Sellersville, Pennsylvania. Contact Jim Soete, WA3YLQ, 215-723-7294, e-mail: <wa3ylq@arrl.net>, <www.rfhill.ampr.org>. (talk-in 145.31 [131.8], exams 10 AM to noon)

Oct. 24–25, **Texoma Hamarama Family Funfest '08**, Ardmore Convention Center, Ardmore, Oklahoma. Contact Henry & Tina Allen, 1-800-588-2841, e-mail: <k5bug@arrl.net>, <www.angelfire.com/tx5/TexomaHamarama>

Oct. 26, **Massillon ARC Hamfest & Auction**, Massillon Boys & Girls Club Complex, Massillon, Ohio. For information go to <www.marcradio.org>. (Talk-in 147.18+; exams contact Gary Kline, WC8W, 330-837-2927)

Nov. 1, **Enid Hamfest**, Garfield County Fairgrounds Hoover Building, Enid, Oklahoma. Information e-mail: <enidhamfest@yahoo.com>. (Talk-in 147.375+ .600; exams 1 PM)

Nov. 7–9, **Asia Pacific DX Convention**, Osaka International House, Osaka, Japan. For information go to: <http://apdxc.org>.

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

CQ Amateur Radio (ISSN 0007-893X) is published monthly by CQ Communications, Inc., 25 Newbridge Rd., Hicksville, NY 11801, Telephone 516-681-2922; Fax 516-681-2926. E-mail: cq@cq-amateur-radio.com. Web site: www.cq-amateur-radio.com. Periodicals Postage Paid at Hicksville, NY 11801 and at additional mailing offices. Subscription prices (all in U.S. dollars): Domestic-one year $36.95, two years $66.95, three years $96.95; Canada/Mexico-one year $49.95, two years $92.95, three years $135.95; Foreign Air Post-one year $61.95, two years $116.95, three years $171.95. U.S. Government Agencies: Subscriptions to CQ are available to agencies of the United States government including military services, only on a cash with order basis. Requests for quotations, bids, contracts, etc., will be refused and will not be returned or processed.

Printed in the U.S.A.
POSTMASTER: Send address changes to:
CQ Amateur Radio, 25 Newbridge Rd., Hicksville, NY 11801

Alinco gives you Mobiles for all Seasons and for all Reasons!

Work the DX on 6 and 10 Meter FM

- DR-03T (pictured) 10 meters
- DR-06T 6 meters

- Same key-operations as DR-135-435 series mobile radios.
- EJ-41U internal TNC board is available as an option for 1200/9600bps packet (DR-06T only), no need to remove mic for packet operation.
- DR-03T 10 watts, H(10W)/M(5W)/L(2W) power settings.
- DR-06T 50 watts, H(50W)/M(20W)/L(5W) power settings.
- 100 memory channels
- Front panel data port
- Rear panel DSUB9 computer connection (DR-06T only)
- CTCSS, DCS encode+decode, DTMF encode and Tone-burst are all standards
- Clean, clear Alinco audio
- Super-wide 7 character alphanumeric display
- Wide and narrow FM modes (16K0 & 8K50F3E / DR-03T is fixed for NFM)
- Theft alarm feature
- A large, palm-fitting commercial-grade backlit microphone with an 8 pin metal connector (not a modular plug) as well as direct frequency input and direct multi-function access such as monitor, call channel, power setting,memory to VFO plus more!
- Stays in mode you select (voice/packet) through power off cycles
- Ten autodial memories

Work simplex and the VHF and UHF Repeaters

- 144 MHz DR-135TMkIII 50 watts, H/M/L power settings
- 220 MHZ DR-235TMkIII (pictured) 25 watts, H/M/L power settings
- 440 MHZ DR-435TMKIII 35 watts, H/M/L power settings

- EJ-41U internal TNC board is available as an option for 1200/9600bps packet
- 100 memory channels
- Front panel data port
- Rear panel DSUB9 computer connection
- No need to remove mic for packet operation
- Ignition key on/off feature
- CTCSS, DCS encode+decode, DTMF encode and Tone-burst are all standards
- Clean, clear Alinco audio
- Super-wide 7 character alphanumeric display
- Wide and narrow FM modes (16K0 & 8K50F3E)
- Theft alarm feature
- A large, palm-fitting commercial-grade backlit microphone with an 8 pin metal connector (not a modular plug) as well as direct frequency input and direct multi-function access such as monitor, call channel, power setting, memory to VFO plus more!
- Stays in mode you select (voice/packet) through power off cycles
- Ten autodial memories

Dual Band fun and versatility

- DR-635T 144 MHz/440MHz

- VHF/UHF full duplex operation includes V/U and U/V modes.
- Cross-band repeater function (where permitted: standard on DR-635T)
- 200 Memory channels
- H/M/L power output settings- VHF: 50/25/5W UHF: 35/20/5W
- Large 6 character alphanumeric display
- Selectable display color illumination (Blue, Violet or amber)
- Internal duplexer - single antenna connector
- Removable control head can be remotely mounted (requires optional EDS-9 separation kit) or allow transceiver to be inverted for optimal speaker placement.
- Expanded receive range includes FM broadcast band (WFM)
- Power supply voltage display
- Theft alarm feature
- Optional 1200 and 9600 bps packet operation with optional EJ-50U
- Digital voice communications with optional EJ-47U
- Illuminated DTMF EMS-57 microphone allows direct VFO frequency entry and remote control of transceiver
- CTCSS & DCS encode and decode plus four different tone bursts
- CTCSS Tone and DCS scan
- Programmable VFO and Memory scan modes
- "Time Out" timer
- Cable Clone feature
- AM Aircraft band reception
- Temperature Compensated Crystal Oscillator
- Ignition key activated power on/off feature
- Optional Accessories
  - EJ-47U digital modulation unit
  - EJ-50U TNC unit
  - EDS-9 Front-control unit separation kit

Distributed in North America by Ham Distributors,
1775 North Loop 336 East, Suite 8, Conroe, Texas 77301
Phone: 936-649-1497 • Fax: 800-824-3128 • email: USrep@Hamdistributors.com

ALINCO
www.alinco.com

Patterned after a classic antenna construction article written by an amateur radio icon over 50 years ago, this simple directional antenna utilizes readily available materials, and it only costs $21.37 to construct, using do-it-yourself tools.

A One-Element Rotary for 18 MHz

BY JOHN LINDHOLM,* W1XX

Perhaps one of the most popular antenna construction articles ever written was published in the January 1955 issue of *QST* and entitled "A One-Element Rotary for 21 Mc."[1] by Lewis G. McCoy, W1ICP. It appeared just two months after I received my Novice license, and with the help of my dad I built the antenna. It utilized inexpensive electrical conduit as the radiator for a shortened rotary dipole. The antenna could be rotated from inside the shack through a series of clothesline-type pulleys and a tightly stretched cord. My first contact using the 15-meter antenna was with a DX station in Trieste, then a rare DXCC country.

"Lew" McCoy was an icon to the Novices of the day because he had an uncanny knack for making the complex understandable. His "transmatch" series is legendary. I had the distinct pleasure and honor of later becoming a colleague

Photo A– W1XX's 17-meter adaptation of the classic "One-Element Rotary for 21 Mc." antenna designed by Lew McCoy, W1ICP, in the mid-1950s. The antenna was placed on a push-up mast and rotated with a TV-type rotator. Many QSOs resulted. (Photos by the author)

**CQ WW VHF Contest Director*
48 Shannock Road, South Kingstown, RI 02879
e-mail: <w1xx@cq-amateur-radio.com>

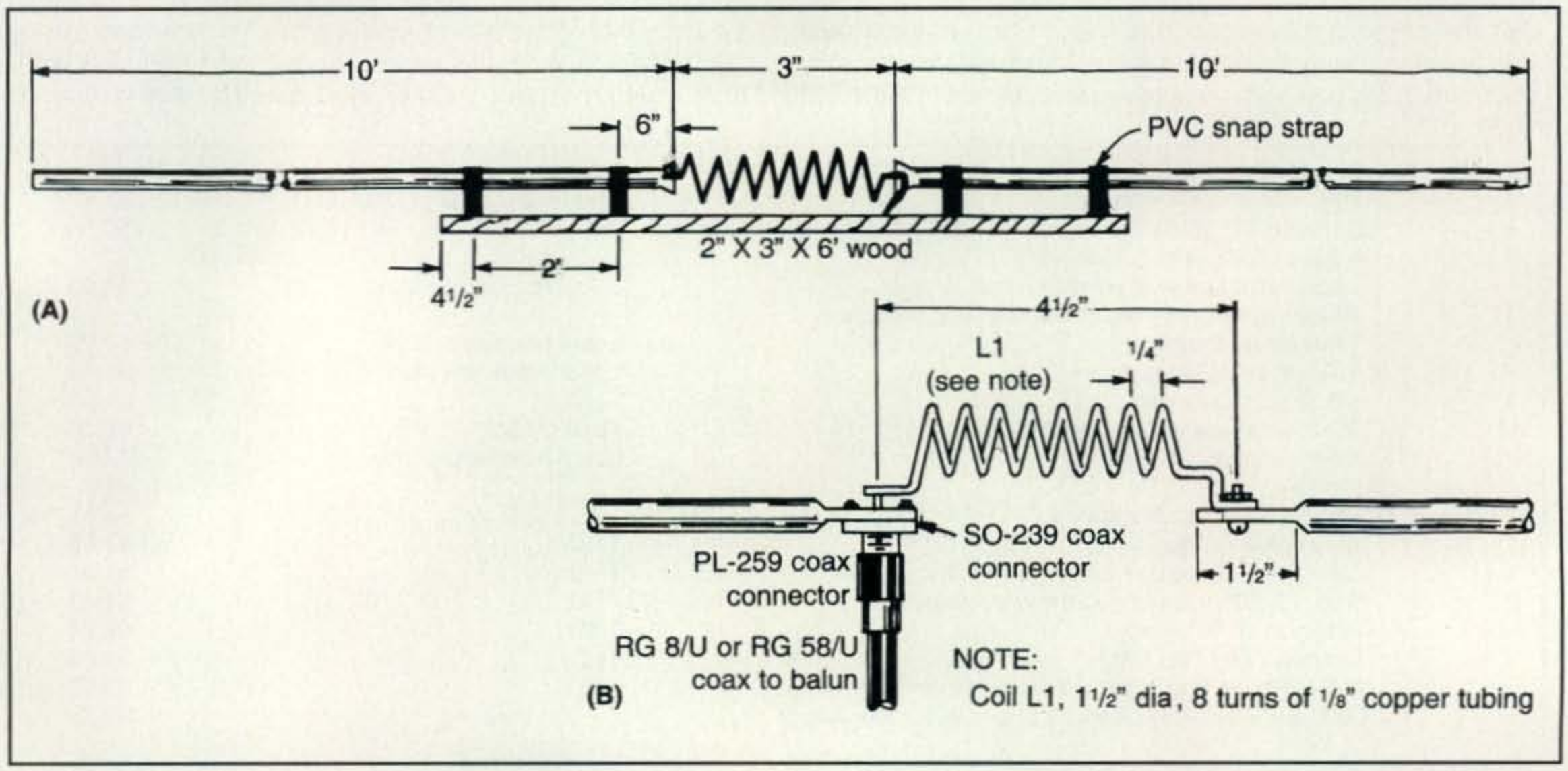


Fig. 1 – (A) Diagram of the antenna. The EMT conduit is held in place with four PVC snap straps. Different antenna mounting options are described in the text. (B) A more detailed drawing of the coil and SO-239 coax connector. A coax choke is connected to the antenna.

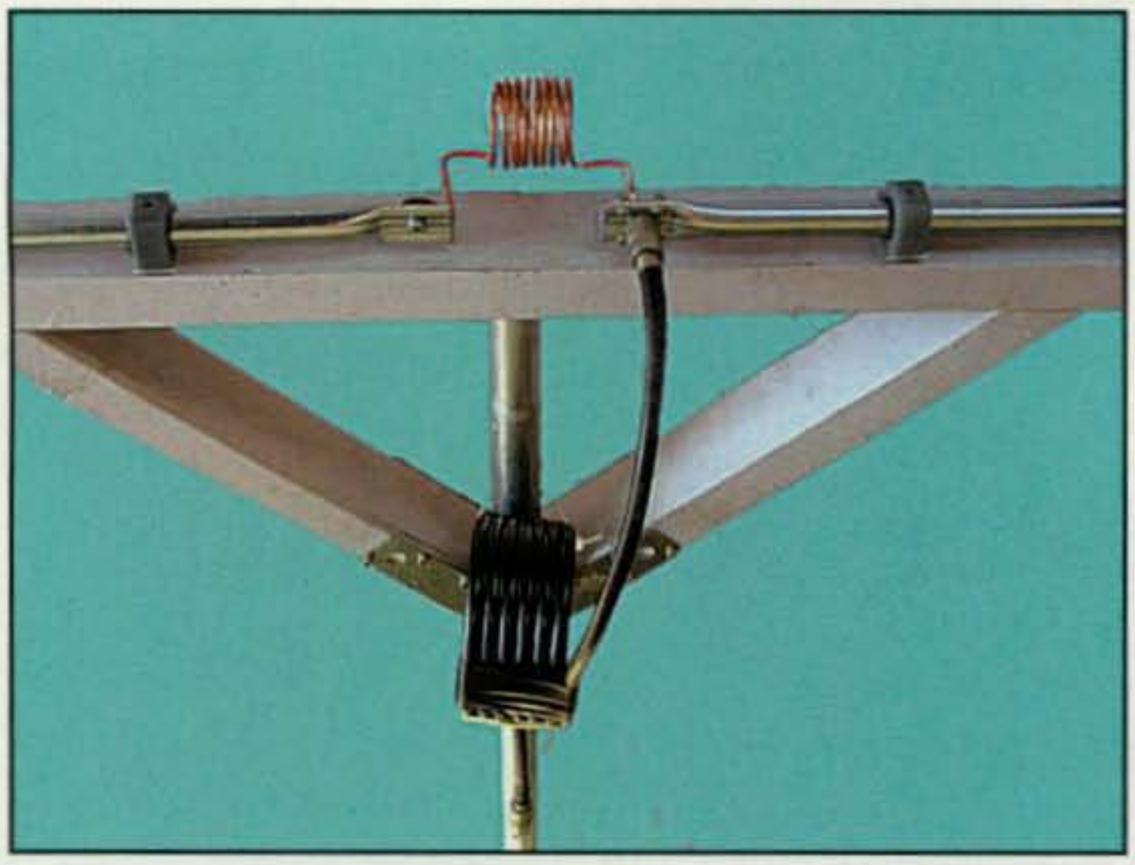


Photo B– A close-up view of the coil, coax choke connection, and PVC snap straps holding the conduit in place. The Y-bracket brace was used here for mounting the antenna to a section of RadioShack® mast.

of his on the ARRL staff. We both belonged to the same contest club. The "real McCoy," a Silent Key now for many years, fittingly closed out his illustrious technical writing career on the pages of *CQ*. His "21 Mc. One-Element Rotary" was the inspiration for my decision to adapt an up-to-date version for the 17-meter band (see photo A).

During many days over the past several months the daytime maximum usable frequency (MUF) fell short of the 15-meter band, but included 17 meters. As we now start the slow, steady climb from the depths of the sunspot minimum, 18 MHz takes on an increased operational importance—good for both DXing and ragchewing.

Objectives

Like the original, this antenna is made from material available from local sources: the hardware store, electronics shop, and today's big-box home-improvement centers. This results in a very low-cost antenna. Not counting any support structure, the antenna, using only more expensive yet more durable stainless-steel hardware, was built for just $21.37. It can be constructed with simple do-it-yourself tools. Except for a wattmeter that measures forward and reflected power, no electronic measuring equipment is needed. Many transceivers meter the standing wave ratio (SWR), which accomplishes the same thing.

Construction

As with the original 15-meter version, the antenna is made from two pieces of 1/2-inch electrical metal tubing (EMT) available in 10-foot lengths from your home-improvement center or electrical-supply shop. It is incredibly inexpensive at $1.97 each compared to aluminum tubing, which is lighter in weight but costs much more. To compensate for the approximate 10 percent shortening of the original antenna and to provide for a closer match to 50 ohms, McCoy used a copper-tubing coil of inductance to bring the antenna into resonance. For 18 MHz, the antenna is short by about twice that amount, or 20 percent short of the formula length. Thus, a coil of approximately twice the inductance is needed. It took just three trial-and-error attempts to fashion a coil producing proper resonance, as measured with a wattmeter. Following these exact construction instructions should allow duplication of these results.

The conduit must first be prepared for later attachment of the feedline. A mounting point is made by flattening about 1 1/2 inches of one end of each conduit using a vise or hammering it on a flat surface. Measuring 3/4 inch from the flattened end (i.e., in the center of the flattened section), drill a 3/16-inch hole in one conduit and a 5/8-inch hole in the other to accommodate an SO-239 female coax receptacle. Since I did not have a metal drill bit that large, I found a local machine shop with a drill press that did a neat job for a nominal fee. Four 9/64-inch holes accommodate four 6-32 × 1/2-inch Phillips pan-head stainless-steel screws with lock washers and nuts to hold the coax connector in place. A single 10-24 × 3/4-inch stainless machine screw is threaded through the drilled hole in the other conduit and secured with a lock washer, fender washer, and nut. The coil is attached

Qty.	Description/Part No.	Source	Price each
2	10-ft. 1/2-in. EMT conduit	The Home Depot (THD)	$1.97
4	Carleton 1/2-in. PVC one-hole conduit snap strap	THD	$0.50
4	6-32 × 1/2-in. stainless steel (ss) Phillips pan-head screw w/washer & nut	Local hardware store	$0.45
1	10-24 x 3/4-in. ss machine screw w/lockwasher, fender washer & nut	Local hardware store	$1.00
4	#10 × 2-in. ss wood screw	Local hardware store	$0.49
1	6-ft. 2 × 3 wood stud	THD	$1.53
1	SO-239 female coax connector	RadioShack	$3.69
5 ft.	1/8-in. copper tubing	Local plumbing supply	$1.09/ft.
Additional Mounting Parts as Required			
1	1/2-in pipe flange	THD	$2.56
1	1/4 × 3-1/2-in. ss hex bolt w/cut washers & nut	THD	$1.30
2	5/16 × 2-1/2 in. ss lag screw w/cut washer	THD	$1.43
2	Simpson 66 "L" strap	THD	$2.64
3	Simpson TP57 tie plate	THD	$1.25
2	1/4 × 2-in. ss bolt w/cut washers, lock washer & nut	THD	$0.92
2	DXE-SAD-175A 1-3/4-in. ss U-bolt & saddle clamp	DX Engineering	$8.15*

DX Engineering: <www.dxengineering.com>
**Less expensive U-bolts without saddles available from THD.*

Table I– Antenna parts list.

It shouldn't feel like work.

OMNI-VII. It's that simple.

So sit back in your chair and relax. The Omni-VII not only has top of the line receiver performance and everything else you need in a high-end transceiver -- it's also very easy to use. Spend your time on the air instead of reading the operator's manual. For complete information on the Omni-VII and our Amateur Radio product line, visit our website or call (800) 833-7373 for our current catalog.

Proudly made in Sevierville, Tennessee USA

TEN-TEC

www.tentec.com

1185 Dolly Parton Pkwy., Sevierville, TN 37862. Sales: 800-833-7373 M-F 8:00-5:30 (Eastern Time) sales@tentec.com. Office: (865) 453-7172. FAX: (865) 428-4483.
Service: (865) 428-0364 M-F 8:00-5:00 (Eastern Time), service@tentec.com. We accept Visa, MC, American Express and Discover.

Photo C– The balun is made with RG-8/U-type coax. The author suggests putting a PL-259 on each end and connecting the feedline through a barrel connector.

between this screw and the center pin of the SO-239.

As shown in fig. 1 and the photographs, the two pieces of tubing are supported by four 1/2-inch PVC one-hole conduit snap straps. These are made by Carleton and available in the electrical-parts department of the big home-improvement retail centers. They insulate the conduit element from the rest of the support system. The original antenna used beehive ceramic insulators, which are no longer easy to find. The snap straps are inexpensive and easy to work with. Since the conduit is slightly too small in diameter and slides loosely in the PVC straps, you'll need to fill the gap for a tight grip. I used some old 1-inch diameter car radiator hose, stripped off the red covering, and cut four 3/4-inch wide pieces for a perfect fit, holding the conduit firmly in place in the PVC straps. Black electrical tape would accomplish the same result. The PVC straps were closed on the conduit by squeezing them in a vise.

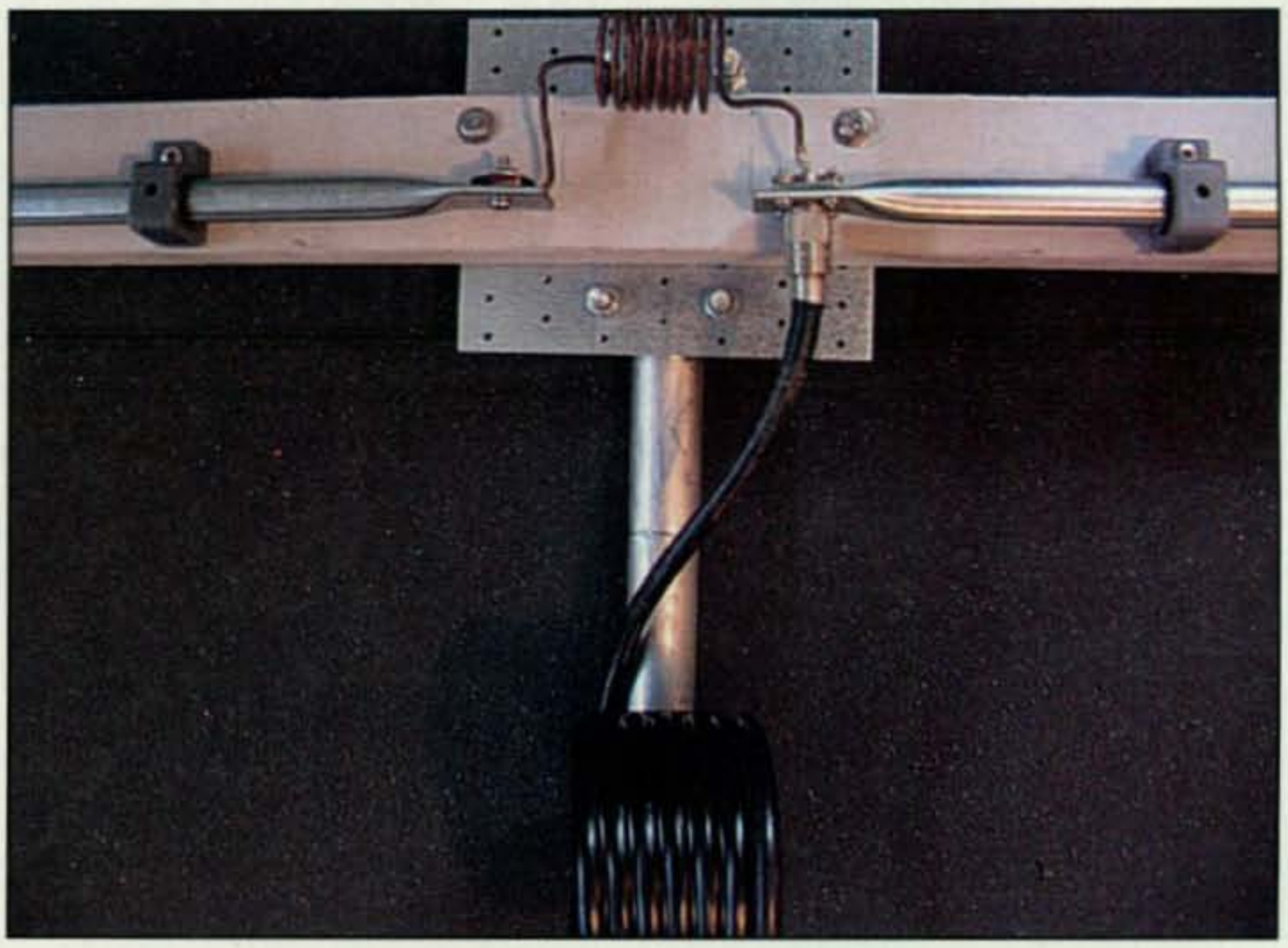
The conduit is supported on the wide side of a 6-foot 2 × 3 wood stud, which previously was stained gray to take on a metallic appearance. Align the "tall" side of the straps with the edge of the wood, securing the straps with four #10 2-inch stainless wood screws in the "short" holes. Do not use the holes on the "tall" side through which the conduit passes. See fig. 1 for the mounting dimensions.

The coil, L1, is made from 1/8-inch diameter copper tubing. It consists of eight turns spaced 1/4 inch apart and a 1 1/2-inch inside diameter. I found 1/8-inch tubing at two local hardware stores, but not at the big-box home center. To make the coil, I wound a 52-inch length of tubing, using a Dap© Patch Stick spackling plastic container as a form. Leave about one inch extra on one end to wrap around the fender washer on the conduit. The coil is connected in series with the center pin of the coax connector and the other half of the antenna. Solder to the center pin of the SO-239 coax receptacle and wrap around under the fender washer on the other half of the antenna and securely tighten the screw and nut. See photo B.

The Balun

A dipole antenna is a *balanced* antenna, but I wanted to feed it with an inherently *unbalanced* coax line. Further, the feedline may not be routed symmetrically away from the antenna itself. Either or both of these conditions can result in common-mode currents in the feedline, which is detrimental to the proper operation of the antenna. This condition can be improved by the insertion of a choke or balun (derived from *bal*anced to *un*balanced) at the feed point. It reduces common-mode currents while making a transition from unbalanced coax to the balanced load of the antenna. For more information about common-mode currents, consult any edition of *The ARRL Antenna Book*.[2]

For this project, a simple coax choke can be made from a 7-foot length of RG-8/U-type coax (e.g., RG-213). Wind six



Photos D1 & D2– Here's a mast-side view (D1, above) of another mounting option using standard deck hardware for an antenna support-to-mast plate and stainless-steel U-bolts with saddles. Photo D2 (right) shows the antenna-side view of the same configuration with the balun attached.

turns on a 4-inch form, such as white PVC plastic sewer pipe. For best performance, wind each turn neatly adjacent to the next, and use copious amounts of good-quality black electrical tape to hold it together. Use either male PL-259 connectors at each end with a barrel (double female) connector to the feedline, or simply form the choke at the antenna end of the continuous feedline. The former is recommended should you ever need to change the feedline for any reason. See photo C.

How to Mount the Antenna

This will be a matter of individual choice, depending on each individual's present antenna-support setup. Here are three possible options.

The original McCoy article described perhaps the simplest. Mount a round plumbing floor flange directly on the bottom center of the 2 × 3 wood support and thread a length of water pipe directly into the flange. This then can be mounted on a roof tripod, a push-up mast, tower, etc. A simple TV-type rotator can be used to rotate the antenna (see photo A).

Option two: Since I had some Radio Shack® TV-type masting from a previous project, I constructed a Y-bracket from two 16-inch 2×3s. Mitered at each end at 45°, each is attached to the main wood support with a 5/16 × 2 1/2-inch stainless lag screw and cut washer. Each side of the Y-bracket is buttressed at the right angle with a Simpson© 66L deck strap and secured with several 1 5/8-inch coated deck screws. Carpenters glue is used at each wood-to-wood contact. The mast section passes through the base of the Y through a 1 1/4-inch hole, seated in a 1/2-inch deep hole on the bottom of the 2 × 3 support. The mast is pinned through both brackets near the base with a 1/4 × 3 1/2-inch stainless hex bolt with nut and lock washers, as shown in photo B.

Another option presented here is to fabricate a more conventional boom-to-mast plate, again using Simpson© deck hardware. Use a triple thickness of "TP57 Tie Plate" for added strength, drilling out the two-inches-on-center starter holes to accommodate U-bolts for attachment to a mast. Stainless U-bolts with saddles, such as DXE-SAD-175A from DX Engineering, are recommended. Use two 1/4 × 2-inch stainless hex bolts and two 1-5/8-inch deck screws to attach the triple tie plate to the center underside of the 2 × 3 wooden support with the driven element of the antenna facing away from the mast. See photos D1 and D2.

Performance

In testing the prototype, the antenna was secured atop an 8-foot ladder while the SWR was checked at each end of the 100-kHz wide band. With 85 watts forward power and less than one watt reflected, the DXpedition to the Marquesas Islands, FO/OH1RX, was heard on CW. I called him on a lark and he came back on the first call! CT1BOL was then worked on SSB, receiving an S7 to S9 with QSB, again on the 8-foot ladder.

Since the band is such a small sliver of spectrum, an SWR close to 1:1 should be achieved across the entire band. If you find the SWR increases significantly at the top end of the band, the copper coil is slightly too big. If the SWR is higher at the bottom end of the band, the coil is too small.

The antenna was then mounted atop a 25-foot push-up mast with a TV-type rotator. Still running just 85 watts, the first stations worked were G4HUV, HK7AAG, VP6PR, FJ/G3TXF, 9Q1EK, and E51WWA with good reports received. A wonderful SSB ragchew with 4X4BL in Haifa followed. Cracking the VP6DX pile-up on both phone and CW was fun. Signal-strength measurements on both receive and transmit were made rotating the antenna from broadside to end on. Signals were three S-units, or about 9 dB stronger on my radio with the antenna broadside to the station worked compared to end on, proving the value of rotating the antenna. That's the equivalent of increasing your power by a factor of eight! Being a bi-directional antenna, only 180° of rotation are needed.

In Closing . . .

I would like to close with slightly modified words from a half-century ago: "The simplicity of the antenna and the low cost, together with the improved performance over a fixed antenna, make it a worthwhile project for an amateur interested in '17-meter' operation."[3]

Thanks to Clarke Greene, K1JX, who reviewed the manuscript for technical accuracy, and Lew McCoy, W1ICP, to whom this article is dedicated *in memoriam*.

Notes

1. *QST*, January 1955, pp. 30–32.
2. *The ARRL Antenna Book*, American Radio Relay League, Inc., Newington, Connecticut.
3. *QST*, January 1955, p. 32.

It's nearly time again for the annual CQ World-Wide DX Contest, the world's most popular on-air competition. Normally, we hear from big-gun stations or people operating in remote locations. So for a change of pace this time around, we bring you 14-year-old KB1OGL's perspective, and lessons learned, as a newcomer to contesting. We particularly recommend it to the big guns!

A Rookie's Guide to Contesting

BY BRITTANY DECKER,* KB1OGL

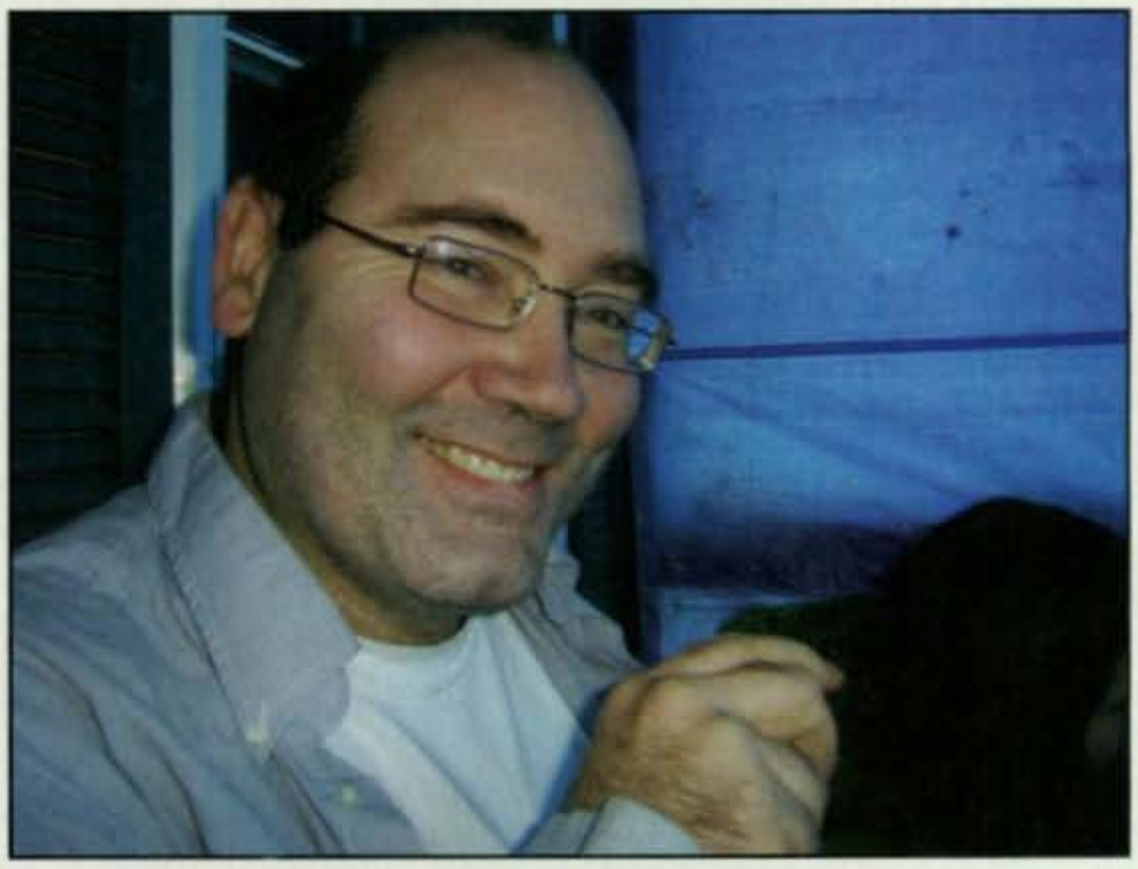
On the surface, this article is about contesting. But on a deeper level, it is also about the importance of ham radio as a source of "family time," and about the extraordinary camaraderie of hams in general and contesters in particular.
—W2VU

I fell in love with contesting almost as soon as I became a ham, stumbling onto a contest one night when I got on the air with my dad on the HF bands. I was tuning around to see if I would be able to hear anything interesting. I then heard someone calling "CQ Sweepstakes." Of course, I was puzzled by this, being new to the hobby. Because the man said "sweepstakes," I assumed there must be some kind of raffle or lottery going on. My dad said I should participate, so I gave a call. The man gave me a number, so I took this to be my raffle number. Then he asked me for my number, and by that time I was utterly confused. My dad explained very quickly that it was a contest to see who can work the most people in a given amount of time, and the number I was given was my contact number. I finally understood the most basic meaning of contesting. However, there was a deeper meaning that I had not yet learned.

A Chilly Start

Winter Field Day of 2007 was the first of its kind. Sponsored by the Society for the Preservation of Amateur Radio, or SPAR[1], it was also my first planned contest operation. I couldn't stay awake for all of it, and I fell asleep at around midnight. My dad and I had not prepared much for it, but we had a good time and scored nicely in the end. We learned during this contest that when you log, you have to be well-organized, unlike us and our paper log. We had a lot of trouble organizing the contacts, and we had also forgotten to write down the times of the contacts! After a couple of months, we finally got the information into the computer and got it all organized. From that time on, we learned to use the computer logging software.

Next came the ARRL January VHF contest. My dad and I decided to build an antenna and operate as a "rover"[2] from Ruggle's Mine in Grafton, New Hampshire. When we got there, the gates were closed and it was snowing hard, so we decided to just park on an unplowed dirt road and operate from there. We set up the antenna in the back of the truck and called many people, but no one heard us. Our antenna also kept blowing down and my dad had to go out into the cold, harsh weather to fix it. The wind was whipping and the snow was coming down hard. After an hour or so, we called it quits and headed home without a single contact. My dad was disappointed, but I was quite happy, being able to spend time with my dad. I also had fun because we got to drive out onto an unknown, unplowed, dirt road, and I thought this was pretty adventurous.

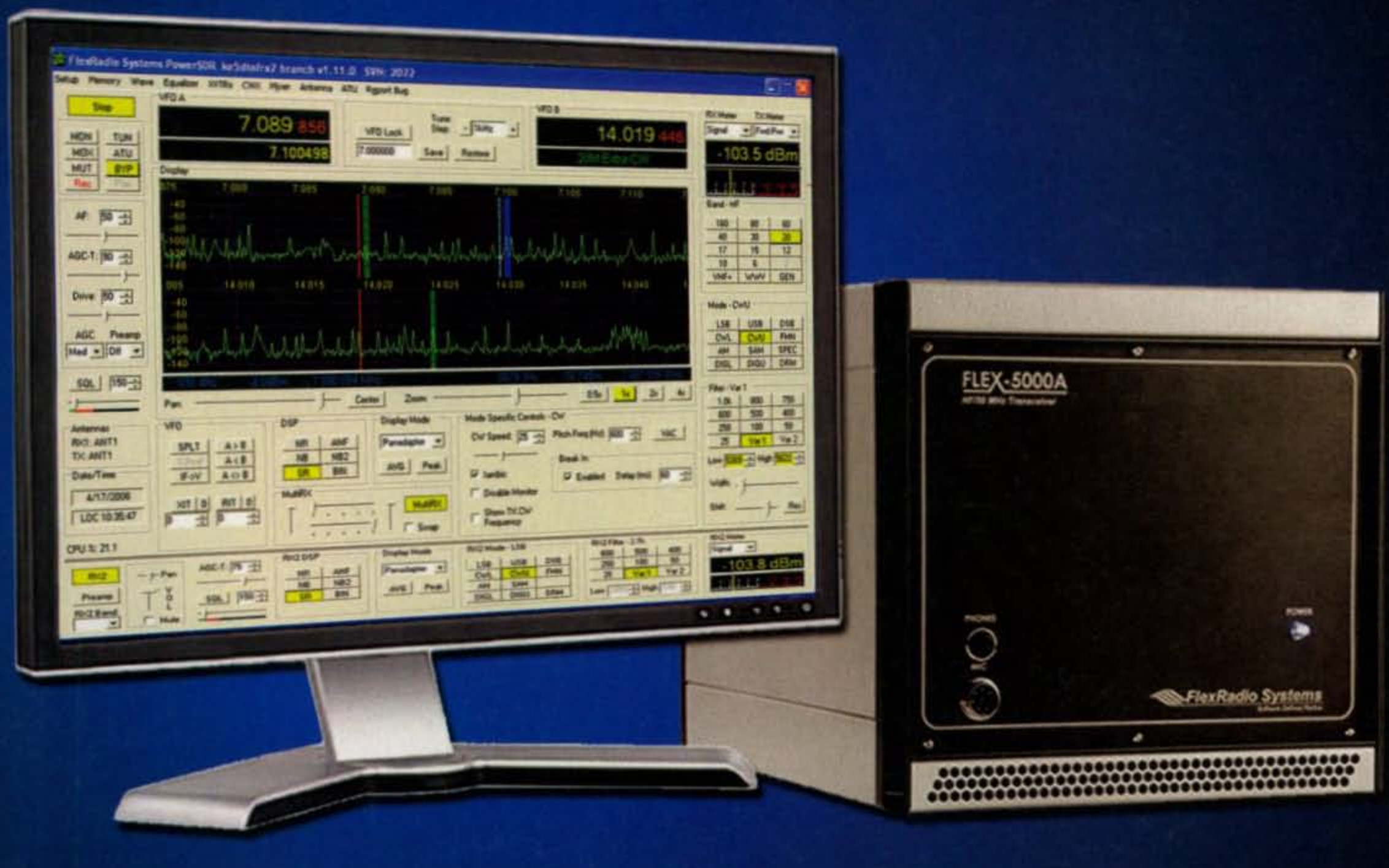


The author's father, KG7HF, was all smiles as he worked the Winter Field Day contest. (All photos courtesy of the author)

From Snow Storms to 'Skeeters

The next contest in store for me was the traditional ARRL Field Day in June 2007. It was my first Field Day, and I spent it with the Nashua Area Radio Club. When we arrived, the club set up in a bustling clearing. It was like a Chex Mix with two huge antennas and colorful tents surrounding them. The Salvation Army provided meals for the club, and the local communications department showed visitors their communications truck. My dad and I welcomed the visitors and informed them about amateur radio. We were also in charge of making 10-meter contacts. I also got to go to the 40-meter tent and practice

e-mail: <kb1ogl@comcast.net>



FLEX-5000A
HF-6M Transceiver

Contester and DXer's Dream Machine!

Unmatched Flexibility. Ultra High-end Performance. Affordable Price.
The FLEX-5000A brings the highest level of features and performance to an affordable price. Its high resolution display gives you lab grade performance with a panadapter that allows you to see the weak signals before you hear them. With the optional second receiver installed the FLEX-5000A is SO2R ready. Easy upgrades and powerful features are a click away for NO extra cost with open source PowerSDR™ software! The FLEX-5000A introduces a new paradigm of Ham Radio where the radio continuously improves over time.

"The FLEX-5000A offers more features and flexibility than virtually any other transceiver I've ever seen and possibly any other radio on the market." (Rick Lindquist, N1RL, QST product review July 2008)

For Detailed Specifications and Features
www.flex-radio.com sales@flex-radio.com
(512) 535-5266

FlexRadio Systems®
Software Defined Radios

The author (left) painstakingly working 6 meters during the 2008 winter VHF contest, while Bill, NE1B (center), sets up the automatic call-CQ button on the radio and Dave, K1WER (right), works 2 meters.

high-speed contesting and logging. The practice that I got from logging really helped, because I am not very good at logging.

When I went back to my tent, my dad wanted me to keep making contacts on 10 meters, but I was too exhausted. So with the mosquitoes biting my face and buzzing in my ears, I fell asleep right away. In the morning, the club members took down the huge antenna towers, slowly and surely. If they had rushed, it would have been a lot more dangerous, but they took it slow and everything was taken down safely.

The next contest after Field Day was technically my second winter VHF contest, but since we made no contacts the first time, it really was my first. A ham operator who lives up the street from us, Bill Barber, NE1B, invited my dad and me to operate the contest from his station. Our day was packed, as I was just getting back from one sleepover and we had a scouting sleepover later that day, so we decided to operate for a couple hours and help out Bill.

When we arrived, we had some sodas with Bill as well as Joe Ciarcia, K1JC, and Dave Brindle, K1WER. Joe, the "Radio Doctor," came over to give Bill a new radio and teach him a few tricks about it. Dave came to operate on 2 meters for the contest and logged the old-fashioned way, on paper, but after the contest learned more about computer logging. We spent quite a while learning about the wonders of N1MM logging software and how to use it. I operated on 6 meters, working mostly Florida and the area surrounding New Hampshire. I learned about the *E*-layer of the ionosphere and how it can enable long-distance contacts over VHF. I operated for about an hour and got about 40 contacts, with just a few multipliers from Florida. When it was time to go, I had scored about 200 points.

From this event I learned that it is a lot more difficult to make contacts in a VHF contest than in one on the HF bands. I have already gotten used to pile-ups and contacts up to your ears. However, in a VHF contest, it's all about patience, perseverance, and precision.

Also in January of 2008, my dad and I again participated in Winter Field Day. We had been planning for it ever since we participated in the first one the year before. In this contest you earn 1000 points for being outside, 1000 for running on generator power, and 1000 for being away from home. My dad and I decided that it was much too cold to be away from home, so we would run on a generator on the front porch with a small tarp tent and a heater.

We made mostly phone contacts on 20 meters, working hams as far away as Spain. While working phone, we had fun alternating between operator and logger so that we would both be able to have lunch and dinner. After about a hundred contacts on phone, we switched to slow scan television, making a single contact on that mode. We then switched to RTTY

The author's 8-year-old brother, Andrew, listens and tries to keep warm while Brittany (in the background) operates in the SPAR Winter Field Day contest.

(radioteletype), and made two or three contacts in that mode. This was our first contest using modes other than phone and also our first contest with a computer interface.

During this contest we faced many issues. Field Day and Winter Field Day are both designed in part to help amateurs identify their stations' weaknesses. Last year's Winter Field Day helped us realize we need a more organized log. This year we faced many more challenges as we were outdoors. Since we were on a generator, we had multiple complaints of background noise coming into the microphone. The microphone would pick up the generator's hum and muffle out my voice. This, however, was something that could not be fixed for this contest, only learned from for the next one. Another challenge we faced was staying warm. Alhough our tarp retained a small amount of heat, I was fully dressed in a coat, warm clothes, and gloves to operate. I even brought out a blanket! My dad had to go back into the house multiple times to put on layer after layer of clothing. We were not the only ones who had trouble staying warm, either. The laptop's mouse would not cooperate in the cold weather. Whenever we tried to move the mouse, it went off in the totally opposite direction. Therefore, from this contest we learned to minimize background noise, and to keep not only your body, but your station warm as well.

Enter the CQ DX Contest

The next contest in which I participated with my dad was the CQ WPX SSB Contest in March 2008. I regret to say that I had never heard of it before Rich, the editor of *CQ*, suggested that I work the contest and write a bit about it for this article. I didn't really know exactly what it was about, but I knew I had to find out.

"From the time I participated in my first contest to now, I believe I have learned the true meaning of contesting. Although it is a lot of fun to see your name or call as the winner of a contest and receive some kind of award, the real joy of contesting is amateur radio itself."

That Saturday I had been running around at school in uncomfortable shoes to help with the Musical Sharing Festival that was being held. I thought I would only stay to play piano for the chorus, but I ended up staying all day and got home at about 3 PM. By that time I was tired and just wanted to sit and watch TV, but my dad was bugging me to get on the air for WPX. I dragged myself onto the air and started with the new software he installed that interfaced the computer and the radio together.

I did not want to do this contest because I thought I knew which contests were great and which were boring. I thought this would be a very boring contest that no one would work. I was definitely wrong! I started with the search-and-pounce method (tuning for and calling other stations calling CQ) and realized exactly how many people —not only in the U.S, but all over the world—were working this contest. That got me into the contest spirit, and I took on the challenge. I spent a couple of hours on the air, then a couple of hours doing something else, and so on.

It was a pretty relaxed contest, but our final score was about 240,000 points! After this I was happy I had worked this contest. It was fun! However, after learning the purpose of it, to get different prefixes on the air, I was a bit disappointed. I had not heard anything too extraordinary that weekend, but I know I'll try again next year.

True Contest Criteria

Now, at the conclusion of this article, this contest has taught me that you must not judge a contest based on very little information, or fatigue, but by how much enjoyment you get out of it. This is one of the best lessons I've learned from a contest, and I owe that to Rich!

I have not been involved in nearly as many contests as some of the other hams out there, but I certainly have learned my fair share from each contest. From the time I participated in my first contest to now, I believe I have learned the true meaning of contesting. Although it is a lot of fun to see your name or call as the winner of a contest and receive some kind of award, the real joy of contesting is amateur radio itself. I realized that many people don't only get involved in contesting to win, but because they love amateur radio. Now that I know this, I know that this is the true reason I love contesting as well.

Notes

1. For more information on Winter Field Day, visit the Society for the Preservation of Amateur Radio website at <http://www.spar-ham.org>.

2. A "rover" in a VHF contest is a mobile station that may operate from more than one location and even more than one grid square.

LDG ELECTRONICS

The #1 Line of Autotuners

NEW! KT-100

The new KT-100 Autotuner fills a need for Kenwood transceiver owners after Kenwood discontinued the Kenwood AT-300 antenna tuner. The KT-100 is a flexible, low cost, easy to use unit just right for an AT-300 compatible Kenwood transceiver. Of course, most any LDG tuner will work just fine with a Kenwood transceiver, but wouldn't it be great if you could use that Tune button on the radio. The KT-100 allows you to do just that as LDG's first dedicated autotuner for Kenwood Amateur transceivers.

The LEDs on the front panel indicate tuning status, and will show a match in seconds, or even less of you've tuned on or near that frequency before. The KT-100 has 2,000 memories for instant recall of the tuning parameters for your favorite bands and frequencies.

If you have an AT-300 compatible Kenwood radio, you can simply plug the KT-100 into your transceiver with the provided cable; the interface powers the tuner, and the Tune button on the radio begins a tuning cycle. The supplied interface cable makes the KT-100 a dedicated tuner for most modern Kenwood transceivers. ***Suggested Price $199***

radio not included

AT-7000

The AT-7000 is the ideal tuner for IC-7000 & other Icom Radios: Covers all frequencies from 1.8–54 MHz (including 6 meters), and will automatically match your antenna. Requires just 0.1W for operation, but will handle up to 125W (100 W on 6 m), making it suitable for everything from QRP (IC- 703 Plus) to a typical 100 W Icom transceiver. All cables included. ***Suggested Price $169***

AT-1000Pro

Building on the success of the AT-1000, LDG Electronics has refined and expanded its 1KW tuner. The AT-1000Pro has an Automode that automatically starts a tuning cycle when the SWR exceeds a limit you set. Other features include: • Operates at any power level between 5 and 1,000 watts peak. RF Relay protection software prevents tuning at greater than 125 watts. • 2 Antenna connections • Tunes from 1.8 to 54.0 MHz (inc. 6 meters) • Tuning time usually under 4 seconds, transmitting near a frequency with stored tuning parameters, under 0.2 seconds. • 2000 memories.• All cables included. ***Suggested Price $599***

AT-100Pro

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

Z-100

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

FREE DIPOLE KIT WITH ANY AUTOTUNER PURCHASE!*

Purchase any LDG Electronics autotuner between September 15th 2008 and January 31st, 2009 and you will receive a free dipole kit buildable for 20, 17, 15,12, 10 or 6 meters (a $20 value) through the mail. Visit www.ldgelectronics.com for your rebate form or write to: 1445 Parran Rd. St. Leonard, MD 20685 USA. Limit one rebate per address.

*Free dipole kit applies to any new LDG autotuner $149 (suggested retail price) or higher in price. User supplies coax cable and support rope.

Now with FREE Dipole Kit with any Autotuner Purchase*!

FT Meter

LDG's new version of its popular FT-Meter presents a lush, highly readable 2.5" 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. On/Off switch for the light.

- LED back-illuminated in cool, high-visibility blue.
- Calibration adjustment is on the back of the unit; makes it easy to calibrate.
- Backlight brightness adjustment is also on the back of the unit; so you can set the backlight to your desired level brightness.

The FT-Meter comes fully assembled and ready to go; just plug it into the radio and you're in the picture like never before. ***Still Only $49***

Z-11Pro

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

"With 8,000 memories in LDG's exclusive "3-D Memory" array, the Z-11Pro uses LDG's state-of-the-art processor-controlled Switched-L tuning network. It will match dipoles, verticals, inverted-Vs or virtually any coax-fed antenna. With an optional LDG balun, it will also match longwires or antennas fed with ladder-line. All cables included. ***Suggested Price $179***

NEW! SLS-2

LDG introduces the SLS-2 microphone switch with RJ-45 mic connectors for modern transceivers. The SLS-2 features two switched and one common jack. You can switch one mic between two radios, or one radio between two microphones. A push-in/push-out button on the front selects the port, and an LED lights to indicate the selection. The SLS-2 makes switching radios or microphones a breeze. ***Suggested Price $59.99***

NEW! ALK-2

The ALK-2 two-port Audio/Linear/Key switch is a versatile Amateur Radio accessory. The ALK-2 electronically switches a common 1/8" stereo jack and stereo RCA jacks between two other sets of 1/8" stereo/RCA jacks. Although the intended purpose of the ALK-2 is to switch stereo audio, code keys, or linear amplifier interface signals; virtually any pair of low voltage signals can be switched between the two ports. On the front panel there is one pushbutton and two LED indicator lights. The button is a pushbutton toggle switch which selects between the two sets of cables connected to the rear ports. The LED's indicate which port is selected. ***Suggested Price $49.99***

AT-897 for the Yaesu FT-897

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

AT-200Pro

The AT-200 features LDG's new "3-D memory system" allowing up to eight antenna settings to be stored for each frequency. Handles up to 250 watts SSB or CW on 1.8 – 30 MHz, and 100 watts on 54 MHz (including 6 meters). Rugged and easy-to-read LED bar graphs show power and SWR, and a function key on the front panel allows you to access data such as mode and status. All cables included.

Suggested Price $249

Call or visit your favorite dealer today!

Visit www.ldgelectronics.com for a complete dealer list.

LDG Electronics, Inc.
1445 Parran Road
St. Leonard, MD 20685
Phone 410-586-2177
Fax 410-586-8475

LDG

CQ World-Wide DX Contest All-Time Records BY FREDERICK CAPOSSELA, K6SSS

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

Phone Single Operator/Single Band
WORLD RECORD HOLDERS

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

Single Operator/All Band

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

WORLD RECORD

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

Multi-Operator/Single Xmtr.

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

WORLD RECORD

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

Multi-Operator/Two Xmtr.

AF	IH9P('03)	29,447,379	11,831	171	688
AS	P3F ('07)	15,277,836	7,494	148	613
EU	IR4X('04)	18,385,620	8,626	185	754
NA	VP2E('04)	40,907,104	16,868	188	804
O	KHØAA('03)	14,109,480	7,589	172	488
SA	PJ2T('02)	28,415,835	12,916	161	628

WORLD RECORD

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

Multi-Operator/Multi-Xmtr.

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

WORLD RECORD

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

CW Single Operator/Single Band
WORLD RECORD HOLDERS

1.8	CN2FF('07) (Opr. UA2FF)	618,849	1,599	26	107
3.5	CN2FB('07) (Opr. WA2FB)	1,590,288	3,244	35	133
7.0	CN2R('06) (Opr. W7EJ)	2,006,576	3,910	35	141
14	CN2KM('04) (Opr. SM2EKM)	2,023,740	3,899	38	142
21	ZD8Z('97) (Opr. N6TJ)	2,357,967	4,589	39	140
28	ZX5J('99) (Opr. N6TJ)	2,131,942	3,962	39	152

Single Operator/All Band

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

WORLD RECORD

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

Multi-Operator/Single Xmtr.

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

WORLD RECORD

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

Multi-Operator/Two Xmtr.

AF	EA8EW('06)	30,654,288	12,276	184	688
AS	A61AJ('02)	24,384,292	10,505	194	704
EU	RU1A('03)	16,533,164	8,314	209	749
NA	HI3A('07)	18,467,772	10,600	160	594
O	AH2R('02)	11,311,266	6,390	171	482
SA	HC8N('04)	30,971,500	12,429	196	679

WORLD RECORD

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

Multi-Operator/Multi-Xmtr.

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

WORLD RECORD

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

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

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

PHONE

Single Operator/Single Band

1.8	K1ZM('95)	55,420	251	15	70
3.5	K1ZM/2('96)	292,100	952	27	100
7.0	KC7EM('95)	409,446	1,083	34	95
14	K1OX('85) (Opr. KC1F)	1,131,328	2,176	36	140
21	KQ2M/1('99)	1,327,139	2,624	39	148
28	W4ZV('01)	1,464,255	2,654	40	155

Single Operator/All Band

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

QRP

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

Low Power

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

Assisted

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

Multi-Operator/Single Xmtr.

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

Multi-Operator/Two Xmtr.

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

Multi-Operator/Multi-Xmtr.

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

CW

Single Operator/Single Band

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

Single Operator/All Band

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

QRP

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

Low Power

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

Assisted

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

Multi-Operator/Single Xmtr.

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

Multi-Operator/Two Xmtr.

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

Multi-Operator/Multi-Xmtr.

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

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

FlexRadio's FLEX-5000 is a very different kind of radio, not only in its engineering as a fully software-defined radio, but also in the mindset of its developers, who have made the software open-source and invite users to write their own improvements and additions, many of which become part of the next "official" software release.

CQ Reviews:

FlexRadio Systems FLEX-5000A Software Defined Radio Transceiver

BY NEAL CAMPBELL,* K3NC

The job of reviewing the FlexRadio Systems FLEX-5000A was both a delightful and challenging experience! My biggest challenge, however, was sorting out what to review: the hardware; the PowerSDR™ software; the entire system, which includes the computer, monitor, etc.; or the operating experience.

Focusing just on the radio itself would have been an easy but unproductive task, since most of the radio functions exist in PowerSDR (hence the reason it is called a *software defined radio*). Reviewing the PowerSDR software, which gives users visual operating console, as well as the code that makes the hardware perform, would have been a more complicated challenge, because PowerSDR is an open-source project whose source code is available to all and subject to change. In fact, there are really two versions of the PowerSDR at any given time: the "official" and the Subversion (or SVN). The latter consists of "developer" releases. The "official" release typically occurs three times a year, while the SVN releases of PowerSDR change almost daily as new features and improvements are generated. Therefore, the challenge was to review something that is constantly improving and that would be somewhat out of date by the time the review was published.

**120 Delmar Ct., Fredericksburg, VA 22407*
e-mail: <neal@abrohamnealsoftware.com>

Photo A– Front-panel view of the FLEX-5000A. There's only one control, an on-off switch! Everything else is done in software. (Photo courtesy of FlexRadio Systems)

The operating experience, on the other hand, is the sum of the hardware, PowerSDR, and all of the other components (i.e., computer, monitor, third-party software, etc.). This review will touch on all of these aspects.

Hardware

The FLEX-5000A is a black and gray box. The basic unit transmits from 160–6 meters and receives from 10 kHz to 65 MHz. There is a single control on the front panel, the power button, which glows a beautiful blue when the unit is powered on, plus an 8-pin Foster connector for connecting a microphone and a 1/4-inch stereo headphone jack (see photo A). The mic pins are configured the same as late-model Yaesu rigs and give you the ability to use condenser mics requiring 5 VDC. Additionally, the box will accommodate three user-installable options: an automatic antenna tuner (ATU); a second receiver (RX2); and (scheduled for release in early 2009) a dual-band 2m/70cm all-mode full-duplex transverter (DXVTR). For a complete list of features, visit <http://www.flex-radio.com/Products.aspx?topic=f5k_features>.

The back side of the FLEX-5000A (photo B) has three SO-239 jacks and six BNC jacks, which are selectable from a drop-down menu within the PowerSDR software. The SO-239 jacks can be selected by band. The BNC functions are as follows:

- a 2m/70cm BNC jack for the upcoming Flex internal transverter;
- a BNC jack for input to the RX2 second receiver module;
- a receive-only BNC jack for those Beverages, RX 4-squares, or whatever specialized receiving antennas you might be using;
- RX OUT and RX IN jacks that allow insertion of preamps or bandpass filters/preselectors into the incoming RF path; an IF output for use with a third-party transverter; and
- an RX port for the input from a third-party transverter.

Audiophiles will love the Balanced LINE-IN, something you don't find on most transceivers. It will accommodate both mic and line-level signals (the signal difference is made up in digital gain). Balanced audio cables are used in most professional equipment to reduce susceptibility to external noise (such as the equipment in our ham shacks!). There are also two RCA jacks to allow audio line input/output for use with other types of external audio devices. A PTT RCA jack is supplied for devices such as a hand or foot switch.

The 5000A also has three RCA jacks for sequential activation of external devices (such as linear amps). Each of the three jacks can be selected via menu option in PowerSDR with a separately defined delay for each (if needed for slower-switching devices).

The 5000A comes with a 500-MHz VCXO[1] (for low phase noise) locked to a 10-MHz TCXO[2]. There is even an external frequency reference BNC connector for those needing more stability than provided in the stock unit, 0.5 PPM. When using an external reference, the 10-MHz TCXO is switched out and the 500-MHz VCXO is locked to the external reference.

There is a special jack, looking very similar to a DB-9 RS-232 jack, labeled "FlexWire I/O" that will be used in the future with a series of FlexWire™ devices for things such as external switching. For the technically inclined, the port is a superset of the I2C standard and will have hooks inside PowerSDR to control future devices.

The other connections on the rear panel are: a powered-speaker output (1/8-inch stereo jack); a grounding post; CW key/keyer input (1/4-inch stereo plug); two IEEE1394a (i.e., FireWire 400) six-pin jacks; and, a four-pin power connector.

The 5000A connects to the computer using only a FireWire cable. As the 5000A has two FireWire ports, theoretically you could connect the 5000A to your computer and then connect another FireWire device to the 5000A. In practice, I would not recommend this.

In May FlexRadio released the RX2 second receiver module, which is user-installable. This optional receiver's performance is fully independent and equal to the main receiver. It is an easy upgrade that should take from 30 to 60 minutes. Once installed, running the calibration routines in PowerSDR is a snap and the installation is complete. With the second receiver installed, you have a full-duplex station, which means you can be transmitting on one band while listening on another. For contesters, this means the RX2-equipped

5000A is a single-box SO2R (Single Operator, 2 Radios) setup.

So What Happens In The Computer?

This article will not delve into the theory of software defined radios, as that is a large and complex topic. However, the Flex-5000 family, like the SDR1000 that came before it, is not your "father's" radio. Where traditional rigs have a roofing filter in front of a multi-stage receiver to provide increasingly narrow filtering, the 5000A basically has one stage. The physical hardware's purpose is to split the RF waveform into two phases, one that is in-phase (I) and another that is 90 degrees out of phase (Q).

Once the RF waveform is split into its I and Q components, they are then digitized by down-converting the incoming I and Q data to baseband audio frequency and feeding it into a high-performance A-to-D[3] converter. These digitized signals are then sent via FireWire to be processed by the PowerSDR software. Conversely, the audio output (your signal) is generated into two out-of-phase digital streams and sent to the 5000A, where it is transformed into a RF signal. (See Lee Crocker, W9OY's sidebar on how this new paradigm is changing ham radio as we know it.)

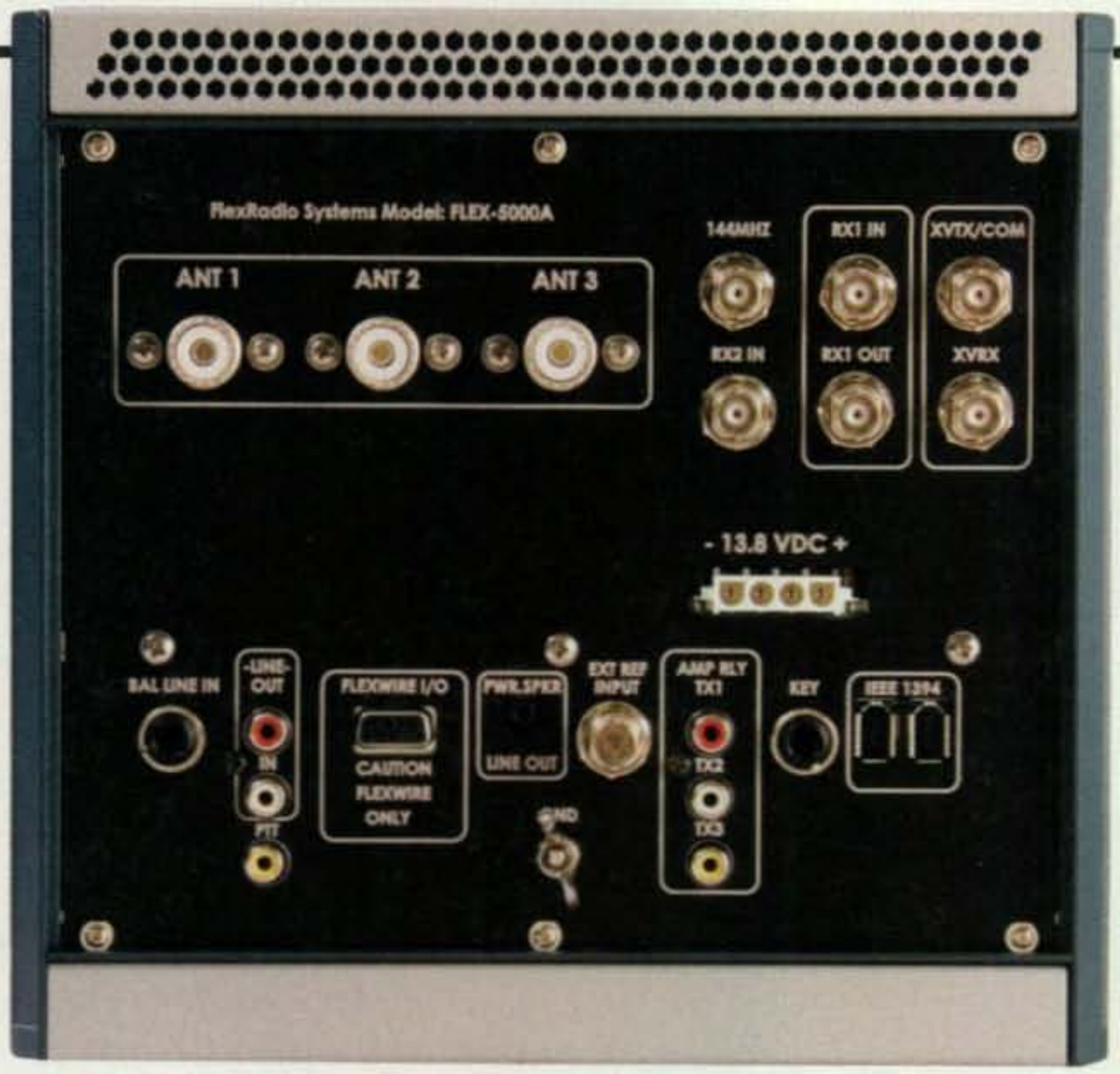


Photo B– Rear panel of the 5000A. You'll see some familiar jacks here, plus a few others. See text for details. (Photo courtesy of FlexRadio)

PowerSDR software takes the two digital streams (I and Q) and performs mathematical operations to provide a very accurate detection of signals, providing its excellent receiver specifications. The full list of specifications can

be found on FlexRadio's website: <http://www.flex-radio.com/Products. aspx?topic=F5Ka_details#specs>.

Prior to the introduction of the 5000A, software defined radios depended on sound cards to accomplish the analog-to-digital (A/D) and digital-to-analog (D/A) processing. Although there are some high-quality soundcards available, having to purchase and connect an external device was a turn-off for some. FlexRadio eliminated these issues by embedding a very high-quality A/D and D/A converter into the 5000A (no more parallel ports, serial ports, etc., only a single FireWire connection to the computer).

How powerful a computer do you need? FlexRadio recommends use of a multi-core processor with 2MB L2 cache, at least 2GB of high-speed memory, a medium to high-end PCI-x16 video card, and a FireWire controller. This sounds like a lot, but after spending a few minutes on the internet, I was able to configure a computer that included a four-core processor, 3GB of DDR2-800 dual-channel memory, a nice ATI video card, and 500 GB disk drive for $700. Less-powerful computers can run the FLEX-5000, but my recommendation is to bite the bullet now and get a higher-end computer.

The Face of Things To Come

Today, PowerSDR is the "face" of the FlexRadio transceivers (see fig. 1), similar in function to other software programs such as Ham Radio Deluxe and TRX-Manager. The reason I start-

The FLEX-5000C

At Dayton this year, FlexRadio introduced the FLEX-5000C, which has all the features of the 5000A as well as a built-in computer with an Intel Core™ 2 Duo processor and Windows XP™ Professional operating system. The "C" also comes with a wireless keyboard and mouse, plus a package of ham radio freeware and shareware, so all you need to add are a monitor and an antenna!

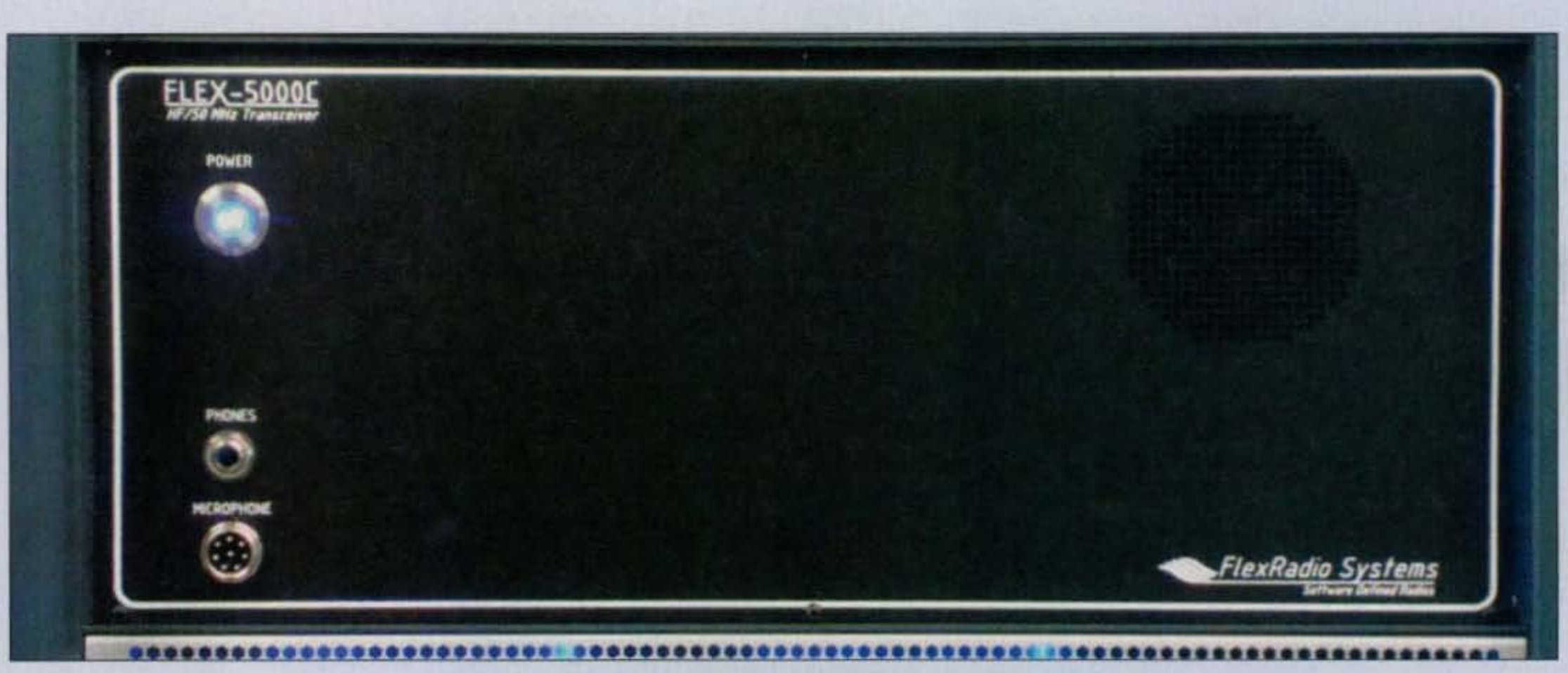


Photo C– Front view of the FLEX-5000C, which includes a built-in computer as well as all the features of the 5000A. (Photo courtesy of FlexRadio)

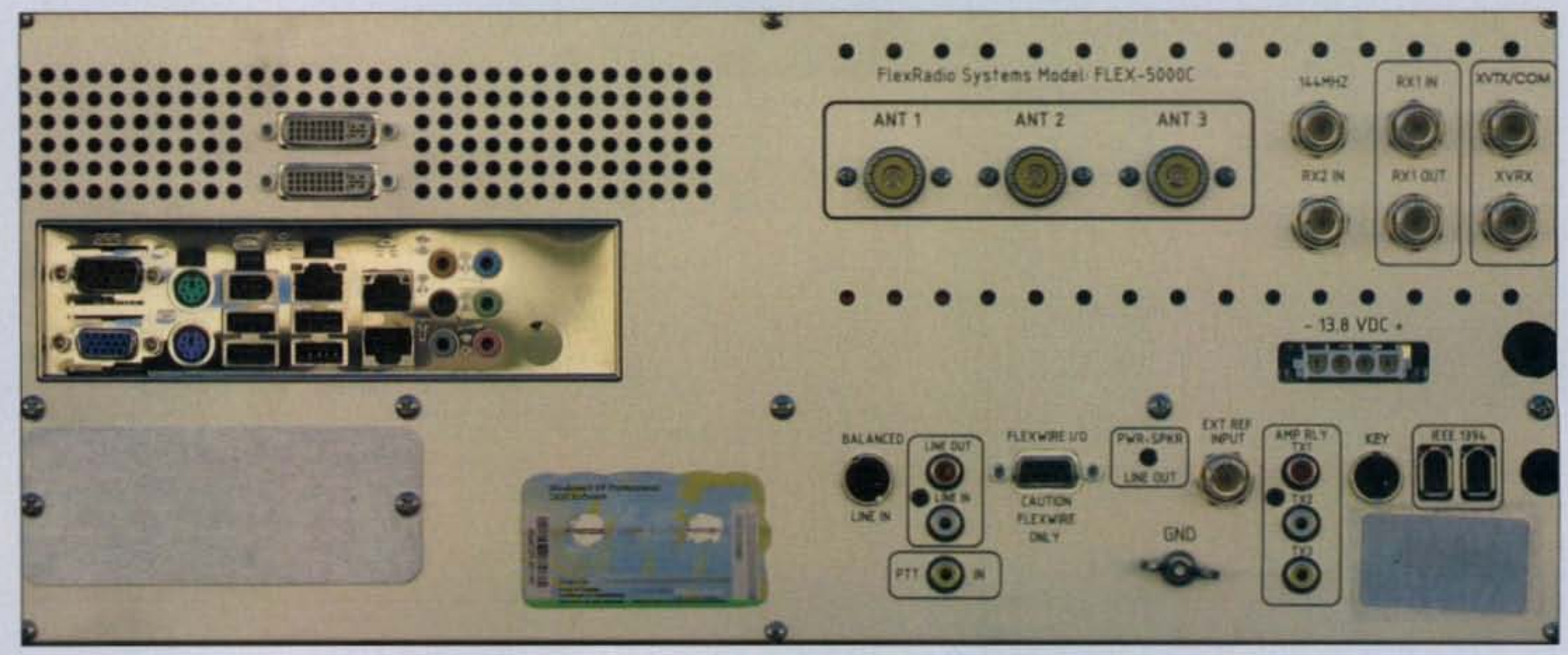


Photo D– Rear view of the 5000C. Note the additional connectors (at left) for the built-in computer. (Photo courtesy of FlexRadio)

ed the last sentence with the word "today" is that, as noted above, PowerSDR is continually changing. About every three months FlexRadio releases a new "official" version of PowerSDR, but most users (according to an informal survey) typically prefer the alpha or beta releases. Since PowerSDR is an open-source project published under the GPL license, the programming source is available for all to see. FlexRadio frequently updates the developer versions of PowerSDR (sometimes nightly) so that users, utilizing a program called TortoiseSVN, can download them at the click of a mouse (it is easier than Windows Update®). Based on my survey, most people are using the developer version in order to get the latest enhancements and changes. Unlike some companies, FlexRadio's development versions are usually very stable. If something is broken (a very rare occurrence), it is fixed almost immediately. Not only can you get the latest version, you can download variations that other Flex users are developing, exploring enhancements in areas such as control of new devices, optimized DSP[4] algorithms, changes to the layout of the PowerSDR window, etc. Many of these experiments from programming-savvy users end up in the official releases.

Recently, one amateur radio magazine reviewed the FLEX-5000 and almost everything the reviewer felt could be improved had in fact been added to an official release before the article hit the street!

As you can see in fig. 2, the display in the middle is a panadapter for the two receivers (no other radio has this capability). Surrounding the panadapter are the controls for the radio functions—for instance, changing bands, modes, power output, noise blanking/reduction, and so forth.

The panadapter display is just one of many displays of the frequency spectrum you can choose. If you like a waterfall display (like PSK programs provide), it is available along with five other display modes. Fig. 2 shows both receivers tuned to 20 meters. The top is on the CW portion of the band and the bottom is on the RTTY segment. You can see the signals in this example for an 80-kHz spread of both receivers (this is controllable by using the Zoom control or the preset buttons beside it).

While the panadapter is showing this wide spectrum, the actual software receivers are only demodulating the signals in the segments shown with the green bars. Receiver 1 is using a 1- kHz spectrum, while the second receiver is using a 2.7-kHz spectrum.

Right-clicking with the mouse in the panadapter display will turn the mouse pointer into a yellow crosshair pointer, as seen in fig. 3 at about 14.035 MHz. By centering the crosshairs on a signal and left-clicking, you will automatically retune the receiver to that signal. Very simple and intuitive!

This is truly point-and-shoot at its finest (FlexRadio calls it ClickTune™). After using this method, along with the ability to see signals across the band segment to know where stations are, it is very difficult to go back to knob twirling. For CW and RTTY there is a button you can press that will "zero-

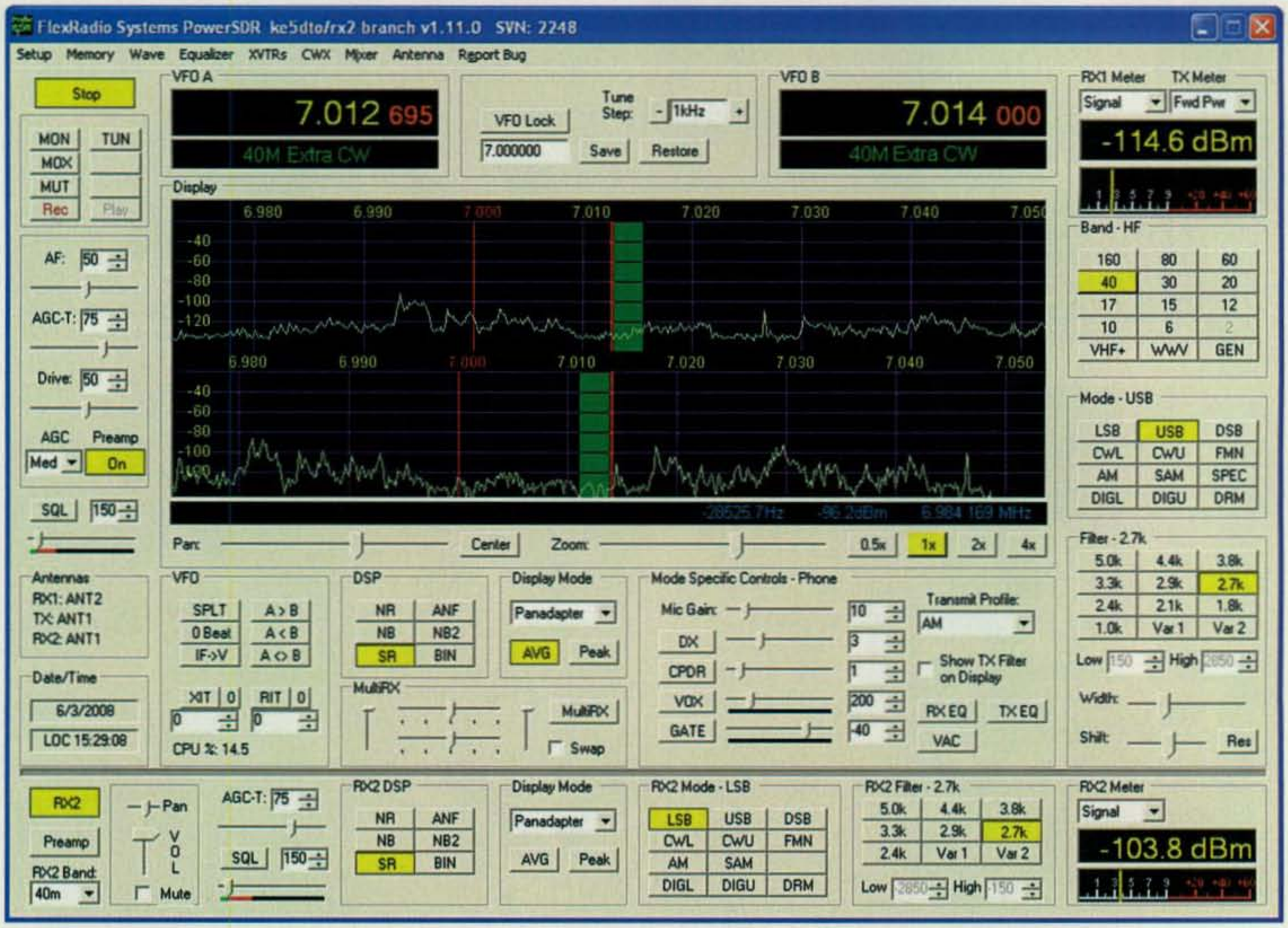


Fig. 1– Screen shot of PowerSDR main window. In this image the second receiver is installed and the radio is simultaneously monitoring two adjacent frequencies in the 40-meter CW band. (Image courtesy FlexRadio Systems)

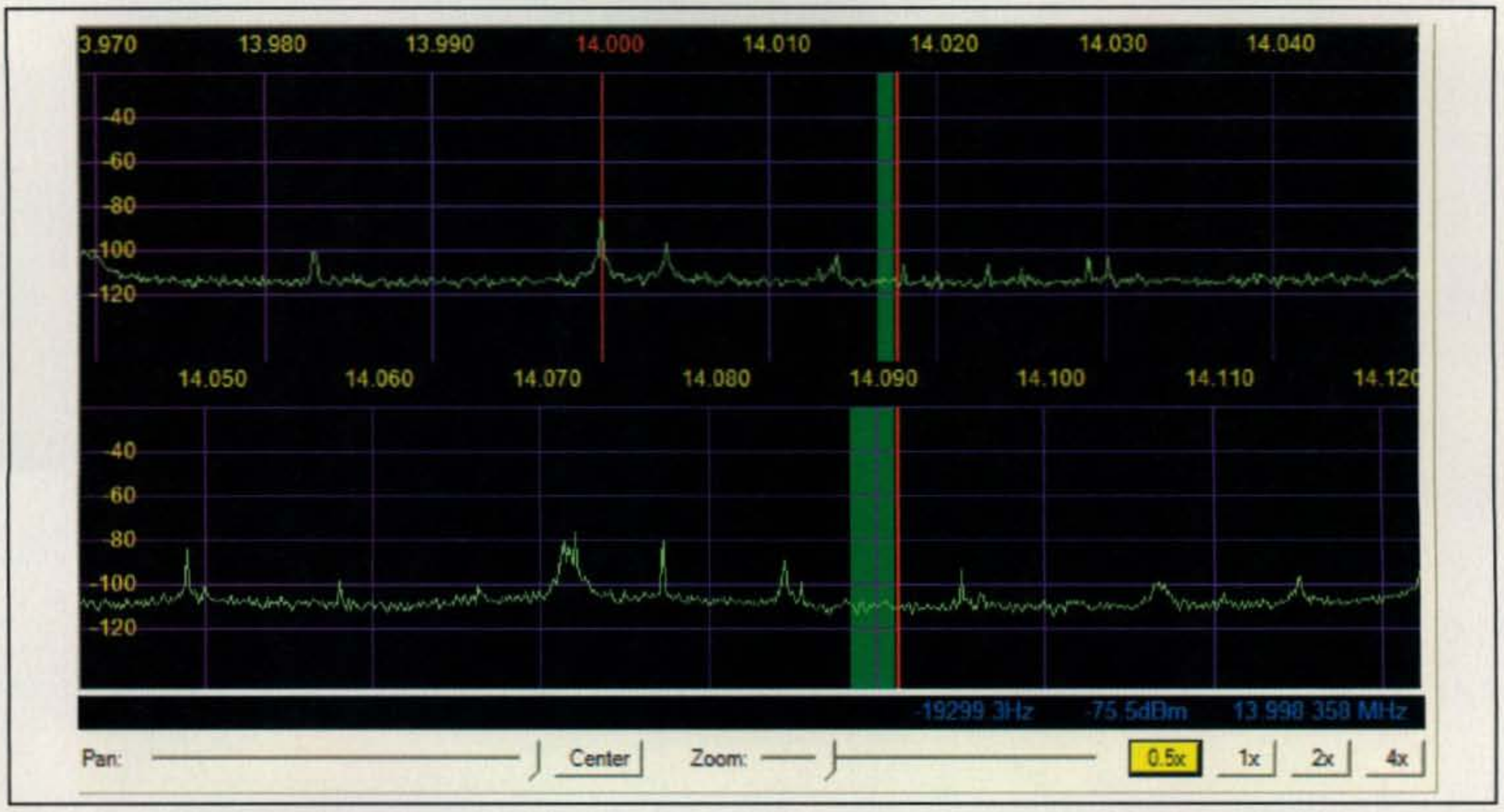


Fig. 2– Dual-receive panadapter display. The green bars represent the receiver's actual passband, set up for CW at the top and RTTY on the bottom. (Image courtesy of K3NC)

beat" the strongest signal in the receiver's bandpass to your preferred CW tone or exactly tune the RTTY signal. One Flex user says that during contests and DXpeditions it is "like shooting fish in a barrel."

Changing the size of the receiver bandpass could not be simpler. When the mouse pointer is not in crosshairs mode (right-click again in the panadapter display if it is), you can just drag the edge of the segment to any desired width. Of course, PowerSDR provides buttons with bandpass presets for each mode, but is very convenient to just grab the edge and change it on the fly. Fig. 4 shows the 5000A with the first receiver tuned to 20 meters using CW-L mode, while receiver 2 is tuned to 17 meters CW-H, both with a bandpass of 1 kHz.

So How Does It Really Play?

The question I most often get is: "How does it play on CW?" Warning: My CW proficiency is limited to about 20 words per minute, so I am not a high-speed QSK (break-in) operator.

The version of PowerSDR that I use provides seamless semi-break-in up to 40 words per minute (meaning you can hear the receiver in between the dits and dahs at 40 wpm). This is out of my league so I honestly cannot comment, but I hear no noticeable lag/delay at my speed of 20 wpm.

There are four methods to send CW via PowerSDR/5000A:

1. A key connected to the KEY IN jack on the back panel, which will utilize the built-in keyer of PowerSDR;

2. A keyer connected to the KEY IN jack on the back panel, and in this method you can mute the CW sidetone generation from PowerSDR so you can concentrate on the sidetone from your keyer;

3. A key or keyer connected to two pins of a serial port (with this option, you can also choose to use the PowerSDR keyer or an external keyer); and

4. The keyboard keyer available within PowerSDR (which includes buffers, and so forth).

I find that using a keyer connected to the KEY IN jack suits my needs the best (I own K1EL's WinKeyer 2 and have grown to love it). The high-speed operators report that the fastest response comes from keying via a serial port. One day I will try that, but at 20 wpm my current setup works very well.

In contests I always use the CW generated by the contest program, which is connected to PowerSDR via a virtual com (or serial) port. The concept of virtual com ports can be confusing at first glance. In reality, it is quite simple. Instead of using the hardware com ports on the back of your computer (if your computer still has them or via the USB-Serial adapters now widely available), virtual comm ports simulate a null modem cable within the Windows® environment. They look, act, and appear to programs as hardware com ports, but no cables are used.

There are many sources of reliable virtual com port software available via the internet, both free (and open source) as well as commercial. The FlexRadio Knowledge Base (<http://kb. flex-radio.com/>) is a great resource for the latest list of virtual comm port software.

To use virtual comm ports, you define (via the software) two virtual comm ports that are paired with each other (e.g., COM5 and COM6). In PowerSDR, you configure the CW Keyer input to use COM5. In your contest program, you tell it to use COM6 for CW output. It all works like magic and there are no cables to gather RF or create the usual "rat's nest" of wires.

You also use virtual comm ports to configure radio control access by your favorite programs (e.g., logging software, digital software, CW Skimmer, Ham Radio Deluxe, etc.). PowerSDR provides remote control (for other programs) by using a superset of the Kenwood TS-2000 CAT commands. This means that any program that can control a TS-2000 can control many of the features of PowerSDR. As the hardware and PowerSDR feature set continue to expand, however, program authors will want to implement the full PowerSDR CAT control set, which allows complete control of PowerSDR .

Fig. 3– PowerSDR with ClickTune™ control. Note the yellow lines that intersect at about 14.035 MHz. This is where a user has right-clicked the mouse. A left-click will retune the rig to that spot. (Image courtesy of K3NC)

Fig. 4– PowerSDR on split band in CW-L and CW-U modes. The passbands appear much wider here than in previous shots, but only because the panadapter is displaying a much narrower segment of spectrum (approximately 9 kHz here vs. about 70 kHz in the others). (Image courtesy of K3NC)

Since so many amateur radio programs have the option to incorporate radio control (or radio monitoring), it has always been difficult to exploit the automation capabilities that you bought, since normally the radio control port was limited to one program. To fully exploit these features, you need to download a freeware program by Steve Nance, K5FR, called DDUtil (http://k5fr.com/ddutilwiki/index.php?title=Download). DDUtil is built specifically for PowerSDR. It allows the user to safely send the PowerSDR CAT information to up to four different programs, while simultaneously sending commands to a SteppIR Controller and PW-1 or Quadra VL1000 linear amplifier. It also can monitor N8LP's LP100 and Wavenode's WN2 power meters and control a large selection of comm port enabled rotors. Truly, station automation has never been this sophisticated and yet relatively simple to use!

At my station, PowerSDR and DDUtil automatically control my SteppIR controller, my microHam band decoder, my Green Heron rotor controller, and monitor my Wavenode WN2 power meter. It prevents PowerSDR from transmitting while my SteppIR is changing bands, eliminating one cause for disaster during long contests.

How Does the 5000A Play with Digital Modes?

As someone who has been very active in digital modes for over 20 years, the PowerSDR/5000A combination is the best digital setup I have ever seen. Besides the excellent sensitivity and close-in dynamic range of the receiver, the key to success is a program called Virtual Audio Cables (or VAC) by Eugene Muzychenko.[5]

VAC is a Windows® sound card emulator that does not need a physical sound card. You define virtual "cables" (there we go again with eliminating physical cables that can accumulate RF) that directs the audio output of PowerSDR to your digital software's input channel. There are detailed instructions to configure this at FlexRadio's Knowledge Base. It really works well.

VAC provides a program called Audio Repeater, which takes the audio output of PowerSDR and sends it to multiple programs so you could have different digital decoders listening to the same signal for diversity decoding. Many contesters like to have dual decoding so if one program (or decoder) garbles a character, maybe the second one will copy it correctly.

As an aside, the latest version of PowerSDR will allow you to send the I and Q digital streams from the 5000A to CW Skimmer via VAC, so CW Skimmer can decode up to 96 kHz of spectrum! It is mind-boggling to see that in action. For more details on CW Skimmer, visit <http://www.dxatlas.com>.

Using the panadapter, it is very easy to see the different types and locations of digital signals. In contests or split-operation DXpeditions, it is very easy to find frequencies in the band where no one else is transmitting.

The Flex-5000A PA stage is rated at 100 watts full duty cycle in all modes (except AM, which is rated at 40 watts.), meaning it provides double the power of most 100-watt radios which require half-power for steady-state signals. For many contesters using amplifiers with 3-500Z finals, 100 watts is often need-

ed to get full "gallon and a half" output, which is another advantage of fully-rated steady-state output radios.

The only feature lacking for digital operation "heaven" is true FSK (frequency shift keying). It is on the drawing board for the future, but AFSK (audio FSK) works wonderfully as is. For modes that use different sidebands (RTTY traditionally uses lower sideband, for example, while PSK uses upper sideband), separate mode buttons allow quick and foolproof switching.

For phone operators, the extremely flexible filter combinations, 3- and 10-band equalizers, the compander and DX enhancers, and "broadcast quality" transmission specifications make an awesome combination. The 3- and 10-band equalizers can be used both on transmit and receive. PowerSDR offers a very sophisticated algorithm for voice compression (to achieve highest intelligibility at the receiving station) called *companding*. It's a form of compression occurring in the audio spectrum prior to the conversion of your signal to its digital stream and slightly expanding it afterwards in the digital domain before it is sent to the 5000A. This provides a realistic sounding signal with more punch than normal compression.

Prior to owning the 5000A, I used external audio equipment to enhance my transmitted signal, but with all of the audio conditioning available in PowerSDR, I no longer have a need for external equipment.

Is This Radio For You?

Setup is actually very easy if you thoroughly read the manual. For some, especially those with no or little computer experience, setup can appear complicated; however, FlexRadio's Support team is always ready to lend a hand. FlexRadio has a legendary reputation for customer support (Gerald Youngblood, the CEO, often will roll up his sleeves on big issues), as well as having immediate access to the software powerhouses that write the firmware and PowerSDR. The FlexRadio email reflector is the most supportive and friendly mailing list I have experienced; there are people online nearly 24 hours a day to help you out.

FlexRadio offers a 30-day unconditional money-back guarantee on all products, so if you find it isn't for you, it is easy to return for a full refund.

The only real problem I have in operating my 5000A is that I always want to purchase another one! At least investigate this radio and find someone who can give you a demonstration. Once you have played with this radio, you will be hooked. It is truly a world-class radio for these times!

The FLEX-5000A retails for $2799; the FLEX-5000C with built-in computer (see sidebar) lists for $5299. To order, or for more information, contact FlexRadio Systems, 13091 Pond Springs Rd. #250 Austin, TX USA 78729; phone: 512-535-5266; e-mail: <sales@flex-radio.com>; on the web: <www.flex-radio.com>.

Notes

1. Voltage-controlled crystal oscillator
2. Temperature-compensated crystal oscillator
3. Analog-to-digital
4. Digital signal processing
5. <http://software.muzychenko.net/eng/vac.html>

User Perspective: Paradigm Shift

By Lee Crocker, W9OY*

I recently was asked, "Is SDR ready for prime time?" Let me answer that with some personal ham history.

My first rig: homebrew transmitter, Hallicrafters S-40B receiver, and a Navy flameproof key.

Paradigm shift: I had two "big iron" boxes, Hallicrafters and Hammarlund.

Paradigm shift: Japanese companies entered the U.S. market with a wide variety of simple transceivers. My big iron went the way of the dodo. Transceivers made more sense—lighter, cheaper, ever more features in ever smaller boxes.

Next came "transition rigs": part traditional transceiver and part proprietary SDR (software defined radio).

The latest paradigm shift, full SDR, has already occurred. SDR is of the present; the others, in my view, have become of the past. SDR is cheaper to build and more feature-packed. Old-time radios are basically etched in stone. Change is at the margins (add a filter or two), not much more. The SDR can be changed radically in form and function simply by changing the computer code. The SDR can be perfectly customized to your station's need, be it ragchewing, DXing, contesting, etc. Upgrading involves a download, not a soldering iron; entire radio fleets can be upgraded by simple download.

Another paradigm shift: open source licensing. While others use proprietary code, FlexRadio freely promotes experimentation within the code among hams. Multiple branches of individually developed code reside on the Flex servers for download. As good ideas come to fruition they are readily included into the main trunk of the SDR code, giving each owner a better radio experience. A hundred enthusiasts' brains are far more creative than one factory engineer making all the decisions. It's a critical mass of hobbyist brain power, super-charging the future of our hobby.

Freedom and flexibility: We are almost at the point of "if you can think it, you can do it." These paradigm shifts are not "future." The results sit on my desk today, with performance that is as good as or better than anything else the market offers. Today, my desk holds only SDRs, radios that are not "of the future." The paradigm shift has already occurred.

Note: The views expressed here are those of the author and do not necessarily reflect the opinions of CQ magazine or its publisher, CQ Communications, Inc.

**4205 Burkholm Rd., Mims, FL 32754*
e-mail: <lee_crocker@yahoo.com>

Emergencies are unpredictable. If you are called on to provide communications and are asked to send or receive formal written messages ("traffic"), will you know what you're doing? W6BNB goes over the basics ...

Theory of Proper Message Handling

BY BOB SHRADER,* W6BNB

In this day and age when all countries are faced with the possibility of being involved in some appalling catastrophe, those who may become involved in emergency communications, and that certainly includes radio amateurs, should know how to properly send and receive messages. Some disasters may be the result of acts of terrorism, while some may be due to tornadoes, wildfires, floods, earthquakes, train wrecks, and so on. In many such circumstances the power lines may go down, telephone lines may no longer operate, and cell phones may not function. With possibly only battery power available, in many cases radio communications may have to depend on low-power "QRP" CW. One watt of HF CW RF power output can provide communications over a surprising number of miles. QRP AM or SSB transceivers are not that readily available. All amateurs should try to have some kind of a battery-operated HF QRP station for emergency use.

Emergency messages may be sent from one point to another in a variety of ways: by voice using microphones; by CW using a variety of keys or a keyboard; or perhaps using RTTY, PSK31, FAX, and other keyboard modes. The basic idea is to get all needed information from one place to another as rapidly as possible and *without error*. That last part is the crux of proper message, or "traffic," handling. Messages must get to their destination exactly as they originally were written. The best way is probably by using the methods developed by merchant marine radio operators over years of operating under the most trying of communicating conditions. Their final sending and receiving methods are also backed by decades of experience by railroad and other telegraph-network operators. The method outlined here is as good as can be devised for most message handling of any radio communications.

Transmitting Speed

Correct transmission of information normally will be improved by slowing speech speed, code sending speed, or typing speed. This is particularly true if the operating conditions are poor because of background room noise, radio noise, possible fading signal strengths, or in the case of voice traffic, the pronunciation of words or numbers. The speed of speaking or transmitting is a primary consideration. A message sent slowly and received without error usually requires far less time than messages that are sent more rapidly but which must be corrected in a number of places. In addition, the faster a receiving operator tries to put down what is being heard, the less legible the writing or printing is likely to be and the quicker the operator will tire. Printing or writing at speeds of 15 to 20 words per minute is reasonably fast. Many people, particularly the elderly, find it difficult to legibly handle 10 wpm.

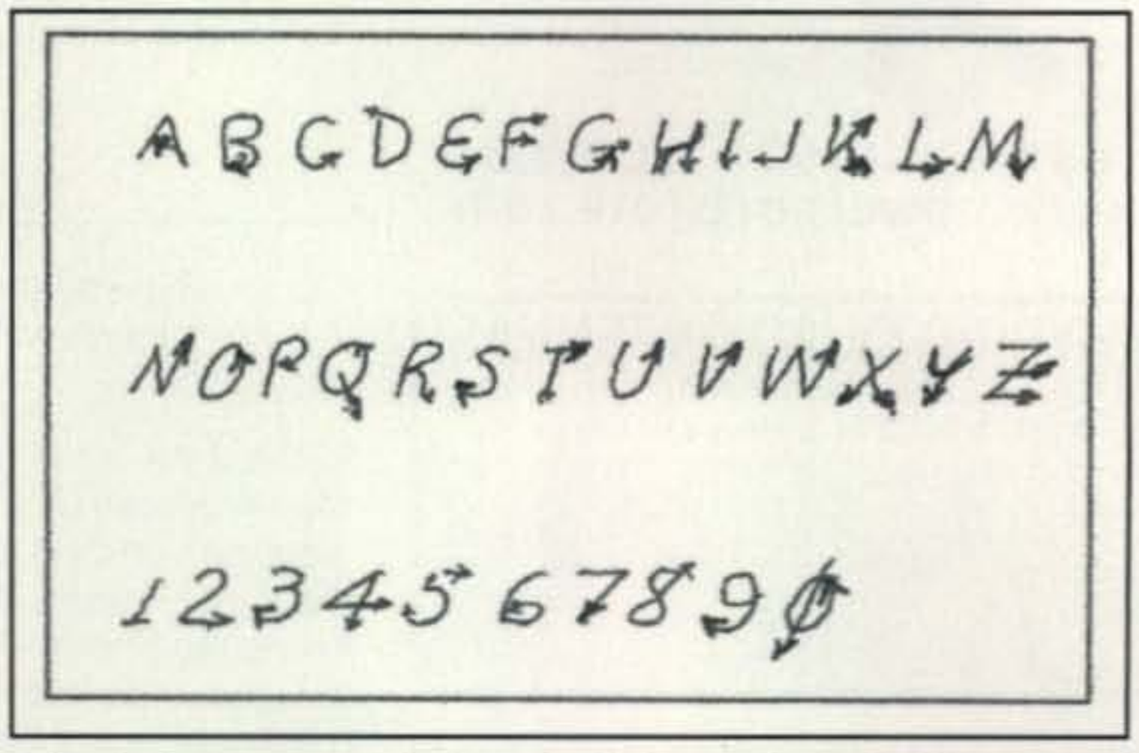


Fig. 1– A recommended method of speed-printing letters and numbers to be used with any message-handling technique.

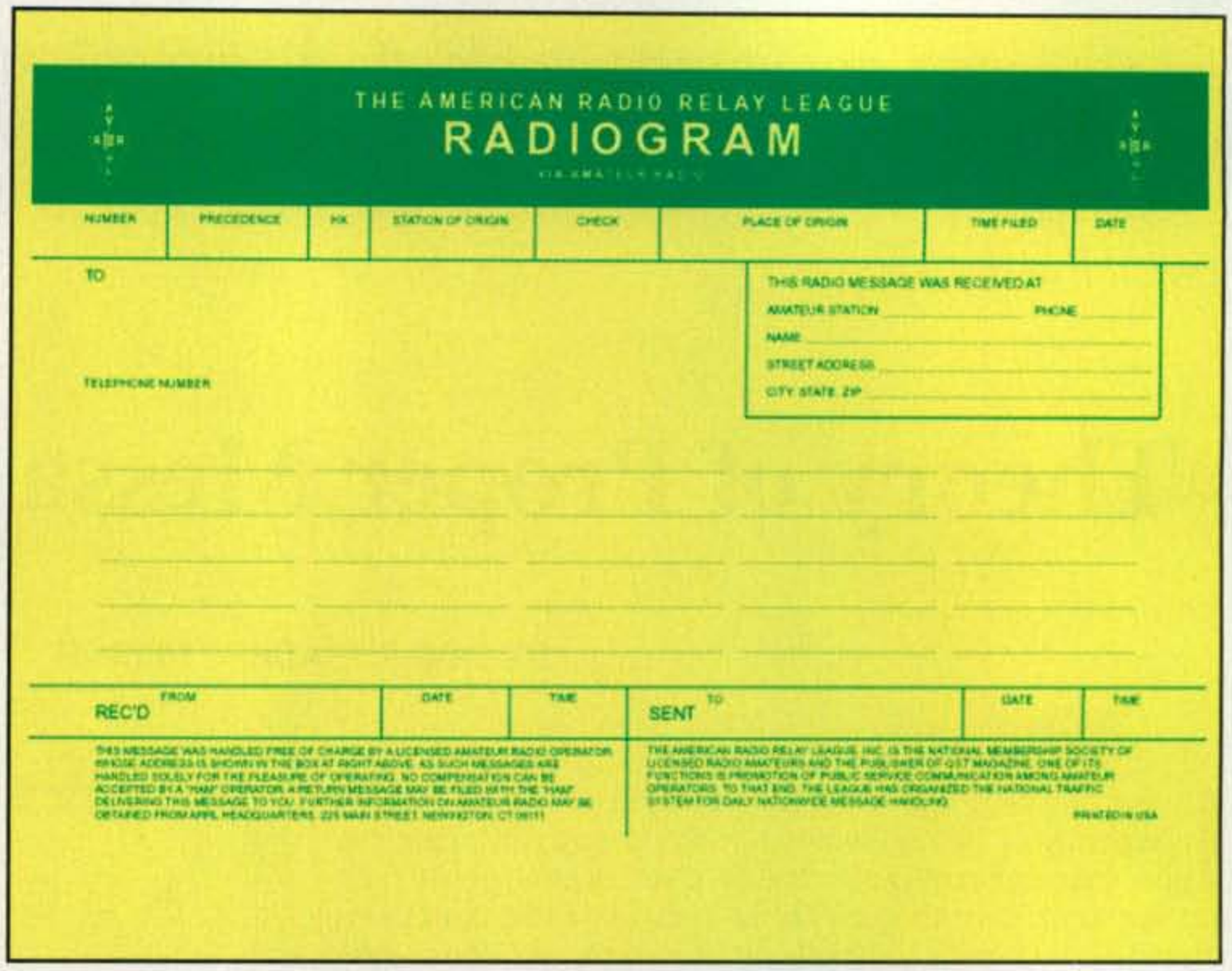
Copying Messages

When a received message is to go to someone other than the receiving operator, a legible copy of it must be made. This may be done with pen, pencil, or typewriter. It may even be done with a an electronic keyboard coupled to a computer and printer, assuming power is available. The last method is probably best, but in many emergency situations such a system may not be available.

It is usually necessary to write or print a message as it is being received on a piece of paper, or "message blank." If the receiving operator has good penmanship, messages can be taken down in longhand. In most cases messages will be more readable if they are printed on message blanks.

When printing letters and numbers (fig. 1), consider the letters J, Y, Z, and the numbers 1 and Ø. Adding a little top line

**11911 Barnett Valley Rd., Sebastapol, CA 95472*
e-mail: <w6bnb@aol.com>



THE AMERICAN RADIO RELAY LEAGUE
RADIOGRAM

NUMBER	PRECEDENCE	HX	STATION OF ORIGIN	CHECK	PLACE OF ORIGIN	TIME FILED	DATE

TO

TELEPHONE NUMBER

THIS RADIO MESSAGE WAS RECEIVED AT
AMATEUR STATION _____ PHONE _____
NAME _____
STREET ADDRESS _____
CITY, STATE, ZIP _____

FROM REC'D	DATE	TIME	TO SENT	DATE	TIME

THIS MESSAGE WAS HANDLED FREE OF CHARGE BY A LICENSED AMATEUR RADIO OPERATOR WHOSE ADDRESS IS SHOWN IN THE BOX AT RIGHT ABOVE. AS SUCH MESSAGES ARE HANDLED SOLELY FOR THE PLEASURE OF OPERATING, NO COMPENSATION CAN BE ACCEPTED BY A "HAM" OPERATOR. A RETURN MESSAGE MAY BE FILED WITH THE "HAM" DELIVERING THIS MESSAGE TO YOU. FURTHER INFORMATION ON AMATEUR RADIO MAY BE OBTAINED FROM ARRL HEADQUARTERS, 225 MAIN STREET, NEWINGTON, CT 06111

THE AMERICAN RADIO RELAY LEAGUE, INC. IS THE NATIONAL MEMBERSHIP SOCIETY OF LICENSED RADIO AMATEURS AND THE PUBLISHER OF QST MAGAZINE. ONE OF ITS FUNCTIONS IS PROMOTION OF PUBLIC SERVICE COMMUNICATION AMONG AMATEUR OPERATORS. TO THAT END, THE LEAGUE HAS ORGANIZED THE NATIONAL TRAFFIC SYSTEM FOR DAILY NATIONWIDE MESSAGE HANDLING.

PRINTED IN USA

Fig. 2– The standard ARRL Radiogram form, the message blank most familiar to hams involved in sending formal written "traffic." (Courtesy ARRL)

to the J prevents confusing a J with a rapidly printed U. With the letter Y, dragging the vertical line down through the top V part lessens the possibility of confusing the Y with a V. A hyphen through a Z prevents confusing a Z with a 2. (However, a hyphen through a 7 is *not* desirable, because it may be read as a printed letter F!) A little line at the base of a 1 will differentiate it from an I, which is printed as one simple downward stroke. The forward-slash through a numeral—Ø—shows it is not a letter O.

To practice printing these letters and numbers, turn on a broadcast talk show and start printing some of the longer words being heard. As the printing is learned, more and more words can be printed in a row. Eventually whole short sentences can be printed. When this happens, you are beginning to learn to copy behind, which incidentally is a much-needed requirement for any good CW or voice copy. When a printed alphabet is learned fairly well, tune in a slow CW transmission and see how well it can be copied.

Required Parts of a Message

All normal messages should have five distinct parts:

1. The "preamble" contains the following information:

(a) The message's number (numbering may start at midnight each day, using either local or UTC time, or on the first of each month, or on the first of the year, or since the beginning of an emergency).

(b) The call letters of the station first sending the message.

(c) The "check" (the total number of words, preferably those in the address, text, and signature, or less efficiently, only in the text and signature, and in some cases only in the text. Be sure to find out the protocol of the group or agency for which you are handling messages.)

(d) Where or by whom the message originated.

(e) Time and date when the message was first filed at the sending position or station. Time and date may be in local time if messages are not leaving the local time zone, using either local 24-hour time or the local hour plus AM or PM. If messages are sent to other time zones, 24-hour UTC should probably be used, or possibly the local time of PST, PDT, etc., should be added.

2. The "address" is the person to whom the message is addressed, and where it has to go to reach that person.

3. The "text" is the message body information.

4. The "signature" is the name, and title if any, of the person sending the message.

5. The "service" information is the call letters of the station from which the message was received, the date and time, and the receiving operator's identification.

If there is ever a question of something being wrong in a message, a "service message" (SVC) can request information about a previously sent or received message and should identify where the error occurred. This is why all messages should have all five parts of all messages correctly completed. When properly copied, the five different parts should stand out as five separate parts on the message blank, as is shown in figs. 2 and 3.

Message Blanks

It is nice to have pre-prepared message blanks printed on half of an 8 1/2" × 11" sheet of paper. An inch or so down from the top of the blank two lines separated by half an inch may be drawn across the paper. The preamble should be printed in this area, with the rest of the message below that. The indented address is printed at the far left just below the preamble line. The text is printed starting at the far left below the first line of the address. The signature of the sender is shown under the text and midway across the blank. At the bottom of the blank at the far left is printed the servicing, the call of the station receiving the message, the receiving time/date, and the operator's initials. If printed message blanks are not available, half of a sheet of 8 1/2" × 11" typing paper does quite nicely.

The Check

In most cases of radio message handling a word-count or "check" should be used. In many amateur messages it does not matter too much if the exact wording is correct or not. However, when it comes to emergency traffic all messages must be 100 percent correct. A check is the way to determine almost immediately if all of the message words have been received and hopefully copied correctly. Operators trained in good message handling will copy only 5 words to a line to enable them to count the check rapidly while receiving a message. If the printing is small enough, or when using a typewriter or keyboard, two groups of five words with an extra space between them produces ten words to a line. This makes check counting twice as easy with long messages. With really long messages a double line-spacing should be used after every 20 words.

Sending Messages by Voice

When transmitting messages by radiotelephone, it is first necessary to deter-

GENERAL MESSAGE

TO:	POSITION
FROM	POSITION
SUBJECT	DATE
MESSAGE	
DATE / TIME / SIGNATURE/POSITION	

PERSON RECEIVING GENERAL MESSAGE KEEP THIS COPY

SENDER REMOVE THIS COPY FOR YOUR FILES

Fig. 3– Another message form with which hams should become familiar is the ICS-213 message blank used by all emergency response agencies operating under the Incident Command System (ICS) or National Incident Management System (NIMS).

mine how close to the microphone an operator should speak. For message handling, the lip-to-microphone distance should probably be no greater than about two inches. Close talking reduces background noises in the room, which requires a reduction of the microphone gain control. Reducing the gain lowers background noise and makes the received signal that much easier to copy. Always consider the receiving operator and make it as easy as possible for him (or her) to copy information.

Slower speech is desirable when sending messages. If transmitting to a receiving operator for the first time, speak slowly, enunciating each word and number carefully. If no corrections are requested, try speaking a little faster. Continue to increase transmitting speed until requests for repeats or corrections begin. That speed is apparently too fast for the receiving operator to copy properly, so go back down to the last slower used speed.

Using VOX, or Voice Operated Xmissions, allows faster voice communications because the receiving operator can stop the sending operator whenever there is a pause for breath or in between words by saying "Break." If the sending operator hears the "Break" word he should stop transmitting and say "Breaker?" The breaker then states the last correctly received word. The sending operator should then repeat that word and continue on with the message.

If VOX is not used and complete messages are sent without a break being transmitted, it may be necessary to request several fills (corrections) at the end of each message. This greatly slows message handling.

If not using VOX operation, after every ten words or so of a message, the transmitting operator should stop and say, "Break?" If no corrections are needed, the receiving operator should say, "OK," or "Go on," or repeat the last correctly received word.

A more or less normal starting of sending a message without VOX might be by an operator saying, "W5XXX this is K5YYY. I have two messages for you." Hearing this the W5XXX operator should say, "K5YYY this is W5XXX. Send your first message." W5ZZZ should start by saying, "K5YYY here is my message number 11 check 23 from W5ZZZ . . ." and so on. When the preamble is completed the operator should say, "End of preamble—Break?" and open the transmitting switch to see if there is any question about what is in the preamble. If the receiving operator produces no comment, then he continues, "Here address." At the end of the address he should say, "End of address —Break?" Then, "Text follows." At the end of the text he should say, "End of tex—Break?" Then, "Signature is." At the end of the signature, "End of message. Over." After a few seconds, while the receiving operator is confirming the check count and adding his servicing information to the bottom of the received message blank, the response would be, "W5ZZZ, your message number 11 check 23 received. Send your next message." During the time the receiving operator is confirming his check count and printing his servicing, the sending operator should be adding his own needed servicing and the time/date and initials either under the signature or at the bottom left of his message blank.

If there is a miscount of the check of a message, both operators can mark off with a lightly penciled forward-slash after every 5 words. To locate a missing word in a received message, for example, the sending operator can read out every 5th marked word on his copy, leaving a second or two for a response. If an incorrect word is called out, the receiving operator immediately knows the error must be somewhere between the last two called out multiple-of-5 words.

At the end of the last message to be sent the operator should say, "No further traffic here. Do you have any traffic for me?" If the answer is, "No traffic

here." it is important that both operators sign off with the callsigns of whatever two stations were involved in the traffic handling, but not their personal callsign if the site is using a different amateur call.

Sending Messages by CW

Messages often are handled faster by CW than by phone, usually because it takes less time to break and request a fill on break-in or "QSK" CW than waiting for a "Break?" on radiotelephone circuits. There are also many operating abbreviations used with CW communications. Of course if VOX is used by voice traffic handlers, it greatly speeds up their communications. With phone traffic there is always the possibility of foreign or other accents that may confuse a receiving operator. However, of course there is also the possibility of poor CW sending or receiving, which can greatly slow down CW circuits! But two well-trained radiotelegraph operators can handle messages quite rapidly, as can two well-trained radiotelephone operators.

Let's look at a message from an Emergency Operations Center (EOC) officer, Captain Ruhle, as handed to an emergency amateur station operator at W5ZZZ for transmission to another amateur station at some nearby emergency site. It might look something like the following:

From Capt Ruhle – Houston EOC
Unit 14
Firehouse 8
Houston
Advise situation existing at this time
at collapsed bridge near west end of
Henry Carter Lane

When the radio operator at the emergency amateur station W5ZZZ is handed this message, its proper message number from W5ZZZ is written in the preamble space at the top of the message blank, adding any special message priority rating. The transmitting station callsign W5ZZZ is added. This is followed by the check (word count) and where the message originated, then the filing time and date the message was filed (when given to the operator, if none stated by the originator). Here is how the message might actually be transmitted by CW:

"W5ABC de W5ZZZ – hr Nr 11 W5ZZZ ck 23 Houston EOC 8R35 PM Apr 8 – To Unit 14 AA Firehouse 8 AA Houston – Advise situation existing at this time at collapsed bridge near west end of Henry Carter Lane – Sig Captain Ruhle AR K"

The transmitting operator would then add the service information at the bottom left of the message blank: the receiving station's call, sent time/date, and sending operator's initials, such as, "W5ABC 8.46 P 3/8/07 RL." The operator's callsign might be used instead of initials.

Note:

The dash "–" is sent _ . . . _ and indicates the end of one of the parts of the message.

EOC indicates the Emergency Operations Center, the message originator.

The "R" means a punctuation mark, a period, or a colon in this case.

"AA" is sent . _ . _ and tells the receiving operator to "Drop down a line."

"AR" is sent . _ . _ . and means "end of message."

"K" whenever sent alone on CW usually means "Over to you."

Here is how the receiving operator should have copied the message on his message blank:

Nr 11 ck 23 W5ABC Houston EOC 8:35 PM Apr 8 2007

Unit 14
Firehouse 8
Houston
Advise situation existing at this time at collapsed bridge near west end of Henry Carter Lane
Captain Ruhle

W5ZZZ 8:42 P 3/8/07 CP

The transmitted "Hr," "To," and "Sig" are not copied by the receiving operator. This requires copying behind a few letters in order not to put down unwanted information.

The extra spacing after "this," "near," and "Carter" indicates the end of 5 words of the check. This indicates that the receiving operator must constantly be counting check to know when 5 words have been copied since the last double spacing. The address in this case happens to have 5 words in it. At a glance, the receiving operator knows the check is 15 + 1 + 2 (number of words in the signature), or 23, as stated in the message preamble. It is only necessary to add the receiving operator servicing at the bottom of the message before acknowledging receipt of the message by sending "QSL ur nr 11." Trained operators can count 10 words before dropping to the next line. On long messages it is only necessary to count how many lines of 10, plus the address and signature words, to know the total check count. This is not easy, but it is all part of top-level operating.

When unusual or difficult words, or maybe numbers or number groups are sent by CW, they may be confirmed by sending ?? and repeating them. On phone, the sending operator should stop for a second and then say, "I say again..." or say, "I spell..." and spell out the word using the standard international phonetic alphabet letters, which are: **A**lpha, **B**ravo, **C**harlie, **D**elta, **E**cho, **F**oxtrot, **G**olf, **H**otel, **I**ndia, **J**uliet, **K**ilo, **L**ima, **M**ike, **N**ovember, **O**scar, **P**apa, **Q**uebec, **R**omeo, **S**ierra, **T**ango, **U**niform, **V**ictor, **W**hisky, **X**-ray, **Y**ankee, **Z**ulu.

Anyone following the message-handling information above will be using a very efficient sending and receiving traffic-handling system. It contains all of the information about who sent and who received the messages. If checking back for any reason, it is easy to find out just where anything questionable is.

While the actual message transmission has been explained using a CW message, traffic handled by voice follows the same general rules. By radiotelephone a few operating words may be used here and there to help facilitate message handling *(such as the word "figures" before a group of numbers—ed.).* These words may differ in different localities, but they should be obvious when heard by operators familiar with this basic theory of proper and efficient message handling.

What You've Told Us...

Our July survey asked about what you do with ham equipment that you've replaced. Nearly half of our respondents (49%) hold onto their old gear as a back-up; 31% sell it; 14% put it away someplace to deal with it "later;" 9% give it away to a club or another ham; 5% keep it as a loaner for a ham in need; 2% say they throw it out (because they never replace anything that still works), and nobody cannibalizes their old radios for parts anymore.

When you *do* sell used gear, 66% of you report that you first clean up the rig and make sure it's working; 9% say you do that sometimes, and 8% say you sell all gear "as is." The rest of you don't sell used gear. In addition, half of you said you provide all manuals to buyers whenever possible; 23% provide buyers with your e-mail address &/or phone number in case of questions or problems; 8% say you will repair gear that you've sold for a limited period, and 3% said, "Nope, once you own it, it's no longer my problem."

There was an interesting disparity between what you see as a good venue for selling your gear vs. your go-to sources to *buy* used equipment. The greatest number of you (28%) prefer to sell gear directly to a club member or other local ham; hamfests are next (20% at own table, 8% at a club table); followed by the internet (23%), trading it to a dealer (8%) and using magazine classified ads (1%). Curiously, though 12% of you turn to magazine classifieds for *buying* used gear, while 34% make purchases over the internet, 41% buy used gear from dealers, 55% buy from club members or other hams, and 57% buy their used gear at hamfests. You may want to think about those buying figures next time you're planning to sell something.

This month's free subscription winner is Allan Kaplan, W1AEL, of Sevierville, Tennessee.

Reader Survey October 2008

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

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

This month, we'd like to get an idea of when you got started in ham radio, how old you were and how active you've been since.

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

1. In what decade did you first become a licensed ham?

1930s or earlier 1
1940s 2
1950s 3
1960s 4
1970s 5
1980s 6
1990s 7
2000s 8
Not yet licensed 9

2. How old were you when you were first licensed?

Under 20 10
20–29 11
30–39 12
40–49 13
50–59 14
60–69 15
70 or older 16

3. When you first became a ham, did you become a member of a radio club?

Yes, a high school club 17
Yes, a college club 18
Yes, a general interest club 19
Yes, a specialty club (emergency comms, DXing, contesting, etc.) 20
No 21

4. Have you held your license continuously since you first became a ham?

Yes 22
No, my license lapsed (for 5 years or less) and then I returned 23
No, my license lapsed (for 5–10 years) and then I returned 24
No, my license lapsed (for more than 10 years) and then I returned 25
No, my license is currently lapsed 26
Never licensed 27

5. Have you been active on the air continuously since you first became a ham?

Yes 28
No, I have gone through short (5 years or less) periods of inactivity 29
No, I have gone through moderate (5–10 years) periods of inactivity 30
No, I have gone through extended (more than 10 years) periods of inactivity 31
I am currently inactive/unlicensed 32

Thank you for your responses. The reader survey crew will be in rehab (in Tahiti) for the next couple of months. We'll see you again in January.

Last year KZ1Z introduced today's SSTV and covered the basics of getting setting up and on the air. In this "step-two" article Pete examines the technical considerations in producing and sending the best possible pictures.

Lights! Camera! Action!

The Art and Science of Looking Your Best on SSTV

BY PETE KEMP,* KZ1Z

While most radio amateurs use their ears, SSTVers add in another dimension, the visual (see my SSTV intro article in March 2007 *CQ*). With changing band conditions, preparing to transmit a picture is an important first step for Slow Scan Television success. The quality of the picture, your on-the-air image, will determine the responses you receive.

With the advent of slow-scan sound-card software, more and more operators are giving the digital visual world a try. Years ago SSTV was a big investment and took up a lot of shack space. The pictures were grainy on a monochrome (black-and-white) monitor. Today's technology allows for postcard-quality images to be transmitted around the world.

Now that radio amateurs have the ability to send high-quality images by SSTV, what are the characteristics of a good picture? While art is in the eye of the beholder, there are some basic elements that should be considered: *color, font, illustration, and composition.*

Color

The colors you select may be the difference between making the contact and being a fuzzy collection of random pixels. Maximum contrast is what you need, especially during weak-signal conditions. The relationship between light and dark is critical. A pale-colored background needs a contrasting font to stand out. A bright-red font on a dark-blue background would yield a poor result. The receiving station may find the letters too difficult to pull out of the picture. Conversely, big, dark bold letters on a pale background would provide a better starting point. Under ideal reception conditions colors can be very effective. Fig. 1 represents the use of multiple colors. However, which color combinations would provide you with the best transmission results under poor band conditions?

Getting the information received properly is the aim. A transmitted signal that cannot be seen on the other side is just noise. Do you see the image in fig. 2?

Fig. 1– Attention-getting graphics are always appreciated.

Fig. 2– Do you see the image?

Font

When thinking in terms of font selection for any words in your photo, keep in mind *font face, font color,* and *style.*

Font face: The font face is the overall design of each letter or number (see chart 1). Keep in mind the KISS Principle: Keep It Simple. A clean, bold face in which the letters are spaced and clearly defined works best. Common computer operating systems offer a wide variety of choices, by default, with options for additional fonts. Supplementary fonts for specific applications may readily be downloaded at no charge via the internet. This flexibility is especially useful for slashed fonts, those fonts where the zero has a diagonal line through it to differentiate the number zero from the letter "O." An excellent website to obtain information on slash-zero fonts, and for downloading, is <http://www.k8zt.com/zero.html>. When making your final choice, keep in mind that some fonts, such as French Script, look fine on wedding invitations but would be too confusing to use for slow-scan television applications. Fonts that are too thin, such as Asia Thin or Arial Narrow, may get lost

**31245 Chatterly Dr., Wesley Chapel, FL 33543*
e-mail: <kz1z@arrl.net>

MFJ tiny Travel Tuner

Tiny 4½x2¼x3 inch tuner handles full 150 Watts! Covers 80-10 Meters, has tuner bypass switch, tunes nearly anything!

MFJ brings you the *world's smallest* full power 150 Watt 80-10 Meter Antenna Tuner. Extra wide matching range lets you tune nearly any antenna.

It's no toy, its got guts! Built with real *air* variable capacitors (600 Volt, 322 pF) and *three* stacked powder iron toroids to handle real power -- not just QRP. Bypass switch lets you bypass tuner when you don't need it.

You can use nearly any transceiver at full power with nearly any coax fed or random wire antenna for portable, home or mobile operation.

It's perfect for compact rigs like Icom IC-706MKIIG, Yaesu FT-100D, Kenwood TS-50, QRP rigs and others with a built-in SWR meter.

Operate anywhere, anytime with a quick easy set-up! Tune out SWR on your mobile whip from inside your car. Operate in your apartment with a wall-to-wall antenna or from a motel room with a wire dropped from a window or from a mountain top with a wire over a tree limb. Great for DXpeditions or field day. Be prepared for emergencies.

MFJ-902 is so small and handy, you'll rely on it wherever you go! It's easy to pack away in your briefcase, suitcase, backpack, glove compartment or desk drawer. It's tiny enough to slide in your back hip pocket! 4½Wx2¼Hx3D inches.

MFJ-902
$99.95

Tiny Travel Tuner with 4:1 Balun

MFJ-902H
$119.95

MFJ-902H, same as MFJ-902 *Tiny Travel Tuner* but has *4:1 balun* for balanced lines and 5-way binding posts for balanced lines and random wire. 5¾Wx2¼Hx 2¾D in.

Tiny Travel Tuner with Cross-Needle SWR/Wattmeter

MFJ-904
$129.95

MFJ-904, same as MFJ-902 *Tiny Travel Tuner* but has *Cross-Needle SWR/Wattmeter.* Read SWR, forward and re-flected power all at a glance in 300/60 and 30/6 Watt ranges. 7¼Hx2¼Hx2¾D inches.

ALL-in-one *Tiny Travel Tuner* with 4:1 Balun *and* SWR/Wattmeter

MFJ-904H
$149.95

ALL-in-one! MFJ-904H, same as MFJ-902 *Tiny Travel Tuner* but has *4:1 balun for balanced lines* and Cross-Needle SWR Wattmeter. Read SWR, forward and reflected power all at a glance in 300/60 and 30/6 Watt ranges. Has 5-way binding posts for balanced lines and random wire. 7¼Hx2¼Hx2¾D inches.

Long 10/12 foot Telescoping Whips

MFJ-1954
$29.95
10 Feet

MFJ-1956
$34.95
12 Feet

10 foot extended, 19 inches collapsed, MFJ-1954, $22.95. 12 foot extended, 22.5 inches collapsed. MFJ-1956, $29.95. Standard 3/8 inch by 24 threaded stud for use with all standard mounts. Durable 1/2 inch diameter plated brass. Telescopes for full 1/4 wave operation 2 to 12/15 Meters. Cover 17, 20, 30, 40, 60, 80, 160 Meters with loading coil. Use two for multi-band dipoles. Replace screwdriver antenna whip for highly efficient *fixed* mobile operation.

MFJ RF Isolator

MFJ-915 *RF Isolator*

MFJ-915
$29.95

prevents unwanted RF from traveling on the outside of your coax shield into your transceiver. This unwanted stray RF can cause painful RF "bites" when you touch your microphone or volume control, cause your display or settings to go crazy, lock up your transceiver or turn off your power supply. In mobile installations, stray RF could cause your car to do funny things even blow your car computer. Clear up these problems, plug an MFJ-915 between your antenna and transceiver. *Don't operate without one!* 5x1½ inches. For 1.8 to 30 MHz.

Portable Collapsible Antenna Tri-Pod

Holds 66 pounds of antenna steady. Black *steel* base forms strong braced equilateral triangle 40 inches on a side. Non-skid feet. One inch diameter steel mast extends height to six feet. Strong base and mast locks. Easily add antenna mount or mast extension for greater heights. Collapses to 38 inches by 4 inch diameter. 6¾ pounds.

MFJ-1918
$49.95

40-10M G5RV Junior
MFJ-1778M, $39.95.
Half-size 52 foot *G5RV Jr* 40-10 Meters, 1500 Watts.

1500 Watt Lightning Surge Protector

MFJ-272
$39.95

Protect your expensive transceiver from static electricity and lightning induced surges with an ultra-fast gas discharge tube. Plug between rig and antenna, attach ground. DC to 1000 MHz. SO-239s.

All-Band G5RV Antenna

MFJ-1778
$44.95

Cover all bands, 160-10M with tuner. 102 ft. long, 1.5kW. Custom fiberglass insulator stress relieves 450 Ohm ladder line. Use horizontally, as inverted vee or sloper. Marconi on 160M.

Glazed Ceramic Antenna Insulator

MFJ-16C06
6-Pack
$4.56
(79 cents each)

Authentic *glazed ceramic* antenna insulator. Extra-strong -- will not break with long antennas and will not arc over or melt even under full legal power. Molded ridges give extra-long high voltage path to prevent high-voltage breakdown. Smooth wire holes prevent wire damage. Use as center or end insulator for dipoles, doublets, G5RVs, guy wires and others.

Current Balun/Center Insulator

True *1:1 Current Balun/Center Insulator* forces equal currents into dipole halves to reduce coax feedline radiation and field pattern distortion. Reduces TVI, RFI and RF hot spots in your shack. 50 ferrite beads on *Teflon*® coax. 1.5kW, 1.8-30 MHz. Stainless steel hardware. *Direct* antenna connection. 5x1½ in.

MFJ-918
$24.95

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

http://www.mfjenterprises.com

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

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

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

KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Arial
KZ1Z	**KZ1Z**	**KZ1Z**	**KZ1Z**	**KZ1Z**	**Ariel Black**
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Arial Italic
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Belin Sans FB Demi
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	COPPERPLATE GOTHIC
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	French Script
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	GALLERY
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Old Century
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Papercuts
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Pythagoras
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	PLUMP MT
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Times New Roman
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	TRANSISTOR
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Wide Latin

Chart 1– Font face defines the typeface being used. You want to choose a font that offers maximum clarity.

Fig. 3– Using multiple large-text characters increases your chances of making that contact.

Font Color					
Black	White	Red	Yellow	Blue	
KZ1Z		KZ1Z		KZ1Z	White
	KZ1Z	KZ1Z	KZ1Z		Black
KZ1Z	KZ1Z		KZ1Z		Red
KZ1Z		KZ1Z		KZ1Z	Yellow
KZ1Z	KZ1Z		KZ1Z		Blue
KZ1Z		KZ1Z		KZ1Z	Gray
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Pale Red
KZ1Z		KZ1Z		KZ1Z	Pale Yellow
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Pale Blue

Chart 2– Font color is another factor in readability, both the color of the letters and the color of the background. This chart shows several different configurations.

among the pixels on the screen when transmitted. A clean typeface such as Copperplate Gothic, Arial Black, or Crystal would be much better suited to radio use.

Depending on the signal quality, some fonts may be made more usable by increasing their size. Consider the SSTV mode you have selected. Will you be transmitting in Robot (B&W), Scotty, or a new high-definition mode? (See Part I for SSTV mode descriptions.) Each mode has its benefits in terms of image transfer. What are the band conditions? Is speed or technical visual quality your primary concern?

Font color: Use contrasting colors, and don't select too many colors, as this may be confusing during adverse signal conditions. Using a big, bold colorful font will also help the viewer during band fades or interference. Our brains are wonderful devices. When looking at an image, our thought processes will sometimes make virtual connections, even if the physical pixels aren't there. Our brains do a very good job of deciphering. Letters such as "B","F," "P," and "R" could be difficult to complete with interference or band fading. If the letters are big, with a thick font, the chances of having another station pick up your call will be enhanced, as demonstrated in fig. 3 and chart 2. Using a variety of colors, such as shown in fig. 4, or contrasting colors, as seen in fig. 5, may increase your chances of getting your call letters through the noise.

Font Style: Font style refers to whether the normal typeface will be made bold, italic, or a combination of both. Some letters do not transpose well when altered from their original style. Some fonts may "fill in" if made bold, or a font may become distorted too much if italicized.

Many of the type fonts available with popular SSTV software may be transformed with shadows, outlining, texturing, and other graphic techniques. However, placing your call letters in a texturized 3-D mode, with different colors next to one another, may be confusing, blending too many elements together. Fig. 6 shows a variety of col-

Fig. 4– SSTV operators are active from many DX entities, too. Here is Elena, EZ8YL, from Turkmenistan.

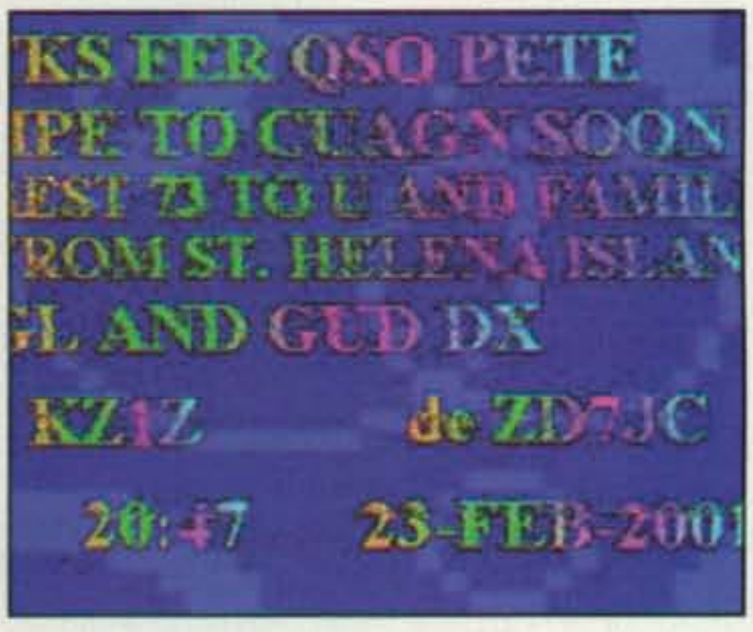


Fig. 5– Use contrasting letters so important information will pop out, not blend into the background.

Fig. 6– Multiple images on one screen may be confusing. If properly arranged, an image can share a lot of information.

Fig. 7– Humor is universal. A little chuckle goes a long way, encouraging friendly QSOs.

ors, fonts, and transformations. Which elements of this image stand out to you? Operators don't want to hunt for your call letters, or other information, on the screen. The elements should stand out (see chart 3).

Be mindful of upper- and lower-case letters. Depending on the reception quality, using both cases may be confusing. For example, is the call K2IZ, KZ1Z, or K2LZ? If your signal is not highly detailed, lower-case letters such as "a," "c," "e," and "o" may also be difficult to discern, as they have a tendency to "fill in."

Fig. 8– With SSTV you may communicate not only around the world, but above it, too!

Illustrations

The graphics you select reflect your station and your personality. Amateur radio operators project their sense of humor, love of nature, family, or other interests through their pictures. Be creative (see fig. 7). While "live" shots, such as Tony England, WØORE's images from the Space Shuttle Challenger were history making (fig. 8), a photo of your shack or the view outside your window can be fun, too.

You don't even need a camera to participate in today's SSTV. The personalization of photographs and illustrations, using readily available Paintshop-type programs, can create some interesting and informative pictures for transmission, as in fig. 9. Stock images are readily available via the internet.

Pictures with a high degree of detail should be used during "closed circuit" (excellent) rather than poor band conditions. Atmospheric noise and QSB can change the end effect. You may have a beautiful picture, but if the image won't be well received, why frustrate everyone? Notice the difference between figs. 10 and 11 when a noisy picture is received. A simple picture with bold colors, such as seen in fig. 12, will work much better than a detailed fractal print and narrow fonts.

The graphics you use provide a better sense of who you are for the person with whom you are in a QSO. Maybe you have an additional common interest in airplanes, sports, or boating. Pictures also may provide a clue to which way to point your antenna, when you pick up just a portion of a CQ call. Is their any question where the stations in figs. 13 and 14 are located?

Where do think the transmitting station in fig. 15 was located? Common sense says the Middle East, but the station actually was in Idaho. A picture such as this sends a mixed message to the receiving station. By selecting the proper picture, you may also convey to the viewer what you are doing. For example, a person with his hand up to his ear, as seen in fig. 16, or a lighthouse search beam, as in fig. 17, would readily indicate a CQ call. The ancient proverb "a picture is worth a thousand words" is true. Take advantage of the message. This is a visual medium.

Enhancing international goodwill has always been a hallmark of good amateur radio operators. Even during tense

Font Style						
Black	White	Red	Yellow	Blue		
KZ1Z		KZ1Z		KZ1Z	White	Normal
	KZ1Z	KZ1Z	KZ1Z		Black	Normal / Bold
KZ1Z	KZ1Z		KZ1Z	KZ1Z	Red	Bold / Italic
KZ1Z		KZ1Z		KZ1Z	Yellow	Italic
	KZ1Z	KZ1Z	KZ1Z		Blue	Italic / Bold
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Gray	Normal
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Pale Red	Normal / Bold
KZ1Z		KZ1Z		KZ1Z	Pale Yellow	Bold / Italic
KZ1Z	KZ1Z	KZ1Z	KZ1Z	KZ1Z	Pale Blue	Italic

Chart 3– Font style is your final consideration. Will your text look best and be most readable with your typeface in its regular style? Will making it bold or italic enhance readability or make the picture muddy?

Fig. 12– Holidays and special-event images share a sense of a country's culture via SSTV.

Fig. 9– Using large text leaves no question of who you are responding to.

Fig. 10– The original fine detail of this image would only be retained under ideal band conditions or when using newer digital SSTV software.

Fig. 13– Is there any question where this station is located?

Fig. 11– A quality image will lose its effectiveness when transmitted under poor band conditions.

Fig. 14– Some images provide a better geographical reference, further refining a station's location.

Fig. 15– Using an image that reflects your location may be helpful. Which direction would you point your antenna for this station?

political times, hams have always been able to communicate in a friendly, non-confrontational manner. While on-the-air QSOs may cover a wide range of subjects, remember that images illustrating hot-button issues, such as political, or overtly religious illustrations are not always appreciated by others. Also remember that others not involved in your contact may be listening/watching.

Amateur radio is a family friendly medium. While a pretty girl will always be a pretty girl, pornography over the airwaves is totally inappropriate. The age old adage "when in doubt, don't" applies. Fig. 18 provides a positive example, although people in some cultures may find it offensive. Use discretion and common sense.

Slow-scan operators often resend the picture back to the originator so they can see how their picture was received. This helps with quality adjustments and helps to correct slants, too. When sending a picture back, most software programs allow you to incorporate that picture within another graphic to spice things up (see figs. 19 and 20).

Composition

Once you have selected your graphic, text, and colors, how do place these elements on the page? Think to yourself, what's important? What information must you absolutely have to transmit? This process is one of the few that promotes thinking *inside* the box. The image you select should be in the same proportion to the standard monitor screen. The next step is to remember your days in elementary school, when you were first learning to write. Remember when your teacher made you put margins on the paper? The same process applies to SSTV. Create an

Fig. 16– An image should reflect your purpose. This picture automatically conveys to other stations that you are in the listening mode.

Fig. 17– Using a lighthouse with beaming lights indicates you are searching for a contact.

imaginary frame inside the monitor into which you place those elements needed to complete your picture.

The placement of those elements will vary, depending on the picture's focus and the size of the text. Radio amateurs desire to get the maximum impact of the graphic, incorporating the text effectively and efficiently, as seen in fig. 21. Note the size, color, and placement of the text, taking full advantage of the image.

Because the vast majority of people read from left to right, top to bottom, a person's eye will first go to the upper left-hand corner of an image or page. Slow-scan pictures appear in the same manner, moving down the page. This makes the process a natural integration of information.

Having viewed literally thousands of slow-scan pictures over the years, certain basics emerge. The call letters of the station you are working usually appear in the upper left-hand area. Your call letters appear in the low right-hand corner, with signal reports and other information in the middle. There is no right way or wrong way. Using this con-

Fig. 18– A pretty girl will always be a pretty girl. Your choice of pictures should be family friendly, and you should always use discretion when contacting a DX station. Some cultures may find even this photo offensive.

Fig. 20– Using the other station's transmission will allow an operator to see how his/her picture is being received instead of relying on the RSV system.

Fig. 22– What is this station's callsign? NI2B, N2IB, IN2B . . .

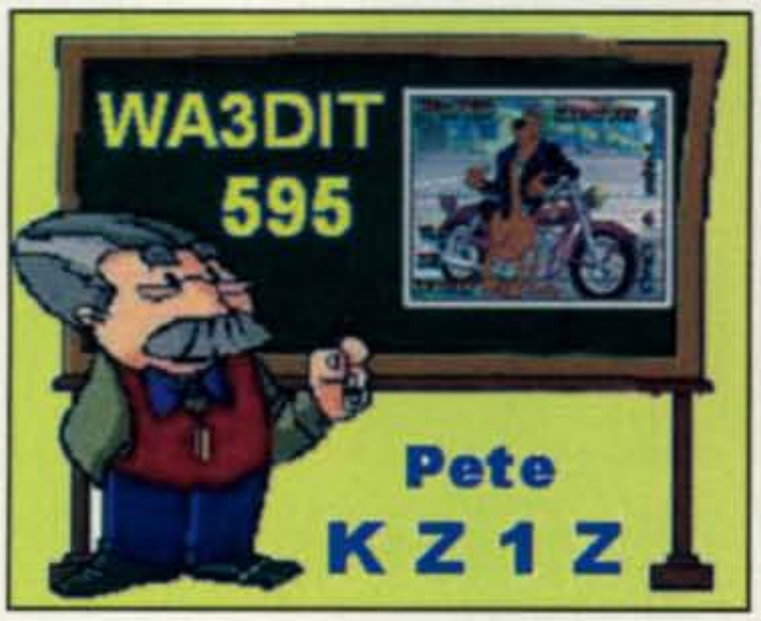


Fig. 19– Incorporating a picture within a picture can be an attention-getter.

Fig. 21– Proper text placement allows for more background image to be seen.

Fig. 23– Sending an SSTV QSL card is effective because of its degree of personalization.

figuration, though, will permit receiving stations to know where to look for clues if you have poor radio conditions.

Balance is also important. Keep your elements together. If someone sent you an image with his call letters all split up in different areas, you would not readily know what the person's correct call is. In fig. 22, is the station's callsign N2BI, N2IB, or IN2B?

Due to the size of the fonts required for clear viewing, text is usually kept to a minimum. Plus, it is placed in such a way that the total picture remains in balance. The text may be to the left, right, or centered horizontally. From top to bottom the same applies, although quite often a diagonal approach is implemented. Like a boilerplate QSO, SSTV operators often anticipate certain layouts. Diagonal text is usually read from the top left corner down, rarely from the bottom left up, and should never be in reverse. Vertical text may also be used but is not as common. The most common use of vertical text is to offset a portrait-oriented picture, to make the final image appear landscape, and to more closely relate to a monitor's proportion, as seen in fig. 23. Vertical text is always read downward. Being cute just confuses the receiving station.

73

Traditionally, the last image sent is a 73 picture. Using the template feature of many common software programs, such as MMSSTV <http://mmhamsoft.amateur-radio.ca/>, or an SSTV specialty program, such as PIX2000 <http://www.qsl.net/ea3dlv/Programas/pix2000.zip> or SSTV Pal <http://www.dxzone.com/cgi-bin/dir/jump2.cgi?ID=11077>, you can also create your own SSTV QSL card.

Slow scan is a fun mode. Take the time to create an image for your station, and you will find more stations will be calling you.

AMERITRON 600 Watt *no tune* FET Amp

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

ALS-600
$1499
Suggested Retail

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

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

Covers 1.5-22 MHz, (10/12 Meters with $29.95 kit, requires FCC license), instant bandswitching, SWR/thermal protected, extremely quiet, lighted peak reading Cross-Needle SWR/Wattmeter, front panel ALC control, operate/standby switch. 12.5 lbs., 9½Wx7⅛Hx12D in.

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

ALS-600 Amp with Switching Power Supply
***New!* ALS-600S, $1599.** ALS-600 amplifier with 10 lb. ALS-600SPS switching power supply combo.

Switching Power Supply
ALS-600SPS
$699
suggested retail

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

From QST Magazine, March, 2005

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

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

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

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

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

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

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

ALS-500M
$849
Suggested Retail

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

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

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

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

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

ALS-500M, $849, 500 Watt mobile amp.
ALS-500MR, $879, ALS-500M/Remote Head
ALS-500RC, $49, Remote head for ALS-500M (for serial # above 13049).
ARF-500K, $179.95, Remote kit for ALS-500M serial # lower than 13049. Includes AL-500RC Remote Head, filter/relay board for ALS-500M, cables, hardware, instructions.

***Free** online manuals!* Ameritron brings you the finest high power accessories!

ARB-704 amp-to-rig interface. . . $59.95

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

RCS-4 Remote Coax Switch. . . $159.95

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

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

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

RCS-10 Remote Coax Switch. . . $179.95

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

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

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

AWM-30 Precision SWR Wattmeter..$149.95

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

AWM-35 Flat Mobile SWR Wattmeter. . $159.95

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

ATP-100 Tuning Pulser . . . $69.95

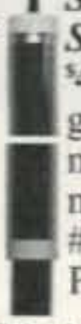
Safely tune up for full power, best linearity. Prevents overheating, tube damage, power supply stress, component failure.

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

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

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

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

SDA-100 Mobile Screwdriver Antenna

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

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

AL-811H, $899. Plugs into 120 VAC outlet. All HF bands. Hi-silicon transformer, heavy duty tank coils, tuned input, operate/standby switch, Xmit LED, ALC, lighted meters, 32 lbs. 13¾Wx8Hx16D in.
AL-811, $749. Like AL-811H, but three 811A, 600 W.

Desktop Kilowatt
with Classic 3-500G tube

AL-80B, $1449. Whisper quiet 3-500G desktop amp gives *full* kilowatt SSB PEP output. Plugs into 120 VAC. Ameritron's exclusive *DynamicALC*™ doubles average SSB power out and *Instantaneous RF Bias*™ gives cooler operation. All HF bands. 48 lbs. 14Wx8½Hx15½D in.

True Legal Limit™
with Eimac® 3CX1500/8877

AL-1500, $3495. Ameritron's *most powerful* amplifier uses the herculean *Eimac®* 3CX1500/8877 *ceramic* tube. 65 Watts input gives you full output power -- it's just loafing with a 2500 Watt power supply. All HF bands, all modes. 77 lbs.17Wx10Hx18½D inches.
AL-1500F, $3095, Import tube.

1500 Watt* True Legal Limit™ *Antenna Tuner

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

Call your dealer for your best price!

Free Catalog: 800-713-3550

AMERITRON

. . . the world's high power leader!

116 Willow Road, Starkville, MS 39759
TECH (662) 323-8211 • **FAX** (662) 323-6551
8 a.m. - 4:30 p.m. CST Monday - Friday
For power amplifier components call (662) 323-8211
http://www.ameritron.com

BY IRWIN MATH,* WA2NDM

Follow-up on Frequency Standard

Last month we described a frequency standard that could easily be built. Then it occurred to me that the particular crystal frequencies we discussed might not be readily available. As a result, this time we will show you ways to divide an input frequency by any desirable whole number from two to ten. This should enable the use of crystals for most whole-number frequencies to be used. In each case we will use one of two low-cost chips, the 7473 dual JK flip-flop and the 7490 decade counter. These low-cost chips are available in CMOS as 74Cxx, TTL as 74LSxx, and many other versions with similar part numbers depending on the particular manufacturer. All versions should work well with these circuits.

The driving circuit for all of the dividers is the same oscillator described last month. This time we have coupled it to an ACT gate, and for reference the complete circuit is shown in fig. 1. In this case a NAND gate such as the 74C00 connected as an inverter is shown, although one inverter section from a 74C04 could also be used. Fig. 2 shows the use of one section of a 7473 as a divide by two coupled to the second section of the same chip (also connected as a divide by two). The result of this connection is that the input frequency is divid-

*c/o CQ magazine

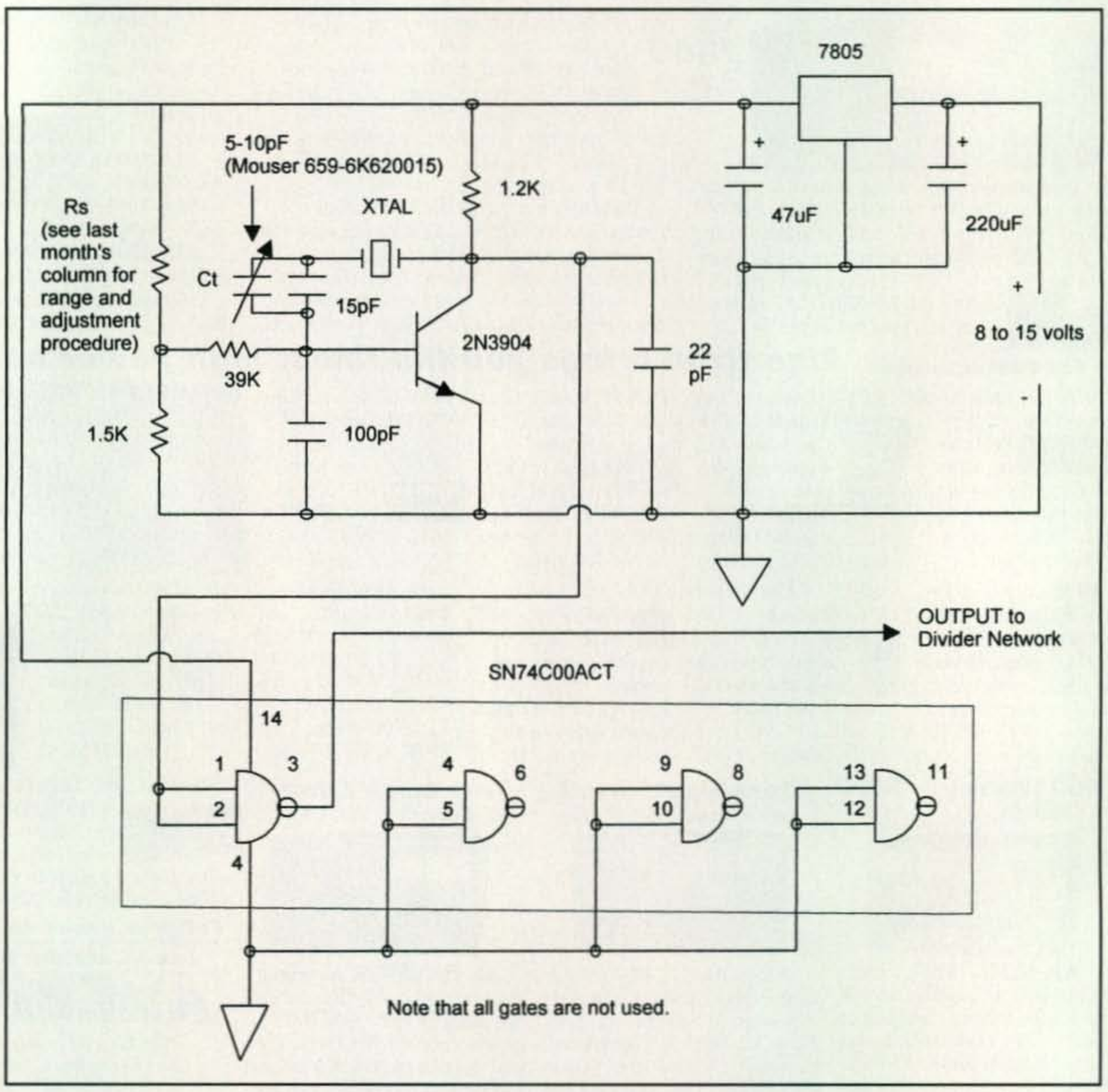


Fig. 1– Basic oscillator and driver schematic.

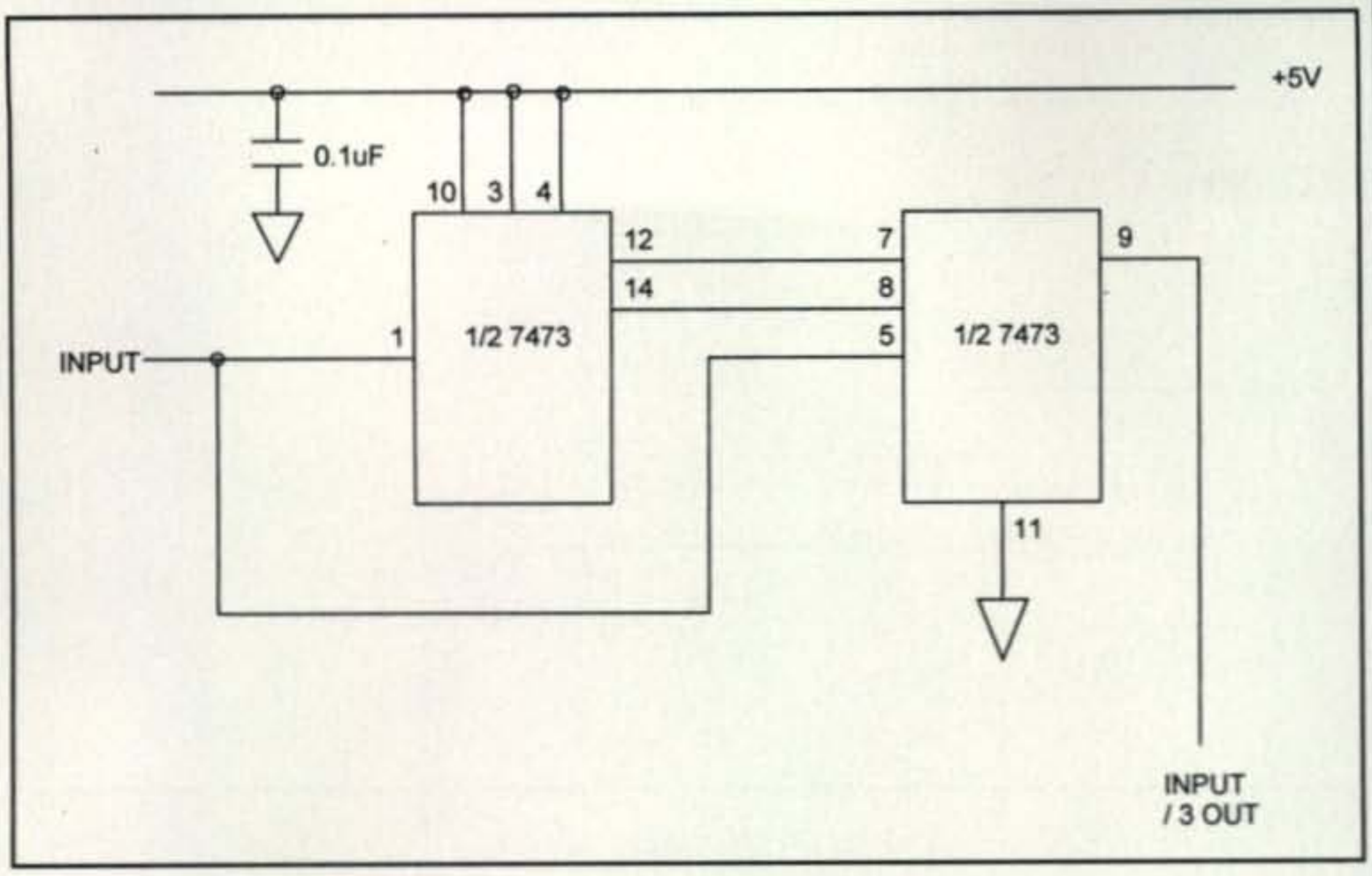


Fig. 2– Divide by three.

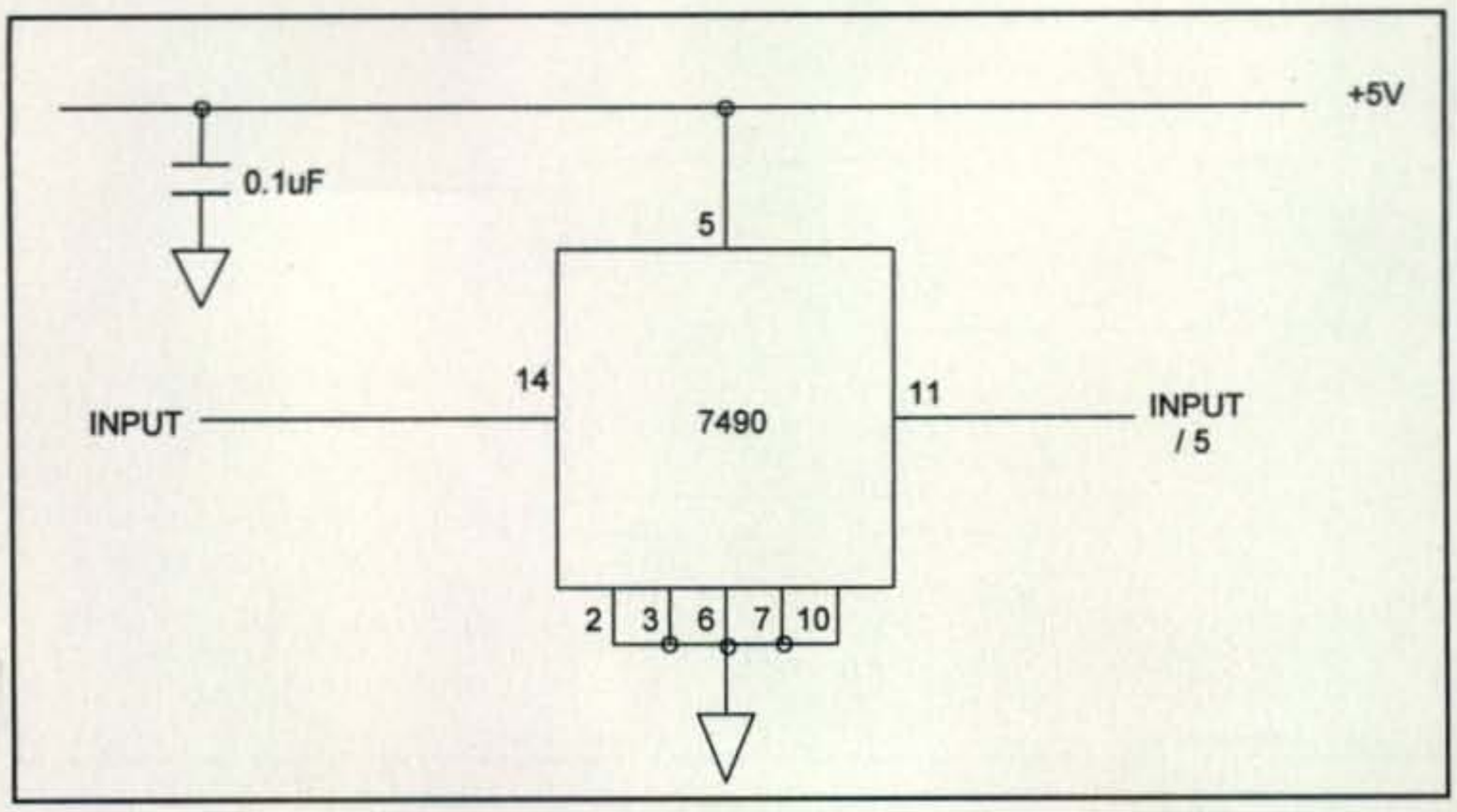


Fig. 3 Divide by five.

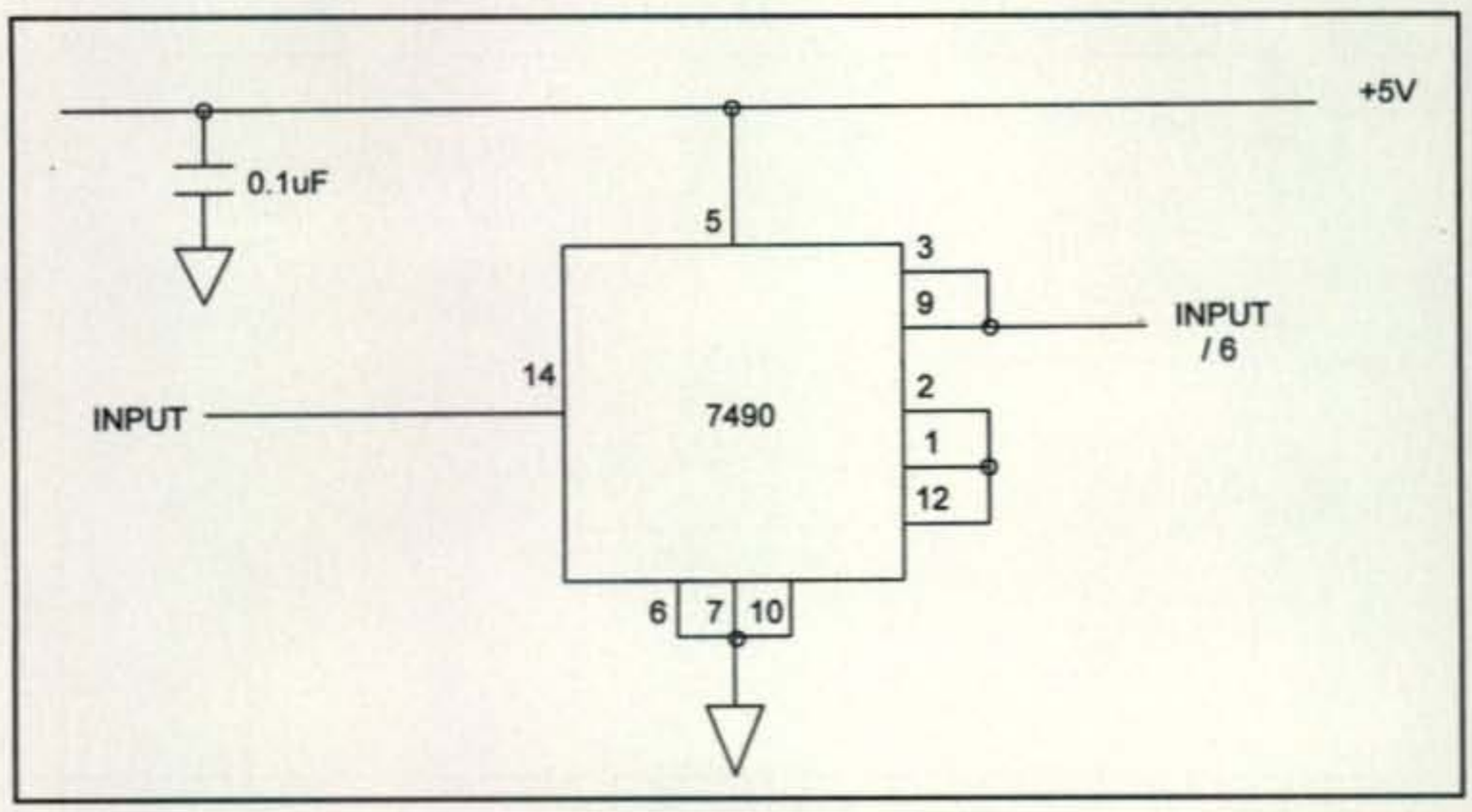


Fig. 4– Divide by six.

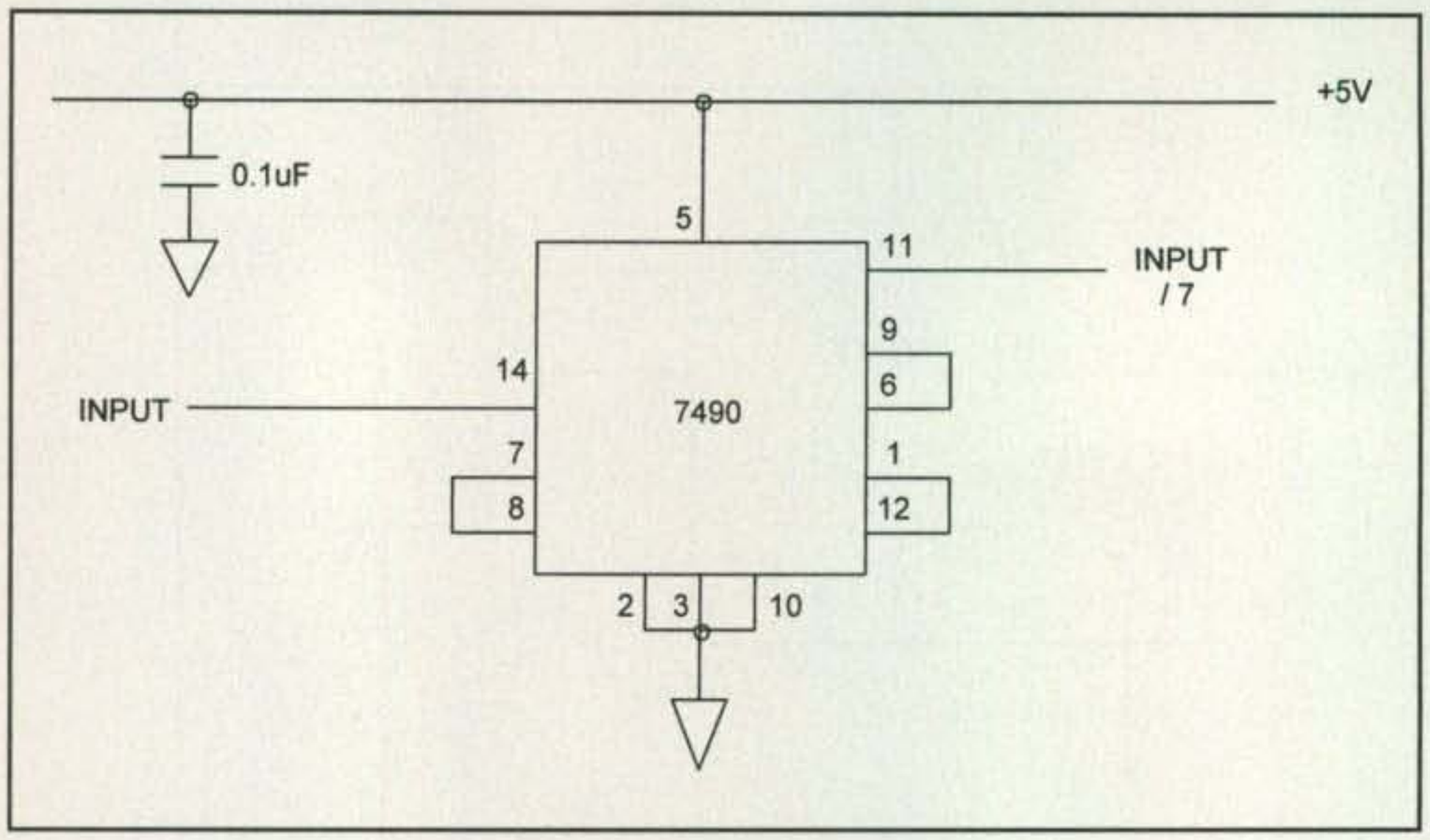


Fig. 5– Divide by seven.

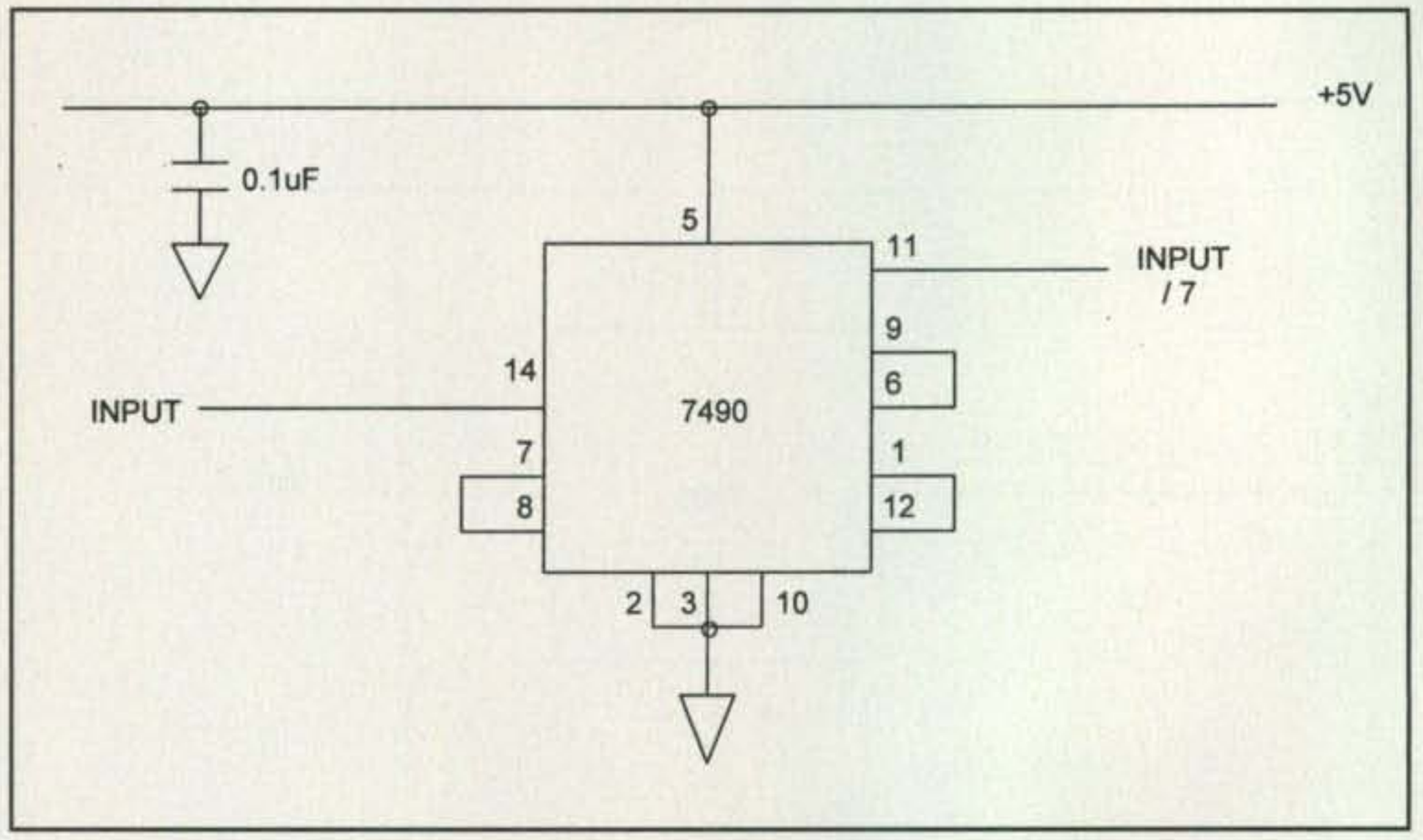


Fig. 6– Divide by eight.

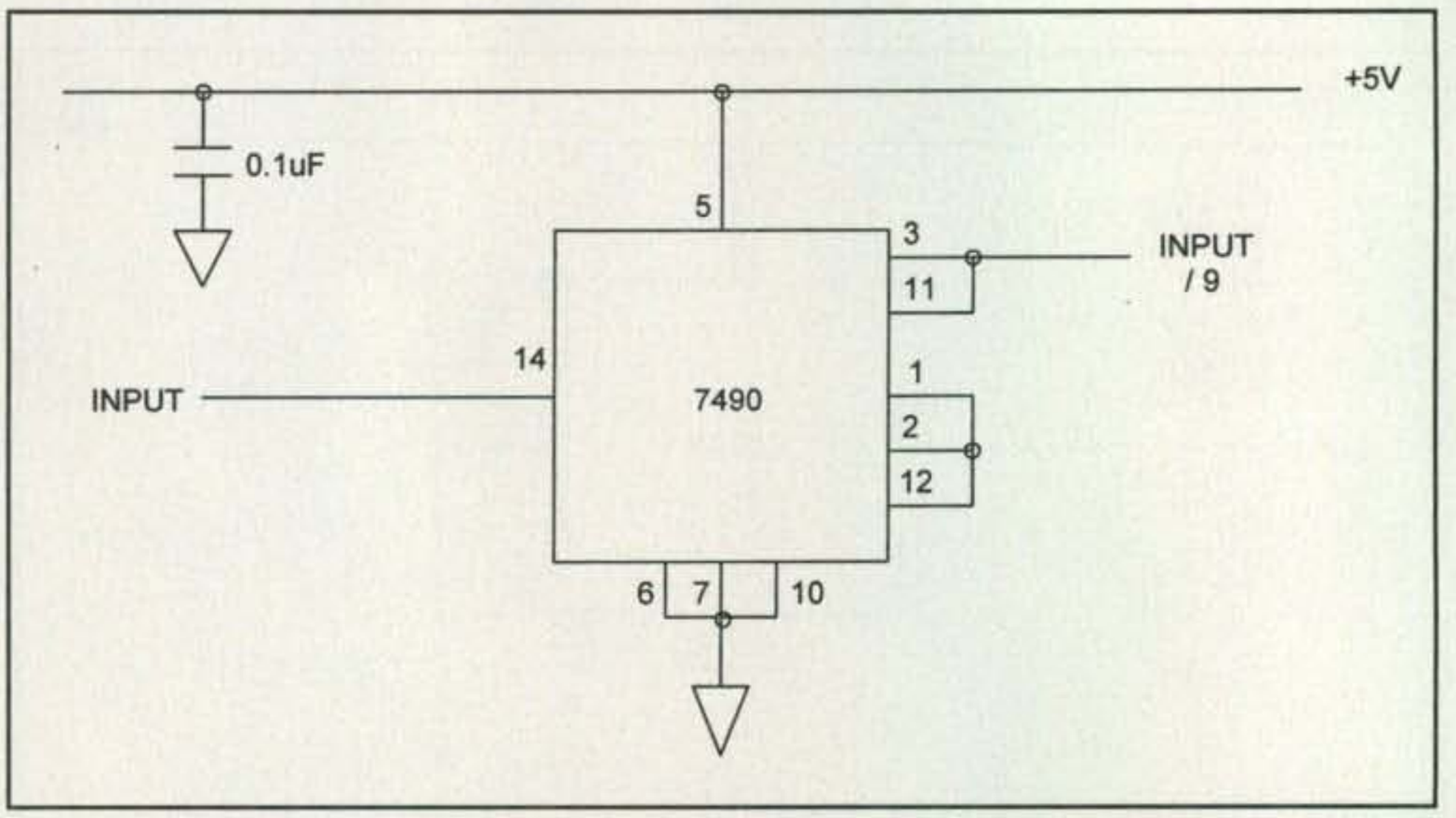


Fig. 7– Divide by nine.

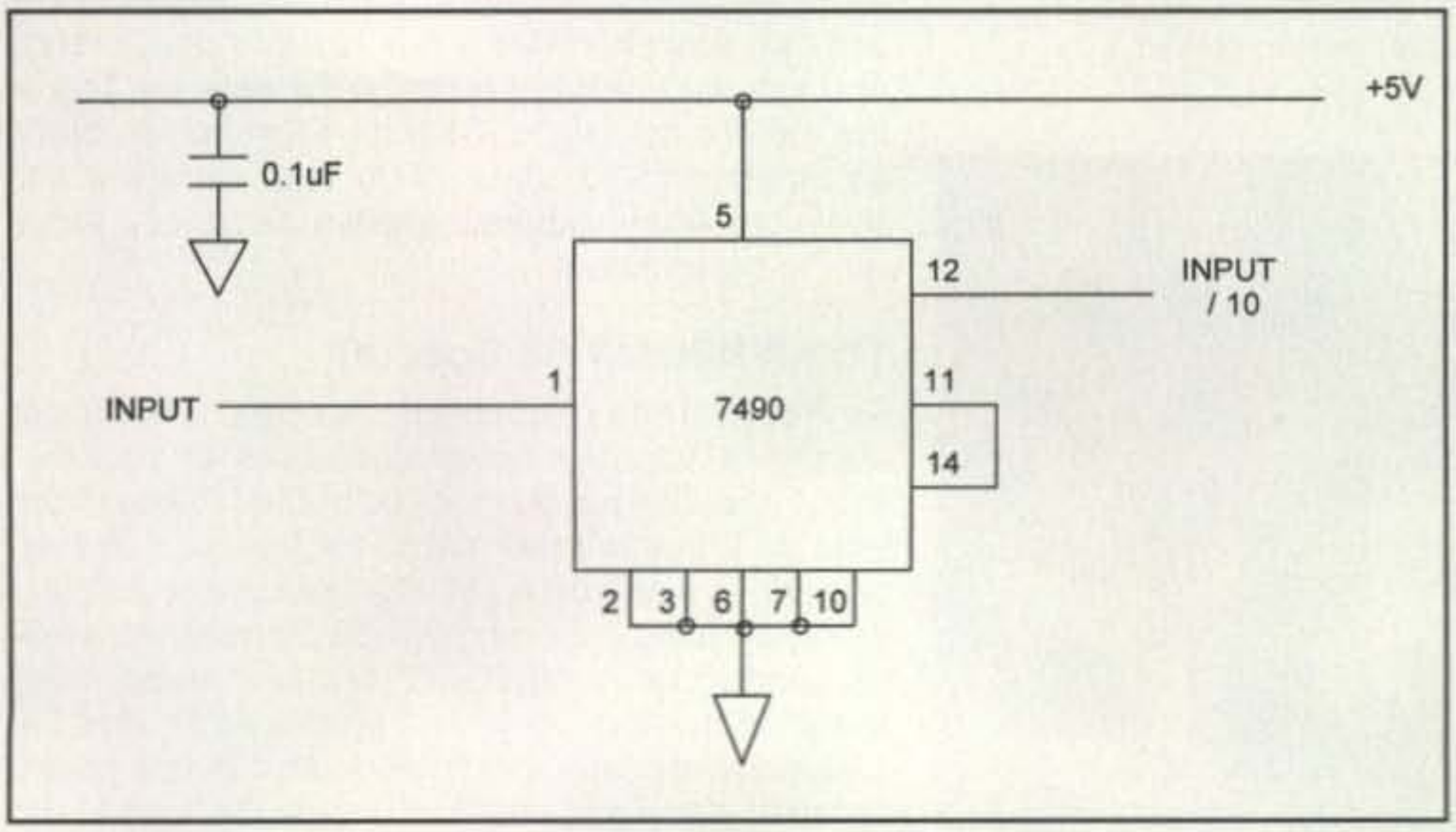


Fig. 8– Divide by ten.

ed by a total of both two and four. Fig. 3 shows the same chip, but this time connected as a divide by three. This completes the use of the 7473 and covers the division ratios of two, three, and four. To divide by factors of five to ten we must switch to the 7490.

The 7490 is a chip that has been around for many years and was usually found in decimal-counting units of all kinds. By clever use of feedback, however, it can easily be set for other division ratios as we will now demonstrate.

Fig. 3 is a divide by five circuit. Fig. 4 is a divide by six circuit. Fig. 5 is a divide by seven circuit. Fig. 6 is a divide by eight circuit (which, by the way, could also be implemented with four flip-flops). Fig. 7 is a divide by nine circuit, and finally, fig. 8 is the common divide by ten circuit. Keep in mind that the 7473 and 7490 circuits can also be connected together, so if you need to divide by 15, for example, simply connect the divide by three (7473) to the divide by five (7490), and so on.

Now, with any whole-number crystal in the range of 2 to 20 MHz you should be able to come up with a divided output that will give you the harmonics you wish. It should be noted that if you do build the complete frequency standard described, you will have a way to determine your exact operating frequency or check the calibration of your digital display. The standard frequency radio stations we spoke about last month (WWV) are extremely accurate, and although the circuits described here are not capable of meeting their overall stability, they will still be well within the resolution of your digital-readout device.

As a final note, the circuits described here are not just limited to frequency standard applications. They can be used anywhere a digital divider is needed.

73, Irwin, WA2NDM

BY DAVE INGRAM,* K4TWJ

In The Spotlight: More Vintage Homebrew

Friends, your interest in classic rigs is incredible, and their associated cost occasionally borders on insanity (we're crazy about vintage tube-type gear!). Fortunately, there is an affordable alternative for our technically inclined friends—homebrewing simple one- and two-tube transmitters and mating them with refurbished receivers of the same era. The pursuit is enjoyable, exhilarating, and as you continue telling us after each vintage rig "World of Ideas" column appears here in *CQ*, a most delightful experience. I fully agree, and more nostalgia specials are the focus of this year's double feature. The transmitters covered this month are thanks to John Karasz, WB2MGY, Charles Zarek, W9SAY, Bill Shepard, W4YEG, and yours truly Dave, K4TWJ.

Before proceeding, I must remind readers that our highlighted transmitters are powered by real zap-you-witless high voltage. Anyone unfamiliar with vacuum-tube gear or safe procedures for working around high voltages should not even consider building or testing our featured transmitters. Just enjoy the views and details.

Incidentally, if you are competent with high voltages and elect to homebrew one of our featured gems, and if you wish to send me a small box or self-addressed well-padded mailer, Paul Phillippe, WBØMPG, sent me a small box of genuine Fahenstock clips to share with everyone. We only ask that you share fairly (six to eight per person) and include sufficient postage for safe mailing of the metal clips to you. Check with me at <k4twj@cq-amateur-radio.com> to be sure clips are still available when requesting them. Now let's focus on the transmitters.

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

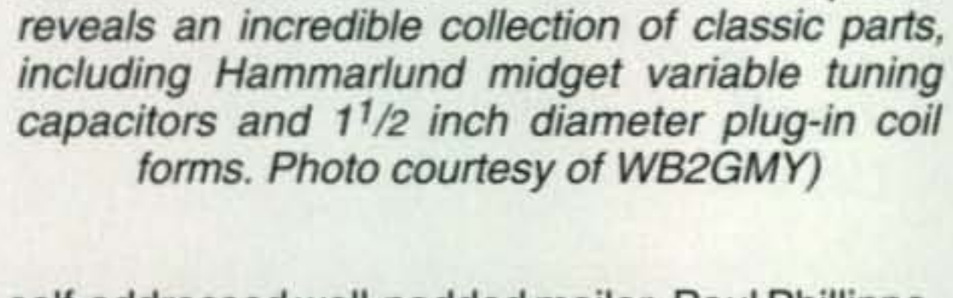


Photo B– Rear view of the WB2GMY 38 Special reveals an incredible collection of classic parts, including Hammarlund midget variable tuning capacitors and 1 1/2 inch diameter plug-in coil forms. Photo courtesy of WB2GMY)

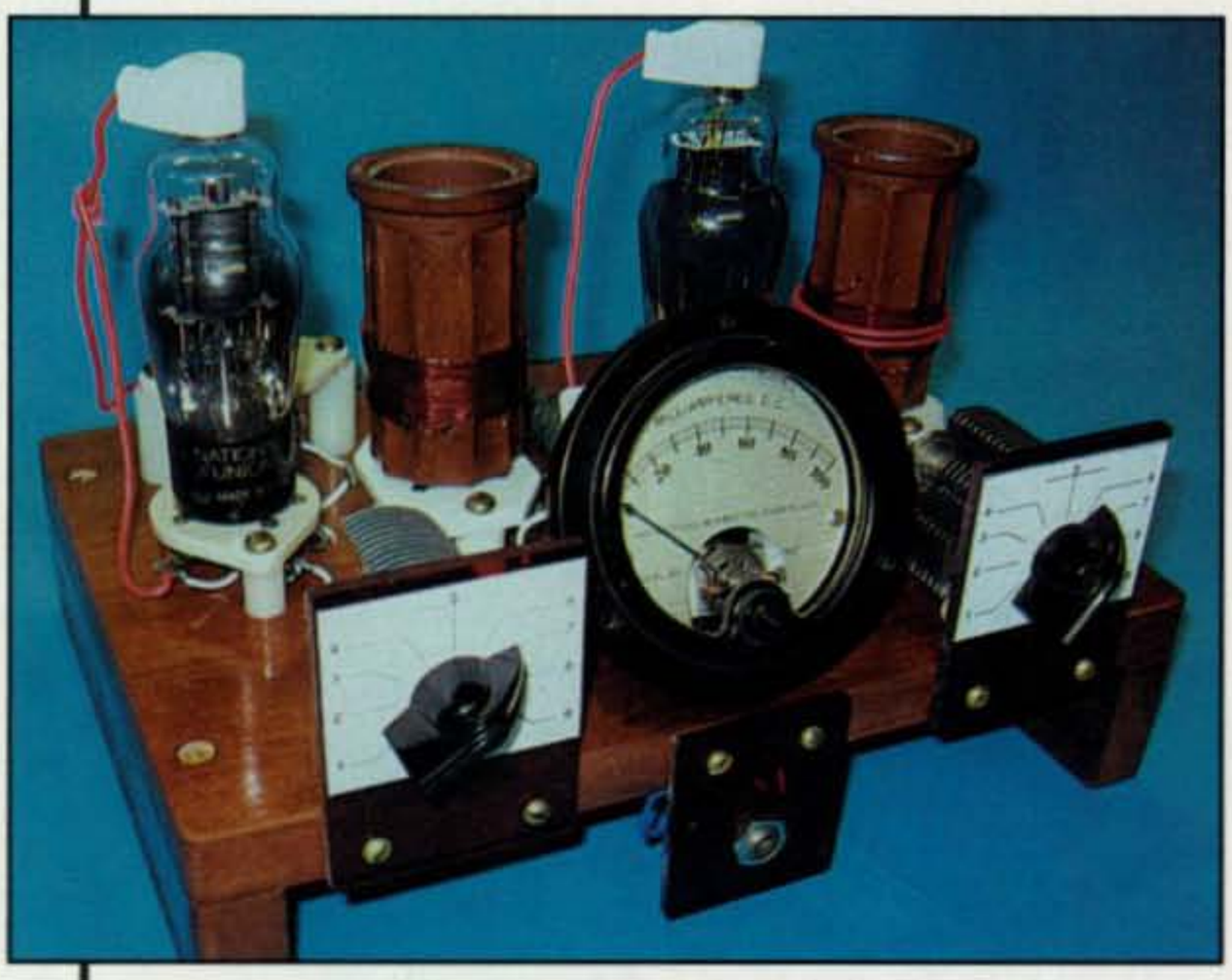


Photo A– Dazzling and beautiful appropriately describe this dual type 38 tube 80/40-meter transmitter John Karasz, WB2GMY, built and designated the "38 Special." Look at those ceramic grid caps, those lily-white isolantite sockets, the round-faced Weston analog meter, and the soft glowing base! (Photo courtesy of John, WB2GMY)

The WB2GMY 38 Special

As Father Time relentlessly marches on and our supply of vacuum tubes continues to dwindle, many beautiful but overlooked bottles (tubes) from eras past become fair game for inclusion in low-power transmitters. A shining example of that fact is the beautiful wood-based 38 Special transmitter John Karasz, WB2GMY, recently made using a pair of number 38 tubes (photos A, B, and C). Classic glamour is vividly abundant in this gem's ceramic grid caps, authentic type 38 tubes and their lily-white isolantite sockets, the round-faced Weston analog meter, and the meticulously polished wood base.

John built the transmitter from an article published in *Short Wave Craft* magazine of November 1936. It was originally developed as a battery-powered rig for rural-area or emergency use and only worked 80 meters, but John modified the plate circuits for 40-meter operation. Output power depends on battery "juice" and typically runs between 1.5 watts with 135 volts and 4 watts with 180 volts. This plate potential was easily obtained during the 1930s, '40s, and '50s using readily available 45-volt B batteries. Snapping

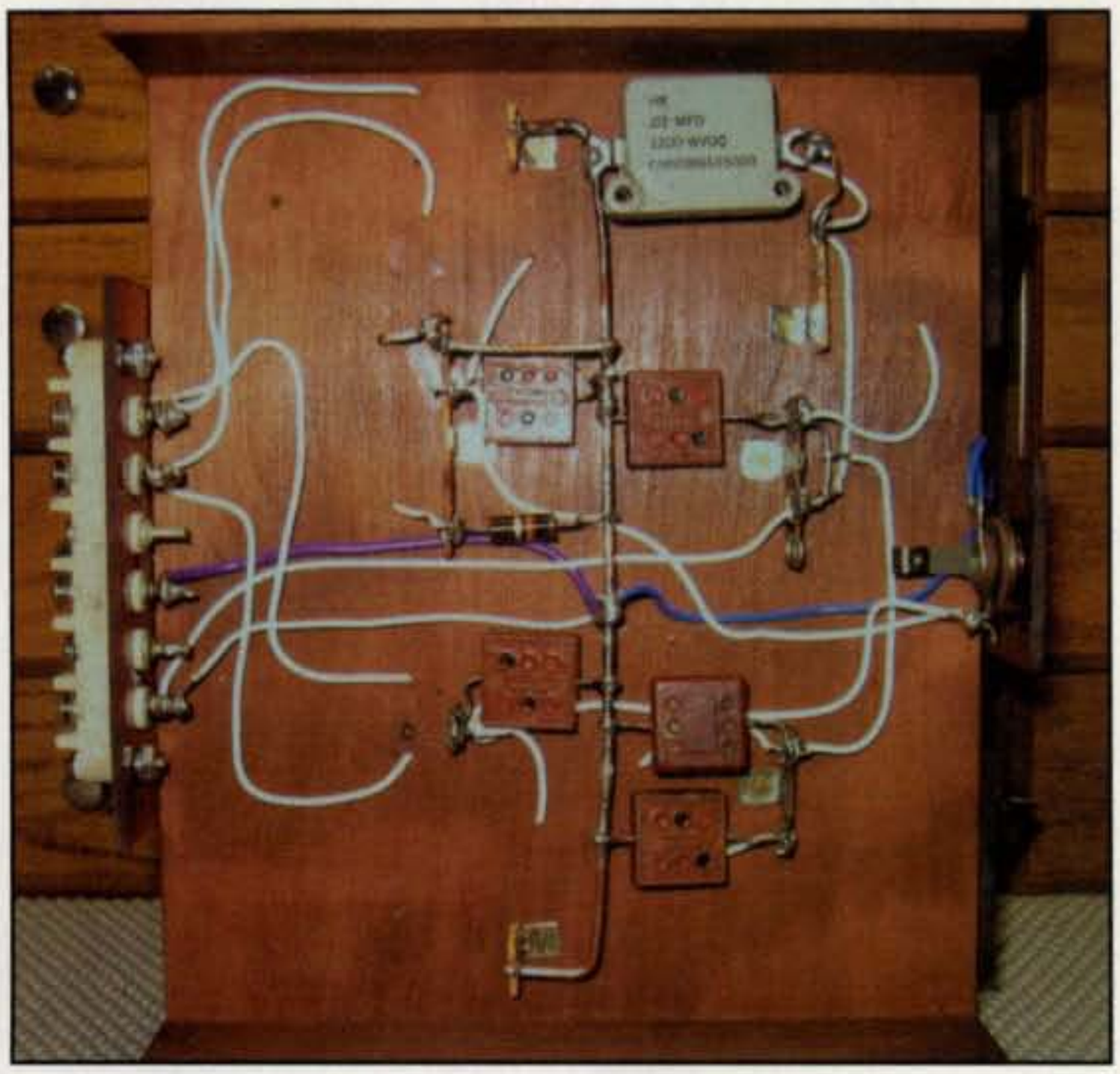


Photo C– Bottom view of the WB2GMY transmitter showing bus-bar ground for all components running from left to right, plus a nice complement of "domino" type capacitors. Transmitter measures 7 1/2 by 10 1/2 inches.

together a series string of fifteen or twenty 9-volt batteries is a convenient way to acquire that voltage today, and they are often available at two for a dollar at Dollar Stores. Current drain is typically 30 or 40 ma key-down, and these "general-purpose" batteries are usually rated around 150 to 200 ma (or higher), so their life is reasonably good. The tube filaments require 6 volts (or you can wire them in series for 12 volts), so a couple of lantern batteries work fine. If preferred, you can also replace the batteries with a homebrew AC supply.

Shifting focus to the transmitter's circuit diagram (fig. 1), you will notice the tubes have a 5-pin base with the two largest pins being the filament and grid 1, the control grid connected to the top plate (tube pin-out shown in bottom view). The 38 tube is so well-shielded that external feedback assistance is necessary to sustain solid oscillation. This is accomplished by soldering a short piece of insulated hookup wire to the oscillator stage's grid lead and wrapping the other insulated end two or three times around the plate lead. As shown, only the output /amplifier 38 is (cathode) keyed and the oscillator runs continuously (that's why switch "SW" is connected in series with B–). John apparently tired of switching on the B– to transmit, so he rewired the two tubes' cathodes in parallel so both stages were energized on key closures. No chirp resulted. Bear in mind that unless disabled, a continuously operating oscillator would produce heterodyne interference on the crystal/receive frequency.

The plate coils in John's 38 Special were originally described as 16 turns of No. 18 wire wound on a 1 1/2-inch diameter plug in coil form and spaced for a length of 1 3/8 inches for 80 meters. John changed the coils to 12 turns of No. 18 or 20 wire close wound (on a 1 1/2-inch form) and substituted 140-pF tuning capacitors for 40 meters. He also pointed out that he used a grid-dip meter to help determine coil turns according to on-hand tuning capacitors—a rapidly disappearing technique that still works great. The antenna pick-up coil, incidentally, is two or three turns of insulated hookup wire wound over the center of the output plate coil and position-tweaked for maximum output.

Tune-up and operation is straightforward and simple. Peak the oscillator section's tuning capacitor for maximum output (or minimum current at the optional meter jack). Next adjust the amplifier/power-output section's tuning capacitor for maximum transmitted signal strength or minimum plate current (which may "peg" a 25-ma meter; a 50-ma meter may be preferred here). Problems? If no oscillation, rebuild the grid-to-plate "gimmick" capacitor. No output/plate current "dip"? Add or remove a couple of turns from the output plate coil. Questions? John's

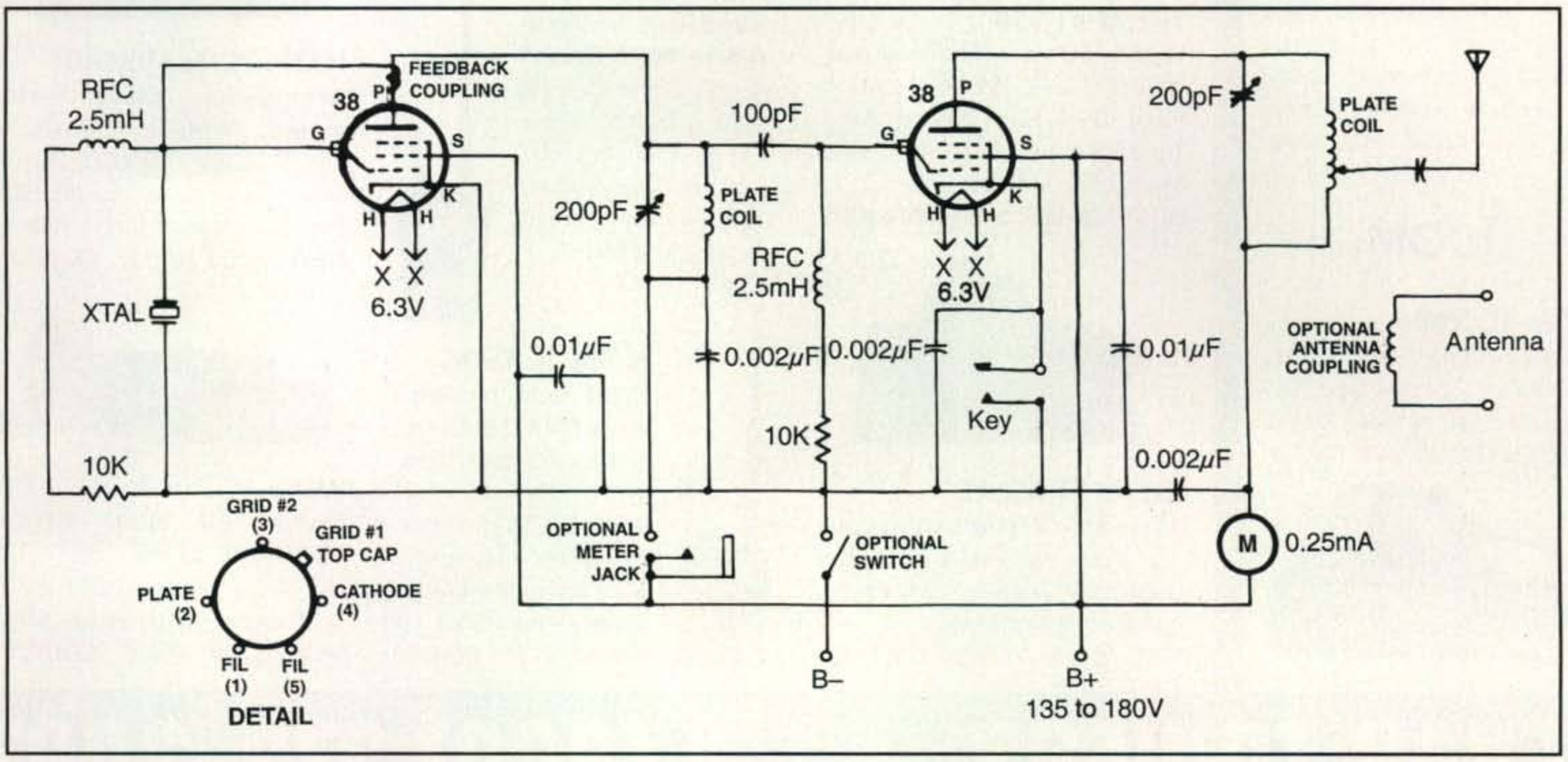


Fig. 1– Circuit diagram of the WB2GMY 38 Special transmitter. The rig was originally described in November 1936 Short Wave Craft *magazine. Tube pin-outs shown are bottom view.*

YOUR NUMBER FOR SAVINGS (800) 272-3467

YAESU FT-7800R
Mobile 2m/70cm FM XCVR, 50/40 Watts, Built-in CTCSS Tone Encode/Decode/Scan, 1000 Memories Channels, and More!
$10 YAESU COUPON!

YAESU

YAESU FT-1802M
Mobile 2m FM XCVR, 50 Watts, Built-in CTCSS Tone Encode/Decode/Scan, 221 Memories Channels, and More!
$10 YAESU COUPON!

ICOM IC-208H
Mobile 2m/70cm FM XCVR, Data Jack, Extended RX, CTCSS Tone Encode/Decode/Scan, DTCS Encode/Decode, 500 Memory Channels, More!
NEW $20 ICOM COUPON!

ICOM

ICOM IC-V8000
Mobile 2m FM XCVR, 75 Watts, CTCSS Tone Encode/Decode/Scan, 200 Memories, More!
CALL FOR YOUR LOW PRICE!

TEXAS TOWERS
Savings As Big As Texas!

- **Great Gear**
- **Great Deals**
- **Great Service**
- **Free UPS S/H!***

*On all radio orders shipped within the contiguous USA.

Alfa-Spid • Alpha-Delta • Ameritron • ARRL • Astron • Bencher • Butternut • Cal-Av • Comet • Cushcraft • Daiwa • Diamond • Force 12 • Gap • Glen Martin • Hustler • Hygain • Icom • Kantronics • Kenwood • Lakeview • Larsen • LDG Electronics • M2 • MFJ • Mirage • Palstar • Polyphaser • Phillystran • Rohn • Tex-Com • Times Microwave • Unadilla • Universal Tower • US Tower • Van Gorden • Vectronics • Vibroplex • Yaesu

YAESU

YAESU FT-2000D
Competition Class, All Mode HF/6m XCVR, 32-Bit DSP, Automatic Tuner, CW & SSB Memory Keyers, 200 Watts, and More!
$200 INSTANT YAESU COUPON!

YAESU FT-2000
Built-In Power Supply, 100 Watts!
$100 INSTANT YAESU COUPON!

YAESU FT-950
World Class Performance, HF/6m XCVR, 32-Bit Floating Point DSP, High Speed Auto Tuner, Built-in CW Keyer, and Much, Much More!
IN STOCK FOR FAST DELIVERY!

YAESU FT-450AT
Affordable Performance. Covers HF/6m. IF-Level DSP, Multi-color LCD Display, CW Keyer, Auto Tuner, and More.
NEW $120 YAESU COUPON!

YAESU VX-7R
6m/2m/220 MHz/70cm HT XCVR, Built to MIL-STD 810, Dual RX, Extended RX, CTCSS Encode/Decode/Scan, 900 Memory Channels, Li-Ion Battery, and More!
$40 YAESU COUPON!

YAESU VX-6R
2m/220 MHz/70cm Triband FM XCVR, Backlit DTMF Keypad, Extended RX, Built-in CTCSS Tone Encode/Decode, 900 Memories, Li-Ion Battery Pack, and Much More!
GREAT LOW PRICE!

ICOM IC-91AD
Hand Held 2m/70cm D-Star XCVR, Backlit Keypad, Extended RX (500 kHz–999 MHz), CTCSS Tone Encode/Decode/Scan, Over 1300 Memories, Li-Ion Battery, and More!
GREAT LOW PRICE!

ICOM IC-T90A
Hand Held 6m/2m/70cm FM XCVR, Backlit Keypad, Extended RX (500 kHz–999 MHz), CTCSS Tone Encode/Decode/Scan, 555 Memories, Li-Ion Battery, and More!
GREAT LOW PRICE!

ICOM

ICOM IC-7800
World Class Performance. All Mode HF/6m XCVR, Massive 7" Color TFT-LCD Display with Bandscope Function, 32-Bit DSP, Automatic Tuner, 200 Watts Output, CW & SSB Memory Keyers, and Much More!
CALL FOR YOUR LOW PRICE!

ICOM IC-756PROIII
Competition Class Performance. All Mode HF/6m XCVR, Big 5" Color TFT-LCD Display with Bandscope, 32-Bit DSP, Auto Tuner, and Much More!
NEW $300 ICOM COUPON!

ICOM IC-7000
Mobile All Mode HF/6m/2m/70cm XCVR, 2.5" TFT-LCD Color Display, DSP, Voice Synthesizer, and Much More!
NEW $200 ICOM COUPON!

TEXAS TOWERS

1108 Summit Avenue, #4 • Plano, TX 75074
Hours: M-F 9 AM–5 PM Central Time
Email: sales@texastowers.com

MASTERCARD
VISA • DISCOVER

TOLL FREE **(800) 272-3467**

Proudly Serving Ham Operators Since 1978!
Visit Our Website for More Great Deals:
http://www.texastowers.com

MORE DEALS THAN YOU CAN SHAKE A STICK AT!

Call or email for our new Ham Radio Catalog!

TEXAS TOWERS

Savings As Big As Texas!

Alfa-Spid • Alpha-Delta • Ameritron • ARRL • Astron • Bencher • Butternut • Cal-Av • Comet • Cushcraft • Daiwa • Diamond • Force 12 • Gap • Glen Martin • Hustler • Hygain • Icom • Kantronics • Kenwood • Lakeview • Larsen • LDG Electronics • M2 • MFJ • Mirage • Palstar • Polyphaser • Phillystran • Rohn • Tex-Com • Times Microwave • Unadilla • Universal Tower • US Tower • Van Gorden • Vectronics • Vibroplex • Yaesu

KENWOOD

KENWOOD TS-2000

Huge Band Coverage, All Mode HF/6m/2m/70cm, Auto Tuner, CW Memory Keyer, Dual RX, Dual DSP, Built-In 1200/9600 bps TNC, TCXO, and Much More!

NEW $80 KENWOOD COUPON!

KENWOOD TS-480SAT

Mobile Performance, All Mode HF/6m, Auto Tuner, Separate Front Control Panel, 16-Bit DSP, CTCSS Encode/Decode, More!

NEW $180 KENWOOD COUPON!

KENWOOD TM-D710A

Mobile 2m/70cm FM XCVR With Built-In TNC, Separate Front Control Panel, CTCSS Encode/Decode, 1000 Memory Channels, and Much More!

CALL FOR YOUR LOW PRICE!

TIMES LMR COAX

High performance coax cable. Offers lower loss than RG-213/U without the water displacement problems common to 9913 and 9086 types.

HUGE LMR STOCK, CALL!

cushcraft

CUSHCRAFT A3S

Three element triband beam with optional 30/40m kit. Compact yet rugged design with all stainless steel hardware. Perfect for limited space application.

CALL FOR MORE CUSHCRAFT!

ALUMINUM TUBING

O.D.	WALL	COST/FT.
6063-T832 DRAWN ALUMINUM TUBING		
.375"	.058"	$1.00
.500"	.058"	$1.10
.625"	.058"	$1.20
.750"	.058"	$1.30
.875"	.058"	$1.40
1.000"	.058"	$1.50
1.125"	.058"	$1.65
1.250"	.058"	$1.85
1.375"	.058"	$2.05
1.500"	.058"	$2.25
1.625"	.058"	$2.55
1.750"	.058"	$2.80
1.875"	.058"	$3.05
2.000"	.058"	$3.30
2.125"	.058"	$3.80

M2 KT-34M2

Four element, short boom triband beam is long on performance! Rugged design with all stainless steel hardware offers broad gain, high F/B ratio, and flat match. Supplied with broadband ferrite balun rated at 3000 Watts.

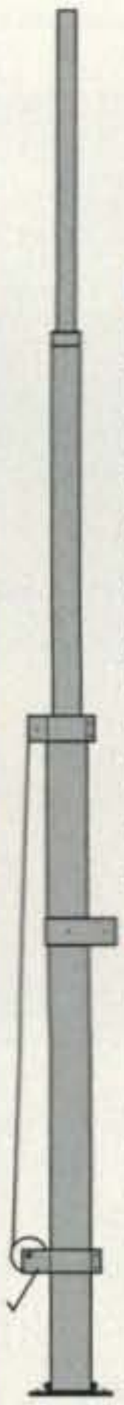
CALL FOR M2 ANTENNAS!

Yaesu G-1000DXA

ANTENNA ROTATORS

Hygain, CD-45II	$369
Hygain, Ham-IV	$509
Hygain, Ham-V	$849
Hygain, T2X	$569
Hygain, T2X Digital	$929
Hygain, HDR-300A	$1269
M2, OR-2800PX	$1379
Yaesu, G-450A	$249
Yaesu G-550	$299
Yaesu, G-800SA	$329
Yaesu, G-800DXA	$409
Yaesu, G-1000DXA	$499
Yaesu, G-2800DXA	$1089
Yaesu G-5500	$599

ROTOR CABLE IN STOCK, CALL!



US TOWER CORPORATION

MA SERIES

Neighbor Friendly Design offers a flagpole-like appearance, while supporting antenna loads up to 22 square feet. Models range from 40–85 feet in height and come with a hand winch and house bracket. Optional self supporting bases are also available.

TOWER EXPERTS

We Ain't Braggin'...

But we've helped so many Hams order US Towers over the years that we've become the US Tower experts. Please call for help selecting the perfect US Tower for your QTH!

Universal

B-18 SERIES

Light Duty Aluminum Self Supporting Towers. Five models range from 30–50 feet in height, and support up to 12 sq. ft. of antenna load.

CALL FOR MORE INFO!

B-26 SERIES

Medium Duty Aluminum Self Supporting Towers. Thirteen models range from 30–90 feet and support up to 34.5 sq. ft. of antenna wind load.

CALL FOR MORE INFO!

B-30 SERIES

Heavy Duty Aluminum SelfSupportingTowers. Nineteen models range from 40–100 feet, and support up to 34.5 sq. ft. of antenna wind load.

CALL FOR MORE INFO!

TEXAS TOWERS

1108 Summit Avenue, #4 • Plano, TX 75074

Hours: M-F 9 AM–5 PM Central Time

Email: sales@texastowers.com

MASTERCARD
VISA • DISCOVER

TOLL FREE **(800) 272-3467**

Proudly Serving Ham Operators Since 1978!

Visit Our Website for More Great Deals:
http://www.texastowers.com

Photo D– This work of art is a 40-meter 6CL6 transmitter built by Charlie Zarek, W9SAY, and it delivers a clean 5-watt signal. It is loaded with good looks and class, and the pair of grid-voltage-stabilizing OB2s blink blue in time with CW keying for extra flash. (Photo courtesy of W9SAY)

e-mail address is <kraszj@optonline.net>. Our thanks and compliments to John, WB2GMY, on his shared views of this outstanding transmitter.

Jewel Box Jewel

In reflecting back on the 1960s, a fair number of our readers may recall a type 6CL6 tube frequently being used in driver stages of some HF transceivers. Some amateurs may still have a spare 6CL6 plus a pair of 6146s affectionately packed in a closet for quickly fixing those surprise Saturday night emergencies (been there, done that, right?).

Now thanks to build-it inspiration from Charles Zarek, W9SAY, here's your chance to give the tube a second life in a show-stopping 40-meter, 5-watt transmitter. The 6CL6 was a hearty little bottle that might be described as similar to the popular 6AQ5, except different. What? Both are miniature type beam power amplifier tubes, but the 6CL6 has a 9-pin base whereas the 6AQ5 has a 7-pin base. The 6CL6 also has a slightly larger filament and output rating (2.8 watts versus 2.0 watts for the 6AQ5, which radio amateurs often "push" beyond respectable limits). Ah, but who knows? Maybe "pushing" helped produce that robust "double-strength tube sound" that just can't be equaled by a solid-state rig. Unquestionably, vacuum tubes reign supreme.

Now focusing on the W9SAY-built 6CL6 transmitter (photo D), Charles says, "The chassis is black-enamel aluminum plate mounted on a small wooden box purchased at a craft store. I gave it a coat of polyurethane varnish and added a 40-mm fan plus a 1-inch hole with screened vent plug for under-chassis cooling." Jolly good show, Charles. That idea is applicable to numerous other rigs, both homebrewed and commercially built.

Looking at the rig's circuit diagram (fig. 2), we see a traditional crystal-oscillator arrangement with a shunt-fed plate circuit—that is, plate voltage passes through the 2.5-mHy choke to the plate but is blocked from reaching the tank coil and tuning capacitor by the .001-µF capacitor. Similarly, the .001-µF capacitor passes RF energy to the tank coil and capacitor, while the 2.5-mHy choke stops (or "chokes out") RF energy from reaching the high-voltage line. Any stray RF energy slipping by the choke or induced into wiring is bypassed to ground by the .005-µF capacitors. (Did you catch that quick burst of theory?)

Incidentally, the trimmer capacitor connected to the tube's grid ensures proper operation and is adjusted for smooth operation with minimum chirp. The series-connected 0B2s are a special frill added to stabilize grid voltage and help minimize any potential for chirp with keying. They are not mandatory for rig operation, but considering how they flash with a bluish glow with keying, who could resist including them in the little transmitter? Our special thanks to W9SAY for sharing details of his special pride (e-mail: <ckzarek@sbcglobal.net>).

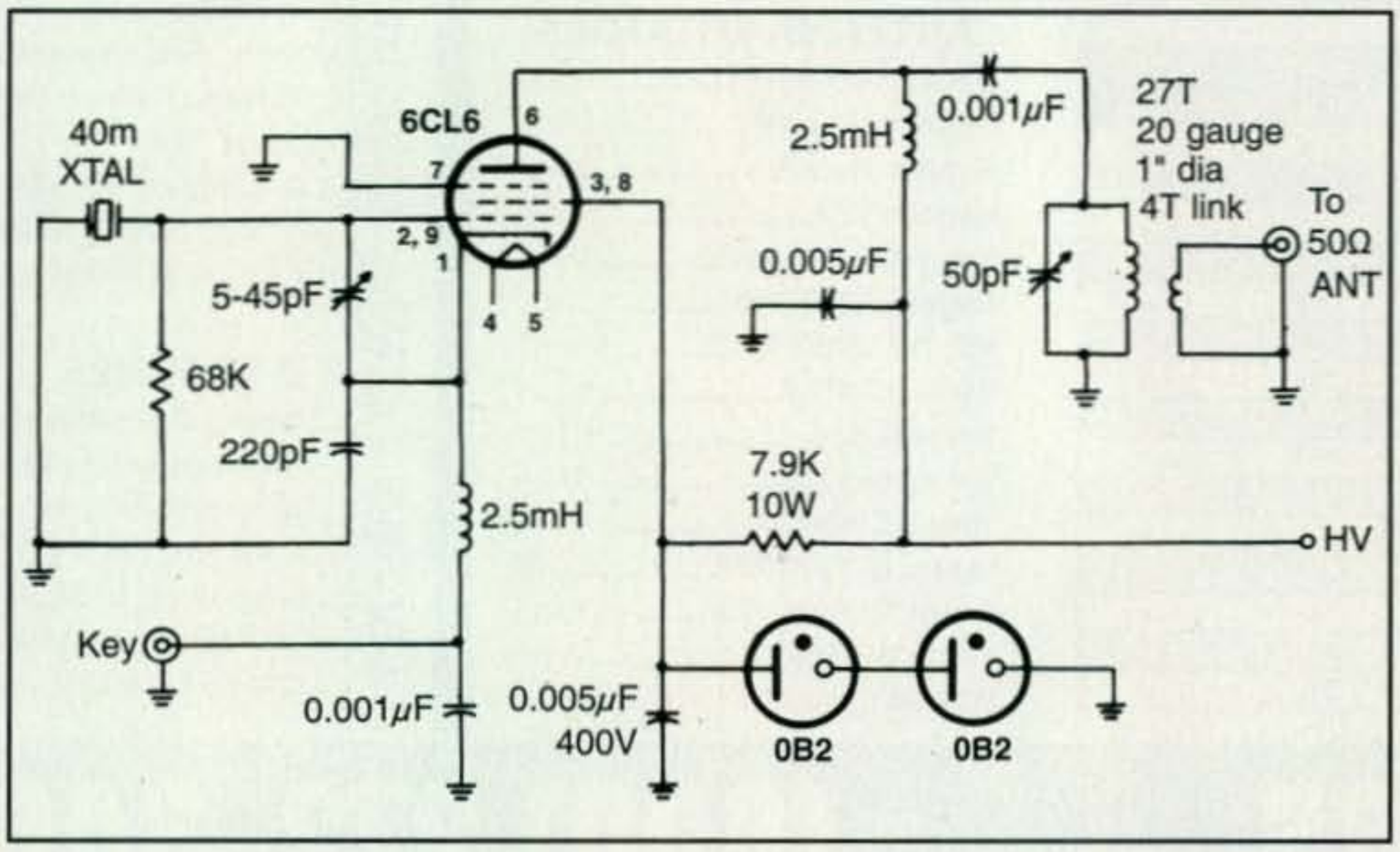


Fig. 2– Circuit diagram of the "class and flash" 6CL6 ransmitter built by W9SAY. (Discussion in text.)

Simply Irresistible!

Have you ever visualized building a one- or two-tube transmitter into one of those great-looking AM radio cabinets of the 1950s or '60s and possibly adding a mating receiver in a similar retro cabinet? The pair would definitely capture attention, and they would be super fun to occasionally use on the air today. Being hopelessly infatuated by the idea, I always browse hamfest flea markets in search of suitable candidates. I also believe that AM radios in good or repairable condition are prized collectables that should not be destroyed, so most radios are admired rather than purchased (sound familiar?).

While attending a recent hamfest one such radio caught my attention and another caught my wallet (photos E and F). The Charlie McCarthy radio was a "basket case" that Bill Shepard, W4YEG, restored for his daughter, Sharon Shepard Harget. The case was in really bad condition and required many hours of care, using everything from PVC to automobile bondo to rebuild it before painting. What a heart-throb, and yes, the radio works great.

Photo E– Anyone appreciating classic tube-type ham gear will surely go crazy over the Majestic Charlie McCarthy AM radio Bill Shepard, W4YEG, rescued from extinction and restored to like new for his daughter, Sharon Shepard Harget. Obviously, it has now acquired family heirloom status. (Photo courtesy of W4YEG)

Photo F– How many of our readers remember this sweet little four-tube AC/DC Arvin AM radio? It was especially noted for its "backward dial" (550 kHz on the right rather than the left side), it ran hot as a firecracker (four big a bottles in a tiny metal cabinet), and it had quite a "kick" when plugged backwards into a home 120-volt outlet. Oh those wonderful days of yesteryear! (Photo by K4TWJ)

The red-case Arvin is a little four-tube AC/DC delight like the ones I enjoyed repairing and occasionally listening to as a grade schooler. It lacked a built-in loop antenna (you just clipped its antenna wire to a metal screen), and it was called a "kitchen radio,"probably because you put it in a kitchen window over a sink, turned on the cold water while tuning in a station, and lit up like a light bulb while being fried by AC! No, I did not convert the dear little Arvin (banish the thought!). It is now working great, playing old-time rock 'n roll and occupying a prime position in the shack.

That fills available space for this month. I will thus bow out quickly and gracefully with an invitation to watch for Part II and more one-tubers next month. 73, Dave, K4TWJ

BY BOB JOSUWEIT,* WA3PZO

Cooperation

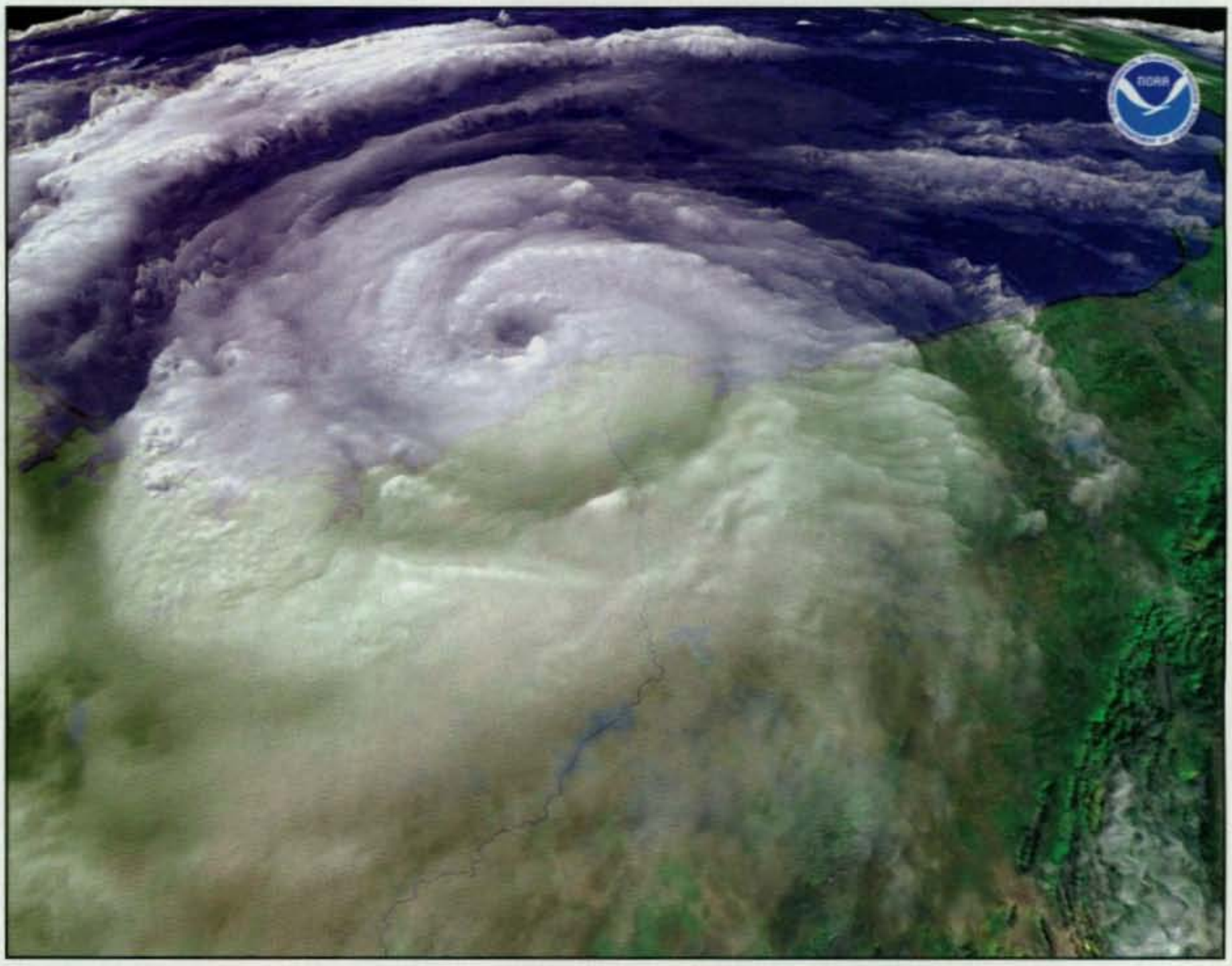
As we approached our deadline for this column, Tropical Storm Edouard came ashore in Texas with 65-mph winds. It was the fifth named storm of the 2008 hurricane season. By early August the National Oceanic and Atmospheric Administration (NOAA) projected an 85-percent probability of an above-normal hurricane season—up from 65 percent in May. The updated outlook included a 67-percent chance of 14 to 18 named storms, of which seven to 10 were expected to become hurricanes, including three to six major hurricanes of Category 3 strength or higher on the Saffir-Simpson Scale. October generally marks the end of the peak hurricane season, although the season doesn't officially end until November 30.

"It is critical that everyone knows the risk for your area, and have a plan to protect yourself, your family, and your property, or to evacuate if requested by local emergency managers. Be prepared throughout the remainder of the hurricane season," Gerry Bell, Ph.D., lead seasonal hurricane forecaster at NOAA's Climate Prediction Center said. "Even people who live inland should be prepared for severe weather and flooding from a tropical storm or a hurricane." The past few months have shown the dependency on amateur radio to be there in an emergency and the close cooperation between amateur-radio-related organizations.

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

Working Together

As Tropical Storm Edouard approached Texas, NASA's Johnson Space Center (JSC) and Marshall Space Flight Center (MSFC) posted a note on their websites. It said in part "JSC will close at noon today (except for those employees completing critical closure activities in advance of Tropical Storm Edouard). . . . Ham radio volunteer operators at JSC and MSFC will be used to



Amateur radio operators throughout the United States and other countries did their part to help provide important communications as Hurricane Dolly headed toward the Texas coast. (Photo courtesy of NOAA)

MFJ *Balanced Line* Antenna Tuner

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

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

Johnson Matchbox

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

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

Everything You Need

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

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

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

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

Compact 7½Wx6Hx8D in. fits anywhere.

Tunes any Balanced Line

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

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

Excellent Balance, Excellent Design

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

MFJ-974HB
$209.95 **A** 1:1 *current* balun is placed on the low impedance 50 Ohm input side to convert the balanced T-Net-work to un-balanced operation. An efficient balun is made of 50 ferrite beads on RG-303 *Teflon*™ coax to give very high isolation. It stays cool even at max power.

Balanced Line = Extremely Low Loss

Balanced lines give extremely low loss.

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

6-80 Meter Balanced Line Tuner

MFJ-974B
$189.95

MFJ-974B, $189.95. Same as MFJ-974H but for 6-80 Meter operation (no 160 Meters).

160-6 Meters All Band Doublet Antenna

MFJ-1777, $59.95. 102 feet doublet antenna covers 160-6 Meters with balanced line tuner. Super strong custom fiberglass center insulator provides stress relief for 450 Ohm ladder line (100 feet included). Authentic *glazed ceramic* end insulators. Handles 1500 Watts.

MFJ *High Current* DC Multi-Outlet Strips

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

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

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

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

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

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

Versatile 5-Way Binding Posts

MFJ-1118
$84.95 **Power** two HF and/or VHF rigs and six accessories from your main 12 VDC supply. *Built-in 0-25 VDC voltmeter.* Two pairs 35 amp 5-way binding posts, fused and RF bypassed for transceivers. Six pairs RF bypassed binding posts with master fuse, ON/OFF switch, and "ON" LED provide 15 Amps for accessories. 12½x2¾x2½ in.

All PowerPoles®

MFJ-1128
$104.95 ***12 outlets, each fused, 40 Amps total.*** Three high-current outlets for transceivers. Nine *switched* outlets for accessories. Mix and match in-cluded fuses as needed (one-40A, one-25A, four-10A, four-5A, three-1A fuses installed). *Built-in 0-25 VDC Voltmeter.* Includes *extra* 12 pairs of *PowerPole®* contacts and *extra* 10 fuses (2 each: 1, 5, 10, 25, 40A) -- *no extra cost.* 12Wx1¼Hx2¾D in.

MFJ-1126
$84.95 ***8 outlets. each fused, 40 Amps total.*** Factory installed fuses: two 1A, three 5A, two 10A, one 25A, one 40A. *Built-in 0-25 VDC Voltmeter.* Includes *extra* 6 pairs of *Anderson PowerPole®* contacts and *extra* 5 fuses (1, 5, 10, 25, 40A) -- *no extra cost.* 9Wx1¼Hx2¾ inches.

PowerPoles® AND 5-Way Binding Posts

MFJ-1129
$114.95 *The best of both worlds!* ***10 outlets, each fused, 40 Amps total.*** Three high-current outlets for rigs -- 2 *PowerPoles®* and 1 versatile high-current 5-way binding post. Seven *switched* outlets for accessories (20A max) -- 5 *PowerPoles®* and 2 versatile binding posts. Mix and match included fuses as needed (1- 40A, 2-25A, 3-10A, 3-5A, 2-1A installed). *Built-in 0-25 VDC Voltmeter.* Includes *extra* 7 pairs of *PowerPole®* contacts, and 10 fuses (2 each,1,5,10, 25, 40A) -- *no extra cost.*12½Wx1¼Hx2¾D in.

MFJ-1124
$64.95 ***6 outlets, each fused, 40 Amps total.*** Four *PowerPoles®* and two high-current 5-way binding posts, Installed fuses: 1-40A, 2-25A, 2-10A, 1-5A, 1-1A. Includes 4 pair *PowerPole®* contacts, and 5 fuses -- *no extra cost.*

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

Free MFJ Catalog
& Nearest Dealer . . . 800-647-1800
http://www.mfjenterprises.com

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

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

After taking this photo during the height of Hurricane Dolly with his cell-phone camera, Gerald Manthey, KC6CNN, sent it on to the Texas EOC using Winlink. (Photo supplied by Army MARS)

provide updated information during normal telephone disruptions." JSC is in Houston; MSFC is in Huntsville, Alabama, out of Edouard's path.

In Victoria, Texas, the *Victoria Advocate* newspaper reported that "Robbie Kirk, the emergency services coordinator for Citizens Medical Center, said staying in regular contact with other hospitals and emergency management agencies is a vital part to making sure the hospital stays operational during inclement weather."

"Communication is definitely key. We have a ham radio and a ham radio operator on staff, a satellite phone, separate land lines from the switchboard, and backup power to all the essential elements in the facility," Robbie said.

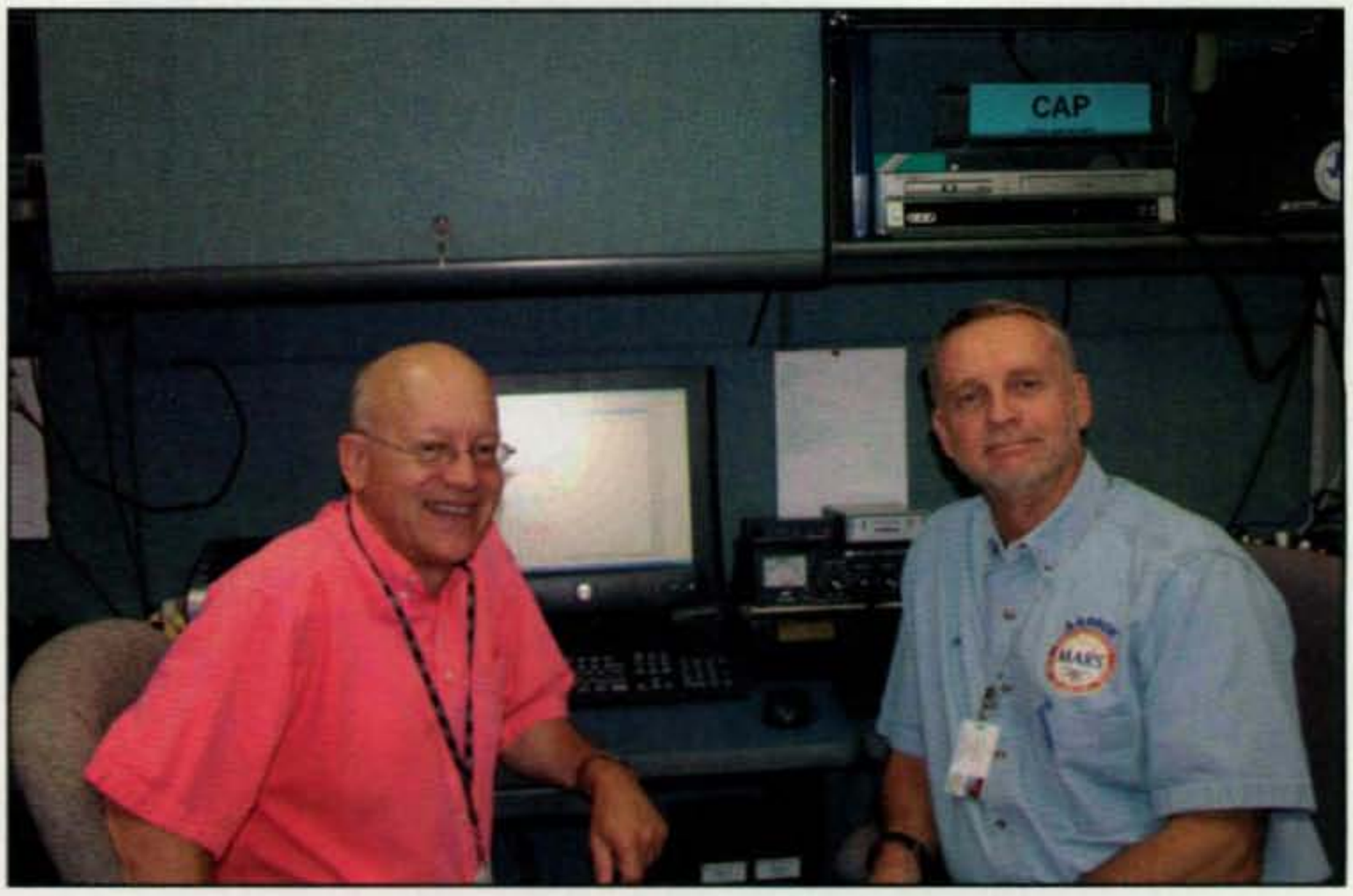
The State of Texas prepared for the arrival of a Category 2 hurricane along the upper Texas coastline, since there have been instances where storms have gained strength just before making landfall. In anticipation of communications outages resulting from loss of power, the State Operations Center (SOC) activated the State's Radio Amateur Civil Emergency Service (RACES) network. The state monitored emergency networks used by RACES and ARES (Amateur Radio Emergency Service). The Texas Military Affiliated Radio Service (MARS) program activated its emergency communications network. MARS manned stations at the SOC and the Joint Operations Center (JOC), located at Texas Military Forces HQ, at Camp Mabry, Austin. The amateur networks provided communications on voice and digital channels. In addition to state operations, many local emergency operations centers activated their hurricane response plans, which included amateur radio.

National Hurricane Center Director Bill Read, KB5FYA, emphasizes the importance of amateur radio in hurricane related disasters. When he has the opportunity he thanks the amateur radio community for its support during past hurricanes and encourages folks to continue to provide that strong support to WX4NHC, the ham station at NHC. This year marks amateur radio's 28th year of service to the National Hurricane Center.

Lessons Learned. While Edouard's top wind speed only reached 65 mph, the Texas amateur radio community took advantage of lessons learned weeks earlier with Hurricane Dolly. Dolly was a strong Category 1 hurricane with maximum wind speeds near 95 mph.

The state activated the RACES network, providing operators at the SOC and several local EOCs. The Amateur Radio Emergency Service (ARES) emergency nets provided critical support to local jurisdictions throughout the impacted and supporting areas. MARS was operational and providing communications to several state and federal locations.

Dave Martin, K5YFO/AAA6TX, Texas Army MARS State Director, explained that many years ago MARSgrams were the staple of the MARS program. He said, "Transferring these messages or any emergency traffic to and from amateur radio was an extremely formal and structured re-file procedure. Now with Winlink and the



Staffing the Texas State Operations Center during Hurricane Dolly were Tom Whiteside, N5TW/ AAR6CQ, and Lew Thompson, W5IFQ/AAR6UK. Whiteside sent information on both the amateur radio and MARS Winlink systems. (Photo courtesy of Army MARS)

multiple affiliations of hams, interoperability between the two radio services is almost seamless."

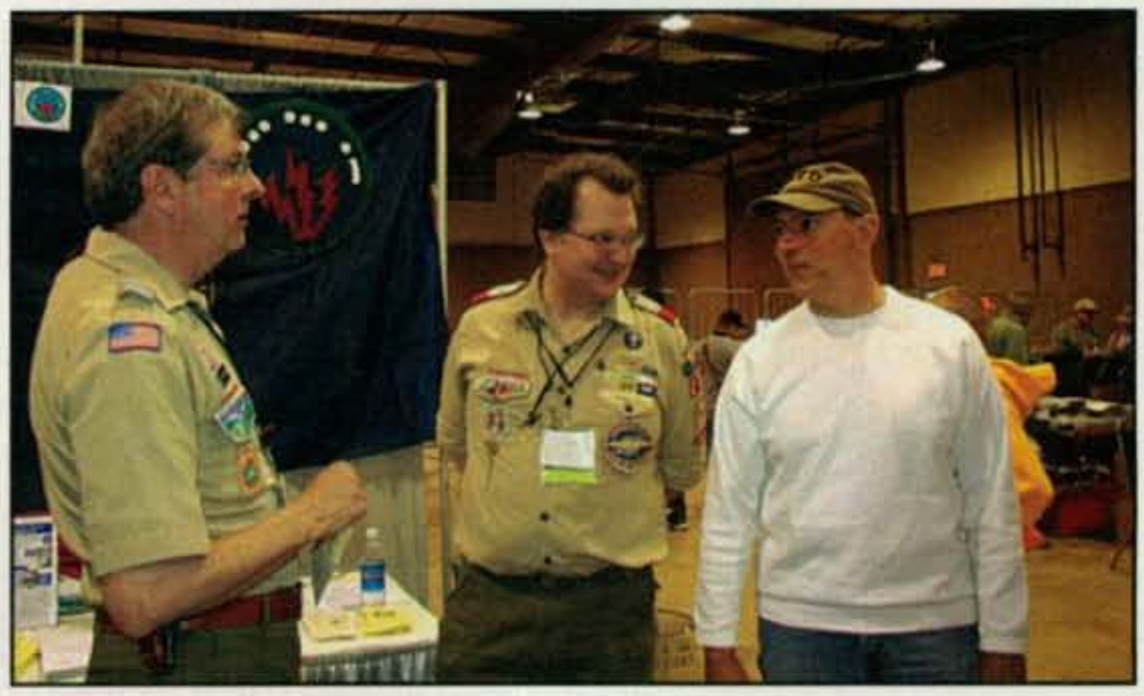
Texas Army MARS operated emergency nets in support of the Texas Military Forces (joint National Guard) and the Governor's Division of Emergency Management. The radio room in the SOC has MARS, RACES, Civil Air Patrol, and Federal Emergency Management Agency (FEMA) radios in one noisy space. The MARS station has the capability of connecting the SOC to the MARS Winlink Network. The MARS station was relaying information from Army and Navy/Marine Corps MARS stations to the SOC staff. At the storm's peak, the HF stations had to shut down, but at least one VHF Telpac digital station was able to stay on the air.

Tom Whiteside, N5TW, was at the SOC helping operate the MARS station, AAN6ETX. However, as a key operator of an amateur emergency communications Radio Message Server (more below), he was also remotely monitoring his home station. Prior to the storm, Whiteside had worked with amateur radio groups in the "valley" (as Texans refer to the area from Brownsville to Laredo) to get their amateur Winlink systems operational. One of those he helped was Police Sergeant Gerald Manthey, KC6CNN, who was operating at the Harlingen City EOC. Manthey also serves as the Director of Emergency Communications. Using his cellphone camera, Manthey sent a picture of the storm to Whiteside and others with the comment that Winlink was still working fine. This visual information was forwarded by Whiteside to AAN6ETX for printing and delivery to the SOC. By including amateur radio and MARS Winlink addresses in subsequent messages, both services were interoperating with automatic refiling of the messages. Amateur RF transmission stayed on amateur frequencies. MARS RF transmission stayed on MARS frequencies, and Winlink automatically translated between the two. All of this benefited those at the SOC.

Manthey told the ARRL that "Winlink is the perfect tool for this sort of thing. You can send messages and get them when you have time. The system works very well even without the Internet, and Winlink is more secure and just easier for complicated messages."

Martin, the MARS director, said they learned some valuable lessons from our ad hoc operations: "One, having affiliations with multiple organizations such as MARS, RACES, and ARES provides value added to all emergency communi-

North Carolina resident Bill Morine, N2COP, provides information on amateur radio during a local hurricane-preparedness exhibit. (Photo courtesy of N2COP)



Gary Wilson, K2GW, and Brian Walker, K9BKW, explain Radio Scouting to a visiting ham at the Dayton Hamvention®. (Photo by Vito Cameruci)

cations systems. Each service can complement the other. Two, the new Radio Message Server (RMS) software performed flawlessly to automatically refile traffic to each Winlink network and therefore achieve a new level of interoperability. And, three, everyone benefitted from the seamless exchange of visual and written information concerning Hurricane Dolly." RMS is part of a new generation of Winlink programs being deployed. For more information on RMS check out the <winlink.org> site. Martin said, "We all look forward to expanding this concept for future operations."

Virginia ARES/RACES Recognized

After years of work and several changes in the amateur radio leadership in Virginia, the Commonwealth of Virginia has recognized members of the Virginia Amateur Radio Emergency Service as members of the Radio Amateur Civil Emergency Service in Virginia.

The agreement allows ARES and RACES in Virginia to operate as one communications unit when called by the Virginia Department of Emergency Management (VDEM). At the same time, it does not prevent the groups from operating on their own when they are not supporting VDEM events. The agreement says that a volunteer RACES member does "enjoy limited protection from liability to the same extent as a State employee, provided they act within the scope of their training, the limits of this MOU, and the mission assigned by the Agency."

It continues, "When activated by VDEM, RACES operations will be under the direction of the VDEM Communications Officer, State Amateur Radio Liaison, or State RACES Officer. Normally message traffic will be formal, written traffic following the National Incident Management System (NIMS) format. However, at times, use of informal tactical communications may be required."

Virginia ARRL Section Manager Carl Clements, W4CAC, and Section Emergency Coordinator Ronald M. Sokol, K4KHZ, signed the Memorandum of Understanding between VDEM and the VA Section ARRL at the Virginia Emergency Operations Center in Richmond. "It was a lot of work completed by a lot of people that made this significant event happen," stated Clements, "and we will continue to work together with emergency managers across the Commonwealth in support of their emergency communications needs in service to the citizens and guests in Virginia."

Sokol was extremely pleased that the signing of the document had come to fruition. He stated, "The restoration of this MOU has taken a succession of ARES administrations to accomplish. Both Carl and I are pleased to be in leadership at this time to see this MOU to conclusion. We are fortunate to have such viable and flexible VDEM leadership and staff with which to work. A special thanks to Terry Hebert, KG4GLS, of VDEM, for his tireless efforts of assisting in the accomplishment of this task. This document allows ARES/RACES to be as ONE in the best interests of the citizens of the Commonwealth of Virginia."

Radio Scouts Reach Out

Scout leaders reached out to ham radio operators at the Dayton Hamvention® this past May to encourage them to provide amateur radio opportunities to Boy Scouts back in their home towns. Bill Ragsdale, K6KN, District Chairman of the Yolo District of the Golden Empire Council of the Boy Scouts of America, led the effort. Ragsdale told hams attending a scouting forum that "this is how we assure the future of your local ham community by growing the next generation of amateurs via the Boy Scouts. At the same time, we also build community awareness about amateur radio. Scouts have a built-in sense of adventure which ham radio complements." Ragsdale presentation can be downloaded at: <http://yolobsa.editme.com/Dayton>.

Each October a half-million Scouts around the world talk to each other via amateur radio during the Jamboree On The Air (JOTA). JOTA is Scouting's largest annual event. The JOTA allows Scouts and Guides all over the world speak to each other by means of amateur radio contacts. Scouting experiences are exchanged and ideas are shared.

According to the JOTA website, the first Jamboree On The Air was held in 1958. Since then thousands of Scouts and

Radio Heroes

Each month we tell a story about radio heroes helping in an emergency situation. However, hams helping is not always during a natural disaster. It could be in times of war. While there are many stories of hams helping during wars, a recent book, *World War II Radio Heroes, Letters of Compassion,* by Lisa Spahr, describes the work of amateur radio operators and shortwave listeners who let family members know that their sons were captured by the German Army, but more importantly, that they were alive and not missing in action.

During World War II there was a nightly program that aired on Radio Berlin called *Calling Back Home.* Each night the program carried a list of the names of prisoners of war, next of kin, and a short message from the captive soldier. Many hams and shortwave listeners faithfully listened to these broadcasts, wrote down the information sent, and then sent a letter or postcard to the soldier's relatives. The German Army hoped that these broadcasts would send a message of doom and gloom to the families, and thus our country would become demoralized. Instead, it lifted the spirit of the families, knowing that the soldiers were alive.

In some cases, the listeners sent out a lot of messages. Some actually developed a message template and filled in the blanks with the information from Radio Berlin.

According to the book, in mid-1943 there were over 45 listeners. They were members of the Shortwave Amateur Monitors (SWAM). The organizer of the group, Mrs. Don Yant in Ohio, assigned several radio operators each night of the week to monitor the enemy radio stations so that no POW family would go without notice. Yant also sent monthly newsletters to the members sharing radio news and techniques.

Although hams were off the air during World War II, they still provided a public service to the families of soldiers who were being held as prisoners of war. World War II Radio Heroes Letters of Compassion *book cover supplied by the author, Lisa Spahr.*

Lisa Spahr, shares her family story of how these radio listeners provided information about her grandfather, who had been captured. The book gives an insight into early amateur radio public service activity. Further information on the book can be found at <www.powletters.com>.

Guides have "met" each other through this event. According to organizers, not only is it fun to talk to Scouts from other parts of the world, but it provides also a chance to find out about other countries and about Scouting elsewhere. Many contacts made during the JOTA have resulted in penpals and links between Scout troops that have lasted for many years.

With no restrictions on age, on the number that can participate, and at little or no expense, the JOTA provides an opportunity for Scouts and Guides to contact each other by amateur radio. Many Scouts and leaders hold licenses and have their own stations, but the majority participate in the JOTA through stations operated by local radio clubs and individual radio amateurs. Today some operators even use television or computer-linked communications.

This year JOTA will be held on October 18 and 19. The event starts at 00:00 hours local time on Saturday and concludes 48 hours later at 24:00 hours local time on Sunday. Each station can choose its own operating hours within this period. More information on JOTA can be found at <http://home.tiscali.nl/worldscout/index.htm>.

Teamwork Pays

This month we reported on different groups working together to provide critical information to those who need to know. We also covered stories of hams helping in years past, and how we can work with the Scouts and Guides to introduce them to a hobby and service that we all enjoy.

Drop us a note about what your group is doing in amateur radio public service activities. Until next time . . .

73, Bob, WA3PZO

beginner's corner

BY WAYNE YOSHIDA,* KH6WZ

An Experienced Beginner

This month I want to introduce you to a guest author, Helen Mahoney, KI6LQV. Helen is what I call an "experienced beginner," because she had some amateur radio knowledge before she earned her ham license. Helen is married to Doug Millar, K6JEY, a long-time ham radio operator with experience on the VHF and above bands, as well as some impressive involvement in exotic ham radio modes such as Earth-Moon-Earth (EME) and on the microwave frequency bands. However, this not a story about Doug. This is Helen's story, so here's Helen:

In the summer before sixth grade, I learned Morse Code just for fun, but I didn't know much about ham radio until I met my husband, Doug, K6JEY, over a decade ago. In all the years that Doug and I have been together, I've learned quite a bit about ham radio as an "observer." Even with my being an observer of Doug's ham radio operations, we always seem to have a great time.

Over the many years, I have shared Doug's enjoyment of various ham radio activities and have allowed antennas to sprout above our house. I've shared his excitement whenever he makes a contact with someone in a new country. I've gone with him for contests, often to very desolate places, to help log the contacts and take pictures. I've even shared his excitement when he brings home yet another thing with knobs to add to his wonderful collection in the garage and house.

Quite often, we take a ham radio set or two on vacation. I remember the time we were in Maui and Doug installed a wire antenna out on the balcony of our hotel room, which looked out over the ocean. It was fun to listen in on Doug's conversations with other ham operators worlds away. I especially recall the contact he made with a ham in Siberia, in a considerably different climate! Of course, we made time to enjoy the traditional sights and experiences on our Hawaii vacation, but adding a ham radio element into the mix made our stay a bit more enjoyable in a different way.

All of this activity centered on Doug and his "invisible" ham friends, his radio and test equipment, and his club meetings and such. I still was just not interested enough to get a license of my own. Then in early 2004 Doug came home from the first annual West Coast Conference of the Society of Amateur Radio Astronomers with some extremely exciting news. The conference was hosted by the Owens Valley Radio Observatory.

"There is a big dish available for us to use. Can you imagine making DX EME contacts with a 40-meter dish? We just have to figure out a way to make this happen!" Doug said.

I knew from watching Doug experiment with his antenna contraption in our driveway (see photo A) that EME had something to do with bouncing signals off the Moon to make radio contacts far away. Being an amateur astronomer, I was especially

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

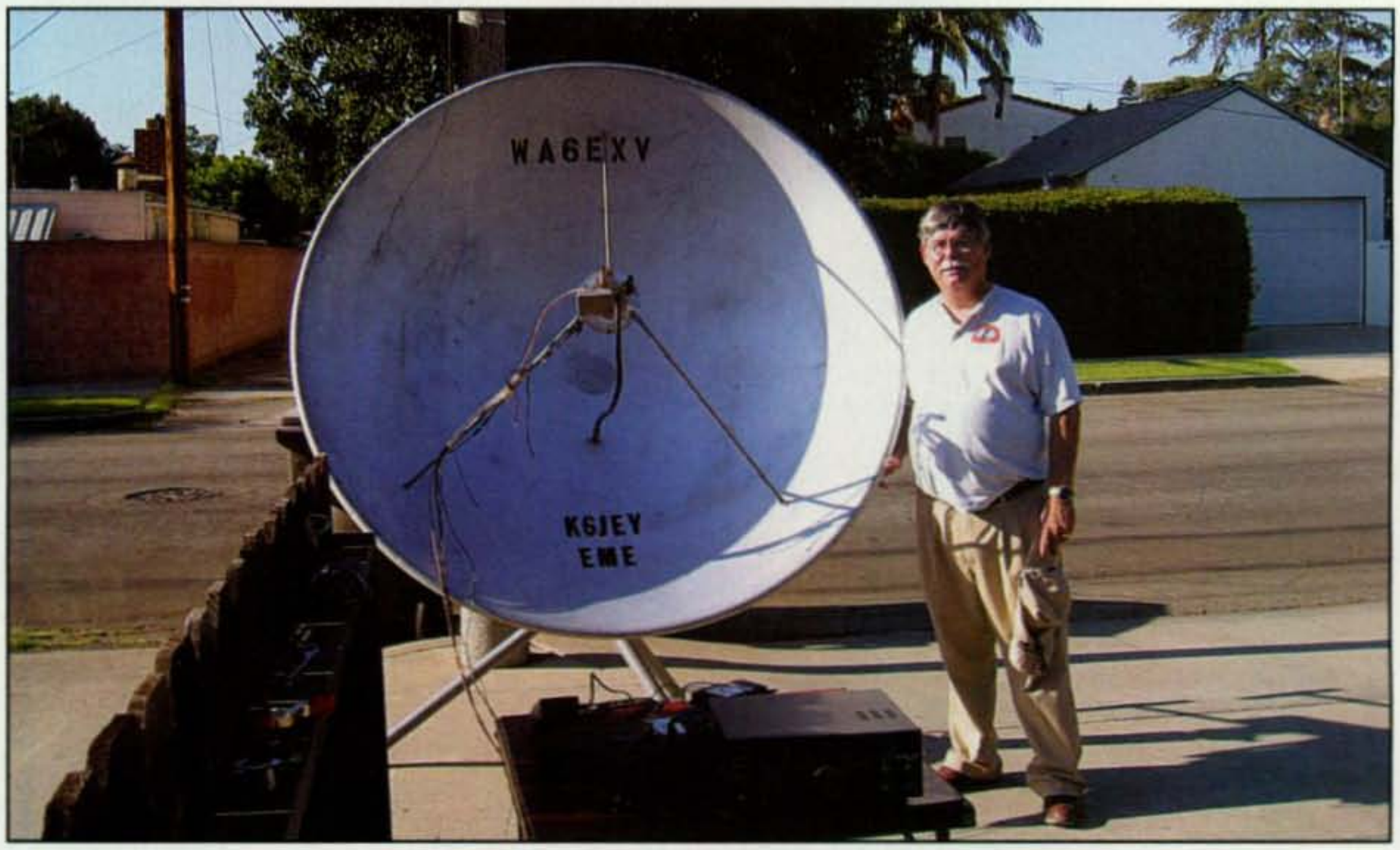


Photo A– One of K6JEY's EME antenna arrays in the driveway of Doug and Helen's home. (Photo by John Oppen, KJ6HZ)

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

E151765 E151765

...POWER ON WITH ASTRON

SWITCHING POWER SUPPLIES...

MODEL SS-10TK

MODEL SS-12IF

SPECIAL FEATURES:

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

PROTECTION FEATURES:

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

SPECIFICATIONS:

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

OUTPUT VOLTAGE: 13.8VDC

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

MODEL SS-18

DESKTOP SWITCHING POWER SUPPLIES

MODEL	CONT. (Amps)	ICS	SIZE (inches)	Wt.(lbs.)
SS-10	7	10	1⅛ x 6 x 9	3.2
SS-12	10	12	1⅜ x 6 x 9	3.4
SS-18	15	18	1⅜ x 6 x 9	3.6
SS-25	20	25	2⅞ x 7 x 9⅝	4.2
SS-30	25	30	3¾ x 7 x 9⅝	5.0

MODEL SS-25M

DESKTOP SWITCHING POWER SUPPLIES WITH VOLT AND AMP METERS

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

MODEL SRM-30

RACKMOUNT SWITCHING POWER SUPPLIES

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

WITH SEPARATE VOLT & AMP METERS

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

MODEL SRM-30M-2

2 ea SWITCHING POWER SUPPLIES ON ONE RACK PANEL

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

WITH SEPARATE VOLT & AMP METERS

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

MODEL SS-12SM/GTX

MODEL SS-10EFJ-98

CUSTOM POWER SUPPLIES FOR RADIOS BELOW

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

CIRCLE 134 ON READER SERVICE CARD

NEW SWITCHING MODELS

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

*ICS – Intermittent Communication Service

intrigued by EME. Lining up a radio antenna to track the Moon is very similar to tracking the Moon with a telescope. Doug filled me in on more details of the big dish antenna and how we could put it to good use in an educational program, combining science, astronomy, and ham radio. This became known as the SBMS/OVRO EME Project (go to: <http://www.ham-radio.com/sbms/ovro/index.htm> for details), a collaboration of the San Bernardino Microwave Society (SBMS) and the Owens Valley Radio Observatory (OVRO).

The project, carried out by my OM Doug, Dennis Kidder, W6DQ, Chuck Swedblom, WA6EXV, and other SBMS members, transformed a big 40-meter dish into an EME antenna. I got the job of moving the dish around to track the Moon.

During one of the test sessions at the OVRO, I got to send my initials (HM) in Morse Code to the Moon and hear the echoes return back to us on Earth three seconds later. Doug said, "Honey, you just touched the Moon." What a marvelous feeling!

That experience finally made me want to get my ham license. When our friend Tisza (wife of SBMS/ OVRO contributor Mel Swanberg, WA6JBD) got her call (KI6DBR), I decided it was time for me to get serious about getting that license.

Photo B– Here is Helen in contact with Gary, AD6FP, on 79 GHz CW. Learning Morse Code many summers ago paid off! (Photo by Doug Millar, K6JEY)

Doug was fantastic and encouraged me as much as possible. He got me license books and other study materials. I was a little disappointed to learn that Morse Code is no longer a requirement to get a ham license, since I still know most all of the letters in Morse. Doug took me to take the Technician test and I passed! I got my call, KI6LQV, in time to participate in the second weekend of the 2007 ARRL 10 GHz and Up Microwave contest.

Doug has been building and modifying microwave ham radios for some time. He had previously built 10-GHz and 24-GHz radios, and then he com-

pleted ones for 47 GHz and 79 GHz. He was anxious to field test them, and the contest was the perfect setting.

We drove up to Mt. Pinos, a mountain located in the San Emigdio Mountain Range. It is the highest point in Ventura County, California at 8,831 feet. We set up our equipment. Across the valley, on Frazier Peak, was Gary Lauterbach, AD6FP, of the 50 MHz and Up Group, with his four microwave-band radios. Doug made contact with Gary on 10 GHz, and I jotted down the info in the log as I had done many times before. However, this time, I got to take the microphone and call him with my own callsign! My heart was pounding as I heard him reply. This was my first microwave QSO!

The same scenario played out on the other three bands, except on 79 GHz Gary was a little weak. Doug decided to use CW for the contact on that band. He turned to me and asked, "Can you talk to him on CW?" I said, "Sure!" That summer Morse Code project many years ago sure paid off (see photo B).

We got busy and made several more contacts on 10 GHz. I discovered that it is a little tricky to log and talk at the same time, but I managed to keep up. After several contacts, I heard a familiar voice, another female voice, calling K6JEY. It was our friend Tisza. After she completed the contact with Doug, I called her. That contact with Tisza was very special to me, since I doubt there have been many woman-to-woman microwave contacts.

We then got in the queue to talk to the contest group down in Mexico. It was quite exciting to be able to talk over such a long distance (600-plus miles). I could see how this radio thing would become addicting!

The next day Doug went to Signal Hill, which is about three miles from our house. I stayed home, as I had a couple of non-radio projects to work on. However, it wasn't long before Doug called me on the telephone and said, "You have to get up here, Helen. They're asking for you!"

It was pretty neat to be wanted by so many, so I went up the hill and made several more contacts. By then a lot of people knew my call. What a thrill it was to hear people calling KI6LQV. "Oh, that's me! They want to talk to me!" I made several more contacts from Signal Hill, which added to my contest points. For a first contest, I did pretty well.

Now I have the ham radio bug, too. Doug got me my own handie-talkie, a Yaesu VX2. I can talk on the local repeaters and monitor the airplanes at the Long Beach airport. When we go on vacation, I can join Doug in DXing. He and I like to see total solar eclipses in exotic locations. Most likely we'll pack a radio or two on our next trip and see whom we can contact.

Perhaps in the future I will try for my General license so I can work the low bands, but for now we're having a lot of fun on the microwave bands. And to think that before I met Doug, I thought microwaves were just for cooking!"

73, Helen, KI6LQV

Helen's story is a great example of how life experiences can come together to form a new bond and a new lifetime endeavor. By the way, Helen's contacts might actually be a new record for the highest frequency (79 GHz) two-way contacts made by an XYL.

If you have an interesting story to tell, please send it to me, along with some interesting photos, and I can share your experiences with the readers of this column. 73, Wayne, KH6WZ

BY FREDERICK O. MAIA,* W5YI

Amateur Radio Licensing and Callsign Systems

The number of first-time licensed amateur radio operators has increased dramatically during the past few years. The surge started in 1991 when the Morse code requirement was dropped from the Technician Class. More joined the hobby when the FCC restructured the hobby in 2000 and the code testing speed was dropped to 5 words-per-minute for all license classes. The latest increase began last year when the telegraphy testing requirement was eliminated entirely.

Statistically, about half of all licensed amateurs hold a Technician Class license, and another 25 percent are General Class. (The General Class surged when licensees no longer had to pass a code exam.) Many, perhaps most, of these Tech and General Class amateurs are basically newcomers to the hobby. In any event, it's safe to say that a great many active radio amateurs have been licensed a relatively short time.

What we thought we would do this month is cover two general areas—licensing and callsign systems—which can be especially complex and confusing to a beginner. Even many long-time licensed amateurs have trouble understanding the FCC's Universal Licensing System (ULS), which began operation in 1999.

Amateur Radio Licensing

FCC License Required. You must obtain a license from the Federal Communications Commission (FCC) to operate an amateur station. You may operate from any location, including island possessions, where the FCC has jurisdiction. Certain restrictions may apply. For example, you need the permission of the ship's master or aircraft pilot when operating from a vessel or plane. You may also operate in Canada without further licensing under a bi-lateral arrangement whereby each country recognizes the license of the other.

The license is granted once you pass a multiple-choice examination administered by a team of Volunteer Examiners (VEs). In theory, the questions are selected by the VE team from published question pools adopted by a committee of Volunteer-Examiner Coordinators (VECs). In reality, the vast majority of VE teams rely on pre-made tests supplied to them by the VECs.

Examination System. Amateur exam opportunities are widely available in all areas of the U.S. Some are even available overseas. You can contact a VE team in your community by contacting a VEC. There are more than a dozen of these organizations. The largest two are the ARRL-VEC (telephone: 800-927-7583) and the W5YI-VEC (800-669-9594). There usually is a small examination fee assessed by the VE team. Both ARRL and W5YI-VECs currently charge $14.

There are three different examinations, one for each license class. Element 2 is the requirement for the beginning Technician Class, Element 3 is for General Class, and Element 4 is for Amateur Extra Class. All examinations must be passed in order. The 5-wpm Morse code exam (Element 1) is no longer required or administered. Elements 2 and 3 each require 26 correct answers out of 35 questions; Element 4 requires 37 out of 50.

The examiners will submit your test results to their VEC. A successfully passed exam will result in a new or upgraded 10-year-term operator license once the VEC electronically submits your application information into the FCC's computer. It takes about a week or two for your license to appear in the Amateur Service database.

You may renew your license within 90 days of its expiration date. You have a two-year "grace period" after your license expires in which to renew your license without having to retake the examinations and start all over again. However, you do not have any operating privileges during this two-year period.

License Classes. There are actually six license classes, but only three are currently issued by the FCC (Technician, General, and Amateur Extra Class). Since 2000, no new Novice, Technician Plus, or Advanced Class licenses have been granted, but Novice and Advanced Class licenses may be renewed indefinitely. Technician-Plus licenses are being renewed as Technician licenses, which is not a practical problem since the current Technician license carries all of the privileges previously granted to Tech-Plus licensees.

Authorized Communications. You determine for yourself whether your communications should be transmitted on Amateur Service frequencies. As a general rule, any amateur-to-amateur communication is permitted, unless it is specifically prohibited or transmitted for compensation.

Although there are some exceptions, transmitting music or "secret" messages, using ham radio while engaging in a criminal act, broadcasting to the general public, retransmitting signals from other types of radio stations, and using obscene or indecent language over the air are prohibited. It is legal to transmit outside your license privileges in a serious emergency.

Universal Licensing System. You may begin operating your radio equipment on the ham bands once your license grant is listed in the FCC's Universal Licensing System located online at <http://wireless.fcc.gov/uls/>. You do not have to wait for the hard-copy license document to arrive. To see your license and callsign in ULS, click on the "Licenses" link, access "name" in the drop-down box ,and type in your last name, followed by a comma, and then your first name.

ULS is an easy-to-use, browser-based common licensing system for all of the FCC's wireless radio

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

services, including the Amateur Radio Service. It replaced eleven separate licensee data bases in 1999. ULS supports electronic filing of applications and online access to licensing information over the internet using a personal computer. You simply submit an administrative change to the licensing database, which is accessed by using your FCC Registration Number (FRN) and password.

The Universal Licensing System also provides a great way to get information, not only on your FCC record, but for all other licensed radio amateurs as well. With ULS License Search or Application Search, you can search by any station callsign, FRN, or licensee name.

FCC Registration. All companies and individuals "conducting business" with the FCC must be registered with CORES, the FCC's COmmission REgistration System. This system generates an unique 10-digit number which relates to your submitted Taxpayer Identification Number (TIN). In the case of individuals, the TIN is your Social Security number (SSN).

All individuals being issued, renewing, or updating an amateur radio license must have an FRN, which is used to identify entities in their transactions with the Commission. In 2001, all existing radio amateurs were issued an FRN and password.

Radio amateurs are now registered in one of three ways. You can (1) register yourself through the FCC's registration site on the internet before being licensed, (2) file an FCC Form 160 document with the FCC, or (3) you can be issued an FRN and password as part of the licensing process. In the latter case, the FRN is automatically generated by CORES when a VEC files for your initial amateur license. Most new radio amateurs get their FRN this third way.

In any case, the FRN and password will arrive in a separate letter from the FCC. Carefully safeguard them, because you will need them later to file applications such as address changes, replacing or renewing your license, or requesting a vanity callsign. You cannot access your record without both of them.

FRN Password. The password ensures that only you (or your authorized representative) is able to update your FCC record information or file or make changes to your applications or licenses. Your password must be a minimum of six characters long and is case-sensitive. Initial passwords may be selected by the applicant during the registration process or the FCC will automatically assign one if the applicant has not pre-registered in CORES.

The FCC recently began requiring enhanced (strengthened) passwords. All new passwords must now include a combination of at least three different types of characters—numeric, upper-case letters, lower-case letters, or special characters (those above the numbers on a keyboard.)

Personal Security Question (PSQ). The PSQ provides radio amateurs with the ability to change their password without contacting FCC support staff. Most radio amateurs, it seems, have not established a PSQ, and as long as you know your password, it is not really necessary for you to do so.

If you do not know your password, you will have file for a password reset. To reset your password online you will need the answer to a Personal Security Question, as well as your FRN. Your FRN is public information and can be found on any of the online Amateur Service license databases,such as the one located at <http://www.qrz.com>.

To set up a PSQ or to change a known password, go to <https://esupport.fcc.gov/password.htm> on the internet. Click on either the "Set Personal Secur-

ity Question" or "Reset Password" link. Simply fill out the online form and select a PSQ question—such as "your mother's maiden name," "your favorite pet's name," or "city of your birth"—from the pull-down list. You can also enter a custom question.

Once you enter a question and answer into the system, you can immediately begin using the online password reset by clicking on the "Reset Password" link located at <https://esupport.fcc.gov/password.htm>.

Social Security Number (SSN). Effective July 1999, the FCC began requiring all licensees to provide their nine-digit SSN to the FCC when they apply for a new, amended, upgraded, or renewed license. This requirement was mandated by Congress as part of the Debt Collection Improvement Act of 1996. Failure to initially supply the FCC with your SSN will result in the denial of your application. In other words, no SSN, no license.

When an FRN exists for you in the FCC records, the SSN is no longer required for subsequent filings. You do, however, need to supply both your FRN and SSN to reset your password unless you have set up a PSQ.

The collection of Taxpayer Identification Numbers (TINs) is a federal requirement imposed on all U.S. government agencies, not just the FCC. This information is sent to the Treasury Department and used to facilitate the collection of any outstanding debts owed to the federal government.

The FCC runs every application it receives against a so-called "Red Light Database" of delinquent entities to which "federal benefits" (including amateur radio licenses) are denied until payment arrangements are made.

Station Callsign Systems

Callsign Formats. All U.S. amateur station callsigns (except special event station calls) contain four, five, or six characters. These callsigns consist of either a one-letter prefix (K, N, W) or a two-letter prefix (AA–AL, KA–KZ, NA–NZ, WA–WZ) followed by a regional number (Ø–9) and up to three suffix letters. The digit in an initial license is determined by the location of the licensee's mailing address. However, you may apply for a different digit when applying for a vanity call (more on those later), and you may keep your current call even if you move to another call area. A radio amateur may hold only one callsign.

Most radio amateurs start at the Technician level and receive an initial "2-by-3" format callsign—that, is two prefix letters (the first begins with K), a regional numeral, and three suffix letters. Amateur callsigns may contain one, two, or three suffix letters (AAA to ZZZ), depending on the license class. The shorter callsigns go to higher class radio amateurs. Upon upgrading to a new license class, applicants may select a new FCC-issued sequential or licensee-selected vanity callsign appropriate for their new license class. It is not necessary, however, that an amateur ever change his/her callsign. Once a station callsign is issued, it may be held for life.

Certain two-letter prefixes are reserved for stations with mailing addresses outside of the continental U.S. (Alaska, the Caribbean, and Hawaii/Pacific Islands.) 2-by-3 format callsigns beginning with AA–AL and NA–NZ currently are not issued by the FCC to anyone. Certain other callsign combinations are reserved for various purposes and reasons (for example, callsigns having the letters SOS or QRA–QUZ as the suffix are not assigned).

Group Callsigns. The callsign format for which a radio amateur is qualified depends on his/her license class. Amateur Extra Class licensees are in Group A, which includes 1-by-2, 2-by-1, or AA–AL-by-2 format callsigns. Advanced Class licensees qualify for Group B 2-by-2 format callsigns, except those with AA–AL prefixes. General, Technician, and Technician Plus Class licensees qualify for 1-by-3 format callsigns (Group C). Novice class operators may only obtain Group D 2-by-3 format callsigns beginning with K or W. Any radio amateur may request a callsign format from a lower grouping in any radio district except those with prefixes reserved for stations outside of the 48 contiguous states.

Sequential Callsign. A sequential callsign is a unique station callsign assigned in order by the FCC's computer to each amateur station during license processing. The callsign is selected from alphabetized blocks of callsigns from each of the 13 U.S. regions, Ø through 9, plus three geographical regions located outside of the continental United States.

Station callsigns are not changed when a holder moves from one numerical radio district to another. The callsign must conform to the licensee's operator class (see Group Callsigns above). There is no FCC fee for a sequential callsign.

Vanity Callsign. This is a specific station callsign selected by the FCC from a list submitted in order of preference by a station licensee or club trustee. Radio Amateur Civil Emergency Service (RACES) and military recreation stations are not eligible for vanity callsigns.

The callsign must conform to the licensee's or trustee's operator class (callsign group). Radio amateurs with continental U.S. mailing addresses may choose a callsign from any geographical region (Ø–9). It is not required that the applicant live in any specific radio district. Vanity callsign recipients get a new ten-year term when their new license/callsign is issued.

Applicants with U.S. mailing addresses in Alaska, the U.S. Caribbean islands (such as the U.S. Virgin Islands and Puerto Rico), and Pacific islands (such as Guam and Hawaii) may optionally select special reserved prefixes for their area. Alaska prefixes are AL, KL, NL, WL; Caribbean are KP, NP, WP; and Pacific are AH, KH, NH, and WH.

There are four different types of vanity callsigns, You can (1) submit a prioritized list of wanted callsigns, (2) reclaim your former callsign, (3) request the callsign of a close relative now deceased, or (4) your ham club may request the callsign of a deceased member.

Generally, no callsign is available for reassignment unless it has been inactive (expired or canceled) for at least two years. Close relatives wanting to obtain the callsign of a deceased amateur and holders of former callsigns do not have to wait the two years.

There is an FCC "regulatory fee" (currently around $10) to obtain an initial vanity callsign or to renew it for another ten years.

Special Event Callsign. This is a 1-by-1 format callsign temporarily assigned to an amateur station by one of five Special Event Call Sign Coordinators for use on the air to publicize an "event of special significance" (which is not defined by the FCC). The callsign contains a prefix letter (K, N, or W) followed by a single regional number (Ø–9) and a single suffix letter (A through Z, except the letter X)—for example, K1A. There are 750 possible special event callsigns.

Amateurs of any license class may reserve a 1-by-1 callsign for up to 15 days. The Special Event Call Sign Coordinators, however, have wide latitude in determining who is eligible for a special event callsign and for how long it may be used. Once you reserve the callsign, you simply substitute the self-selected 1-by-1 callsign for your FCC-assigned callsign. You must announce your primary callsign at least

once each hour while using the 1-by-1 callsign. There is no fee.

Callsign Indicators. Any amateur station, including a special event station, may include with its FCC-assigned callsign one or more self-assigned indicators (for example, W5YI/KP2). Each indicator must be separated from its assigned callsign by a slant (/) or any suitable word that denotes the slant mark ("portable," "stroke," etc.). The indicator must be included before, after, or both before and after the station's assigned callsign (for example, KP2/W5YI/contest). You may not select an indicator that is the ITU-authorized prefix of another country.

Club Station Callsign. A club may apply for a club station license by filing an application with one of three Club Station Call Sign Administrators. A CSCSA is an amateur radio organization that has agreed to provide voluntary, uncompensated, and unreimbursed services for processing club license applications.

Club stations are initially assigned sequential 2-by-3 callsigns beginning with KA–KZ, which later may be exchanged by the club trustee under the Vanity Call Sign Program. The club trustee's callsign group determines which callsigns are available to the club. There is no limit to the number of club station licenses that can be held by the same club and each is eligible for a vanity callsign.

Callsign Identification by Foreign Amateurs. The FCC no longer issues reciprocal permits for alien amateur licensees. When a station is transmitting in the U.S. under the privileges afforded by an amateur service license granted by the government of Canada or a license granted by any other country with which the United States has a multilateral or bilateral agreement, an indicator consisting of the appropriate letter-numeral designating the station location must be included in the station identification. This indicator must be separated from the assigned callsign by the slant mark (/) or any suitable word that denotes the slant mark. In most cases, the U.S. radio district indicator must be announced *before* the foreign radio amateur's callsign (for example, W5/DL1DX). However, when the station is transmitting under the authority of an amateur service license granted by the government of Canada, the indicator must be included *after* the callsign (for example, VE3XX/W4).

See you next month.

73, Fred, W5YI

When does my subscription expire?

Your subscription expiration information is located in the top line of the address label on each issue. Here's a rundown of what each of the numbers stand for:

Expiration Month = January Year (14)=2014

# of Copies

CQ 12345 JAN 14 1
RICH MOSESON W2VU
25 NEWBRIDGE ROAD
HICKSVILLE, NY 11801-2345
//////// (Bar Code)////////

First group of digits is the **magazine's ID#**; (CQ, PC, VHF).

Next group is your **account number**.

Followed by your **expiration date** month and year.

The last number denotes the **number of copies you receive.**

Additional questions? Call or e-mail us anytime. We'll need your full name, address and zip code to process your inquiry.

Time to renew?

Use the postage-paid envelope bound in here.

CQ Communications, Inc.
516-681-2922; fax 516-681-2926;
or e-mail us at
<circulation@cq-amateur-radio.com>

BY PHIL SALAS,* AD5X

Building a 12/17-meter Trap Dipole

Photo A– The completed 17/12-meter trap dipole ready for working some DX. Now if only the sunspots co-operate!

Two months ago in the August issue I discussed building high-voltage antenna trap capacitors. Last month we built a pair of 12-meter traps using the home-built capacitors and a pair of home-built coils. This month we'll complete the project by incorporating everything into a 12/17-meter trap dipole.

Table I shows all of the parts needed for the 12/17-meter trap dipole. As discussed last time, I used aluminum tubing, as I wanted a rotatable 12/17-meter dipole. Obviously, you can use the traps in a wire antenna if you prefer.

(**Caution:** When working with the fiberglass tubes, use gloves and goggles to protect your skin and eyes from the little fiberglass shards.)

The first task is to build the dipole fiberglass center insulator, which is detailed in fig. 1. I used #6 sheet-metal screws to firmly attach the aluminum

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

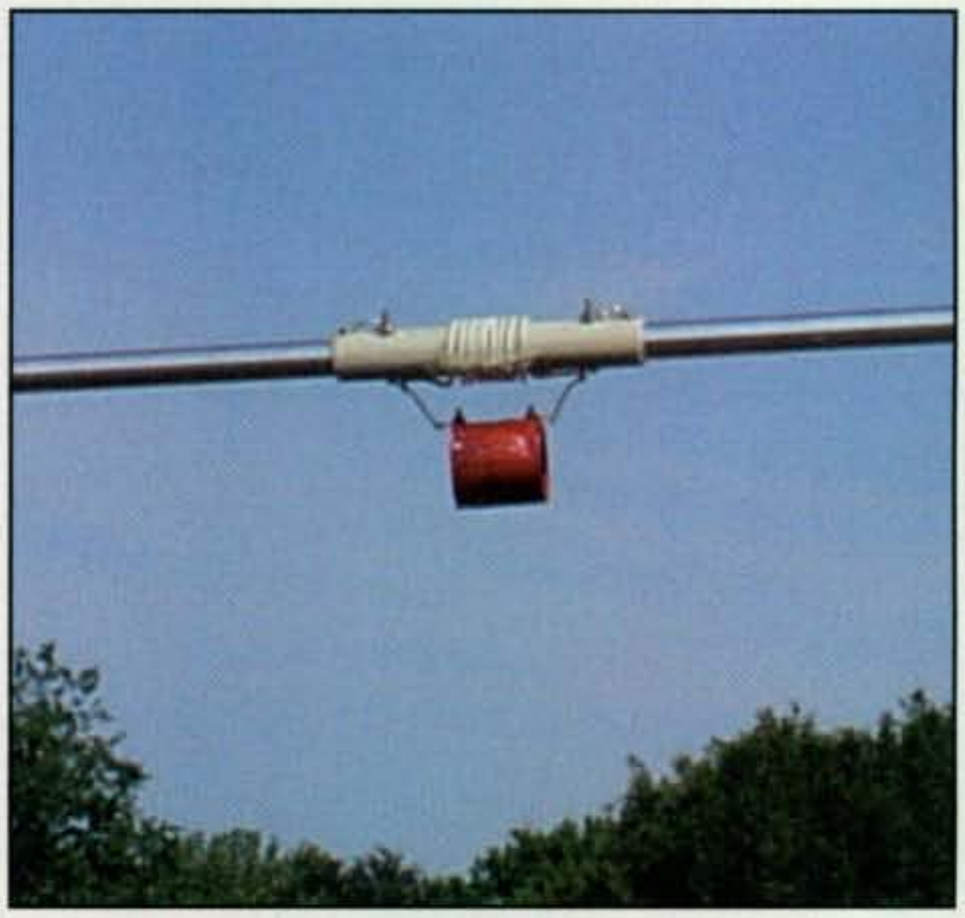


Photo B–Close up of the home-made trap on the dipole.

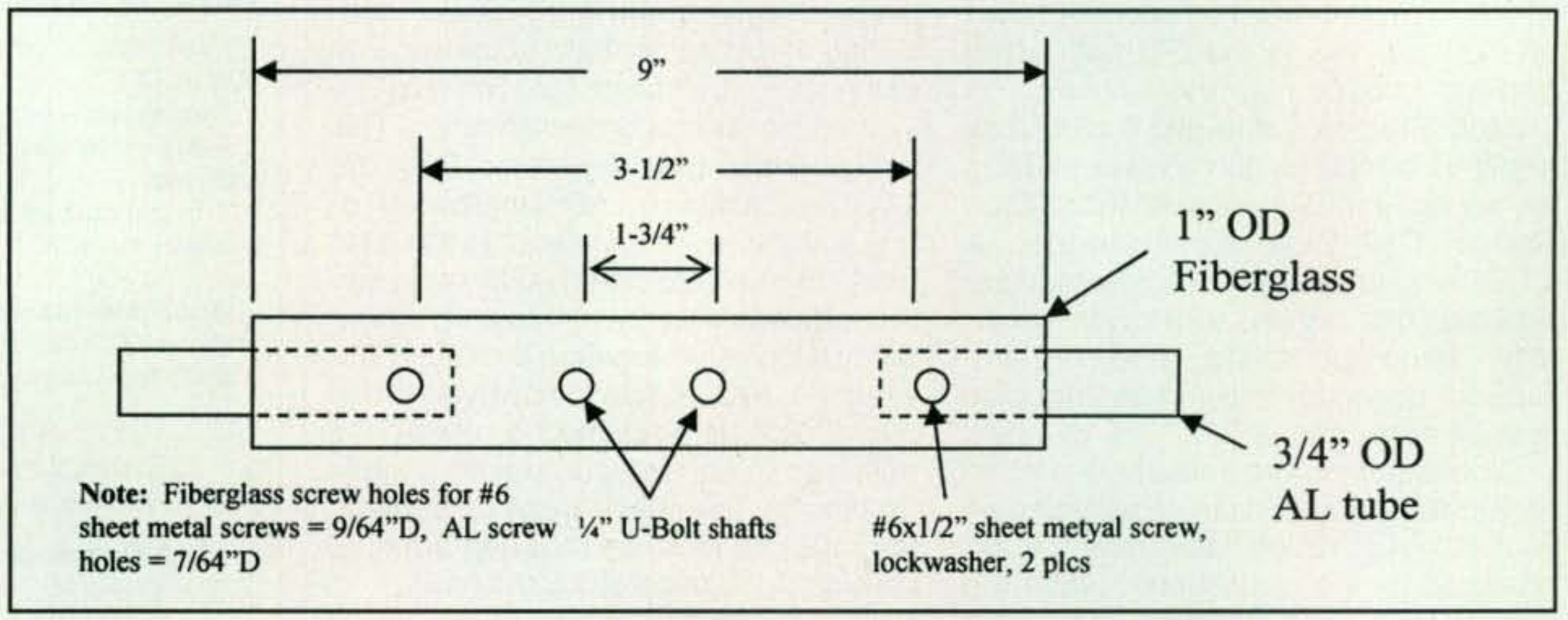


Fig. 1– Center insulator details.

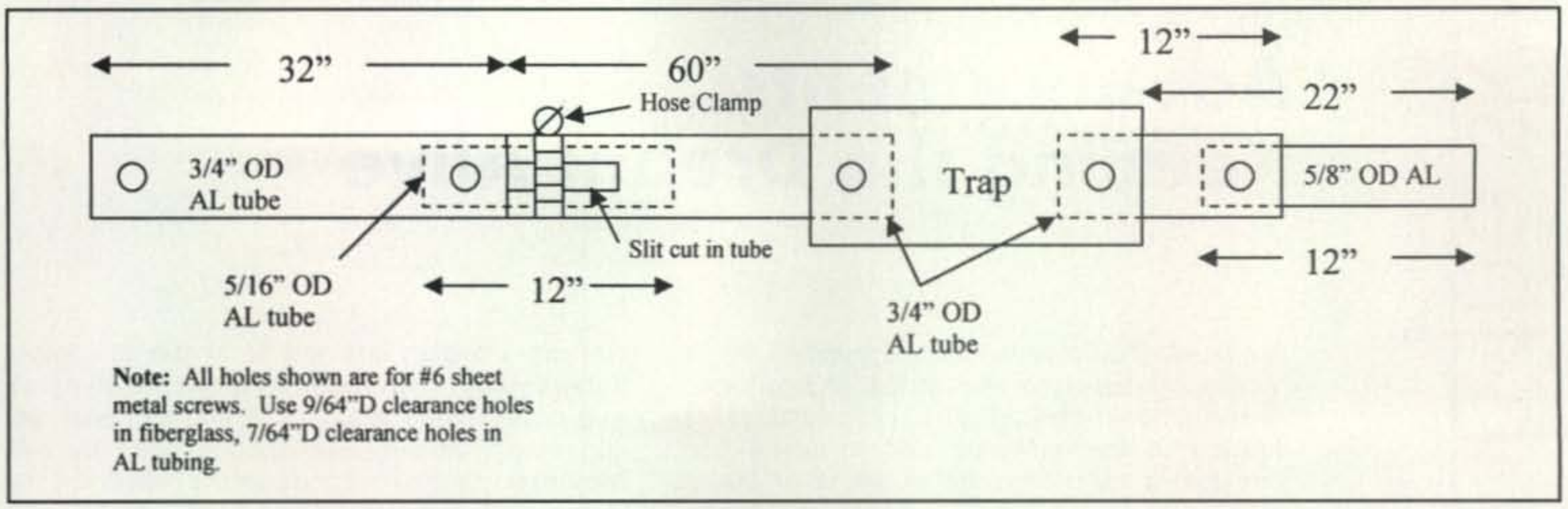


Fig. 2– Each element.

Photo C– The feedline balun consists of a 5-inch diameter coil of six turns of coax.

Description	Source/Part No.	Price ea.
12/17 meter traps (2)	See last month's "Weekender"	
U-bolt/Clamp Set	RadioShack 15-826	$5.49
8 ft. 1"OD fiberglass tube	Max-Gain Systems RT-1-8	$10.00
3/4"OD x 6' aluminum tube (4 pieces)	Texas Towers	$1.50/ft.
5/8"OD x 6' aluminum tube (1 piece)	Texas Towers	$1.30/ft.
#6 solder lugs (2)	Home improvement store	
#6 × 1/2" SS sheet-metal screw (10)	Home improvement store	

Max-Gain Systems: <www.mgs4u.com> (Pay $0.50 to have the 8 ft. tube cut in half)
Texas Towers: <www.texastowers.com>
Mouser: <www.mouser.com>

Table I – Parts list for the 12/17-meter trap dipole.

elements and the coax feed to the center insulator. Fig. 2 shows the individual element construction. My inner 12-meter element came in almost 2 feet shorter than the calculated length (234/freq.) due to the trap loading, and the overall length is 6.6 feet shorter than calculated, again due to the inductive loading of the traps on this band. Photo A shows the dipole up and ready for operation, and photo B is a close-up of the trap.

At this point, you should use an SWR analyzer (preferably) or SWR meter to make any element-length adjustments to center the SWR in each band. Adjust both sides of the antenna by the same amounts. The inner 12-meter elements are easily adjusted with the hose clamps. For the outer element, I placed the 5/8"OD tubing in the 3/4"OD tubing and slid it for best SWR on 17 meters. Then I marked the tubing with a black marker pen, took down the antenna, and drilled #6 holes as shown to attach this element in place. Finally, a balun should be used at the feedpoint, as this is a balanced antenna. As you can see in photo C, I used a 6-turn coax balun. The balun interfaces to the dipole via solder lugs on the ends of the stripped coax cable. Make sure you weatherproof this end of the coax. Liquid Electrical Tape™ from your local home improvement store works great.

Other ideas: As discussed earlier, you can build a wire trap dipole, or if you wish a more robust antenna, use 1.125"OD/1.0"ID aluminum tubing for the inner element. Yo also can use PVC tubing for the center insulator and trap forms. Experiment! Antennas are very forgiving . . . and you can become well known by the employees at your local home improvement store!

I am creating an article that combines these last three "Weekender" columns for those who want everything in one document. E-mail me for a copy.

Next month we'll look some more at uses for snap-on ferrites. Previously, I had discussed these in general terms for RFI reduction. However, next time I'll show you some measured data when using these for both RFI reduction and as inexpensive transmission-line baluns. Until then… 73, Phil, AD5X

magic in the sky

BY JEFF REINHARDT,* AA6JR

Advancements: Keeping the Dream Alive

In terms of advancements in technology, the last hundred years have seen an astounding leap forward when compared with all of the history of civilization in the centuries and millennia prior. Consider what's occurred in terms of life expectancy, science, law, art, music, communications, education, and educational opportunities. In a quote I heard but can't accurately attribute, there was a statement along the lines of "of all that is known by man, over 80 percent of that knowledge has been accumulated in the last two centuries."

On the "plus" side, through the magic of the internet and other resources, we now seem to have the world at our fingertips. Research that often took days or weeks frequently can be accomplished in seconds. Compare the sharing of knowledge today to that of 1908, when the primary medium was print and scientific research was shared through technical publications or one-to-one correspondence via the mail, which could take days or weeks to reach its destination.

On the "minus" side, we've seen less in the way of screening information, or outright attempts to manipulate or distort. I'm sure it's not a big secret to readers of *CQ* that not everything you see on the internet is true. However, there are many others who do not understand that premise.

What we know and how we share information is not a new concern. From Gutenberg's printing press, the invention of the 24-hour news cycle that was heralded by the arrival of the telegraph, through faster forms of travel (powered ship, rail, and aircraft), and finally radio and TV, each advancement has been used for both good and evil. In other words, you can find both the best and worst in mankind using the same media or devices. *"When my brother and I built the first man-carrying flying machine we thought that we were introducing into the world an invention which would make further wars practically impossible."—Orville Wright, 1917.*

Enter Ham Radio

When it comes to establishing and maintaining communications in a time of emergency, we—ham radio operators—are clearly "the good guys." Try as they might, private industry has not been able to bump us off . . . *and they have tried.* No matter how many cell phones are sold or commercial public safety repeaters are put in place, the billions of dollars invested by private industry have still not been able to equal the robust resilience of ham radio.

This was again proven to me a few weeks ago on July 29. I was at a meeting in downtown Los Angeles, when just before noon a moderate earthquake was felt. It was strong enough to get the attention of everyone present at the meeting. After the shaking stopped, out came the cell phones and surprise, surprise, the system was not able to respond. Wireline phones were similarly impacted. Now this was only a moderate event, no major damage or injuries. So here we were in the center of the second most populated city in the nation, which one would presume is well served by a robust communications infrastructure *and the civilian communications system was overwhelmed in a matter of seconds.* I can't imagine what chaos would have ensued if it had been a larger emergency. How would trapped or injured people get help?

I don't like to brag, but I reached in my briefcase, pulled out a ham radio, was able to tune to some key repeaters, and had a fairly quick handle on the magnitude and epicenter of the event. Using the same radio, I was

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

With telephone and power lines down throughout the Gulf Coast disaster area after Hurricane Katrina, amateur radio was there to provide communications (Photo by Liz Roll/FEMA)

able to monitor public safety frequencies and determine that this was not a major emergency.

Our Strength is Our Individuality...

There's an old saying that the most lethal weapon on the planet is a Marine and his rifle. Get a good rifle company of Marines and you have a serious force to contend with. I'll build on that by saying nothing can replace a cadre of experienced ham radio operators who are well versed in using their own equipment, their training, and their ability to innovate. Give yourself extra points if you sharpen those skills by participating in Field Day, local ARES, or RACES drills conducted with public safety agencies, or even by conducting communications in support of community events. It all adds up to experience and knowing how to both use your gear and communicate with others.

...And Ability to Play as a Team

When it comes to emergency responses, what private industry cannot replicate is our "cellular" abilities. We own and maintain our own equipment. We are scattered throughout the country or a region so that if one or some of us are impacted in a way that we cannot respond, others can easily take our place. We do not over-rely on fixed infrastructure. Even if a valued repeater goes down, we often can work around it. We're not dependent on local power sources. Through our Field Day activities and other drills, we know how to pull together generators, batteries, mobile units, even solar power if necessary. In a matter of a few hours or less, we can establish local and long-distance communications under adverse conditions.

Winning the Outreach Battle

However, there's another bit of adversity we must overcome. Commercial providers have lured many government agencies into the false sense of security that their systems are all that is needed—for a price, of course. Also, those interests have something we do not, and that is very deep "war chests" that can be used to influence policy decisions.

Don't get me wrong. I have nothing against commercial interests selling their radios and systems. I do get upset when they promise what cannot be delivered.

We could reply with a one-word response, "Katrina," during which all the commercial systems collapsed and took considerable time to re-establish. In the meantime, hams were up and on the air almost as quickly as the wind died down. However, it will take more than that. Public safety agencies need to know who we are, what we're capable of, and that we can be depended upon. That doesn't happen overnight or through a press release. You have to be there during drills and community events to generate that sense of dependability. A quip from Woody Allen can provide some guidance: "Eighty percent of success is showing up."

If I had to bet my ability to communicate against a storehouse of radios kept in some basement where they can be forgotten with neglected batteries or lost as part of the emergeny event, or having scattered in the same community a group of experienced ham operators with their own gear, I know which choice I would make.

Thus, while technology may continue to advance into digital, satellite, or more exotic forms, not every "advancement" supplants older effective, established methods. You can still go to a book store and return with a hardcover treasure. A bicycle is still both an effective workout and a fossil-fuel saver.

The beacon at the peak of the Capitol Records Building in Hollywood transmits a Morse code message. Is there a similar beacon where you live?

And ham radio will be ready to serve in the aftermath of the next emergency, provided you do your share to ensure it is ready.

"Hidden Morse"

I've recently been amused at finding Morse Code present in some unlikely places. Last year during a trip that took me to Pittsburgh, I noticed a Morse-like pattern from the blinking beacon atop a downtown skyscraper. Sure enough, it was spelling out P-I-T-T-S-B-U-R-G-H. I believe I've also mentioned in a previous column that the famous Capitol Records building in Hollywood, the one that looks like a stack of records, has a Morse beacon that spells out HOLLYWOOD. One recent Sunday night I was watching a baseball game from Boston's Fenway Park, when a shot of the out-of-town scoreboard in the outfield caught my eye with what looked like Morse symbols. Sure enough, a bit of internet research revealed it shows the initials of former team owners Thomas Austin Yawkey (TAY) and Jean Remington Yawkey (JRY). Who knew?

Are there other Morse beacons or messages out there? Drop me a note if you find some.

Those blinking beacons gave me a chuckle, as someone, somewhere, decided it was worth the extra effort to add those messages, that can only be recognized by a few, to the *Magic In The Sky*.

73, Jeff, AA6JR

digital connection

BY DON ROTOLO,* N2IRZ

CW Skimmer (and the MELP Yelp)

Being a 5 word-per-minute General—and let's be honest here, that 5 wpm was a long time ago and not much of a challenge—I'm always looking for ways to copy some of the Morse code I hear on the bands. (One of these days I'll find the time to break the 10-wpm barrier, but until then, I'm cheating). A friend pointed me to the DX Atlas website <www.dxatlas.com>, where I downloaded a trial copy of CW Skimmer.

CW Skimmer is a nifty piece of software from Alex Shovkoplyas, VE3NEA, that decodes Morse code (CW). Using a wideband receiver, such as a SoftRock, and a modern 3-GHz Pentium with wideband audio card, decoding up to 700 signals ***in parallel*** is possible. (You read that right: 700 CW signals, all at the same time. Wow!) For more modest setups, such as my ICOM IC-706 MKIIG and 2.2 GHz AMD Athlon-64, decoding every CW signal within the 3-kHz audio bandwidth during a busy contest weekend with an ordinary sound card barely consumes 4 percent of my computer's CPU time.

What's really nice about CW Skimmer is that even though it works quite well, if it misses a character the fast waterfall display allows you to fill in the blanks visually, even at 30 wpm or more, and you also get a DSP cleaned-up version to decode by ear as well. Several features such as icons to highlight specific CW phrases (like "599") and highlight colors for callsigns on a "watch list" come in handy. It even has an optional Telnet cluster server, which allows extracted callsigns to be seen as spots by others, much like a personal DX Cluster.

Debate Among Contesters

The contesting community is currently discussing whether stations using CW Skimmer should be considered "Assisted" category stations. With that SoftRock receiver, you can view quite a wide swath (at least 10 kHz) of the CW segment on a band and see all of the CW activity, essentially spotting a big chunk of the band at once. Some say that this constitutes an unfair advantage to those with the cash to set up CW Skimmer optimally, and thus feel that such stations should be considered Assisted, putting them into the same category as anyone using a DX Cluster or other spotting aid. Others dispute that notion, since money can always buy an advantage—bigger antennas, more powerful amplifiers, better feed line, and more sensitive receivers. Personally, I'm a digital guy, not a contester, so I'm staying out of that debate for now. *(Editor's note: The CQ WW Contest Committee has decided that use of CW Skimmer or similar software in the CQ World-Wide DX Contest will put an entrant into the Assisted category. It is likely that other contest sponsors will follow suit.)*

Anyway, let's go through getting your own copy of CW Skimmer and setting it up. CW Skimmer requires Windows® ME, 2000, or XP, although some audio drivers may allow Windows 98SE or Vista to be used.. In any case, Windows 95 and 98GE are definitely not supported. You also need a sound card. For a 3-kHz audio input, almost any sound card will be fine, but if you plan on using a wideband source, it should go without saying that you need a wideband audio card.

First step, as always, is to download the software. There's a link from the main DX Atlas web site—look for the CW Skimmer link off to the left—or you can go directly to <www.dxatlas.com/CwSkimmer/>. Remember that what you're downloading is a full-function trial version of the software, although it's only good for 30 days. If you find that you like it and want to keep using it, you'll need to spend the $75 to register your copy. My advice is to try it first and then decide.

The install file is a 3-MB .ZIP file which unzips to a standard InstallShield installation wizard of almost the exact same size. The wizard runs quickly and smoothly, installing both CW Skimmer (along with an Uninstall program) and Omni-Rig, a freeware utility that allows CW Skimmer to con-

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

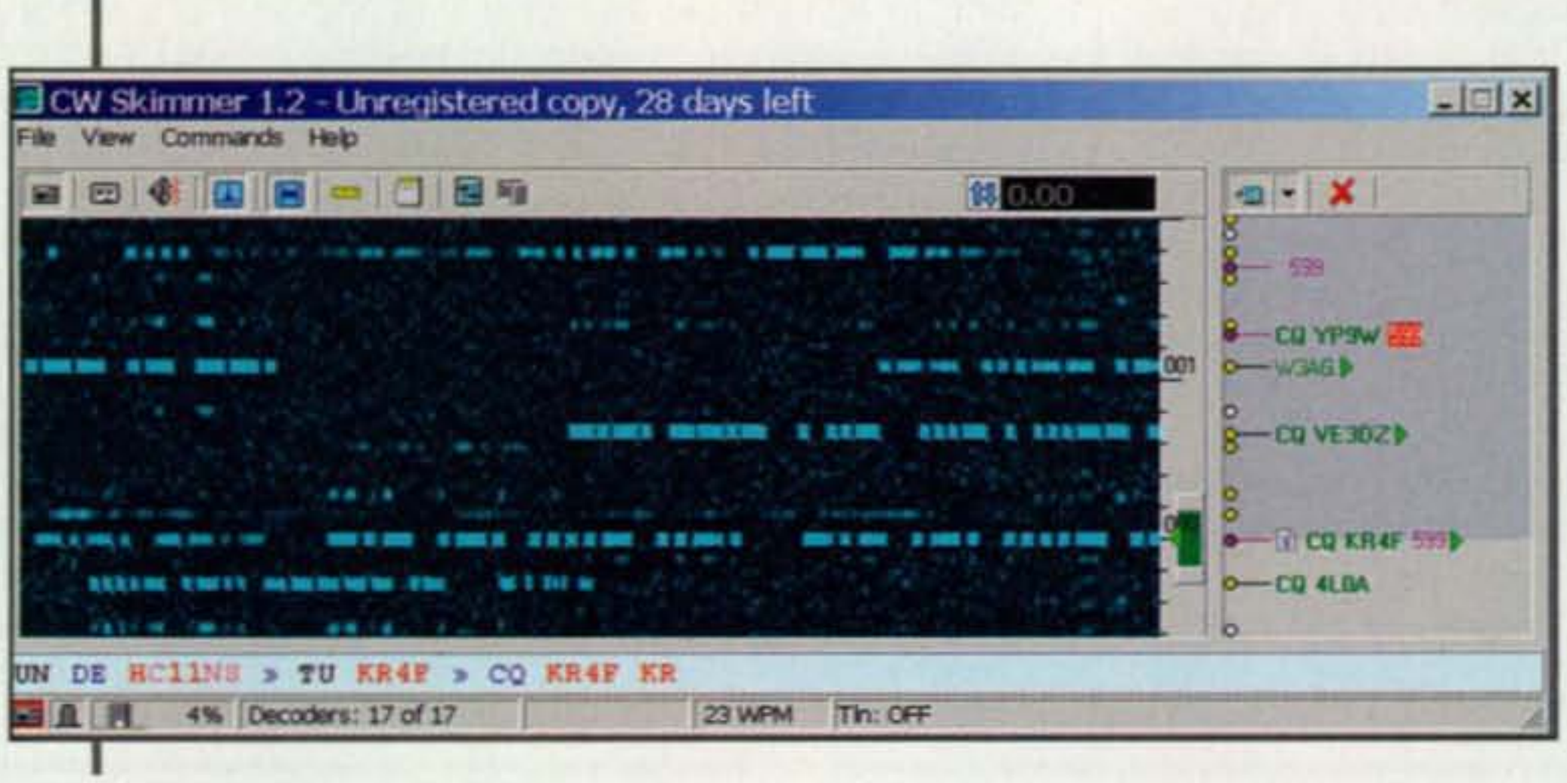


Fig. 1– The CW Skimmer main window. This shows only a 3-kHz bandwidth; wideband operation can show quite a bit more. The Band Map to the right is showing confirmed callsigns, but it can also show raw text as received. The variable-bandwidth DSP filter (the dark-green bar around 800 Hz) indicates which signal is being processed for re-formed audio for the computer speakers and text display at the bottom of the window.

CQ calendars, books, cds, & dvds!

Hot Item!

2009/10 Calendars

January 2009 - March 2010

CQ Amateur Radio Operators Calendar
15 spectacular color images of some of the biggest,most photogenic shacks, antennas, scenics & personalities.

Order No. HRCAL $10.95

Ham Radio Magazine on CD

Brought to you by CQ & ARRL
Enjoy quick and easy access to every issue of this popular magazine, broken down by years!

Three sets, each containing 4 CDs -

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

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

MIL SPEC Radio Gear

Korean War To Present Day
by Mark Francis, KIØPF

Detailed write-ups for many familiar sets: PRC-25/-77, RT-68, PRC-1099, GRC-106, GRR-5, R-392 and more. Over 230 pages of operation, modification, and maintenance tips and information, including 200+ illustrations.

Order No. MILSPEC $27.95

Passport to World Band Radio

2008 Edition

The world's #1 selling shortwave guide! Have the world at your fingertips! You'll find in depth details on what to buy and where to tune.

Order No. PASS $22.95

"Up Two" by G3SXW

Are you a DX'er? Have you longed to be on the other side of the pile-ups? Dream of taking a rig to exotic locations? Then this book is certain to bring you the vicarious thrills of operating from exotic places.

Order No.: UPTWO $19.95

Understanding, Building & Using Baluns & Ununs

by Jerry Sevick, W2FMI

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

Order No. 2BU $19.95

W6SAI HF Antenna Handbook

by Bill Orr, W6SAI

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

Order No. W6SAI $19.95

The Short Vertical Antenna & Ground Radial

by Jerry Sevick, W2FMI

Small but solid guide on the design and installation of inexpensive, yet effective short HF vertical antennas. Antenna restrictions a problem? This book could keep you on the air!

Order No. SVERT $10.00

The NEW Shortwave Propagation Handbook

by W3ASK, N4XX & K6GKU
A comprehensive source of HF propagation principles, sunspots, ionospheric predictions, with photos, charts and tables galore!

Order No. SWP $19.95

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!

Order No. HEATHKIT $29.95

2008 World Radio TV Handbook

Up-to-date information on mediumwave, shortwave, and FM broadcasts and broadcasters. Includes articles of interest to both listeners and DXers, reviews of the latest equipment, maps with SW transmitter sites and much, much more!

Order No. WRTH $29.95

"Getting Started" DVD Paks

Our renowned Getting Started videos have been grouped together on DVDs!

1 - $24.95
2 - $45.95
3 - $65.95

CQ Ham Radio Welcome Pak

Includes 3 programs:
Ham Radio Horizons
Getting Started in Ham Radio
Getting Started in VHF
Order # DVDHR

CQ VHF Specialty Pak

Includes 3 programs:
Getting Started in Satellites
Getting Started in VHF
Getting Started in Packet
Order # DVDVHF

CQ HF Specialty Pak

Includes 2 programs:
Getting Started in DXing
Getting Started in Contesting
Order # DVDHF

1 Pak for $24.95; 2 Paks for $45.95; 3 Paks for $65.95
Buy any combination and save!

Contesting in Africa

Multi-Multi on the Equator
by Roger Western, G3SXW
& the Voo Doo Contest Group

A compelling array of contesting and DXing experiences from one of the most unique operating venues on Earth, the African continent.

Order No. AFRI $19.95

The Complete DXer

Third Edition

The joy of the chase, the agony of defeat, the thrill of victory are the stuff of The Complete DXer, a book that is almost as seductive as the DX chase it describes. It excites, it entertains, it teaches!

Order: COMPDXer $19.95

HR Anthologies

Sale! $18.00 ea. ~~$19.95~~

Now you can enjoy collections of the best material published in *Ham Radio magazine*, conveniently arranged by subject and original publication date. Choose your interest, your time period and choose your anthology!

Homebrewing Techniques .....*Order # AHOME*
Test Equipment & Repair Techniques ..*Order # ATEST*
Antennas - 1968 - 1972 .....*Order # ANTS1*
Antennas - 1973 - 1975 .....*Order # ANTS 2*
Get all 4 for $70 . . . Order # ASET

Shipping & Handling: U.S. & Possessions-add $7 for the first item, $3.50 for the second and $2 for each additional item. FREE shipping on orders over $100 shipping to one domestic address.
***For a single *CQ Amateur Radio Operators Calendar* shipping within the U.S. & Possessions add only $2 Shipping and Handling.**
All Foreign Shipping & Handling - calculated by order weight and destination and added to your credit card charge.

CQ Communications, Inc., 25 Newbridge Rd., Hicksville, NY 11801
Call 1-800-853-9797 - FAX your order to 516-681-2926 - www.cq-amateur-radio.com

The MELP Yelp: Fast Footwork for Some DV Software

I've written about most of the new soundcard based Digital Voice (DV) modes available to amateurs, such as WinDRM and FDMDV. These make use of a voice Coder-Decoder (codec) known as MELP (Mixed Excitation Linear Prediction). There are few different flavors of MELP, varying in occupied bandwidth and audio quality, but it's been recently learned that they all have a similar problem: They need to be licensed.

It turns out that the MELP we've all been using is an illegal copy. *Oops!* MELP was licensed for use at no cost, but only to agencies of the US Government, since it funded the research that ultimately resulted in MELP. It seems this wide-open license was misinterpreted as wide-open for everyone, and so copies of MELP were distributed and downloaded by hams worldwide, unwittingly violating copyright laws.

As someone whose intellectual property (such as this column) is protected by copyright, I am strongly in favor of observing copyright and other legal protections. Considering that, and with the knowledge that I have copies of illegal software on my computer, I have gone ahead and erased them. I recommend that you do the same thing as well, because it's the right thing to do.

Does this mean that Texas Instruments, Microsoft, and Compandant, to name a few of the companies licensing versions of MELP, will be coming after radio amateurs en masse like RIAA against people who downloaded music? I doubt it, but that's only my opinion. While even simply possessing a copy of a MELP DLL could be a violation of the intellectual property rights of these companies, *using* it most certainly appears to be so.

So what does this mean for the Digital Voice community? First of all, only three current DV programs were affected: WinDRM, FDMDV, and DRMDV. Others, including AOR's software and D-Star, use different codecs. As it turns out, WinDRM was always able to use an alternative open-source codec called Speex, while FDMDV was quickly rewritten to use it as well. DRMDV, since it's really not in wide use and is inferior to the other two products, was abandoned. That means you can still use these programs—just not with MELP.

You will need to download a new copy of FDMDV, and/or select a different codec in WinDRM (such as Speex). There are practical as well as legal reasons: If you're still using MELP, the rest of us using Speex won't be able to decode your signals. It's known that Speex isn't nearly as good as MELP, but it's far better than nothing. Perhaps someone will be able to negotiate a non-profit use agreement in the future, but for now, my advice is to avoid using unlicensed software.

trol your radio through the CAT interface. (Omni-Rig is a useful program in its own right and can also be downloaded separately from the DX Atlas website). My only complaint with the installation is that it doesn't put a shortcut onto your desktop, but this is easily remedied by right-clicking the link on the All Programs list and selecting Send To Desktop as Shortcut.

Skimmer Setup

Let's start the software and go through the setup options. The included help file is brief and to the point and covers every topic adequately. To quote the help file: "CW Skimmer controls external hardware and performs real-time audio streaming. This makes the program very sensitive to the correctness of its configuration settings. Please follow the instructions below carefully to ensure that the software is properly configured." Instead of my trying to replicate or summarize all of the possible configuration possibilities, I'm just going to skim over the most important points.

With the software open, select View on the menu and then Settings. Note that the Settings window can also be opened by clicking on the appropriate icon from the application screen. The first step is to select which kind of radio you have. For starters, let's pick the 3-kHz radio, as it's the easiest to set up. Note that the decoding capabilities and overall usefulness of CW Skimmer as a band-scope-type utility are quite underused in the 3-kHz mode, so always keep the eventual move to a wideband setup in mind to take full advantage of everything it has to offer.

Next click on the Audio tab. Only if you have more than one sound card will you need to make changes here. CW Skimmer is sensitive to the audio drivers and, in wideband mode, the audio card itself. According to the help file, start with the WDM interface, and if that doesn't work, try the MDE interface. In my setup, which was already configured for other digital-mode software such as DigiPan, the defaults worked perfectly right out of the box. If you're using the CAT tuning interface, be sure to configure it properly, and to set the sidetone frequency accurately, as this sets the receiver center frequency as well as the DSP audio output tone (more on that later). As with any soundcard mode, you may need to adjust the audio levels for the software

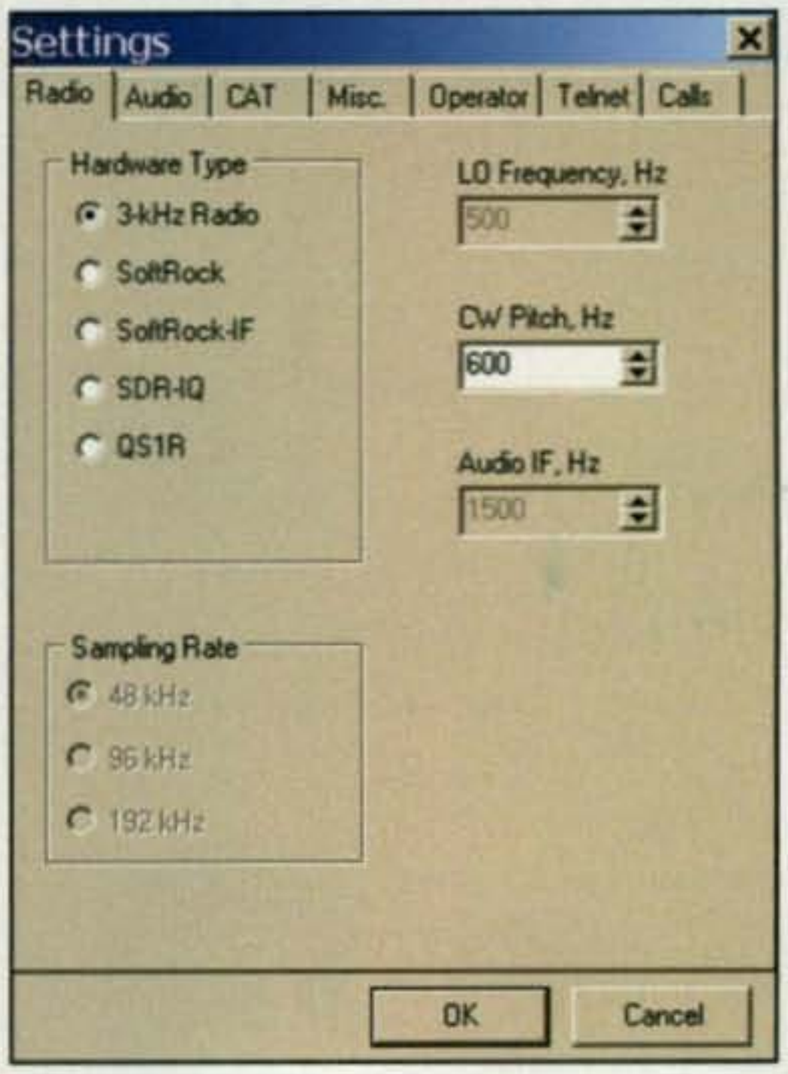


Fig. 2–The Radio tab in the Settings window, showing the various settings and supported radios. Note that most Software-Defined Radios (including the FlexRadio offerings) and wideband receivers are indirectly supported. With this program, wideband is definitely the way to go.

to perform properly, but I found CW Skimmer relatively insensitive to audio input level, meaning it's not that picky, working well under almost all conditions.

Operating with the Skimmer

OK, with the most important settings done, close the Settings window and click on the "Start/Stop Radio" icon at the far left to start decoding (be sure to disable any AGC on the radio for best performance). At first I was puzzled as to why the waterfall display was blank, causing me to check the troubleshooting section of the help file until I found that icon by reading the manual, so don't make the same mistake. Tune to a CW signal and watch the waterfall display. I enlarged the CW Skimmer window horizontally to the width of my screen so I could see more of the CW. The thickness of the line indicates signal strength. The Noise Blanker and Key Click filter can come in handy to clean up the display if necessary.

To the right is the Band Map, which can be configured to show only Verified Callsigns, All Callsigns, or Raw Text by pulling down the "Filter Labels" box just above. Experiment with the different settings, but you'll eventually find that Verified Callsigns gives the cleanest and most useful display when the band is crowded, and All Callsigns at other

Clarification on Digital TV

In my August column, I inadvertently implied that you can view High-Definition TV on any TV by simply connecting it to a Digital TV converter box. Although the DTV signals being broadcast can be true HDTV, you first need an HDTV to see HDTV signals, and then you also need a converter box with HDTV outputs. The DTV converter boxes eligible for the $40 coupon do not have HDTV outputs, since they are intended to convert DTV to display on an analog TV set. Thanks to Glenn Little, WB4UIV, for pointing this out.

times. Raw text looks a lot like the Multiple Station decoding option in DigiPan.

Between the Waterfall display and the Band Map is the frequency display and DSP decoder filter indicator, the dark green bar on the frequency display. Any CW signal within the DSP decoder bandwidth is re-formed and sent to the computer speakers as clean CW for by-ear decoding. To hear it, ensure the signal is in the DSP bandwidth (which can be enlarged or reduced from 700 Hz to 20 Hz by dragging the mouse pointer) and click on the "Enable Audio Output" icon, the little speaker just to the right of the Start/Stop Radio icon. The text from a signal in the DSP Decoder bandwidth is also displayed on the single-line display beneath the waterfall display.

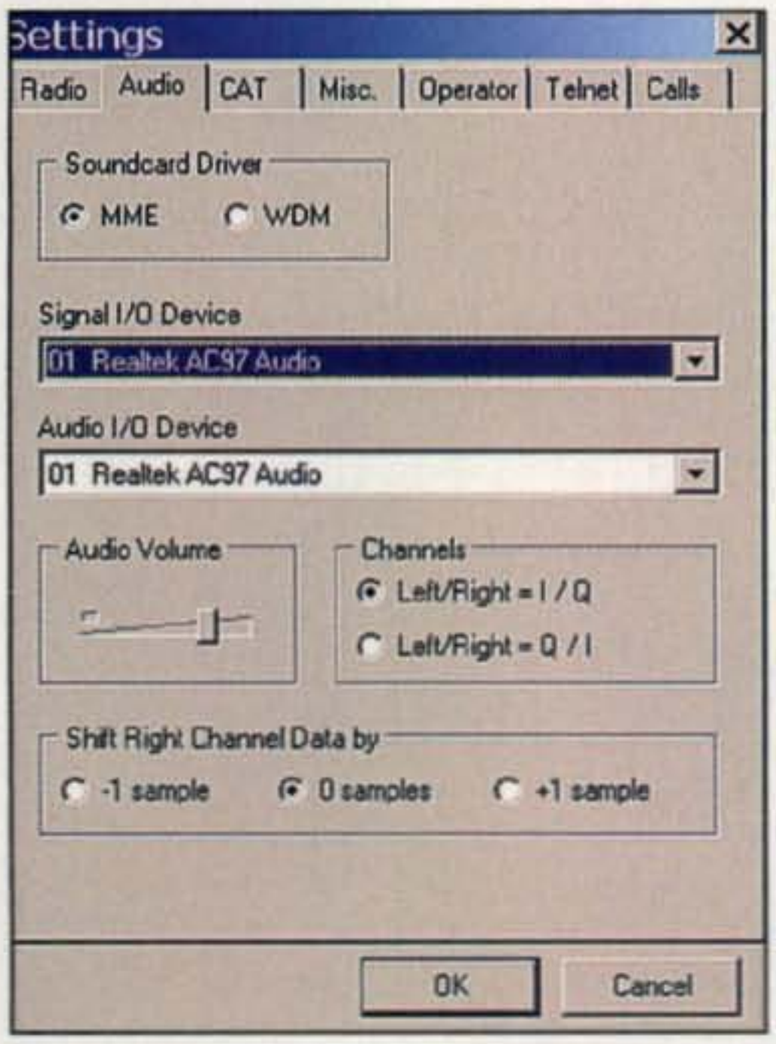


Fig. 3– The Audio tab in the Settings window. For a standard (3 kHz) audio signal the default settings worked just fine for me, but for a wideband setup you may need to tweak the settings for best performance. The included Help file provides sufficient guidance.

Some of the more advanced features of CW Skimmer are quite helpful and well thought out. For example, simply mousing over a callsign in the Band Map brings up the text recently decoded from that station. A built-in DSP noise blanker and key-click filter are included. The received signals can be recorded (and played back), useful for documenting a QSO (perhaps something historic) or even parts of a contest session for later review. Two recorded segments are available as links from the help file to demonstrate how wideband works in a contest situation or in a pile-up situation.

CW Skimmer is also somewhat intelligent in its display capabilities. It looks for certain words or phrases, such as "599" (or the more common "5NN"), "CQ", "QRL?" and highlights them. It interprets words such as "DE" and "TEST" to figure out which station is running (and which is the correspondent), or if a station is in Search & Pounce mode. As mentioned previously, you can enter one or more callsigns into the Watch List, and these will be highlighted if seen—handy for active DXpeditions. Of course, if you're using the CAT interface, you tune to any signal instantly by simply clicking it. You can even limit the tuning range to the CW section of the band (with a choice of several band plans) if you prefer.

The Telnet feature is the only one I did not explore. This is a service you can set up to allow others to read your DX Skimmer spots. It is a read-only server, meaning others cannot post spots, but they can log in (requiring a password is optional) and use your data in much the same was as they can use an ordinary DX Cluster, either directly or via most logging, contesting, and cluster-monitoring programs that support Telnet operation.

There are a few other handy features in CW Skimmer, such as the Callsign List showing all of the verified callsigns along with the frequency and time, and the ability to select how carefully a callsign is verified (from "Minimal" to "Paranoid". I'll leave the discovery of these and other features to you.

I'm not enough of a CW guy to register DX Skimmer, but one day I believe that I will devote more resources to my lazy quest to become really proficient at the code. Whether this puts a contester into the Assisted class or not is something I won't debate, but I can say with certainty that CW Skimmer will be a very valuable piece of software for anyone who enjoys CW operating, both contester and casual ragchewer alike. With a 30-day free, full-function trial version, the author is making sure you have enough time to see how good this software really is. Try it. I think you'll be as impressed as I was.

In closing, I want to thank the several readers who wrote with excellent questions and comments about the Digital TV piece in August , particularly the fellow whose DTV problems included rattlesnakes (!). As a writer, I can say that there's nothing better than reader feedback, both good and bad. Write early, and write often.

73, Don, N2IRZ

qrp

BY DAVE INGRAM,* K4TWJ

Three Cheers (Treats) for QRP

What is a quick and easy way to enjoy HFing—from the den, the patio, the car, a vacation cottage, or even a park bench in the fall? By going QRP, naturally! The gear is small, lightweight, reasonably priced, and doing more with less is an ideal way to fine-tune your operating skills. The intensely (hopelessly?) devoted go a couple of steps further here, winning awards, setting QRP records building their own gear, and dinking with the simple circuits just for fun. Three examples of those facts, the famed 1000 Miles per Watt Award, the ever-popular Michigan Mighty Mite Transmitter, and the classic Two Chipper receiver are the subjects of this month's column. Here's hoping our views give you, too, that final push to go QRP!

The 1000 Miles per Watt Award

Communicating over a long distance while using 5 watts or less of output power is a noteworthy achievement from any point of view, and the QRP Amateur Radio Club International recognizes that feat with its prestigious 1000 Miles per Watt award (details at <www.qrparci.org>; click on "Awards"). See photo A. You do not need to be a member of QRP ARCI to apply for the award, but I heartily recommend joining. You will receive an official QRP ARCI membership number good for life (and for use in contests) and the club's "QRP Quarterly" newsletter will keep your interest in QRP flourishing. Membership in QRP ARCI is $20 a year (in the U.S.), and you can apply on-line or via postal mail (QRP ARCI, Jack Nelson, K5FSE, 1540 Stonehaven, Cumming, GA 30040).

As QRP ARCI explains, the 1000 Miles per Watt award is available to any amateur who successfully conducts a QSO with another amateur in which the distance between the two stations divided by the QRP station's output power equals or exceeds 1000 miles per watt. As some examples, the distance between Alabama and Perth (Australia) is approximately 11,000 miles, and assuming 5 watts of power, that equals 2200 miles per watt. The distance between Miami and Moscow (5740 miles) barely qualifies at 5 watts, and the distance between Chicago and London (3960 miles) would qualify only at less than 4 watts of power. Where did I find those figures? There is a good distance calculator listed on the QRP ARCI website's awards page (www.indo.com/distance/). If the associated grid squares or latitudes and longitudes are known, you can also directly enter them on a calculator at the club's website.

Two other DX awards you may find appealing are Worked All Continents QRP and 5 Band Worked All Continents QRP. The fee for any of these awards is $4.00 (for U.S.). Applications and questions go to Jeff Embry, K3OQ, online at: <awards@qrparci.org>, or via postal mail to Jeff at 8650 Welbeck Way, Gaithersburg, MD 20886. Give them a good old college try and also consider joining the QRP ARCI's fall on-the-air QSO party happening this month on October 18 and 19 (details on the QRP ARCI website).

The Michigan Mighty Mite

Another long-running and widely respected QRP group is the Michigan QRP Club (www.miqrp.org), and its work in promoting both the homebrewing and

Photo A– Would you like to pursue a reasonably achievable challenge with an impressive reward? Check out the QRP ARCI's 1000 Miles per Watt award (details at <www.qrparci.org>). If you are interested in a real challenge, consider setting a new world record, such as exceeding 44,180 miles per watt on 17 meters (accomplished by contacting VK6HF in Western Australia from Alabama while running 250 milliwatts).

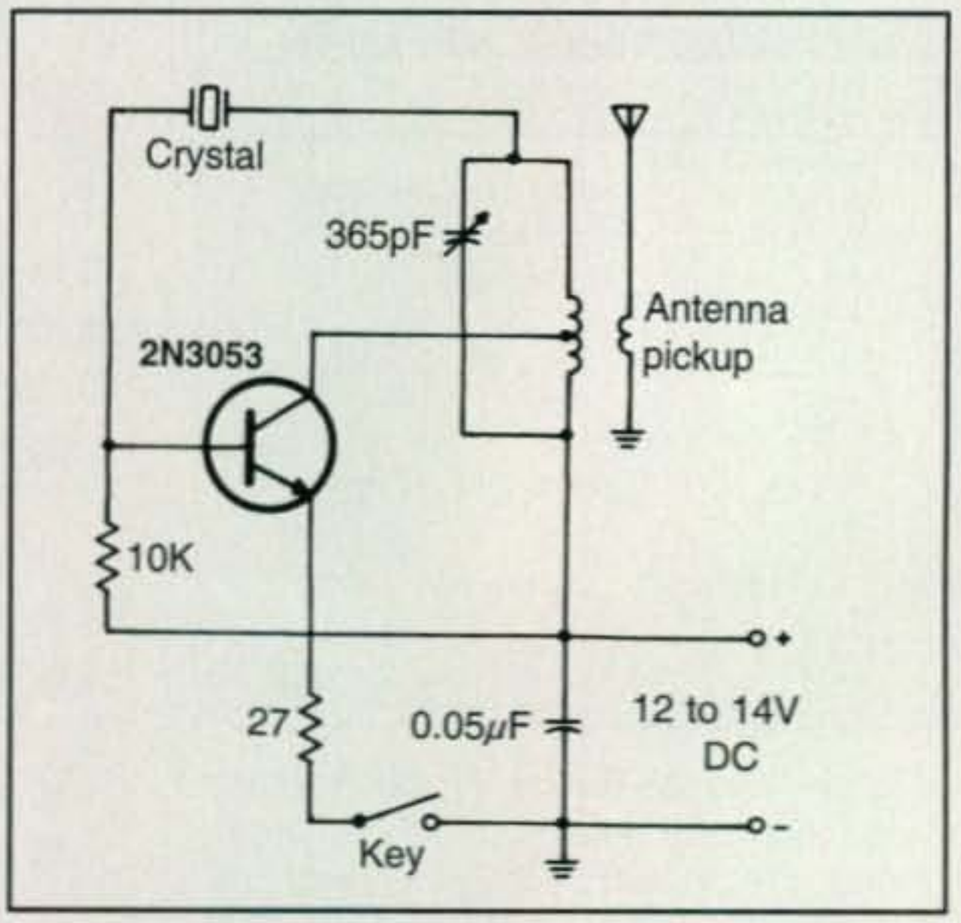


Fig. 1– Circuit diagram of the famous Michigan Mighty Mite QRP transmitter. It is simple, effective, and easy to tune. What else could one want!

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

operating aspects of low-power hamming is quite remarkable. I have not seen the club newsletter/mini-magazine, the "Five Watter," in a few years, but it has always been filled with neat projects such as the Michigan Mighty Mite.

This simple CW transmitter (fig. 1) goes together in only one or two hours and has effectively introduced many newcomers to the wondrous world of QRP. It is low cost, works with old-style FT-243 or newer metal-cased crystals, and can be assembled for 40-, 30-, 80-, or 160-meter operation. Output power is approximately 1.5 watts when using a 13.8-volt supply. The transmitter's coil is wound on a 35-mm plastic film canister or a 1.25-inch diameter pill bottle.

For 40-meter operation, the coil is 21 turns of No. 22 or 24 enamel-coated copper wire tapped at seven turns from its bottom/+12-volt end. For 30 meters, the coil is 15 turns (of the same wire) tapped at four turns. For 80 meters, 46 turns tapped at 16 turns works well, and for 160 meters 64 turns tapped at 20 turns gives good results. The antenna pickup coil is four turns for 40 or 30 meters and eight turns for 80 or 160 meters. Wind it over the middle of the main (tapped) coil using more enamel-coated wire or plastic-insulated solid hookup wire. Experiment with the antenna coil's position to "tweak" output power. A small 365-pFd plastic-cased tuning capacitor or an open-air equivalent works fine for tuning and tune-up is also a cinch: Just adjust the variable capacitor for maximum output consistent with the cleanest/smoothest keying signal.

Once you get this little gem "perking," you might want to experiment with adding a second (or third or fourth) 2N3053 in parallel with the transmitter's existing 2N3053 for higher output. Since a variable capacitor is used for tuning, quickly readjusting it to compensate for extra transistors is a snap. What else can I say except it is a neat project, so enjoy!!

The Two Chipper

Do you need a quick-to-assemble receiver to mate with your Michigan Mighty Mite transmitter? A good all-around choice is the "Two Chipper" receiver (photo B). This little gem's circuit design has been used with and without expansions in a number of mini rigs such as K8IDN's MRX receiver, NorCal's 49er, and MFJ's Cub (with crystal filter). It has also been used in Great Britain's "Sudden" receiver (available from <www.qrpme.com>) and Elecraft's KX-1 (modified to include crystal filter and microprocessor con-

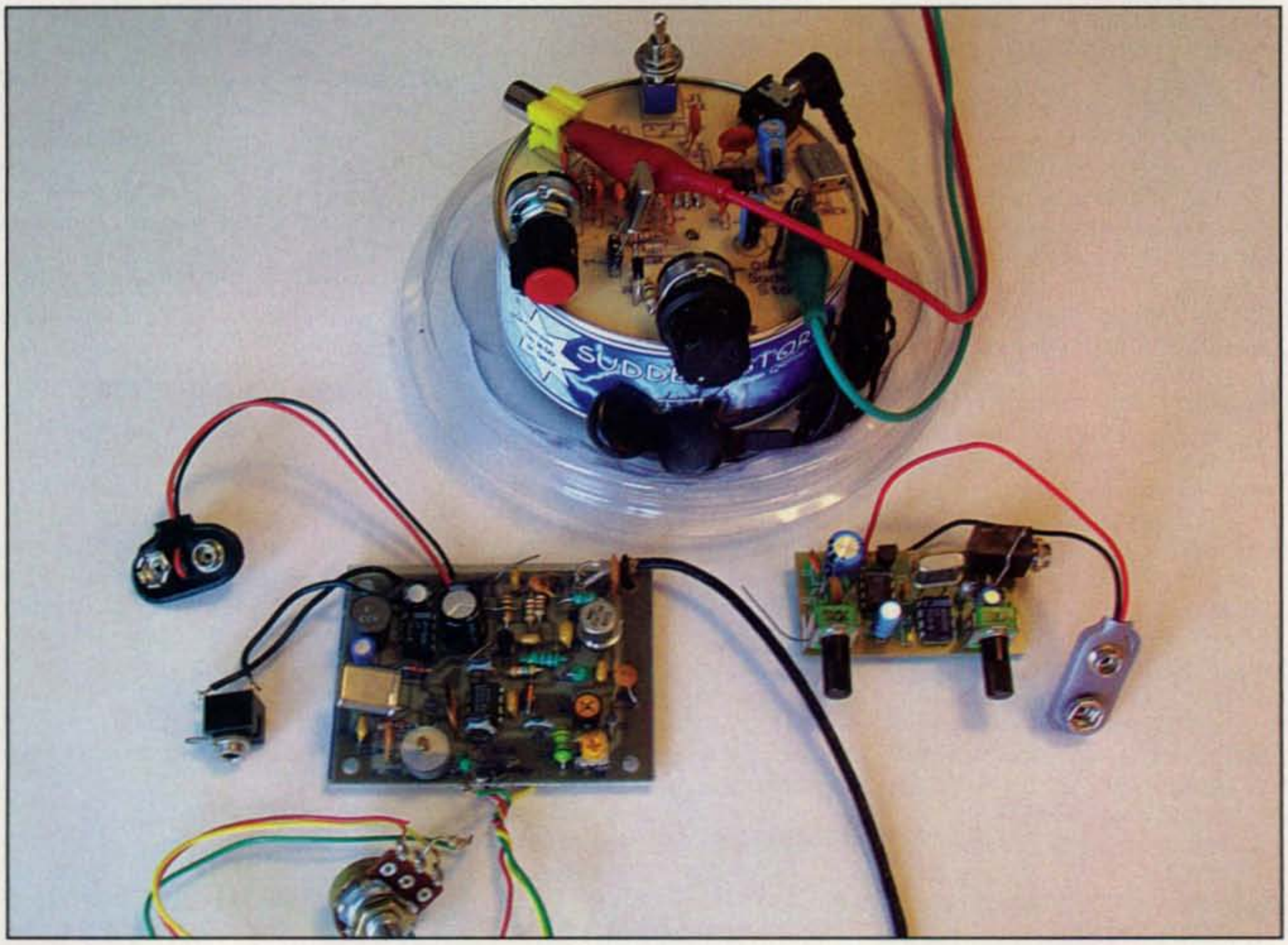


Photo B– Three familiar versions of the Two Chipper receiver are the round-base "Sudden Storm" from <www.qrpme.com>, the no-longer-available NorCal 49er ,and the also discontinued but delightful (and tiny) MRX receiver. Enterprising QRPers can also perfboard-assemble their own Two Chipper. (Details in text.)

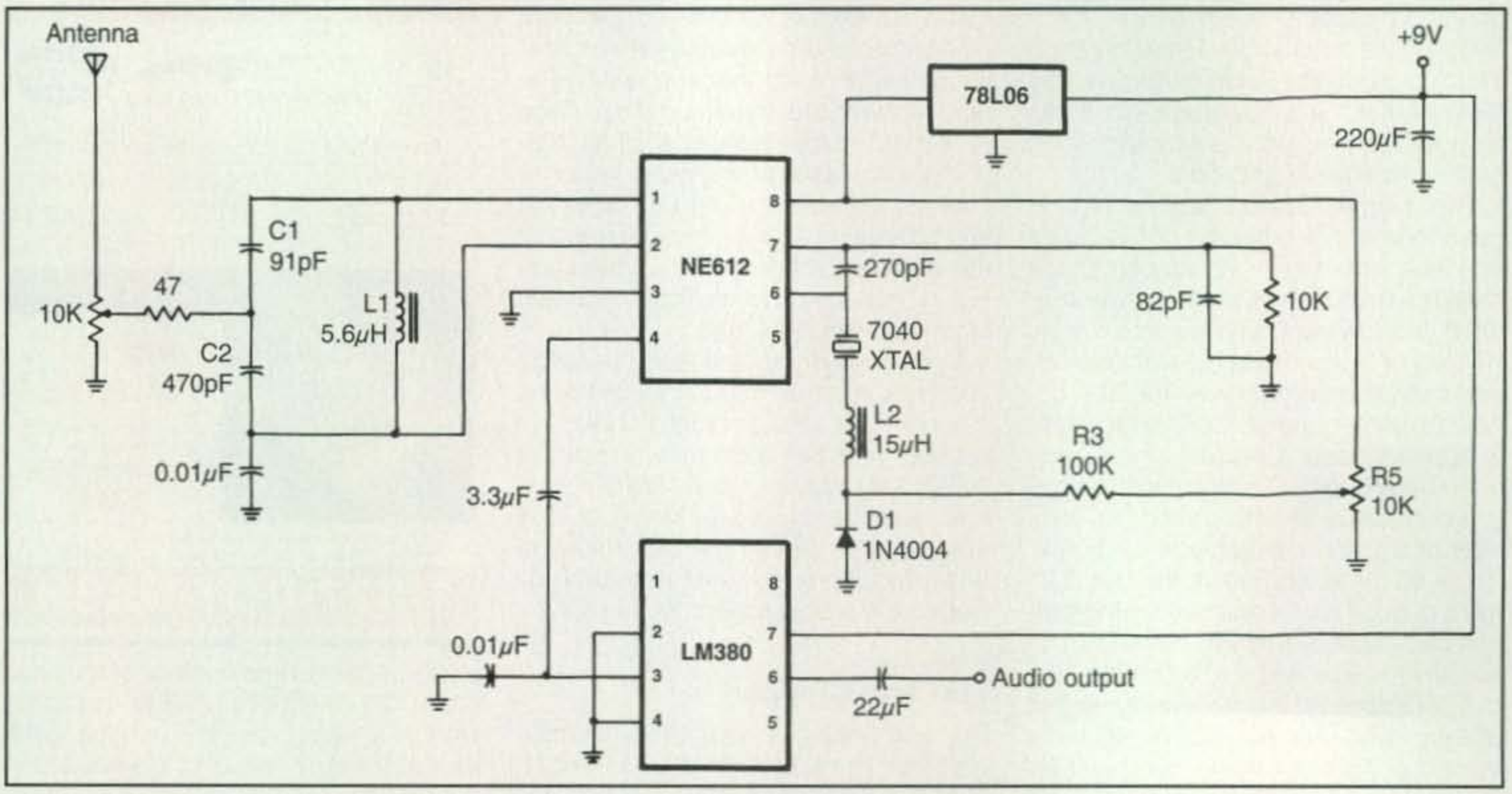


Fig. 2– Circuit diagram of the MRX version of Two Chipper receiver discussed in the text. A similar circuit is used in Sudden receiver and 49er mini transceiver.

trol), and many more. Like the Energizer Bunny, this little delight just keeps on going, and going, and going.

The Two Chipper works well, too. I often leave my QRP ME version playing in the shack to casually monitor activity on 30 meters or QRP activity around 7040 kHz on 40 meters. This version does not have a crystal filter, so I can hear stations on either side of a selected frequency without riding the tuning control. Audio from a pair of Dollar Store earbuds plugged into the Sudden is also loud enough to serve as a mini-speaker for monitoring in a quiet room. I have run several direct comparisons between my TS-2000, IC-746 Pro, and the Sudden when hearing JAs and PYs, and have found a signal two or three S-units above band or background noise on a "big rig" is readable on the Sudden. It definitely beats my Hallicrafters S-38 for casual listening.

Study the Two Chipper's basic circuit (MRX version as shown in fig. 2), and you will note it is comprised of approximately two dozen parts (a quick-brew project for sure). A very popular NE612 functions as both a heterodyne oscillator and a mixer, converting incoming signals (peaked by C1, C2, and L1) directly to audio, which is then coupled from pin 4 of the NE612 to pin 3 of audio amplifier LM-380. Output from pin 6 of the LM-380 is sufficient to really make a pair of earbuds jump, or a small two-inch speaker romp. The NE612's oscillator frequency is set by the crystal and can be tuned several kHz by the associated VXO circuit, which is comprised of L2, D1 (which acts like a varicap) and R3 plus R5 (which varies bias on D1 to change its capacitance).

The "front end" of my MRX-version Two Chipper receiver was optimized for 40-meter reception, so I changed C1 to 68 pFd, C2 to 330 pFd, and L1 to 4.7 µH, switched to a 30-meter crystal, and was pleasantly overwhelmed with outstanding performance. After building the QRP ME "Sudden Storm" version with its handy crystal socket, I discovered just swapping between 40- and 30-meter crystals was quite adequate and produced a convenient dual-band receiver to boot. The Sudden receiver has now been used with a Tuna Tin 2 transmitter (also from <www.qrpme.com>) in a couple of Flying Pigs "Run For the Bacon" contests (see <www.fpqrp.net> for particulars), and the combo works well together. I clip-lead connect the transmitter and the receiver's ground to the antenna, and then use one hand to touch the receiver's antenna clip lead to the antenna wire plug when receiving, or remove it when transmitting/keying with the other hand. Now that's real hands-on T/R switching!

Home experimenters keen on doing more with less can have a ball dinking with this little receiver. As an example, you can perfboard-assemble only the NE612 stage and route its audio output (available between pin 4 and ground) through a .01-mFd capacitor to the "top" and "bottom" terminals on an AM radio's volume control for blowout in-home band monitoring. The NE612 converts strong and weak signals alike, so cranking up the radio's volume increases sensitivity. Does your car radio have an MP-3 player input socket? Connect output from the NE612 (or the full Two Chipper receiver) to the socket, crank up the radio, and roll out like a big wheel.

Show Us Your QRP

We wind down this month's column with an invitation (encouragement!) to share your views and experiences in QRP with everyone via this *CQ* column. Show us what you are using in a rig, antenna, and key. Show us how you have it set up—in a narrow storeroom, under a staircase, in a reworked closet—and tell us what you have worked lately. We all like to see and study how our friends put together their stations. I especially recall that several years ago one chap enclosed his full QRP station in a roll-top breadbox, and it was dazzling.

Remember, too, that 35-mm photos (sent directly to me in Gardendale, AL, and not to the *CQ* office in NY) work are as good as or better than e-mailed digital images (which must be between 250k and 1 meg resolution). Send me a note and I will hold a spot for you.

73, Dave, K4TWJ

RSGB Books from CQ

View more RSGB books on our web site!

Guide to VHF/UHF Amateur Radio

By Ian Poole, G3YWX

RSGB 2000 Ed.,112 pgs. Everything you will need to help you enjoy VHF/UHF to the fullest. Choosing the right transmitter, receiver, antenna,utilizing the correct part of each band and more!

Order No. RSGVUAR $16.00

Antenna Toolkit 2

By Joe Carr, K4IPV

RSGB & Newnes, 2002 Ed., 256 pgs. A definitive design guide for sending and receiving radio signals. Together with the powerful suite of CD software included with this book, the reader will have a complete solution for constructing or using an antenna; everything but the actual hardware!

Order: RSANTKIT2 $48.00

Practical Wire Antennas 2

By Ian Poole, G3YWX

RSGB, 2005 Edition, 176 pages This significantly expanded and fully revised edition includes designs for a wide range of practical wire antennas . You'll find just about every type of wire antenna you could possible imagine with complete and easy to understand designs.

Order: RSPWA2 $23.50

Packet Radio Primer

By Dave Coomber, G8UYZ & Martin Croft, G8NZU

RSGB, 2nd Ed., 1995, 266 pages Detailed practical advise for beginners. Completely revised and greatly expanded to cover developments in this field and beyond bare basics into advanced areas such as satellite operations.

Order: RSPRP $16.00

VHF/UHF Handbook

Edited by Andy Barter, G8ATD

RSGB, 2nd Ed., 320 pages. This second edition guides you through the theory and practice of VHF/UHF operating and transmission lines. Includes info on getting started, antennas, constructing your own equipment, satellite ops, local nets and specialized modes.

Order: RXVUH $29.50

HF Antenna Collection

RSGB, 2nd Ed., 2002. 252 pages.

A collection of outstanding articles and short pieces which were published in *Radio Communication* magazine. Includes single- and multi-element, horizontal and vertical antennas, extremely small transceiving and receiving antennas, feeders, tuners and much much more!

Order: RSHFAC $33.00

QRP Basics

By Rev. George Dobbs, G3RJV

RSGB, 2003 Edition, 208 pages How to get the best results from a QRP station whether from home or outdoors. Explains how to construct your own station, including complete transmitters, receivers and some accessories. Other sections include toroidal coils, constuction techniques and equipping a workshop. You'll also find a listing of QRP contests and awards.

Order: RSQRPB $28.50

The Antenna Experimenter's Guide

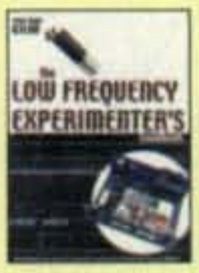
RSGB, 2nd Ed., 1996. 160 pages.

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

Order: RSTAEG $33.00

The Low Frequency Experimenter's Hdbk

By Peter Dodd, G3LDO



RSGB, 2000 Ed., 296 pages.

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

Order: RSLFEH $33.00

Technical Topics Scrapbook 1995-1999

By Pat Hawker, G3VA

RSGB, 2000 Ed., 314 pages. This third compilation of 'Tech Topic' articles is a fascinating collection of circuit ideas, antenna lore, component news and more!

Order: RSTTC99 $27.50

IOTA Directory

Edited by Roger Balister, G3KMA

RSGB, 2007 Ed..

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

Order: RSIOTA $18.00

Low Power Scrapbook

RSGB, 2001 Ed., 320 pages.

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

Order: RSLPS $18.00

HF Amateur Radio

RSGB, 2007 Second Ed.

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

Order: RSHFAR $23.00

Technical Topics Scrapbook 1985-1989

by Pat Hawker, G3VA

RSGB, 1st Ed., 1993, 346 pages A collection of popular 'Technical Topics' published in RadCom. Info, ideas, mods and tips for amateurs.

Order: RSVUDXB $18.00

Power Supply Handbook

By John Fielding, ZS5JF

RSGB, 2006 Edition, 288 pages How power supplies work, selecting components, building and modifying supplies, measuring the finished supply, batteries, chargers, test equipment - it's all here!

Order: RSPSH $28.50

HF Antennas for All Locations

By Les Moxon, G6XN

RSGB, 2nd Edition, 322 pages Design and construction of hundreds of antennas. No matter what your location there's one for you!

Order: RSHFAAL $33.50

Shipping & Handling: U.S. & Possessions-add $7 for the first item, $3.50 for the second and $2 for each additional item. FREE shipping on orders over $100 shipping to one domestic address.
All Foreign Shipping & Handling - calculated by order weight and destination and added to your credit card charge.

CQ Communications, Inc., 25 Newbridge Rd., Hicksville, NY 11801
Call 800-853-9797 - Fax 516-681-2926 - www.cq-amateur-radio.com

what's new

BY ANTHONY A. LUSCRE,* K8ZT

Portable Field Radio, Portable Antenna, Interface, Software & more

This month we take a look at two items for portable operations—a three-band portable field radio and a very portable vertical antenna. We also cover a new online ham radio "second-hand shop" and a USB CW and PTT keyer. Next up is a Linux logging software program with a twist. Finally, we visit the Amateur Radio Website of the Month.

Three-Band Portable Field Radio

Hendricks QRP Kits recently introduced a three-band portable field radio, the PFR3 XCVR (photos A, B, and C), designed by Steve Weber, KD1JV. This CW-only transceiver provides full band coverage on 40, 30, and 20 meters. Receiver specifications include an MDS (minimum discernible signal) of 0.2 µV and a selectivity of 300 Hz. Receive current required on receive is only 47 ma and drops to 34 ma when idle.

The rig provides 5 watts of transmit power at 12 volts. The built-in iambic keyer has two 63-character keyer memories. You have your choice of unbalanced coax or balanced-line output with a built-in balanced-line tuner.

The rig's small size, of 7.3" long, 4.4" wide, 1.6" high (18.4 × 11 × 4 cm) makes it easy to slide in a backpack or even a large pocket. The unique, bright-yellow case color will make it easy to find this radio when you are ready to pack-up!

The unit will operate with a supply DC voltage of 8 volts minimum, 12.5 volts maximum. You can preview assembly instructions at <www.qrpkits.com/files/PFR-3_REV_B.1%20manual.pdf>. Price is $200 and optional paddles are an additional $40. You can order this and a variety of other kits from the Hendricks QRP Kits website at <www.qrpkits.com>.

Portable Vertical Antenna

The Eagle One portable vertical antenna (photo D) from S & G Engineering is designed and produced Stephen, W8AFX, and Georgia Sheers, W8GMS. The antenna is a very portable, fiberglass-based vertical that retracts to a mere 44 inches when not in use. It is lightweight, under 5 pounds, and comes with a shoulder carrying strap.

The antenna covers 80 through 10 meters with the use of an antenna tuner. (They recommend the ICOM AH-4, but the antenna will work with a wide variety of automatic or manual tuners.) The antenna comes with two clamps to easily attach it to a mounting pole, or you can use the optional tripod mount.

Photo A– Front top view of Hendricks QRP Kits recently introduced three-band portable field radio, the PFR3 XCVR, with optional paddles. (Photos A, B & C courtesy of Hendricks QRP Kits)

Photo B– View of the back of the PFR3 XCVR.

Photo C– The PFR3 with a clear top to display the interior.

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

Photo D– The Eagle One vertical antenna in collapsed position with included mounting brackets, optional tripod, and a user-supplied tuner. When fully extended, the antenna is 31 feet in height and it collapses to 44 inches for easy transporting. (Photo courtesy of S & G Engineering)

The wire element in the fiberglass casing is a special flexweave wire with 160 strands and a heavy coating. There is a #6 connector on the top of the antenna that can be used to extend the length of the antenna in either a vertical or inverted-L configuration. The bottom of the antenna has a lug for attaching directly to the antenna tuner or coax feed line. The fiberglass pole itself is available in two colors, black for stealth or bright orange for visibility. The pole is designed to withstand 70-mph plus winds. When extended, the antenna sections are held in place by friction grips for easy portability. If the antenna is meant for a fixed location, the addition of #6 self-tapping screws provides extra security. The antenna is also very suitable for use with RVs. Prices are $95 for antenna and $45 for the tripod. For more information visit <www.w8afx.com>.

New Second-Hand Website

JTK Communications, Inc. has officially launched its new website, <SecondHandRadio.com>. Created to meet the needs of individual hams and small firms when disposing of outdated, obsolete, or surplus electronics, the website provides free photo-enhanced classified advertising for both individuals and retailers. As opposed to auction-only websites, <SecondHandRadio.com> operates more like newspaper classified ads; its only intent is to put buyer and seller together. According to the company, "A ham can create an account, place an ad, and upload as many as 16 photographs for each listing; this can be accomplished in minutes." Website visitors can browse the listings by category or easily search and sort by location or price. Ads may be set to automatically expire in as little as one week or remain for up to two years. The website imposes no restrictions on negotiations between parties, nor any oversight. For more information visit the website.

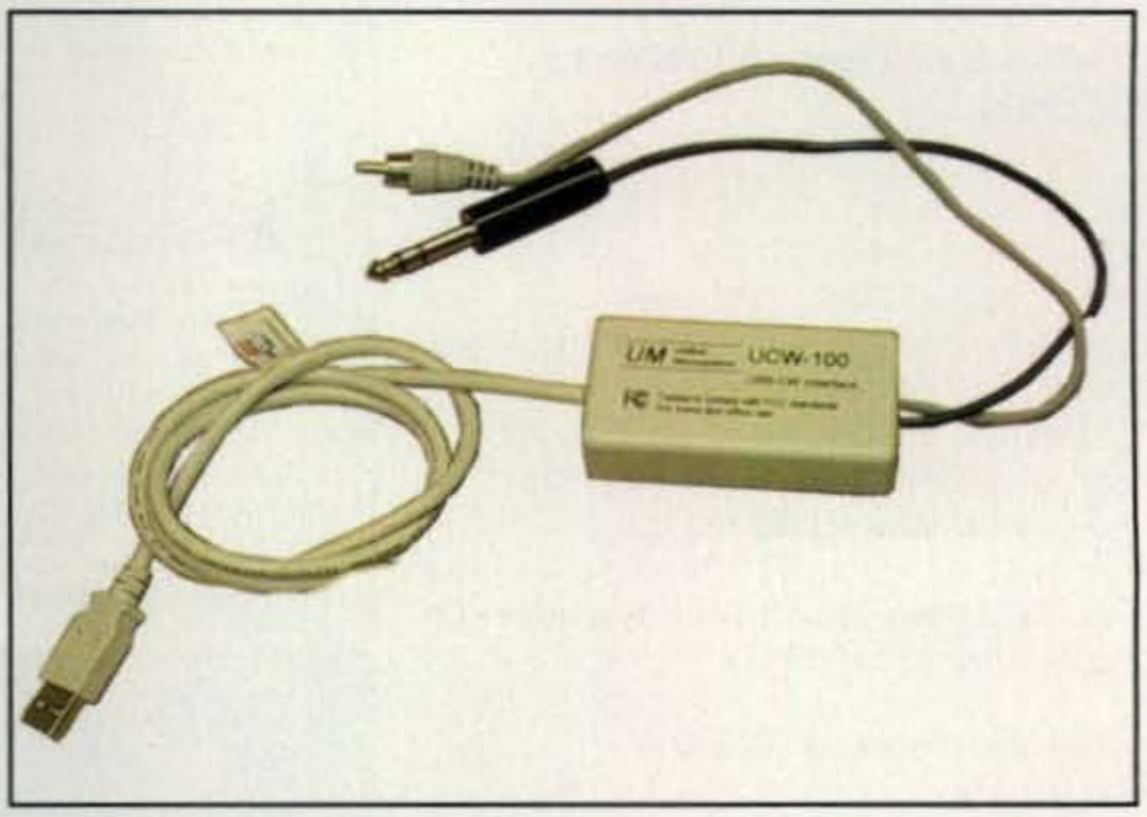


Photo E– The UCW-100 consists of a small box (weight 12 ounces) with a USB cable coming out of one side and two cables coming out of the other side, one with 1/4-inch stereo phone plug and one with an RCA connector. (Photo courtesy of Unified Microsystems)

USB to CW & PTT Interface

If you are like many hams, your PC does not have enough serial or printer ports to interface with all your gear. Your new laptop may not have any COM or LPT ports at all! One solution is to use your USB ports. Unified Microsystems has introduced the UCW-100 (photo E) to do just that. The UCW-100 consists of a small box (weight is 12 ounces) with a USB cable coming out of one side and two cables coming out of the other side, one with a 1/4-inch stereo phone plug and one with an RCA connector. You plug the UCW-100's USB connector into a USB port of your PC and the 1/4-inch stereo phone plug into the CW jack of your transceiver. With the RCA plug you can control the rig's PTT.

The UCW-100 looks like a COM port to your PC and logging or radio control programs. It runs in two modes. The default mode supports the amateur radio standard for generating CW and PTT with the DTR and RTS signals. If your logging or radio control program can generate CW through a serial port, it probably already works with the UCW-100. In the other mode, the UCW-100 utilizes an internal CW keyer. Text is sent to the virtual COM port just like it is sent to a modem or terminal, except that the UCW-100 converts it to Morse code. This makes adding CW support to new programs easy, eliminating tricky Windows® timing issues. The UCW-100 PTT output can also be used with your sound-card interface for transmit control with your favorite digital mode, such as PSK31, RTTY, etc. Price is $49.95. For more

Vanity Call Fees to Increase Slightly

The cost of a vanity callsign will be going up by 60 cents, from $11.70 to $12.30, according to the FCC. The fees—for both initial applications and renewals—are adjusted annually. According to the *ARRL Letter,* those fees have ranged over the years from the current low of $11.70 to a high of $50 for a ten-year term. Notice of the change was published August 26th in the *Federal Register,* meaning that the new fees take effect 30 days later, on September 25, 2008.

Clay Whitehead, W6WW, Silent Key

Clay T. "Tom" Whitehead, W6WW, the man credited with setting the stage for the array of commercial satellites delivering cable TV programming and low-cost long-distance phone service to Americans, has died at age 69. According to the Joplin (MO) *Globe* newspaper, Whitehead was the first director of the White House Office of Telecommunications Policy, serving from 1970–1974, and promoted a policy called "Open Skies," which led to the creation of the domestic satellite system that allows cable companies and networks to deliver programming to a nationwide audience without relying on leased landlines. Whitehead grew up in Columbus, Kansas, near Joplin, and was living in McLean, Virginia, at the time of his death in late July of prostate cancer. He had remained active on the ham bands and had renewed his license in 2006.

Desecheo Still a Question Mark

Newsline reported on August 14 that "The DX Newsletter" was reporting that an operation from rare Desecheo Island had been approved for November, and that a special event call of K5D had been secured. However, *CQ's* DX Editor and "QRZ DX" and *The DX Magazine* publisher Carl Smith, N4AA, says arrangements are still far from certain. Quoting noted DXer Bob Allphin, K4UEE, Smith reported in "QRZ DX" there is a tentative agreement for future access to the island, which is a national wildlife refuge, under strict guidelines and close supervision by the U.S. Fish and Wildlife Service. Allphin said the FWS had sent letters at the end of June to several people and groups that had previously requested permission to operate from the U.S.-owned Caribbean island, giving them 45 days to submit a proposal. The deadline was August 14, and as of press time no decision had been made and no date had been set, although it was expected to be sometime in the September-to-December 2008 timeframe. Watch for updates in Carl's DX column and in the various DX newsletters.

Fig. 1– A screen shot of the DBLog program by ZP4KFX.

details or to order the UCW-100 visit <www.unifiedmicro.com/usb.htm>.

DBLog

DBLog is a free, Linux-based logging program for radio amateurs based on a relational data base (fig. 1). It has been developed in Gambas2, a sort of Visual Basic for Linux and the relational database PostgreSQL. Produced by Pino Zollo, ZP4KFX, it allows the user to log QSOs and keep DXCC mixed-mode statistics (detecting new countries and countries needed on each band). DBLog can also import and export ADIF files, allowing compatibility with a large number of other logging and contesting software.

DBLog has a band map that can be integrated with DX cluster sources to receive spots and check them against the local log statistics. A new database table stores incoming spots that are then displayed, in order by frequency, on the band map. If you radio is configured for control by your computer, clicking on a cluster spot on the band map will set frequency and mode of the radio.

DBLog can be interfaced to all the radios supported by hamlib (another Open Source software package found at <http://hamlib.sourceforge.net>). Interfacing allows the program to read

Fig. 2– A screen shot of "Radio Merit Badge," the October Amateur Radio Website of the Month.

and/or set your radio's VFO frequency. Other features include display of an azimuthal map centered on your QTH and a CW keyer.

The advantages of using a relational data base both for QSO data and configuration data include: users can do any kind of fancy query on log or spot data using the standard SQL language; client-server operation allows a multi-operator club station or DXpedition to have many operators logging into the same log (and the log server can even be at a remote location); many other database programs can be used to analyze data; and it allows other hams to write other integrated programs (e.g., digital modes, EME, meteor scatter and so on).

Pino welcomes others to develop additional features for this open source software. Visit <www.qsl.net/zp4kfx/Linux/dblog.html> for more information.

The Amateur Radio Website of the Month

This month's Amateur Radio Website is from Gary Wilson, K2GW. It focuses on the Boy Scout Radio Merit Badge and its requirements. The site, at <http://k2gw.tripod.com/radiomeritbadge> (fig. 2), is divided into two parts.

Radio Merit Badge Online is designed for Boy Scouts who want some web-based help in meeting the requirements for the Radio Merit Badge.

Radio Merit Badge Day is designed to help amateur radio operators run a Radio Merit Badge course in their area. Everything you need to plan such an event is included. There's also information on how to become a Radio Merit Badge counselor in your local Boy Scout Council.

Wrap-up

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

Until next month . . .

73, Anthony K8ZT

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

awards

BY TED MELINOSKY,* K1BV

More Q&A plus DX and US Awards

This time we begin with more USA-CA Award questions and then move on to awards from around the world and the U.S.

Q: I have my first USA-CA application ready to go as a computer spreadsheet, which I understand is fine instead of the CQ Counties Award Record Book. I plan to put my application info and certification at the end along with the certification of the witnesses, just using the language from the book. Is this okay?

A: Yes, the red county listing booklet is optional. Any way you provide the information and witness certification is acceptable. You can save yourself some typing by cutting and pasting the "official" wording from my website: <http://www.dxawards.com/> . Click on the county hunting link.

Q: Is a signal report a necessary part of the QSO exchange to be valid for USA-CA? Some operating events such as ARRL Field Day and Sweepstakes don't have a signal report in their exchanges. Are these QSOs valid for the award?

A: The USA-CA rules do not require the actual exchange of a signal report. New counties worked in FD or SS may certainly be counted for the award. On some of the nets (14336, 14056.5 and 10.122) you will often hear stations struggling to exchange marginal reports such as 22(9) or 33(9). Understanding the weak report sent in both directions is generally considered to be adequate proof of exchanging sufficient information to be considered a valid contact. I like it when the rare county operator gives "interesting" reports such as 2×7 or 3×2.

Q: I'm interested in starting to hunt counties. What resources are there on the internet to get me going?

A: As with almost any endeavor, the internet has excellent sources to get you started. The two most important websites devoted to county hunting are:
<http://www.countyhunter.com/>
(KK7X County Hunter dot com)
<http://208.178.228.13/ch/index.html>
(K3IMC The County Hunter Web)

The premier organized group devoted to county hunting is at <http://marac.org/>.

The rules for USA-CA are found at: <http://www.cq-amateur-radio.com/usacarul.htm>.

My website includes some useful links for county hunters: <http://www.dxawards.com/>.

YL Awards

The following three awards might be considered the second installment of my August column, which featured awards sponsored by the Young Ladies Radio League (YLRL) group. Several countries have YL groups, or other organizations, that sponsor awards for contacting their YL members or a specified number of YLs. The first of these comes from Canada, where the Canadian Ladies Amateur Radio Association (CLARA) sponsors an interesting series of awards. The rules for three of them are covered here.

CLARA Awards. General requirements are as follows: Contacts after January 1, 1945 count for the awards. All bands and modes may be used except 2 meters and VHF packet. GCR list accepted. Cards must be in your possession, and the award custodian reserves the right to request any card. Basic certificates are obtained for working and confirming contacts listed for each category. Endorsements are available for each certificate in increments of 10 contacts. Fee for the basic certificate $US5/$C5. An engraved plaque is $US/$C60. Apply to: Kathy Steels, VE3GYY, 444 Jellicoe Crescent, London, Ontario, N6K 2M5, Canada.

The CLARA National Net: is on Tuesdays at 1700Z on 14.120 MHz, except July and August.

Internet: <http://www.qsl.net/clara/>.

USA-CA Honor Roll

500

N4GOA 3436

The total number of counties for credit for the United States of America Counties Award is 3077. The basic award fee for subscribers is $6.00. For nonsubscribers it is $12.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for $2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated June 1, 2000. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 12 Wells Woods Road, Columbia, CT 06237 USA. DX stations must include extra postage for airmail reply.

The Canadian Ladies Amateur Radio Association's 10 DX-YL Award is issued for contacting ten YLs in ten different countries.

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

Work German YLs to earn the DARC's DL YL Award.

CLARA Certificate. Canadian and U.S. stations work ten members in five Canadian call areas (limit of four VE3/VA3). DX stations work five members in three Canadian call areas (limit two VE3/VA3).

CLARA Family Certificate. Work a member plus any licensed family members, scoring 1 point for each contact made. Family members need not reside in Canada nor be at the same address. A total of ten points is needed for the award. Log must show family relationships.

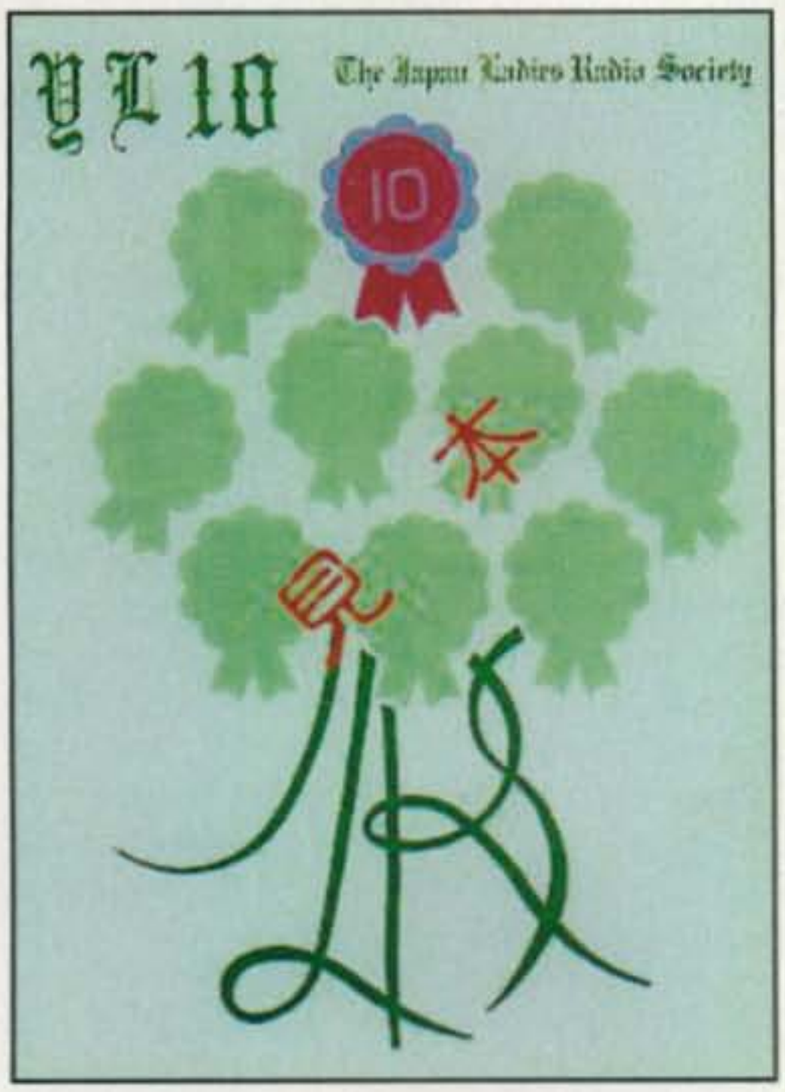
CLARA 10 DX-YL Certificate. Work ten YLs in ten different countries. Use an approved DX country list. When 100 DX YL contacts have been confirmed for the 10 DX-YL certificate, you may apply for either the special paper certificate or the engraved plaque.

DL YL Award. The second of these awards is part of the official series of awards offered by the German national amateur radio association, the Deutscher Amateur Radio Club e.V. (DARC). With separate awards being offered all the way up to 1000 points, it implies that it is possible to contact at least 250 German YLs (at four points per QSO for DX stations). With the beginning level of the award set at just 50 points, it is possible that you've already earned this one.

For DL stations, each DL YL = 1 point, EU = 2 points, and DX = 4 points.

The DL YL certificate is available separately for 50, 100, 200, 300, and 400 points. DL-YL 500 with a silver button requires 500 points. DL-YL certificates are available separately for 600, 700, 800, and 900 points. The DL YL 1000 certificate with a gold button requires 1000 points.

DX YLs operating in Germany count the same as DL YLs operating from any club station if the card is signed with the first name and their home call. SWL okay. All bands and modes may be used. Send cards and award fee of 10 Euros. If the silver or gold button is desired, add 13 Euros . Apply to: DARC Amateurfunkzentrum, DL YL Award, Lindenallee 4, D-34225 Baunatal, Germany. Internet: <http://www.darc.de/diplome/index.html>



The Japan Ladies Radio Society offers the YL 10 certificate for contacting ten YLs worldwide, including at least one JLRS member.

JLRS Awards. The third country featuring YL awards is Japan, where the Japan Ladies Radio Society (JLRS) offers classically simple and tastefully designed certificates. Here are the rules for three of the society's most popular awards. They have an internet site (in Japanese): <http://www.jarl.com/jlrs/>. I have found that the GOOGLE translation tool actually does a pretty good job

of translating the text into understandable, if not exactly good, English. These translation tools have come a long way over the past few years, and that's a good thing considering that ham awards are popular all over the world.

General Requirements: The awards are designed to encourage YL activity on SSB and CW. Send GCR list and 10 IRCs for each award. The endorsement fee for the YL 10 award, however, is 3 IRCs for each group of 10 YL contacts.

YL 10 Certificate. Requires ten confirmed contacts with licensed YL operators worldwide, including at least one JLRS member. Endorsement (fee 3 IRCs) stickers are available for each additional group of ten YLs. Contacts with JLRS members are not required for additional endorsements. Single-band contacts (CW only) will receive a separate award. Send a GCR list and fee of 10 IRCs to: Masako Izumi, JA8AQY, 162-19, Uriyama-Kakuta Yuubari, Hokkaido, 090-1524, Japan.

YL CW WAJA Certificate. Make 47 contacts with licensed Japanese YLs in each of 43 Prefectures, plus one each for Tokyo-to, Osaka-fu, Kyoto-fu, and Hokkaido. Apply to JA8AQY as listed above.

YL CW AJD. Contact a licensed YL in each of ten call area districts in Japan 1 to Ø. (Apply to JA8AQY as listed above.)

Ukraine Fair QSLer Award

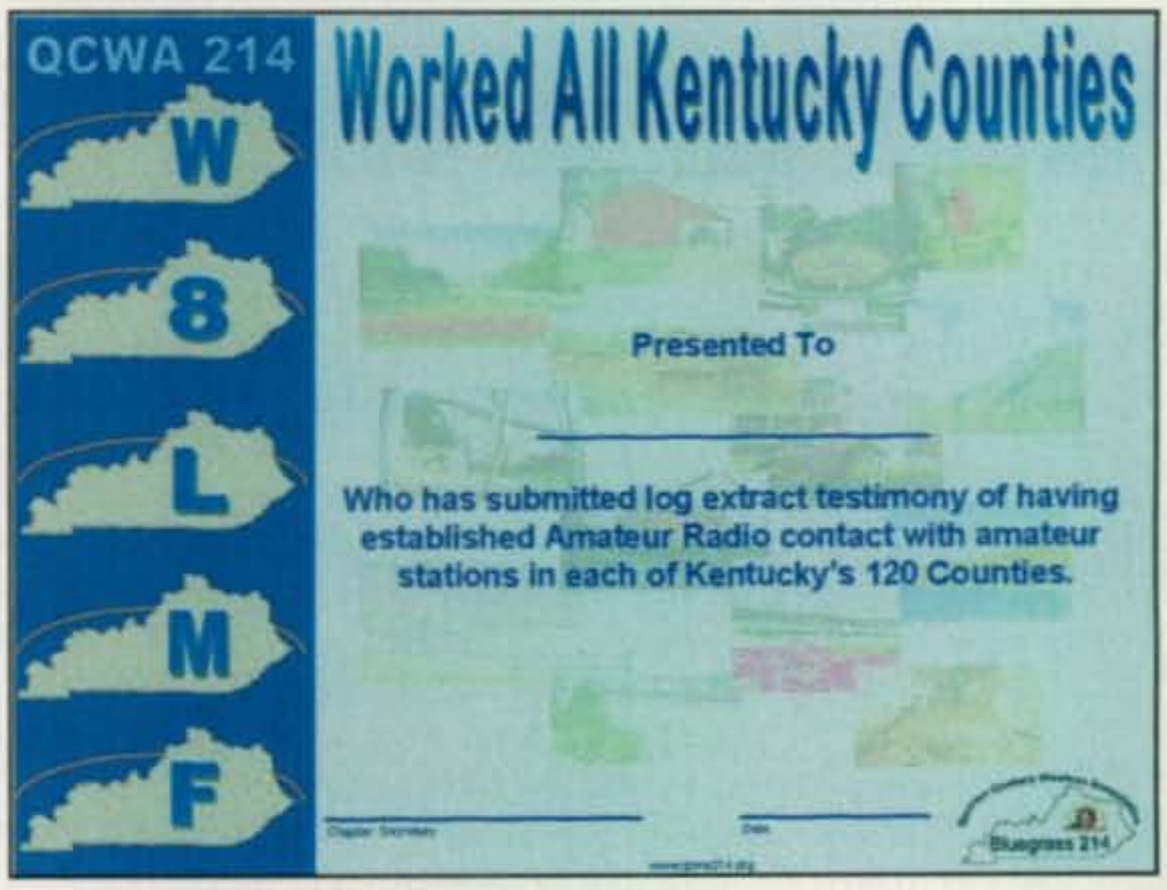
Gennady V. Treus, UX5UO, is a well-known QSL printer in the Ukraine who offers an award to those who provide proof of having at least 50 different cards that he produced (with the "UX5UO print" logo) in their collection. This is not as difficult as it sounds, since he is known for having a pretty large customer list, heavily represented by DX and expedition-type stations that are frequent users of color cards at reasonable prices. The award is a multicolored collage of his cards and is quite handsome.

The award is available for any amateur radio or SWL station worldwide. There are no band/time/mode restrictions. Each unique callsign counts 1 point. Possession of the cards is required.

Two classes of the award are available: Second Class, 50 points, and First Class, 200 points. In addition, if you earn the First Class award, Gennady will print 1000 cards ("advanced and middle" type) for you and charge only for the postage. A list of stations that have used UX5UO for card printing is on his website: <http://www.ux5uoqsl.com/fair_qsler-en.html>. It is a *long* list.

Send a list of QSLs and $1.00 or 1 IRC for Ukraine stations, or $1.00 or 2 IRCs for all others to: Fair QSLer Award Manager, Oleg Schumann, UT5UML, P.O. Box 925, Kiev-100, 02100, Ukraine. If you are applying for the First Class award, send the personal data you would like used on your cards and pay postage expense only upon receipt of the new QSLs (this is approximately $15 for worldwide delivery).

Gennady Treus, UX5UO, sponsors the Fair QSLer Award for having contacted at least 50 stations that have their cards printed by UX5UO.



The Worked All Kentucky Counties Award is one of the most recent awards given for contacting all of the counties of a state. It is sponsored by the QCWA Bluegrass Chapter 214.

Worked All Kentucky Counties Award

One of the most recent additions to the states that sponsor "all counties" awards is Kentucky, where the Bluegrass Chapter 214 of the Quarter Century Wireless Association (QCWA) has adopted the award as one of its projects. In the late 1960s I lived in Louisville and on many weekends I traveled the state, providing many hunters with needed Kentucky counties. Propagation was better at that time, and it was not unusual to make 50 to 60 contacts per county (sigh).

Contact and confirm each of the 120 counties of Kentucky using any band or mode. There are no date restrictions. SWL OK. No endorsements available. Applicants must use The Bluegrass Chapter 214 application form and county list both of which may be downloaded from their official website at or by sending an SASE to the award manager.

Complete the county list and application and submit with fee of $US7. The award manager reserves the right to request any of the cards to check for validity. Mail to the Worked All Kentucky Award Manager, Dave Vest, K8DV, 2934 Rontina Dr., Goshen, Ohio 45122. E-mail: <KY-Award@qcwa214.org>; internet:<http://www.qcwa214.org>.

We're always interested in hearing from clubs, special interest groups, or individuals who sponsor an award. Contact me at the e-mail address shown on the first page of this column.

73, Ted, K1BV

BY CARL SMITH,* N4AA

While You're Waiting for the Sun . . .

Oh my ... it's October? How or where did this year go? However or wherever it went, it's going quicker than most of us would like and the contest season in full swing. October is the time for CQ WW DX SSB Contest, and then in November it's the ARRL Sweepstakes followed by the CQ WW CW (my favorite). Then there's more to follow from December through next March. There are plenty of activities, if we could just get some help from the sun.

The "trouble" with Cycle 24 has been cussed and discussed from about every angle. What it all boils down to is just be patient and it will come, and no manner of screaming and gnashing of teeth will make it get here one day earlier. There are still a lot of things to keep our interest as we wait, however, as I have mentioned several times. Trying different modes or bands (such as 6 meters), etc., can keep your attention. Then there is your local DX club or even a general-interest ham radio club. You can always get involved in the local emergency communications program, too. There is an ARES group in most communities, and unfortunately, in many cases they are seriously undermanned. These are the folks who go into action when natural disasters occur. You remember Hurricane Katrina, don't you? Who provided communications when everything else failed? Yes, hams, and a lot of those hams were folks just like you and me.

Hopefully, you saw the articles in the August and September issues of *CQ* by Bob Josuweit, WA3PZO, about the Chinese hams after the devastating earthquake that occurred in May. DXers and contesters are, for the most part, the best operators around. We have ears that can hear almost anything, in spite of the noise. We manage to maintain contact when others can't. We, typically, have many years of experience that should not be wasted. What would you do in case of a disaster affecting your community? Think about that.

I didn't mean to get off topic, but it just seemed to "fit" right now.

Local hams on Guam (left to right): In the back row are Alfred, WH2Z; Aki, WH2AK; Joel, WH2X; and Jason, AH2DT. Sitting are Harry, KH2/WX8C, and Sungki, KH2/K1IWD (now AH2Y). The young boy in the center is the son of Joel, WH2X. The photo was taken at a BBQ party for Lee and Harry, who participated in the CQ WW WPX CW Contest.
(Photo courtesy of Lee, HL1IWD)

A Change in DXCC Rules

The following is an extract from the minutes of the recent ARRL Board of Directors meeting. It is significant in that they deleted DXCC rule #5 concerning the publishing of "complete" log information. Here are the details:

Mr. Frahm presented the report of the Programs and Services Committee which covered operating awards, emergency communications and the Volunteer Examiner Coordinator. On motion of Mr. Norton, seconded by Mr. Fallon, it was VOTED that Rule 5 under DXCC Rules, Section III. Accreditation Criteria, be deleted. The rule reads:

5. The presentation in any public forum of logs or other representations of station operation showing details of station activity or other information from which all essential QSO elements (time, date, band, mode and callsign) for individual contacts can be derived creates a question as to the integrity of the claimed QSOs with that station during the period encompassed by the log. Presentation of such information in any public forum by the station operator, operators or associated parties is not allowed and may be considered sufficient reason to deny ARRL award credit for contacts with any station

Left to right in this photo are Gary, K6JAJ, and John, MMØBQN. Gary says, "While in Scotland I had a chance to meet John, who is a very active DXer and is now working the world on 6 meters with a 5L M². He works all bands, CW/SSB."
(Photo courtesy of Gary, K6JAJ)

*P.O. Box DX, Leicester, NC 28748-0249
e-mail: <n4aa@cq-amateur-radio.com>

The WPX Program

SSB

3012.....N4GOA
3013.....LU3DHH
3014.....TI8II

Mixed

2013.....JK1MZT

Digital

14.....GØDEZ
15.....SV1EOS

CW: 600 GØDEZ.
SSB: 400 LU3DHH.
Digital: 450 SV1EOS.

40 Meters: JN3SAC
30 Meters: JN3SAC
17 Meters: JN3SAC
12 Meters: JN3SAC

North America: N4GOA

Award of Excellence Holders: N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MDD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GO, W4BQY, IØJX, WA1JMP, KØJN, W4VQ, KF2O, WB8CNL, W1JR, F9RM, W5UR, CT1FL, WA4QMQ, W8ILC, VE7DP, K9BG, W1CU, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SMØDJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SMØAJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, DK4SY, UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8UB, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, KBØG, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, 9A2NA, W4UW, NXØI, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DEØDAQ, I1WXY, LU1DOW, N1IR, IK4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBF, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, WØULU, K9XR, JAØSU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, I7PXV, S53EO, DF7GK, S57J, EA5BM, DL1EY, DJ1YH, KUØA, VE2UW, 9A9R, UAØFZ, DJ3JSW, OE6CLE, HB9BIN, N1KC, SM5DAC, RW9SG, WA3GNW, S51U, W4MS, I2EAY, RAØFU, CT4NH, EA7TV, W9IAL, LY3BA, K1NU, W1TE, UA3AP, EA5AT, OK1DWC, KX1A, IZ5BAM, K4LQ, KØKG, DL6ATM, VE9FX, DL2CHN, W2OO, AI6Z, RU3DX, WB9IHH, CT1EEN, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, KT2C, UA9CGL, AE5B, KØDEQ, DKØPM, SV1EOS, UAØFAI, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, WA5VGI.

160 Meter Endorsements: N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8ILC, K9BG, W1CU, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SMØDJZ, DK5AD, W3ARK, LA7JO, SMØAJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DEØDXM, UR2QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, KBØG, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YBØTK, K9QFR, W4UW, NXØI, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, WX3N, W5ODD, IØRIZ, I2MQP, F6HMJ, HB9DDZ, K9XR, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, DJ1YH, KUØA, VR2UW, UAØFZ, DJ3JSW, OE6CLD, HB9BIN, N1KC, SM5DAC, S51U, RAØFU, CT4NH, EA7TV, LY3BA, K1NU, W1TE, UA3AP, OK1DWC, KX1A, IZ5BAM, DL6ATM, W2OO, RU3DX, WB9IHH, G4PWA, OK1FED, EU1TT, S53MJ, DL2KQ, RA1AOB, UA9CGL, SM6DHU, KØDEQ, DKØPM, SV1EOS, N4GG, UA4RZ, 7K3QPL, EW1CQ, UA4LY, RZ3DX, UA3AIO, UA4RC, N8BJQ, UA3BS, UA9FGR, UT3UY, WA5VGI.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if airmail desired) to "CQ WPX Awards," P.O. Box 355, New Carlisle, OH 45344 USA. Note: WPX will not accept prefixes/calls which have been confirmed by computer-generated electronic means.

*Please Note: The price of the bars for the Award of Excellence are $6.50 each.

5 Band WAZ

As of August 1, 2008, 755 stations have attained the 200 zone level and 1608 stations have attained the 150 zone level.

New recipients of 5 Band WAZ with all 200 zones confirmed:
N5TY

The top contenders for 5 Band WAZ (zones needed, 80 or 40 meters):

SU1U, 199 (27)
N4WW, 199 (26)
W4LI, 199 (26)
K7UR, 199 (34)
W2YY, 199 (26)
IK8BQE, 199 (31)
JA2IVK, 199 (34 on 40m)
IK1AOD, 199 (1)
WØCP, 199 (18)
GM3YOR, 199 (31)
VO1FB, 199 (19)
KZ4V, 199 (26)
W6DN, 199 (17)
W3NO, 199 (26)
HB9DDZ, 199 (31)
RU3FM, 199 (1)
N3UN, 199 (18)
OH2VZ, 199 (31)
W1JZ, 199 (24)
W1FZ, 199 (26)
SM7BIP, 199 (31)
SP5DVP, 199 (31 on 40)
N4NX, 199 (26)
N4MM, 199 (26)
EA7GF, 199 (1)
N6HR/7, 199 (37)
JA5IU, 199 (2)
RU3DX, 199 (6)
N4XR, 199 (27)
HA5AGS, 199 (1)
VE3XN, 199 (26)
YU7GMN, 199 (10)
K7LJ, 199 (37)
RA6AX, 199 (6 on 10m)
RX4HZ, 199 (13)
KØGM, 199 (17)
S58Q, 199 (31)
EA5BCX, 198 (27, 39)
G3KDB, 198 (1, 12)
JA1DM, 198 (2, 40)
9A5I, 198 (1, 16)
K4CN, 198 (23, 26)
G3KMQ, 198 (1, 27)
N2QT, 198 (23, 24)
OK1DWC, 198 (6, 31)
W4UM, 198 (18, 23)
US7MM,198 (2, 6)
K2TK, 198 (23, 24)
K3JGJ, 198 (24, 26)
W4DC, 198 (24, 26)
F5NBU, 198 (19, 31)
OE2LCM, 198 (1, 31)
HA1RW, 198 (1, 31)
WK3N, 198 (23, 24)
W9XY, 198 (22, 26)
KZ2I, 198 (24, 26)
W7VJ, 198 (34, 37)
K9MIE, 198 (18, 21)
W9RN, 198 (26, 19 on 40)
W5CWQ,198 (17, 18)
WB9EEE, 198 (17, 18)
K9OW,198 (34on10, 2on15)
I5KKW, 198 (31, 23 on 20)
JT1BV, 198 (4, 11)

The following have qualified for the basic 5 Band WAZ Award:

UA9FGR (194 zones)
RWØCF (170 zones)

5 Band WAZ updates:

UT7UW, 200 zones
K8YC, 183 zones

***Please note: Cost of the 5 Band WAZ Plaque is $100 shipped within the U.S.; $120 all foreign (sent airmail).**

Rules and applications for the WAZ program may be obtained by sending a large SAE with two units of postage or an address label and $1.00 to: WAZ Award Manager, Floyd Gerald, N5FG, 17 Green Hollow Rd., Wiggins, MS 39577. The processing fee for the 5BWAZ award is $10.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $15.00 for nonsubscribers. An endorsement fee of $2.00 for subscribers and $5.00 for nonsubscribers is charged for each additional 10 zones confirmed. Please make all checks payable to Floyd Gerald. Applicants sending QSL cards to a *CQ* checkpoint or the Award Manager must include return postage. N5FG may also be reached via e-mail: <n5fg@cq-amateur-radio.com>.

for which such presentations have been made. Persistent violation of this provision may result in disqualification from the DXCC program.

This rule cannot be enforced. In its place staff will create resources and guidelines for QSLing and for QSL managers in order to maintain the integrity of operating awards programs.

We'll have to see what the "staff" comes up with concerning the on-line log-search routines we have become familiar with checking during major DXpeditions.

DXpedition News

Last month I mentioned two DXpeditions scheduled for October: VK9W, Willis Island and TO5DX from St. Barthelemy. Another one has been announced for October 24–31 to Niue. Dave, N1EMC, has been licensed as ZK2DF primarily for the CQ WW DX SSB Contest. For the contest he plans to operate 40–10 meters, but outside the contest he will be adding 6-meter operation. He will work SSB with perhaps some RTTY. Dave has a web site (http://dx.zk2df.nu) with more details. He will upload his logs to Logbook of The World, but will also answer requests by mail. Just remember to include an SAE and sufficient postage/money for the return.

The French operation from Glorioso (FR/G) was postponed to the September/October time frame, but nothing further has been announced as of this writing in early August. This one is really needed, ranked at #4 on the Most Wanted list. I'm still hoping for some word of either go or no-go from the leaders, and it could happen before this issue gets to you. Keep watching the DX news sources for last-minute information.

Willi, DJ7RJ, announced that he and Ulli, DL2AH, would be going to Tokelau (ZK3) during September. He said, "I have booked my flight August 26 until October 27 via LAX to Samoa (5W)! After we get back on Samoa, I am not sure what will be next. It may be FO/Marquesas or FW/Wallis & Futuna! Ulli likes to visit KH8. He was there a few years ago. As for our journey to 5W, everything is running well. Two ships are leaving Apia a couple of days after we arrive on Samoa. We have a good chance to get a reservation for one of the ships. Maybe we will arrive on

Bill, N2WB, remembers four big guns on Wake Island in 1998. (Left to right: N6MZ, "Big Gun," N2OO, and N2WB (Wild Bill). Bill says, "Wow, over ten years ago. My first 160-meter CW DXpedition, 12–18 hours a day on the radio. My first RTTY/SSB QSO at the same time." (Photo courtesy of Bill, N2WB)

The WAZ Program

20 Meter SSB

1175 ..... SV2DGH

20 Meter CW

579 ..... W5QP

160 Meters

280 ..... N5TY (36 zones)
281 ..... UA4CC (40 zones)
282 ..... UA4LY (38 zones)

All Band WAZ

Mixed

8521 ..... SV2DGH
8522 ..... WA6LOS/DU

SSB

5081 ..... SV2DGH
5082 ..... IV3BSF

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>.

Tokelau Sept. 2 or Sept. 5. We have to stay at least three weeks on Nukunonu before we travel back to Apia. So, it means we will be back in Apia at the end of September! Afterwards I will decide what will be the next island to visit. I am not sure yet. My flight back to LAX will be Oct. 21. QSL to home call via CBA."

An operation from Papua (P29) was announced sometime ago by G3KHZ, G4EDG, CT1AGF, and W5GAI. They

CQ DX Awards Program

SSB

2511 ..... KD4QMY
2512 ..... AF3Y
2513 ..... G3KMQ

SSB Endorsements

330 ..... NØFW/339
330 ..... DU9RG/339
330 ..... K4CN/338
330 ..... K3JGJ/338
330 ..... VE2PJ/338
330 ..... N5ZM/338
330 ..... W7BJN/337
330 ..... K9IW/336
330 ..... W9IL/333

CW Endorsements

330 ..... NØFW/338
330 ..... K4CN/337
330 ..... N5ZM/336
330 ..... K3JGJ/334
330 ..... K9IW/336
310 ..... W9IL/319

RTTY Endorsements

330 ..... N5ZM/330
300 ..... K4CN/303

The basic award fee for subscribers to *CQ* is $6. For nonsubscribers, it is $12. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00 each plus SASE. Updates not involving the issuance of a sticker are free. All updates and correspondence must include an SASE. Rules and application forms for the CQ DX Awards may be found on the <www.cq-amateur-radio.com> website, or may be obtained by sending a business-size, self-addressed, stamped envelope to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. Currently we recognize 338 active countries. Please make all checks payable to the award manager.

Looking Ahead in CQ

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

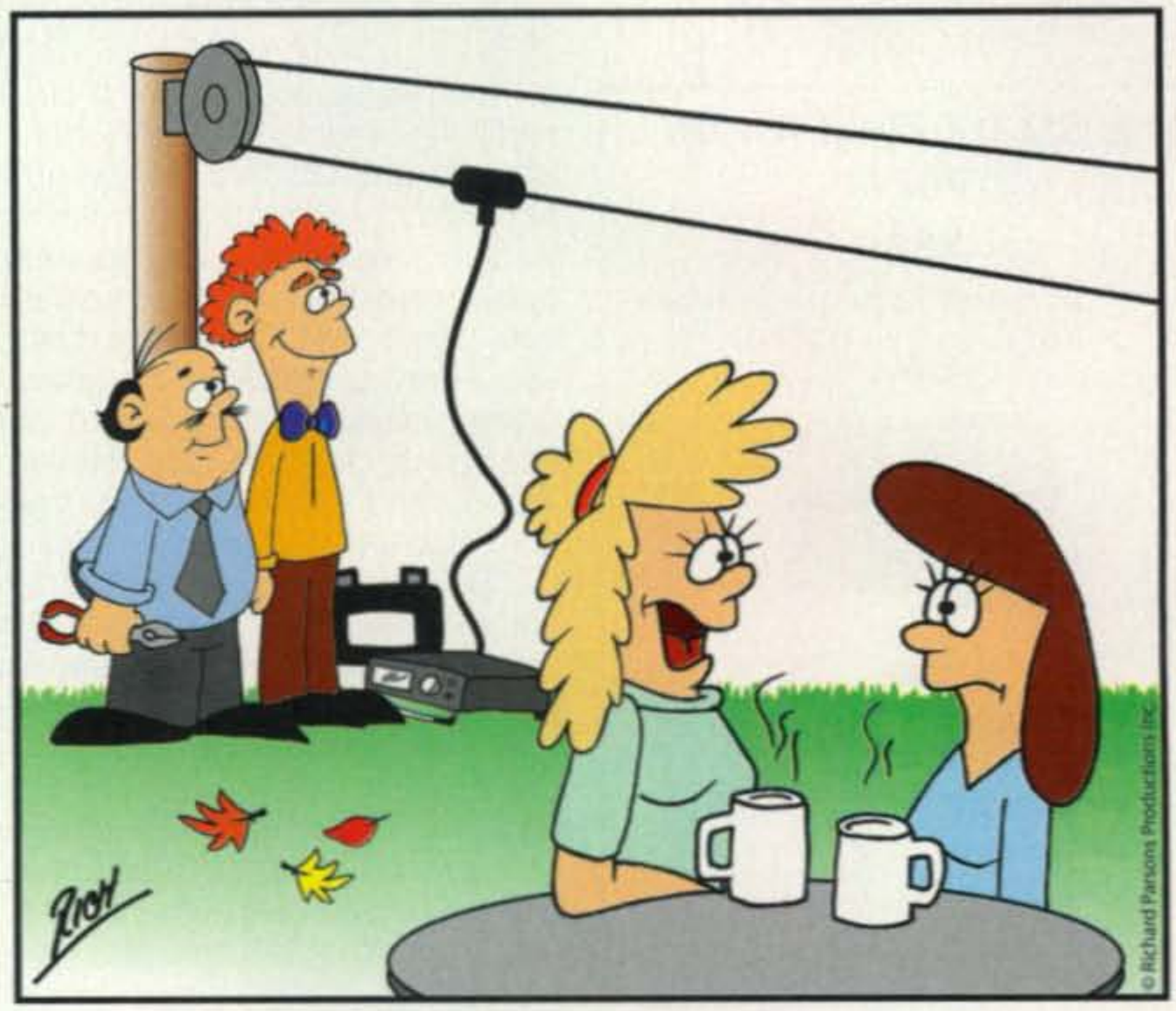
• "Galactic Cosmic Rays and 160-Meter Propagation," by NM7M & K9LA

• "Ham Radio Returns to World War II," by W1TP

• "Plumber's Special: 20-meter Ground Plane with Weatherproof Feed," by K3KR

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

SUCH A HAM



Stan & Cliff have been working all day on installing my clothesline, Mary.

CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries. With few exceptions, the ARRL DXCC Countries List is used as the country standard. The CQ DX Award currently recognizes 339 countries. Honor Roll listing is automatic when an application is received and approved for 275 or more active countries. Deleted countries do not count and all totals are adjusted as deletions occur. To remain on the CQ DX Honor Roll, annual updates are required. All updates must be accompanied by an SASE if confirmation of total is required. The fee for endorsement stickers is $1.00 each plus SASE. Please make checks payable to the awards manager, Billy F. Williams. All updates should be mailed to P.O. Box 9673, Jacksonville, FL 32208.

CW

NØFW 338	W7CNL 337	DL3DXX 336	KA7T 335	I4LCK 334	W4UW 330	SM5HV/HK7 327	OZ5UR 320	VE7KDU 300
WB4UBD 338	W8XD 337	K8LJG 336	K7LAY 335	YU1AB 334	W7IIT 330	F6HMJ 326	CT1YH 320	KT2C 300
K3UA 338	W4OEL 337	N4CH 336	HB9DDZ 335	K3JGJ 334	G3KMQ 329	W4LI 325	W9IL 319	WD9DZV 295
K9BWQ 337	EA2IA 337	K4JLD 336	K2JLA 334	WØHZ 333	N5HB 329	N4OT 325	YT1AT 317	K4IE 291
N7FU 337	WØJLC 337	K9IW 336	F3AT 334	K6LEB 333	K1HDO 329	YV5ANT 324	RA1AOB 317	G3DPX 284
N4JF 337	K2TQC 337	N5ZM 336	WA4IUM 334	K5RT 332	K7JS 329	KF8UN 323	EA3ALV 316	KØKG 284
K4IQJ 337	K4CN 337	W4MPY 336	PA5PQ 334	K3JGJ 332	W6OUL 329	IKØTUG 321	W6YQ 316	N2VW 282
K2FL 337	N7RO 336	F3TH 335	K2ENT 334	VE3XN 331	N7WO 329	W3II 320	WA4DOU 315	DJ1YH 281
N4MM 337	K2OWE 336	PY2YP 335	NC9T 334	K2JF 331	KE3A 329	IKØADY 320	UA9SG 310	XE1MD 280
K4MQG 337	N5FG 336	N6AW 335	W2VJN 334	WA8DXA 331	K6CU 329	WG5G/QRPp 320	YU7FW 306	W2JLK 277
W7OM 337	OK1MP 336	N4AH 335	G4BWP 334	K8SIX 331	KA3S 328	F5OIU 320	ON4CAS 304	
K9MM 337	K9OW 336	K5UO 335	W1JR 334	W2UE 330	K1FK 328	PY4WS 320	N1KC 302	

SSB

K4JLD 339	K9MM 338	VE3MR 337	K9IW 336	OE2EGL 334	KSØZ 332	CP2DL 327	XE2NLD 315	N5WYR 300
EA2IA 339	K9BWQ 338	VE3MRS 337	K2JLA 335	WA4IUM 334	LU4DXU 332	NI5D 327	IZ6CST 314	YC9WZJ 300
XE1AE 339	WB4UBD 338	AA4S 337	OE7SEL 335	K5RT 334	VE4ROY 332	K7TCL 326	W6NW 314	K7ZM 300
IN3DEI 339	W8AXI 338	OK1MP 337	ZL3NS 335	W6SHY 334	CT1EEN 332	YV4VN 326	EA3ALV 313	WA1ECF 295
NØFW 339	W9SS 338	IK8CNT 337	K7JS 335	W5RUK 334	YV1JV 331	SV3AQR 326	W7GAX 312	KW1DX 295
DU9RG 339	VK4LC 338	EA4DO 337	PY4OY 335	EA3KB 334	N5ORT 331	KD5ZD 326	KA1LMR 312	W4EJG 295
K3UA 339	K7LAY 338	CT3BM 337	VE3XN 335	CT3DL 334	CT1AHU 331	WR5Y 325	ON4CAS 312	K7ZM 295
K6YRA 338	OZ5EV 338	YU1AB 337	PA5PQ 335	VE7WJ 334	EA3JL 331	KC4MJ 325	RA1AOB 312	XE1MW 293
IK1GPG 338	OZ3SK 338	IØZV 337	XE1VIC 335	WA4WTG 334	K1HDO 331	PY2DBU 325	KD2GC 311	XE1MEX 293
K5TVC 338	WS9V 338	K8LJG 337	K2ENT 335	K5UO 334	K7HG 331	YT1AT 325	K5CX 310	K1RB 292
K2TQC 338	EA3BMT 338	W3AZD 337	IK6GPZ 335	ZL1BOQ 334	N5YY 331	KE4SCY 325	RW9SG 310	W9ACE 291
KZ2P 338	W6DPD 338	KØKG 337	NC9T 335	N7WR 334	F6HMJ 331	W4MPY 325	XE1RBV 310	W5PVE 288
K4MZU 338	VE2PJ 338	W2FKF 337	K1UO 335	K3LC 334	K3PT 330	K6GFJ 324	IØYKN 310	WD9DZV 287
N4JF 338	K3JGJ 338	W7FP 337	I8KCI 335	HB9DDZ 334	N1ALR 330	W6WI 323	AA1VX 308	HB9DQD 286
W4WX 338	N5ZM 338	VE2GHZ 337	I8LEL 335	4N7ZZ 333	W9OKL 329	EA3CYM 323	WB2AQC 305	VE7HAM 285
K5OVC 338	K4CN 338	IKØAZG 337	DU1KT 335	VE1YX 333	W2FGY 329	WN9NBT 322	K3BYV 303	N8LIQ 284
W6BCQ 338	XE1L 337	K2FL 337	CT1EEB 335	W2JZK 333	CT1CFH 329	W6OUL 322	JR4NUN 303	WØIKD 283
DJ9ZB 338	N7RO 337	YU3AA 337	W1JR 335	K8LJG 333	EA1JG 329	CT1ESO 321	YV2FEQ 303	KBØRNC 282
W6EUF 338	OE3WWB 337	W7BJN 337	I4LCK 335	VE4ACY 333	KF8UN 328	VE7SMP 320	KU4BP 303	AE9DX 282
K4MQG 338	K9OW 337	W4UNP 336	ZL1HY 335	VE2WY 333	WØULU 328	N1KC 320	K7SAM 303	IK8TMI 281
N7BK 338	N5FG 337	K8SIX 336	W2CC 335	K9PP 333	K1EY 328	W5GZI 320	W4PGC 302	F5INJ 279
N4MM 338	PY2YP 337	W4UW 336	N2VW 335	EA3EQT 333	K4DXA 328	LU3HBO 317	EA8AYV 302	W5GT 276
4Z4DX 338	N6AW 337	DL3DXX 336	WDØBNC 334	YV1KZ 333	LU5DV 328	WB4GMR 317	N2LM 302	HSØ/EA4BKA 276
N4CH 338	K9HQM 337	KE3A 336	WØYDB 334	W9IL 333	XE1MD 327	WØROB 317	4X6DK 301	K9DXR 275
W7OM 338	KE5K 337	AB4IQ 336	W4NKI 334	YV1AJ 332	DK5WQ 327	N8SHZ 316	4Z5FL/M 301	AD7J 275

RTTY

WB4UBD 337	K2ENT 333	N5FG 331	OK1MP 325	EA5FKI 319	K4CN 303	W4EEU 297
NI4H 336	K3UA 332	N5ZM 330	G4BWP 320	PA5PQ 311	K8SIX 300	

The CQ DX Field Award Program

SSB

59 ..... W9HT 60 ..... KD4QMY

CW

54 ..... DL6KVA

Endorsements

Mixed

250 ..... K2TQC/262

CW

200 ..... DL6KVA/220 3.5/7 MHz OK2PKY

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.

planned to be active from a couple of Most Wanted IOTAs—OC-181 (Witu Islands) and OC-041 (Ninigo group)—between October 18 and November 4. Further information was expected in due course, but nothing more has been seen as of now. They were looking for two more operators. The group was going to charter the same boat that was used last year on the Nukumanu, Taku'u, and Kilinailau DXpedition. The boat also caters to scuba divers.

ZS8T was expected months ago, but nothing has been heard from Petrus. The expedition to Marion Island will last into February of 2009, so there is still hope that some operation will take place. Marion was ranked at # 6 worldwide on the last Most Wanted Survey, so there are a lot of DXers anxiously waiting some news from Petrus.

Further down the calendar there is a planned operation from Spratly in March 2009. You might want to keep an eye out for latest information on this one. It was ranked at #53.

Events for DXers

This issue should reach most of you before the end of September, so let me remind you of gatherings such as the W9-DXCC convention in Chicago September 20 and the SEDCO (DX/Contest) conference in Pigeon Forge, Tennessee the next weekend, September 27. SEDCO follows the Ten-Tec Factory Hamfest in nearby Sevierville. This hamfest has turned out to be a very popular event. Check the Ten-Tec website (http://www.tentec.com) for more information.

Another event for DXers is the Asia Pacific DX Convention. This will be the second convention, and this year it will be held at the Osaka International House in Osaka, Japan, November 7–9. Specific details of the program will be on the web page <http://apdxc.org>. Check the website often for updates. Photos and presentation videos from APDXC 2005 are also on this website. Take a look and see that everyone had a great time

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....262	F6HMJ....201	K8OOK....184
HAØDU....228	JN3SAC....200	K2SHZ....182
W1CU....220	W4UM....198	K2AU....182
VE3XN....217	W6OAT....194	KØCA....181
N8PR....214	N4NX....192	K1NU....180
HA1RW....213	VE3ZZ....191	ON4CAS....180
KØDEQ....210	HA9PP....190	W5ODD....177
HA5WA....206	BA4DW....188	NØFW....176
KF8UN....205	OK1AOV....187	
N4MM....201	9A5CY....187	

SSB

W1CU....207	KØDEQ....184	NØFW....176
W4ABW....191	N4MM....184	DL3DXX....175
VE7SMP....190	W4UM....180	

CW

DL6KVA....220	JN3SAC....194	N4NX....177
W1CU....212	OK2PO....184	KØCA....175
DL3DXX....203	N4MM....179	
KØDEQ....201	OK1AOV....178	

at APDXC 2005. You can register via website e-mail information. The convention staff suggests that attendees plan to arrive by November 6, as the APDXC 2008 program starts early on November 7 with a guided tour of the ICOM factory in Wakayama. Additional tours include Nipponbashi (electronics area); the city of Nara, Japan's capital in the 8th century; along with great fellowship with DXers from around the world.

Harbach Electronics Takes on Peter Dahl Products

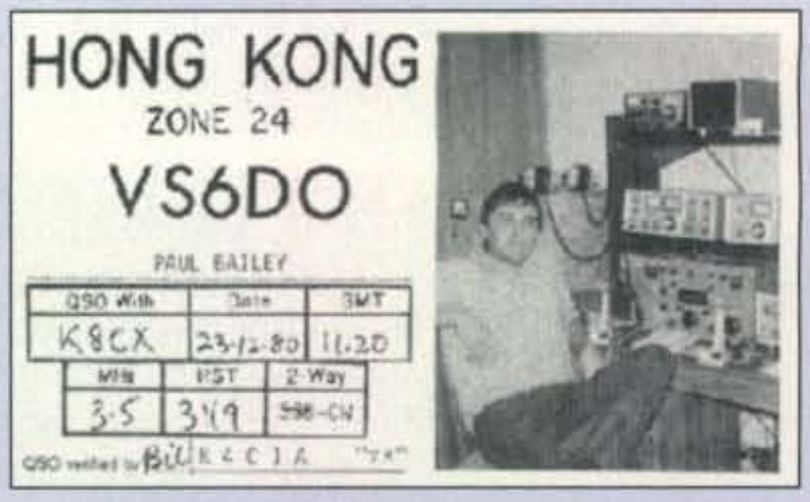
Those of you who like to build your own amplifiers, etc., may remember the name "Peter Dahl." This company furnished mostly power transformers to replace those in factory-built equipment, but also offered a lot of transformers for custom-designed power supplies. Well, the company was sold earlier this year to Harbach Electronics. After making the transfer of equipment and materials, Harbach announced it was ready for business and it has a section of its website dedicated to the Peter Dahl product line. Take a look at <http://www.harbachelectronics.com>for all the offerings.

QSL Information

EK88L via IK2DUW
EM5ØARDF via US0VA
EM75ØW via UT7WZ
EN62EN via UR4EYN
EP3PK via IK2DUW
EP4SP via OK1DOT
ER0/NA1SA via RW3GW/3
ER0/R7C via RW3GW/3
ET3JA via OK3AA
EY8MM via K1BV
EY8WW via K1BV
EY9ØMT via K1BV
F/3A2LF via 3A2LF
F/G3PJT via G3PJT
F/ON6JUN/P via ON5SD
FØGVS via 3A2LF
F1NXQ via 3A2LF
F5NXQ via 3A2LF
FG/F5IRO via F8CRS
FG/F8CRS via F8CRS
FGØGVS via 3A2LF
FH/JA1ELY via JA1ELY
FM/F5IRO via F8CRS
FM/F8CRS via F8CRS
FMØGVS via 3A2LF
FO/F5IRO via F5CQ
FOØELY via JA1ELY
FOØKUS via JA1ELY
FO5IW via JA1ELY
FO5RU via F5CQ
FS/KJ9I via KJ9I

(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>; <http://golist.net/>.)

Paul Bailey, VS6DO (SK), was well known for his DXing from Hong Kong in the 1980s. Doug, ZP6CW, remembered Paul this way: "VS6DO and I were apartment neighbors. I could look across at his flat and see his 813s glowing red when he was on Top Band." (Photo from the Ham Gallery website of Tom, K8CX)



Silent Keys

Recently, a number of well-known DXers have become Silent Keys. Some of them are: Dave Tremayne, ZL1AV; Paul Bailey, VS6DO; Dave Miller, W1GDQ; and Ray McClure, W8CNL. We extend our condolences their families and friends, and to any others not mentioned here.

Most Wanted Survey

A reminder about *The DX Magazine*'s Most Wanted Survey, which I mentioned last month. It is up and running on the DX Publishing website, <http://www.dxpub.com>, and your input is really needed.

Until next month, enjoy the chase and Have Fun!

73, Carl, N4AA

vhf plus

BY JOE LYNCH,* N6CL

Aurora Substorms Mystery Solved?

"The Tail that Never Ends" might be a subtitle for my ongoing series on the Earth's magnetotail. In this, the fourth month of this series, I report on how the THEMIS satellite mission was used to discover how the aurora substorms (or what are more commonly known in North America as the Northern Lights) are powered. As it turns out, the substorms are powered by a reconnecting of a part of the magnetotail. First, however, a bit of catching up from last month's column is in order.

The THEMIS Satellite Mission

Shortly after last month's print deadline for this column, Vassilis Angelopoulos, et. al[1], published the results of the THEMIS satellite mission's observation of the February 26, 2008 aurora substorm. As I reported in last month's column, the THEMIS mission is a five-identical-washing-machine-size satellite system that was launched on February 17, 2007.

After launch, each of these satellites was placed into an elliptical orbit according to the various stages of the mission. See <http://themis.ssl.berkeley.edu/orbits.html> for an explanation of each of the stages of the mission. Fig. 1 illustrates Stage 3, which put the satellites' apogees inside the magnetotail, each with progressively more distant apogees, with satellite P1 having the most distant apogee. On October 15, 2008 the mission will conclude Stage 5, which is the Dayside Science Phase. The placement of the satellites in Stage 3 caused them to be in alignment every four days, which was the fortuitous situation on February 26, 2008.

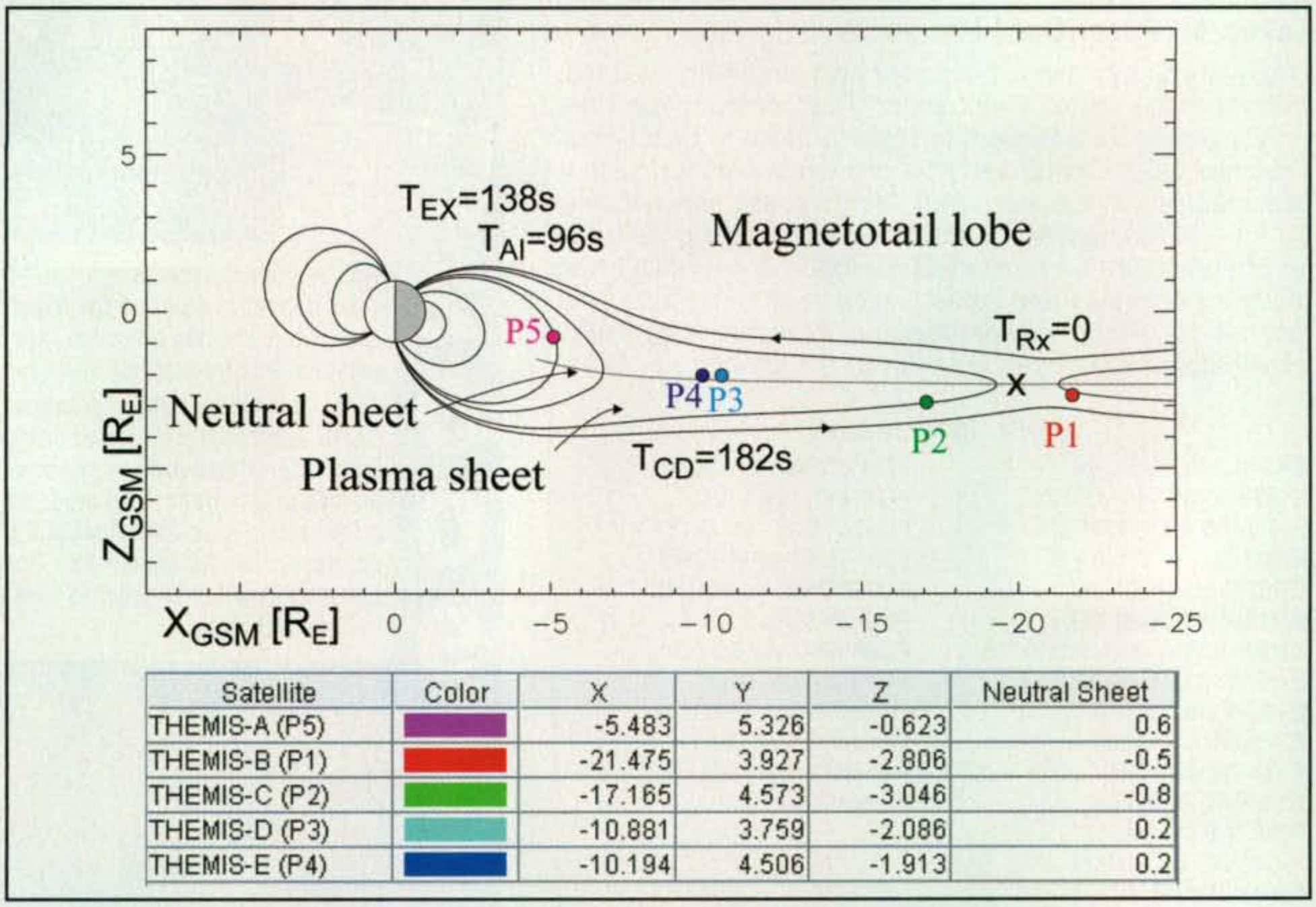
For 30 years there have been two separate theories concerning the onset of aurora substorms.

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

VHF Plus Calendar

Oct. 1	432 MHz Fall Sprint (see text for details)
Oct. 5	Moon Apogee; Very poor EME conditions
Oct. 7	First Quarter Moon
Oct. 8	*Draconids* meteor shower predicted peak;
Oct. 11	Microwave Fall Sprint (see text for details)
Oct. 12	Good EME conditions
Oct. 14	Full Moon
Oct. 17	Moon Perigee
Oct. 17–18	Microwave Update (see text for details)
Oct. 18–19	ARRL 50 MHz to 1296 MHz EME Contest; 50 MHz Fall Sprint (see text for details)
Oct. 19	Poor EME conditions
Oct. 21	Last Quarter Moon; *Orionids* meteor shower predicted peak
Oct. 23–26	AMSAT-NA Space Symposium and Annual Meeting (see text for details)
Oct. 26	Moderate EME conditions
Oct. 28	New Moon

—EME conditions courtesy W5LUU.



Satellite	Color	X	Y	Z	Neutral Sheet
THEMIS-A (P5)		-5.483	5.326	-0.623	0.6
THEMIS-B (P1)		-21.475	3.927	-2.806	-0.5
THEMIS-C (P2)		-17.165	4.573	-3.046	-0.8
THEMIS-D (P3)		-10.881	3.759	-2.086	0.2
THEMIS-E (P4)		-10.194	4.506	-1.913	0.2

Fig. 1– Projections of THEMIS probes in X-Z_{GSM} plane along with representative field lines and neutral sheet location in Giocentric Solar Magnetospheric (GSM) coordinates at 04:45 UTC on February 26, 2008. Times refer to the time delays in Table I. (Used with permission of Vassilis Angelopoulos, principal investigator of the NASA-funded THEMIS satellite mission)

One theory has the cause being a build-up of large currents in the space environment known as plasma, which is suddenly released by an explosive instability. As the space currents in the plasma are disrupted, they implode toward Earth, which causes the start of the substorm. All of this activity takes place approximately one-sixth the distance from Earth to the Moon.

The other theory is that when two of the magnetic field lines of the magnetotail come close together because of the increasing storage of energy from the Sun, there is a moment when a critical limit is reached and they short together. This reconnecting causes the magnetic energy to be transformed into kinetic energy and heat. The resultant energy is released, causing the plasma to be accelerated and thereby producing accelerated electrons. This reconnection takes place about one-third of the way to the Moon. The THEMIS satellite mission was positioned to test this second theory.

As Table I and fig. 1 illustrate, the mission was a success. At 04:50:28 UTC on February 26, 2008, the effects of reconnection registered on satellite, or probe, P1. Ten seconds later the reconnection effects registered on probe P2. Approximately one minute later aural intensification began. Then at 04:52:27 the earthward flow onset was detected at probe P3, followed 38 seconds later by depolarization, also at probe P3.

Implications of the Results

Commenting on the results of the mission, principal investigator Angelopoulos stated: "Armed with this knowledge, we are not only putting to rest age-old questions about the origin of the spectacular auroral eruptions but will also be able to provide statistics on substorm evolution and model its effects on space weather."

Even though the preliminary results now give substantial support for the second theory, questions remain and new questions have arisen. For example, because of the *Science* magazine article "What growth-phase process preconditions and destabilizes tail reconnection during spontaneous and externally driven substorms?" the researchers plan to spend the next several years trying to find the answer to this question.

Insofar as implications for the weak-signal VHF operator are concerned, knowing a bit more about the sequence of events leading up to a substorm can make for better understanding and use of the resultant propagation from the substorm.

Perseids Meteor Shower a Bust

Despite predictions for a more robust *Perseids* meteor shower this year, by all accounts it was a bust. Dave Clingerman, W6OAL's post to the VHF reflector tells it all: "I fired up on 50.125 MHz and 144.2 MHz [around 0900 UTC on August 12, 2008]. In the space of three hours I heard one syllable." Maybe next year will be better.

Two Amateur Radio Cubesats Lost

Two amateur radio cubesats built by students at Santa Clara University in California were lost when their launch vehicle, the SpaceX Falcon-1 rocket, failed shortly after takeoff on August 3, 2008. The cubesats Presat and NanoSail-D were to have operated on 70-cm allocations.

The rocket launched from the Reagan Test Site on Omelek Island, Kwajalein Atoll, Republic of Marshall Islands at 0334 UTC on Sunday. Unfortunately, the flight ended about two minutes into

Event	Observed Time (UTC)	Inferred delay (seconds since 04:50:03 UTC)
Reconnection onset	04:50:03 (inferred)	TRx = 0
Reconnection effects at P1	04:50:28	25
Reconnection effects at P2	04:50:38	35
Auroral intensification	04:51:39	TAI = 96
High latitude Pi2 onset	04:52:00	117
Substorm expansion onset	04:52:21	TEX = 138
Earthward flow onset at P3	04:52:27	144
Mid-latitude Pi2 onset	04:53:05	182
Dipolarization at P3	04:53:05	TCD = 182
Auroral Electroject Increase	04:54:00	237

Table I– Summary of timing results during the February 26, 2008 04:53:45 UT substorm onset, in order of time sequence. The last column is the time delay assuming reconnection onset at 04:50:03 UT, at 20 RE (RE is one radius of the Earth), which was arrived at based on our interpretation of data and an estimate of an average Alfvén speed in the plasma sheet of 500 km/s. (Used with permission of Vassilis Angelopoulos, principal investigator of the NASA-funded THEMIS satellite mission)

the launch when a problem occurred with stage separation.

Fortunately, the story has a happy ending, according to an e-mail to *CQ* from the project director, Dr. Chris Kitts, KE6QLL: "As it turns out, there's a very good silver lining. One satellite, NanoSail, has a flight spare satellite ready to go. So, the NASA team is most likely going to try to find another launch opportunity, and when they do, my students will be ready to go. The other satellite, PreSat, was really a preliminary test for a different spacecraft called PharmaSat, and PharmaSat is currently scheduled for launch [this month] so we are turning our attention to preparing for that launch."

For more information on these satellites as well as their background story, see: <http://www.scu.edu/engineering/horizons/2008spring/robotics.cfm>.

2008 Summer Mid-Latitude Long Haul 6-meter E_s

Thanks in part (or maybe a lot) to WSJT, VHF weak-signal propagation has enjoyed a renewed interest in recent years. The result is the discovery (or maybe rediscovery) of existing propagation paths well past the time of year for what would be considered the active sporadic-*E* season. For example, John Butrovich, W5UWB, in EL17ax, worked EB1EHO on 50.257 on August 9, 2008 at 1658 UTC, using JT6M. Also, the 2-meter DX cluster posted sporadic-*E* propagation on August 2, 2008.

Such activity has caught the attention of seasoned 6-meter DXer and former "The World Above 50 MHz" columnist Bill Smith, WØWOI. In order to learn more about what is happening, Bill posted the following to the VHF reflector:

It surely is an understatement saying this has been a fun (Northern Hemisphere) summer on 6 meters. The USA DX-inclined have done well, especially those operating from the East Coast of the USA, as well as those along the Gulf of Mexico and Pacific Ocean bordering states.

Judging from hundreds of hours observing the 50 MHz DX Cluster and operating from EN22 (west central Iowa), those geographic areas enjoyed long-haul JE1BMJ-designated SSSP by a factor of 25 to 1 versus other modes of propagation over the central 50% of the USA, but we flat-landers above 40 degrees north didn't miss out, June 27–28 being the season blockbuster. Six-meter WACs and 50 countries plus have been worked within two months (late May to mid July) from the upper Midwest USA.

I had the pleasure of listening to two propagation presentations by Carl Luetzelschwab, K9LA, at a Minnesota ham convention in early August, but came home with more questions than answers. There is so much speculation as to the mechanics of this propagation mode which Han, JE1BMJ, calls SSSP (Summer Solstice Short-path Propagation), which is as good a noun as any.

Is this mode multi-multi-hop E_s, ducting, chordal, scatter, and/or all of the above? Will this mode disappear when *F2* returns, or what?

I'm very curious and volunteering to coordinate a (compilation) and distribution of observations from worldwide input: favored paths, time of day, WWV numbers daily and short-term correlation, preferred antennas (arrays) and their height, your local topography, (whether) the mode (has) always existed or (whether) band occupancy and equipment (have) merely revealed the existence, does the mode propagate in the Southern Hemisphere summer season? Whatever you think contributes to "SSSP."

Inquiring minds want to know. We may never know. Nevertheless, 7000-plus mile 50 MHz QSOs at absolute zero sunspot cycle minimum is fascinating to explore.

If you're interested, drop me an e-mail at

w0woi@aol.com. I'll acknowledge each and distribute an overview in the near future.

In his original post on the VHF reflector Bill indicated a deadline of Labor Day. However, in a phone conversation with him, he agreed to extend his deadline until the end of this month.

Silent Keys

Joe Burke, K6IBY, passed away August 3, 2008, after battling cancer for about two years.

As mentioned last month, Al Ferrera, K6MXI, lost his battle to cancer on July 4, 2008. Al was a pioneer in the development of laser technology at University Labs in Berkeley, CA during the 1960s. He later worked on projects for the Apollo and Skylab missions at Tinsley Labs. He was also a successful vineyard owner and started the Sonoma Valley Vintners Association in 1972. In 1983 he established Ferrera and Associates, a communications planning and engineering company and CalSites, a telecommunications site management company. In 2006 he became the president and CEO of Pogowave Communications, Inc., Sonoma County's largest wireless ISP. Donations in memory of Al may be made to the American Cancer Society. My thanks go to Bob Magnani, K6QXY, for furnishing Al's obituary to me.

Gene Harlan, WB9MMM Battling ALS

Gene Harlan, WB9MMM, the owner of Harlan Technologies and the publisher and editor of *Amateur Television Quarterly*, has made it public that he is battling ALS, more commonly known as Lou Gehrig's Disease. While Gene has announced that he is looking for a buyer for the magazine, he is also taking his time to find the right buyer to continue his fine work of publishing ATV activities.

Our thoughts and prayers are with our colleague in the editing business. If you wish to send your regards to Gene, you may e-mail him at <ATVQ@hampubs.com> or to send a note to his snail mail address: 5931 Alma Drive, Rockford, IL 61108.

Current Contests

The **432 MHz Fall Sprint** is October 1, 7 PM to 11 PM local time. The **Microwave (902 MHz and above) Fall Sprint** is October 11, 6 AM to 12 PM local time. The **ARRL 50 MHz to 1296 MHz EME Contest** is October 18–19. The **50 MHz Fall Sprint** is October 18, 2300 UTC to October 19, 0300 UTC.

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

Current Conferences and Conventions

The 2008 **Microwave Update** conference is to be held October 17-18, 2008 in Bloomington, Minnesota at the Holiday Inn Bloomington I-35. For further information, please check the Microwave Update website: <http://www.microwaveupdate.org>.

The 2008 AMSAT-NA Space Symposium and Annual Meeting will be held October 23–26, in Atlanta, Georgia at the Doubletree Buckhead Hotel. For more information, see the AMSAT URL pertaining to the symposium at: <http://www.amsat.org/amsat-new/symposium/2008/index.php>.

Meteor Showers

The *Draconids* is predicted to peak somewhere around 1030 UTC on October 8. The predicted ZHR (zenith hourly rate) may reach storm levels. The *Orionids* is predicted to peak on October 21.

For more information on the above meteor shower predictions see Tomas Hood, NW7US's propagation column. Also visit the International Meteor Organization's website: <http://www.imo.net/calendar/2008>.

And Finally . . .

This month I hope to see those of you who like to chase the birds at the AMSAT conference in Atlanta. While at the conference, I hope to present my paper on the supposed lunar meteor shower of June 20–30, 1975 and my reasons for believing that it was not a shower, but rather a sandstorm.

In the meantime, as always, I will be looking for your input to this, your column. Until next month . . .

73 de Joe, N6CL

Note

1. *Tail Reconnection Triggering Substorm Onset*, Vassilis Angelopoulos, James P. McFadden, Davin Larson, Charles W. Carlson, Stephen B. Mende, Harald Frey, Tai Phan, David G. Sibeck, Karl-Heinz Glassmeier, Uli Auster, Eric Donovan, Ian R. Mann, I. Jonathan Rae, Christopher T. Russell, Andrei Runov, Xu-Zhi Zhou, and Larry Kepko. Published online August 5 2008; 10.1126/science.1160495 (Science Express Research Articles).

Contesting Secrets

BY JOHN DORR,* K1AR

October's Contest Tip

Like me, when you operate a contest everything goes exactly as planned, right? Unfortunately, that is rarely the case. The question is what do you do with the information you learn during a contest. The most basic of tool is simply to keep notes. Whether it's a sticky rotator when beaming to the south or the callsign of a nice multiplier that moved around the bands for you, competitive advantage can be gained by capturing information that you'll undoubtedly forget later. Give it a try. You'll be amazed at how valuable your notes will be after the contest for the next time!

Over the years, there has been considerable discussion about whether or not operating secrets truly exist in contesting. After all, it's only natural to assume that our experiences contribute to a basket of proprietary knowledge that only we know. Well, as a 40-year veteran of contesting, I'm here to report this month on the closest held secret of all. There are no secrets!

I know that many of you disagree with the premise that secrets do not exist amongst the ranks of contest operators. Also, depending on your perspective, I will concede that there are some operating tips that can afford advantage over others. The point, however, is that they ultimately do not contribute in a sustainable way to one competitor beating another.

For many reasons, I've always endorsed an open policy about my personal operating strategy, logs, and other pertinent information. Therefore, take a few minutes with an open mind and give the subject some thought. Are there really any secrets out there in contest land?

When considering the topic of contesting secrets, one has to be careful to differentiate between the concept of circumstantial events and activities that are sustainable time and time again. Let me give you an example.

*2 Mitchell Pond Road, Windham, NH 03087
e-mail: <K1AR@contesting.com>

Calendar of Events

All year	**CQ DX Marathon**
Sept. 25	BCC QSO Party
Sept. 27–28	**CQ WW RTTY DX Contest**
Sept. 27–28	SAC SSB Contest
Sept. 27–28	Texas QSO Party
Oct. 3–5	YL Anniversary CW Party
Oct. 4–5	California QSO Party (CQP)
Oct. 4–5	Oceania SSB DX Contest
Oct. 5	RSGB 21/28 MHz Contest
Oct. 10–12	YL Anniversary SSB Party
Oct. 11–12	Oceania CW DX Contest
Oct. 11–12	Pennsylvania QSO Party
Oct. 12	North American RTTY Sprint
Oct. 18–19	JARTS WW RTTY Contest
Oct. 18–19	Worked All Germany Contest
Oct. 18–19	W/VE Islands QSO Party
Oct. 19	Asia-Pacific CW Sprint
Oct. 19–20	Illinois QSO Party
Oct. 25–26	**CQ WW DX SSBContest**
Oct. 25–26	ARRL Int'l EME Competition
Nov. 1–2	Ukrainian DX Contest
Nov. 1–2	RCA QSO Party
Nov. 1–3	ARRL CW Sweepstakes
Nov. 29–30	**CQ WW DX CW Contest**

Many years ago while operating as a single operator in the CQ WW DX CW Contest, I chose to try 40 meters at a ridiculously early time for the East Coast—something like noon! As I began tuning the band, I noticed the European signals were fairly strong, which was unusual even by East Coast standards. A few of the U.S. multi-ops were calling CQ, but there was not a peer single operator to be found. Thus, I fired up on 7003 and called CQ, only to be rewarded with a swarming mass of callers. Much to my delight I had discovered a band opening before most of my competitors, resulting in its being the pivotal operating decision of the weekend. To this day, my friends sometimes ask, "AR, why did you go to 40 meters so early?" My answer usually includes the fact that it was just a bit of intuition. Intuition is hardly the basis for claiming a closely held operating secret. Rather, it represent years of experience.

Of course, with decades of operating stories to tell, I can share other examples as well. I remember countless times when I've discovered unusual band openings (e.g., Southeast Asia booming in via the long path in the middle of the night on 20 meters or that HSØ on 10 meters when the band was otherwise dead). There were no secrets to that method of operating. Experience, however, has taught me that one of keys to successful operating is to constantly search for the obscure—band

An enthusiastic group from the Radio Amateur Society of Thailand (RAST) met in July, and no less than 15 plaques and certificates for the 2007 CQ WW VHF Contest were presented! (Photo courtesy of Champ, E21EIC)

openings and opportunities that others may not consider. If you view that as a secret, then now you know. I prefer to think of it as one of the hundreds of operating decisions one makes in every contest.

As technology has continued to infuse the world of contesting, we have become a more open-contest society. And while I'll admit that in the early days of contesting there may have been some closely guarded approaches to contest operating, the notion of secrets has totally evaporated as technology continues to expose many things that were previously hidden. In my view, this is good for contesting. Whether it is open logs, such as the policy now being implemented by the CQ WW, or the potential of publicly available UBN/LCR logging error reports, openness makes the contest community at large a better group of operators. It certainly contributes to the position that operating secrets are non-existent. More importantly, it makes a wealth of experience available for all to learn from and better understand.

There are other areas of operating strategy that often get confused as "secrets." Here are just a few examples:

- Knowing which stations are more willing to move to other bands for you.
- Understanding more effective transmit frequencies to use on 40- and 75-meter SSB.
- Maximizing the QSO potential from certain geographical areas around the world.
- Finding stations "outside the contest" that are willing to give you a contest QSO.
- Consistently making the right decisions about band choices.
- Knowing when to run vs. "search & pounce."
- Successfully applying the contrarian approach to operating—trying operating tactics that few would otherwise consider.

I accept the fact that many of you may view the above list to be premised on "operating secrets." I prefer to think of the topics as being rooted in the core of operating strategy that is derived from years of experience. Maybe it's semantics? Not in my book.

The bottom line, however, is that good operators at a well-engineered station are still going to win contests, and there will never be a substitute for "hard work and lots of chair time." There is no magic pill or closely held group of secrets that will make a difference. It's easy to confuse the benefits of experience with the view that contest success is based on knowledge that others don't have. Fortunately, as with everything else in life, putting in your time pays rich dividends in contesting. There are no substitutes and there are certainly no deep and dark secrets that will ever change that fact. What do you think?

Final Comments

I'll let you in on one secret: I'm out of time for this month. I encourage everyone to be more receptive about openness in contesting. In my view, the benefits clearly outweigh the downside.

It's hard to believe the summer is behind us and we've entered yet another contest season. The CQ WW SSB is first up at the end of this month. I hope to work you many times this fall. See you in the next one!

73, John, K1AR

propagation

BY TOMAS HOOD,* NW7US

Good Conditions Predicted for 2008 CQ WW DX SSB Contest

A Quick Look at Current Solar Cycle Conditions

(Data rounded to nearest whole number)

Sunspots
Observed Monthly, July 2008: 1
Twelve-month smoothed, January 2008: 4

10.7 cm Flux
Observed Monthly, July 2008: 66
Twelve-month smoothed, January 2008: 70

***Ap* Index**
Observed Monthly, July 2008: 6
Twelve-month smoothed, January 2008: 8

HF radio enthusiasts celebrate the arrival of the fall DX season. From October through November 2008 we will see a steady improvement in the DX bands. During the CQ WW DX Contests (SSB the last full weekend of October; CW the last full weekend of November), we should experience fairly good conditions.

The 2008 CQ WW SSB Contest (for the rules and more information on the WW DX Contest see: <http://www.cqww.com/>, <www.cq-amateur-radio.com>; and 2007 results in the August and September issues of *CQ*, with the 2008 rules in the September issue) will start at 0000 UTC, Saturday, October 25, and run through 2359 UTC Sunday, October 26. Looking at the 27-day rotation of the sun, taking into consideration the current solar activity at the time of writing this column, propagation may be good on both days.

Predictions for one 27-day rotational period are far more accurate than for three 27-day rotational periods (the most recent data available by this issue's deadline). Be sure to carefully check conditions on September 28 and 29, since this would be one rotational period before the SSB contest weekend. There is better than a 90-percent chance that conditions observed on those days will recur during the October contest weekend.

See the "Last-Minute Forecast" on this page for expected day-to-day conditions for the entire month of October. An updated day-to-day forecast for the SSB contest weekend will appear as a bulletin at the beginning of the November column. That issue should reach most subscribers before the SSB contest begins. You can also see an up-to-the-day "Last-Minute Forecast" on my propagation resource center, at <http://prop.hfradio.org/>.

Table I presents the smoothed sunspot count during previous WW DX Contest periods since 1997, and what is predicted for the 2008 contest. Contest conditions could be somewhat like those of last year, but perhaps slightly improved if the predicted increase in solar activity holds true. Low- to middle-latitude propagation paths should be poor to fair on lower frequencies, while it might be a struggle to find propagation on the higher HF frequencies. It is expected that the bands will have a lot of fluctua-

*P.O. Box 9, Stevensville, Montana 59870-0009
e-mail: <nw7us@hfradio.org>

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for October 2008

Propagation Index.....	Expected Signal Quality (4)	(3)	(2)	(1)
Above Normal: 1-2, 7-10, 15-16, 19-21	A	A	B	C
High Normal: 4-6, 11-12, 14, 17-18, 31	A	B	C	C-D
Low Normal: 3, 13, 30	B	C-B	C-D	D-E
Below Normal: None	C	C-D	D-E	E
Disturbed: None	C-D	D	E	E

Where expected signal quality is:
A—Excellent opening, exceptionally strong, steady signals greater than S9.
B—Good opening, moderately strong signals varying between S6 and S9, with little fading or noise.
C—Fair opening, signals between moderately strong and weak, varying between S3 and S6, with some fading and noise.
D—Poor opening, with weak signals varying between S1 and S3, with considerable fading and noise.
E—No opening expected.

HOW TO USE THIS FORECAST

1. Find the *propagation index* associated with the particular path opening from the Propagation Charts appearing in *The New Shortwave Propagation Handbook* by George Jacobs, W3ASK; Theodore J. Cohen, N4XX; and Robert B. Rose, K6GKU.

2. With the *propagation index*, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a *propagation index* of 3 will be good (B) on Oct. 1st and 2nd, fair (C) to poor (D) on the 3rd, fair (C) on Oct. 4–6, and so forth.

3. As an alternative, the Last-Minute Forecast may be used as a general guide to space weather and geomagnetic conditions through the month. When conditions are Above Normal, for example, the geomagnetic field should be quiet and space weather should be mild. On the other hand, days marked as Disturbed will be riddled with geomagnetic storms. Propagation of radio signals in the HF spectrum will be affected by these conditions. In general, when conditions are High Normal to Above Normal, signals will be more reliable on a given path, when the path is ionospherically supported.

	1997	'98	'99	2000	'01	'02	'03	'04	'05	'06	'07	'08
October	32	71	108	115	114	91	58	36	26	14	6	10*
November	35	73	111	113	116	85	57	35	25	13	6	12*

**Predicted values expected during the 2008 contest.*

Table I– Smoothed sunspot numbers recorded during CQ WW DX Contests since 1997 (October SSB, November CW).

tion in performance, although the lower frequency bands will be much quieter than in the past few years.

Be aware that during this not-unusual solar cycle minimum many are reporting activity even on 10 meters, some due to the gray-line propagation mode, some due to sporadic-*E* openings (probably not a player during the contest period, though), and other reports that lie outside convention (probably due to ionospheric energizing resulting from high-speed solar-wind interaction with the Earth's magnetosphere). There may well be some welcome surprises during the contest period on higher HF frequencies and even on 6 meters (even though 6-meter contacts do not count for CQ WW contest credit).

This month's column is designed to help you make the most of propagation conditions during the contest, if you plan on participating. Even if you are not a dedicated contester, you should give it a try. If you are trying for your DXCC or other "wallpaper," the CQ WW DX is the contest of choice, especially during more active solar years. Sure, conditions may not be as hot as during the years of the solar cycle maximum, but with the improvement in propagation on lower HF bands such 40 meters, there is a lot of opportunity to make a good score.

Try out propagation modeling and forecasting software programs to see how those programs model the contest conditions for *you*, based on parameters such as your antenna properties, geographic location, power levels, and operating times. A program I have covered in past columns is ACE-HF Pro. Using such a program you can work out an operational plan using tools such as ACE-HF's Animated Coverage Maps, or the ACE-HF Pro's band-opening charts for the various propagation paths you wish to target to get those extra contest points. (See <http://hfradio.org/ace-hf/> for more details.)

October Propagation

The following is a band-by-band summary of DX propagation conditions expected from mid-October through mid-December and centered on the two CQ WW Contest weekends. Next month's column will update this summary.

160 Meters: Considerably decreased static levels, quieter geomagnetic conditions (as compared to the last few years), and longer hours of darkness in the northern latitudes should provide a number of DX openings on this band. These openings will often be weak due to the relatively high signal absorption, since we are not yet to the longest periods of daily darkness. However, give this band a try, as some fairly good openings should be possible toward Europe and the south from the eastern half of the United States, and toward the south, the Far East, Australasia, and the South Pacific from the western half of the country. Other DX openings might also be possible. The best propagation aid for this band (and for 80 and 40 meters as well) is a set of sunrise and sunset curves, since DX signals tend to peak when it is local sunrise at the easterly end of the path. A good internet website featuring a gray-line map display may be found at <http://www.fourmilab.ch/earthview/>. Follow the link, "Map of the Earth," showing the day and night regions.

80 Meters: This should be a good band for DX openings to many areas of the world during the hours of darkness and into the sunrise period. The band should peak toward Europe and in a generally easterly direction around midnight. For openings in a generally western direction expect a peak just after sunrise. The band should remain open toward the south throughout most of the night. Propagation on this band is quite similar to that expected on 40 meters, except that signals will be somewhat weaker on the average, noise levels will be a bit higher, and the period for band openings in a particular direction will be a bit shorter.

40 Meters: This should be the hottest DX band during the hours of darkness, as the seasonal static levels are lower than they were during the summer. The band should be open first for DX toward Europe and the east during the late afternoon. Signals should increase in intensity as darkness approaches. During the hours of darkness expect good DX openings to most areas of the world. Signals should peak from an easterly direction about midnight, and from a westerly direction just after sunrise. Excellent openings toward the south should be possible throughout most of the nighttime period. When the Last-Minute Forecast indicates Above Normal or High Normal, the choice for best nighttime band will be 40 and 20 meters.

20 Meters: DX openings should be possible on this band both day and night. Conditions should peak about an hour or two after sunrise and again during the late afternoon and early evening hours. Expect to work into some areas of the world between sunrise and sunset, when conditions are a mix of low geomagnetic activity and an increase in solar activity. Good openings should be possible to many areas of the world dur-

ing the dusk and dawn periods, following the gray-line. When conditions are Above Normal, expect 20 meters to offer a few surprise worldwide DX openings during the night. (I've recently listened to stations in Australia on 20 meters during my local—Montana—late evening. This should continue to occur during the months of October and November.) Look for long-path openings for about an hour or so after sunrise and again for an hour or so before local sunset. Signal levels are expected to be exceptionally strong during the October contest period.

15 Meters: This year, 15 meters will be a marginal DX band. However, during the daylight hours, this band should still see some significant action. Fair to Good conditions are expected from shortly after sunrise through the early evening hours. The band could remain open into the evening toward southern and tropical areas.

10 Meters: For those in low and middle latitude locations, 10 meters could yield a number of daytime contacts during the contest weekends, especially between the points in the Southern Hemisphere and along paths crossing the equator. However, I don't expect too much excitement on this band. With the continued decline in solar activity, this band suffers. Those in the Caribbean and other tropical regions possibly will find 10 meters a usable band this year.

VHF Conditions

Sporadic-*E* activity is very rare during October in the northern temperate zone (where much of the U.S. is located). While the WW SSB contest weekend looks like a quiet period, there are a few days forecast with moderate geomagnetic activity and possible radio storms. There may be a few aurora-mode (Au) propagation events during October. Remember that digital modes and CW are the best way to go with aurora, particularly on 144 MHz through 432 MHz, as the voice modes become extremely distorted and unrecognizable due to the effects of the aurora. The best times to check for VHF aurora openings are when conditions are expected to be Below Normal or Disturbed, as shown in the Last-Minute Forecast at the beginning of this column.

There is some possibility of extended tropospheric conditions during October because of the changing weather patterns. Two meters is the best band to watch for this.

October does have the *Draconids* meteor shower, active between October 6 and 10, and expected to peak on October 8. The shower could reach a very high hourly rate of meteors. As with the *Leonids,* the best time to check for radio propagation would be from about midnight onward until dawn. The *Draconids* is primarily a periodic shower that twice has produced spectacular, brief, meteor storms in the last century (in 1933 and 1946). In 1999 a wholly unexpected minor outburst was witnessed from the Far East. *Draconid* meteors are exceptionally slow moving, a characteristic that helps separate genuine shower meteors. This shower could produce meteor scatter mode (Ms) propagation openings on VHF and UHF.

Check out <http://www.imo.net/calendar/2008> for a complete calendar of meteor showers in 2008.

Current Solar Cycle Progress

The Dominion Radio Astrophysical Observatory at Penticton, BC, Canada, reports a 10.7-cm observed monthly mean solar flux of 65.8 for July 2008. The 12-month smoothed 10.7-cm flux centered on January 2008 is 70.0. The predicted smoothed 10.7-cm solar flux for October 2008 is 67, give or take about 4 points.

The Royal Observatory of Belgium reports that the monthly mean observed sunspot number for July 2008 is 0.5, down from June's 3.1. The lowest daily sunspot value recorded was zero (0), on July 1–17, 19, and July 21–31. The highest daily sunspot count was 8 on July 18 and July 20. The 12-month running smoothed sunspot number centered on January 2008 is 4.2. A smoothed sunspot count of 10, give or take about 2 points, is expected for October 2008.

The observed monthly mean planetary *A*-index (*Ap*) for July 2008 is 6. The 12-month smoothed *Ap*-index centered on January 2008 is 7.7. Expect the overall geomagnetic activity to vary greatly between quiet to active during October. Refer to the Last-Minute Forecast for the outlook on conditions during October.

I invite you to visit my online propagation resource at <http://propagation.hfradio.org/>, where you can get the latest space data, forecasts, and more, all in an organized manner. If you have a cell phone with internet capabilities, try <http://wap.hfradio.org/>.

Drop me an e-mail or send me a letter if you have questions or topics you would like to see me explore in this column. I'd also appreciate any feedback you might have on what I have written. Until next month . . .

73 de Tomas, NW7US

our readers say

No, It's Not Ham Radio

Editor, *CQ*:

In your editorial in *CQ*, April 2008, you wrote (regarding Echolink and IRLP), "... and my definition is that if I'm talking into a microphone and communicating with another ham, then it's ham radio... "Well, Rich, every telephone has a built-in microphone at one end. If you and I were to talk on the phone, it is clearly *not* ham radio. As they used to say in math class, QED.

I really have nothing against these modes — they are an interesting tool for communication. Folks should use them all they want to. Just *don't* call them ham radio, when there is little or no RF involved! You might look up the word "radio" sometime. Merriam -Webster's first definition is "of, relating to, or operated by radiant energy."

Sumner Weisman, W1VIV (since 1952)

A Towering Article

Editor, *CQ*:

I enjoyed the excellent article by John Lindholm, W1XX, in the June issue of *CQ* regarding erecting a tower. It was quite timely, as I am in the process of erecting a tower myself, having chosen for many reasons to obtain a building permit, not the least of which was that I live on a city lot with many neighbors! I will need the document in case someone complains.

However, as an attorney, I do have one comment that I don't see clearly discussed in the article. W1XX does an excellent job of describing the process of filing an answer to a complaint about the tower. He appropriately mentions the need to provide documentation of insurance coverage through one's home-owner's plan. What is not discussed and could potentially backfire on a ham is the problem of not having a building permit should liability arise from the tower. If the tower falls during a storm, for instance, and damages one's home, it is likely any claim made through the home-owner's insurance plan will be denied if no building permit was obtained prior to installing the tower. A building permit provides the ham with some documentation that the tower was installed to code. Without that document, the insurance company may refuse to honor a claim, arguing they have no way to determine if the tower was appropriately installed.

This is one of the issues that each ham must consider when deciding the "risk/benefit" ratio of obtaining a permit or not. Simply being "in the country" where no one cares may be a most compelling reason to obtain a permit, which will help the ham should any liability arise.

Bob Patton, W4DFW

Hamvention Hotties

Editor, *CQ*:

I enjoyed your article about Dayton in the August issue of *CQ*. I have two ideas for you to use if you agree. First, when writing about any new items, please include approximate retail price ranges for each, if available. Second, a minor grammatical suggestion. On page 30 in the first sentence under "transceivers," you start out with "We've got." In my days at school, my English teachers would not have been happy. "We've got" used to be a contraction of we have and got. I do not believe you would actually say "we have got." It was always my understanding that if "we have it," "we got it," and visa versa. I also realize that all of us are guilty of misusing "we've got," but would hope journalists would try to elevate us through better use of our language. Maybe, "We have several new transceivers on the market this year," etc., could be used. I was not a fan of the English classes, but remember a teacher saying that she "wished we would all forget the word 'got'." I am sure you can tell that my sentence structure may not be the best, but I try.

Keep up the good work with *CQ*, and please take this as a friendly reminder about the use of our language, not really a criticism. Remember, "we've got" more important things to do. As doctors used to say, "an apple a day keeps the doctor away." My thought is "a laugh a day keeps insanity away." Hi

Hank Crofoot, KB2VLP

W2VU responds: Hank, it's very difficult to include price ranges for most of the items featured in our Dayton new products articles, as many are so new that prices have not yet been finalized. In addition, it is up to individual dealers to set their selling price, so there is often a significant difference between the manufacturer's suggested list price and the actual "street price." Regarding the use of "we've got," one of the things we try to do here at *CQ* is to keep our writing conversational, and sometimes that means favoring the way real people really speak to some of the hard and fast rules of grammar. I try to be guided by Winston Churchill's famous response when criticized for ending a sentence with a preposition. "This," he said, "is the type of errant pedantry up with which I shall not put!"

More on Aircraft Scatter

Editor, *CQ*:

It is with great interest I read the letters from Joe, K1JT, and Dick, K2RIW, in the May 2008 issue of *CQ* regarding their aircraft scatter observations and experience. Some additional information about aircraft scatter can be found at my website: <http://www.2ingandlin.se/SM6FHZ.htm> (main page) and specifically at <http://www.2ingandlin.se/ACS.htm>. I have been interested in aircraft scatter for more than 15 years and have collected my experiences as well as the web references I have been able to find.

Ingolf, SM6FHZ

Oops ... Wrong Rocket

Editor, *CQ*:

With facts so easy to check using the net, it is too bad that an article about an excellent gentlemen like Dr. Townsend (June 2008 *CQ*) was marred by a large error in historical fact. The caption on the photo on page 16 credits the Navy Vanguard with being the first US satellite launched. In fact, the credit should go to the Army, who launched the first of the Explorers at the end of January 1958. The Navy Vanguard program had been intended to get the honor (the President's decision), but after several failures, the Army team at Redstone Arsenal was told to go ahead. They did.

This was so utterly simple to check in Wikipedia that I am puzzled at the oversight.

Bill Aycock, W4BSG

W2VU replies: The explanation is simple, Bill. This magazine is written and edited by humans, and we goofed. We are well aware that Explorer I was the first successfully-orbited U.S. satellite. We would advise caution in relying on Wikipedia for anything, though. It is well-known for sometimes getting "facts" wrong because there is no trail of accountability. Anything you see on Wikipedia should be confirmed by a more reliable source before you accept it as fact.

Speaking of Errors...

Editor, *CQ*:

I think the back issues on line is a great idea! (See <http://hamcall.net/cq>.) However, I did notice the "QUA" column in the very first issue miss-spelled "engineering." You all are probably too young to take credit for that.

Mike Stein, WB9NOO

W2VU replies: Mike, while I can take neither credit nor blame for something that happened ten years before I was born, I will point out—in defense of my predecessors—that the word "engineering" was used twice in the paragraph to which you refer, and it was spelled correctly the first time. So it was clearly a typo, and typos are eternal. And by the way, you misspelled "misspelled" in your letter.—73

On the Cover

On this month's cover are the Haleys of Santa Fe, TX. From left are Cody, KB5WYJ, Casey, AB5RG, Cindy, W5CLH and Marty, AB5GU. Marty got his license in 1992, upgraded to Extra in 1993, and his wife Cindy is a Technician licensed since 2006. Their oldest son, Cody, age 25, became a ham at 9 years of age and has twice given speeches at the Dayton Youth in Ham Radio Forum. Casey, age 24, was licensed at 7 and made Extra (and DXCC) at 8, with 20 WPM code. Casey earned a ham radio scholarship to Texas A&M University and is now a biomedical engineer. Wyatt, WY5ATT, not pictured, was licensed at 10 and is now 15. The Haleys love to travel to hamfests and often combine this with camping trips. They often work contests as a multi-op, and built a small ham radio campground where they and their ham friends relax and operate VHF and UHF contests. *(Cover Photo by Larry Mulvehill, WB2ZPI; text by Dan Moseson, KC2OOM)*

ham shop

Advertising Rates: Non-commercial ads are 20 cents per word including abbreviations and addresses. Commercial and organization ads are $1.00 per word. Boldface words are $1.50 each (specify which words). Minimum charge $2.00. No ad will be printed unless accompanied by full remittance. All ads must be typewritten double-spaced.
Closing Date: The 10th day in the third month preceding date of publication (example: Jan. 10th for the March issue). Because the advertisers and equipment contained in Ham Shop have not been investigated, the Publisher of *CQ* cannot vouch for the merchandise listed therein. The publisher reserves the right to reject any advertisement. Direct all correspondence and ad copy to: CQ Ham Shop, 25 Newbridge Road, Hicksville, NY 11801 (fax: 516-681-2926; e-mail: <hamshop @cq-amateur-radio.com>.

CB-TO-10M CONVERSIONS: Frequency modifications, FM, books, plans, kits, high-performance CB accessories. Catalog $3. CBCI, Box 30655CQ, Tucson, AZ 85751. <www.cbcintl.com>

At **www.HamRadioExpress.com** we know you can't afford to waste time looking for Ham Radio Antennas & Accessories. With **over 3,000 products in our four warehouses**, you can rely on **Ham Radio Express** to have the parts you need, in stock, especially those special, hard-to-find parts, fixed station antennas, baluns, mobile antennas, mobile antenna mounts, accessories, and RF connectors. **Custom Built Cable Assemblies** for your Packet TNC/KPC to radio interface devices. We stock interface cables for all amateur radio makes and models: AEA, Kantronics, MFJ, PacComm, and more Packet Controllers. All cables are in stock or can be built in one day. All cable assemblies are double-checked before they are shipped. Toll-Free Order Lines: M–F 9 AM to 4 PM: **1-800-726-2919** or **1-866-300-1969**; Fax **1-434-525-4919**. **Help and Tech Support:** *Not sure what model you need?* At **www.HamRadioExpress.com** our Technical Support staff (1-434-509-4666, 9 AM to 4 PM weekdays) can help you decide what you need, and all available for same-day shipment. On-line visit: **www.HamRadioExpress.com**

QSLing SUPPLIES. e-mail: <plumdx@msn.com>.

QSLs FOR DX STATIONS: Our new "International Division" was established to handle QSL needs of DX hams. We understand the problems of packaging, shipping, and dealing with the customs problems. You can trust us to deliver a quality QSL, usually much cheaper than you can find locally. Write, call, or FAX for free samples and ordering information. "The QSL Man—W4MPY," 682 Mount Pleasant Road, Monetta, SC 29105 USA. Phone or FAX 803-685-7117.

"QRZ DX"—since 1979: Available as an **Adobe PDF file** each Wednesday or by regular mail. Your best source for weekly DX information. Send #10 SASE for sample/rates. **"The DX Magazine"—since 1989:** Bimonthly – Full of DXpedition reports, QSL Information, Awards, DX news, technical articles, and more. Send $3.00 for sample/rates. DX Publishing, Inc., P.O. Box DX, Leicester, NC 28748-0249. Phone/Fax: 828-683-0709; e-mail: <DX@dxpub.com>; WEB PAGE: <http://www.dxpub.com>.

CERTIFICATE for proven contacts with all ten American districts. SASE to W6DDB, 45527 Third Street East, Lancaster, CA 93535-1802.

TRYLON SELF-SUPPORTING TOWERS: Delivered **ANYWHERE** in the US for **ONLY** $261.00. This is the **BEST** tower value around – 96 feet for only $2451.00 **DELIVERED TO YOUR QTH!** Go to <www.championradio.com> or call 888-833-3104 for more information.

MAUI, HAWAII: vacation with a ham. Since 1990. <www.seaqmaui.com>, telephone 808-572-7914, or <kh6sq@seaqmaui.com>.

ALUMINUM CHASSIS AND CABINET KITS, UHF-VHF Antenna Parts, Catalog. E-mail: <k3iwk@flash.net> or <http://www.flash.net/~k3iwk>.

HF VERTICAL COMPARISON REPORT: K7LXC and NØAX test Cushcraft, Butternut, MFJ, Force 12, Hustler, Gap, and Diamond verticals. 64-page report includes protocol, data sets, and summaries. $17 plus $4 s/h. <www.championradio.com>, 888-833-3104.

NEAT STUFF! DWM Communications— <http://qth.com/dwm>

NAME BADGES BY GENE: In full color, our artwork or yours. See our web page for samples and prices. **www.hampubs.com** Harlan Technologies 815-398-2683.

REAL HAMS DO CODE: Move up to CW with **CW Mental Block Buster III.** Succeed with hypnosis and NLP. Includes two (2) CDs and Manual. Only $29.95 plus $5.00 s/h US. FL add $2.14 tax. Success Easy, 160 West Camino Real #128, Boca Raton, FL 33432, 800-425-2552, <www.success-is-easy.com>.

WANTED: HAM EQUIPMENT AND RELATED ITEMS. Donate your excess gear—new, old, in any condition—to the Radio Club of Junior High School 22, the Nation's only full time non-profit organization working to get Ham Radio into schools around the country as a teaching tool using our EDUCOM—Education Thru Communication—program. Send your radio to school. Your donated material will be picked up ANYWHERE or shipping arranged, and this means a tax deduction to the full extent of the law for you as we are an IRS 501(c)(3) charity in our 28th year of service. It is always easier to donate and usually more financially rewarding, BUT MOST IMPORTANT your gift will mean a whole new world of educational opportunity for children nationwide. Radios you can write off; kids you can't. Make 2008 the year to help a child and yourself. Write, phone, or FAX the WB2JKJ "22 Crew" today: The RC of JHS 22, P.O. Box 1052, New York, NY 10002. Twenty-four hours call 516-674-4072; fax 516-674-9600; or e-mail <crew@wb2jkj.org>. Join us on the WB2JKJ Classroom Net, 7.238 MHz, 1200–1330 UTC daily and 21.395 MHz from 1400 to 2000 UTC.

IMRA-International Mission Radio Assn. helps missioners—equipment loaned; weekday net, 14.280 MHz, 1:00–3:00 PM Eastern. Sr. Noreen Perelli, KE2LT, 2755 Woodhull Ave., Bronx, NY 10469.

PHASED ARRAY NETWORKS by COMTEK SYSTEMS deliver gain and front to back. Call 704-542-4808; fax 704-542-9652. COMTEK SYSTEMS, P.O. Box 470565, Charlotte, NC 28247.

3200+ DIFFERENT AWARDS from 128 DXCC countries. Complete data online at <http://www.dxawards.com>. One year full access just $6. Ted Melinosky, K1BV, 12 Wells Wood Road, Columbia, CT 06237-1525.

CASH FOR COLLINS, HALLICRAFTERS SX-88, & DRAKE TR-6. Buy any Collins equipment. Leo, KJ6HI, phone/fax 310-670-6969, e-mail: <radioleo@earthlink.net>.

IT'S NEW AND HOT! "Keys III" features highly detailed views and photos of keys, bugs, and paddles like few people have ever seen! It's awesome and it's available on CD ($16 + $2.50 post) or as a full-size book ($18 + $4.05 Priority Mail). Also still available, "Keys II" ($16 + $2.50 post) and "QRP NOW!" ($16 + $2.50 post). Order direct from Dave Ingram, K4TWJ, 3994 Long Leaf Drive, Gardendale, AL 35071.

PACKET RADIO AND MORE! Join TAPR, connect with the largest amateur radio digital group in the U.S. Creators of the TNC-2 standard, working on Software Defined Radio technology. Benefits: newsletter, software, discounts on kits and publications. For membership prices see the TAPR website: <http://www.tapr.org>).

FOR SALE: CQ/Ham Radio/QST/73 magazines and binders. SASE brings data sheet. W6DDB, 45527 Third Street East, Lancaster, CA 93535-1802.

advertiser's index

now including websites

advertiser's index

now including websites

It's easy to advertise in CQ. Let me know what I can do to help.
Don Allen, W9CW
(217) 344-4570 or FAX (217) 344-4575
e-mail:ads@cq-amateur-radio.com
Please direct subscription questions to 516-681-2922

ANAHEIM, CA
(Near Disneyland)
933 N. Euclid St., 92801
(714) 533-7373
(800) 854-6046
Janet, KL7MF, Mgr.
anaheim@hamradio.com

BURBANK, CA
1525 W. Magnolia Blvd, 91506
(818) 842-1786
(800) 854-6046
Eric, K6EJC, Mgr.
Magnolia between
S. Victory & Buena Vista
burbank@hamradio.com

OAKLAND, CA
2210 Livingston St., 94606
(510) 534-5757
(800) 854-6046
Mark, WI7YN, Mgr.
I-880 at 23rd Ave. ramp
oakland@hamradio.com

SAN DIEGO, CA
5375 Kearny Villa Rd., 92123
(858) 560-4900
(800) 854-6046
Tom, KM6K, Mgr.
Hwy. 163 & Claremont Mesa
sandiego@hamradio.com

SUNNYVALE, CA
510 Lawrence Exp. #102, 94085
(408) 736-9496
(800) 854-6046
Dan, K6DN, Mgr.
So. from Hwy. 101
sunnyvale@hamradio.com

NEW CASTLE, DE
(Near Philadelphia)
1509 N. Dupont Hwy., 19720
(302) 322-7092
(800) 644-4476
Rick, K3TL, Mgr.
RT.13 1/4 mi., So. I-295
newcastle@hamradio.com

PORTLAND, OR
11705 S.W. Pacific Hwy.
97223
(503) 598-0555
(800) 854-6046
Leon, W7AD, Mgr.
Tigard-99W exit
from Hwy. 5 & 217
portland@hamradio.com

DENVER, CO
8400 E. Iliff Ave. #9, 80231
(303) 745-7373
(800) 444-9476
John, N5EHP, Mgr.
denver@hamradio.com

PHOENIX, AZ
1939 W. Dunlap Ave., 85021
(602) 242-3515
(800) 444-9476
Gary, N7GJ, Mgr.
1 mi. east of I-17
phoenix@hamradio.com

ATLANTA, GA
6071 Buford Hwy., 30340
(770) 263-0700
(800) 444-7927
Mark, KJ4VO, Mgr.
Doraville, 1 mi. no. of I-285
atlanta@hamradio.com

WOODBRIDGE, VA
(Near Washington D.C.)
14803 Build America Dr. 22191
(703) 643-1063
(800) 444-4799
Steve, W4SHG, Mgr.
Exit 161, I-95, So. to US 1
woodbridge@hamradio.com

SALEM, NH
(Near Boston)
224 N. Broadway, 03079
(603) 898-3750
(800) 444-0047
Chuck, N1UC, Mgr.
sales@hamradio.com
Exit 1, I-93;
28 mi. No. of Boston
salem@hamradio.com

12 STORE BUYING POWER

HAM RADIO OUTLET®

WORLDWIDE DISTRIBUTION

HRO Specials & Yaesu coupons good thru 10/31

YAESU

FT-897D VHF/UHF/HF Transceiver

- HF/6M/2M/70CM • DSP Built-in
- HF 100W (20W battery)
- Optional P.S. + Tuner • TCXO Built-in

Call Now For Our Low Pricing!

FT-950 HF + 6M TCVR

- 100W HF/6M
- Auto Tuner built-in
- 3 roofing filters built-in
- DMU-2000 Compatible

NEW!

Call Now For Low Pricing!

FT-8800R 2M/440 Mobile

- V+U/V+V/U+U operation
- V+U full duplex • Cross Band repeater function
- 50W 2M 35W UHF
- 1000+ Memory channels
- WIRES ready

Call Now For Low Pricing!

Competitive pricing!

VX-3R 2M/440 HT

- Ultra-Compact Dual-Band HT w/ Wide band RX
- 1.5W RF out 2m/ 1w RF out 440
- WiRES Compatible
- 1000 Memory channels
- AA Battery compatible w/Optional FBA-37

NEW!

Call For Low Intro Price!

FT-60R

- 2m/440 HT
- 5W Wide-band receive
- CTCSS/DCS Built-in
- Emergency Auto ID

Low Price!

VX-7R/VX-7R Black

50/2M/220/440 HT

- Wideband RX - 900 Memories
- 5W TX (300mw 220Mhz)
- Li-Ion Battery
- Fully Submersible to 3 ft.
- Built-in CTCSS/DCS
- Internet WIRES compatible

Now available in Black!

VX-6R

2M/220/440HT

- wideband RX – 900 memories
- 5W 2/440 , 1.5W 220 MHz TX
- Li-ION Battery - EAI system
- Fully submersible to 3 ft.
- CW trainer built-in

NEW Low Price!

VX-150

2M Handheld

With new high capacity battery!

- Direct Keypad Entry
- 5w output
- 209 memories
- Ultra Rugged

Call Now For Special Pricing!

FT-857D

Ultra compact HF, VHF, UHF

- 100w HF/6M, 50w 2M, 20w UHF
- DSP included • 32 color display
- 200 mems • Detachable front panel (YSK-857 requires

Call for Low Price!

FT-7800R 2M/440 Mobile

- 50w 2m, 40w on 440mHz
- Weather Alert
- 1000+ Mems
- WIRES Capability
- Wideband Receiver (Cell Blocked)

FREE YSK-7800

Call Now For Your Low Price!

FT-2000/FT2000D HF + 6M tcvr

- 100 W w/ auto tuner • built-in Power supply
- DSP filters / Voice memory recorder
- 200W (FT-2000D)
- 3 Band Parametric Mic EQ • 3 IF roofing filters

Call For Low Pricing!

NEW!

FT-450AT HF + 6M TCVR

- 100W HF/6M • Auto Tuner built-in • DSP Built-in
- 500 Memories • DNR, IF Notch, IF Shift

Call Now For Special Pricing

AZ, CA, CO, GA, VA residents add sales tax. Prices, specifications, descriptions, subject to change without notice.

Look for the HRO Home Page on the World Wide Web
http://www.hamradio.com

#1 in Customer Service

COAST TO COAST FREE SHIPPING
UPS - Most Items Over $100
Rapid Deliveries From The Store Nearest To You!

A TECHNOLOGY BREAKTHROUGH

MH-74A7A + FGPS-2*1

SCALE 1/2

VX-8R

SCALE 1/1

WEIGHT 8.5 oz

NEW

- All-in-one High-performance Tri-Band Transceiver with GPS/APRS® Operation *1
- Bluetooth® for Hands-free Operation *1
- Barometric Pressure and Temperature Sensors
- Waterproof/Submersible IPX7 rated – 3 feet for 30 minutes
- Dual Ham band Operation (V+V/U+U/V+U) while listening to AM/FM Broadcasts
- Wideband Receive for 500 kHz-999.99 MHz *2
- Completely independent AM/FM receiver included!
- Internal Bar Antenna for better AM Broadcast Band reception.
- Enjoy FM broadcasts in stereo, with your stereo headset/earphone!
- Optional 1 watt operation, using three AA batteries *1
- A large LCD backlit display in a compact case!
- Up to 9 hours *3 of Amateur Band operation with the optional FNB-102LI, high capacity Lithium-ion Battery.

* APRS® is a registered trademark of Bob Bruninga WB4APR.

50/144/(222)/430 MHz 5 W FM Transceiver
(50 MHz: AM 1 W; 222 MHz: 1.5 W (USA version Only))

VX-8R

The optional GPS unit can be attached to the radio.

*1 With optional accessories
*2 US Version - Cellular band blocked
*3 Assuming a duty cycle of 6-second transmit, 6-second receive, and 48-second standby (50 MHz 5 W)

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

Specifications subject to change without notice. Some accessories and/or options may be standard in some areas. Frequency coverage may differ in some countries. Check with your local Yaesu dealer for specific details.

YAESU
Choice of the World's top DX'ers℠

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

NEW IC-7200 HF for the Adventurer

It's what makes the outdoors great!

With a remarkable balance between cost and performance, the IC-7200 opens the door for any new EmComm operator or the long experienced HF operators wanting to work contacts while outdoors. Don't let the small size fool you, this radio is packed full of indoor radio performance. Whether you are involved in emergency planning, on your dream DXpedition, or at your home base, this radio is built for wherever your adventures may take you. *Make your trek to an authorized Icom dealer today!*

Features:

- Class Leading IF DSP and Digital Functions Built-in
- AGC Loop Management Controlled by DSP
- Flexible Selectable Filter Width and Shape
- 6kHz Roofing Filter
- USB Port for CI-V Format PC Control and Audio In/out
- 201 Alphanumeric Memory Channels

ICOM