ICD 08241

Amateur Radio

CQ

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January 1996

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son, K5VT, Phoenix, AZ

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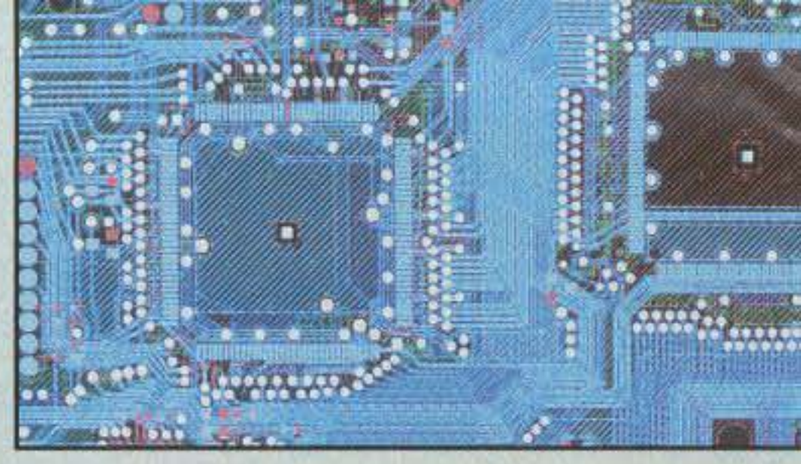
THE RADIO AMATEUR'S JOURNAL

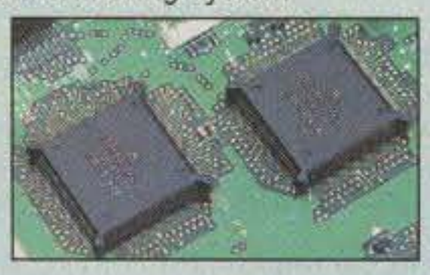
HF TREASURE

Intelligent Digital Enhanced Communications System



State-Of-The-Art IF-Stage DSP

Once again Kenwood defines the standard with next generation DSP. Utilizing dual digital signal processing chips, the TS-870S captures wave forms at the IF stage (including AGC circuit) in realtime to provide unmatched clarity, noise reduction and control over inbound or outbound signals. The DSP chips deliver a dynamic range of 144dB, enabling you to detect previously unheard signals and customize the filtering system through the menu interface. No other transceiver on the market gives you this much power and flexibility.



Digital Filters

Applying complex algorithms at the IF stage allows you to attain filtering that is unattainable with conventional analog circuits. For instance, you can shape the filter sharp enough to obtain over 100dB out of pass band attenuation with virtually no signal loss. Through the menu-driven interface on the front panel, you can apply standard filters or customize and store them for rapid and convenient access. And because it's all digital, there is no additional cost of optional filters!

Two Noise Reduction Methods

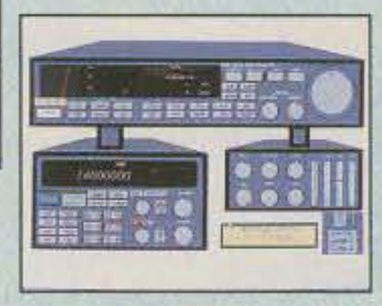
Choose from 2 methods of noise reduction: Line Enhancer Method (LEM) or Speech Processing/ Auto Correlation (SPAC). LEM allows you to custom-shape a filter curve around a target signal, essentially 'carving' it out of the background noise — a powerful tool in SSB operation. For tough CW conditions use the SPAC function, which employs a statistical correlation algorithm to pull weak signals out of the background.

IF Digital Auto-Notch

Another benefit of IF-stage DSP is the ability to detect and eliminate broadcast carrier and continuous beat signals far more effectively than analog systems. It automatically tracks beat signal changes so you can 'set it and forget it'.

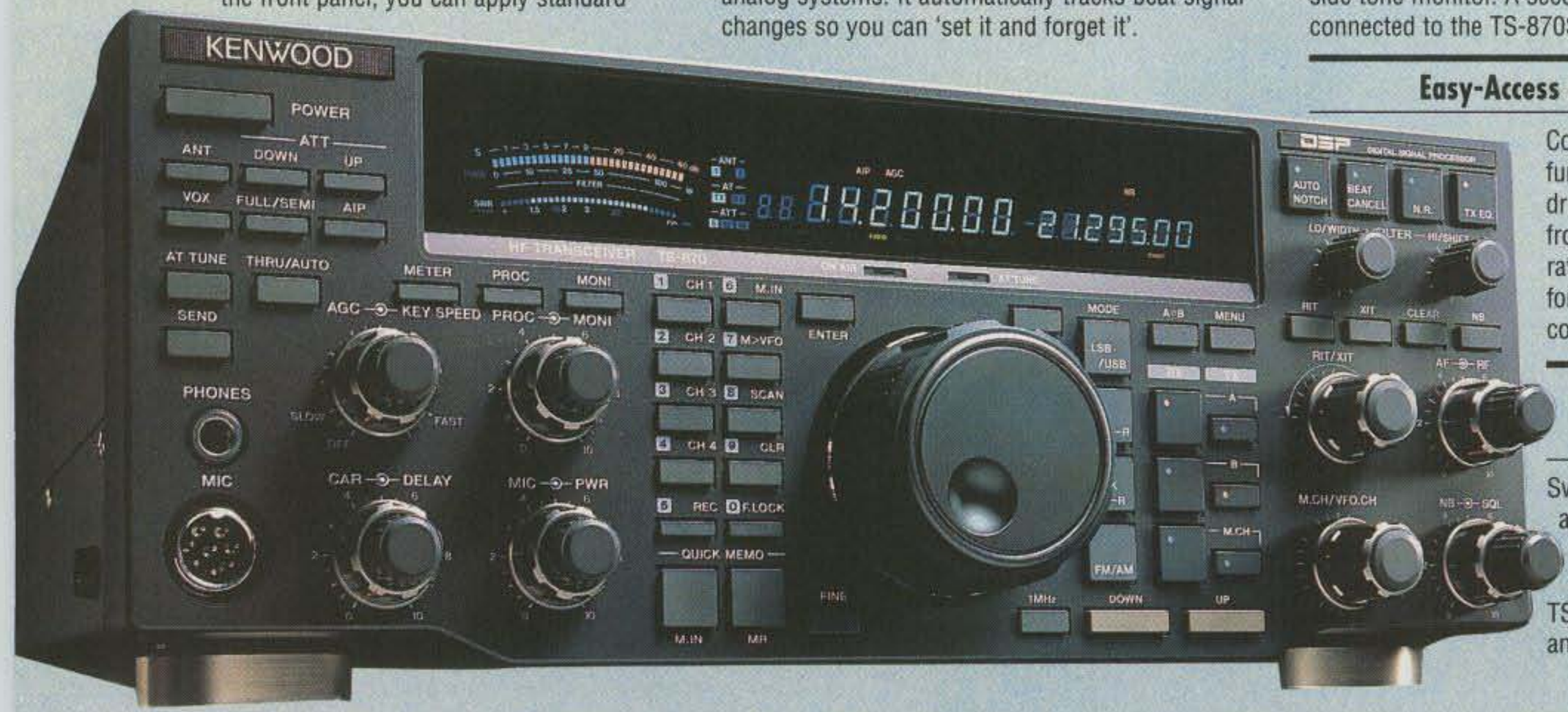
57.6 Kbps Computer Control

High speed computer control is available through a built-in RS-232C port and supplied Windows®-compatable software called RCP (Radio Control Program). This enables access to most functions of the TS-870S including on/off, frequencies, bands, modes and more. It's also possible to "create" a customized screen radio, based on an original design or the included templates.



Built-In K1 LogiKey Keyer

Sophisticated CW operation is possible with the built-in K1 LogiKey electronic keyer with full or semi break-in, DSP-adjustable rise/fall times, and side tone monitor. A second keyer may also be connected to the TS-870S.



Easy-Access Menu System

Control all of the rig's functions through the menu-driven user interface on the front panel. It also incorporates a Quick Menu feature for rapid access to your most commonly used functions.

Dual Antenna and RX Out

Switch between 2 separate antenna systems from the front panel, plus attach an external receiver to the TS-870S for maximum antenna utilization.

Other Features

■ Beat cancel ■ Variable AGC ■ Selectable voice equalizer (SSB & AM) ■ Speech processor ■ Selectable transmit equalizer ■ 100 watts output on SSB, CW, FSK; 25 watts on AM ■ 100 kHz - 30 MHz general coverage receiver ■ Built-in automatic antenna tuner (TX & RX) ■ Dual VFO with 100 channel memories plus 5 channel quick memory ■ Full band scan, programmable band scan, group scan, memory scan with memory channel lock-out ■ Built-in tone encoder ■ High-quality 60-second digital recording unit option (DRU-3) ■ Voice Synthesizer unit option (VS-2) ■ Modifiable for MARS/CAP*

*Permits required for MARS and CAP use. Specifications guaranteed for Amateur bands only.
Kenwood follows a policy of continuous advancement in development.
For this reason, specifications may be changed without notice.

TS-870S

HF TRANSCEIVER

ISO 9002 Meets ISO Manufacturing Quality System

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95ARD-1333

Smart Dual-Bander

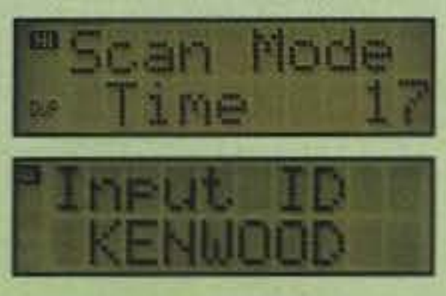
SEE AUTHORIZED KENWOOD DEALER FOR YOUR SPECIAL SAVINGS!

144MHz/440MHz Dual-Band Operation

Ultra compact, lightweight in design, this smart FM dual-bander offers a superb combination of operating ease and powerful performance for handheld communications. As well as providing single-band operation, the TH-79A(D) features extensive dual-band functions, including full-duplex operation and the ability to receive two frequencies simultaneously, even on the same band. And for especially demanding applications, a high-power version — the TH-79A(D)H — is also available.

Dot-Matrix LCD & Menu System

In addition to frequency data, the easy-to-read dot-matrix LCD, a Kenwood exclusive, offers access to a menu system with full alphanumeric display of functions and settings. You can also scroll through a summary of your current operational status.

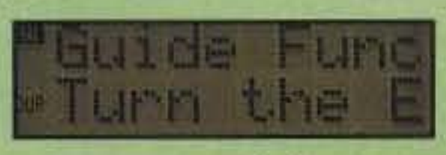


82 Non-Volatile Memory Channels with ID

The memory channels are all capable of storing transmit and receive frequencies independently—thus allowing split-frequency operations — and an alphanumeric ID can be used to identify each one.

Guide Function

There's no need to carry a manual with you: the dot-matrix LCD provides access to a handy guide function that displays simple to understand operating instructions at the touch of a button.



Wide-Range Flexible Antenna

A high-performance flexible antenna ensures excellent reception over the TH-79A(D)s extended RX range — including Air Band, weather channel and other service frequencies.

DTMF Keypad with DTMF Memory

The built-in DTMF keypad enables direct frequency entry and direct recall of memory channels. Up to ten 15-digit DTMF codes with alphanumeric ID can be stored for telephone autopatch use.

Wireless Clone Function

If you're operating two or more transceivers, the ultimate time-saver is the TH-79A(D)s cloning function. Essential data is transferred rapidly, without needing a cable.

Other Features

- Efficient FET power module
- Automatic Band Change
- Full band scan, programmable band scan, memory scan with memory channel lock-out
- TO & CO scan stop modes
- DTSS with page and answer-back function
- Power-on call sign display
- Built-in CTCSS tone encoder/decoder
- Tone alert system with elapsed time indicator
- Cross-band repeater function
- Auto repeater offset (VHF)
- Can use as a remote controller for TM-733A/742A/642A/942A
- Lock functions
- 3-position output power control (High, Low, Economy Low)
- Auto power-off and battery save function
- Modifiable for MARS/CAP*

*Permits required for MARS and CAP use. Specifications guaranteed for Amateur bands only. Kenwood follows a policy of continuous advancement in development. For this reason, specifications may be changed without notice.

TH-79A (Deluxe)

FM DUAL BANDER

ISO 9002 Meets ISO Manufacturing Quality System

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Is the Ultimate Value in HF Linear Amplifiers

"... a truly spectacular piece of equipment... that is affordable by the average ham."

Doug Weaver, KD8KX

"I want you to know how pleased I am with my new ETO 91β. It was well worth the wait. Since its arrival in June it has performed flawlessly at 'pile up busting.'*

"I am an avid DXer (309 confirmed) and a fairly serious contester. My biggest thrill came recently with XRØY on 40 meters. The only stations getting through at the time were the 6's - it was right at sundown for them.

*"When I fired up the **91β** he came back to me on the second call. I actually had to correct the op and assure him that my call was KD**8**KX and not KD**6**KX!*

*"My **91β** sure has become the envy of all my ham friends."*

Doug Weaver, KD8KX

* A new ETO **91β** to help YOU bust the pile ups is available for prompt delivery if you order quickly. If you're serious about amateur radio, eventually you'll insist on ETO/ *ALPHA* POWER. So why not enjoy it now? To order your **91β** or other ETO/ *ALPHA* amplifier, just call Ray Heaton.

ETO 91β CONDENSED SPECIFICATIONS

RF OUTPUT: 1.5KW, no time limit
COVERAGE: All authorized amateur HF bands
BANDCHANGE/TUNEUP: 'By the numbers'
DRIVE POWER: 55-60W nominal
HARMONICS: At least -50 dBc
INTERMOD: At least -36 dBpk
T/R-QSK: High speed vacuum relay
TUBES: Two 4CX800A ceramic–metal tetrodes; resistive grid; common cathode with rf negative feedback

PAØERA operates XRØY. Five ETO 91β linears powered some 40,000 QSOs from Easter Island and Salas y Gomez.

PROTECTION: Grid & screen current limiting; trip to stby for high SWR or IPavg, RF arc, or severe mistuning; AC off for HV fault
TRANSFORMER: 3.5 kVA, encapsulated, strip wound Unisil-H® core
AC POWER: 100-125/200-250V, 50-60 Hz
WARRANTY: 4 year, limited; 30 day money-back guarantee (US/Canada)

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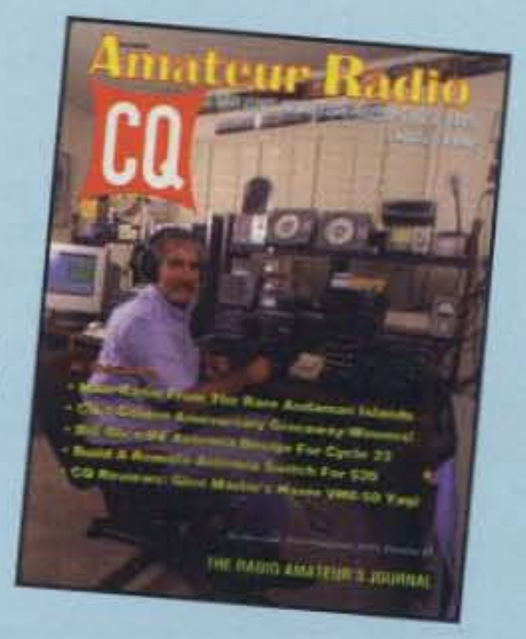
122 HAM SHOP

ON THE COVER: When you think of Vince Thompson, K5VT, scores of DXpeditions come to mind. Over the years, Vince has had an uncanny ability to show up in some of the world's rarest countries. As you can see, he also has a fine home station at his Phoenix, Arizona QTH. (Photo by Larry Mulvehill, WB2ZPI)



ZERO BIAS

AN EDITORIAL

January is an interesting month. It is named after the ancient Roman deity Janus, and marked the beginning of the Romans' calendar year. According to their belief, Janus was literally a two-faced spirit who lived or resided in gates, so he "saw" things that passed, approached, or entered from various perspectives—namely the beginnings. Beginnings are also possibilities, a clean slate on which to draw plans, hopes, and dreams. Most of us believe that things will be better in the new year, and we even make resolutions to help guide us in the right direction. Of course, there are a number of us (not you or me) who also forsake those resolutions early on in the month, but the concept of a fresh start carries on.

Each January my "fresh start" usually means doing something about my antennas. It's also usually too cold to actually do something about my antennas except to collect a few more catalogs, draw a few pictures, and dream about what could be. In reality, there's nothing really wrong with what I have, nor does it need replacing. This is just my yearly go-around about height. What I really "need" is about 25 or 30 feet more in antenna height, something I'm not about to achieve. Probably, if my antenna was about 30 feet higher than it is right now, I'd still want 30 feet more.

Each year about this time I get a call from my friend Woody, who tries to convince me that I should and could put a Skyneedle through the center of my house. The logic is that for most of the time it would be nested down and therefore well within the confines of local law. I have to admit that the first time I heard the idea I thought it was ridiculous and crazy. However, each succeeding year it sounds better and more plausible. I'm not too sure what the neighbors would think, but then again I'm not too thrilled with some of the stuff they've done either. It goes back to beauty is in the eye of the beholder.

Each year, after I get Woody's call I get out my tape-measure and go around the house measuring to see where the Skyneedle would have to go and what would have to be moved. I live in a one-story house with a basement, so mechanically at least it's feasible. Basically, it would have to go in the physical center of the house so that the antenna on top would turn and still be over my property alone. This is a tall order, as I have a very small piece of property. You can see, of course, how all of this can stir even the most sluggish of imaginations. For a few weeks, everything—including mechanical problems, finance, legal considerations, and the like—is possible and doable.

This year we added a new wrinkle. Always when we've talked about doing the project, I assumed that the mechanism would go in the basement (I still can't figure out where) and the mast would come up through the living-room floor and then up through the attic. I had already sort of gotten used to that idea. "No," he said, "we're going to put the base in the living room, and a piece of structural steel in the basement under the floor will support it." Naturally, I asked how big the base would be, and the answer was about four square feet. I reminded him how big my living room is and that four square feet is a big chunk of it (it really is a small house). Well, he said to think in terms of an atrium going through the living room.

This was getting serious. My mind began to conjure up images of an African Gray or two and few toucans, plus perhaps an archaeopteryx flying about (admittedly just up and down) in a plant-filled atrium. My original thought had hooks welded to the mast to possibly hang coats and potted plants. Then I thought about a high sunspot cycle and a lot of activity, and pictured coats and flower pots spinning around, being flung against living-room walls. I know it's just a matter of time before I totally accept the idea and go with it, though. Obviously, there won't be any birds or hooks, and preferably no atrium either. But I know there is a way.

As I think in somewhat grandiose terms, I also remember that Janus is a two-faced numen who also remembers where I came from. He remembers the fifteen-year-old Novice who had dreams of adding a Kreco groundplane, and if things worked out, a Gotham beam. Well, both of those happened in due time, along with a long line of other antennas. The point is that everything is possible in time, if you can focus your attention and time towards a goal. With amateur radio the goal changes as technology and product availability change. If at age fifteen I could have fantasized about acquiring the ideal amateur radio station and exactly what it would consist of, it would have required that I build at least half of it. There was no way, in terms of real dollars, that I could have bought what was available and the parts to build what wasn't. By the time I could have earned, saved, and squirreled away enough money to satisfy that fantasy, the station for the most part would have been obsolete, even in those days. Did that stop me or countless others from trying to achieve that goal? Certainly not.

Now, some forty-odd years later, amateurs still want what they perceive as the ideal station. In terms of today's real dollars, the stuff is a better buy. In terms of aesthetics, today's gear will *look* great for a much longer period than it will be state-of-the-art. If your rig is five to ten years old, it just won't do what the newer stuff will do, even though they may look similar. It's no great plot. It's just that our technology keeps changing. I know that some amateurs find that disconcerting, but probably in that same time frame they've gone through two cars and a couple of suits and ties (although wearable, they're no longer in style). And don't forget about women's fashions, which are light years ahead of the changes in technology and specifically designed to be obsolete in less than a year.

Maybe it's like a giant merry-go-round: You keep going around trying to get that brass ring of perfection. Just when you figure out the sequencing and what you have to do, someone adds a few more horses. In most of life, and certainly in amateur radio, someone is adding new horses all the time. For the most part, it's interesting and a challenge, although sometimes it's just nice to ride around for a while. Reality, though, dictates that in general we have to keep moving or face being left behind.

So, as Janus and I face the beginning of 1996, one of us is still preoccupied with what to do about his antenna. As I said, what I have is basically fine, but knowing that it could be better is sort of an irritant and a motivator. While I don't subscribe to New Year's Resolutions, which generally are impossible to keep, I do create my January list of things I would like to accomplish during the year. Within that list are always a few amateur radio projects which will enhance my enjoyment of the hobby. After all, that's why people take up a hobby in the first place. We all got into amateur radio and perhaps other pastimes because we thought we'd have a good time, enjoy ourselves, and achieve a sense of accomplishment.

As long as we're into beginnings, think about amateur radio in terms of what you would like to accomplish and what you would enjoy. If it sounds good to you, mention it to someone else. He or she might enjoy it, too. Remember, it's hard to convince someone else to join our ranks if we don't look like we're having a good time and enjoying ourselves. Also, try to give your imagination a workout this year and explore some new areas of the hobby, at least areas that are new to you. Most of us are not going to stick a Skyneedle through the house to gain a few extra feet in height, but the idea does create some very interesting musings.

Right now, my musings are only carrying me as far as painting the shack and putting up more shelves. I still have a batch of stuff to get rid of, but I do have a supply of graph paper in case a great idea pops up. If I listen to Woody a few more times, I'm liable to start chopping a hole in the roof and designing an atrium. January is also great antenna weather, and all I have to do now is find where I can get a bag of archaeopteryx chow.

73, Alan, K2EEK

Expand Your Horizons to 6 Meters and Save $300!

See your ICOM dealer for details.

IC-736: 6 Meters and HF!

- ☐ HF and 6 Meters!
- ☐ 100 W Output for Both HF and 50 MHz
- ☐ Internal AC Power Supply
- ☐ Automatic Antenna Tuner (Covers 6 M to 160 M)
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- ☐ Newly Developed DDS Circuit for 1 Hz Fine Tuning Resolution
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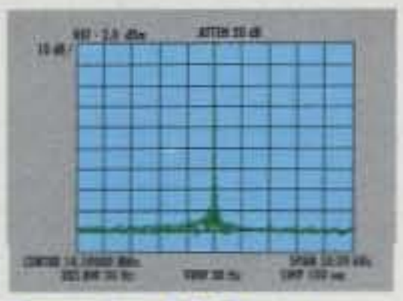
- ☐ Built-in Electronic Keyer
- ☐ RIT, ΔTx, ΔRx
- ☐ 10 Key Pad
- ☐ VOX
- ☐ RF Gain
- ☐ 101 Memory Channels
- ☐ Passband Tuning
- ☐ AF-type Speech Compressor
- ☐ CW Full Break-In
- ☐ Notch Filter
- ☐ Noise Blanker
- ☐ Large Display



Transmitter C/N Ratio

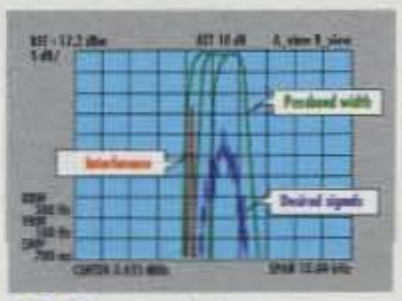
Now you can work all of the HF bands AND have access to one of the most exciting amateur bands – 6 M! The IC-736 is an all band, all mode transceiver with a general coverage receiver. Only an antenna, coaxial cable and AC outlet are necessary to get up-and-running with this rig. Cutting edge features and "plug 'n play" operation make the IC-736 a "complete station in a box!"

The IC-736's compact and cleverly designed **Automatic Antenna Tuner** has preset memories for each 100 kHz step, thereby providing very high speed tuning. Tunes all ham bands plus 6 M!

Equipped with **2 Antenna Connectors,** the IC-736 includes an **Automatic Antenna Selector.** In each band, the band memory memorizes the selected antenna so you don't need to change an antenna manually each time you change the operating band.

The IC-736 employs power **MOS-FET's** in the driver and final amplifier stages, providing a clean, 100 W of output power over all of the ham bands as well as the 50 MHz band.

An **Aluminum Die-Cast Frame** and **2 Large Cooling Fans** help stabilize the



PBT Characteristics

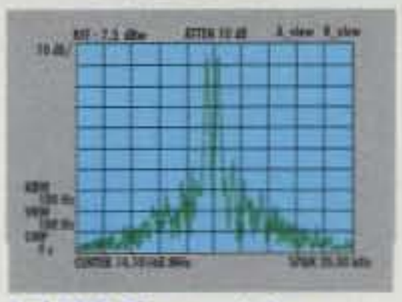
IC-736's PA circuit to obtain 100% full duty cycle operation. Performance you can count on under the most demanding of conditions.

CW fans will love the IC-736. The **Full Break-In Function** (QSK) allows you to receive signals between transmitted keying pulses (semi break-in is also available). **Separately Designed CW Key Jacks** allow you to connect both a memory keyer and a paddle – great for contest operation!

The **Double Band Stacking Register** memorizes 2 frequencies along with modes in each band so it can be used like 2 VFO's in one band.

Up to 10 **Electronic "Memo Pads"** are available. This is especially useful during contests or while DX hunting. When catching a station you would like to temporarily store, simply push the memo pad-write button. The frequency and mode is automatically stored in a memo pad so you can continue band searching.

For interference rejection, the IC-736 has **Passband Tuning** and a **Notch Filter.** During crowded band conditions, these two functions can be used in combination, providing an extremely effective method of reducing most types of interference.



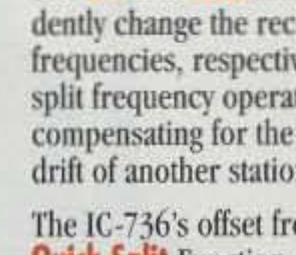
3rd IMD Characteristics

The **RIT** and **ΔTX** functions independently change the receive or transmit frequencies, respectively. Great for split frequency operation or for compensating for the frequency drift of another station.

The IC-736's offset frequency for **Quick Split** Function can be pre-programmed. A **Split Lock** function prevents you from mistakenly changing the receive frequency while changing the transmit frequency.

A newly designed **DDS** (Direct Digital Synthesizer) provides frequency resolution to an exacting 1 Hz. Rotate the main dial and experience the comfortable analog feeling of fine tuning. One complete dial rotation is equal to 200 Hz.

Call ICOM's brochure hotline for more information: (206) 450-6088



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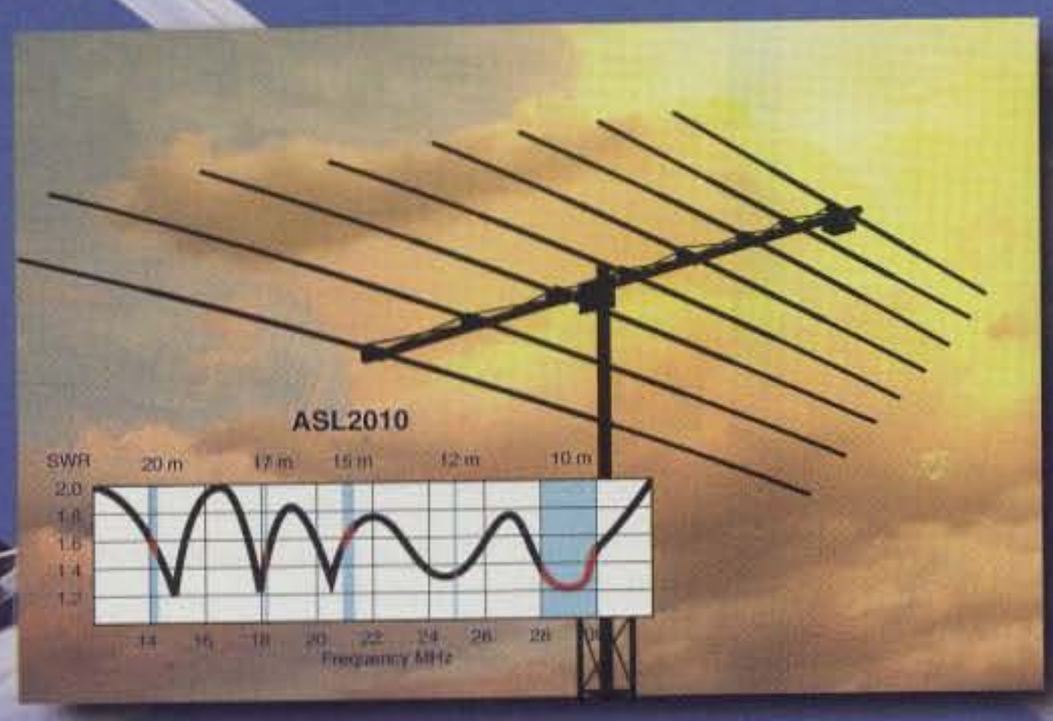

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2:1 Bandwidth	18.5 MHz
Power Rating, Watts	2000
3 dB Beam Width, Deg. E Plane	65
Boom Length, ft (m)	18 (5.48)
Boom Diameter, In (cm)	2.0 (5.08)
Longest Element, ft (m)	38 (11.58)
Element Center Dia, in (cm)	1.25 (3.18)
Turning Radius, ft (m)	19.25 (5.86)
Mast Size Range, in (cm)	1.5-2 (3.18-5.08)
Wind Load, ft^2 (m^2)	10.1 (.93)
Weight, lb (kg)	55 (25.5)

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ANNOUNCEMENTS

• **The Dayton ARA, Inc.** is offering scholarships to licensed amateurs graduating from high school in 1996. They are offering 8 scholarships in the amount of $2000 each. Applications are now being accepted. For further information and application forms, send an SASE to DARA Scholarships, 45 Cinnamon Court, Springboro, OH 45066-1000.

• **Heli-Hams** is a nonprofit association of pilots and people with interests in both helicopters and amateur/shortwave radio. It is designed for these people to be able the contact each other and stay in touch via Heli-Hams. Anyone interested should contact Marden Pride, 34 Fountain St., A5, Haverhill, MA 01830; e-mail wb1ggi@gw.w1mx.ampr.org; or via packet at WB1GGI@K1UGM. #EMA.MA.USA.NOAM.

• **The following special events are scheduled for January:**

WP2S and **N1VKO**, from Sunrise, Florida; Sunrise Tech Amateur Radio Team (START); to commemorate the sixth anniversary of Sunrise Technologies; 1500–2100 Z Jan. 21; operation in the lower 50 kHz of the General phone subband. For certificate, send QSL and 9 × 12 SASE to Sunrise Technologies, Inc., 10001 NW 50th Street, Suite 109, Sunrise, FL 33351.

K2SST, from Atlantic Highlands, New Jersey; Boy Scout Troop 22 to celebrate their 84th anniversary; Jan. 27–28; operation on 40 and 15 meter phone. For more information, or to receive a certificate, send 9 × 11 inch SASE and QSL to K2SST, 112 Prospect Avenue, Atlantic Highlands, NJ 07716.

4-land, from the Charlotte County Fair, Port Charlotte, Florida; The Peace River Repeater Association; Jan. 11–22; 3 PM to 9 PM weekdays; 12 to 9 PM weekends; operation in the General portion of 80, 40, 20, and Novice/Tech plus portion of 10 and 2 meters and 440; exchange RS(T) and QTH. Certificate for a confirming QSO card. Send SASE (for flat certificate send 10 × 13) to Larry Brown, KD4KVE, 23165, Glen Ave., Port Charlotte, FL 33980.

• **The following hamfests, etc., are slated for January:**

Jan. 13, **WestFest—West Valley Hamfest**, Glendale Community College, Phoenix, Arizona. Call Morgan, N7DLW, at 602-938-4356; or Mark, N7KKQ, at 602-843-0960.

Jan. 13, **NCARC Winter Superfest**, Larimer County Fairgrounds, Loveland, Colorado. Call Michael Robinson, AAØUB, at 970-282-1167. (Exams.)

Jan. 13, **Harrisburg RAC Hamfest**, Oberlin FC Social Hall, Harrisburg, Pennsylvania. For information call 717-232-6087.

Jan. 13, **Greenwood ARC Hamfest**, Greenwood Civic Center, Greenwood, South Carolina. Call Frank Kolar, WA9FWO, at 803-229-5639; or Alice Taylor at 803-227-9773; or send an SASE to GARC, 104 Rock Creek Drive, Greenwood, SC 29646.

Jan. 13–14, **17th Annual Sarasota Hamfest and Computer Show**, Robarts Sports Arena at The Sarasota Fair Grounds, Sarasota, Florida. Contact Sam Everts, KE4BXF, at 941-927-8999 for more information. (Exams.)

Jan. 14, **Waukesha Swapfest**, Waukesha County Expo Center, Waukesha, Wisconsin. For information, contact Phil Gural, W9NAW, at 414-425-3649. (Exams.)

Jan. 14, **Tusco ARC Hamfest**, Ohio National Guard Armory, Dover, Ohio. For more information, contact Howard Blind, KD8KF, 6288 Echo Lake Road, N.E., New Philadelphia, OH 44663 (216-364-5258).

Jan. 20, **Sixth Annual Northwest Missouri Winter Hamfest**, Ramada Inn, St. Joseph, Missouri. For details write to Northwest Missouri Winter Hamfest, c/o Gaylen Pearson, WBØW, 1210 Midyett Road, St. Joseph, MO 64506. (Exams.)

Jan. 21, **Southfield, Michigan High School Tech Dept. Swap & Shop**, Southfield High School, Southfield, Michigan. Contact Gerald Kocsis, Southfield High School, 24675 Lahser Rd., Southfield, MI 48034.

Jan. 21, **Tippecanoe ARA VE Testing Session**, Red Cross Bldg., Lafayette, Indiana. Call Robert Martin, W7YE, 317-423-1035.

Jan. 21, **Giant Electronic Flea Market**, Lincoln High School, Yonkers, New York. For info, send SASE to METRO 70cm Network, 53 Hayward St., Yonkers, NY 10704; or call Otto Supliski, WB2SLQ at 914-969-1053. (Exams.)

Jan. 27, **Tennessee Valley Amateur Radio Network Hamfest**, Civic Center, Gallatin, Tennessee. For information, contact Bill Ferrell, N4SSB, 1032 Hidden Woods Tr., Gallatin, TN 37066; or call 615-452-7246. (Handicapped accessible; exams.)

Jan. 28, **Maryland Mobileers ARC Post Holiday Swapfest and Flea Market,** Odenton Volunteer Fire Dept. Hall, Odenton, Maryland. Contact Tom Wilkison, KA3OMU, 592 Eason Drive, Severn, MD 21144 (410-969-2639 eves). (Exams.)

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Celebrating 50 Years with *CQ*

CQ's year-long 50th anniversary celebration last year culminated in the awarding of our Golden Anniversary Giveaway prizes. The grand prize winner was even able to come to CQ headquarters for the formal presentation.

The year 1995 was an incredible one for *CQ*. It's an amazing feeling to be able to celebrate a 50th anniversary, and that's especially true when it comes to our beloved hobby of amateur radio.

We began 1995 with a bang. Our 50th anniversary issue, published last January, was a labor of love, and it's a project we'd gladly do again. After all, a 50-year benchmark in anything is quite an accomplishment, and we wanted to celebrate in style. We also wanted to show our thanks to those who have been a part of *CQ* over the past 50 years.

The countless authors, advertisers, and "behind-the-scenes" contributors who have supported our awards and contest programs over the years have made *CQ* what it is today. However, it's the thousands of readers such as yourself, from all around the world, who have made the past 50 years so successful!

It's been an honor to share these years of amateur radio with you. And we're even more excited about the next 50 years. Be assured, though, that *CQ* is not resting on its success. The launch of our new magazines last month—*CQ VHF* and *CQ Contest*—are evidence that our proud tradition as an amateur radio leader will continue for many, many more decades to come. Thanks again to all of you who have helped make it possible!

We needed a very big box to hold all of your prize mail, including the grand prize winning entry of Tony Streeto, KA1VEJ, shown being picked here.

CQ's 1995 Golden Anniversary Giveaway

Another way we wanted to celebrate our 50th anniversary was by sharing our excitement with all of you in a fun and tangible way. That led to *CQ*'s Golden Anniversary Giveaway. Throughout the year we ran announcements of our contest in *CQ*, and your response was incredible. Our best guess is that over 20,000 of you, from scores of countries around the world, participated. We hope all of you enjoyed it as much as we did.

The accompanying table is a listing of the contest winners. (You will notice that there are callsigns missing. Not every entrant supplied that information on the entry forms.) We also thought you might like a bit of background information on the top three prize winners. We therefore lead off with Tony Streeto, KA1VEJ, our grand prize winner, and follow with Troy Sherrill, WD8MQP, first prize winner, and Dale Maroushek, NØPEY, a second prize winner.

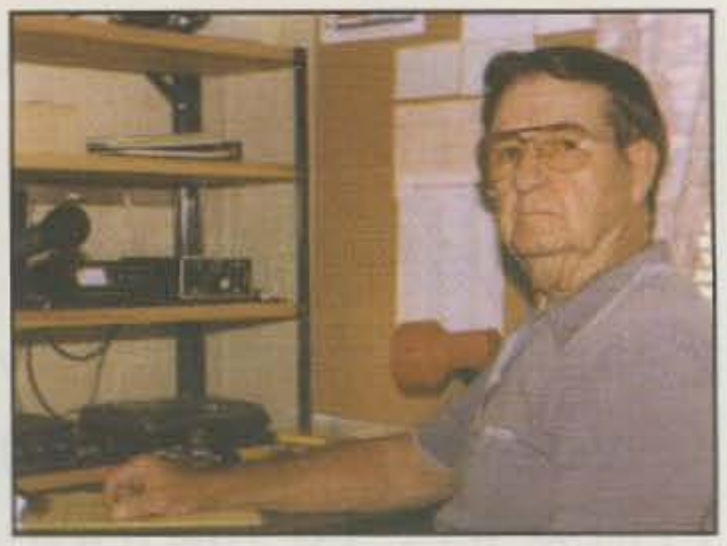
CQ Golden Giveaway grand prize winner Tony Streeto, KA1VEJ, alongside CQ's John Dorr, K1AR (left), and Dick Ross, K2MGA (right).

Tony Streeto, KA1VEJ Grand Prize Winner

Tony Streeto, KA1VEJ, had the good fortune of being *CQ*'s grand prize winner. Living relatively close to *CQ* headquarters, he was able to visit us in person to claim his prize. An amateur for just a few years, Tony is hooked for life on both HF and VHF from his North Guilford, Connecticut QTH.

One of the many highlights of our hobby is the friendships we make over the years. Tony is no stranger to this, and when he came to *CQ* headquarters he brought with him his good friends "Buzz," K1GLK, and "King," KA1VMB.

Fun was had by all on "grand prize day" at CQ. Shown left to right are Simon Shatzman; Alan Dorhoffer, K2EEK; Rich Buzzard, K1GLK; Tony Streeto, KA1VEJ; Colonious King, KA1VMB; and John Dorr, K1AR.



Here is first prize winner Troy Sherrill, WD8MQP, sitting at his FB operating position.

There's plenty of room in the shack of Dale Maroushek, NØPEY, to put his second-place prize to work!

(Continued on page 120)

And what are good friends for? Both Buzz and King generously volunteered to help Tony spend his winnings—all in the spirit of friendship, of course. Congratulations, Tony!

Troy Sherrill, WD8MQP First Prize Winner

Troy, WD8MQP, is an active ham who is 71 years young and operates from his Oak Harbor, Ohio home. Now retired, Troy's amateur radio pursuits include simple construction projects. He's been an amateur for 20 years, but his interest in electronics goes back decades before that: Troy built his first superhet receiver in 1944, long before the days of digital signal processing or solid-state front ends.

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Amateur Radio In The Andaman Islands
A Visit With Mani, VU2JPS

Sometimes we tend to think that everyone is blessed with modern transceivers and multiband Yagis. As the old song goes, "It ain't necessarily so." VK9NS takes us on a trip to the Andaman Islands, where we can see how much can be, and has been, done with determination alone.

BY JIM SMITH*, VK9NS

The journey to Port Blair in the Andaman Islands took me back in spirit to a time many years ago. In one sense it took me back to an area where I had first started my activities in amateur radio (at one time I was on Car Nicobar), and in another sense it took me back to the days when the hobby was different. Many say they were the Golden Days.

For several months HIDXA (the Heard Island DX Association) had been in touch with Mani, VU2JPS, who is employed on the technical staff for All India Radio in Port Blair. Our intention to help Mani with a donation of some radio equipment had proven to be more difficult than we first visualized. The importation of amateur radio equipment is linked to the actual VU license and requires an Import Certificate issued by the Indian Government, WPC Licensing authority. This process takes time, and some months down the road the equipment being donated to Mani remained stubbornly on Norfolk Island.

My recent visit to Europe in September/October via Sydney, Bangkok, New Delhi, and London had me within striking distance of the Andaman Islands. It was decided that a visit to Port Blair would be of great benefit and would probably enable me to ascertain exactly what was required to get the equipment on its way.

After an early morning arrival in Bangkok, I broke my journey and then traveled to Calcutta, arriving late the same afternoon. The next morning, after a two hour flight, I arrived at Port Blair. The landing was memorable, as the runway is short and on touch down prompt appropriate action is required—BBRRAAKKEESS!!

Since I had entered India at Calcutta and completed customs and entry requirements, there were almost no formalities at Port Blair. I did, however, get a further permit, which if desired would enable me to visit several defined areas in the region.

It was to be the following day before I actually met Mani, VU2JPS. A message from me carried by a new-found friend had Mani appear at my "hotel" very quickly. I use the word "hotel" with some reservation, but not unkindly, as it was very clean.

It was really something to be able to finally meet Mani after our faxes and telephone calls made in previous months. Very soon after this meeting we were at Mani's very modest home, which was quite close—in fact, within reasonable walking distance. At his home I met his wife, Mala, who is licensed as VU2MTC, and over the ensuing days they always made me feel very welcome.

The Cushcraft beam on Norfolk Island almost ready for shipping to Mani, VU2JPS.

The return to the "Golden Days" became evident very quickly as Mani and Mala showed me their shack. Although I knew that the equipment used by Mani was said to be "simple," nothing prepared me for the reality. For start-

Mala, VU2MTC, and Mani, VU2JPS, my gracious hosts on Andaman.

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Yours truly, Jim, VK9NS.

Mani and Mala's 40 meter amplifier and pair of 1625 tubes.

ers, everything they possessed was homebrew, which years ago was a tradition in amateur radio. All the equipment was built with a minimum of financial outlay and liberal use of available material. A 40 meter SSB transceiver with about 10 watts output had been built in an old amplifier cabinet and chassis. The original front panel was still in use, with a few extra cutouts and holes to suit. Another transceiver for 20 meters had CW and AM capability, again with low power output. Two amplifiers—one for 20 meters using a pair of very flat 807's and the other for 40 meters using a pair of 1625's (12V 807's)—helped boost power to something a bit more potent. They had an ATU using the well-tried Moni-match SWR bridge circuit, and for any metering there were old VU-style meters. The method of getting high voltage for the amplifiers was an on-board voltage doubler straight across the 230 VAC input—effective, but! However, it must be said that the AC supply was floating on both legs.

On the second day I helped Mani upgrade his antenna system by purchasing a 6 meter length of water pipe from Aberdeen Market in downtown Port Blair. The delivery man had a longish walk, but in due course he appeared at the house and we were in business. The

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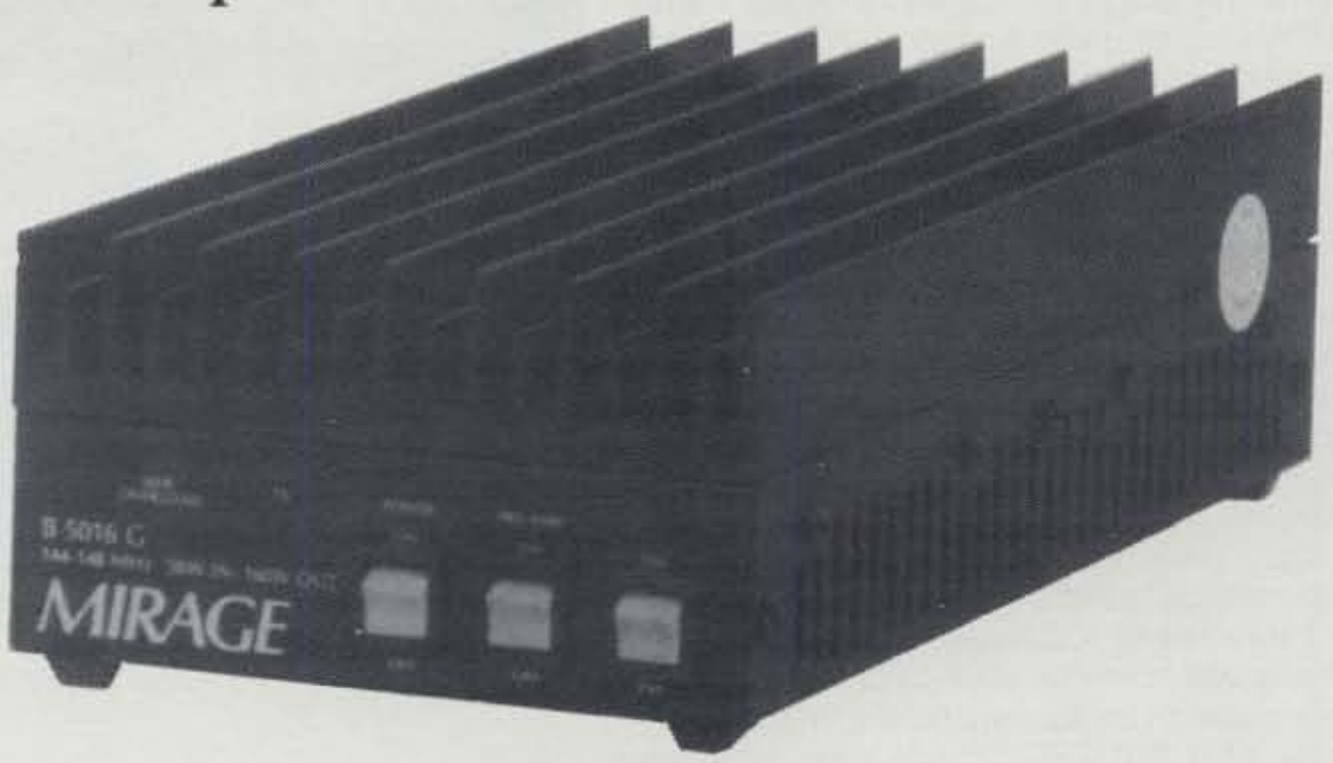

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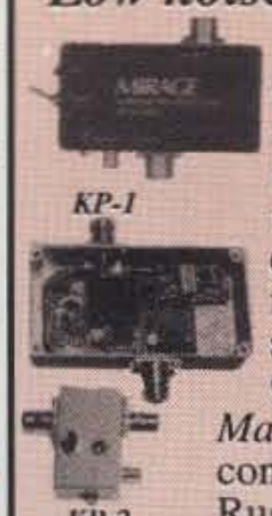

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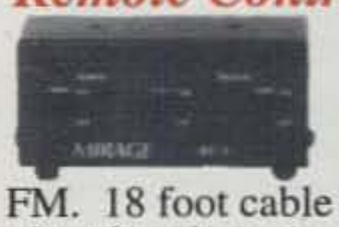

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mast made a good support for a 20 meter ground plane and also helped get his existing 40 meter dipole antenna higher in the air by several meters.

In operating terms, to say that things are difficult would be an understatement. It is to the credit of Mani that he has done so much since he opened up from Port Blair at the end of 1994. In making QSOs he usually goes via Paran, VU2AU, starting with a sked on 20 meters. His direct-conversion receiver (of the transceiver) resolves the SSB signal of Paran by an RIT-type control. He then goes back to the list stations, Paran on CW, and this explains his method of operating, which drew some adverse comments in various DX outlets. One point driven home here is that many operators show their lack of understanding of what the real world can be like, as they sit in front of their expensive, all-singing, all-dancing stations with state-of-the-art equipment. As Mani struggles to make QSOs from this very rare area, he does it with everything he has—his operating skills with his home-brew station stretched to the limit.

I traveled to Madras after making a telephone call from Port Blair to determine exact requirements for the equipment Import Certificate. I felt that CHOICE Agencies, who handled Yaesu products in India, would be a good starting point. The owner, Babu, VU2SCB, and two of his colleagues—Deppan, VU2DPN, and Balki, VU2WIN—met me at the airport and drove me into town. The hour drive to his office was an education in itself, as the traffic in Madras has to be seen to be believed. Once there, we had lunch and some time to become better acquainted with each other.

The 20 meter transceiver, AM/CW with direct-conversion receiver.

After lunch I had a crash course on the intricacies of importing amateur radio equipment into India. It certainly helps to have an expert teaching the "ropes," and Babu proved to be invaluable. In one area at least I had made a faulty assumption. The equipment would first enter India at Calcutta, and it was there that the customs clearance and payment of duty, etc., would have to be done—not at Port Blair. It was a very rewarding visit, and in my view, the dispatch of the equipment will now be relatively straightforward. We shall see.

In financial terms Mani and his family are severely limited, and yet their hospitality and kindness to me showed no limits. My stay in Port Blair was memorable, and I hope to return to find Mani and Mala with a decent transceiver. I would love to see their faces as they unpack a decent rig, as the cost of such a possession is far beyond their meager resources.

As I write this, it seems that with the knowledge gained in Port Blair and later in Madras, the HIDXA will be able to complete the task of trying to assist Mani and Mala in continuing their activity with a reasonable rig. I know they deserve it, and our hobby of amateur radio has a long tradition of amateurs helping other amateurs. We're trying to continue this in our efforts.

Acknowledgements

Acknowledgement is due to many. In particular, though, I would like to thank the Indian Consulate staff in Sydney; several DXers who assisted and kept confidence; the polite and helpful staff at all levels who made travel arrangements within India and the Andaman Islands. To Mani, Mali, and family goes a big thanks. To the engineering staff of all India Radio in Port Blair, I would like to thank them for their kindness and interest. My thanks to Babu, VU2SCB, of CHOICE Agencies, Madras. And finally, thanks to the membership of the HIDXA; they continue to do so much for DX-ing and amateur radio. ■

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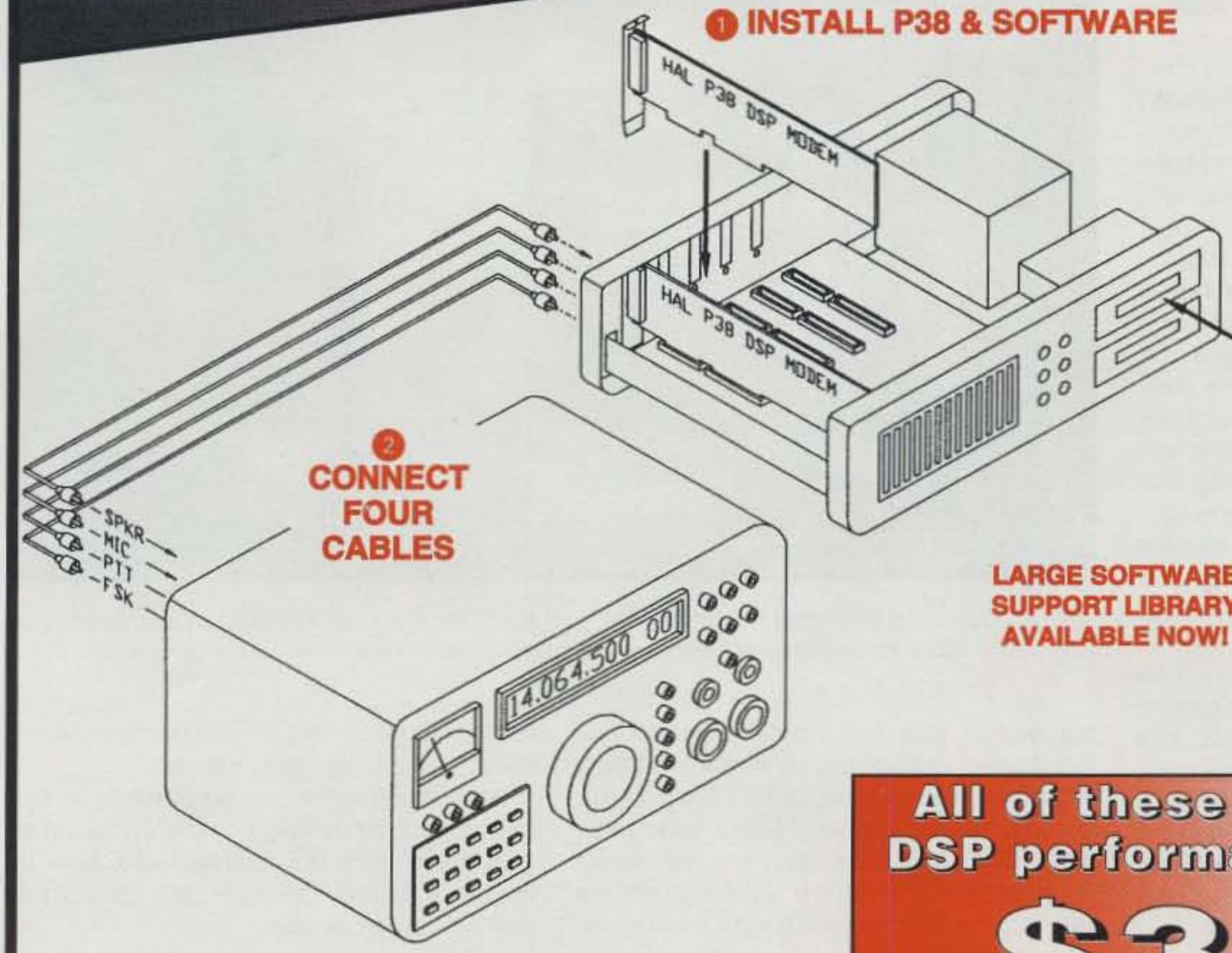

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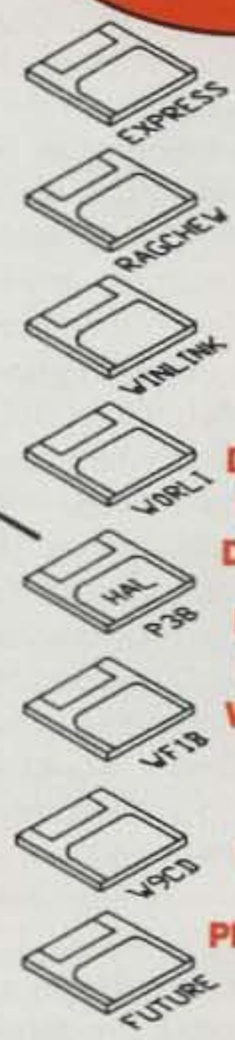

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The Original Kilburg Geochron

BY ALAN M. DORHOFFER*, K2EEK

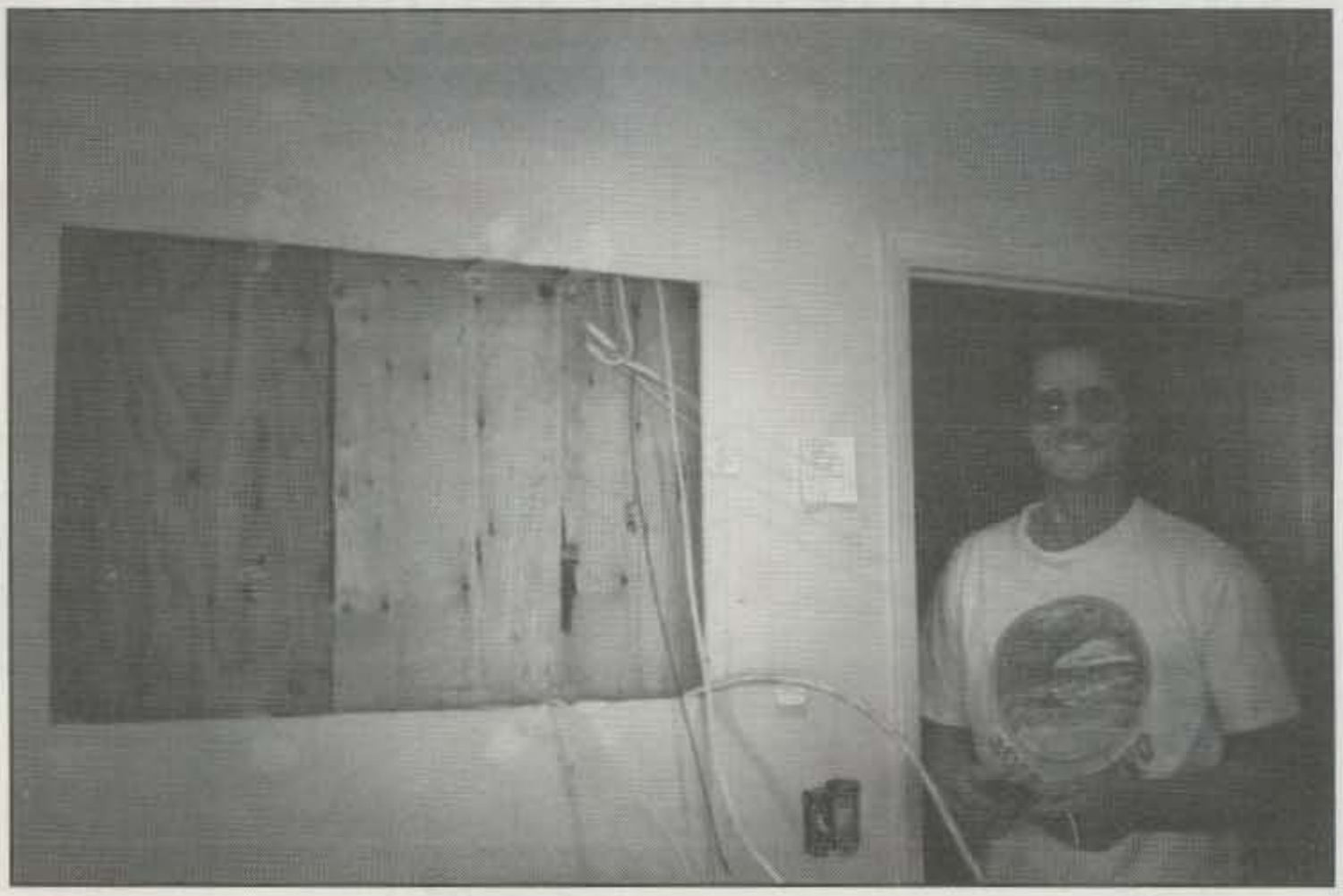
Yes, I know that all of the features are available on a computer. Emotionally, however, that's the same as saying that a reproduction of a great painting is just as good as the original. And emotionally I've been covetous of the Geochron for many, many years. While I've wanted one for a long time, I've also held to the thought that one shouldn't always have everything one wants. It's character building. Well, I finally decided to build my character and maintain my integrity with something other than a Geochron.

It started with my cleaning up my shack. I was going through a batch of stuff, sorting out the good from the bad, when I came across a folder in my desk from 1984. In it was a brochure and an installation manual from Geochron. Well, that was cause for me to sit back and muse for a while. I could visualize the wall in front of me suddenly stripped of clocks, pictures, and maps, and adorned with a built-in Geochron. Of course it would fit! The next twenty minutes or so involved my taking all of the existing stuff down from the wall so that I could get a better and clear view of where it could go.

The next thing I needed to do was clean the wall a bit so I could draw an outline of the cutout to judge a good height above the equipment to place the Geochron. The wall, besides being a tad grungy, was a candy-apple green color. Don't ask why. It's a long story. I quickly scrubbed the wall clean and applied a coat of white primer. When the paint was dry, I took a 4 foot level and penciled in a rectangle roughly the size of the opening I would need. I Scotch® taped the brochure in the middle of the rectangle and spent the rest of the day looking up at it from the operating position. Would this be the year?

The next day was a holiday, so I had more time to look up at the brochure taped to the wall. My whirlwind frenzy had subsided, and it was time to decide whether or not to chop the wall. Of course it was. A little drilling, sawing, and ripping easily removed the sheetrock rectangle so carefully drawn the day before. So far so good—no water pipes. Two electrical wires would have to be rerouted (not by me). Several 2 × 4's would have to be cut and the opening boxed out.

I should point out at this juncture that before you run amok with a reciprocating saw, you must make sure that you are not cutting into a load-bearing wall. (No, I didn't make that mistake.) A load-bearing wall will require special preparation, including a suitable header and jackstuds to replace the studs you are taking out. After a quick draping of the radio gear (It's true that men will generally work around, over, and through stuff rather than simply move it.) I cut out the studs. I knew when I bought the saw that it would come in handy one day, although I probably should have practiced using it first, as it can get away from you.

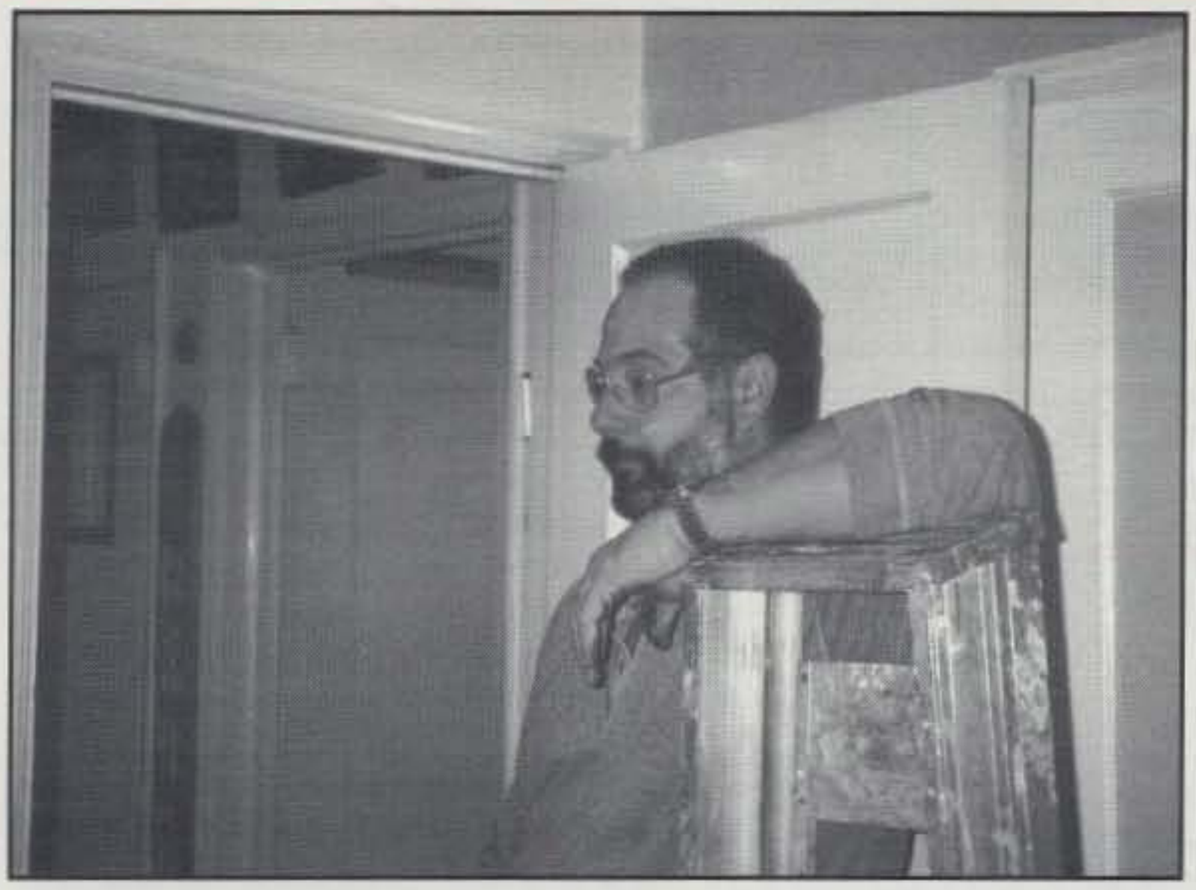


This is your basic, everyday hole in the wall, just about the right size to mount a Geochron. This is also the basic smiling face of Dennis, the electrician who completed his part in little less than an hour.

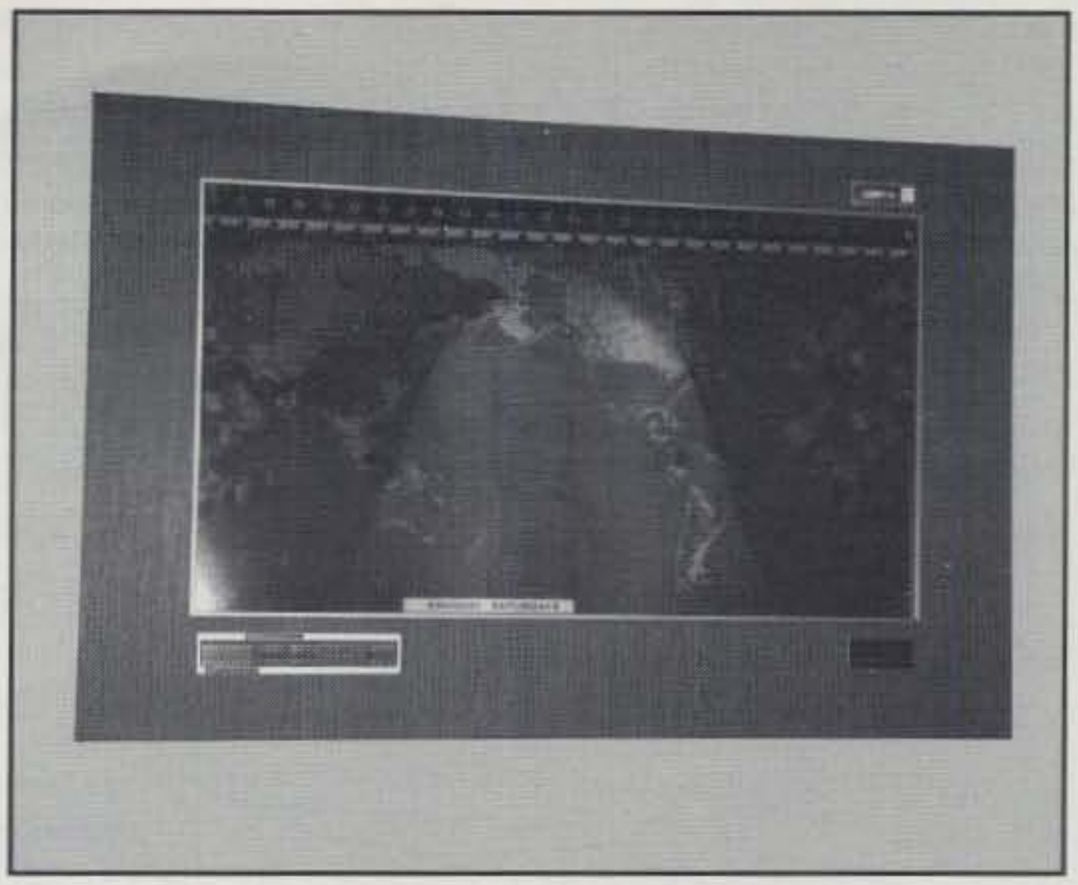
Next, if you're like me, you'll clean up the broken stuff that fell off the shelf on the adjacent side of the wall in the next room. *Note:* In the future remove stuff from both sides of the wall before proceeding.

A few days later the hole is complete, the wall is clean and shiny with fresh paint, and the brackets and outlet are in place.

*Editor, CQ



This is my neighbor Roy looking amazed as he checks out the Geochron we just installed.



Here it is, firmly mounted in the wall, and yes, perfectly level. My character is not only built, it rejoices every time I see the Geochron.

I then made sure the stud ends were level, cut a top and bottom plate, and waited for the electrician to show up. Dennis, the electrician, finally showed up, rerouted the two wires (which I had nicked slightly; I was lucky), ran a third wire for the clock, and did two other things I had wanted done around the shack but had put off—all in less than an hour. There's a lot to be said for knowing what you're doing.

At this point I still didn't have the Geochron, so progress was slowed down. I secured the top plate for the hole and applied liberal amounts of spackle to dress up the opening. I still needed to cut a hole in the bottom plate for the electrical outlet which would come with the unit. A bit more spackle—and a bit more—can create a nice finished edge. After repeated sanding and spackling, you'll get a small sense of what it was like for Michelangelo when he worked on the Sistine chapel. Some more primer, a few coats of paint, and the green was gone. Well, to be truthful, the green was only gone from the areas I could reach on that one wall without moving too much gear. Next the rest of the room had to be done, along with some other changes. It had definitely gotten out of hand!

For a few days before the giant carton arrived at the office I got to stare at the beautiful, freshly painted wall with a marvelously framed out hole. After the box did arrive, another day went by before I could get it home and finally open the box.

The hardware packet was simple—just two brackets and four mounting screws. A small box taped to it contained the recessed clock outlet fixture. A few quick measurements and a few minutes with a jig-saw was all it took to finish the hole for the recessed outlet.

The side brackets went up with ease, and everything was almost ready for the big moment. I finally took the unit out of the carton. I had kept it in the carton as long as possible to avoid stepping on it, dropping something on it, or damaging it in any other way.

Next (and you too probably will do this) I ran slightly amok around the house trying to find an extension cord. The instructions tell you to plug it in, check it out, and roughly set it up before you install the Geochron. I don't know why, but I expected all sorts of complicated procedures, explicit and exacting parameters, and detailed (but systematically confusing) scientific jargon on how to get it up and running. Well, nothing could be further from the truth. It took about two or three minutes to make the setup and to see just how it works. It's really very easy.

The hard part, and one not covered in the

instructions, is how to coerce someone into coming over to help with the physical installation. No, it's not that heavy, but it is big and a little unwieldy for one person. This was not the time to be a hero and risk dropping it, thereby damaging the Geochron, everything below it, and yourself.

It was Saturday afternoon and nobody I called was home. My neighbors were out doing whatever, so I fidgeted around the house on tenterhooks until my neighbor Roy came home. I quickly enlisted his aid in the project. Another two or three minutes were needed to finish it up and install the unit. It fit perfectly, was exactly level, and looked beautiful. We both just stared at it for a while, mesmerized by it, and then I explained to Roy just what it was that he was seeing.

For one thing, the Geochron is a clock. It uses a 24 hour scale across the top, aligning with the lines of longitude on the map. There is a small scale above the primary scale which takes into account the one hour shift for daylight savings time. There is also a small window opening at the upper right which numerically (analog) displays minutes. I guess if all you really wanted was a big clock that required a bit of interpolation, this would be reason enough to buy one.

Most of the almost 2 foot by 3 foot space is taken up with a glorious full-color map lit from behind by two fluorescent lamp fixtures. Moving across (yes, I said moving), the face of the map is an irregular gray outline. Lo and behold, we are looking at a large-scale depiction of the day/night terminator, which gives us an instantaneous view of potential gray-line propagation paths. Obviously, we've all read *CQ*'s *The NEW Shortwave Propagation Handbook* (see chapter 7), or we're old enough and have been around long enough to remember the work of the Monroe's published in the November 1964 issue of *CQ*. Therefore, the immediate benefit of the wall display is clearly visible to the erstwhile, the dilettante, and the avid DXer alike.

The irregular gray shape moves extremely slowly and is a function of the month and the date. The shape changes accordingly, varying with the season. The numerical date and the month are shown in the rectangular window at the lower left of the unit, below the map. The map moves across at a faster rate—15° of longitude per hour (amazing how that works out). The day of the week is shown, along with direction arrows (depicting next day time zones), in moving white bands along the bottom of the map. In the center is a large figure-8 with a moving black dot which depicts the position of the sun on this day of the year. That's a lot to look at and take in at one shot.

Now remember that all of this is calibrated or set up in just a few minutes with four basic controls plus an on-off switch for the two light fixtures. These are located on the bottom of the unit (normally within the wall) and are easily accessed by pivoting the Geochron out of the wall. At this point it is primarily supported by the two mounting brackets, so it can be done simply by one person.

I can assure you that leaving the lights on at night will bathe the shack in a warm glow, light enough to operate by. It probably will be just light enough to pique your neighbor's curiosity as to what that multi-colored glowing thing that shines through the curtain is.

Well, I'm pretty sure my neighbor Roy understands by now what it does, and I'm just about certain that I do too. Was it worth all the years of waiting just to build character? Probably not, now that I see it in my shack. However, a few hours after it was all finished and glowing brightly, we had a huge storm go through with a resultant massive power failure in the area. Now if I were superstitious, I might see this as an omen.

The Original Kilburg Geochron retails for $1465.00 and the flush-mount bracket kit (for recessed mounting; includes the receptacle) sells for $46.00. They are manufactured by Geochron Enterprises, Inc., 899 Arguello St., Unit "A," Redwood City, CA 94063-1308. ■

CONSTRUCTION

How To Build A Low-Cost Remote Antenna Switch

Does adding more antennas mean adding more coax or drilling more holes in the house? Not necessarily, as we'll find out by reading AD5X's solution to the problem.

BY PHIL SALAS*, AD5X

It seems that whenever I plan something, the final needs are always more than what my original plans were set up for. As an example, I figured that I would never need more than two coaxial cables (one for my vertical antenna and one for a triband beam) and a rotator cable to pass through the wall of my home. Therefore, I did an excellent job drilling holes through the brick and mounting nice weatherproof boxes outside the house with just the right amount of space for the cables and connectors that I needed. Actually, I did plan ahead in that I went for years and years with just a vertical antenna. In any case, I had no sooner put up the beam (a Cushcraft A3S) when I realized the benefits of a high antenna on the higher frequencies. I knew I needed to add 17 and 12 meters to my tower, and I only had one coax cable going to the tower. The solution to this problem seemed to be a remote antenna switch.

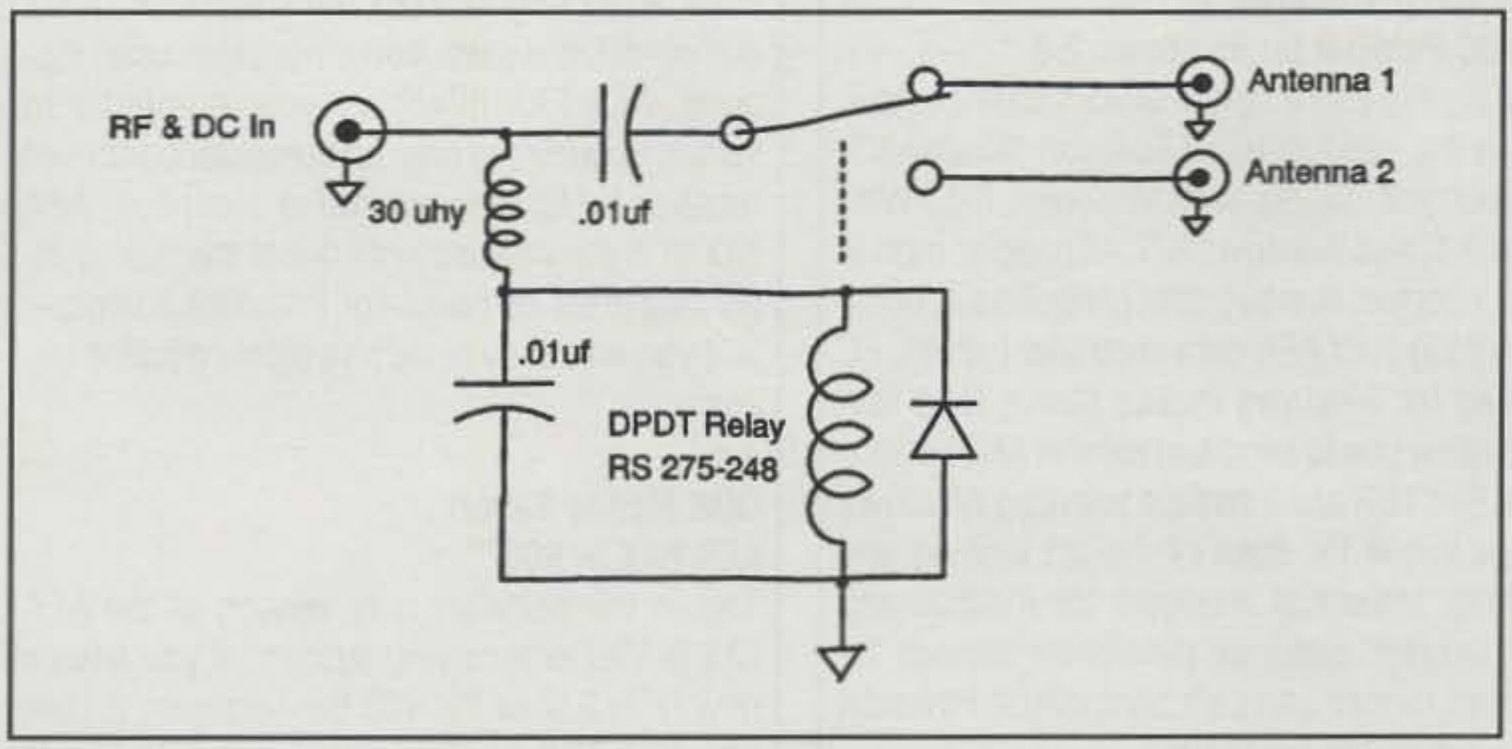


Fig. 1– Schematic diagram for the remote antenna switch.

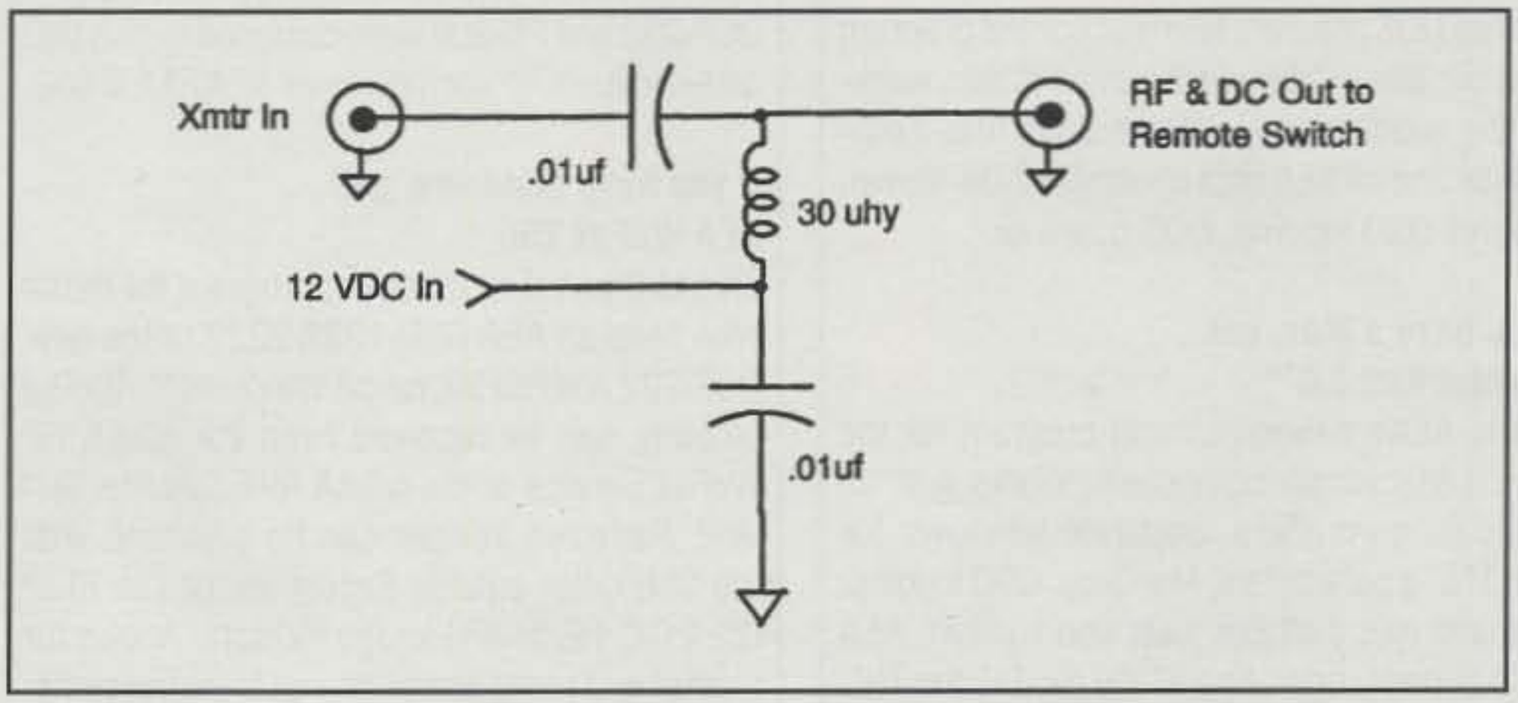


Fig. 2– Schematic diagram for the indoor DC control circuit.

Remote Switch

There are two ways you can implement a remote antenna switch. You can power a remote antenna relay with a separate control wire from your operating position, or you can run the relay control voltage up the center conductor of the coax cable. Putting the control voltage on the coax center conductor is the cleanest way—and in my case the only way—to do it. Now how do we implement the switch?

For the outdoor switch enclosure you need a weatherproof and waterproof container. I have had great success using those aluminum electrical outdoor boxes that are meant for adding external switches and outlets to your home. The most common kind has three 1/2 inch threaded holes in it—one on the back and two on the sides. You will also need a blank aluminum cover for this box. The cover comes with a weatherproof seal. The box and cover cost around $4 at any hardware store. The box comes with two threaded hole plugs. In this application you will need to plug all three 1/2 inch holes, so you will have to buy an extra hole plug while you are at it.

Your first task should be to drill a 3/8 inch hole in the back of the box and secure a 1 1/2 inch long 3/8×16 bolt to the box with a 3/8 lockwasher and nut. The threaded end of the bolt protrudes out from the back of the box. This bolt will be used to attach the relay box to one of the tower legs with another 3/8 lockwasher and nut. Use stainless-steel hardware to prevent corrosion.

The schematic of the remote switch box is shown in fig. 1. For the relay I used a Radio Shack Mini 10 Amp SPDT Relay, RS 275-248.

(Continued on page 28)

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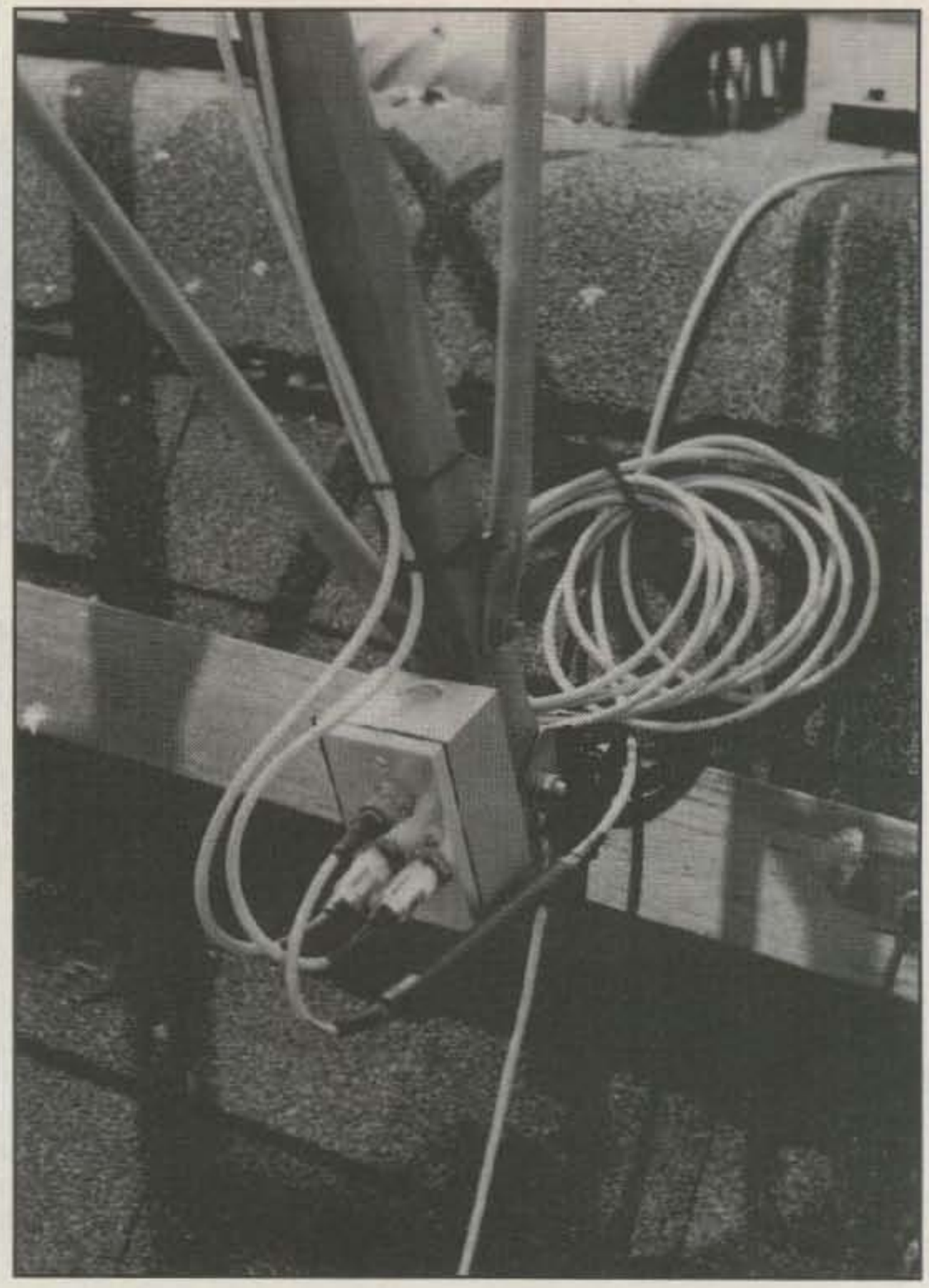

The external switch box is shown mounted on the author's rooftop tower.

This is a very small, sealed relay with relay contacts that will handle 10 amps at 125 VAC. This relay has a 12 VDC coil. And the price is only $2.99! The coupling and bypass capacitors are Radio Shack RS 272-131, 0.01 µF @ 500 WVDC. These will work great for a 100 watt transmitter. For higher powers you will need to find a high Q transmitter coupling capacitor. The DC bypass capacitor working voltage is not critical.

For the isolation inductor I settled on a 100 µHy Radio Shack RS 273-102. Since this is a fairly high-value inductor, I was concerned about resonances within the operating range of the switch. To check this, I shunted a dummy load with the inductor and swept the 1.8–30 MHz frequency range with my MFJ-259 SWR Analyzer. I found that these inductors are series resonant right at 21 MHz—15 meters! As it turns out, these inductors have two layers of windings on a phenolic form. I unwound the top layer and rechecked the inductor and found that there were no longer any resonances across the entire HF range. According to my Autek RF-1 Analyzer, the coil inductance with the outer winding layer removed is 30 µHy. This gives a very high impedance at 14 MHz and above. It will also give good results even down to 160 meters (340 ohms of reactance on 160 meters).

As you can see in the photos, all the components for the outdoor switch box mount on the cover. First, I punched three 5/8 inch diameter holes in the cover for the SO-239 connectors. Next I mounted the relay on a small sub-board which was then mounted on stand-offs on the cover. Again, I used stainless-steel hardware to avoid corrosion problems.

Indoor Unit

The purpose of the indoor unit is to bridge the DC control voltage onto the coax center conductor near the operator's position in the shack. The schematic of the indoor unit is shown in fig. 2. I built this circuit into a Radio Shack RS 270-235 aluminum box. I used the same 0.01 µF capacitors and 30 µHy modified inductor as in the outside remote switch. For the DC connection I used the "RACES style" nylon con-

OWNERS SAY IT BEST

It's one thing for us to say the OMNI-VI has the finest amateur receiver in the world, it's quite another to hear it from your fellow hams. So take a look in our mail bag – here are just a few of the letters we receive from active DXers and Contesters. OMNI-VI owners say it best!

"The OMNI-VI has finally ended my search!"

"I have owned 18 different HF rigs including most high end models from your three competitors. I used each intensively, many side by side. I pick 2 to retain, then purchase another to run more comparisons - my personal quest to find the 'ultimate' rig. With high hopes, I purchased and then sold when each did not quite deliver. I thought I might be looking for something that did not exist. The OMNI-VI has finally ended my search! If there were a word that defined better than superb, I would use it for the OMNI's receiver. It is a serious operator's rig - not a fashion designer's creation with little substance beneath the veneer."

— Gregory Buhyoff, KN4FR

"Performance to cost ratio makes this radio a best buy."

"In my 40+ years of hamming, I have owned and operated most equipment that has been built. I am still a very active DXer. To say I am pleased with my OMNI-VI would be a wild understatement. Quietness, selectivity and dynamic range is the best I have seen. Performance to cost ratio makes this radio a best buy."

—Ralph Napolitano, W9LKJ

"For the first time I am not bothered by strong adjacent stations."

"I dreamed for many years of having this type of performance and you have done it. For the first time I am not bothered by strong adjacent stations. Recently I was listening to a very weak station on 40 and only discovered after tuning up in frequency a little that an 80 dB over 9 was only 1.5 KHz away [we'll forgive Tom's enthusiasm, that's a BIG signal]. *I was so impressed that I nearly jumped up and shouted. Thanks for such great performance."*

— Tom Jednacz, KA2G

"It truly does pull in the weak ones."

"I have to say I am pretty picky and spent considerable time making up my mind. My observation is that the OMNI-VI is 20% better than the competition which I had for 10 years. Easy to operate and the receiver is all I hoped it would be. It truly does pull in the weak ones and in this down spiraling sunspot cycle being able to hear them is the competitive edge. The filtering exceeds my expectations. I now realize there is a stateside company that hams can still rely on. TEN-TEC staff have been extremely kind; a cheerful and helpful voice is just a phone call away."

— Tommy Farr, WJ60.

"Nothing I have tried comes close to the receiver performance of the OMNI-VI."

"I spent several years being disappointed by the available transceivers. I like to work DX, contests, and most especially weak signal DX on the low bands. From the Mid-West there is no more demanding situation than 40 meters at contest time, each 1 KHz away, and trying to work the weak Europeans. On my OMNI, the Europeans are crystal clear and although very weak a pleasure to work. On the competitions' transceivers they are indistinct and confusing in the noise. Nothing I have tried comes close to the receiver performance of the OMNI-VI."

— Bill Maxson, N4AR

Would I buy it again? I sure would!

"You may be interested in my response to a letter from a ham who saw my station pictured in QST. He asks if the OMNI-VI performs as well as advertisements say and, further, would I buy it again? 'I sure would! I have used TEN-TEC for 25 years and consider it tops. OMNI-VI is the best in a long line of transceivers. You just can't beat their service.' I know from personal experience."

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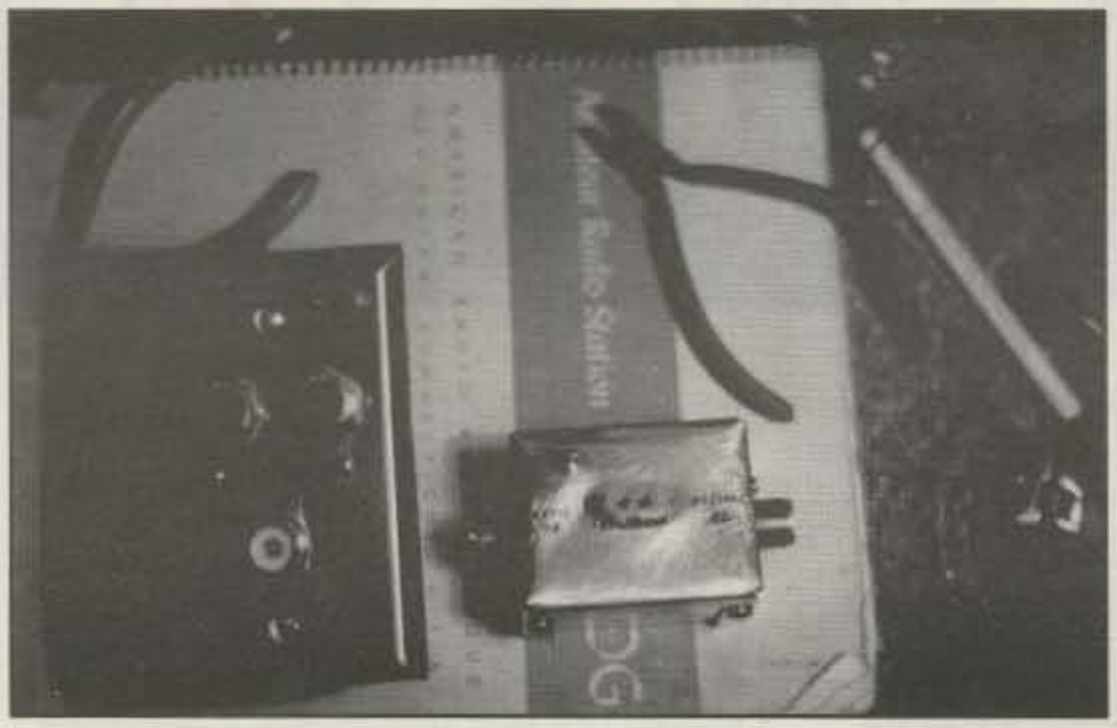
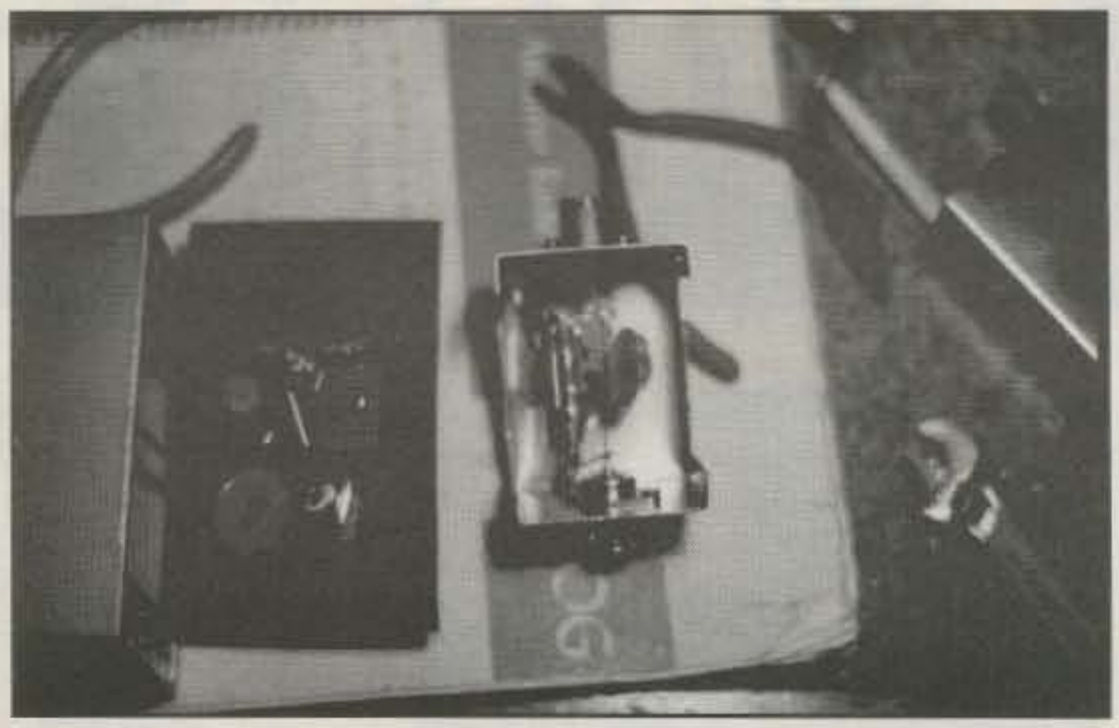


A view of the completed external switch box (left) and the indoor DC bridging unit (right).



Interior views of the remote switch box (left) and the bridging unit (right).

nectors (Radio Shack RS 274-222) as shown in the photo. You can either add an SPST switch on this box to control the DC voltage, or switch the incoming 12 volts from another location.

Performance

How does this switch work? Great—at least at the 100 watt level. For higher powers you should use high-Q transmitter-type coupling capacitors as mentioned earlier. Mica transmitting capacitors work well. The coupling capacitor voltage rating is not that critical, since there should be very little voltage drop across it in this application. However, high Q is necessary so that the capacitors don't dissipate much power. All Electronics (818-904-0524) has a good selection of transmitting mica capacitors at low prices. They have a 0.02 µF 600 VDC mica capacitor (MC-203) at a price of only two/$1.00. The 10 amp relay contacts should be okay for high power (5.5 amps RMS for 1500 watts @ 50 ohms). And for frequencies below 20 meters, you should also increase the value of the coupling capacitors. You should parallel two 0.01 µF capacitors for 80 meters, and probably four for 160 meters. I did measure the VSWR through both the indoor unit and the outdoor relay unit through a short piece of coax into 50 ohm loads at the outdoor unit outputs. The VSWR stayed at 1:1 up through 12 meters. On 10 meters it grew to 1.2:1 due to the stray inductances in the two boxes. This is certainly quite acceptable.

Conclusion

I've described an easily built remote relay switch that will cost you no more than about $20, including both the indoor and outdoor units (about the cost of 50 feet of RG-213!). This switch works well through the HF bands and provides you with an alternative to adding additional coax cable runs when you increase your antenna farm! ■

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Hams complain about today's cars having precious little space for gear. The SCOUT is the smallest HF rig in the industry (excluding QRP) measuring only 2.5" x 7.25" x 9.75" and runs directly off the 12 VDC car battery. If the SCOUT won't fit your car, nothing will. The optional noise blanker reduces ignition noise from both your car and the one that just drove by.

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Business travelers and vacationing hams typically set up a briefcase or small travel bag to include the 5 lb SCOUT, wire or whip antenna and lightweight power supply like our Model 938 switcher (its only 3 lbs!). It is surprising how many hikers and cyclists take along their SCOUT using some clever battery arrangement.

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The SCOUT is the most economical way to get started in ham radio. Consider the choice a new ham must make just to test his interest in HF: (1) Spend nearly $1000 or more on a new rig, (2) buy a used radio and take a chance on its condition, or (3) invest in a SCOUT at $549 with a one year factory warranty and our legendary TEN-TEC support.

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Operators with years of experience and a shack full of expensive HF gear also buy the SCOUT. It's refreshing to many who say "It takes 5 minutes to learn and without all the complicated features, there is only one thing to do with a SCOUT, work someone!" Experienced hams call us constantly to report "I can't believe this receiver, it outperforms my $1400 synthesized rig".

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The Glen Martin Engineering Hazer Voyager VH8-50

BY LEW McCOY*, W1ICP

I feel a little guilty about this review, as it should have appeared at least six months ago. As some of you may know, I had some heavy heart surgery a little while ago, so my amateur radio writing kind of slowed down for a bit. I'm back up and running now, so here goes.

This project has been in process for nearly year and has been put into use several times. So what is the Hazer Voyager VH8-50? This is a track system for raising and lowering beam antennas up and down a tower—in my case, a Rohn 50 footer. My tower originally was a Rohn 50 footer that opened at the center and cranked over. I used it for many years, but always disliked the fact that it was difficult to work on beams as it is tough to adjust element lengths, matching, etc., with the antenna cranked over and down (almost upside down).

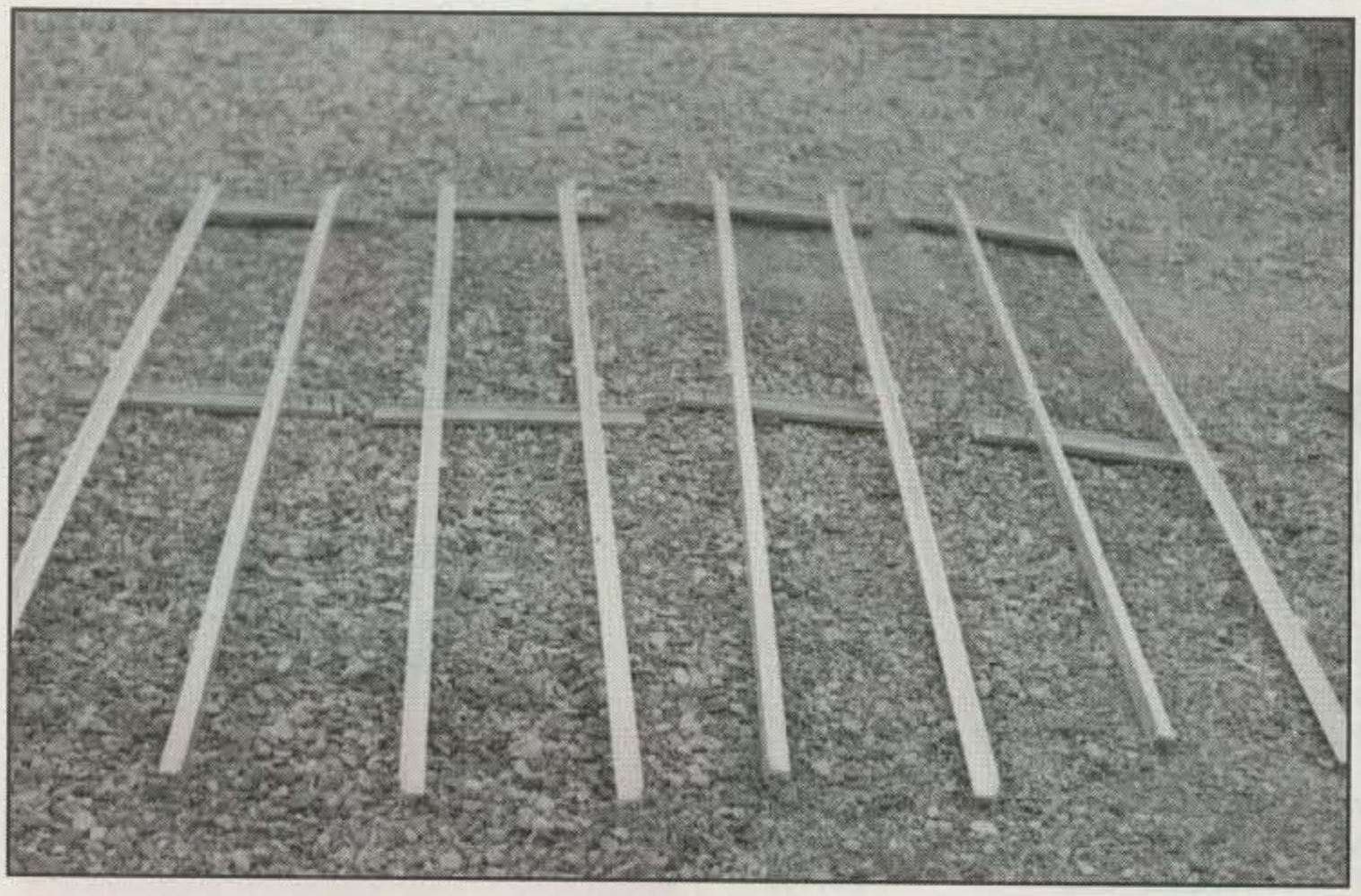
In any case, I have always been fascinated by the Glen Martin Hazer products in that you could raise and lower a beam with relative ease. The VH8 is simply a carriage that is mounted on tracks, which in turn are mounted on the tower. The carriage is raised or lowered via a heavy-duty winch and cable system. The carriage runs on the tracks and locks in place at the top of the tower.

Let me give you some specifications as to weight and wind-loading details. The unit will handle an antenna, mast, and rotor load up to 300 pounds. I am using an antenna that is a multiband beam weighing in at slightly over 100 pounds. The rotor will go about 30 pounds plus, and the mast another 25 pounds or so. My location is smack on the Continental Divide at 6400 feet. You can assume, and you will be correct, that I regularly encounter winds of well over 50 miles per hour. The wind-load area that the Hazer will handle is 24 square feet, and the company says this is a conservative rating.

The accompanying photographs show the track sections that are mounted to the tower tubing via very heavy-duty U bolts. The carriage has four sets of wheels that travel up and down the track. The wheels are placed so that they "encompass" the side of the track, providing a positive holding action. At the bottom of the tower and track is an extremely heavy-duty winch and stainless-steel cable system. The cable system is driven by a hand crank winch that is geared very slow and has very good lifting power. The company recommends using a heavy-duty 1/2 inch electric drill to operate the winch. However, a hand crank is provided. I might add, if I had any complaints it would be that the crank method is very slow for raising or lowering the carriage—and I do mean slow. However, this is really necessary to provide the gear reduction and lifting power.

Fig. 1 provides some details of the cable system. It is a continuous cable which travels over a wheel at the tower top and through the winch at the bottom. Of course, the big con-

*Technical Editor, CQ, 1500 W. Idaho St., Silver City, NM 88061



These are the running rails that are assembled prior to mounting them on the tower face.

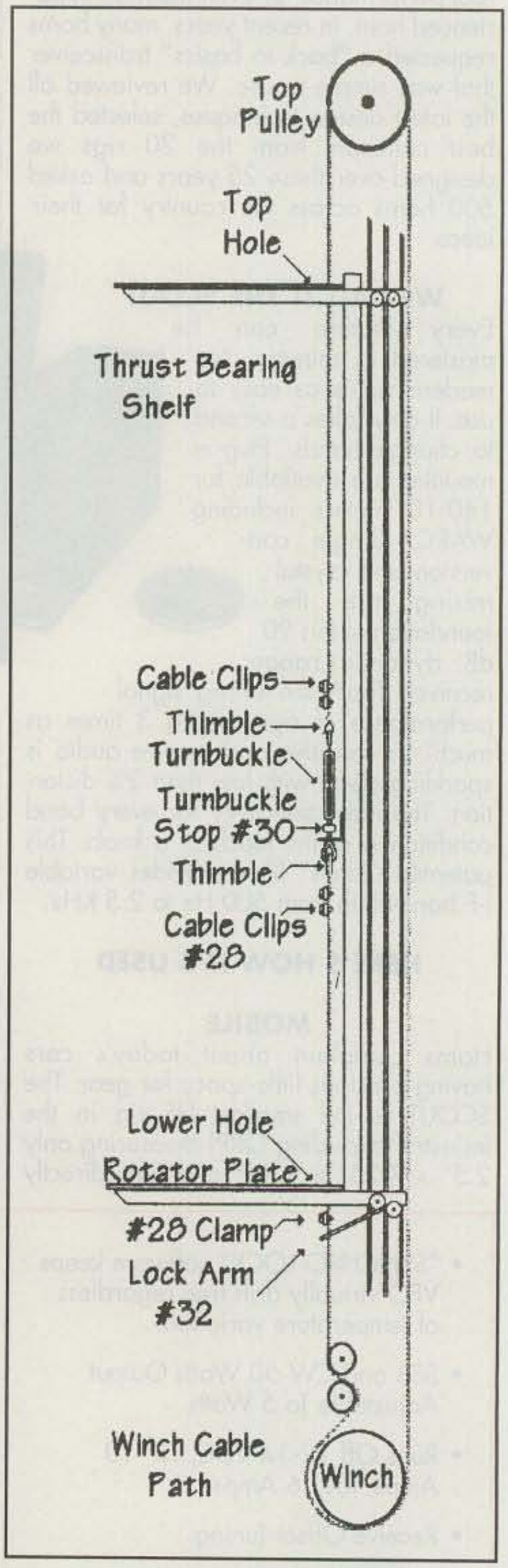


Fig. 1– This drawing from the manual shows the winch cable system as it is used on the Hazer Voyager VH8-50.

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Full-time GPS port (2nd serial port) allows both a GPS and computer to be attached to the PicoPacket. This option also provides a real-time clock, 128k RAM, and Digital DCD.

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  - » 128k RAM - add $20.
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- PicoPacket Batterypack model with 32k RAM - $189.
  - » Open Squelch DCD - add $15.
  - » 128k RAM - add $20.
- PicoPacket Batterypack model with second serial port, 128k, RTC, Open Squelch DCD - $249.
- PicoPacket/GPS. Same as model directly above plus internal GPS receiver and GPS antenna - $629.
- Companion GPS receiver w/active antenna, data cable - $399.
- Extra battery pack - $30.

This view shows the top of the carriage and the thrust bearing of the beam mast.

cern with any raising and lowering of an antenna is the safety measures. The bottom rear wheels of the carriage are arranged so that if the cable or system starts to slip, the wheels are automatically locked into place. I tested this method several times, so I know it works in a very positive fashion.

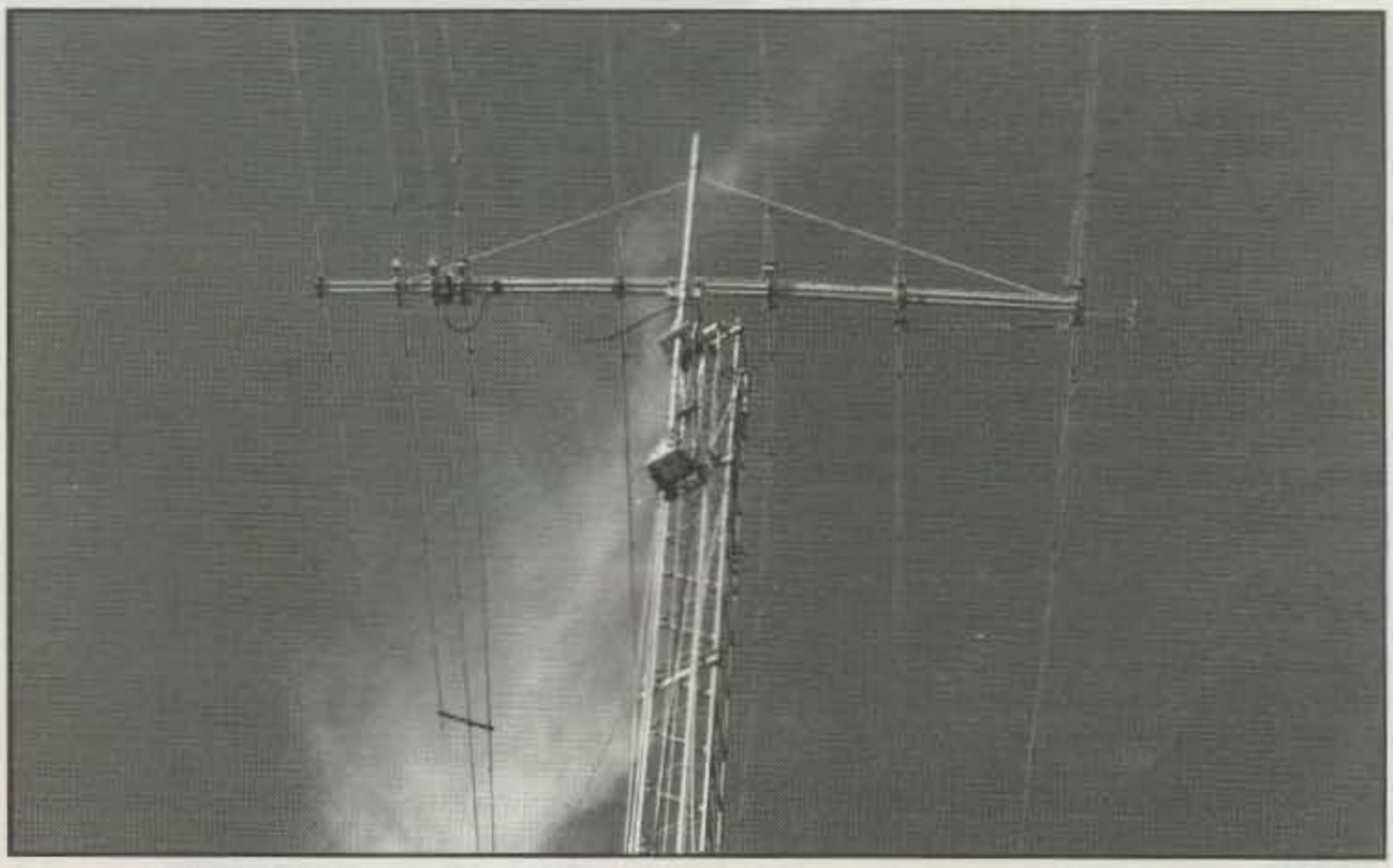
The antenna rotor system can be installed on the bottom carriage plate. In my case, I installed a mast bearing on the top plate of the carriage. Glen Martin also sells bearings for their carriages. I might add here that this side-mounted carriage is rather new. For some years the company has been selling a carriage system that fits around a tower, but this system rides strictly on the side. In addition, the instruction manual is more than adequate and is well illustrated with step-by-step instructions.

The list price of this unit, complete, is $1230. I really like it, because in my case I am always adjusting or tuning antennas. I might add that also provided is a "keeper" cable that attaches to the platform so that the feed line and rotor controls go up and down with the antenna. I use a heavy-duty, 1/2 inch electric drill, and it only takes a minute or so to raise or lower the antenna. Also, I use three sets of guys on my tower, three at the top and three in the middle, just in case. I always wait for a calm, non-windy day and then loosen two sets of guys at the top and two in the middle.

One other point is worth mentioning. My beam balance is at a point that permits clearance of the tower at the center. If a beam has to be mounted off center to clear the tower, I would suggest adding a small amount of weight to the boom to achieve balance.

It is obvious that I really like this system. I can tune a beam with great ease. I like computer programs for beams, but they still leave something to be desired when it comes to tuning an antenna.

The Hazer VH8-50 is manufacturer by Glen Martin Engineering, Inc., Route 3, Box 322, Boonville, MO 65233 (816-882-2734). ■



The antenna raised into place. The top section of the tower has a plate/bar. The top of the carriage locks into two notches that hold the carriage and beam assembly firmly in place.

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✷ Giant 3 day Flea Market ✷ Exhibits ✷ Activities for the Non-Ham

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May 17, 18 and 19, 1996; Dayton, Ohio at Hara Arena

Communications

FAXMail: (information sent to you via FAX): Set your Fax to manual send/receive, then call (513) 276-6934

BBS via America Online: Keyword "Ham", then "Conference" , then "conventions", then "Hamvention"

PHONE: (513) 276-6930. For fast response, please obtain the committee Voice Mail box numbers via FAXMail or BBS.

FAX (incoming): (513) 274-8369

MAIL: Hamvention, Box 964, Dayton, Ohio 45401-0964

E-MAIL: Hamvention@aol.com or n8emo@ix.netcom.com

WWW: http://users.aol.com/hamradclub/dayton.htm

Special Services

Lodging information and special award nomination forms were in our 1995 Program. A limited number of Handicap parking permits are available. License Exam by appointment only. For Form 610, call 1-800-418-3676
Call, FAX, Mail, or BBS for more information.

Bus service

Bus service will be provided between Hamvention, Air Force Museum, Salem Mall and Forest Park Mall parking areas. Many hotels/motels will have bus service for a nominal charge.

Returned Checks

A $25 service charge will be assessed on all returned checks.

Deadlines

In order to have time to return tickets to you, we must have advanced registration orders postmarked not later than May 3 (USA) or April 26 (Canada). Tickets will not be mailed before January 15th,1996. Ticket requests that are received **AFTER** the deadline will be processed and **HELD** for pick-up at the Hamvention Office in the Silver Arena. Tickets can be picked up beginning Thursday, May 16 at 8:00 a.m.

Flea Market

Flea Market Tickets (valid all 3 days) will be sold IN ADVANCE ONLY. No spaces sold at gate. A maximum of 3 spaces per person (non-transferable). Electricity is available in a portion of the last Flea Market row for $50 additional. Rental tables and chairs are not available in the Flea Market. Vendors ***MUST*** order an admission ticket for each person when ordering Flea Market spaces. Please send a separate check for Flea Market space(s) and admission ticket(s). Spaces will be allocated by the Hamvention committee from orders mailed by February 5. Please use 1st class mail *only*.

Notification of Flea Market space assignment will be mailed on or about **March 25, 1996**. Please indicate in the box below if you would like to attend regardless of Flea Market space assignment.

HAMVENTION Is sponsored by the Dayton Amateur Radio Association Inc.

Advance Registration

Enclose check or money order for amount indicated in U.S. dollars and type or print your name and address clearly.

Make checks payable to:

Dayton HAMVENTION Mail to -
Dayton Hamvention Box 1446, Dayton, OH 45401-1446

Flea Market tickets *Please check one and enclose **two** checks.*

❑ Send admission tickets **only** if flea market space(s) assigned.

❑ Send admission tickets **regardless** of flea market space assignment.

	How Many		
Admission (valid all 3 days)	_____	@ $12.00*	$_____
Grand Banquet	_____	@ $23.00**	$_____
Alternate Activities			
Saturday Luncheon	_____	@ $9.00	$_____
Sunday Luncheon	_____	@ $9.00	$_____
		Total	$_____
Flea Market ‡	_____	$45/1 space	
(Max.3 spaces)	_____	$100/2 adjacent	
	_____	$200/3 adjacent	$_____
Electricity	add _____	$50.00	$_____
Covered tent	_____	$290.00 ea.	$_____
		Total	$_____

Name _____ Call _____

Address _____

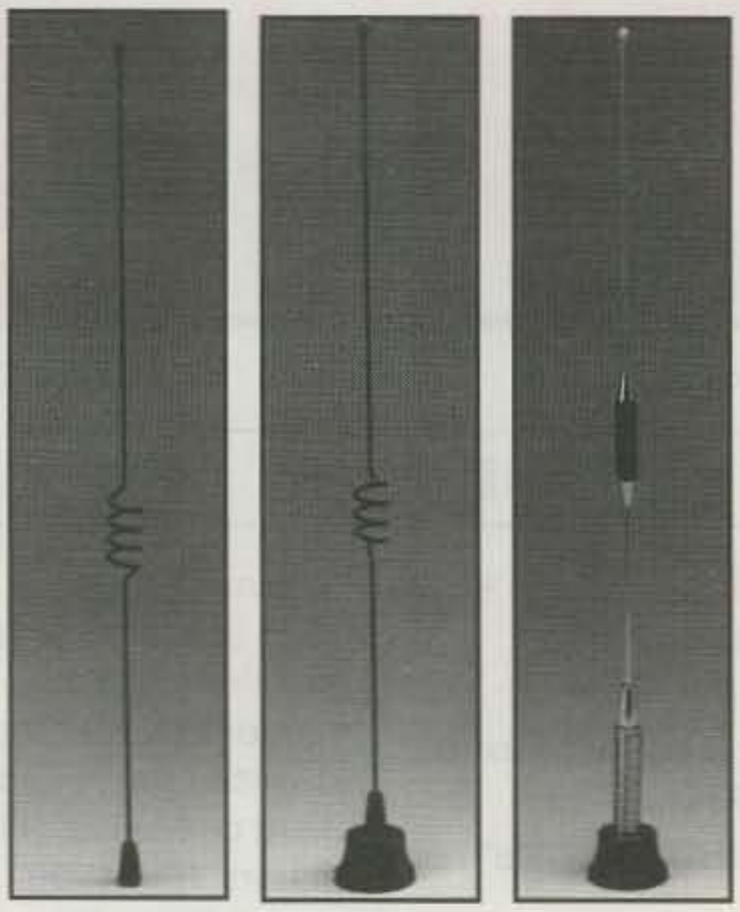
City _____ State _____ Zip+4 _____ – _____

Daytime Phone # ( )_____ Evening Phone # ( ) _____

*$15.00 at door
**$25.00 at door, if available
‡ Admission ticket must be ordered with flea market spaces

CIRCLE 156 ON READER SERVICE CARD

SHOWCASE



Larsen Dual-Band Antennas

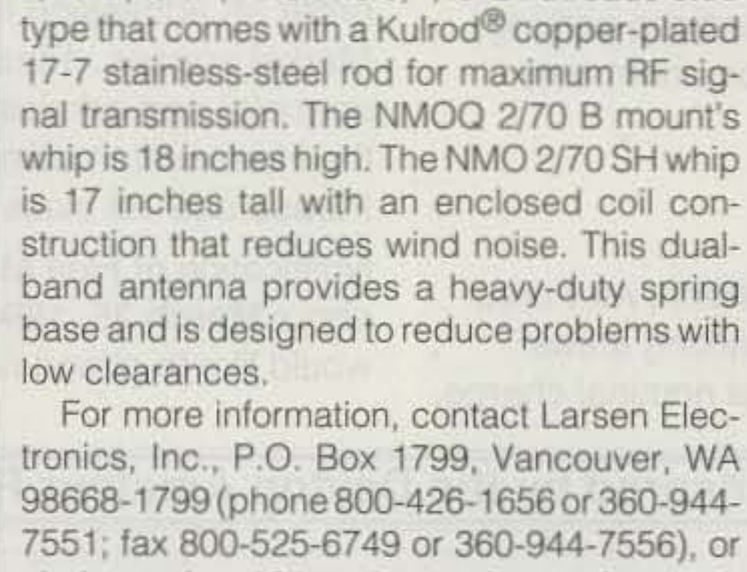
Larsen Electronics has added three new antennas to their dual-band series. The new LMC 2/70 B, NMOQ 2/70 B, and NMO 2/70 SH dual-band antennas are designed for simultaneous use of VHF and UHF frequencies in amateur applications. The frequency range is 144–148 MHz on VHF and 440–450 MHz on UHF.

The Larsen mount style antenna, the LMC 2/70 B, is a 3/4 inch hole, 5/16–24 threads stud type that comes with a Kulrod® copper-plated 17-7 stainless-steel rod for maximum RF signal transmission. The NMOQ 2/70 B mount's whip is 18 inches high. The NMO 2/70 SH whip is 17 inches tall with an enclosed coil construction that reduces wind noise. This dual-band antenna provides a heavy-duty spring base and is designed to reduce problems with low clearances.

For more information, contact Larsen Electronics, Inc., P.O. Box 1799, Vancouver, WA 98668-1799 (phone 800-426-1656 or 360-944-7551; fax 800-525-6749 or 360-944-7556), or circle number 101 on the reader service card.

HTMORSE Software From Electrosoft

Software that helps no-code techs upgrade by using their HTs to learn Morse Code on-air is now available from Electrosoft. HTMORSE turns a laptop or tabletop PC computer into a Morse keyboard that sends Morse Code from any HT by connecting the microphone jack to the computer serial port with an optional cable. Morse keyboard features adjustable code speed from 5 to 100 words per minute, adjustable dot/dash ratio, ten buffers, a selectable code side tone, and a random code generator. Practice for VE exams is built in.



HTMORSE is available for $30; optional cable is available for $10 (send radio manufacturer and model number). Both feature a money-back guarantee. For more information, contact Electrosoft, P.O. Box 1462, Loveland, CO 80539 (970-663-4777), or circle number 102 on the reader service card.

Alexander Batteries' Optimizer 2000 Series

The Optimizer 2000 Series battery management system supports Nickel-Cadmium, Nickel Metal Hydride, Sealed Lead Acid, and specific Lithium technology rechargeable batteries in three- or six-bay configurations. Features of the Optimizer 2000 Series include Charge/Discharge with capacity measurements; Analyze, which cycles automatically through a charge, discharge, and additional charge; Condition, which cycles automatically through three separate charge/discharge cycles showing the capacity for each cycle

and the final capacity for all three cycles combined. Other features include interchangeable battery adapters; a basic although adjustable 900 mA charge rate; 600 mA discharge rate; and computer interface and software to perform analysis of charge and discharge curves with respect to temperature, time, voltage, and charge current. Fast charge termination is monitored according to voltage and temperature characteristics. The unit also includes a ten hour safety back-up timer.

The Optimizer 2000 is equipped with a universal switching power supply with power management control for the international market. The system meets UL, CSA, and TUV agency approvals and also incorporates the CE mark. For more information, contact Alexander Batteries, P.O. Box 1508, Mason City, IA 50402 (phone 515-423-8955; fax 515-423-1644), or circle number 103 on the reader service card.

CAIG Laboratories DeoxIT™

CAIG Laboratories, Inc. has introduced an environmentally-safe aerosol contact cleaner,

deoxidizer and preservative. DeoxIT's active ingredients are formulated to deoxidize, clean, preserve, lubricate, and improve conductivity on metal connectors and contacts without the need for carrier solvents for dilution or cleaning surfaces. The spray container provides short bursts of 100% concentrate of DeoxIT via a precision metered valve.

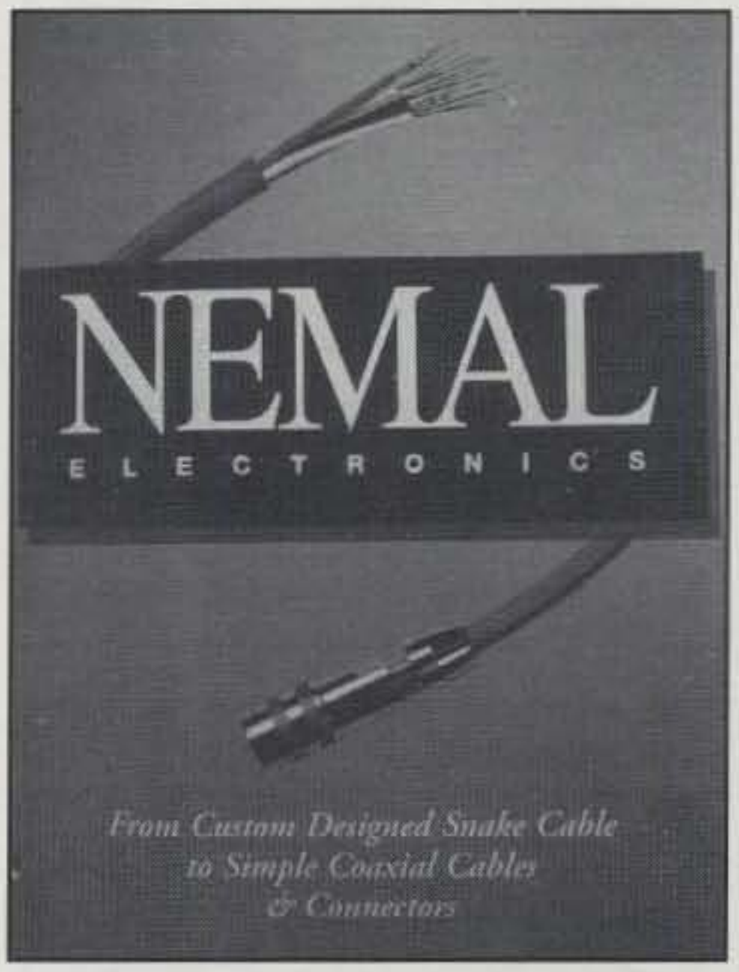
Pretreating with DeoxIT will reduce intermittent connection problems and increase transmission quality and product reliability. DeoxIT can be used on switches, relays, batteries, connectors, plugs and sockets, edge connectors, terminal strips, interconnecting cables, and other metal surfaces, etc. DeoxIT is also available in wipes, pens, and liquids—all 100% concentrate, environmentally safe, non-flammable, non-corrosive, and non-toxic. For production applications that require a light (5%) coating of DeoxIT, CAIG offers a 5% concentrate in purified petroleum naphtha, flammable (until solvent evaporates), with no ozone-depleting CFC's.

For further information, request Tech Sheet SB-DIR and SB-SPEC from CAIG Laboratories, Inc., 16744 West Bernardo Drive, San Diego, CA 92127-1904 (phone: 619-451-1799; fax 619-451-2799), or circle number 104 on the reader service card.

Nemal Cable and Connector Selection Guide

Nemal Electronics International has published a new edition of its Cable and Connector Selection Guide. The 48-page guide contains detailed technical specifications and illustrations of more than 1000 cable, connector, and interconnect products. The 1995–96 edition has over 100 new products, including a section on 75 ohm BNC connectors, adapters, and patch panels for serial digital applications, RF terminations and attenuators, and custom composite cables for broadcast applications. The guide also includes performance data on both commercial and military coaxial cables.

For more information, contact Nemal Electronics International, Inc. at 305-899-0900; fax 305-895-8178; e-mail NEMAL1@aol.com; or



on the internet at http:\\www.csz.com\nemal\; or circle 106 on the reader service card.

GØLOV & G4LUE UK Callbook On Disk

This version (3.3) of "Callbook-On-Disk" is a specially written database for fast searching. Users can search under callsign, address,

postal code, surname, wild card, or frequency. The database allows users to list all callsigns in any town, county, or postal code. The software lists all UK repeaters, nodes, HF beacons and mailboxes, and lists all repeaters on the same channel. "Callbook-On-Disk" is available on 3.5" disks and requires an AT-PC 286 or better, VGA color/mono monitor, a 3.5" DS-HD floppy disk drive, a hard drive with 14 Mb free space, and MS-DOS 3.3 or higher.

For more information, contact GØLOV & G4LUE Amateur Radio Software, 8 Hild Ave., Cudworth, Barnsley, South Yorkshire, S72 8RN England (phone 0836-748958), or circle number 108 on the reader service card.

Optoelectronics Pocket-Size Frequency Counter

The new CUB pocket-size frequency counter is the latest in Optoelectronics' line of handheld frequency counters. The CUB improves on the model 3300 MiniCounter by adding features such as: Digital Filter, Auto Capture, 10 hour battery life; 8 selectable gate times; high-speed .0001 second gate; and 9-digit LCD display. The CUB also incorporates all of the other standard features of the 3300 MiniCounter. The new Capture mode allows for a frequency to remain displayed as long as desired, with no chance of being overridden by surrounding RF. The CUB Frequency Counter measures 3.7" × 2.75" × 1.2", and weighs 7.5 ounces. The unit is priced at $149.

To order call 800-327-5912. For more information, call Optoelectronics at 305-771-2050; fax 305-771-2052; write to them at 5821 NE 14th Ave., Ft. Lauderdale, FL 33334; or circle number 107 on the reader service card.

MFJ *tunable* DSP *filter*

NEW

. . . Tunable "brick wall" bandpass, lowpass, highpass, notch, SSB, CW filters . . . programmable pre-set filters . . . automatic multiple notch filter eliminates heterodynes . . . adaptive noise reduction reduces noise and QRN . . . for Voice, CW, Data . . .

MFJ's ***tunable*** **super DSP filter automatically eliminates heterodynes, reduces noise and interference** ***simultaneously*** **on SSB, AM, CW, packet, AMTOR, PACTOR, RTTY, SSTV, WeFAX, FAX, weak signal VHF, EME, satellite -- nearly any mode.**

Only MFJ gives you tunable and programmable "brick wall" DSP filters

MFJ-784B

$249.95

Patent pending

You get MFJ's tunable FIR linear phase filters that minimize ringing, prevent data errors and have "brick wall" filter response with up to 57 dB attenuation just 75 Hz away.

Only **MFJ gives you 5** ***tunable*** **DSP filters. You can** ***tune*** **each lowpass, highpass, notch, and bandpass filter including optimized SSB and CW filters. You can** ***vary*** **the bandwidth to pinpoint and eliminate interference.**

Only **MFJ gives you 5** ***factory*** **pre-set filters and 10** ***programmable*** **pre-set filters that you can customize. Instantly remove QRM with the turn of a switch!**

You get MFJ's ***automatic notch*** **filter that searches for and eliminates** ***multiple*** **heterodynes.**

You also get MFJ's advanced ***adaptive noise reduction*****. It silences background noise and QRN so much that SSB signals sound like local FM.**

The ***automatic*** **notch and** ***adaptive*** **noise reduction can be used with** ***all*** **relevant tunable pre-set filters.**

Automatic gain control **(AGC) keeps audio level constant during signal fade.**

Automatic notch filter

MFJ's automatic notch filter searches for and eliminates multiple heterodynes in milli-seconds. It's so fast, that even *interfering* CW and RTTY signals can also be eliminated.

With up to 50 dB attenuation, you'll copy stations otherwise masked by heterodynes.

Voice signals aren't degraded because the notch is extremely narrow.

Turn on *automatic* notch and you'll never hear unwanted heterodynes of tuner-uppers.

You can *selectively* remove unwanted tones using the two *manually tunable* notch filters --an MFJ exclusive. Knock out unwanted CW stations while you're on CW.

Adaptive Noise Reduction

Turning on noise reduction silences background noise. It reduces fatigue and makes noisy signals readable.

Noise reduction works in all filter modes and on all random noise -- white noise, static, impulse, ignition noise, power line noise, hiss.

The LMS algorithm gives you up to 20 dB of noise reduction. Noise reduction is adjustable to prevent signal distortion.

Tunable highpass/lowpass filters

For Voice and Data, nothing beats MFJ's exclusive *tunable* highpass/lowpass FIR linear phase "brick wall" filters.

You can tune the lower cutoff frequency 200 to 2200 Hz and the upper cutoff frequency 1400 to 3400 Hz. This lets you create *custom* filters for Voice, Data and other modes.

Signals just 75 Hz away literally disappear -- they are reduced 57 dB!

NEW MFJ-784B Features

- Tunable *Spotting Tone*™ -- an *MFJ invention* -- accurately tunes even the narrowest CW filter
- MFJ's exclusive *Adaptive Tuning*™ -- Center frequency tuning automatically becomes finer as you narrow bandwidth -- makes extremely narrow filters easy-to-use
- Improved automatic notch with *variable* aggressiveness
- New quieter audio amplifier gives you *full* 2½ Watts output
- Speaker ON/OFF button, phones always active
- Accurate easy-to-use input level indicator
- *Filter Talk*™ function sends precise filter settings in Morse code
- Filter automatically bypasses during transmit for monitoring CW sidetone, voice or data by sensing PTT line
- Improved manual notch in the CW mode
- Manual notch and automatic notch can be used simultaneously
- Noise reduction,automatic notch and tunable manual notch can be used in Memory mode
- Adjustable line level output
- More Mark-Space frequencies and baud rates for data filters
- Improved self-test for all digital circuitry, switches and controls

Unlike other filters, speech is not distorted by unequal time delay.

When signals are weak, you can improve copy by removing noisy high and low speech frequencies that contain little information.

On crowded HF bands, you can "slice-off" overlapping SSB signals to improve copy.

You can highpass filter out hum, pulses, rasp and other irritating low frequency noise.

Tunable bandpass filters

Narrow band signals like CW and RTTY jump out of QRM when you switch in MFJ's *exclusive* tunable FIR bandpass filters.

You can tune the center frequency from 300 to 3400 Hz, and vary the bandwidth from 30 Hz to 2100 Hz -- from super-tight CW filters to wide razor-sharp Data filters.

As you narrow the bandwidth, interfering signals drop out, because, just 60 Hz away, they're down by over 47 dB.

You can use narrower bandwidths to fight tough QRM because these linear phase filters don't distort signals with unequal time delays.

Even with the narrowest 30 Hz bandwidth, you'll never have a problem with ringing.

One position gives you two tunable filters you can use together. For example, tune one to mark, one to space and set the bandwidth tight for an incredibly sharp RTTY filter.

15 *pre-set* filters -- use factory set or program your own

You can select from fifteen convenient *pre-set* filters. Use them for SSB, AM, CW, packet, AMTOR, PACTOR, RTTY, SSTV, WeFAX, FAX or any mode you can think of.

If you don't like our pre-set filters, you can program your own -- *an MFJ exclusive!* Save center frequency/ bandwidth, lowpass/highpass cutoffs, auto/manual notch, noise reduction -- all filter settings -- in 10 *programmable* filters.

Only MFJ gives you the best of both worlds -- *tunable* filters to eliminate nearly any QRM and fast convenient *pre-set* filters customized for any mode.

Plus more . . .

A push-button bypasses your filter -- lets you hear the *entire* unfiltered signal.

2½ watt amplifier, volume control, input level control, speaker jack, PTT sense line, line level output. 9½x2½x6 inches.

Plugs between your transceiver or receiver and external speaker or headphones. Use 12 VDC or 110 VAC with MFJ-1315, $14.95.

MFJ-780, $99.95, "brick wall" DSP data filter. Plugs inside MFJ-1278B or MFJ-1278 Multimode Data Controller.

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You get MFJ's famous one year No Matter What™ unconditional guarantee. That means we will repair or replace (at our option) your MFJ-784B no matter what for a full year

Call your dealer for your *best* price

Automatically eliminate heterodynes, reduce noise and QRM on Voice, CW and Data. Call your favorite dealer for your best price and order your MFJ *tunable* DSP filter today!

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CIRCLE 147 ON READER SERVICE CARD

MATH'S NOTES

BY IRWIN MATH, WA2NDM

WHAT'S NEW AND HOW TO USE IT

Food For Thought

Since *CQ* is prepared several months in advance of its cover date, I would like to be the first (in print) to wish all of my readers a very Happy New Year, with a sincere wish that all of your dreams come true in the 366 days ahead (yes, 1996 is a leap year!).

Well, 1996 has arrived, and it's quite hard to believe that in only four years we will begin a new century! I often wonder what we as amateurs will find awaiting us. Lately, unfortunately, there are times when I wonder if amateur radio as we know it will even be there in the years to come. The growth of the Internet, and the resultant ease with which people can communicate with each other without purchasing expensive equipment, erecting antennas, and predicting sunspot cycles, may actually be dampening the spirit of many technically oriented potential amateurs. I have read that there even are ways being developed to allow direct user-to-user speech transmission by means of real-time digital processing. Once this is a reality, add a random-selection software program of some sort and you will be able to call "CQ Internet" (or something similar) and have a noise-free, QRM-free QSO with the whole world as your potential contact! Will "Worked All Hubs" be our new coveted award? I for one certainly hope not!

While predicting the future is very risky and usually not too accurate (a fact that I sometimes consider fortunate), a brief review of a couple of key events, at a similar point in time, just before and after the turn of the 20th century, is interesting in demonstrating how supposedly insignificant accomplishments of today can sometimes develop to the point where they significantly change our lives tomorrow.

In 1894, a mere 102 years ago, a 20-year-old Italian named Guglielmo Marconi got the idea of transmitting telegraph signals by means of wireless "Hertzian Waves" after reading about the theoretical work of mathematician James Maxwell and experiments of German scientist Heinrich Hertz earlier in the century. In just one year of intense experimentation Marconi succeeded in increasing the distance that signals could be transmitted from a few feet to a mile. A major factor in accomplishing this radical increase in range was his use of a wire connected to the earth, which he called a "ground wire," and another wire suspended in the air, which he called an "aerial wire." Sound familiar?

At this point, Marconi offered his invention to the Italian government, who was not particularly impressed or interested. Disappointed, he went to England in July 1896 to continue his experiments. Marconi soon increased the transmission distance of his equipment to over eight miles, but felt that he had "by no means reached the limit!" Nothing less than transatlantic comunications would satisfy him, and at the turn of the century he set out to prove it could be done.

Shortly after noon on December 12, 1901, in a raging gale, Marconi and his assistants sent up a large kite, at the end of over 400 feet of copper wire, to be used as an antenna. Huddled over their simple crystal receiver, they heard the dit-dit-dit of the letter "S" sent from England in Morse Code. Today, bouncing signals off the moon at frequencies that were impossible to generate in those days is quite common.

In 1882 Thomas Edison was experimenting with a problem that was plaguing his early electric lamps—the darkening of the glass bulb from material boiling off the filament. To attract this material to one point in the lamp, he inserted a metal plate in the bulb and connected it to a high positive voltage. The technique did not work very well, but Edison did notice that current would only flow in one direction. He called this phenomenon the "Edison Effect," but let the matter rest there. It wasn't until 20 years later that Sir Ambrose Fleming discovered that this arrangement of filament and plate made a superior detector of radio waves. In 1908 Lee Deforest added a grid between the plate and filament, and the age of vacuum-tube technology began.

Today solid-state electronics allows us to package thousands, if not millions, of transistors and diodes in tiny packages that require microscopes for examination. That, however, is another story.

The two examples above were chosen because both provided the initial steps to what later became major technologies and intimately involved amateur radio operators and experimenters in their development and growth. In and around the turn of the 20th century no one could really predict what these would become. Edison himself did not realize that he had built a diode, and *Cooly's Manual of Physics*, a college textbook of the time, called "Hertzian Waves" an interesting laboratory curiosity. Marconi, who could be thought of as the first amateur radio operator and experimenter, at least had a vision that wireless communications could amount to something, but he had an uphill battle at the beginning.

Today, at the end of the 20th century, there are no doubt similar situations, and we as amateurs would do well to try to recognize them. Microprocessors are at an all-time high in packing density, capability, and operating speed. Artificial intelligence seems to be a very real possibility. Speech recognition and synthesis is here, and the wireless communications industry is reaching out to the masses. The opportunities abound!

While the fabrication of a custom IC or transistor does require special facilities, obtaining the finished device is as easy as consulting the next catalog of any one of a number of new or surplus component sales outlets. It is the application of the device into the technological marvel of the next generation that awaits the true experimenter. Remember too that Marconi's spark coils, aerial and ground wires, and crystal detectors were available to anyone in the 1890s who had enough insight and vision to put them together in the right combination to make a wireless transmission system. Edison's light bulbs could be bought at the time, and any high school lab's vacuum pump could have been used to re-evacuate the bulb after the plate and grid had been inserted. Only the desire was missing.

If you want to even begin to think about the future properly, remember your thoughts from the standpoint of the not-so-distant past:

Would you in the 1940s, '50s, and '60s ever have thought that the "limited" point-to-point, line-of sight UHF and microwave frequencies would be employed for audio, video, and digital communication systems using orbiting satellites as repeaters to achieve worldwide transmission ranges?

Would you in the 1960s ever have thought that 900 MHz transceivers (cellular telephones), for example, using digital encoding techniques would provide reliable full-duplex communications?

Would you in 1970 ever have believed that a tiny pocket-size Global Positioning Satellite System radio receiver would be able to give you your exact location anywhere on the earth to an accuracy of a few feet?

Do you even realize that today more than 85% of the world's long-distance telephone conversations are transmitted by pulses of light in non-conducting fiber-optic cable, and that cable even transverses the oceans?

What all of this leads up to, in my mind, is simply, will amateur radio still be able to influence and change our lives in the future, or will the Internet (or just a lack of interest) replace the hobby?

I would like to believe that the new "unusable" 100 GHz+ frequency spectrum will be pioneered by amateurs just like the "200 meters and down" spectrum was pioneered so many years ago. The argument that it is too difficult or expensive doesn't fly. After all, trying to operate or experiment in the 30 to 150 MHz region with type 30 style vacuum tubes (in the 1920s and 1930s) was also quite difficult, but it was done!

I would like to believe that the new modulation scheme, whatever form it may take, will be developed by experimenters just like FM and SSB. The trick is not necessarily complex microprocessor-controlled exotic circuitry in well-equipped laboratories, but perhaps some real clever original thought! Finally, I would like to believe that when the 22nd century is about to begin, people will look back to the 21st century and clearly see the role amateur radio has played. We owe it to our heritage, if not to ourselves.

73, Irwin, WA2NDM

c/o CQ magazine

MFJ TNCs for VHF/HF Packet

MFJ-1270C super TAPR TNC clone has a world wide reputation as the most reliable packet TNC in the world! Thousands used as digipeaters, nodes, BBS and in all kinds of commerical applications working 24 hours a day -- many work for years without a single failure . . .

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MFJ-1270C **$119.95**

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VHF *and* HF operation.

You get high performance VHF *and* HF modems as standard equipment -- for double fun.

You get a true DCD circuit that dramatically reduces sensitivity to noise and dramatically increases completed QSOs.

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You get a *free* 110 VAC power suppy at no extra cost. With other brands, the AC power supply could cost you an extra $20.95.

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The *enhanced* Easy Mail™ personal mailbox lets you use a dedicated call-sign for your mailbox. Your mailbox can stay on while you operate packet. It will also auto forward or reverse forward mail to and from other BBSs. A *check mail* LED blinks when you have mail. More features: remote sysop access, sysop paging, mailbox C-text, chat mode and many other features not available in other TNCs. The mailbox memory is expandable to 32K, 128K and 512K.

WeFAX gives you Weather Maps

You get a WeFAX mode that lets you print full fledged weather maps from your HF radio to screen or printer or save to disk using an MFJ Starter Pack.

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You can add MFJ's optional *internal* 2400 baud or 9600 baud modem just by *plugging it in* and making a few simple connections.

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You get a KISS interface that lets you run TCP/IP and MYSYS and MFJ's Host Mode that makes it easy to write efficient application programs.

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You also get 32K RAM, IC sockets for easy service, 256K ROM, speaker jack, lithium battery backup, RS-232 *and* TTL serial ports, radio cable (you have to add a connector for *your* radio), Fast-Start™ Manual plus much more. Use 12 VDC or 110 VAC. 9½x1½x7½ in.

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If you want a TNC that'll work 24 hours a day without failure -- *one that has more features than any other* -- get the ultra reliable MFJ-1270C today and enjoy packet for a long, long time.

2400 Baud *Turbo*™ TNC

MFJ-1270CT, $209.95. Has all the features of the MFJ-1270C plus built-in fast 2400 baud modem. Operate 300, 1200 and 2400 baud packet with the MFJ-1270CT. Radio modification is *not* necessary when operating 2400 baud packet.

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TNC ACCESSORIES

MFJ Starter Packs

An MFJ Starter Pack, $24.95, gets you on the air instantly. You get interface cable, software on disk and instructions -- just plug it all in and start enjoying packet. Order **MFJ-1284** for IBM or compatibles, **MFJ-1282** for Commodore 64/128, **MFJ-1287** for Macintosh or **MFJ-1290** for Amiga.

2400 and 9600 Baud Modems

MFJ-2400, $89.95, operates 300, 1200 and 2400 baud packet and works with any radio. **MFJ-9600B,** $109.95, G3RUH compatible 9600 baud modem. Not all radios compatible with 9600 baud. Both plug into MFJ TNCs for easy installation.

Mailbox Memory

For MFJ-1270C/1276. Plugs into RAM socket for extra *mailbox* memory. **MFJ-45A** (32K), $14.95, **MFJ-45B**(128K), $29.95, **MFJ-45C** (512K), $159.95.

Real Time Clock

MFJ-43, $29.95, ends re-setting TNC clock everytime you turn it on. Maintains correct time even when TNC is off. Plugs into RAM socket. Works with MFJ TNCs and TAPR TNC clones.

FM Deviation Meter

MFJ-52, $29.95, plug this board into your TNC configured as TheNet X-1J Node and users can check their transceiver packet FM deviation. Requires X-1J or later nodeware. See *CQ Magazine*, Nov. 1993.

Firmware Upgrade

For older MFJ TNCs. **MFJ-40C**, $19.95, gives you enhanced mailbox and supports mailbox up to 512K. ***And now you also get GPS compatibility.***

Mailbox Memory Expansion Board

For older MFJ TNCs. **MFJ-47A**, $49.95, 32K RAM; **MFJ-47B**, $69.95, 128K RAM; **MFJ-47C**, $239.95, 512K RAM. Complete with firmware.

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Switch between your TNC or Mic by pushing a button!

Switch between your microphone and TNC by pushing a button!

MFJ-1272B/M **$39.95**

You won't have to unplug your microphone and plug in your TNC *everytime* you want to work packet or other digital modes.

Just plug these pre-wired cables into your rig's microphone connector and into your TNC and you're ready to go -- no more hard-to-find connectors and wiring up cables.

Works with HF, VHF and UHF radios with 8 pin mic connectors -- including Kenwood, ICOM, Yaesu, Alinco and others. *For radios with 8-pin RJ-45 modular telephone jack, select the new "M" models.*

Plug-in jumpers let you quickly set-up for virtually any radio. Factory set for Kenwood and Alinco. Includes easy-to-follow instructions. Has audio-in and speaker jacks. 3¼x1¼x4 inches.

MFJ-1272B/1272M, $39.95, for MFJ TNC/multimodes,TAPR TNC-2 clones.
MFJ-1272BX/1272MX, $39.95, for PK-232.
MFJ-1272BYV/1272MYV, $39.95, for KAM VHF/KPC3.
MFJ-1272BYH/1272MYH, $39.95, for KAM HF Port.

Pre-wired Radio-to-TNC cables . . . $14.95

Radios \ TNC Type	All MFJ TNCs/ PK900/PK96/ PK12/PacCom/ other TNC-2 compatibles	KAM VHF[5]/ KAM HF[5]/ KPC3[5]/ KPC9612[5]	PK-232	PK-88
Icom[1]/Yaesu/ Alinco/Radio Shack HTs	MFJ-5024	MFJ-5024YV	MFJ-5024X	MFJ-5024Z
Kenwood[2] HTs	MFJ-5026	MFJ-5026YV	MFJ-5026X	MFJ-5026Z
Yaesu 8-pin	MFJ-5080	MFJ-5080YV MFJ-5080YH	MFJ-5080X	MFJ-5080Z
Icom[3] 8-pin	MFJ-5084	MFJ-5084YV MFJ-5084YH	MFJ-5084X	MFJ-5084Z
Kenwood/Alinco 8-pin	MFJ-5086	MFJ-5086YV MFJ-5086YH	MFJ-5086X	MFJ-5086Z
Yaesu 8-pin modular	MFJ-5080M	MFJ-5080MYV	MFJ-5080MX	MFJ-5080MZ
Icom[4] 8-pin modular	MFJ-5084M	MFJ-5084MYV	MFJ-5084MX	MFJ-5084MZ
Kenwood 8-pin modular	MFJ-5086	MFJ-5086MYV	MFJ-5086MX	MFJ-5086MZ
Radio Shack 8-pin modular	MFJ-5088M	MFJ-5088MYV	MFJ-5088MX	MFJ-5088MZ

1. does not include IC-W2A
2. does not include 2500
4. does not include IC-100H, IC-2700H
5. YV for KAM VHF port, YH for KAM
6. YV for KP9612 1200 baud port
7. YH models for KPC9612 9600 baud port

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You also get an extra 32K of memory for your enhanced *Easy Mail*™ packet mailbox.

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ANTENNAS & ACCESSORIES

A LOOK AT THE SHACK FROM BOTH ENDS OF THE COAX

Happy New Year!

This month we begin with some antenna notes and work our way through to "Short Bursts" and the field of radio astronomy. We finish up with "CQ—Looking Back Five," so let's get started.

Antenna Notes

Optoelectronics Scout™. Last month we featured several PerCon FCC frequency databases for business and amateur markets. These databases are available in CD-ROM format and can be read by both IBM and Macintosh PCs.

As we noted, among the databases hobbyists are interested in are SPECTRUM and SPECTRUM for Scout. SPECTRUM ($29.95) is a database with over three million records. Its 15 fields include frequency; callsign; radio service and class of service codes; transmitter city, county, and state; latitude and longitude; and the number of units for various radio services. SPECTRUM includes a simple-to-use search routine with 7 fill-in-the-blank searches.

Another special version, SPECTRUM for Scout ($39.95), is for use with the Optoelectronics Scout hand-held frequency recorder. SPECTRUM for Scout has the same features and data content as SPECTRUM, but it also can read and process data from a Scout datafile. The Scout datafiles may be compared with the SPECTRUM FCC data.

The Optoelectronics Scout is a hand-held frequency recorder (see photo). It's very similar to a conventional frequency counter, being able to measure the frequency of any transmission from 10 MHz to 1.4 GHz that's at least 10-15 dB greater than the ambient RF level. But the Scout also can capture up to 400 frequencies and store them into memory, recording up to 255 "hits" on each frequency in memory, even tuning a properly interfaced receiver to the frequency captured by the Scout.

The pocket-size unit features a custom 10-digit LCD display and, for discreet recording, a built-in, pager-style vibrator to let you know when frequencies are recorded during a walk-by. A distinctive double beep informs you when a new frequency is found, while a single beep indicates that a previously recorded frequency has been hit again. A 16-segment bargraph display indicates the relative signal strength. A recall mode lets you view all 400 frequencies and counts stored in memory, while a sleep mode allows all frequencies stored to be saved when power is turned off. You can recall frequencies from the Scout's memory to tune the associated receiver, a feature known as Memory Tuning.

The Scout serial interface (which is compatible with the ICOM CI-V standard) and the optional interface converter let you connect the unit to a PC for remote control, automatic data logging, and downloading stored frequency information. With the SPECTRUM CD-ROM (available from Optoelectronics or PerCon), you can download all of your saved frequencies to check against the FCC database. Also available is the OptoLog™ Frequency Logging Software, which logs detected frequencies to an ASCII text file. This capability is handy in determining the operating frequency and operating habits of nearby radio transmitters.

When connected to a properly interfaced and modified Realistic scanner, or receivers that conform to the ICOM CI-V interface standard, the Optoelectronics Scout will automatically tune the receiver to the frequency it records; this is a feature known as Reaction Tuning. Frequencies also may be recalled from the Scout to tune the receiver. (Photo courtesy Optoelectronics)

In addition, when the Scout is connected to a properly interfaced and modified Radio Shack Realistic Pro-2005, Pro-2006, or Pro-2035 scanner, or a receiver that conforms to the ICOM CI-V interface standard (such as the ICOM R7000, R7100, and R9000, or the AOR AR2700 or AR8000), the unit can automatically tune the receiver to the frequency it records. This feature is known as Reaction Tuning (pat. pend.).

The basic Scout is $449; various accessories are available, including the Scanblaster™ Series of scanning accessory packages. For more information, contact Optoelectronics, Inc., 5821 N.E. 14th Ave., Ft. Lauderdale, FL 33334 (1-800-327-5912). (The PerCon FCC databases we described last month are from PerCon Corp., 4906 Maple Springs/Ellery Road, Bemus Point, NY 14712; 716-386-6015.)

SAMCO Antennas. SAMCO Antennas offers a variety of rugged base and mobile VHF and UHF antennas. They feature broadband, high-gain, 5- and 6-element Yagis covering a variety of commercial and amateur frequencies, over the ranges 70–512 and 800–999 MHz. Mounting brackets are available that allow either horizontal or vertical polarization with most of the antennas. Tower leg mounts, stacking harnesses, cable assemblies, and magnetic mounts also are available.

Several other antennas are offered. These include a line of horizontally-polarized base and mobile VHF and UHF antennas designed specifically to offer solutions to RF interference problems. These omnidirectional, horizontally polarized antennas are designed to minimize interference by providing up to 30 dB isolation from nearby vertically polarized transmitters. The SAMCO antennas are furnished with a two-year limited warranty.

For more information, and antenna and accessory pricing, contact SAMCO Antennas, Inc., 2628 Whitmore, Ft. Worth, TX 76107 (817-336-4351).

Hustler "HS" Spirit Series Antennas. The Newtronics Antenna Corp., with its Hustler antennas, is an old-line antenna supplier that's well known for its CB, monitor, and amateur fixed station and mobile antennas. Hustler has a new, 28-page antenna catalog for "communications professionals" that details their antennas and various mounts, springs, and other accessories.

Prominently featured in the catalog are the "HS" Spirit Series antennas. These vertical antennas originally were produced for the professional communications market and now are also available for amateur use. The VHF and UHF Spirits have an offset radiator (OSR) design with phased half-wave copper radiators. The design is said to yield precise radiation angle control and wide bandwidth, while minimizing intermodulation effects.

The "HS" antennas feature a white extruded fiberglass radome and heavy aluminum base to offer high stability and rigidity. The lightning-protected antennas are available in configurations from 136 MHz to 2 GHz; power-handling capability is 400 watts. The new catalog also depicts the similar but very heavy-duty "HD" Series Antennas, which cover the same frequency ranges.

For a catalog, contact Newtronics Antenna Corp., One Newtronics Place, Mineral Wells, TX 76067 (1-800-949-9490).

Amidon Inc. Catalog Update. On several occasions, most recently in July 1993, we noted the Amidon Associates tech-data flyer that depicts their iron-powder and ferrite coil

289 Poplar Drive, Millbrook, AL 36054

N3EQF Amateur Radio Logbook SAMPLE

NO	CALL/SER #	[multiplier]	DATE/FREQ	TIME ON/OFF	SENT/RCVD	QSL/MODE	PWR
	WN2TWW	Woodcliff Lake	11-05-71	20:00:00	599	S	
	John	NJ	3.711	20:00:00	569	CW	75
1				My call WN3QEI			
	TR8JLD	Libreville	05-06-87	01:31:00	59	X	
	Jeanlouis		14.195	01:31:00	59	USB	100
2		Gabon					
	ON6FT	Menen	03-24-88	03:48:00	579	X	
	Roy		7.001	03:48:00	599	CW	100
3		Belgium					
	EA8AMT	Tenerife	03-28-92	01:26:56	58	S	
	Justo		21.0	01:30:00	59	USB	100
4		Canary Island					
	N3EQF	Coraopolis	12-28-93	02:26:56	58	S	
	Tom	PA	21.0	02:45:00	59	USB	100
5		USA		Author of the Log-EQF program!			

<Home> <PgUp> <PgDn> <End> <n> <F1> <Esc>

Fig. 1– Log-EQF, a very popular shareware logger from Tom Dandrea, N3EQF, offers a well-designed menu and data entry system that strikes a balance between power and ease of use. Recent versions include numerous enhancements, such as online DXCC and WAS tracking; callsign lookup using SAM, HamCall, AMSoft, and QRZ! databases; a CW keyer; complete PacketClusterTM support; and interface with most computer-ready rigs. Shown here is the "view in detail" screen.

form products. Amidon long has offered a broad selection of iron-powder and ferrite cores, ferrite beads, bobbins, magnet wire, baluns, toroids, coil forms, and related components. Their flyer is particularly useful in that it contains various application notes that describe the products Amidon offers and show typical radio shack uses for them.

Amidon now also offers a separate, 8-page, 8½" × 11" format flyer that describes its expanding line of high-efficiency balun (balanced-to-unbalanced) and UNUN (unbalanced-to-unbalanced) transformers. These are designed by Dr. Jerry Sevick, W2FMI, author of several books and over 30 articles on transmission line transformers. (The most recent of Jerry's books is *Building and Using Baluns and Ununs: Practical Designs for the Experimenter,* available from CQ Communications for $19.95 plus shipping/handling.)

As a reminder, baluns and ununs belong to a class of impedance matching devices known as transmission line transformers. They transmit energy from input to output by a *transmission line mode* instead of by flux linkages as in the case of conventional transformers. Baluns and ununs can have very high efficiencies and very broad bandwidths. They are a practical and economical answer to many RF matching problems, as they are fairly small and lightweight, yet have adequate power-handling capability for most amateur applications.

Amidon offers what it claims to be the most comprehensive selection of transmission line transformers available anywhere in the 1 MHz to 50 MHz, 100 watt to 10 KW ranges. The catalog shows over nine types of ununs and eleven types of baluns. The catalog also has excellent tutorial information as to when and when not to use baluns and ununs, straightforward information on "current" and "voltage" baluns, and other useful matching information.

For a tech-data flyer and a balun/unun catalog, write to Amidon Inc., 3122 Alpine Ave., Santa Ana, CA 92704 (714-850-4660).

Software Notes

Log-EQF. We have featured Tom Dandrea, N3EQF's Log-EQF, a very popular shareware logbook program for the IBM PC, several times since the program was first released in October 1989. We most recently discussed it in the January 1993 column.

Recently Tom saw where we recalled Log-EQF in a recent "Looking Back Five" column segment, and it dawned on him that it's been several years since he sent us an update. He assured us that Log-EQF is alive and well, although a great many enhancements have been made to the program. It's still available as shareware, and it can be found on many BBSes and in various CD-ROM collections; registered versions are available too. Tom also offers Log-EQF Junior, identical to its "big brother" except there is no provision for radio or TNC interfaces.

To recall, Log-EQF (see fig. 1) is a logging program that includes TNC and radio interface support. A wide range of features, a well-designed menu and entry system, and reliable performance have made this logger a favorite. Recent versions (it's now up to Version 7) include online DXCC and WAS tracking; callsign lookup using SAM, HamCall, AmSoft, and QRZ! databases; a CW keyer; complete PacketCluster™ support; and interface with most computer-ready rigs. A specialized collateral program, Rig-EQF, is $20. It provides comprehensive computer control of a Kenwood trans-

Project Phoenix, undertaken by the SETI Institute, is the continuation of the Targeted Search portion of NASA's cancelled High Resolution Microwave Survey (HRMS). Project Phoenix surveys about 1000 sun-like stars located within 150 light-years, over the range 1.2 to 3.0 GHz. The 64 meter Parkes Observatory radio telescope dish, shown here, is run by Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO). In June 1995 project scientists completed scanning from this Southern Hemisphere vantage point in New South Wales; they will continue observations using the 305 meter Arecibo Observatory antenna in Puerto Rico. (Photo courtesy the SETI Institute)

ceiver or receiver via the serial port interface.

For more information, contact Tom Dandrea, N3EQF, at EQF Software, 396 Sautter Dr., Coraopolis, PA 15108 (412-457-2584). The registered version is available from Tom or from Westworld Computer Services (1-800-995-1605) for $30.

Sidekick Deluxe and Dashboard 3.0 for Windows. Almost anyone familiar with plain-vanilla MS-DOS has heard of Borland International's Sidekick, a popup personal information manager (PIM) introduced in 1984. In fact, Sidekick practically had the pop-up desktop market to itself, and almost became a synonym for TSR (terminate-and-stay-resident) software. But over the years, as Windows developed, we heard less and less about Sidekick.

Now, with the move of Borland's founder, Philippe Kahn, to a new company, Starfish Software, we're hearing more about Sidekick as a rejuvenated, Windows-based PIM. The program is marketed as a "total solution for people who need help getting organized."

The new Sidekick for Windows is a sort of electronic day planner and PIM that helps you keep your daily life organized by making effective use of your computer. Sidekick has three easy-to-use, intuitive modules that work together to give you everything you need to organize your names, addresses, and numbers quickly and efficiently; track contacts; manage important appointments, projects, meetings, and dates; and use all of this information to be more productive (fig. 2).

The heart of Sidekick is the Calendar module. It offers multiple daily, weekly, and monthly calendars and To Do lists with priorities, due dates, and alarms. You can set overlapping appointments, recurring events, and even multi-day events. The Cardfile module lets you create multiple files to organize and manage everything from your address book to your CD collection. Finally, the Notes module lets you capture, jot down, manage, and instantly retrieve important notes related to daily projects; you can even write letters and mail-merge them with Cardfile data.

Reportedly, there are some problems in running Sidekick under Microsoft Windows 95. Starfish Software has released Sidekick 95 to be compatible with the new operating system. It includes an integral spell checker that can be used with the PIM's expanded note-taking module.

While Sidekick for Windows is available separately, Sidekick Deluxe on CD-ROM is a hard-to-beat bargain at $69.95. What makes the latter package "deluxe"? The Deluxe package also includes some 40 "Sidekick Companions," information-packed content files that work with Sidekick; a well-regarded Windows shell, Dashboard for Windows 3.0, which provides quick and easy access to the most commonly-performed Windows tasks; and an on-disc multimedia video which promotes Kahn's five-point "Organized for Success" time management plan.

I found Sidekick Deluxe to be an excellent value and extremely simple to use, enough so to pull me away from my former favorite PIM, Lotus Organizer. More information on Sidekick and Sidekick Deluxe is available from Starfish Software, 1700 Green Hills Road, Scotts Valley, CA 95066 (1-800-765-7839).

PakTERM Update. In last January's column we described PakTERM, offered by Bob Lewis, AA4PB, through his company, Intelligent Software Solutions. In case you might not recall this particular column, in it we noted that PakTERM is designed for the PacComm PacTOR Controller (PTC) working PACTOR/AMTOR/RTTY. PakTERM replaces the controller's command set with a menu-driven system with a "human interface" that makes operation easier and friendlier. The program analyzes PTC status and command responses to take control of the PTC to free you for communicating.

Bob wrote to advise us that he had released Version 1.07 (the latest number probably now is even higher), which has a fully automatic call/name index. Whenever a new callsign is logged, the operator's call and name are entered into the index. The next time you work this station, his or her name automatically pops up on the status line, along with the call. The index uses a binary search algorithm which is very fast. The most recent 1000 to 2000 different calls are retained in the index; old calls are purged automatically so you never have to worry about file maintenance.

Bob advises that PakTERM now is available from the American Digital Radio Society, P.O. Box 2550, Goldenrod, FL 32733-2550 (407-677-7000). Cost still is $30 plus $2.50 s/h.

Book Notes

Two from Tiare. Two interesting and timely

new Tiare Publications books crossed my desk recently. One is Richard H. Arland, K7YHA's *Low Power Communications, Volume 3—QRP Hardware.* In it the author takes a close look at equipment for QRP (low power) operations. He discusses new and used commercially manufactured transceivers, transceiver kits, QRP accessories, antenna adventures (and some misadventures), and buying and trading used equipment.

The new book is an attempt to bring together some loose ends which were not covered in the previous two volumes. It's also something of a reference guide to past and present gear, where the author's strong opinions regarding various rigs and manufacturers come through clearly. Appendices list QRP suppliers and manufacturers, QRP nets, and QRP organizations. The 101-page book is $14.95 plus $2 s/h.

(Vol. 3 is the third book in the series. It follows K7YHA's *Low Power Communications, Volume 1—Basic QRP*, a $14.95 introductory "how to" QRP book, which we discussed in September 1992; and the $19.95 *Low Power Communications, Volume 2—Advanced QRP Operating*, with eight chapters written by some of the top QRPers, which we highlighted in September 1994.)

A second new Tiare book is *BBS Radio: The National Directory of Radio Hobby Bulletin Board Services*, by Mike Witkowski. In it Mike lists in a simple computer-printout format several hundred BBSes that are partly or completely devoted to various aspects of the radio communications hobby, including BBSes of interest to radio amateurs, shortwave listeners (SWLs), and scanner buffs. The BBS listings show the board's name, area code, and telephone number. A location also is indicated for most listings, and Canadian BBSes are included in the directory. The book is $9.95.

For more information or a catalog, contact Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147 (1-800-420-0579).

Radio Adventure Newsletter. On several previous occasions we described the antenna and antenna accessory products offered by Jim Stevens, KK7C, of AntennasWest, most recently so in November 1994. The AntennasWest products emphasize casual, on-the-go, practical HF, VHF, and UHF antenna needs.

I have found the AntennasWest catalog always to be interesting. It's taken several forms over the years, including loose stacks of spec sheets on each antenna in the product line as well as a more conventional but entertainingly written catalog that was more than just a collection of product listings.

The latest AntennasWest catalog evolved further into the *Radio Adventure Newsletter for Radio Amateurs*, which, though heavily AntennasWest product oriented and including a thick AntennasWest centerfold, is nicely organized into features, reviews, specialized columns, and users group columns. Jim actively solicits for the newsletter user comments, articles, and idea exchanges on AntennasWest products. The users group columns also are intended to help users keep up to date with product improvements, modifications, and new applications.

Radio Adventure is published six times yearly. A one-year subscription is $9.95 from Radio Adventure Subscriptions, P.O. Box 50183, Provo, UT 84605 (1-800-926-7373). Individual copies are $2.

C. Crane Company Catalog Update. In the

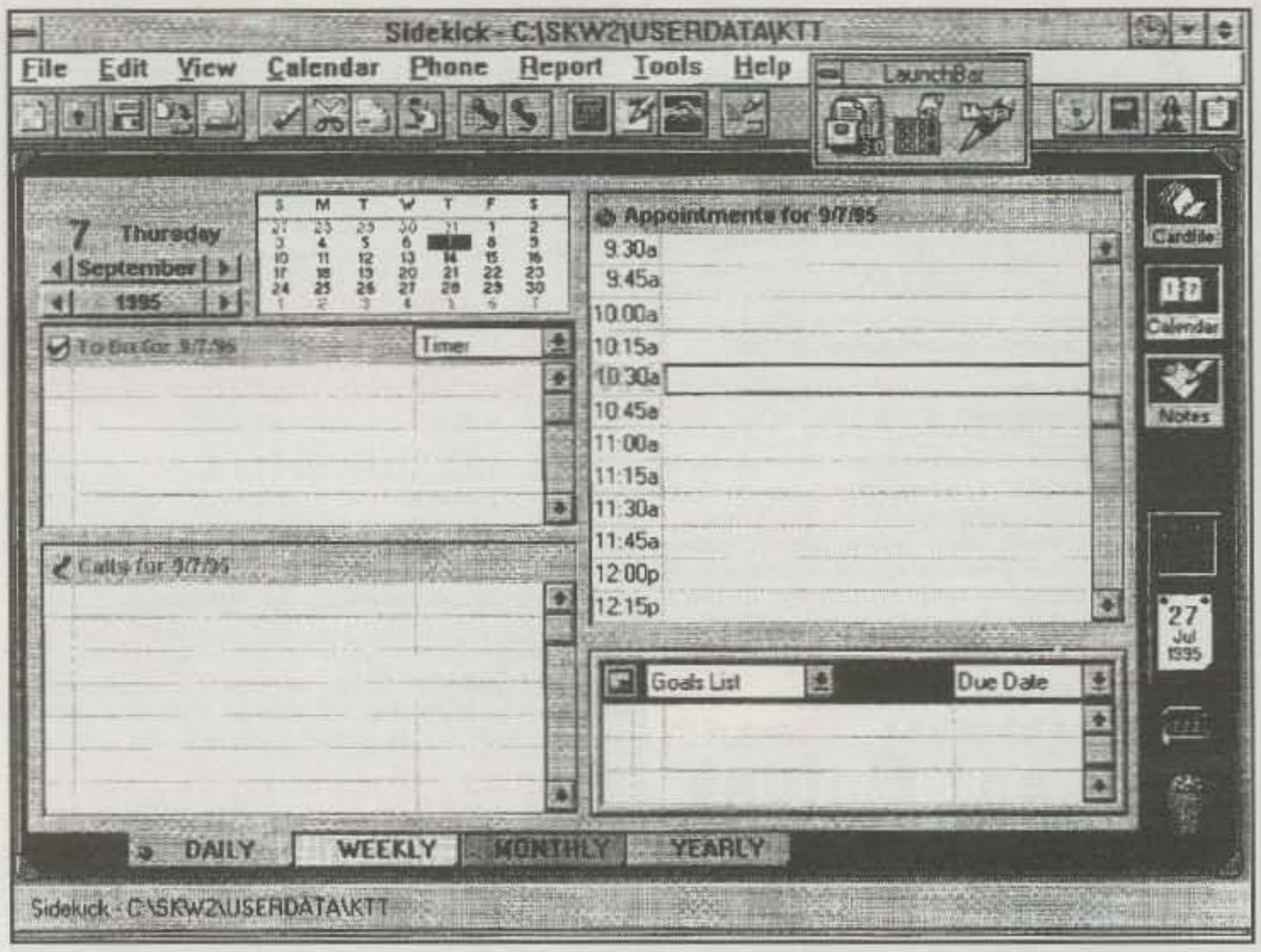

Fig. 2– Starfish Software's Sidekick for Windows is a sort of electronic day planner, a specialized personal information management (PIM). The program has three easy-to-use, intuitive modules that work together to give you everything you need to organize your names, addresses, and numbers quickly and efficiently; track contacts; manage important appointments, projects, meetings, dates; and use this information to be more productive.

June column we noted the C. Crane Co. "Communications Excitement" catalog which focused on radios and antennas especially for SWLs and scanner buffs. As we noted then, product listings include a wide variety of antennas and radios for AM, FM, and shortwave listening; scanners; portable and solar power packs; books; FAX machines; satellite dishes; and various accessories, including speakers, headphones, and radio shack "odds and ends."

The company's product line scope has been expanded considerably since we last looked, and the new catalog now is up to 79 pages. Free catalogs are available from C. Crane Co., 558 Tenth Street, Fortuna, CA 95540-2350 (1-800-522-8863).

We Get Letters

A Quick Acknowledgment. Once again, and chronically so, we're running out of space, so we'll have to wrap things up for this month very soon. But we would like to acknowledge some of the many folks who have written, FAXed, or e-mailed your columnist over the past several months. A tip of the hat to Taylor Davidson, N4TD; Mark Hoersten, N8VEA; W. Neville Newham, VK6VU; and Gabriele Villa, I2VGW. Thanks for the input, gang.

Short Bursts

Hams and SETI. Are you interested in *real* DX, the kind where distances are measured in light-years rather than in miles? That's the stuff of radio astronomy, a field that long has held the interest of radio amateurs. Radio astronomy is the study of celestial objects and phenomena by means of the radio waves they emit and absorb naturally. These radio waves are received by radiotelescopes, sensitive antennas, and receivers equipped with instruments to make observations at radio wavelengths.

The field of radio astronomy is little more than 60 years old, having its beginnings in 1931–1932; radio engineer Karl G. Jansky was an early pioneer. Beginning in 1937 and continuing into the 1940s, Grote Reber, W9GFZ, of Wheaton, Illinois built a backyard parabolic dish antenna to continue Jansky's work.

A closely related effort is that of SETI, the search for extraterrestrial intelligence, a quest that seeks to answer the age-old question, "Are we alone?" Indeed, the most pondered questions about the universe are those relating to life beyond our own earth. Foremost is the prospect that the life we seek is intelligent. No discovery could stir the imagination more than the revelation that we are *not* alone, and that beings potentially more advanced than we are share the universe. Such a finding could truly be the greatest discovery in human history.

Will you derive a practical benefit from SETI efforts? Realistically, you shouldn't count on a QSL for two-way communications anytime soon, because the light-years of separation between us and other civilizations are prohibitive. But consider what we on earth might learn from and about such civilizations if we're able to decode any signals received!

The federal government *used to* fund SETI research fairly well. As it turns out, with the massive cutbacks in the government, especially in the National Aeronautics and Space Administration (NASA), radio amateurs now may play a decisive role in SETI. The demise of the just-begun NASA High Resolution Microwave Survey (HRMS) in 1993 was almost fatal to American SETI. HRMS was to be NASA's long-term SETI effort, but in the fall of 1993 Congress eliminated the project's funding. Both HRMS components, the Targeted Search and the All Sky Survey, were axed. With NASA no longer involved, SETI researchers saw a greatly diminished chance to answer the questions posed by SETI.

The SETI League, the SETI Institute, the Planetary Society, and other nongovernmental organizations now are privatizing SETI. The Targeted Search HRMS component has become Project Phoenix under sponsorship of the SETI Institute; the Planetary Society is the main steward of the SERENDIP (Search for Extraterrestrial Radio Emissions from Nearby Developed Intelligent Populations) SETI project at the University of California at Berkeley; and the All Sky Survey will kick off in 1996 under The SETI League.

The SETI League plans to conduct a thorough survey of the entire sky in the so-called "water hole" microwave region; this region gets its name from the two fragments (H and OH) of the water molecule which have "radio signatures" in this band. The consensus is that the 18 to 21 centimeter region, or about 1.4 to 1.7 GHz, seems like the best range to use to listen for signals of extraterrestrial origin. The search is to be kicked off on Earth Day, April 20, 1996, and it will necessarily involve thousands of radio amateurs and other hobbyists.

The SETI League's All Sky Survey, which has been named "Project Argus," will involve the region 1420 to 1660 MHz, a bandwidth of 240 MHz. Monitoring it even at 10 Hz resolution, there are some 24 million channels to scan, a rather daunting prospect. Since the water hole is about 240 MHz wide, to cover the assigned

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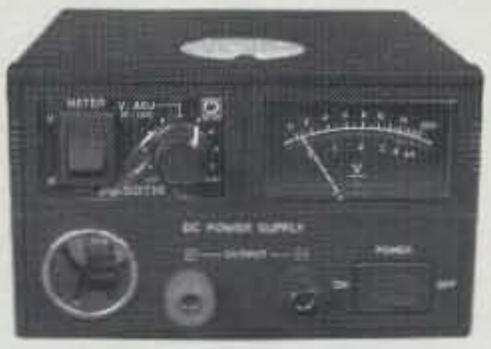

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Voltage (VDC)	3-15	13.8	1-15	1-15	13.8
Current (ICS)	12	14	30	40	5.2
Current (cont.)	9.2	12	24	32	4.2
Ripple(max.)	3mV	3mV	3mV	3mV	3mV
Regulation	1%	1%	1%	1%	2%
Cooling Fan	NO	NO	NO	YES	NO
Size(inch.)	5x4x9	5x4x9	7x6x9	11x5.5x9	6x3x9
Weight (lbs.)	11	11	18	22	6
Meter	YES	NO	YES	YES	YES

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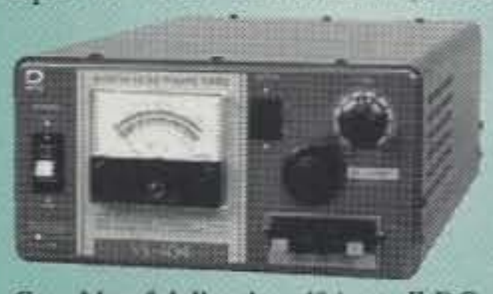

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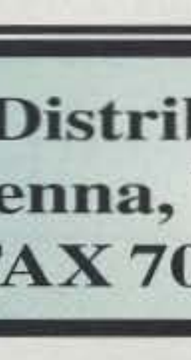

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swath of sky at all declinations, project participants would need to listen for some 2760 years! Of course, this isn't practical. But in the League's estimation, some 5520 coordinated experimenters could do the sky survey in just one year.

Importantly, an all sky survey makes no assumptions as to the direction to explore; it sweeps the *entire sky* that can be seen from a given location. No hard-to-come-by antenna tracking is required, since it's the sky, rather than individual stars, that's being surveyed. According to Dr. H. Paul Shuch, N6TX, Executive Director of the League, this approach is ideally suited to the community of radio amateurs and microwave experimenters.

What do you need in hardware and software to join in the search? First, you need a three to five meter parabolic reflector, similar to that used for TVRO or 23 cm moonbounce, plus a low-noise amplifier (LNA) covering 1.4 to 1.7 GHz. You also need a downconverter to shift this range to a suitable IF (intermediate frequency); IF amplifiers, filters, and a detector to derive audio; a digital signal processing (DSP) unit; spectrum analysis software; and a PC. All of this equipment is not exactly cheap, but it's roughly about the same cost as outfitting the typical OSCAR satellite station.

Some coordination of the project is needed, and this is where The SETI League comes into play. It plans to assign participating amateurs specific search declinations, and it will act as a clearinghouse for information and search results. For more information on the League and the project, contact The SETI League, P.O. Box 555, Little Ferry, NJ 07643 (1-800-TAU-SETI); e-mail at info@setileague.org. Earth Day, April 20, isn't far away!

Looking Back Five

Five Years Ago in Antennas and Accessories. Now you know what the column looks like in January 1996. But what were the topics of discussion in January 1991? This column was called "Open Forum," and with it we took a deep scoop into the mailbag.

We opened with reader commentary on a variety of antenna topics from Bill Hemmer, KE7QE; Gordon "Chad" Chadwick, KA7ZSI; William Squire; Tom Osborne, W7WHY; Jim Miller, KF4HK; Dick Genaille, W4UW; R. T. Carruthers, K7HDB; and Jeff Kadet, W3CRH. Other correspondents included L. B. Cebik, W4RNL; Mike Zane, K6URI; Don Shulkey, W1BLR; and Clarence A. Grimm.

We also took note in the January 1991 column of the AA1A Sidekick Antenna offered by Dave Riley of Broadcast Technical Services; ground rod connection parts from The RF Connection; Unadilla antenna parts offered by Antenna's, Etc.; the Ameritron RCS-4 Coax Switch; the MFJ-948 antenna tuner; and the Rupp Corp. PC-AT battery pack.

Software-wise, we highlighted CoCoPACT/CoPACT3 digital terminal programs for the Tandy TRS-80 Color Computer, by Monty J. Haley, WJ5W; the Aries-2, an integrating program for multimode terminal units and computer capable transceivers, from Ashton ITC; AMSAT satellite tracking software; the AEA Amiga AVT, an Amiga video terminal for SSTV and FAX; and the UltraVision 2.0 IBM PC utility from Personics Corporation.

If you find a topic we covered in this or a previous column to be of interest, please obtain the back issue directly from *CQ*'s New York office, rather than requesting the column from us. Most back issues are available from *CQ* for $3.50 postpaid. (*CQ* also offers a number of "back issues special" sets to help you complete your collection, plus other reasonably priced deals on back issues. Check their ad in this issue, or call them at 1-800-853-9797 to order the issues you need.)

Wrap-Up

That's all for this time, gang. Next time more Antennas and Accessories topics of current interest. See you then.

Overheard: A college professor, speaking to a colleague, said, "I see my son as a child of the universe. So far, there's no sign of intelligent life." (Fits in well with SETI, doesn't it?)

73, Karl, W8FX

BY DAVE INGRAM, K4TWJ

WORLD OF IDEAS

A LOOK AT THE WORLD AROUND US

Resurrection '96: Helping Amateur Radio Grow

What does amateur radio mean to you? Do you consider your WAS, WAZ, and DXCC certificates or awards from winning contests achievements to be proud of? Are you a manufacturer or importer of amateur radio equipment studying the future of this limited market? Will the good old days of amateur radio magically return as the sunspot count begins to rise? If any of these questions touched a sensitive spot, you are urged to read this column and move forward with its ideas to ensure a brighter future for all!

Most of us are aware that amateur radio's popularity in the U.S. is not expanding at a healthy rate, and its future growth (indeed, existence!) is becoming uncertain. This problem will not cure itself without our assistance, yet all of us—from old pro operators to new equipment manufacturers and importers—are still not considering it serious enough to be part of the solution. Do we honestly want to just sit by and watch the world's greatest hobby become extinct? Personally, I cannot accept a passe attitude or an "oh, that would not happen to us" answer to that question. Can you?

Unless we (that is, you and I) make amends—and soon—amateur radio in the strong old US of A is destined to dwindle to the point where it will be doing good to support a small handful of equipment manufacturers, only a couple of mini-magazines, and very few awards programs. And do not assume a better economic situation is not vital to amateur radio's existence in the US; it is the foundation of our future. There is power in numbers—power to stand tall above modern rivals and numbers to quadruple (at the least!) the amateur radio market for industry. Why should companies continue competing for the same small group of customers when they can get four times the customer base with the same (refocused) effort and expenditures? Growth—right now—is needed more than ever before!

Some Background Details

During the 1930s, '40s, '50s, '60s, and '70s amateur radio was a hot and thriving interest with few electronic-related challengers. Young people were fascinated by radio communications, and spare time for learning theory and Morse Code was much more abundant than it is in today's fast-paced/high-pressure world. Cellular telephones, home computers, and the Internet were unknown during that tender age.

Manufacturers and industry leaders such as Art Collins, Leo G. Meyerson, Bob Henry, etc., were also actively involved in amateur radio. They talked with fellow amateurs on a "ham-to-ham" level, inspired the hobby onward and upward, and sold gear like crazy.

The 1980s brought many changes, however. Spare time became more scarce than money. More sophisticated ("advanced") equipment hit the market, but the basic "what it is and how you use it" explanations for newcomers became miniscule. As the decade progressed, the home computer industry began growing while amateur radio struggled to "hold its own ground."

A small group of newer industry leaders recognized the importance of changing with the changing times. They realized amateur radio needed an updated and more attainable entry method, and they also foresaw the need and benefits of laying stepping stones so those newcomers could progress upward in amateur radio. Their efforts, combined with those of several influential amateur radio organizations, ultimately resulted in adoption of the Code Free and Tech Plus license classes. Were their endeavors worthwhile? You bet! Industry flourished, we all lived in harmony, and new amateurs even showed us how 10 meter SSB was "wide open" more than ever before realized! Unfortunately, kingpins shifted, and "onward and upward" plans faded into the sunset during the early 1990s. Simultaneously, cellular telephones, international charge card calling, home computers, and the Internet skyrocketed in popularity. Another generation also came of age at that time, one reared listening only to FM radio and assuming the AM band and shortwave spectrum were shorter range wastelands (unbelievable, but sadly true!).

The sunspot cycle hit bottom in 1995, leaving many (all!) Tech Plus licensees listening to a dead 10 meter band, with no stepping stones for attainable upgrading in place. If they wanted to progress, they strictly had to be devoted and overcome significant hurdles! Meanwhile, articles describing how to computer link on the Internet and the World Wide Web rather than how (or why!) to progress in amateur radio graced (?) our leading magazines. Folks seemingly overlooked facts such as using the Internet costs money—and that same money invested in amateur radio yields ten times the rewards. Considering the previous background facts, it is a miracle amateur radio is still holding together, and newcomers should be commended for staying in the game!

A Note To Newcomers

Amateur radio has over a hundred areas of special interest and enjoyment. Two meter FM and packet are only two of them, and a mere tip of the iceberg. There are also satellites (fourteen in operation right now), ham TV, low-band DXing (an absolute blast), contesting, QRP, Slow Scan TV, and much more. Why limit your fun? Even the European winner in a recent CW DX contest was a new licensee who barely knew Morse Code. That's right; he used a multimode TNC and home computer for reading and sending code (at high speed, no less) and for instant logging. Some newcomers are also having a ball using small QRP rigs to contact neighborhood friends.

Now what about you? Drop me a note (and SASE) telling about your ventures and interests, and I will try to include them in the future.

Where We Stand Today

Over 90 percent of today's amateurs (newcomers and old pros alike) presently own at least one new or like-new VHF FM transceiver. Assuming they will continue tossing those units aside to purchase similar style newer units is frivolous optimism. The same logic holds true for 6 meters and 70 cm. Newer amateurs must have a way to experience the fun of operating a variety of low bands on SSB or CW—their choice—any time in a sunspot cycle (a cycle, incidentally, is eleven years from peak to peak). Late 1995 to mid-1996 is the bottom of our present cycle. Hopefully, conditions slowly will start improving by late 1996. Who/what groups stand to benefit most from helping newer amateurs? The same ones doing nothing to help them today. Leave it to "the other folks" to handle this, and they will shift them over to the Internet—or become the industry's new role-model leader.

The Old Pro's Position

The vast majority of seasoned amateurs (those who have been through at least two full sunspot cycles) openly state we need more new amateurs, and relaxed licensing requirements seem the logical answer. Unfortunately, this same group has contributed far more than their share to amateur radio in the past, and now feel others should "run with the ball"—and they are right. A minority group of seasoned amateurs feel our sacred standards should never be relaxed, even if it means total extinction (yes, I know, and the *Titanic* was also unsinkable). Unfortunately, the latter group telephones and writes to the ARRL, the FCC, their congressmen, and every other known outlet voicing their opinion when anyone rocks the boat on licensing and privilege restructuring.

The ARRL and The FCC's Position

Directions and decisions of amateur radio's prime guiding body, the ARRL, are directly influenced by membership-elected Section Managers in each state and a Board of Directors in 15 combined divisions. Section Managers report input from their respective geographic areas to their related Directors, who in turn relay the information to ARRL headquarters (guess which groups in the field yell the loudest to their Section Managers?). Input from industry-affiliated marketing managers also influences the ARRL's direction. However, those affiliates usually walk softly around the

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A Note To Old Pros

A consistent influx of newcomers is necessary to keep any area of pursuit exciting and growing, and that fact is especially true in amateur radio. Elmering plays a major role here. Newcomers are joining a game that we old pros took for granted as it became more complex each year. New amateurs may not have much interest in CW, but that does not infringe on our proficiency or enjoyment of the mode. It simply is more inspiration to be good role models for them. Every newcomer who voluntarily prefers CW should be the ultimate compliment to his/her Elmer!

League to retain all possible favoritism and endorsements.

Like most federal agencies, the FCC has downsized and delegated all the responsibilities they could to related communications facilities. Licensing, for example, has been placed on the ARRL's shoulders—and then delegated on to authorized Volunteer Examiner groups in various geographical areas. Deviations in this diversified testing system are quite noticeable, as passing an upgrade test in some areas of the country is next to impossible. Don't tell me this isn't factual. I've seen it with my own eyes and heard it with my own ears while visiting hamfests across the land. How long has it been since you silently observed test sessions?

Industry's Position

Amateur radio's equipment manufacturers, importers, and magazine publishers are in a position to realize the results of hobby growth where it impacts most—right in the old wallet. Conscientious and intelligently planned actions of industry kingpins also directly influence the ARRL, the FCC, and the overall amateur population. Indeed, industry is situated in a position to influence amateur radio's future more than any other group. Someone within the industry will soon break the present "follow the follower" game, become a noted leader, and capture the market while becoming a modern radio hero. Some others will continue to free-ride on previously laid groundwork. Why continue picking from the same old row of turnips rather than planting seeds for more turnips? Ah . . . but the challenge comes when budgets are being tightened (again), right? Well, continue in your proven safe direction a while longer, and eventually you will not have a budget to worry about.

The New Amateur's Position

Too many newcomers assume 2 meters and 70 cm are the only hot attractions of amateur radio. They also visualize operating the mysterious low bands of 160 through 10 meters as complex, offering little of interest and requiring super-expensive equipment. And who has actually taken them under their wing and explained differently, rather than just shoving license-upgrading materials in their faces? Most of us old pros are having such a ball on the air that we cannot pull ourselves away long enough to explain the totally captivating world of HF to newer amateurs. Even our leading magazines and equipment companies are falling short here (with the exception of "The

Ham Companion" part of *QST* and RadCom's *DI-Y* mini-magazine). Once again I will offer to start the ball rolling by including topics guided by your requests in this column. So what piques your curiosity? How the HF bands work? How signals skip long distances? Which band is "open" when? QRP? Invisible or hidden antennas? How to set up a station for 500, 1000, or "x" bucks? Miniature rigs for around town fun? Talk to me! That invitation could cause a flurry of mail, so remember to include a self-addressed stamped envelope and be patient for personal (and brief!) replies. Better yet, just continue watching/reading this "World of Ideas" column until your requested area is featured—possibly with your notes and photos!

Ideas For Future Progression

The main focus of this column is highlighting a "world of ideas" to enhance amateur radio's appeal and enjoyment, so let's apply that theory to inspiring enthusiasm for HF hamming. I will share a couple of ideas to kindle your creative thinking along these lines.

Newcomers need a friendly means of investigating the world of HF right in their own homes, with their own radios, and at their own available time. Combine that thought with less stringent licensing requirements plus greater public awareness, and amateur radio can once again flourish in the US. Seriously pursued, this idea could become reality before the end of 1996.

Weekend QSO parties are always a treat, so visualize a new one we will call "Novice/Tech Days." Novices and Techs call "CQ N/T Days" on CW in their allocated 80, 40, or 15 meter band segments (maybe we could even add temporary authorization for 20 meters). General through Extra Class operators answer their CQs on SSB (in slightly higher SSB band segments). After establishing contact, the upper class licensee invites the Novice/Tech onto his/her frequency for a two-way SSB QSO. This "Elmering concept" continues as long as both parties can stay in contact with each other. However, the newcomer can call additional SSB CQs and even work some rare DX on SSB while under the watchful/guiding eye (ear?) of his/her on-air Elmer. Assuming both Elmer and student are sharp operators, they can even chase some good long-path openings together, and tell each other when to call in pileups. Tack some cups, jackets, and T-shirt awards onto that party, promote it worldwide, and it can be amateur radio's hottest informal activity. Now let's talk about license upgrading.

First, let's recognize that passing a 13 word per minute Morse Code test is more challenging than passing a complex theory exam (which is no picnic in itself). If that was not a true fact, more Tech Plus licensees would be Generals or higher licensees now. Passing a 13 wpm code test is the only difference between Tech Plus and General, so what's the problem? There is a significant learning block between 9 and 12 wpm (the "impassable plateau"), and this brick wall stops over 60 percent of today's Tech Plus operators from upgrading. Lowering the code requirement to 7½ wpm alone would allow up to 50 percent of them to upgrade. Incorporating less complex theory requirements would encourage 15 to 20 percent more Tech Plus licensees to go for General license status. Now like many old pros, I am a dedicated high-speed CW enthusiast (both hands, every waking minute, with both bugs and paddles!), but also like many old pros, I do not feel my personal ideals should be imposed on others. Amateur radio is suppose to be a hobby! Even with its licensing criteria lowered to mate with modern times, it is still head and shoulders above any and all electronic rivals!

So how can such ideas for survival and growth be actively pursued? There are industry meetings and ARRL forums at all major (and many minor) hamfests.

That's the story for this month, gang, and I trust you are open-minded enough to realize my ideas are intended only to help amateur radio. No one is more devoted to amateur radio than I—*no one*. Otherwise, plans to ensure its health and future would have been instigated (or at least voiced!) long ago.

73, Dave, K4TWJ

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Sangean ATS803A-U portable shortwave w/AC adapter – 9 memory	$129.95
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CIRCLE 159 ON READER SERVICE CARD

BY BUCK ROGERS, K4ABT

PACKET USER'S NOTEBOOK

CONNECTING YOU AND PACKET RADIO IN THE REAL WORLD

ZIPCODE ZIPNODE

For several months now I've covered node features and applications that are not explained in critical detail in the X-1J4 documentation. These sometimes are hidden qualities that might enable a system node operator (SNO) to enhance our use of the X-1J4 network node by calling to task an application for one of the features. This month's application is directed to the system node operators (SNO) who support personal mailboxes for use by area users or full-service BBSes on the same frequency. This also applies to a node in APRS service when a TNC2 is being employed as a digipeater. As a matter of fact, if you are using a perfectly good TNC2 or clone in APRS service on a mountaintop, then by all means replace the TNC2 (or clone) EPROM with a more useful X-1J4 network node EPROM.

Although this month's column is not about APRS use of the X-1J4 node, if you are interested in the APRS network on 145.790 MHz, then read the December 1995 "Packet User's Notebook" for a full explanation of the X-1J4 use in APRS applications.

A passing note: The AEA PK-96 can also be made into an X-1J4 node using a special version of the X-1J4 node code. Once the PKX-1J4 EPROM (available from AEA) is installed, the PK-96 can be configured to perform in either the 1200 or 9600 baud environment.

A brief review of the parameters may be necessary. Once you have the TNC2 clone or the PK-96 outfitted with the X-1J4 EPROM, the next step is to configure the parameters and mode settings similar to the following:

```
P 50 19 70 254 4 3 2000 16 180 2 3 180 4 4
    600 64 10 4 4 10 60 0 1 0 1 1

MO 0 0 6 3 0 40 0 600 0 3600 1 27 0 1 1 0 0
```

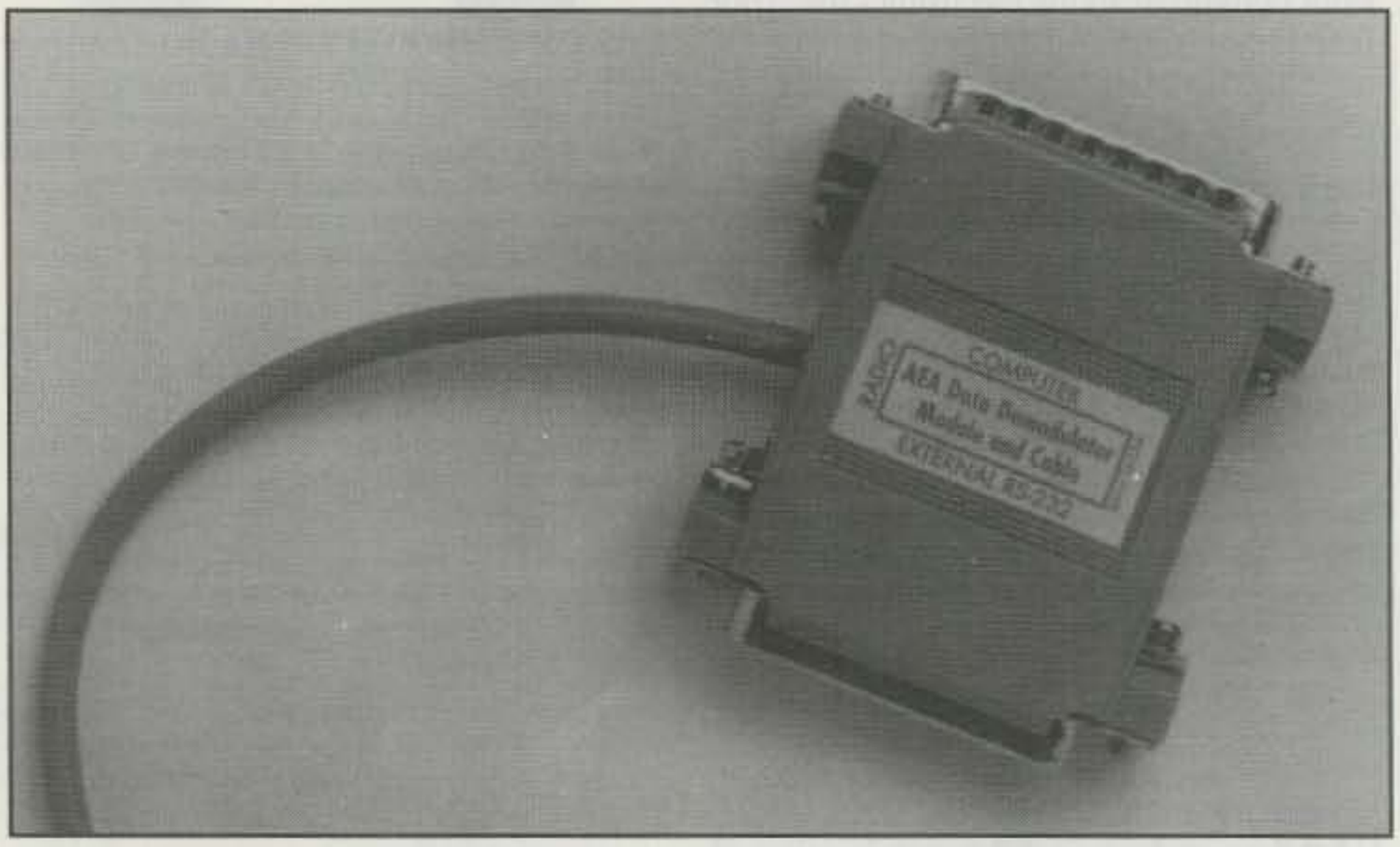
Next set the HOSTAlias to WIDE, and turn the HOST feature OFF by setting the HOST command to minus.

BBSA:

No, this is not a new acronym. It is just an explanation of one of the many features contained within theNet X-1J4 node code. In this month's column I will explain how to put more of the features to use. Dave Roberts, G8KBB, did us many favors when he rewrote theNet code and added extra features that are explained in this column.

The BBSALIAS (BBSA is sufficient for command entry) is how we enable the X-1J4 to access a granted mailbox or a full-service BBS without first connecting to the node. The personal mailbox call or BBS callsign must be accessible from the node we are configuring. In this case we are not attempting to digipeat via the node. We are going to connect to a mailbox that we know has connectivity from a known node.

211 Luenburg Drive, Evington, VA 24550



The AEA ACARS data demodulator module and cable.

And How?

As SNO of our node we first connect to the X-1J4 node and enter the sysop command mode. We then enable the BBS feature by sending the following node:

BBS<space> **+** (plus sign)

Next we send the node the callsign of the mailbox or BBS that is to be accessed from the node. We add the mailbox or BBS callsign by sending the X-1J4 node the information in the following format:

BBS<space>(**BBSCALL**)

The last of the three inputs we must send to theNet X-1J4 node is the **BBSA**lias. It is entered in this manner:

BBSA<space>(**BBSALIAS**)

Next I've provided an example of how I set up node "77" to respond to a connect intended for my personal mailbox (PBBS) at Evington, Virginia. I connect to node "77" and enter the SNO command mode by sending the SYsop or MAnager command and responding with the correct password entry.

After sending the SNO password of node "77" I will not receive a response. If the node is satisfied that I've sent the correct password, I send the following three entries to node "77":

BBS +
BBS K4ABT-1
BBSA 24550

The reason I use "24550" as the BBSAlias is because this is the postal code for Evington, Virginia. It makes sense to use this code, as it also identifies or establishes an area of coverage for the mailbox.

In the SEDAN we are configuring many of the nodes to support the area postal code that is attached to the SNO's address or place of residence. This makes it possible for network users to reach an area where a friend or local user resides and leave a message without having to know his or her mailbox, PBBS, or BBS callsign.

As the SEDAN SNOs add their postal "zip" code to the node, I will be updating the map with the postal codes shown on the SEDAN map (see fig. 1). In this way the user need only look at the map to locate the nearest mailbox where mail can be left for an area station. This will provide even greater access information for the SEDAN user.

It is important to remember that no direct connect is made to the node that supports the routing (BBSAlias) to the mailbox or BBS. What is required is a "connect" from a user station near the node that accesses the area mailbox. The node that is a neighbor to the mailbox or PBBS hears the connect attempt from the area user and the rest is automatic.

As an added note for the X-1J4 SNO, the BBSAlias may also be used to digipeat via if you have parameter 23 set ON. If parameter 24 is OFF there could be a problem, however. In response to those looking at callsign/SSID issues, the node sends a callsign when the connect occurs, and the response contains the call of both the node and the host mailbox or BBS. I must clarify this statement as follows: "Provided the sysop has the installed proper callsign."

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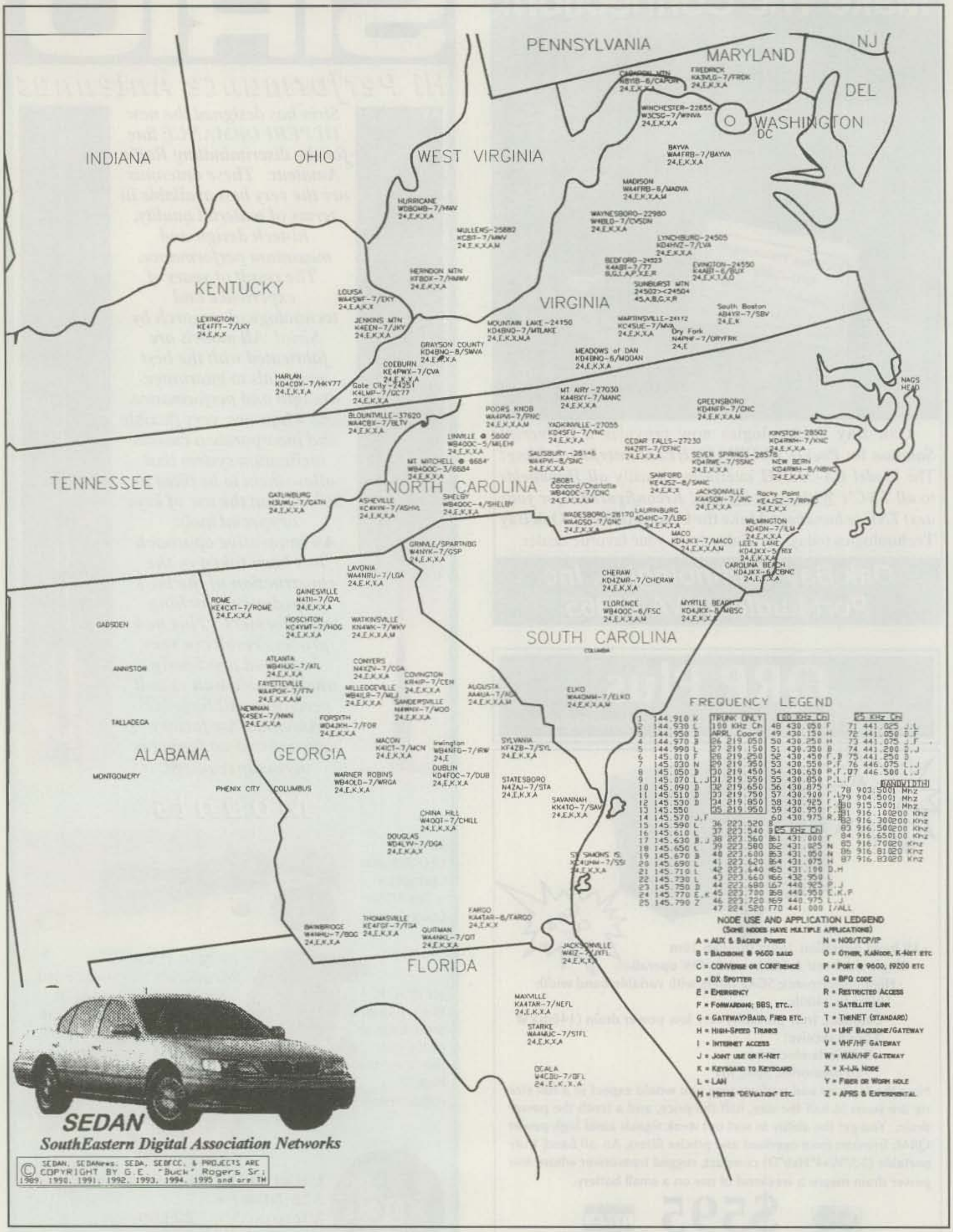


FREQUENCY LEGEND

			TRUNK ONLY	60 KHz Ch		25 KHz Ch	
1	144.910	K	100 KHz Ch	48	430.050	F	71 441.025 J,L
2	144.930	L	APRL Coord	49	430.150	H	72 441.050 D,F
3	144.950	D	26 219.050	50	430.250	H	73 441.075 J,F
4	144.970	B	27 219.150	51	430.350	B	74 441.200 B,J
5	144.990	L	28 219.250	52	430.450	F,B	75 441.250 B
6	145.010	F	29 219.350	53	430.550	P,F	76 446.075 L,J
7	145.030	N	30 219.450	54	430.650	P,F,D	77 446.500 L,J
8	145.050	B	31 219.550	55	430.850	P,L,F	
9	145.070	L,J	32 219.650	56	430.875	F	78 903.5001 Mhz
10	145.090	D	33 219.750	57	430.900	F,L	79 904.5001 Mhz
11	145.510	D	34 219.850	58	430.925	F,B	80 915.5001 Mhz
12	145.530	D	35 219.950	59	430.950	F,B	81 916.100200 Khz
13	145.550			60	430.975	R,F	82 916.300200 Khz
14	145.570	J,F					83 916.500200 Khz
15	145.590	L	36 223.520	25 KHz Ch			84 916.6501.00 Khz
16	145.610	L	37 223.540				85 916.70020 Khz
17	145.630	B,J	38 223.560	861	431.000	F	86 916.81020 Khz
18	145.650	L	39 223.580	862	431.025	N	87 916.83020 Khz
19	145.670	B	40 223.600	863	431.050	N	
20	145.690	L	41 223.620	864	431.075	H	
21	145.710	L	42 223.640	465	431.100	D,H	
22	145.730	L	43 223.660	866	432.950	L	
23	145.750	D	44 223.680	467	440.925	P,J	
24	145.770	E,K	45 223.700	868	440.950	E,K,P	
25	145.790	Z	46 223.720	869	440.975	L,J	
			47 224.520	870	441.000	I/ALL	

NODE USE AND APPLICATION LEDGEND

(SOME NODES HAVE MULTIPLE APPLICATIONS)

- A = AUX. & BACKUP POWER
- B = BACKBONE @ 9600 BAUD
- C = CONVERSE OR CONFERENCE
- D = DX SPOTTER
- E = EMERGENCY
- F = FORWARDING; BBS, ETC..
- G = GATEWAY>BAUD, FREQ ETC.
- H = HIGH-SPEED TRUNKS
- I = INTERNET ACCESS
- J = JOINT USE OR K-NET
- K = KEYBOARD TO KEYBOARD
- L = LAN
- M = METER "DEVIATION" ETC.
- N = NOS/TCP/IP
- O = OTHER, KaNode, K-Net ETC
- P = PORT @ 9600, 19200 ETC
- Q = BPQ CODE
- R = RESTRICTED ACCESS
- S = SATELLITE LINK
- T = TheNET (STANDARD)
- U = UHF BACKBONE/GATEWAY
- V = VHF/HF GATEWAY
- W = WAN/HF GATEWAY
- X = X-IJ4 NODE
- Y = FIBER OR WORM HOLE
- Z = APRS & EXPERIMENTAL

SEDAN

SouthEastern Digital Association Networks

Fig. 1– The SouthEastern Digital Association Network map. Note the addition of "zipcodes" attached to some nodes in Virginia, West Virginia, and North Carolina. This technique will enable easy access to area users and better defining of user access to local area mailboxes. As more SNOs add the zipcodes to their nodes, this map will be updated to reflect the changes.

For the full-service BBS SNO who supports a full-service BBS, this same technique may be applied to the node that will enable access to a neighboring BBS. The implementation is the same, except the area name or club acronym (up to six letters/characters) may be substituted for the postal code.

In Retrospect

Last month I mentioned the possible loss of our HF WEFAX stations. Not long after I wrote that column I received a flyer from John Hoot of Software Systems Consulting (SSC). It covered some of the same concerns that I expressed in the December 1995 article.

John has devised a method for us to maintain reception of WeFAX by building and distributing a VHF alternative to the HF WeFAX system. The system that SSC offers has all the necessary devices, receivers, and software to put us into the WeFAX reception mode. Since some of us already have VHF receivers that cover 137.5 MHz, he has divided the system into modules so we may purchase only the required device or software. John (SSC) has several other systems that are of interest to the digital amateur. The new SSC frame-grabber is a nice addition to the slow-scan operator's ham shack. If you are not into slow-scan television already, John has that, too.

I've viewed some of these satellite photos, and I can attest that a "clear" difference is seen between the VHF satellite WeFAX reception and the noisy photos from the HF ground stations. I'll have lots more to say about this feature-packed system soon in an upcoming column during 1996.

Aircraft Digital Communication On Your Screen

AEA has recently introduced the AEA ACARS package for receiving aircraft digital communications. AEA ACARS is a package containing a small demodulator cable (see photo) and DOS computer software that when attached to a scanner or receiver lets you decode the digital communication taking place between ground stations and aircraft.

ACARS is an acronym for Aircraft Communications Addressing and Reporting System. ACARS is a digital data link system designed to enhance air-ground-air communications. As aircraft fly they continuously transmit information, and AEA ACARS gives you the ability to monitor this air-to-ground communication. If you are near a major airport, you can even monitor both air-to-ground and ground-to-air digital communications.

The ACARS frequencies carry a lot of traffic between aircraft and ground stations. The ACARS transmission information varies widely. It can range from simple arrival/departure reports, to lengthy aircraft computer downlinks of navigation, engine, and performance data, plus much more. All you need is AEA ACARS, a VHF receiver or scanner capable of covering 129-132 MHz AM, and an IBM-compatible (386 or better) computer.

There are three versions of AEA ACARS:

1. The entire AEA ACARS package. This includes the demodulator, software, and detailed manual.

2. The AEA FAX ACARS Upgrade. The demodulator used for AEA FAX (I, II, and III) is the same as ACARS, so AEA FAX owners can get the software-only version of AEA ACARS to use with their current demodulator.

3. The AEA ACARS 900 package. AEA PK-900 owners already have the hardware built into their data controllers. All they need is this special software-only version of ACARS designed to work with the PK-900.

AEA ACARS is available from your favorite amateur radio equipment dealers. For more information on AEA ACARS, call AEA's Literature request line at 800-432-8873 or FAX requests to 206-775-2340. Advanced Electronic Applications, Inc, P.O. Box C2160, Lynnwood, WA 98036.

Happy Packeting!

BucK4ABT @ WA4RTS.VA.USA

BY DOUG DeMAW, W1FB

DOUG'S DESK

CONSTRUCTION PROJECTS, TECHNIQUES, AND THEORY

Build A 25 Watt QRP Booster

Having been a QRP enthusiast and operator for some 35 years, I fully appreciate and endorse the 5 watt maximum output power rule that separates the QRP purist from his or her QRO counterpart. In fact, for many years I limited my output power on 20 and 40 meter CW to 2 watts, and I was able to enjoy worldwide QSOs most of the time. However, there are occasions when 5 watts is not sufficient for maintaining a "solid" QSO. This is especially true when band conditions are substandard, and/or when QRN is a problem. At such times it is convenient to add "shoes" to one's QRP transmitter in order to make the copy less difficult at the other end of the circuit. The 6.1 dB signal increase from 5 watts to 25 watts can provide a marked improvement when the going is rough.

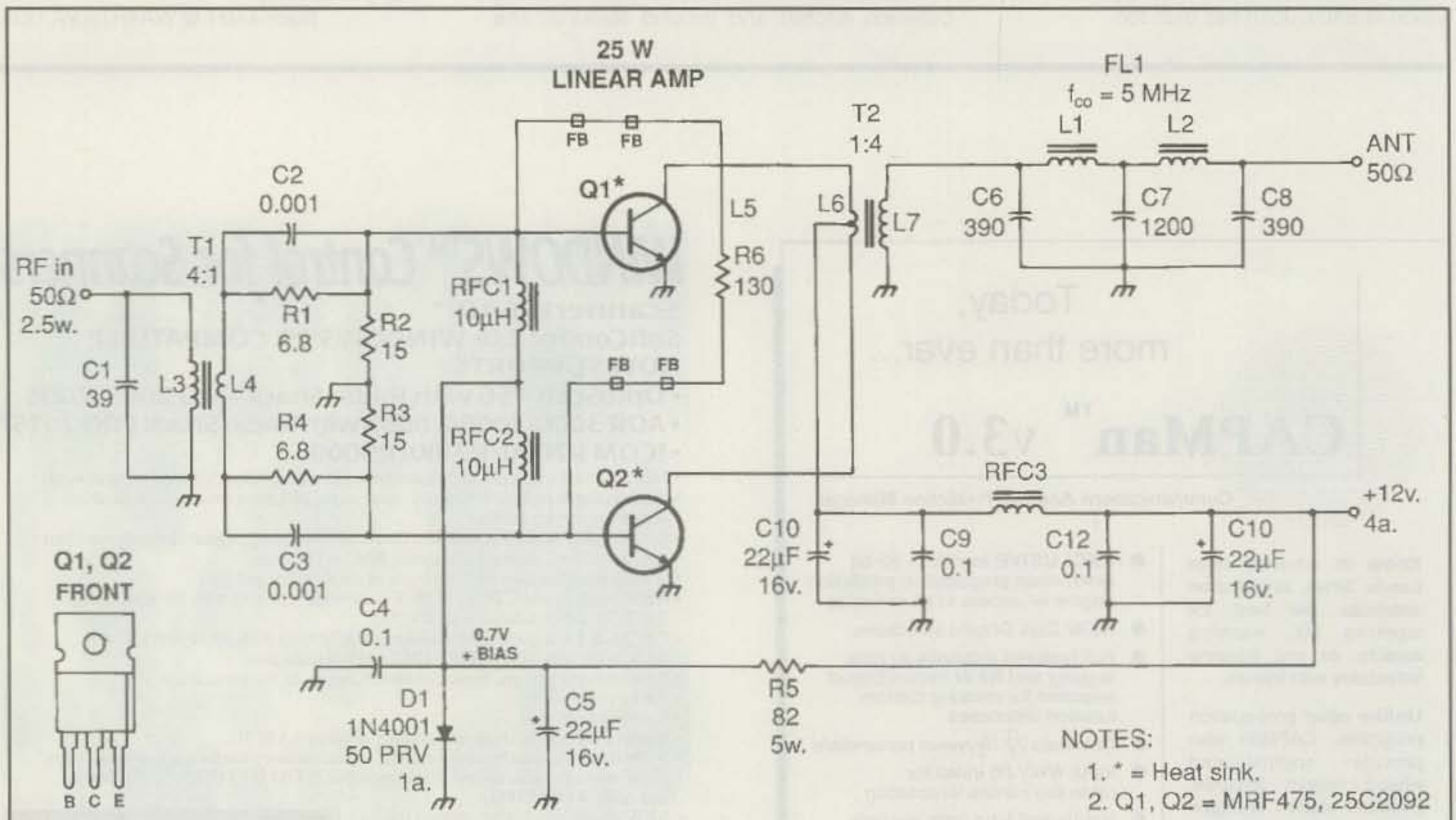
P.O. Box 250, Luther, MI 49656

In this article I will describe a 25 watt linear amplifier that can be driven to full output with 2.5 watts of power. Since the amplifier is linear, you may use it for CW or SSB operation. It is suitable also for use with homemade or commercial QRP transmitters. The circuit may be utilized as a driver for a high-power solid-state RF amplifier, should you choose to use it in that manner.

Circuit Information

There is nothing unique about the circuit in fig. 1. It is based in part on a design found in Motorola application note AN-779. Q1 and Q2 are Motorola MRF475 devices in the application note. I used 2SC2092s in my version, since they are inexpensive and have slightly more gain than the MRF475s.

This broadband amplifier is suitable for use from 1.8 through 30 MHz. The only component values that must be changed for operation on any given HF band are those in the harmonic filter, FL1 (Table I). The diagram shows a 5-element filter which offers marginal harmonic suppression, but FL1 is entirely adequate when the circuit is used as a driver. A 7-element filter is my recommendation for direct operation into an antenna. L and C values for 5- and 7-element low-pass 50 ohm filters may be obtained from the filter tables in *The ARRL*



C6, C7, C8—Dipped silver mica or polystyrene capacitors.
D1—1-A, 50 or 100 PRV rectifier diode.
FB—Miniature 850 μ_i Amidon No. FB-43-301 ferrite bead over a short length of No. 24 wire.
L1, L2—Toroidal inductor, 2.86 µH. Use 24 turns of No. 26 enam. wire on an Amidon T50-2 powdered-iron core (see Table I).
Q1, Q2—Motorola MRF475, 2SC2092, or equivalent NPN RF device.
R5—82 ohm, 5 watt resistor.
RFC1, RFC2—Miniature 10 µH RF choke (Mouser Electronics).
RFC3—8 turns of No. 24 enam. wire on an Amidon FT-37-43 toroid core.
T1—4:1 Z ratio broadband transformer. L3 has 6 turns of No. 24 enam. wire through an Amidon BN-43-2402 balun core. L4 has 3 turns of No. 24 enam. wire. An FT-50-43 toroid may be substituted for the BN-43-2402 core.
T2—4:1 Z ratio broadband transformer. L5 (see text) is a one-turn loop inside an Amidon BN-43-7051 balun core. L6 has 3 turns of No. 22 enam. wire. L7 has 6 turns of No. 24 enam. wire.

Fig. 1– Schematic diagram of the 25 watt linear amplifier. Decimal value capacitors are in µF. Others are in pF. Polarized capacitors are electrolytic or tantalum, 16 volts or greater. Resistors other than R5 are 1/4 watt carbon-composition or carbon-film units.

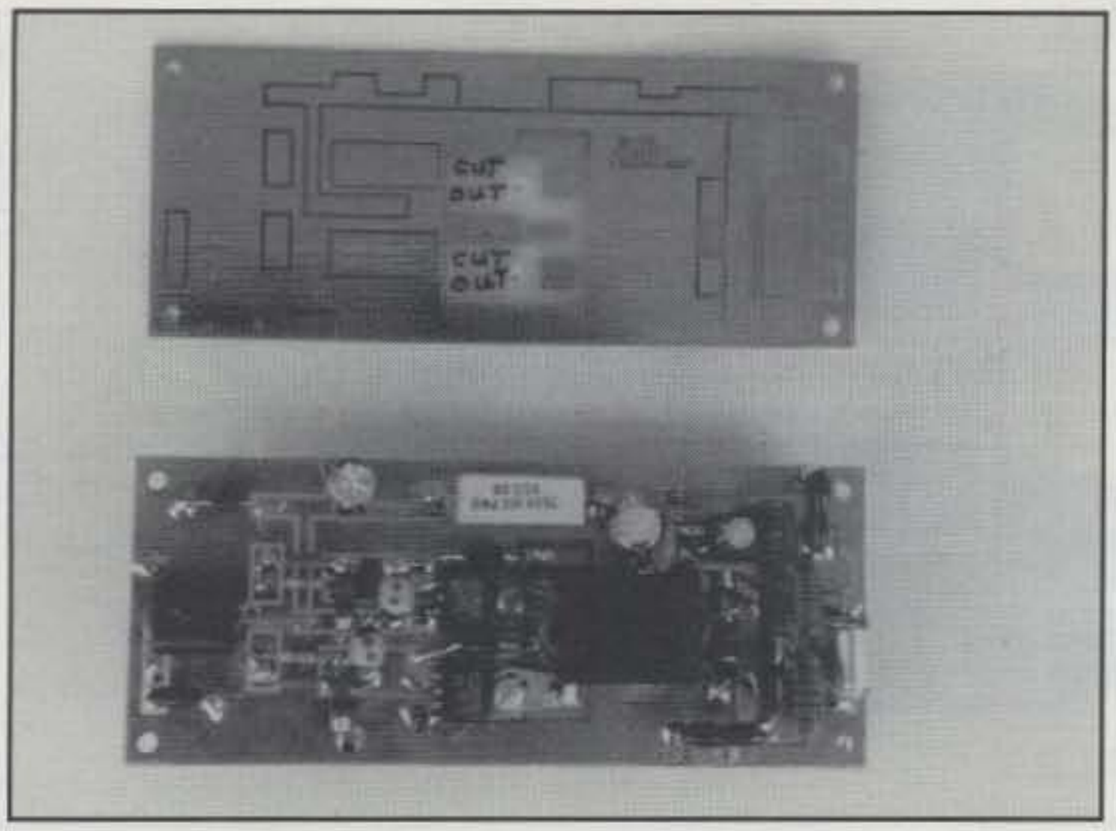


Fig. 2– Photograph of the etched PC board (top) before the parts are mounted on the foil side. The lower part of the picture shows the assembled amplifier. Cutouts are required for Q1 and Q2 to facilitate coupling them to the heat sinks atop the PC board.

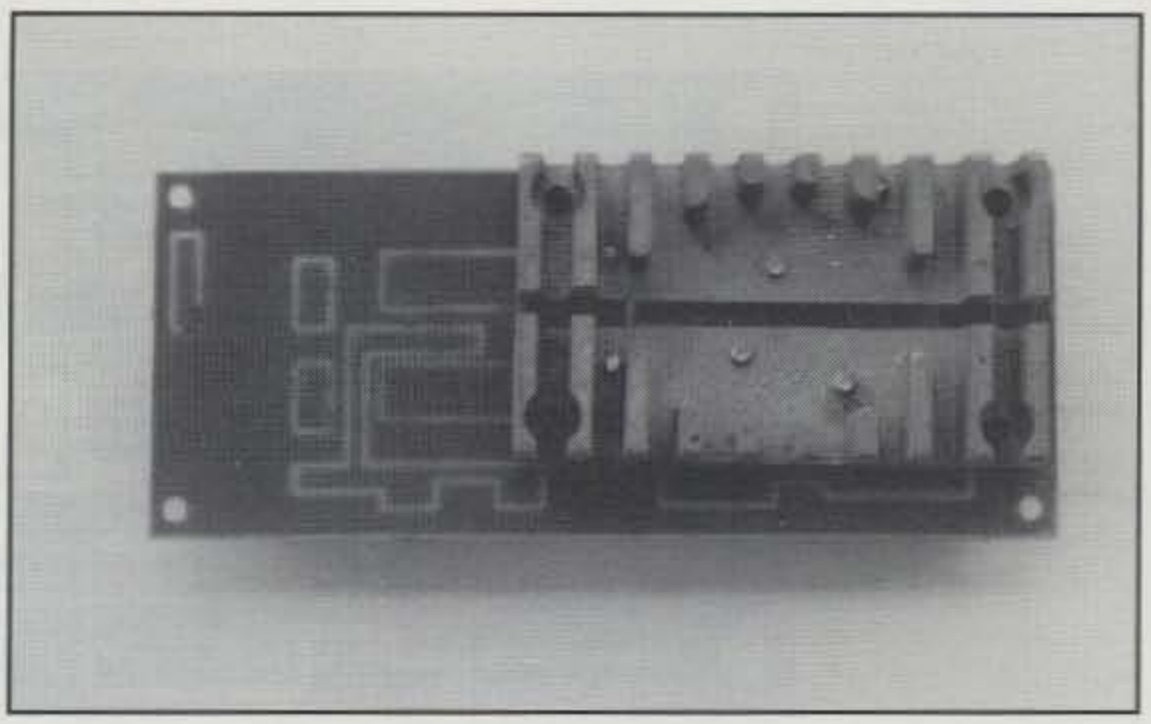


Fig. 3– Photograph of the top side of the amplifier PC board showing the heat sinks. A single heavy-duty, extruded heat sink has been cut in half to provide individual sinks for Q1 and Q2 of fig. 1. The heat sinks and their mounting screws must be isolated from circuit ground (see text).

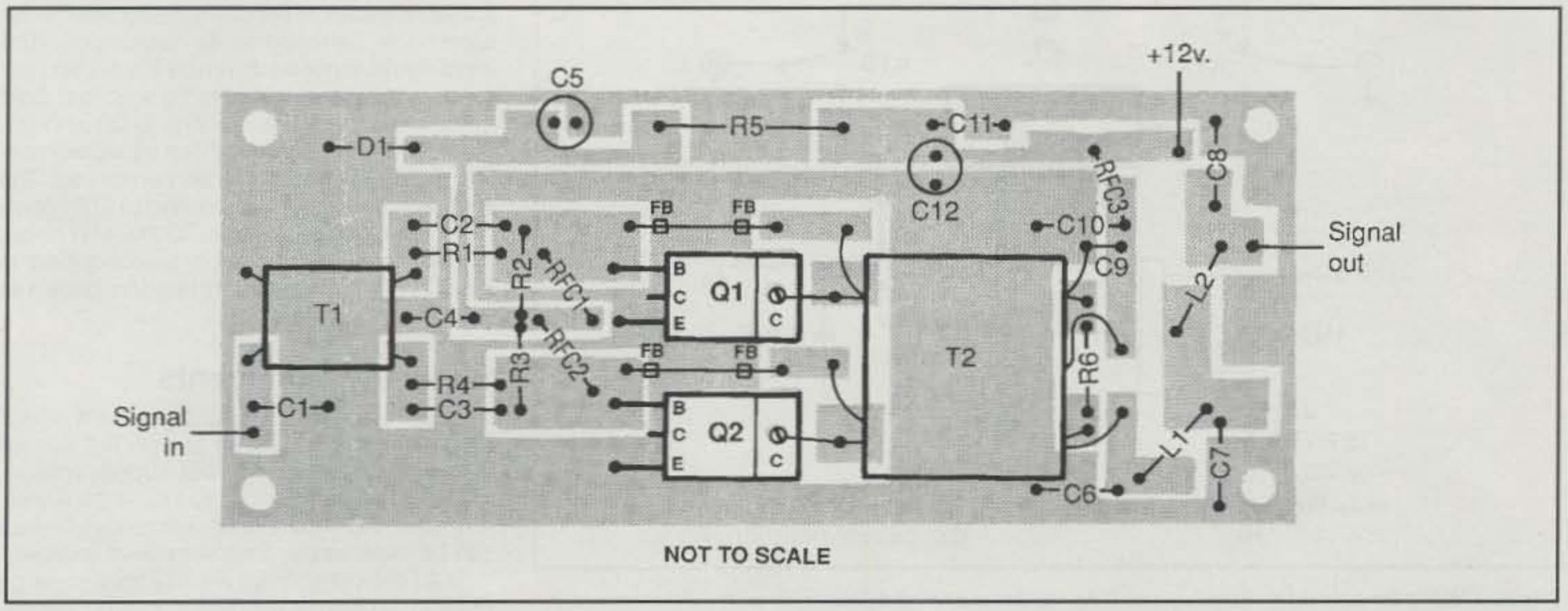


Fig. 4– Expanded view (not to scale) of the parts placement on the etched-foil side of the amplifier PC board.

Band (m)	C6, C8 (pF)	C7 (pF)	L1, L2 (µH)/Winding Data)
160	820	2500	5.36 uH, 33 turns No. 26 enam. wire on a T50-2 toroid.
75/80	390	1200	2.86 uH, 24 turns No. 26 enam. wire on a T50-2 toroid.
40	270	820	1.72 uH, 19 turns No. 22 enam. wire on a T50-2 toroid.
30	180	560	1.15 uH, 16 turns No. 22 enam. wire on a T50-6 toroid.
20	130	400	0.83 uH, 14 turns No. 22 enam. wire on a T50-6 toroid.
17	100	300	0.65 uH, 12 turns No. 22 enam. wire on a T50-6 toroid.
15	82	270	0.56 uH, 11 turns No. 22 enam. wire on a T50-6 toroid.
12	75	240	0.49 uH, 10 turns No. 22 enam. wire on a T50-6 toroid.
10	56	180	0.37 uH, 9 turns No. 22 enam. wire on a T50-6 toroid.

Table I– These 50 ohm, 5-element low-pass filters are for use in the fig. 1 circuit. Filter constants are derived for a Butterworth response. Capacitance values listed are the nearest standard ones to the calculated values, within 10 percent.

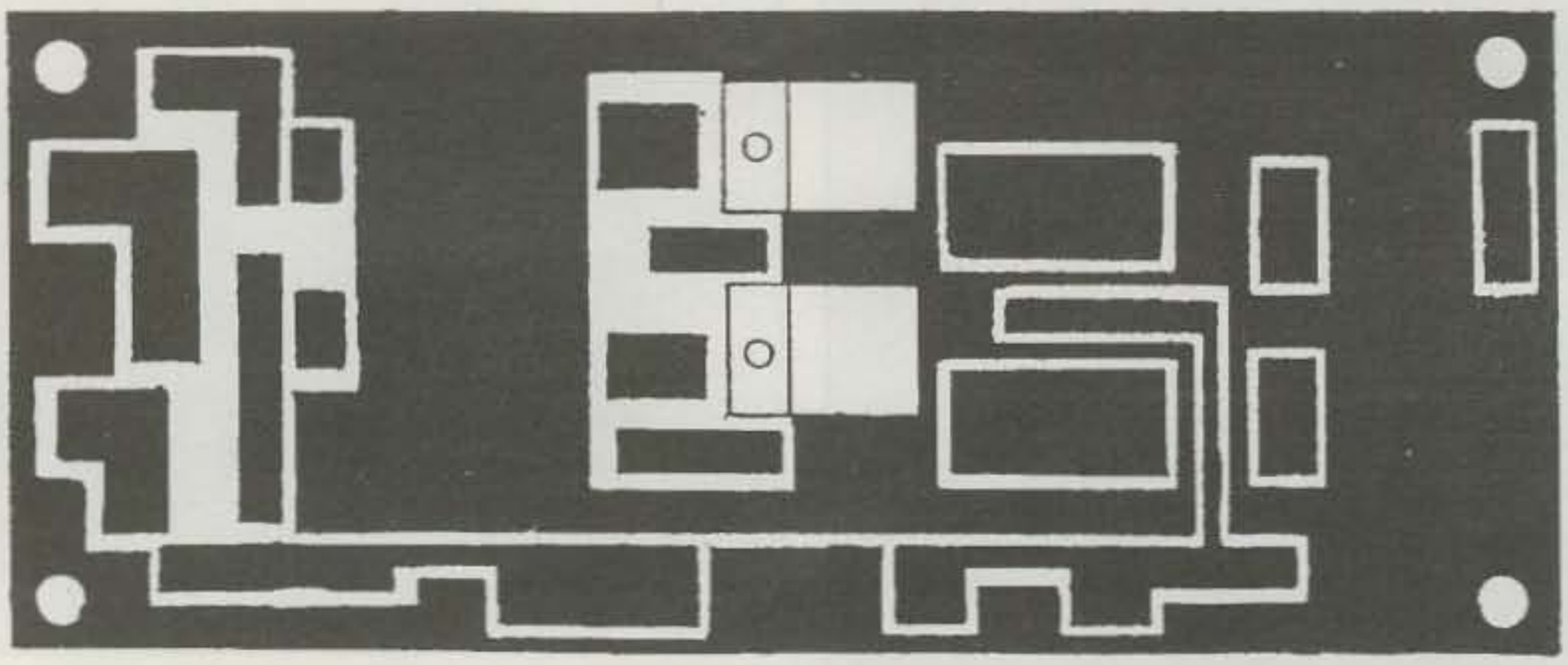
Handbook. The FL1 values listed in fig. 1 are for operation in the 75 meter band. There is sufficient room on the circuit board to add one more capacitor and toroid inductor to form a 7-element filter. This means cutting a PC board pad to accommodate the additional two parts.

Shunt feedback is provided by L5, R6, and the four ferrite beads. The feedback network serves to level the gain from 1.8 to 30 MHz by reducing the amplifier gain gradually as the operating frequency is lowered. The feedback circuit also helps to ensure stable operation by preventing the amplifier gain from being excessively high from 1.8 through 7 MHz, in particular. L5 is a single turn of wire that is passed through the core of T2. The center of the turn is opened to accommodate R6, which controls the amount of feedback from the transistor collectors to the bases. C2, C3, R1, and R4 are also used to level the amplifier gain. They allow maximum drive at the high end of the 1.8 to 30 MHz range, but reduce the effective drive at the lower end of the amplifier range. C1 is used to cancel unwanted T1 inductive reactance at the upper end of the amplifier operating range.

Forward bias (+0.7 V) is supplied to Q1 and Q2 from D1, which also acts as a "sorta" regulator. This forward bias places the amplifier in the class B linear mode. The bias circuit may be eliminated for CW-only operation. If this is done, ground the junction of RFC1 and RFC2.

Construction Tips

An etched PC board for this amplifier is available from FAR Circuits.[1] Fig. 2 shows the



TO SCALE

Fig. 5– Scale etching pattern for the 25 watt amplifier, as seen from the etched side.

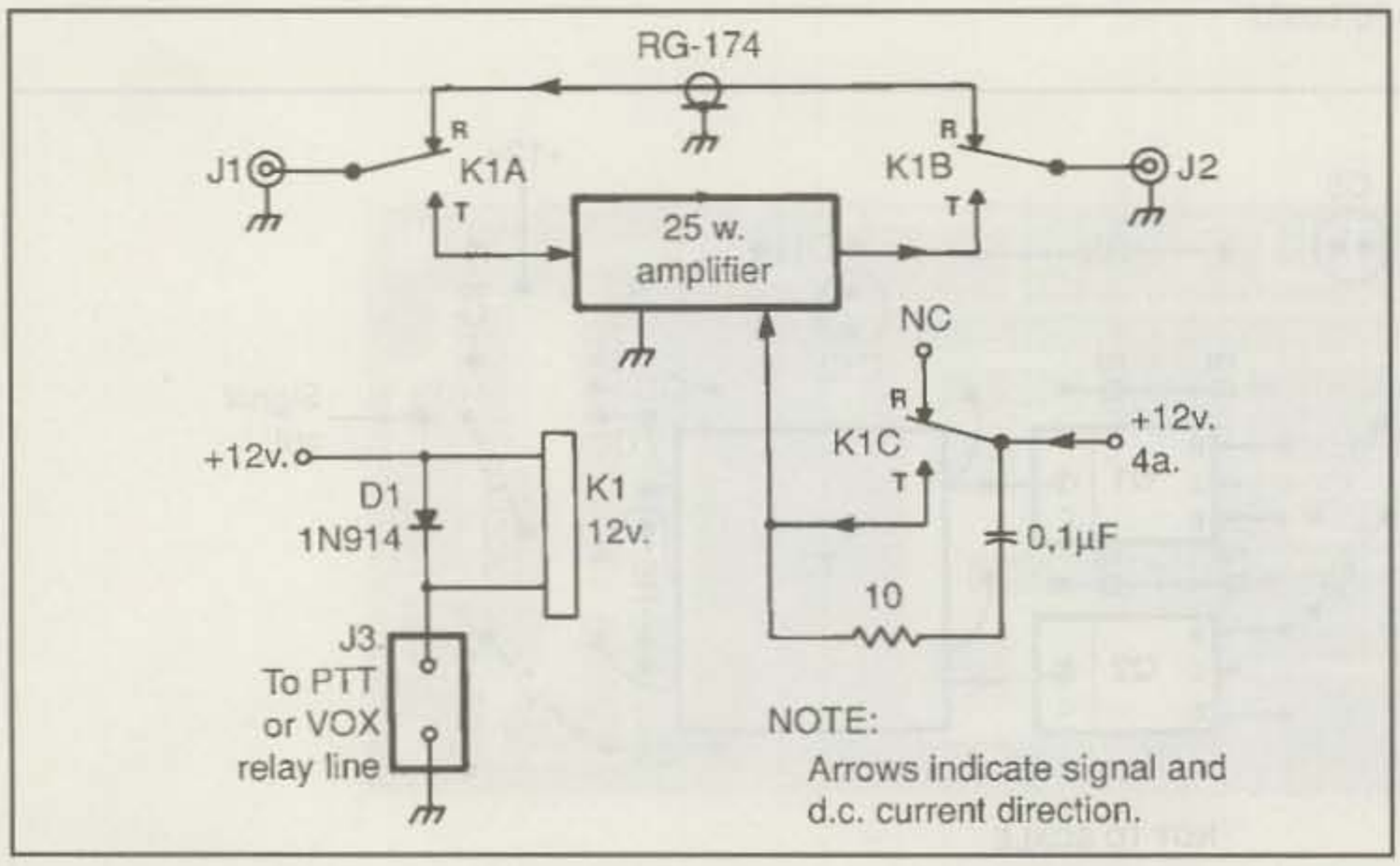


Fig. 6– Details for adding a relay type of TR circuit to permit amplifier use with a transceiver. K1 is a 12 volt, 4-pole double-throw relay (one section not used) with 1-A or greater contact rating, such as an All Electronics No. 4PRLY-12 (1-800-826-5432). See text for information on building a solid-state TR switch for full QSK operation.

assembled amplifier and the PC board before the parts were soldered to the foil side of the unit. Note the cut-out areas for Q1 and Q2. They are required to allow the transistors to be attached to the heat sinks on the non-foil side of the board. Make certain that the heat-sink mounting screws do not touch circuit ground. The tabs (collectors) of the transistors and the heat sinks are hot with +12 volts. Therefore, the center lead (collector) on each transistor is snipped off near the body of the device. The tabs of Q1 and Q2 are connected to the appropriate PC board pads by means of solder lugs under the screws that attach the devices to their heat sinks. This can be seen in the pictorial drawing of fig. 4. Details concerning the heat sinks are shown in fig. 3. I made them by cutting a large extruded heat sink into two sections. The sinks are drilled and tapped for 4-40 screws to facilitate mounting them to the PC board, and for attaching the transistors to the sinks. There are three tapped holes in each heat sink. Be sure to use heat-sink compound between the transistors and their heat sinks.

You can make your own PC board from the scale pattern in fig. 5. The unwanted copper may be removed by means of ferric chloride etchant, or you may remove it with a small motorized craft tool and router or cone-shaped grinder bit.

Although I used balun (binocular) cores for T1 and T2, you may use ferrite toroids of the same permeability (850 μ_i) and approximate cross-sectional area. Both core styles are available from Amidon, Inc.[2] Most of the remaining components may be purchased from Mouser Electronics[3] or Hosfelt Electronics.[4] Q1 and Q2 are available from RF Parts.[5]

TR Circuit

If you plan to use the fig. 1 amplifier with a transceiver, it will be necessary to employ a switch-around circuit that routes the antenna to the receiver during standby periods. Fig. 6 contains details for using a relay to accomplish this action. It is triggered by the PTT line or VOX relay in the transceiver. The action of K1 must be rapid in order to prevent "hot switching" the amplifier. In other words, the amplifier must be actuated after or at precisely the same time the antenna is switched to its output port: The amplifier must not be driven by the exciter until the antenna is connected to the amplifier. Cold switching will prevent damage to Q1 and Q2. Furthermore, hot switching can cause momentary spurious products to be transmitted. The fig. 5 TR circuit is unsuitable for full QSK operation. However, a 25 watt solid-state TR circuit for full break-in operation is described in *W1FB's QRP Notebook*, 2nd edition, page 141 (available from The ARRL).

Summary Comments

The fig. 1 amplifier draws between 4 and 5 amps at maximum output power. The current is determined by the power supply voltage, which may range from 12 to 13.6 volts. A well-regulated DC supply or an automobile battery can be used as the amplifier power source.

The heat sinks for Q1 and Q2 must be large enough to prevent overheating of the transistors. Q1 and Q2 draw idling current between words or CW characters. Therefore, the transistors do not have an opportunity to cool down as they would during class-C operation. You should be able to hold your finger against the heat sinks without discomfort after an extended key-down period. Air vents on the enclosure walls and cover, or housing the amplifier in a perforated-metal cabinet, will help to reduce heating. Inclusion of a small circulating fan is suggested for operation in tropical regions.

Footnotes

1. Far Circuits (N9ATW), 18N640 Field Court, Dundee, IL 60118 (708-426-2431 after 6 PM).

2. Amidon, Inc., 3122 Alpine Ave., Santa Ana, CA 92704 (714-850-4660). Catalog on request.

3. Mouser Electronics, 2401 Hwy. 287 N., Mansfield, TX 76063 (1-800-346-6873). Catalog on request.

4. Hosfelt Electronics, Inc., 2700 Sunset Blvd., Steubenville, OH 43952 (1-800-524-6464). Catalog on request.

5. RF Parts, 435 S. Pacific St., San Marcos, CA 92069 (1-800-737-2787).

BY BILL WELSH, W6DDB

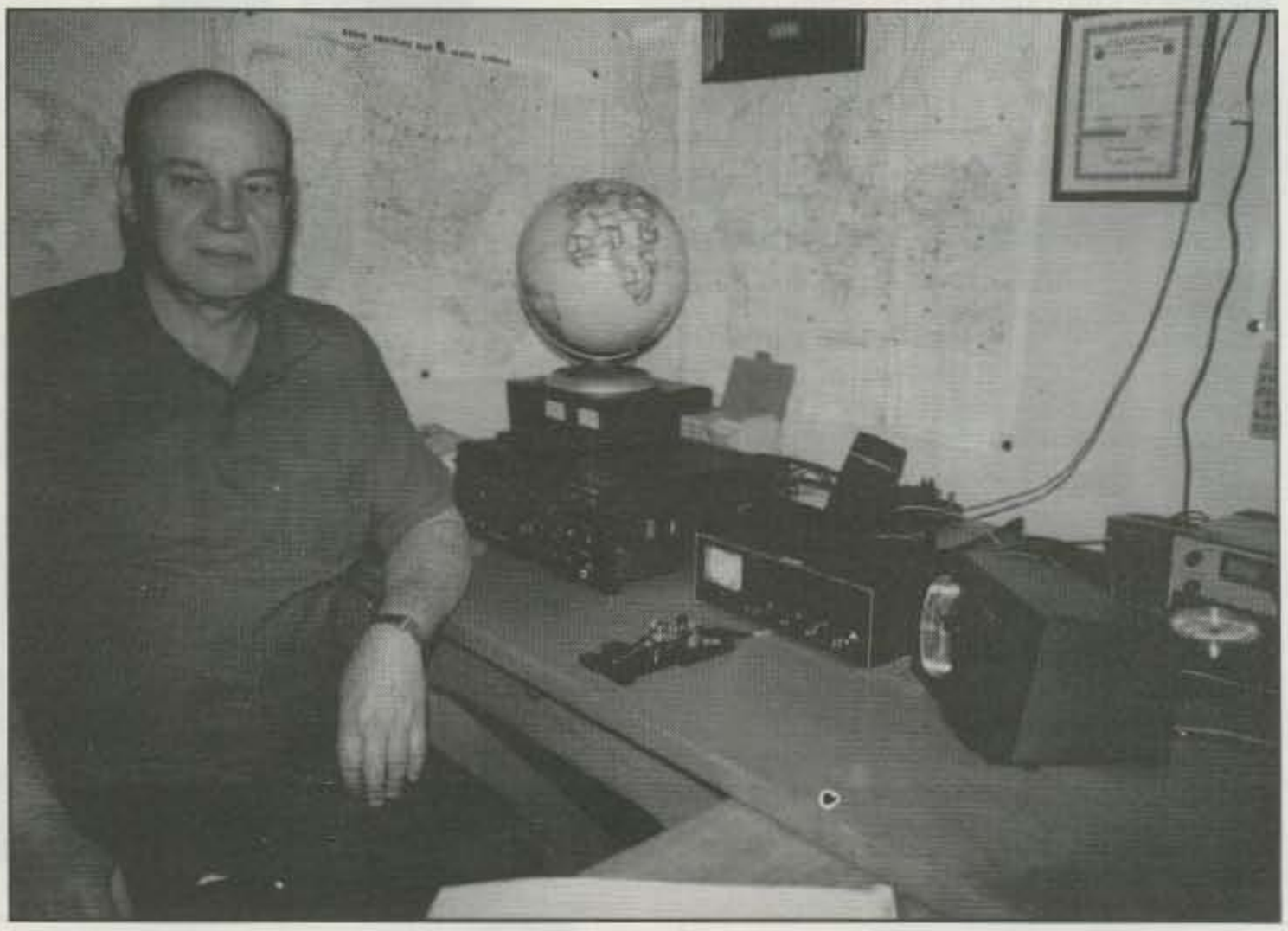
BILL'S BASICS

"HOW TO" FOR THE NEWCOMER TO AMATEUR RADIO

Getting Started—Part I

It is very important for each Novice and Technician-Plus amateur to establish and use a good high-frequency station. Until (and unless) international amateur radio regulations are changed, applicants must continue to prove Morse Code proficiency to obtain any license which allows you to operate below 30 MHz. Simply stated, you must master the International Morse Code to get a license which authorizes you to use the high-frequency (3–30 MHz) bands.

Implementation of the ARRL's Novice enhancement proposal has almost killed Novice licensing. The primary entry license is now the Code Free Technician, which does not authorize any high-frequency operation. Fortunately, many of these new amateurs acquire enough code proficiency to enable them to upgrade to Technician-Plus licenses. This article is directed to Novice and Technician-Plus licensees who should operate in the Novice code segments to achieve the code proficiency they need to pass 13 WPM upgrade tests.



This is Darrell Kelson, KB7VIO, who lives in Magna, Utah. He achieved his General ticket at age 66. He likes to answer CQ calls and chat.

Junk Equipment

It is important to establish a good station, and failure to do so usually lessens a new amateur's interest in operating. This unfortunate circumstance results in less time on the air and a slower increase in code proficiency. Each new amateur should get her/his initial station assembled and have it ready to operate as soon as the license arrives. Station equipment and accessories are covered in this article to help you set up a station that can serve you well. However, it is up to you to get the job done. The words *equipment* and *gear* are used throughout this article to mean the transceiver, or the transmitter and receiver combination. The word *accessory* applies to auxiliary items such as telegraph keys, microphones, headphones, antennas, rotators, antenna tuners, and external SWR/power meters.

Do not buy junk. I often have students tell me that they are going to get something cheap just to give amateur radio a try, and that they will get good equipment if they decide to stick with amateur radio. If they do this, it usually results in one more inactive licensee. Junk gear costs new amateurs extra money, even if they quickly realize their mistake and upgrade to better equipment. Poor operating results are normal with junk gear and often cause new amateurs to quit amateur radio entirely. Install the best station you can put together within your physical (space) and financial limitations.

Experienced operators can achieve remarkable results with less than satisfactory equipment. However, the beginning amateur has enough trouble achieving fair results, even when using excellent equipment. It does not make sense to add the burden of poor equipment to the woes of a beginning amateur. Junk gear and inexperienced operators are a bad combination.

45527 Third Street East, Lancaster, CA 93535-1802

Guidance

I have helped many new amateurs set up their first stations. This five-part article contains many tips that can help you avoid time-consuming, expensive mistakes. Subject headings and sub-headings make it easier to locate desired information. You should read the entire article, and then go back through it to pick out portions that are of particular interest. It is simpler and cheaper to avoid mistakes than it is to correct them.

Plan every step and know exactly what you are going to do before you begin assembling your first station. Selecting equipment and accessories presents a tough challenge to most new amateurs.

Even experienced amateurs do a lot of reading, talking, and comparing before deciding which items they want to obtain to upgrade their stations. If you have an acquaintance who is an active amateur (not just a license holder who does not operate), she/he should be able to help you select suitable items. However, each final decision is yours. It is reasonable to assume that other amateurs will base their opinions and advice on their own experiences. At best, they may be telling you the situation that existed when they last were in the market for equipment and/or accessories. It is possible that a well-intentioned amateur might give you bad advice due to lack of knowledge about currently available items. It is okay to listen to the advice of long-licensed amateurs, but when you're trying to select equipment, you should remember that this type of amateur may recommend gear which performed satisfactorily for him when he was first licensed. However, that may have been decades ago, and the bands have changed a lot while that old gear was getting more and more obsolete. The old clunkers have been replaced by units which are smaller, lighter, and far more useful on today's crowded bands.

Magazines

Major amateur radio publications can be used to obtain an introduction to each item that is of interest to you. Equipment reviews are presented in many issues. These reviews may be a bit too technical in some parts for beginners, but their concluding remarks are generally simple and direct. You can request additional information about specific items of interest by writing to the manufacturers, using addresses shown in advertisements. Local amateur radio stores usually have sales flyers available on a lot of items. It is my opinion that most equipment and accessory reviews have not been

critical enough (where criticism is justified) to be useful. However, recent reviews appear to be more useful than previous ones. You can at least extract basic facts from reviews and use them in evaluating items of interest.

Clubs

If you have an amateur radio club in your area, it can be beneficial to you to attend its meetings to pick the brains of its members and (possibly) to obtain some help in setting up your first station. You have to evaluate what you are told, but you are sure to benefit from discussions with local active amateurs.

Clubs provide a central meeting place for many worthwhile activities such as auctions, licensing courses, conventions, TVI/BCI committees, emergency communications, and contests. You'll benefit by participating in club activities. Newer amateurs are often the spark plugs in the club, and their fresh ideas and enthusiasm are beneficial. If your local club doesn't conduct licensing courses, urge them to do so. The ARRL has a lot of material available to help instructors do the job right.

Build or Buy?

You must decide whether you are going to build your station equipment/accessories or buy commercially built units. If you decide to build your own station, you must choose between constructing kits, building from schematics (homebrewing), or modifying military surplus gear. The decision is yours. The following information is just intended to help you make the decision that is best in your case.

Building Kits

If you like to build, and if you have the required tools and test equipment, you may decide to build a kit. You may decide to build all or part of the equipment and accessories for your station. If you are not an experienced kit builder, I advise against building units for your initial station. I have found that most of the new amateurs should not build their initial station units from either kits or schematics because they are not yet experienced enough to properly construct, test, and troubleshoot relatively complex modern amateur gear. Also, it is unlikely that a new amateur would have the test equipment that is needed to test and/or troubleshoot completed homebrew items, nor is she/he likely to have the knowledge of how to use such test equipment.

I like to build equipment and I have homebrewed many items, but I advise inexperienced new amateurs against building. There is plenty of time to build things after you have upgraded to at least the General license. A completed kit usually reflects the experience and capability of its builder. It is very important for each new amateur to start operating with a station that functions well, and good commercial gear provides this opportunity.

The popular belief that you save a lot of money by building your own gear is not supported by the facts. Unless you have free access to a wide variety of parts, it is cheaper to build a kit than it is to build from a schematic. However, a modern kit costs close to the price of an equivalent commercially manufactured unit.

Most of the currently available kits are for low-power (QRP) equipment. The major equipment kit suppliers have left this business. The advantage of building gear is that you acquire desired familiarity with it and are not hesitant to troubleshoot problems that may occur. There is also the pride in having built your gear. The kit builder learns about components, color codes, circuit symbols, and soldering, plus the proper use of hand tools and test equipment. These are good reasons for building your own.

There are also disadvantages related to building gear. Equipment built from a kit has a lower resale value than comparable factory manufactured gear, regardless of how well it is made or how well it functions. Completed kits are seldom accepted as direct (cash value) trade-ins towards commercial gear being purchased. Some stores will help you sell kit gear at a commission, but many outlets will not have anything to do with kit units. Gear that you homebrew from schematics has even less resale value than items built from kits. Amateurs commonly change their station equipment; therefore, resale value is important. You "swallow the anchor" when you build gear, so be aware of the advantages and disadvantages associated with building gear.

If you decide to build a kit (or kits), it is helpful to locate other amateurs who have built (and are using) the same equipment you plan to build. You can benefit from their experience,

Here is four-year-old Rebecca, the daughter of Amandio de Sousa, VE3CAV, of Scarborough, Ontario, Canada. She enjoys listening to her father and brother (Mike, VA3CDS) operating on the air.

and they may be willing to demonstrate equipment performance on the air. Fellow club members could be helpful in this regard.

Building From Schematics (Homebrewing)

Building equipment and/or accessories from circuit designs printed in publications is usually less desirable than building a tried and proven kit. If you purchase all the required parts, your cost can be higher than the prices of a comparable kit. If you do not use a proven circuit design (such as in *The ARRL Handbook*), you may be using circuit design and test data that are incomplete and/or incorrect. Completed kits have known designed performance capabilities, which helps sell them. Homebrew gear is almost impossible to sell, no matter how well it functions. Homebrew gear has the lowest resale value, and you are seldom able to recover a dime for each dollar invested in parts.

Modifying Surplus

If you decide against building homebrew or kit gear, perhaps due to limited funds, you can satisfy your urge to get your hands dirty by modifying surplus military communications equipment/accessories to meet your station needs. Old amateur radio magazines contain many surplus equipment conversion articles. There are also surplus conversion manuals available to help you do the job right. Some surplus gear just requires conversion for use with 117 Vac house power, which may only involve building a suitable power supply.

Some military gear is well suited to amateur radio, but a lot of it is not particularly useful. One must take time and evaluate the items that are available from surplus outfits. Magazines often contain advertisements of military surplus gear. A lot of surplus communications gear has separate control panels (etc.), and it may not look as nice as commercially manufactured amateur gear.

If you are thinking about modifying surplus gear for amateur use, get catalogs from several surplus dealers and read associated conversion articles before making a final decision.

Commercial Equipment

It might sound good to tell you to build your first station, but experience has taught me that most new amateurs are better off starting as "appliance operators" until they have learned enough to be useful instead of being dangerous. The primary purpose of Novice and Technician-Plus licenses is to provide people with an easy introduction to amateur radio. The Novice code bands give Novice and Technician-Plus operators opportunities to increase code proficiency to the 13 WPM General and Advanced code test requirement while enjoying on-the-air contacts. Commercially manufactured equipment and accessories provide the fastest and easiest way for beginning amateurs to get dependable initial stations on the air.

If you are a typical beginner, electronic theory is probably still just partially understood. I have seldom known a newcomer with a good station who failed to upgrade. However, I have known Novices and Technician-Plus amateurs who became discouraged and quit amateur radio due to poor operating results attributable to the use of junk equipment. Modern commercially manufactured amateur radio equipment is a tremendous bargain. A modern 15 to 20 pound transceiver provides more communications capability than a ton of amateur equipment provided about 50 years ago. It is no wonder that so few manufacturers build amateur radio gear. We have superb equipment available to us at low cost. I have sold industrial, marine, and medical electronic equipment. Amateur gear sells at about one-third to one-fifth their prices.

Whether you build or buy, get it done before your license arrives. At least, get your station operable as soon as possible after you do receive your ticket. Do not delay getting on the air due to time spent building station items. You do not need a license to build, and you should operate as soon as you are licensed. Commercial gear will enable you to assemble a suitable station quickly and easily. The only pain is financial.

New Versus Used Equipment

It used to be sensible and commonplace for new amateurs to establish their initial stations just to meet their initial operating needs. This is no longer the situation. It is now advisable to install an initial station that meets your initial needs, but will also allow you to use increased operating privileges after you upgrade to a General (or higher) license. The present situation makes it reasonable for beginners to consider both new and used equipment, whereas they previously purchased used gear almost exclusively.

Used equipment normally provides more communication capability at lower cost than new gear. The safest way to buy used gear is to buy it from an active amateur, preferably another member of your local amateur radio club. Purchasing equipment advertised in amateur radio magazines has proven to be surprisingly satisfactory, but it is best to purchase gear from nearby amateurs. There are still a lot of hybrid (combination solid-state and tube) transceivers on the used equipment market due to many amateurs changing over to completely solid-state gear. These hybrid transceivers are a bit harder to tune up than the newer solid-state rigs, due to the fact that the transmitter section final radio frequency stage has to be tuned and loaded to the antenna, whereas solid-state rigs do not require this tuning and loading. Do not let this adjustment requirement scare you away from hybrid rigs. It is easy to master this procedure. If your financial situation permits you to do so, get a transceiver that was marketed in the past decade.

Equipment changes drastically and rapidly. You may as well take advantage of the latest improvements. If your financial situation is good, it is wise to get top-quality equipment at the start. Modern gear is fantastic.

If you buy used gear from a store, you would be wise to deal with an outlet that permits such equipment to be turned in if it is found to be unsatisfactory, with your full purchase price applied to any other used or new equipment you select. There is usually a 10- to 15-day limit to this type of turn-in offer, which is enough time to evaluate equipment. Don't assume that distributors check out and recondition all used equipment before they sell it. Experience has taught me that most used gear is sold in the same condition in which it is received as a trade-in. Also, please remember that (like cars) many owners trade in amateur gear when it starts to give them trouble.

Cost Comparisons

When making cost comparisons between transceivers, be careful to consider the complete package you would buy in each case. Some of the items you may have to purchase in addition to the basic transceiver are a 117 VAC power supply (for fixed station operation), a noise blanker, a suitable (narrow) code filter,

a secondary frequency control (sometimes referred to as a remote VFO), SWR/power meter, microphone, electronic keyer, antenna tuner, and separate speaker. Some transceivers come with some of the preceding accessories built in, which makes a major difference in values.

Modern transceivers are primarily designed to provide mobile voice (SSB) communications. A properly designed radiotelegraph (A1A) transmitter produces a signal width that is about five times the sending speed. Assuming a top speed of no more than 20 WPM on Novice bands, you do not need anything wider than a 100 to 150 Hz filter. Filters sharper than 250 Hertz commonly tend to ring. It is advisable to get a 250 or 500 Hz filter if you intend to operate Morse Code. Broader filters subject the listener to noise and other signals that may be present in the additional spectrum. The transceiver you select may have a narrow code filter available as an accessory item. If not, suitable filters are normally available from companies which advertise in amateur radio magazines. It usually is necessary to purchase a narrow-width code filter, so take this extra expense into consideration when determining the price of the package you are going to buy.

Solid-State Versus Hybrid Or Tube Equipment

Solid-state gear is usually smaller, uses less electric power, runs cooler, is lighter, and is better suited to emergency use, since it runs on battery voltage. Transistors and other solid-state devices are less likely to be damaged by mechanical shock than tube gear.

Completely (all) tube equipment is available used at lower cost than hybrid or solid-state gear. The latest (newest) tube gear can meet a beginner's needs well, and still be useful for other modes of operation when you get a higher class license. Amateurs are more at ease troubleshooting tube gear than they are when working on solid-state equipment. If you are considering the purchase of tube gear that consists of a separate receiver and transmitter, you are welcome to request a copy of an article I wrote about such gear. Send $2.00 and your SASE to my callbook address for a data sheet. The general coverage includes audio notch filters, converters, preselectors, Q-multipliers, and transceivers. The receiver coverage includes internal noise, selectivity, sensitivity, simplicity, and stability (electrical and mechanical) factors. The transmitter coverage includes AM voice bands, crystals, keying, power, and VFO considerations. There is not enough current use of really old equipment to warrant covering it in this article.

Hybrid gear is generally newer than tube equipment and is older than solid-state gear. The receiver section and most of the transmitter is solid state. Usually just the final RF amplifier and driver stages use tubes in hybrid gear. Hybrid gear presents near state-of-the-art features at reasonable cost.

Solid-state equipment is now available in the used gear market. Generally, it provides up-to-date features and excellent performance. If you purchase new gear, I advise you to get all desired accessory items during the initial purchase. When equipment is no longer the current model, the accessories soon become unobtainable. The need for one particular feature is frequently overlooked. That feature is dual frequency control which enables you to listen and transmit on frequencies that are more than 5 kHz away from each other. Most of the modern transceivers have this capability built in as they are sold. In other cases, the second frequency control is an accessory that must be purchased to supplement the basic transceiver; it often is called a remote VFO (variable frequency oscillator). Several examples should help you understand the need for this second frequency control. Most transceivers include a control that permits the receiver to be tuned several kiloHertz above and below the transmit frequency, without moving the transmit frequency. This feature enables you to tune in a responding station that is not quite on frequency without shifting your transmit frequency, which could cause loss of the contact. This feature is called by many names on different equipment. A few of these names are offset tuning (OT), receiver incremental tuning (RIT), and clarifier. This offset tuning serves its purpose, but there are situations when transmit and receive frequencies are too far apart for offset tuning to get the job done. One example involves working DX voice (SSB) stations in the 14,100 to 14,150 kHz segment of 20 meters. USA amateurs are not allowed to use voice in this segment. The DX amateur could make a CQ call (general call to all stations) on a frequency such as 14,125 kHz and state that she/he is listening around 14,280 kHz. In this case, the USA amateur needs to transmit on 14,280 kHz and receive on 14,125 kHz, which requires a second frequency control. Another example involves working military stations during Armed Forces weekend. The military stations transmit just below and above the amateur bands, stating the frequency where they are listening for replies in the amateur bands. Again, a second frequency control is required to work these stations.

Summary

This concludes the first part of this five-part article. The next part covers the choice between using high or low power, transceivers, SWR/power meters, dummy loads, receiver characteristics, stacking equipment, and custom consoles.

Photographs Wanted

Photographs of new amateurs in their shacks provide introductions to a few of the newer licensees. Photograph size is unimportant, but good definition, contrast, and subject matter are important. Color pictures can be used, but black-and-white photographs are preferred. Operating activities and achievements, plus a self-introduction, are needed with each picture. Send an SASE if a picture must be returned. A free one-year *CQ* subscription (or renewal) is awarded to the one amateur whose picture I select as the winner for the month. If you are a subscriber, please enclose the mailing label (or copy) from your latest *CQ* issue. One award is made each month, no matter how many photographs are printed. DX amateurs, who frequently work the American Novice bands, are also urged to submit photographs.

BY BILL ORR, W6SAI

RADIO FUNdamentals

THINGS TO LEARN, PROJECTS TO BUILD, AND GEAR TO USE

A DX Antenna For Sunspot Cycle 23

Yes! It looks like the first sunspots of Cycle 23 are at hand. Good news! Our thanks to George, W3ASK, who liberally salted the ionosphere during the early months of this year. We also musn't forget the members of the Northern California DX Club who celebrated the appearance of the new sunspots by throwing a dummy load off the Golden Gate Bridge into the Pacific Ocean.

"So far," one of the members grumbled, "my dummy load gives me better reception than my big beam. Now that the cycle is going up, the least I can do is deep-six the load and reconnect my receiver to the antenna!"

Well, time to think about new antennas for Cycle 23. I had considered this opportunity for some months. Now was the time to act! I didn't have a beam for 20 meters, and my home was cleverly placed on the lot in such a position that any simple wire antenna that I could squeeze onto my property plopped its main lobe into central Africa, an area remarkably devoid of amateur radio operators. It wasn't easy to work into Europe on 14 MHz with this setup. I didn't want to take down my 18 MHz beam, so what to do?

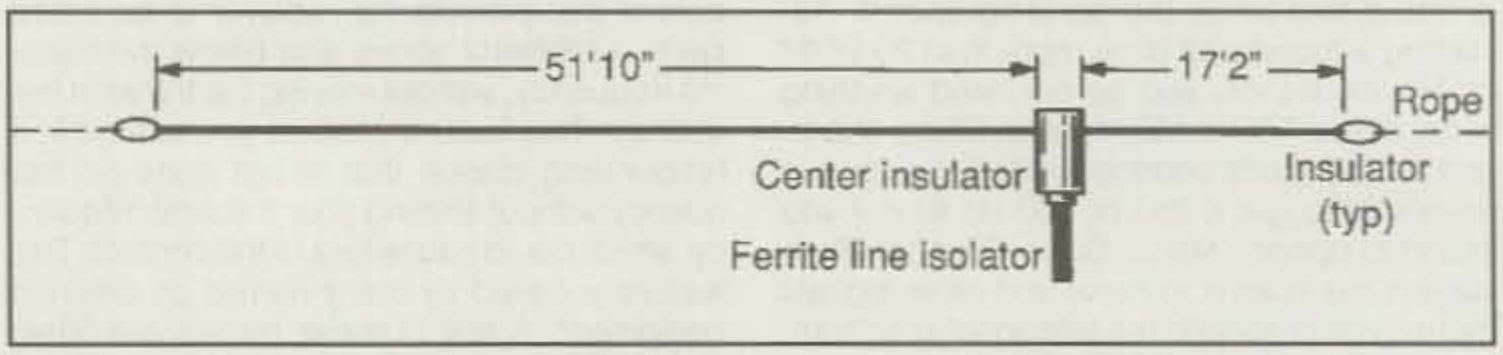


Fig. 1– The full-wave dipole for 20 meters. Azimuth plot is a cloverleaf. Feedpoint impedance is about 86 ohms.

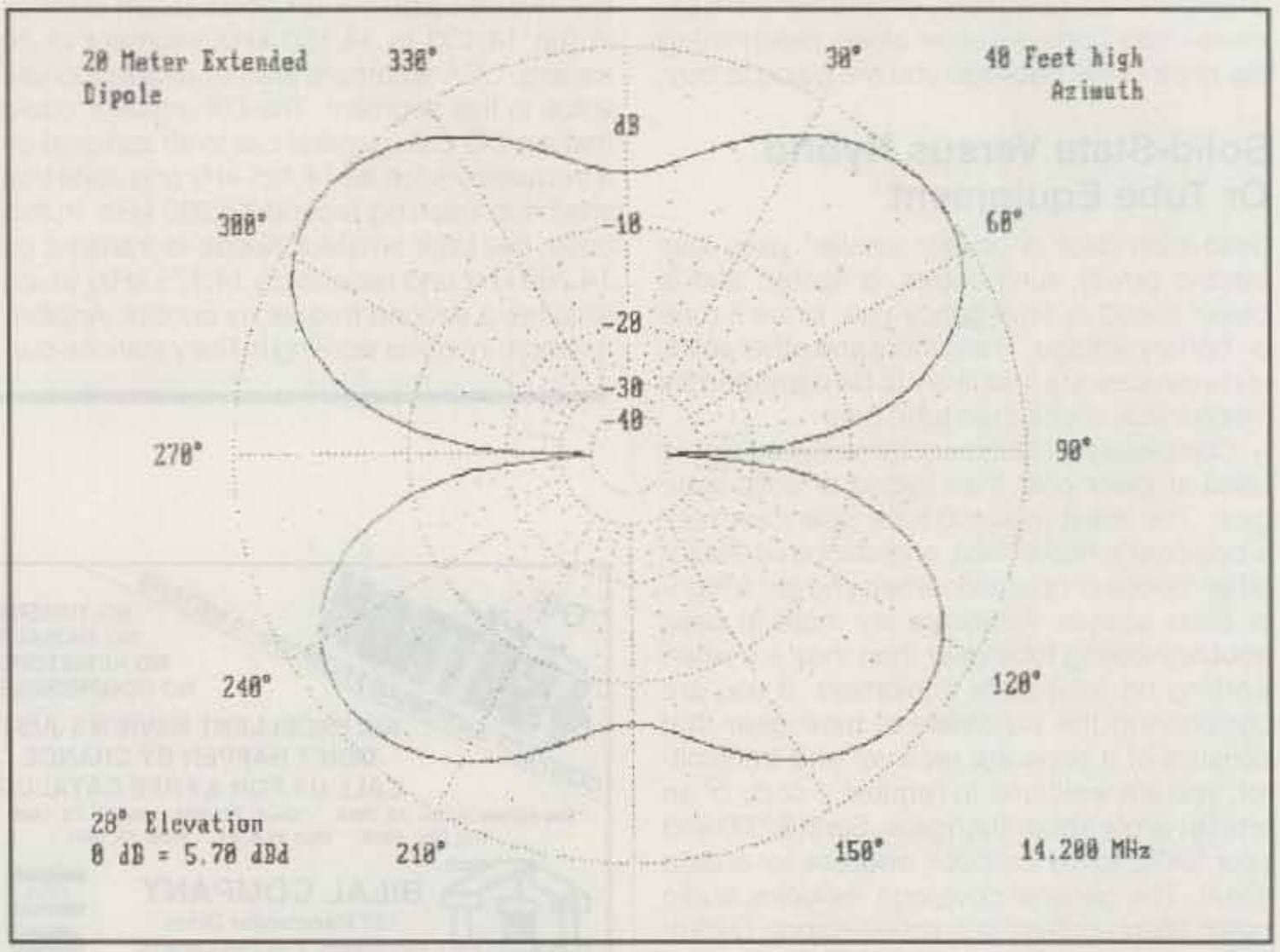


Fig. 2– Azimuth plot of full-wave dipole. North is at the top of the screen. The gain figure (lower left) represents ground reflection gain.

The Full-Wave Dipole

My antenna analyzer program quickly told me that given the direction in which I could erect a wire antenna, my best bet was a full-wave job that had a clover-leaf pattern. One of the leaves would be aimed directly at Europe.

The problem was, if the full-wave antenna was fed in the center, as is the general case, it instantly would become two half-waves in phase and provide a narrow beam at right angles to the wire. That wasn't what I was looking for.

How about feeding it at a point of maximum current in one of the half-wave sections? That would provide the proper current relationship in the antenna, with the appropriate pattern.

The first run of the computer program produced a wire about 68 feet long, fed about 17 feet from one end (fig. 1). At the design frequency of 14.2 MHz the feedpoint impedance is about 86 ohms. This configuration looks suspiciously like a multiband off-center fed antenna, but it is not. It is a one-band job with a pattern quite different than a dipole.

Building The Antenna

It was easy to build the antenna. I had an old klystron magnet coil (courtesy of the scrap pile at a local electronics outfit) that had thousands of feet of #16 enamel wire on it. I wound off about 70 feet. I used an Alpha-Delta model Delta-C antenna hardware kit consisting of a center insulator and two end insulators. The light gray color of the devices blended nicely with the smoggy atmosphere. Below the center insulator, I placed a Radio Works C1-2K ferrite line isolator.

Everything went together in about an hour, and I eagerly checked the antenna out with my MFJ-259 analyzer—resonance at 14,200 kHz, just where I wanted it. I had erected it at a height of 40 feet. The results matched the computer program very closely, so it looked like it was time to try the antenna on the air.

The Computer Analysis

I used an analysis program of Brian Beezley, K6STI.[1] The azimuth plot of the antenna is shown in fig. 2. Lobe maxima are at an angle of about 50 degrees to the wire, and large nulls appear at 90 and 180 degrees. In real-life, over an imperfect ground, I doubt if these nulls are as deep as they look, or as wide as they appear to be. Time will tell.

I next ran an elevation plot (fig. 3). The pattern is not quite a mirror-image, as the feedpoint of the antenna is off-center, but it looks as if the pattern difference is only about one dB.

The elevation angle of the main lobe is about 28 degrees, and that is a function of antenna height above ground. I'm stuck with that! Even so, the lobe exhibits energy at a 10 degree angle that is only about 4 dB below maximum.

What have I gained over a simple center-fed dipole placed in the same position? Look at fig. 4. At a 28 degree elevation angle it looks as if I picked up about 3 dB at an azimuth angle of 45 degrees—the direction of Europe! Not bad for a few extra feet of wire.

At a 50 degree azimuth angle the increase in gain of the extended antenna clearly shows up (fig. 5). And down at about a 10 degree

48 Campbell Lane, Menlo Park, CA 94025

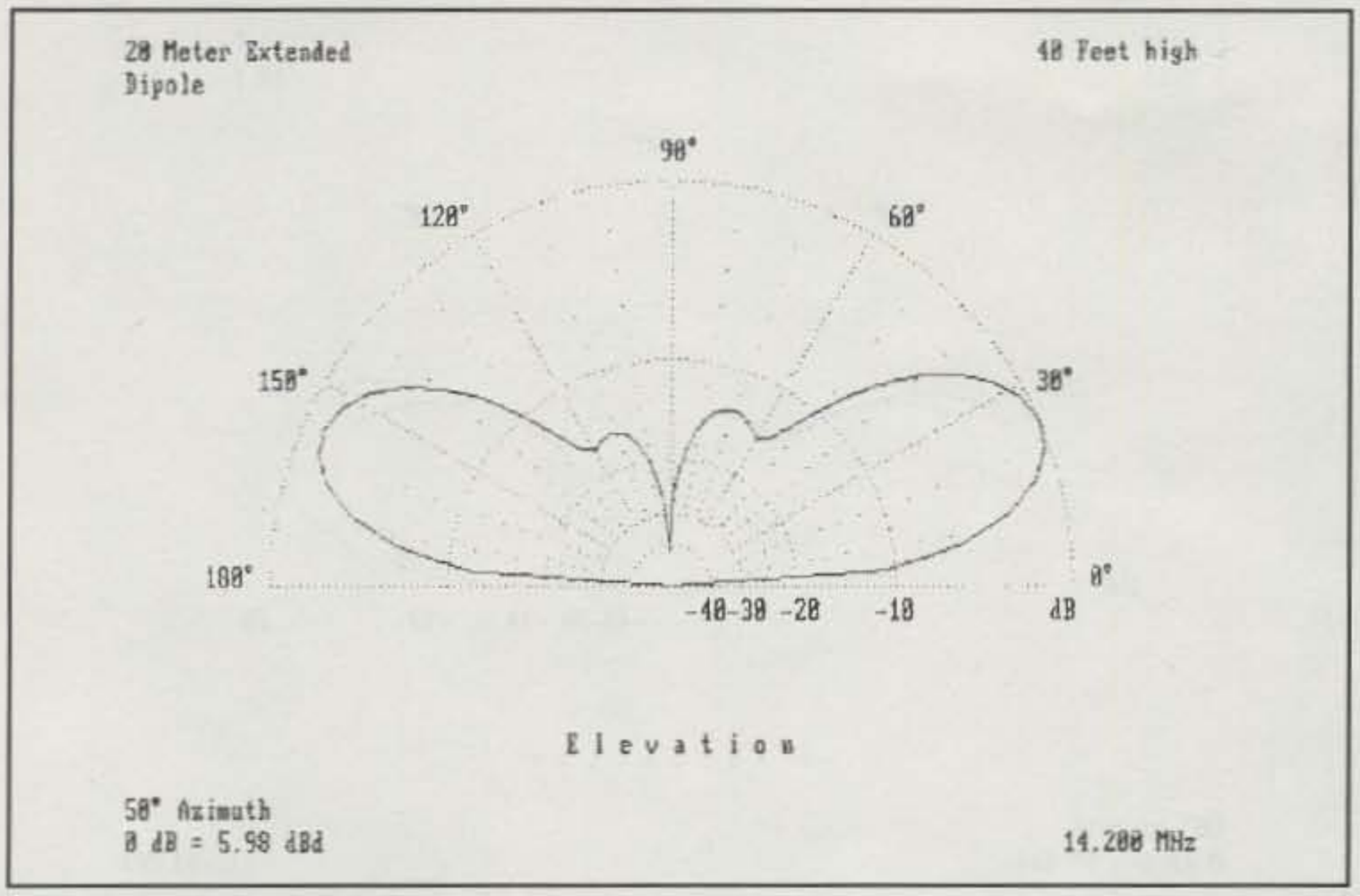


Fig. 3– Elevation plot of full-wave dipole at 40 feet. Angle of main lobe depends upon height of antenna above ground.

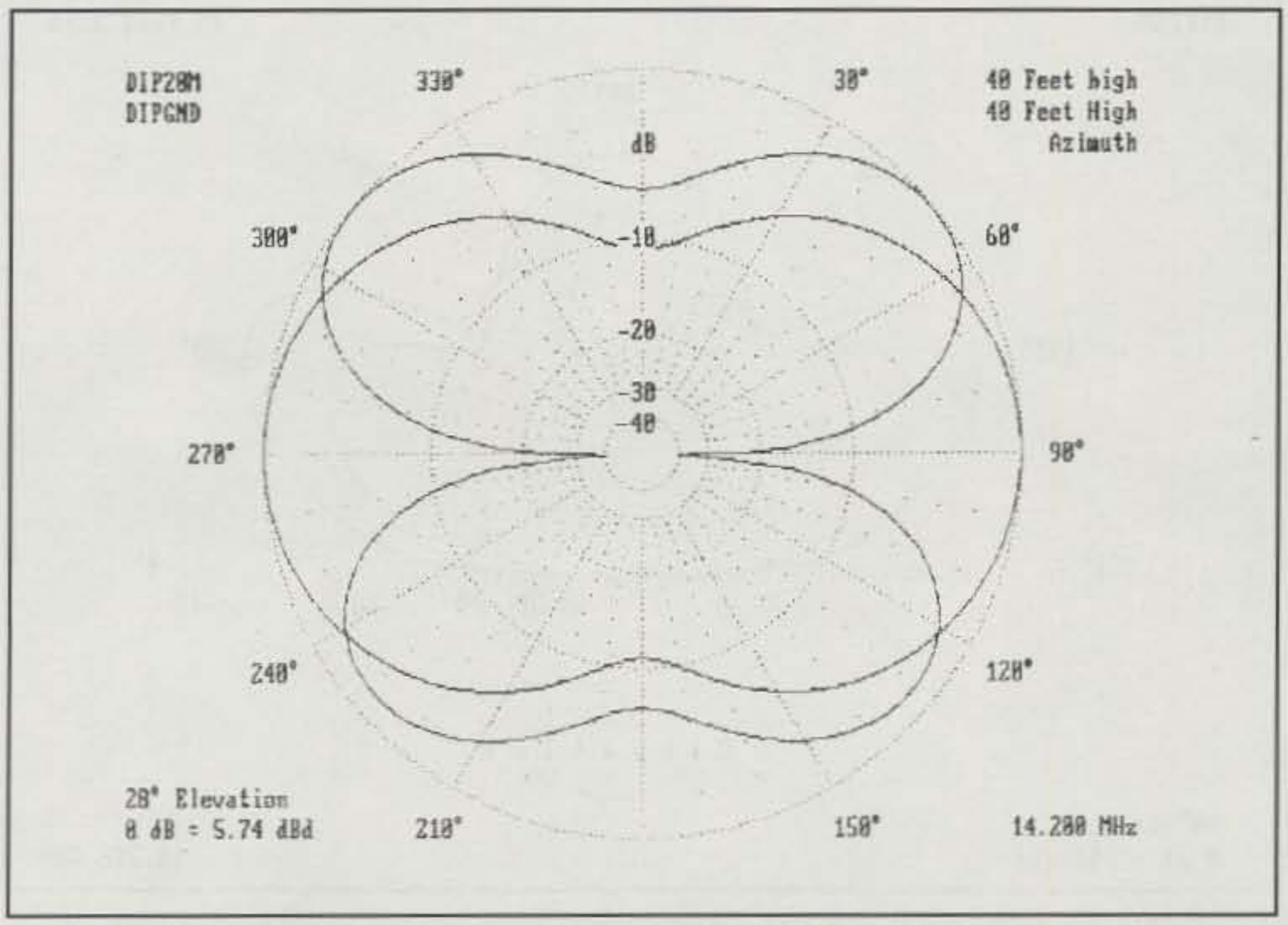


Fig. 4– Elevation plot of full-wave antenna compared to half-wave dipole. Note increase in gain at azimuth angles near line of antenna—about 3 dB!

angle it looks as if the improvement is on the order of 3 dB.

The last check was to observe the elevation patterns at a 10 degree azimuth angle, almost in line with the antenna (fig. 6). Here the extended dipole shows its worth. The 4 dB advantage is clearly apparent at 10 degrees, and carries through up to the angle of maximum power.

Where does the gain come from? Well, the antenna takes power from where I don't want it (straight up) and directs it where I do want it. The actual power gain of the antenna itself over a dipole is less than one decibel. It is merely that the antenna takes advantage of ground reflection and provides enhanced, low-angle radiation where it will do some good.

Feeding The Antenna

The input resistance at resonance of this antenna provides pause for thought. It is about 86 ohms. If a 75 ohm transmission line were used, the SWR would be very low. However, no one I know uses such a line, nor are there any SWR meters easily available that work with a 75 ohm line. The solution? Use a 50 ohm line.

This is not as bad as it seems. SWR at antenna resonance is about 1.7, slowly rising as the

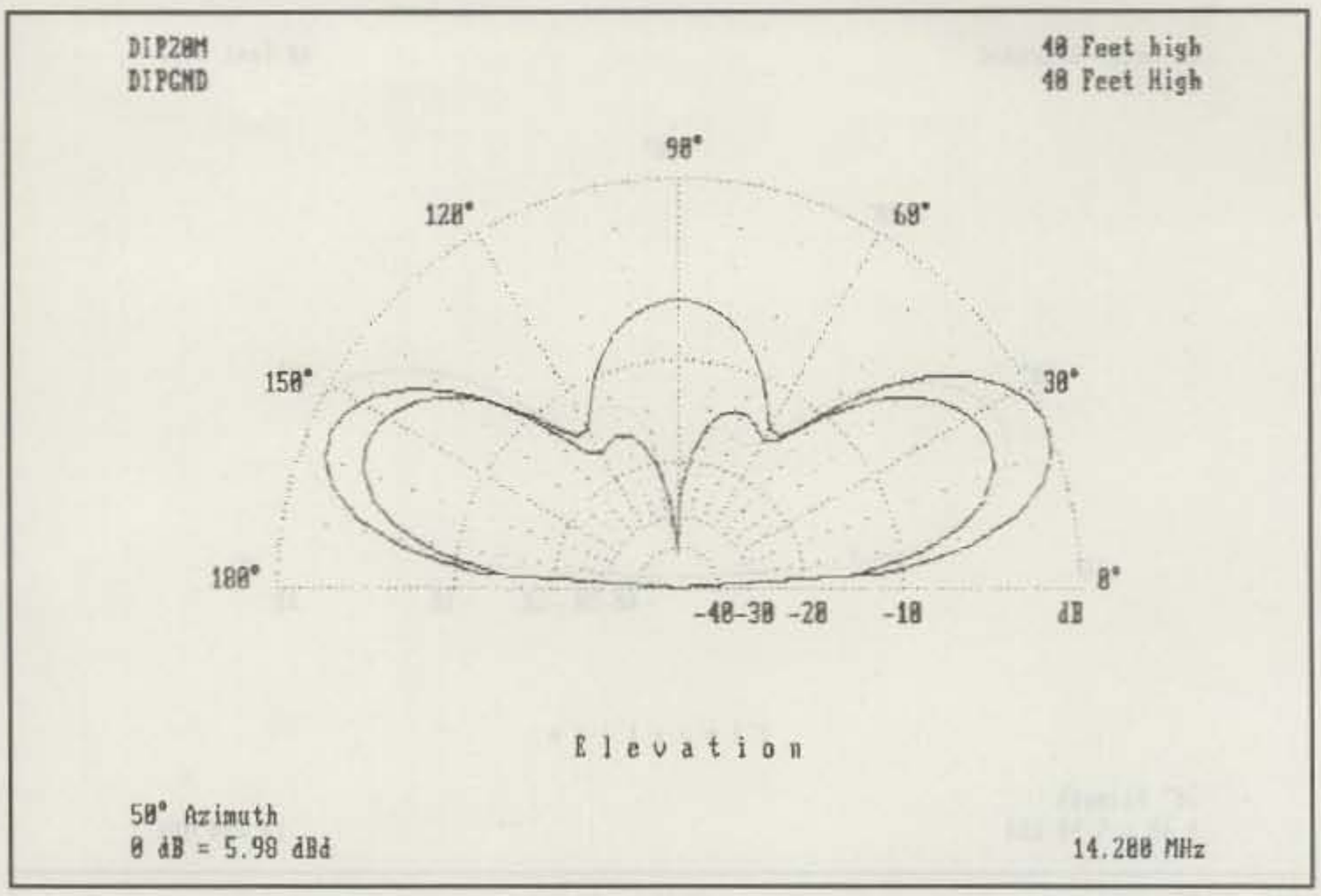


Fig. 5– Low-angle gain of full-wave dipole shows up in comparison with half-wave dipole.

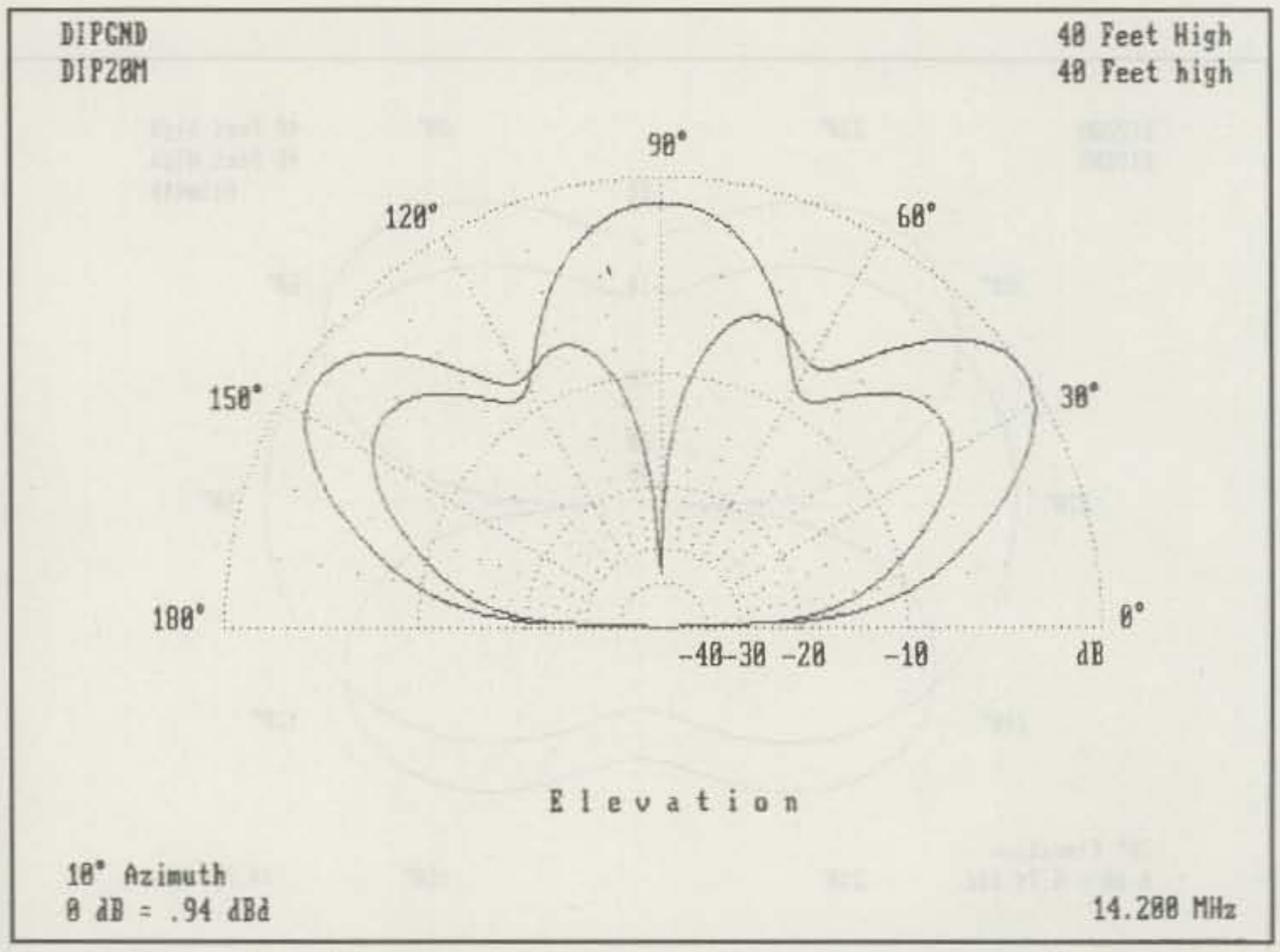


Fig. 6– End-on view of antenna plot. Note pattern improvement at take-off angles below 30 degrees.

antenna is operated off-resonance. Since every red-blooded amateur has either an auxiliary antenna tuner or a tuner built-in his transceiver, the SWR poses no problem. If you have time and various short lengths of coax, I bet you could arrive at a feedline length that would permit proper transceiver loading without a tuner! Those of you with memories like a steel trap will realize this scheme doesn't change the SWR; it merely provides an impedance that is more satisfactory to the transceiver (akin to taking a journey around the perimeter of a Smith Chart!).

Results

When I finally connected the antenna to my transceiver, I had to go outside and see if it was really up in the air. It was. With my usual luck, I had landed in the midst of a solar fade-out! I was able to get an encouraging report from an amateur crosstown who heard me with a fine signal. The band gradually came back to life, and in a short time I worked a 4X4, a UA3, and a ZP6 with good reports both ways. So it looks as if the antenna is working. Since that lucky day, I've worked a bunch of Europeans and other DX at random places around the globe. I'll keep you posted.

The Johnson-Q Antenna

All those out there who know what a Johnson-Q antenna is, raise your hand! For the majority of readers who have never heard of this famous antenna, it was one of the most popu-

lar DX antennas prior to World War II. If you didn't have a Johnson-Q, you just weren't one of the Big Guns!

This matching system was the answer to the problem of feeding a dipole antenna. Coaxial line for amateurs was not available, and the line of choice was two-wire open line, having a spacing of about 4 inches. A line of this design had a characteristic impedance of about 600 ohms depending on wire size and actual spacing. This meant that if the line was used to feed the center of a dipole, the feedpoint of which was about 70 ohms, the SWR on the line was greater than 10-to-1, leading to high line loss and tricky tuning problems at the transmitter.

The Johnson-Q used a linear matching transformer to drop the SWR on the open-wire line close to unity. The matching transformer was a quarter-wavelength long and was composed of two 1/2 inch diameter aluminum tubes, spaced about 1 1/2 inches, center to center. Fig. 7 shows the general construction.

The problem with the Johnson Q was the weight of the center insulator and the aluminum Q bars. In spite of the nifty idea, it was virually impossible to put enough tension on the flat-top to pull the antenna into a horizontal position. Some operators supported the aluminum tubes with a short pole placed beneath the antenna.

The antenna, in any event, worked well. The irony is that the massive and weighty Q-section could have been replaced with a compact and light-weight L-network made up of a single capacitor and two small inductors! Apparently no one thought of that.

The Johnson-Q faded into limbo after World War II with the introduction of inexpensive 50 ohm coax. Old timers remember the Johnson-Q antenna as a piece of nostalgia. If you had one, you were to be envied, as it was very expensive. The 20 meter version cost an astronomical $6.00! That was a lot of money at the depths of the Great Depression! It just shows that an avid DXer will not let any cost stand in the way of a super-antenna!

A New Type-N Connector!

Anyone who has gone through the frustrating task of putting a type N connector (UG-21) on a piece of coax knows what a nasty job that is. It is very easy to damage the little rubber gasket, and then you are in Deep Kimchii. I hate the little demons.

Finally, 50 years after the UG-21 hit the market, an improved version is at hand. It goes together much in the manner as the PL-259 (fig. 8). Here's the way you do the job:

1. Cut the end of the coax even. Strip the jacket, shield, and dielectric back 1/2 inch. Don't nick the center conductor!

2. Cut the outer jacket back an additional 3/8 inch. Tin the braid. Don't overheat.

3. Screw the plug subassembly on the cable. Solder assembly to braid through solder holes, making a good bond between braid and shell. Solder center conductor to center pin. Don't overheat. *Note:* Solder must seal holes for connector to be waterproof.

4. After assembly cools, screw shell onto assembly. Tighten until assembly bottoms on hex structure.

There! It wasn't hard, was it?

You can get this new connector for less than $4.00. Two distributors that carry it are: The Wireman (N8UG), 261 Pittman Rd., Landrum, SC 29356 (803-895-4195), part number 7354; and Cable X-perts, Inc. (KC9VW), 113 McHen-

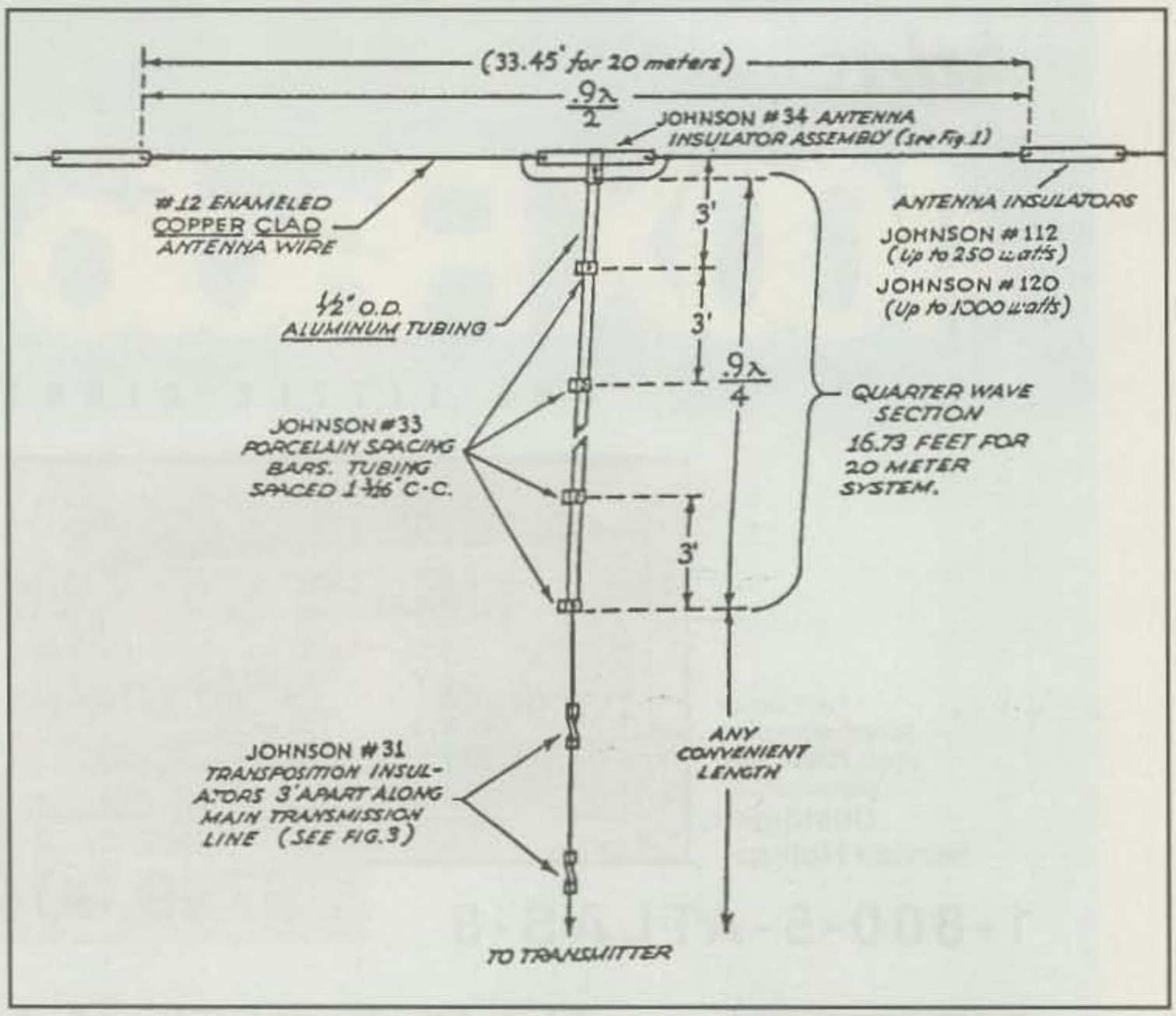


Fig. 7– The famous Johnson-Q antenna sold in kit form by E.F. Johnson Co.

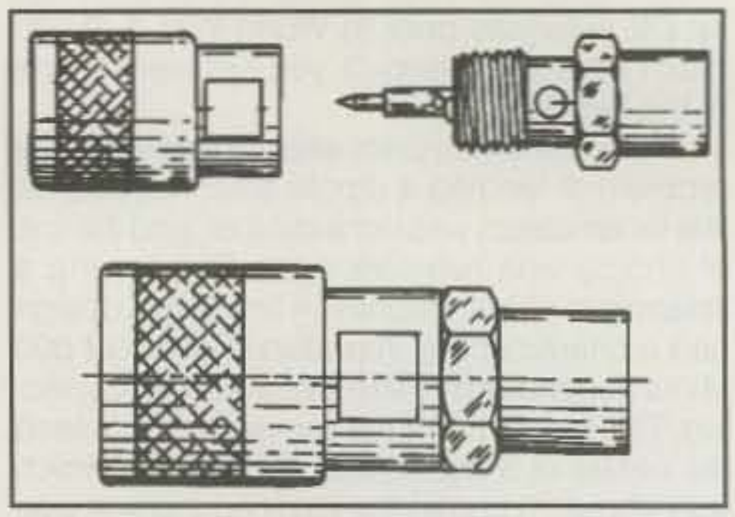


Fig. 8– Illustration from the Cable X-perts catalog shows how the new type-N coax connector goes together

ry Rd., Suite 240, Buffalo Grove, IL 60089 (708-506-1886), part number 6633S.

And Thank You Very Much!

My appreciation to the following readers who have written me in the past weeks. I enjoyed hearing from all of you!

Don Wiggins, W4EHV; Bruce Kelley, W2ICE; Don Leslie, W6FMX; Hu McClain, K6SPK; Bob Hickman, AA5WE; Darrell Penrod, KB4UX; John Boles, KA6LWC; George Goldstone, W8AP; Bill Wildenheim, W8YFB; Steve Barnes, KH6SB/Ø; Louis Cronenberger, K4BGZ; and Dick Rollema, PAØSE.

73, Bill, W6SAI

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CIRCLE 45 ON READER SERVICE CARD

BY JOE LYNCH, N6CL

VHF PLUS

ALL ABOUT THE WORLD ABOVE HF

VHF+ Operating Techniques and Procedures

Last month we looked at the amateur bands on the VHF+ frequencies. Because there are so many new amateurs operating on the VHF+ frequencies, I have decided that this month we'll look at some general knowledge of operating procedures. If you're new to the hobby, this will be very informative; if you've been around for awhile, read on anyway. The review will do you good, and you might just learn something new!

If you're a Technician class licensee, you're allowed to operate on any of the VHF+ frequencies using any mode of operation authorized to that particular frequency. If you're a Novice class licensee, you have access to the entire 125 cm amateur band and certain privileges on the 23 cm amateur band (see last month's column for the specifics).

The most popular operation for the beginning amateur is via the repeater. In order to be successful in your operating on the repeater, there are a few technical aspects and some operating protocol that you should know.

First, let's look at the technical knowledge. Let's begin with some general knowledge. When using a particular repeater, everyone transmits on the same frequency, called the "input frequency" because the repeater receiver listens on that frequency. Everyone also listens on the same frequency, called the output frequency, because the repeater transmits on that frequency. These two frequencies are separated by a few kiloHertz (on 6 and 2 meters) or megaHertz on the other bands. On 2 meters the separation is 600 kHz. On 6 meters the separation is 500 kHz to 1 MHz. On 125 cm the separation is 1.6 MHz. On 70 cm the separation is 5 MHz. And on 23 cm the separation is 5 MHz. These separations are referred to as "standard splits." In rare circumstances a repeater is set up to operate on something other that these pairs of frequencies and that set of frequencies is called a "non-standard split."

By agreement through the band plans mentioned in last month's column, and by FCC regulations, repeater operation is conducted in certain portions of the bands. By regional agreement a repeater is assigned a "frequency pair" by the local or area coordinating council. This frequency pair sets the input and the output frequencies. To be assigned a frequency pair you must apply with the repeater coordinating council for your area. To find out the name of the council in your area, check with the ARRL *Repeater Directory*.

The input frequency is also known as the "offset frequency" because it is offset from the transmit frequency. Depending on where in the band the frequency pair is located, the offset frequency is either up (or plus +) or down (or minus –) from the transmit frequency. For example, in the 2 meter band, if the repeater is assigned an output frequency below 147.000 MHz, the offset is minus and vice versa.

The repeater is equipped with an identifier that signs the callsign of the control operator. This identification, by law, must take place at least every ten minutes and at the cessation of activity on the repeater. It can be voice or CW at a rate of around 13–16 wpm.

Gone are the days of the operator changing receivers (which was the case with the first use of repeaters on the old 5 meter band in the 1930s). This has been replaced on some repeaters by an automatic function called "voting." Voting works by using several receivers at various sites around an area to be covered. These receivers are linked "cross-band" or via dedicated phone lines to the transmitter site, which also may have a receiver. The receiver hearing the loudest signal is electronically "plugged in" to the transmitter by the voting system and that signal is then retransmitted.

This physical separation helps alleviate a problem called "desensing." Desensing is what happens to a receiver when a strong signal is in close proximity of it. The receiver front-end is so overwhelmed with a signal, even one that is not on the same frequency, that it cannot hear anything else. It could potentially be a problem when the transmitter of the repeater's signal is so loud to the receiver that the receiver can't hear anything but the transmitter. All remote, or weaker, signals are blocked out.

For the repeaters that have on-site receivers, this problem is dealt with (although not totally solved) by using a "duplexer." This device isolates the transmit signal from the receiver. Instead of overloading the receiver, the signal is several tens of dB weaker, or down from, its normal signal strength and thus not nearly as much of a threat as it originally was to the on-site receiver.

Sometimes repeater receivers can be subject to another type of interference—that from users of another repeater operating on the same frequencies. Occasionally conditions can be such that signals from users of another repeater on the same frequency can be so loud to the first repeater as to render it useless to the regular users. A way of preventing this kind of interference is through continuous tone-controlled squelch system, or CTCSS tones. These tones operate on low frequencies and low audio levels that normally are not passed through the repeater to the transmitter.

A repeater receiver that is set up to operate with CTCSS has its input tuned to "hear" the correct tone. If it does not hear it, then the receiver does not pass the signal on to the transmitter for retransmission.

While CTCSS tone access is designed to keep unwanted signals from inadvertently keying the repeater, it also can be used to deny access to those you do not want using the repeater. While this practice is not illegal, it is looked upon with a bit of disfavor because by law all amateur radio frequencies are open for use by all authorized (by class of license) amateur radio operators.

Another device, connected to the repeater and working through it, is known as an "autopatch." An autopatch is a phone patch that automatically connects the repeater to local phone lines. By using it an amateur can make a phone call to a friend or even to emergency services to report an accident or another type of emergency. While it is a convenience, it can be misused both by the type of communications handled over it, and the length of time it is used.

While the FCC has made it legal to "order a pizza" over the autopatch, using it to conduct one's day to day business activities is still illegal. It is up to the user of the repeater through "self-policing" to keep the uses of the autopatch within the legal guidelines.

Bearing in mind this self-policing responsibility, it is important to note that each repeater is managed by a control operator. This person

P.O. Box 73, Oklahoma City, OK 73101
Internet jlynch @post.cis.smu.edu
Compuserve 72124.2734@compuserv.com

VHF PLUS CALENDAR

January 4	*Quandrantids* or *Quads* predicted peak. *(See text for details.)* Highest moon declination.
January 5	Full Moon.
January 6	Moon Apogee.
January 7	Moderate EME conditions.
January 13	Last quarter moon.
January 14	Moderate EME conditions.
January 18	Lowest moon declination.
January 20	Perigee and new moon.
January 20–22	ARRL VHF Sweepstakes contest. *(See text for details.)*
January 21	Poor EME conditions.
January 27	First quarter moon.
January 28	Poor EME conditions.

**EME conditions courtesy W5LUU.*

is ultimately responsible for the legal operation of the repeater. It is important, therefore, when you use a repeater, you do nothing that would be considered illegal, because not only do you jeopardize your license, you can imperil the license of the control operator.

The other problem of the length of time a single operator uses the autopatch is generally handled by a timer. Many timers are set to cut off, or terminate, the autopatch after three minutes during normal usage times. Some, however, are designed to terminate after only a minute during peak times, such as during daily commute times. Usually an electronic verbal warning is given so both parties hear it about 30 seconds before the patch disconnects.

Most autopatches are "open." That is, any amateur can use them. However, some repeater owners may restrict the use of the autopatch to certain members of a club or informal group. If this is the case, the autopatch is known as "closed," and certain access codes known to the group must be entered before dialing the phone number to use the autopatch.

Even "open" machines may use the "*" and "#" buttons as controls to keep someone from accidentally initiating a telephone call. The phrase "star up and pound down" means that you must use the "*" button ahead of the phone number to access the autopatch and the "#" button after the phone call is completed to "hang up" the phone.

Another timer, an on-the-air timer, is also used to keep one operator from monopolizing the repeater. As with the autopatch timer, it's usually set for three minutes during "off peak" times and for only 30 seconds during peak times. How do you know if you've "timed out?" When you let up on the mic button and you hear an electronic voice say, "You timed out!" It is a bit embarrassing to have it happen, so watch your watch if you get a bit long-winded.

Another device used with the repeater is a "courtesy tone." The courtesy tone is heard at the end of a transmission of the repeater. It is called "courtesy" because it builds in a pause of a second or so, to allow someone who is not part of your QSO to break in and say something. Perhaps the breaking person has an emergency to report or perhaps the person just has something to contribute to the conversation. When the tone has sounded, then the original parties are free to continue their QSO.

Even when the tone has sounded, however, it is a good idea to pause a second or two longer, because if the repeater is equipped with a timer, the tone also shows that the timer has been reset. If you start transmitting before the tone sounds, then you will pick up on the time remaining from the previous transmission. You could unknowingly time out fairly quickly during your transmission.

What about protocol? Unlike HF QSOs, you do not "call CQ." Instead, you simply press your mic button and announce, "WB5LUA monitoring (or listening)." If someone else is listening and wants to talk to you, then that person would say, "WB5LUA, this is AA5C" and listen for your reply. In this way a QSO begins.

When using the autopatch, whether in an emergency or for routine calls, you must identify your station—for example, "This is K5CPZ to the patch." At the conclusion of the patch, you must also identify your station—"This is K5CPZ clearing the patch." Again, check with the control operator to determine what he or she requires you to use.

One other word about "identifying": It is particularly annoying to listen to someone "kerchunk" or key up a repeater without initially identifying. To some, this may show that someone has emergency communications and is trying to, but not quite making it into the repeater. You can see the potential ramifications for someone to spend unnecessary time trying to listen for someone else just because that person doesn't have the courtesy to identifying his or her transmissions. Besides, by law, you must identify your initial transmissions.

While operating via the repeater is most popular, there exist other forms of communication on the VHF+ frequencies. Simplex operation quietly takes place on the simplex frequencies without much notice from repeater users. So if you are getting a bit bored from the same old group of people on the repeaters, tune to the simplex frequencies. You will find a whole group of new friends.

Nevertheless, as I said, using a repeater is probably your first activity as a newly licensed amateur. There should be nothing intimidating about it. The normal, day-to-day users are usually friendly and want to help you "learn the ropes." Don't be afraid to pick up the mic (or handheld) and join in on the fun.

Other Types of VHF+ Operations: After the newness of operating on the repeater wears off, you might decide that you want to explore other types of operations available on the VHF+ frequencies. There are plenty. Among them are packet, weak signal (which is extensively covered in this column), satellite, and amateur television (ATV). By convention or by regulation, a portion of each of the VHF+ bands is set aside for these other operations.

Packet operations makes use of the computer with your amateur station. With this linking of the two, you can send messages or software files to your fellow amateurs. This digital communications is in the form of packets—thus the name "packet radio."

The term "weak signal" usually refers to operations on SSB or CW. Within weak-signal operations are more sophisticated forms of communications—meteor scatter (bouncing signals off the trail of ionization caused by a meteor burning up in the atmosphere) and moonbounce (bouncing signals off the surface of the moon and back to earth). Weak-signal operation affords you the ability to work stations at considerable distance (DX).

Another form of DX communications is via amateur radio satellites. There are several satellites in orbit that make it possible for you to talk to stations considerably faurther from you. Some satellites even store and forward packet messages for retrieval on subsequent orbits.

Amateur television is a form of communication that is gaining in popularity. In the basic operation you can send pictures of yourself or your station to your fellow amateur. In more sophisticated operations, you can participate in emergency communications or cover special events such as a parade.

For More Information: At the risk of appearing a bit vain, I am going to put in a plug for my book, *The VHF "How To" Book*. It is available from CQ Communications for $15.95, plus $3.50 shipping/handling. Also available from CQ Communications is the "Getting Started in VHF" video tape. You can purchase a copy of it for $19.95, plus $3.50 shipping. CQ also carries a number of American Radio Relay League publications. For ordering information, call CQ's toll free line, 800-853-9797.

Space Shuttle Scatter

The following is from Jack Henry, N6XQ. In his report, he describes using a different mode of scatter communications.

"While on a microwave DXpedition in Vizcaino Peninsula (in DL27) in September I worked Dennis Dinga, N6DD, a space enthusiast, on a 440 MHz repeater system. Dennis informed me that I would get the 'Bozo of the Year Award' if I didn't get up at 4 AM to see the Space Shuttle re-enter the atmosphere to land in Florida.

"It turns out that he has been wanting to witness the event for a decade, but always missed out because of overcast skies. He explained that I was in the perfect spot for viewing, as it would be directly overhead at about 225,000 feet. He said it would be an experience that I would never forget. I told him I would probably be in Catavina about 100 miles north, but would make an attempt to get up.

"I put in a call for a 3:45 AM wake-up at the motel in Catavina and was awakened at 3:15. Oh well, it's only sleep. It was a perfect morning in the Baja desert, zero percent humidity and clear skies. There were many stars, and the Milky Way galaxy clearly visible. I retrieved my portable FM broadcast receiver to test for an ionization trail. From 88 to 108 MHz no stations were present, so it would be an easy test to conduct. I was just about ready to give up when—WOW!!! There it was.

"On the west horizon, this extremely bright pinpoint source was moving slowly toward me. An enormous trail, similar to a jet's contrail, glowing a yellowish orange color was streaking behind the vehicle. The trail appeared to be several times the diameter of the visible moon.

"I turned the FM portable on, and alas, there were many station across the band. They were not extremely strong, but were easy to copy. I didn't dwell on identifying stations, only observing quantity as a quick test. This was 4 AM on Monday, and I suspected that most stations were off the air for maintenance or lack of an audience. I know there are only four FM stations in Baja south of Insanity, and I was sure that they were off the air.

"I was thrilled that I was picking up a large quantity of stations. I only observed FM broadcast stations when the vehicle was visible. Immediately I thought of making a 2 meter sked with XE2HWB the next time a vehicle makes a similar ground track on re-entry.

"I truly was in the perfect location, as the vehicle track was about 70° up from the horizon. I had not heard of any detailed accounts of re-entries ,so I didn't know what to expect. The large glowing contrail was an unexpected surprise.

"The vehicle appeared to travel slowly and seemed to have taken three to five minutes to travel horizon to horizon. The contrail was clearly visible for a half hour after the space vehicle tracked over the eastern horizon.

"At Jimmy Treybig, W6JKV's barbecue (in late September) I met with Bill Tynan, W3XO. Bill told me that he had observed the event before, but only remembered the contrail lasting for a few minutes. Perhaps it was because the vehicle is higher when it is over Baja that it gave me extended viewing time.

"I strongly recommend that if anyone has the opportunity to witness a re-entry, that they do so, as it is truly an exhilarating experience. This made up for us getting stuck in the mud!"

States Above 50 MHz Award

In honor of its 30th anniversary, the Central States VHF Society has announced the States Above 50 MHz award/contest. The following are the rules for the award/contest:

Purpose:

1. Commemorate the 30th anniversary of the Central States VHF Society in 1996 by issuing certificates to anyone working 30 or more states on the bands above 50 MHz.

2. Promote activity across all bands above 50 MHz and all propagation modes found on these bands.

3. Promote working states, as this was the original goal of the founding amateurs of the CSVHF Society.

4. Promote membership in the CSVHF Society. Only members are eligible for the 1st, 2nd, and 3rd place plaques.

Award/Contest Period: 0001 UTC, 1 January 1996 to 2359 UTC 20 July 1996.

Objective: Work as many states as possible on each of the amateur bands above 50 MHz.

Scoring: The total score is the sum of the number of states worked on each band.

Awards:

1. Certificates will be awarded to any station who applies with a score of 30 or higher. The applicant does not have to be a member of the CSVHF Society to receive a certificate.

2. Walnut plaques will be awarded for 1st, 2nd, and 3rd place high scores. The awards will be presented at the 30th annual CSVHF Society Conference on Saturday, July 27, 1996. You must be a member of the CSVHF Society to be eligible for the 1st, 2nd, or 3rd place plaque awards. In case of a tie, a weighing factor will be applied to each band's score

making higher frequency scores more valuable than lower frequency scores.

Entry/application forms: Entry forms may be obtained by sending an SASE to: Rod Blocksome, KØDAS, 690 Eastview Dr., Robins, Iowa 52328. All entries for the plaque awards must be received not later than midnight, July 24, 1996. Entries for the certificate awards will be accepted through August 31, 1996. Submit entries to Rod Blocksome, KØDAS at the above address.

Miscellaneous Rules:

1. Refer to the ARRL rules for WAS awards for any issue not specifically covered by these rules. In case of a conflict, the rules in this document shall take precedence.

2. QSL cards are not required. However, verification of contacts may be done at the discretion of the CSVHF Awards committee. All decisions of the committee are final.

3. All entries must be on the CSVHF entry form (or copies thereof) and must be signed and dated by the applicant.

4. An applicant may submit only one entry per physical location.

5. Entries must be one band per page. Each page must clearly show the following information for each state being claimed: Callsign, Date, Time, and Propagation mode.

Here are the answers to several questions that have come up:

1.EME contacts do count, same as they do for WAS.

2.To Join the Central States VHF Society send a check for $5.00 payable to Central States VHF Society to: Charles Chennault, WA5YOU, 242 Barbara Drive, Monroe, LA, 71203. Charlie's e-mail address is reported to be: CKC@bayou.com. Along with the check, give him your name, call, address, grid locator, and indicate if you are a member of the ARRL. Membership runs from conference to conference, so dues now will expire after the July 1996 conference.

3. There is no CSVHF newsletter at this time for the membership. There is a net on 3843 Sunday local at 0230 UTC called by WA5VJB.

4. A question came in concerning operating portable or roving operations: How is it scored? Answer: Each location is a separate entry. However, for the definition of what constitutes a different location, you need to refer to the ARRL WAS rules for VHF+.

5. A comment came back that there was no use in trying if you didn't have EME capability. I would urge everyone to carefully read the rules and consider the possible strategies that could be employed. For instance: Could a good 6 meter only station get 30 states? Probably. Could he beat a 2 meter EME station? Maybe. Could either beat a New England Microwave only station? I don't know. How about a station in Colorado that has something on several bands? I don't know. The point is, I think there is a certificate for anyone willing to work at it along with a little luck of being in on openings. I think there are enough variables involved to provide many routes to being a serious contender for a plaque.

Thanks to KØFQA, the Central States VHF Society now has a Web page at the following: http://www.umn.edu/nlhome/m042/liebe009/. Look there for the latest information about the 1996 conference in Minnesota. Further information about the technical and family programs will be added as plans develop. Also planned is a membership roster.

Thanks to KØDAS and WØUC and the Internet for the above report.

The *VHF/UHF DX Book* is Back

What quickly became a collector's item, the *VHF/UHF DX Book* (because its first edition sold out so quickly) is back in the form of a second edition. It was to have been available from December 1st. The second printing includes some minor typographical revisions and an updated version of G4DDK's "Suffolk" 28-144 MHz transverter.

The RSGB will be handling all distribution, but expect delays of some months before the book is available from national distributors. In the meantime, anybody world wide can order directly from the RSGB. Their phone number is +44 1707 659015; fax is obviously cheaper and more accurate: +44 1707 645105. The mailing address is: RSGB, Lambda House, Cranborne Rd., Potters Bar EN6 3JE, England.

The price is 18.00 UK pounds (under 16 pounds to RSGB members). Insist on airmail, because surface mail takes forever. Airmail for a single copy is under 3.00 pounds. Currently, UK pound = about $1.50–1.60 US. The RGSB accepts all major credit cards, so the credit card looks like the best way to order. I highly recommend this book as an excellent reference guide for the weak-signal VHF operator.

Current Contests

ARRL VHF Sweepstakes: This annual winter classic takes place between 20–22 January, beginning at 1800 UTC 20 January and ending at 0300 UTC 22 January. Exchange is your grid square. This is the only VHF contest that features club competition. This is the first ARRL contest with the *revised* new Rover rules. If you plan to be a Rover, then the following is important to you: To figure the Rover's final score, multiply the sum of all QSO points by the number of different grid locators worked per band, regardless of which grid locator they were made from, plus one additional multiplier for every grid that you activated.

The complete rules appear on page 107 of December 1995 *QST*. Rules plus log/summary sheets are also available electronically from the League from several different sources, including their bulletin board (860-594-0306), and their home page (http://www.arrl.org) via the World Wide Web. As always, send or electronically file your log and summary sheets to the League.

Current Meteor Showers

The *Quads:* The *Quandrantids* or *Quads*, is a brief, but very active meteor shower. Expected peak is around 0520 UTC on 4 January. The actual peak can occur ±3½ hours of the predicted peak. The best paths are north-south. Long duration meteors can be expected about 1½ hours after the predicted peak. As always, look to 3818 or 3843 kHz in the evening hours for opportunities for schedules.

Southeast VHF Society Formed

The following is courtesy Ron Hooper, AB4RU: "Announcing the Southeastern VHF Society! The Southeastern VHF Society has been formed to: Promote weak signal modes of operation and experimentation (SSB, CW, EME, etc) on the VHF, UHF, and Microwave bands. Sponsor and conduct a technical, educational and operating conference yearly in the Southeast, beginning in the Spring of 1997.

"Whether you are an experienced VHF+ operator, equipment enthusiast, new ham, or someone who would like to learn more about the excitement of building and/or operating VHF/UHF weak-signal gear. . . the Southeastern VHF Society is for you! We are looking for hams to join us in this exciting facet of our hobby. Presently we have hams from the States of Alabama, Georgia, North Carolina, South Carolina, Tennessee, and Virginia who have agreed to help build the Southeastern VHF Society into a first-class organization along the lines of the Central States VHF Society. Will you join us?

"Dues are $20 for 1996. For an application, send an SASE to: Neal Sulmeyer, AE6E, Treasurer, Southeastern VHF Society, 412 Stockwood Drive, Woodstock, GA 30188. An electronic copy of the application can be obtained by sending an e-mail request to Ron Hooper, AB4RU, at ab4ru@aol.com.

"For more information on the Southeastern VHF Society, contact any of the well-known VHFers listed below: Steve Adams, WS4F, President, P.O. Box 1255, Cornelia, GA 30531 (770-869-0565; e-mail: stevews4f@aol.com); Dick Hanson, N4HSM, Vice President, 7540 Williamsburg Drive, Cumming, GA. 30131 (770-844-7002, e-mail: n4hsm@aol.com); Bob Striegl, KA2DRH, Secretary, 18068 Parker Road, Athens, AL 35611 (205-729-1429, e-mail: IDVUG@mhs-tva.attmail.com); Neal Sulmeyer, AE6E, Treasurer, 412 Stockwood Dr., Woodstock, GA 30188 (770-926-8422; e-mail: humecon@crl.com); or Ron Hooper, AB4RU, Newsletter Editor, 2953 Hwy 51 S.h, Lula, GA 30554 (706-677-2800, e-mail: ab4ru@aol.com.

1995 Microwave Update

The 1995 Microwave Update conference was held at the Arlington La Quinta Inn over the last weekend in October. Over 110 microwave enthusiasts participated in the conference. This year a number of DXers were present, including amateurs from Australia, Canada, England, Germany, Japan, and the Netherlands.

Among the speakers and their topics were: Rick Campbell, KK7B, The Next Generation Microwave Transverters; Paul Wade, N1BWT, Parabolic Dish Antennas; Chip Angle, N6CA, Local Oscillator and Filter Design for the Microwave bands; Al Ward, WB5LUA, New LNAs for Microwave Bands; Tommy Henderson, WD5AGO, LNA Design Considerations; Paul Shuch, N6TX, The Search for Extra Terrestrial Intelligence Continues; Keith Pugh, W5IU, An Update on the Phase 3-D Amateur Satellite; Sam Jewell, G4DDK, A High-Quality Source for the 2.8–3.5 GHz Frequency Range; Toshihiko Takamizawa, JE1AAH, Building 24 GHz Equipment that Works; and Dennis Mungham, VE3ASO, Reports on VE3ONT 10 GHz Operation. Other speakers included: Tom Whitted, WA8WZG, Microwave Operation, Midwest Style; Dave Robinson, WG3I, An Easy Route to 24 GHz; and Steve Kostro, N2CEI, Neatness Counts in Microwave Construction.

The conference ended with a Texas-style barbecue at Al Ward, WB5LUA's QTH. Folowing that, Al demonstrated EME on 10 GHz. Several visitors had not ever heard EME communications, let alone SSB off the moon.

Much appreciation goes to this year's hosts, Al Ward, Kent Britain, WA5VJB, and Wes Atchison, WA5TKU, for the hard work that they performed to make the conference a success.

Copies of the *Proceedings* can be obtained from the League for $12, plus $3 shipping.

Tragedy Strikes WQØP Family

The following is from the "Rocky Mountain VHF+ Newsletter": In September, Greg Cerney, WQØP, lost a son in an automiblie accident. Greg's wife and several of their children were injured in the accident, not far from his home. Please drop Greg a not via his *Callbook* address.

And Finally

The first of this month a group of us who sing in Seminary Singers is supposed to tour border towns across south Texas. I will have 6 meters and my GPS receiver with me and will look for openings in order to give out some of those rare grid locators along the border.

Thanks go to all of you for your reports via the Internet, the mail, my phone and fax machine. I regularly check both Internet addresses that are listed at the beginning of this column. I check my answering machine and fax machine less frequently now that I am spending so much time in Dallas at school. Nevertheless, you can still call me at 405-528-6624 in OKC or 214-768-5282 in Dallas, or fax me at 405-528-0746.

My best wishes go to all of you for a healthy, and wonderful new year. Until next month.

73, Joe, N6CL

Ameritron *no tune* Solid State FET Amplifier

No tuning, no fuss, no worries -- just turn on and operate . . . Incredibly low $1299 includes AC power supply, 600 Watts output, continuous 1.5-22 MHz coverage, instant bandswitching, no warm up, no tubes to baby, fully SWR protected, extremely quiet, very compact

- **Ameritron's** *revolutionary* ALS-600 is amateur radio's *only* linear amplifier that uses four rugged TMOS RF power FETs -- gives unequaled *no tune* solid state performance
- **$1299 includes** Ameritron's *no tune* FET Amplifier *and* a 120/220 VAC, 50/60 Hz AC power supply for home operation

ALS-600
$1299
Suggested Retail
(*Includes* AC Power Supply)

- **Instant bandswitching, no tuning, no warm up** -- just turn on and operate
- **Output Power** -- 600 Watts PEP, 500 Watts CW
- **Continuous Coverage** -- 1.5 to 22 MHz; 10/12 Meters with easy-to-install optional kit, $29.95 plus s/h
- **SWR Protection** -- prevents amplifier damage if you switch to wrong band, use wrong antenna or have high SWR
- **Over Power Protection** -- if output forward power or reflected power exceeds safe level, output power is automatically reduced to prevent amplifier damage by controlling ALC to exciter
- **Extremely quiet** -- low speed, low volume fan is so quiet you'll hardly know it's there, unlike noisy blowers used in other amps
- **Very Compact** -- 6 x 9½x12 inch amplifier takes up less desktop space than your transceiver and weighs about the same -- only 12½ pounds
- **Illuminated Cross-Needle SWR/Wattmeter** -- lets you read SWR, forward and reflected *peak* power simultaneously
- **Operate/Standby Switch** -- lets you run "barefoot", but you can instantly switch to full power if you need it
- **Front Panel ALC Control** -- *exclusive* Ameritron feature -- convenient front panel control lets you adjust your output power
- **Transmit, ALC, SWR LED indicators** -- keeps you informed
- **12 VDC output jack** -- lets you power low current accessories
- **Separate** ALS-600PS power supply (included) can be placed conveniently out of the way and plugged into your nearest 120 VAC outlet -- no special wiring needed
- **Made in USA**
- **Enjoy** 600 Watts of *no tune* solid state power. Call your favorite dealer for your best price and order your ALS-600 with power supply today

ALS-600PS Heavy Duty Power Supply

ALS-600PS power supply included with ALS-600 amplifier

- **Massive choke input filter** greatly improves voltage regulation and reduces peak AC line current
- **Ameritron's** exclusive *Multi-Voltage Power Transformer* lets you compensate for stressful high line voltage and performance robbing low line voltage
- ***Step-Start Inrush Protection***™ stops damaging inrush currents and extends life of power supply components
- **Illuminated** Cross-Needle Meter monitors voltage and current of 50 VDC line
- **Extremely** quiet fan
- **Very compact** 6 x 9 ½ x12 inches -- can be placed conveniently out-of-way
- **Wired for 120 VAC,** supplies 50 VDC at 25 amps to ALS-600 amplifier
- **Also** use on 100-130 VAC and 220-250 VAC, 50/60 Hz
- **Draws** less than 12 amps at 100 VAC and less than 6 amps at 230 VAC
- **Includes prewired cable** to plug into ALS-600 amplifier
- **Made in USA**

Ameritron Mobile *no tune* Solid State Amplifier

Ideal mobile amplifier -- ***uses 13.8 VDC mobile electrical system, very compact 3½x9x15 inches, extremely quiet, 500 Watts output, continuous 1.5-22 MHz coverage, instant bandswitching, no tuning, no warm up, SWR protected***

ALS-500M
$799
Suggested Retail

- **Mobile *no tune* Solid State Amplifer** -- uses four rugged 2SC2879 high power linear RF power transistors
- **Instant bandswitching, no tuning, no warm up** -- just turn on and operate -- makes mobile QSOs safer
- **Very Compact** -- just 3½x9x15 inches -- fits in nearly any mobile installation; weighs only 7 pounds, that's less than some mobile HF transceivers
- **Extremely quiet** --quiet low speed, low volume fan stays off and silent until temperature rises
- **Output Power** -- 500 Watts PEP, 400 Watts CW
- **Continuous Coverage** -- 1.5 to 22 MHz; 10/12 Meters with easy-to-install optional kit, $29.95 plus s/h
- **Load Fault Protection** -- disables and bypasses amplifier if antenna has excessively high reflected power or if bandswitch is set lower than exciter frequency -- virtually eliminates damage because of operating error; has Load Fault LED indicator
- **Thermal Overload Protection** -- disables and bypasses amplifier if temperature is excessively high; automatically resets when temperature drops to safe level; has Thermal Overload LED indicator
- **Excellent harmonic suppression** -- multiple section output network and push-pull output circuit gives excellent harmonic suppression
- **DC current meter** lets you monitor collector current
- **ON/OFF Switch**-- bypasses amplifier for "barefoot" operation without having to disconnect high current power supply cables
- **Remote ON/OFF Control** -- lets you remotely control ON/OFF function for out-of-the-way mounting of amplifier
- **Exciter Drive** -- less than 100 watts input gives full output
- **Power Supply Requirements** -- requires 13.8 VDC at 80 amperes peak current for PA transistors and separate line for 12-15 VDC at 4 amperes for control and bias circuits
- **Made in USA**
- **Call you favorite dealer** for your best price and order your ALS-500M today

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AWARDS

NEWS OF CERTIFICATE AND AWARD COLLECTING

This month we salute Randy Hatt, KN4RI, USA-CA recipient #885, September 24, 1995. Randy tells his own story.

Randy Hatt, KN4RI
USA-CA #885, 9-24-95

"I graduated from high school in Lansing, Michigan in 1966 and attended a local community college for a couple of years after that. I joined the Army in February 1969 for a couple of years of excitement. After the army I got married in late 1971. At that time I was working as a mason tender for a general contractor. In 1973 I received a three-year Bricklayer's apprenticeship and worked in the trades until 1978. After several years of working outside in the Michigan weather, I decided that there must be a better way to make a living. I went back to college and learned how to be a computer programmer. I've done some traveling around Michigan, Texas, and Florida working on different projects as a consultant, and I am now back in Michigan working at General Motors in Flint (Genesse Co.).

Randy Hatt, KN4RI, USA-CA #885.

"In June 1973 I received my Novice call, WN8NVD. I upgraded to a General class license in September 1973 with the call of WB8NVD. Seventeen years later, in October 1990, I upgraded to Advanced, and received the call KN4RI while in Florida. Two months later I upgraded to the Extra class license.

"I don't remember when it was that I came across the County Hunters on 14.336, but it was sometime late in 1973. I was hooked! I received USA-CA-500 #1011 in August 1973 and USA-CA-1000 #382 in November 1975.

"In the spring of 1979 I was divorced from my first wife and was off the air for the most part until 1985. On one of my contracts in Texas I met this wonderful little lady who actually put up with me, my hobbies, and county hunting. On August 30, 1986 we were married. Pattie and I became very involved in showing dogs, Samoyeds, from 1985–1990. We had one of our dogs nationally ranked in 1989, but it soon became too political for us and we got out.

"Over the years I have met a few County Hunters and have enjoyed the friendships made over the air. The one County Hunter who has impressed me the most, and whom I've had the pleasure of meeting, is Arnie, K9DCJ. I guess the strangest meeting I've had was while Pattie and I were cruising down the intercostal waterway in Florida. I saw this tower and beam in a guy's backyard. Like any ham would do, I pulled the boat up to this guy's dock. He came out wondering what I was doing, so I introduced myself. Well, I came to find out that he too is an active County Hunter. It was Ed, now WW1N, USA-CA #345.

"I would like to say thanks to Cheryl, KJ5PQ, for getting my last county, ending a 22 year project. Needless to say, I would still not be done if it were not for the net controls and especially the mobiles. Mobiles are the heart and soul of County Hunting.—73, Randy, KN4RI"

Box 76, Pleasant Mount, PA 18453-0076

SPECIAL HONOR ROLL

Bill Sidney, WB8JZN
USA-CA All Counties #886
October 12, 1995

Margarat Vining, W4KZT
USA-CA All Counties #887
October 12, 1995

Nell Devitt, NB6A
USA-CA All Counties #888
October 27, 1995

Lawrence Prichard, W9SUQ
USA-CA All Counties #889
October 27, 1995

HONOR ROLL

500		2000	
W8JZN	2888	W8JZN	1069
W4KZT	2889	W4KZT	1070
NB6A	2890	NB6A	1071
W9SUQ	2891	W9SUQ	1072
HC4L	2892		

1000		2500	
W8JZN	1396	W8JZN	996
W4KZT	1397	W4KZT	997
NB6A	1398	NB6A	998
W9SUQ	1399	W9SUQ	999
JA9CWJ	1400		

1500		3000	
W8JZN	1165	W8JZN	905
W4KZT	1166	W4KZT	906
NB6A	1167	NB6A	907
W9SUQ	1168	W9SUQ	908

The total number of counties for credit for the United States of America Counties Award is 3076. The basic award fee for subscribers is $4.00. For nonsubscribers it is $10.00. Initial application must be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 76 North Broadway, Hicksville, NY 11801 USA for $2.00. To qualify for the special subscriber rate, please send a recent *CQ* mailing label with your application. 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 15, 1991. A complete copy of the rules may be obtained by sending an SASE to Norm Van Raay, WA3RTY, USA-CA Award Manager, Box 76, Pleasant Mount, PA 18453-0076 USA. DX stations must include extra postage for airmail reply.

MARAC 95 Update

Paul Scipione, AA2AV, the chairman of the MARAC 95 National Convention, asked us to share this message.

"To the nearly 200 County Hunters from around the nation and world who attended our national convention in Hamburg, New York, I want to thank you for coming, and on behalf of the whole MARAC 95 Committee, I hope you had a great time. In spite of so-so weather and several on-site illnesses, everyone seemed to agree that MARAC 95 was one of our best meetings ever. The evening at the ball game was great. Everyone was in awe of Niagara Falls, and our banquet at Ilio DePaulo's was sensational. All the nifty door prizes weren't too bad either! Best of all were the 24-hr-a-day eyeball QSOs in our 'intimate' hospitality room and all the advice on mobile HF installations. When all the smoke cleared, we even made a modest 'profit' for MARAC. That should get next year's group in Arizona off to a good start.

"I want to say sincere thanks to my wonderful committee: Jim, KZ2P; Paul, WB2ABD; Joyce, WB9NUL; Bo, NØ2W; Bill, K2NJ; Gail, WB2AXG; and Roger, WB2HUV. You're the best!—Paul Scipione, AA2AV, USA-CA #770."

Awards Issued

USA-CA 500: Bill Sidney, WB8JZN, #2888; Margaret Vining, W4KZT, #2889; Nell Devitt, NB6A, #2890; Lawrence Prichard, W9SUQ, #2891; Lilian De Ayala, HC4L, #2892.

USA-CA 1000: Bill Sidney, WB8JZN, #1396; Margaret Vining, W4KZT, #1397; Nell Devitt, NB6A, #1398; Lawrence Prichard, W9SUQ, #1399; Yoshiharu Katada, JA9CWJ, #1400.

USA-CA 1500: Bill Sidney, WB8JZN, #1165; Margaret Vining, W4KZT, #1166; Nell Devitt, NB6A, #1167; Lawrence Prichard, W9SUQ, #1168.

USA-CA 2000: Bill Sidney, WB8JZN, #1069; Margaret Vining, W4KZT, #1070; Nell Devitt, NB6A, #1071; Lawrence Prichard, W9SUQ, #1072. **USA-CA 2500:** Bill Sidney, WB8JZN, #996; Margaret Vining, W4KZT, #997; Nell Devitt, NB6A, #998; Lawrence Prichard, W9SUQ, #999.

USA-CA 3000: Bill Sidney, WB8JZN, #905; Margaret Vining, W4KZT, #906; Nell Devitt, NB6A, #907; Lawrence Prichard, W9SUQ, #908.

Awards Available

The Republic of Austria will celebrate its millennium in 1996. The Austrian Communications Authorities in conjunction with the ITU have authorized all Austrian amateur radio operators to utilize the special prefix OEM (M signifies the Latin word mille, 1000) as of 0000 UTC 1 January 1996 and until 2400 UTC 31 December 1996. The OVSV is offering two awards for this event under the following rules.

WOEM—Worked OEM. This award is sponsored by OVSV on the occasion of Austria's millennium and may be worked by any amateur radio station and SWLs under the following conditions.

The WOEM Award is offered in celebration of Austria's millennium.

European Countries: 20 different OEM callsigns, of which at least three must be from the callsign areas OEM 1 and OEM 3.

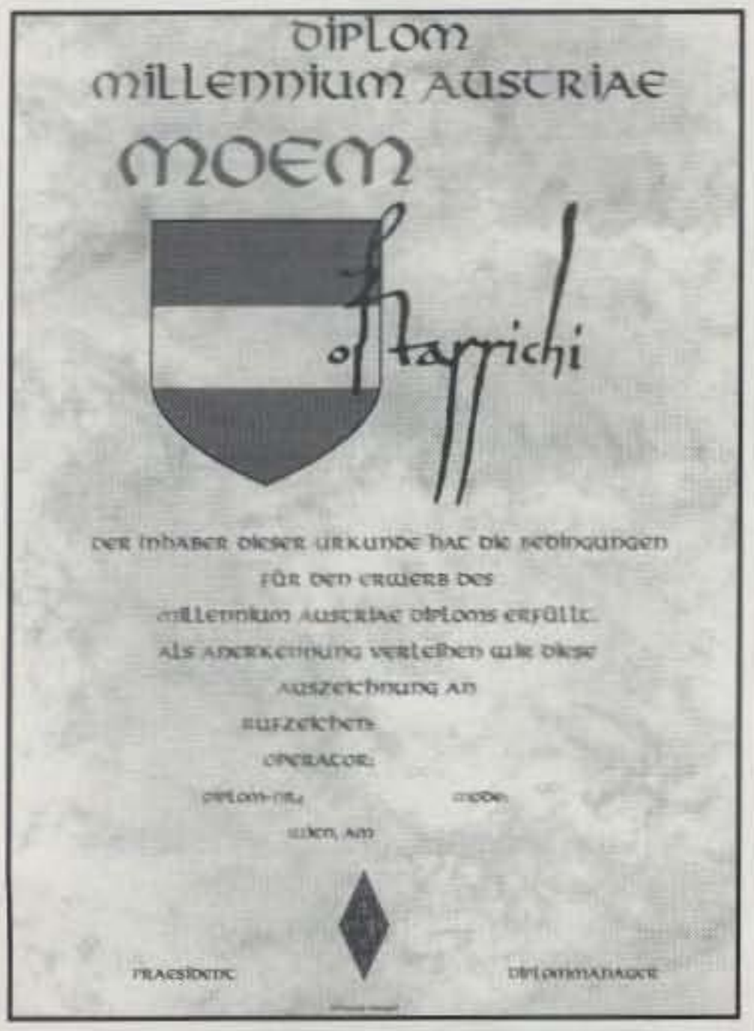
Countries Outside Europe: 10 different OEM calls, including at least two OEM 1 and two OEM 3.

All bands/modes are valid for this award.

MOEM—Worked 1000 OEM Points. One-thousand points are required according to the following count:
OEM 4-7 and 9 stations: 20 points each.
OEM 1-2-3-5-6 stations: 10 points each.
OEM X stations: 30 points each (club stations). (First letter of the suffix is X.)

A minimum of five different callsign areas must be worked. All bands and all modes are valid for this award. Send your applications (GRC list) with 10 IRCs (or ATS 100. or DEM 15. or USD 10.) to O.V.S.V.,k Diplommanager, Theresiengasse 11, A-1180 Vienna, Austria.

Your participation in these two short-time awards is very welcome, and you are free to apply for mixed or single mode operation.



The MOEM Award is sponsored by the Austrian Communications Authorities and the ITU.

Estonia Award. This award is issued by the Estonian Amateur Radio Union (EARU) as its official award. The award is issued in classes HF, VHF, UHF, SHF, SIX, and SAT. Corresponding stickers are issued to indicate the class of award. The rules of the award are as follows (for stations outside of Europe).

DX stations applying for the award in the classes:

HF—should work at least 10 different ES stations on HF bands;

VHF, UHF, and SHF—should work at least 2 different ES stations either on 2 meter, 70 cm, or 23,cm bands;

6 meters—should work at least 5 different ES stations on the 6 meter band;

Satellite—should work at least 3 different ES stations via manmade amateur radio satellite of whatever type.

Contacts with ES stations are valid from January 1, 1990. Callsigns ESLXX, ESIXX/2, ESIXX/3, etc., for example, are counted as different ES stations. Each claim must be accompanied by an abstract of station log with all necessary data on the contacts achieved for the award concerned. Each list must be accompanied by documentary proof in the form of letters or QSL cards showing that two-way communication has taken place, or by a statement from the applicant's national society or from any two amateurs other than the applicant himself that the necessary QSL cards have been checked. Therefore, QSL cards are not required to be sent to the award manager.

An SWL can obtain the award and the corresponding stickers according to the same rules on the basis of the received ES QSL cards.

The "Estonia Award" will be issued upon payment of a fee of 5 USD. Each sticker in addition is 2 USD.

All correspondence (applications), together with the corresponding fee, should be sent to EARU Award Manager, P.O. Box 125, EE-0090 Tallinn, Estonia, Europe.

On A Personal Note

Well, summer has come and gone, and we had our first snowfall of the year on 1 November. The natives say that we are in for it this year. El Nino has moved away from its usual haunt; the caterpillars have heavy coats; but most telling of all the grosbeeks are eating up everything in sight. (At least that's what the natives claim.)

After closing our business, my YL, Carol, took the summer off and enjoyed her gardening. We also enjoyed each other's company without having to worry about the older folk and our helpers who were always around. But alas, expenses continue and people want to get paid, so Carol returned to nursing and is working as a three to eleven supervisor at a Nersing Home. The evenings sure are lonely.

My health has been good lately, thanks to the good folks at the VAMC Wilkes Barre.

We have been spending quite a bit of time exploring the Internet and the World Wide Web—fascinating stuff. But remember all the debates about doing business on 2 meters. Well, I wonder about all that e-mail and the post office. Now they are begininng to use the net to talk real-time, anywhere in the world, all for a local phone call if you have a local provider.

Speaking of e-mail, some folks have sent their documentation over the net. As long as it is sent in ASCII or can be converted to ASCII, I will accept it. My e-mail address is as follows: wa3rty@epix.net. Questions or concerns can also be sent via this address.

On a final note for this month, it was a pleasure to award USA-CA #888 to a very nice Young Lady, Nell Devitt, NB6A. She just loves giving out #888 with 88's to all. By the way, Nell is a young 70 years old.

73, Norm, WA3RTY

Announcing:

The 39th Annual CQ World-Wide WPX Contest

SSB: March 30–31, 1996

CW: May 25–26, 1996

I. Contest Period: Only 36 hours of the 48 hour contest period permitted for Single Operator stations. **Off periods must be a minimum of 60 minutes in length and clearly marked in the log.** Multi-Operator stations may operate the full 48 hours.

II. Objective: Object of the contest is for amateurs around the world to contact as many amateurs in other parts of the world as possible during the contest period.

III. Bands: The 1.8, 3.5, 7, 14, 21, and 28 MHz bands may be used. No WARC bands.

IV. Types of Competition:

1. Single Operator (Single band and All band)

(a) Single operator stations are those at which one person performs all of the operating, logging, and spotting functions. **Only one transmitted signal is allowed at any time.**

(b) **Low Power:** Same as 1 (a) except that **output power shall not exceed 100 watts.** Stations in this category will compete with other low power stations only.

(c) **QRP/p:** Same as 1(a) except that **output power shall not exceed 5 watts.** Stations in this category will compete with other QRP/p stations only.

(d) **Assisted:** Same as 1(a) except the **passive use (no self-spotting) of DX spotting nets or other forms of DX alerting is permitted.** Stations in this category will compete with other Assisted stations only.

2. Multi Operator (All band operation only)

(a) **Single-Transmitter:** Only one transmitter and one band permitted during the same time period (defined as 10 minutes).

(b) **Multi-Transmitter:** No limit to transmitters, but only one signal and running station allowed per band. *Note:* All transmitters and receivers must be located within a 500 meter diameter area or within property limits of the station licensee, whichever is greater. **All operation must take place from the same operating site.** All antennas must be physically connected by wires to the transmitters and receivers.

V. Exchange: RS(T) report plus a progressive contact three-digit contact number starting with 001 for the first contact. (Continue to four digits if past 999.) Multi-transmitter stations use separate serial numbers for each band.

VI. Points:

(a) Contacts between stations on different continents are worth three (3) points on 28, 21, and 14 MHz and six (6) points on 7, 3.5, and 1.8 MHz.

(b) Contacts between stations on the same continent, but different countries, are worth one (1) point on 28, 21, and 14 MHz and two (2) points on 7, 3.5, and 1.8 MHz. **Exception: For North American stations only—contacts between stations within the North American boundaries are worth two (2) points on 28, 21, and 14 MHz and four (4) points on 7, 3.5, and 1.8 MHz.**

(c) Contacts between stations in the same country are permitted for multiplier credit but are worth zero (0) points.

VII. Multiplier: The multiplier is the number of **"valid"** prefixes worked. A PREFIX is counted only once regardless of the number of times the same prefix is worked.

(a) A PREFIX is the letter/numeral combination which form the first part of the amateur call (examples: N8, W8, WD8, HG1, HG19, KC2, OE2, OE25, etc.). Any difference in the numbering, lettering, or order of same shall constitute a separate prefix. A station operating from a DXCC country different from that indicated by its callsign is required to sign portable. The portable prefix must be an authorized prefix of the country/call area of operation. In cases of portable operation, the portable designator will then become the prefix. Example: N8BJQ operating from Wake Island would sign N8BJQ/KH9 or N8BJQ/NH9. KH6XXX operating from Ohio must use an authorized prefix for the US 8th district (W8, K8, etc.). Portable designators without numbers will be assigned a zero (0) after the second letter of the portable designator to form the prefix. Example: N8BJQ/PA would become PAØ. All calls without numbers will be assigned a zero (0) after the first two letters to form the prefix. Example: XEFTJW would count as XEØ. Maritime mobile, mobile, /A, /E, /J, /P or interim license class identifiers do not count as prefixes.

(b) Special event, commemorative, and other unique prefix stations are encouraged to participate.

VII. Scoring:

1. Single Operator: (a) All Band score = total QSO points from all bands multiplied by the number of different prefixes worked (prefixes are counted only once). (b) Single band score = total QSO points on the band multiplied by the number of different prefixes worked.

2. Multi-Operator: Scoring is the same as Single Operator, All Band.

3. A station may be worked once one each band for QSO point credit. **Prefix credit can be taken only once.**

IX. QRP/p Section: Single Operator only. Output power must not exceed 5 watts. **You must denote QRP/p on the summary sheet and state the actual maximum output power used for all claimed contacts.** Results will be listed in a separate QRP/p section and certificates will be awarded to each top-scoring QRP/p station in the order indicated in Section XI.

X. Low Power Section: Single Operator only. Output power must not exceed 100 watts. **You must indicate low power on the summary sheet and state the actual maximum output power used for all claimed contacts.** Results will be listed in a separate low power section and certificates will be awarded to each top-scoring low power station in the order indicated in Section XI.

XI Awards: Certificates will be awarded to the highest scoring station in each category listed under Section IV—

1. In every participating country;

2. In each call area of the United States, Canada, Australia and Asiatic Russia.

All scores will be published. To be eligible for an award, a single operator station must show a minimum of 12 hours of operation and multi-operator stations must show a minimum of 24 hours of operation.

A single band log will be eligible for a single band award only. If a log contains more than one band, it will be judged as an all-band entry unless specified otherwise.

In countries or sections where entries justify, second- and third-place awards will be made.

XII. Trophies, Plaques, and Donors:

SSB

Single Operator, All Band

WORLD—Stanley Cohen, WD8QDQ
USA—Atilano de Oms, PY5EG
EUROPE—Jim Hoffman, N5FA
SOUTH AMERICA—Ron Moorefield, W8ILC

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Single Operator, Single Band
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WORLD Low Power—Verne Fowler, W8BLA
WORLD 7 MHz—William D. Johnson, KVØQ
OCEANIA—D. Craig Boyer, AH9B
USA 28 MHz Novice/Tech—Jon Engelhardt, KAØZFX
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Multi-Operator, Multi-Transmitter
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Contest Expedition
WORLD—Kansas City DX Club

* * *

CW
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A station winning a World trophy will not be considered for a sub-area award. That trophy will be awarded to the runner-up for that area if the returns justify the award.

XIII. Club Competition: A trophy will be awarded each year to the club or group that has the highest aggregate scores from logs submitted by members. The club must be a local group and not a national organization. Participation is limited to members operating within a local geographical area **(Exception: DXpeditions especially organized for operation in the contest and manned by members.)** Indicate your club affiliation on the summary sheet. To be eligible for an award, a minimum of three logs must be received from a club.

XIV. Log Instructions:

(a) All times must be in GMT. All breaks must be clearly marked. Single operator and multi-single logs must be submitted in chronological order. Multi-multi logs must be submitted chronologically by band.

(b) All sent and received exchanges are to be logged.

(c) Prefix multipliers should be entered only the FIRST TIME they are worked.

(d) Logs must be checked for duplicate contacts, correct QSO points, and prefix multipliers. Duplicate contacts must be clearly shown. Computerized logs must be checked for typing accuracy. Original logs may be requested if further cross-checking is required.

(e) **An alpha/numeric check list of claimed PREFIX multipliers must be submitted with your log.**

(f) Each entry must be accompanied by a Summary Sheet listing all scoring information, the category of competition, and the entrant's name and mailing address in BLOCK LETTERS. Also submit a signed declaration that all contest rules and regulations for amateur radio in the country of operation have been observed.

(g) Official log and summary sheets are available from *CQ* for an SASE with sufficient postage. If official forms are not available, you may make your own.

(h) Disk submission of logs is encouraged. CT's *.BIN file or *.ALL file, N6TR's *.DAT file, NA's *.QDF file, or *.DBF files are preferred. An ASCII file containing all required information is also acceptable. Disk files must be in chronological order for single operator and multi-single stations and chronological by band for multi-multi stations.Label your disks and name your files with the call used (for example: N8BJQ.BIN or N8BJQ.DAT). Disks will be **required** from top-scoring stations if requested.

(i) Logs may be submitted via E-mail to:

SDB@AG9V.AMPR.ORG or
N8BJQ@ERINET.COM

Binary files may be sent, providing they are in MIME or UUENCODE format. Internet submissions will also require a summary sheet and prefix multiplier sheet. Logs received via E-mail will be confirmed via E-mail upon receipt.

XV. Disqualification: Violation of amateur radio regulations in the country of the contestant, or the rules of the contest, unsportsmanlike conduct, taking credit for excessive duplicate contacts, unverifiable QSOs or multipliers will be deemed sufficient cause for disqualification. An entrant whose log is deemed by the WPX Contest Committee to contain a large number of discrepancies may be disqualified as a participant operator or station for a period of one year. If within a five-year period the operator is disqualified a second time, he will be ineligible for any *CQ* contest awards for three years.

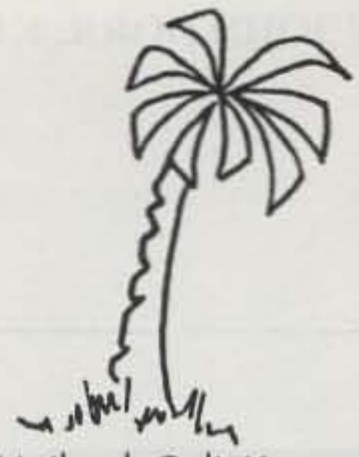
The use of non-amateur means such as telephones, telegrams, etc., to elicit contacts or multipliers **during** a contest is unsportsmanlike and the entry is subject to disqualification. Actions and decisions of the WPX Contest Committee are official and final.

XIII. Deadline:

(a) All entries must be postmarked NO LATER than May 10, 1996 for the SSB section and July 10, 1996 for the CW section. E-mail logs are also subject to these deadlines. **Indicate SSB or CW on your envelope.** One extension of up to 30 days, for legitimate reasons, may be granted if requested from the contest director. Logs postmarked after the deadline, or extension deadline, if granted, may be listed in the results, but will be ineligible for any awards.

All logs go to: *CQ Magazine*, WPX Contest, 76 N. Broadway, Hicksville, NY 11801 USA. Questions pertaining to the WPX Contest can be sent to WPX Contest Director, Steve Bolia, N8BJQ, 4121 Gardenview Dr., Beavercreek, OH 45431 USA, or via e-mail to the following: N8BJQ@ERINET.COM.

Please remember to send in to *CQ* magazine early for WPX Contest log and summary sheets.



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BY JOHN DORR, K1AR

CONTEST CALENDAR

NEWS/VIEWS OF ON-THE-AIR COMPETITION

Visiting the CQ WW—One More Time!

You may recall I wrote a column last year describing my experiences and some highlights from the 1994 CQ WW DX SSB Contest in "play-by-play" format. I received so many positive comments from you about the report that I've decided to give it a try one more time. So with that in mind, here we go!

This year, as has been the case for the past five years, I decided to enter the Single Operator, All Band category. If you were in my shoes you'd probably want to do the same thing. After all, I've not only been fortunate to operate from one of the best stations in the U.S., but I also have had one of the world's best hosts—Ken Wolff, K1EA!

In listening to the bands the week before the contest, it was clear that we had a better than even shot at having tolerable conditions. Fifteen meters was opening daily to Europe with 59+ signals, and even a few weak EAs were popping through on 10. So with station and operator ready to go, I fired up on 20 meters at 2330Z to check things out. One quick CQ immediately yielded a pileup of JAs. As the adrenalin continued to build, so did the pileup. At 2340Z I made the requisite pit stop at the other side of the house and sat down for the start of the race. For reasons that I still don't understand, the U.S. handed me 14150.4, which I used right at the beginning. My normal pre-contest operating approach is to tune the bands right up to the beginning rather than camp on a run frequency. But with the band edge available and a pileup calling me, how could I move? That turned out to be a great way to start. It seemed that nearly every station that called me in the 15 minutes preceding the contest waited on my frequency for 0000Z. One quick CQ as the clock turned over resulted in my working 37 JAs in 11 minutes! Now that's the way to start a contest!

As one might expect, the band quickly died towards Asia. By 0030Z I was relegated to a night of low-band operating—not a terrible form of suffering from K1EA's QTH. Forty meters also started with a bang with 55 QSOs in the log (101 total) by 0100Z. It was a thrilling first hour as 9X/ON4WW and JW8GV called in, among many others.

As is the case for most East Coast stations, nighttime operating is a slugfest of CQing and tuning for Europeans. Sometimes it can result in some quality runs, but for most it's just a "holding pattern" warmup period for the real fun in the morning. This year 40 meters died very early to Europe, making 80 meters the money band. With a four-square 80 meter vertical array at my fingertips, the evening hours yielded slow, steady rates of 40–60 QSOs/hour.

During the late night I made my usual side trips to the high bands hoping to find a few interesting multipliers coming through via odd propagation paths. This year was no exception, as I snagged KHØ, FO, A35, and a few others on 20 meters. As it turns out, the nighttime hours are an operating period when a second radio really becomes useful. I'm much more inclined to call CQ continuously on 80 meters if I know that I can tune the other bands with a second transceiver. And the results showed this to be true.

Although we certainly don't experience the 06-08Z European opening on 20 meters during this part of the sunspot cycle, it was encouraging to hear EA8AH and scores of audible (but unworkable) Europeans coming through at 0830Z. Frankly, I didn't put much faith in a quality 15 meter opening for the weekend, but my hopes increased dramatically, as 20 seemed to be awakening earlier than expected. During the 0900Z hour I was able, in search and pounce mode, to work many European stations. By 1020Z the flood gates opened up! The unfortunate thing about a relatively early 20 meter opening is that you cannot effectively work any more low-band QSOs—even with a second radio. The QSO rate and action is just too fast and furious. Having said that, I just couldn't resist the temptation when I heard S9 JAs on 40, so I made a brief pit stop on 40, snagged a couple of quick "double multipliers," and then jumped back on 20. If you analyze the strategy, it probably didn't make sense, but sometimes you can use this little burst of motivation to your advantage.

One of the most valuable applications of the second radio came to play around 1150Z on Saturday. Even though I was running stations extremely well on 20 meters, I knew that 15 was going to be the place to hang out if it opened at all. As I checked it over and over, I was able to land on a wonderful run frequency (21205) right as the band was peaking .

Fifteen meters turned out to be an amazing band for the entire weekend. After only 20 minutes of operating, I had already worked 81 stations! Not only were the Italians and other southern Europeans booming in, but so was northern Europe.

The first hour (1200Z) ended up being the best I've ever experienced from the states; 231 QSOs and a constant roaring pileup! The excitement continued for several more hours on 15 meters. During this period it was virtually impossible to do anything else (i.e., tune other bands on the other transceiver). Except for a few QSOs on 10 meters, this was temporarily a single band 15 meter contest.

With 15 meters being so wide open, I knew that either the MUF was at 21451 or 10 meters had some possibilities. What little listening time I could afford proved that the band was at least open to Africa. It turned out to be very productive to spin down to 10 meters and easily work four or five fast double multipliers as well as two Europeans (9A1A and IK4GRO)! What is this contest going to be like in a few years?

From years of previous experience you learn to accept that after the fast runs of Saturday morning subside, you're generally relegated to slower rates for the rest of the contest. This was the next surprise of the contest. Not only did I work 48 stations in 16 minutes on 15 meters at 1630Z (after 4½ hours of running), but 20 meters was the big surprise. Usually with a fantastic 15 meter opening such as the one we experienced this year, 20 meters is a bit of a "downer." So at 1730Z, with 15 meters still wide open, I decided I had better hit 20 and slug it out. A quick listen to the band found 14178 relatively clear and off I went. After one CQ, it seemed as if the 15 meter pileup followed me to this new run frequency. The noises I was hearing in my headphones were beyond belief. Perhaps the usual Sunday afternoon hallucinations were already happening? In the first ten minutes of operating on 20 I worked 33 sta-

Calendar of Events

Dec.	31	ARRL Straight Key Night
Dec.	31	RAC Canada Winter Contest
Jan.	6-7	ARRL RTTY Roundup
Jan.	12-14	Japan Int'l. Low Band CW Contest
Jan.	13-14	North American CW QSO Party
Jan.	13-14	YLRL Novice/Technician Day
Jan.	13-14	Michigan QRP Club CW Contest
Jan.	13-14	HA DX Contest
Jan.	15-20	UTA DX Marathon Contest
Jan.	19-21	YL Int'l. CW QSO Party
Jan.	20-21	ARRL VHF Sweepstakes
Jan.	20-21	North American SSB QSO Party
Jan.	21	QRP ARCI Winter Fireside SSB Sprint
Jan.	**26-28**	**CQ WW 160 Meter SSB Contest**
Jan.	27-28	U.B.A. SSB Contest
Jan. 27-Feb. 4		QRP ARCI Novice/Tech CW Roundup
Feb.	3-4	Northern New England QSO Party
Feb.	10-11	PACC Contest
Feb.	10-11	QCWA CW QSO Party
Feb.	10-12	YLRL YL-OM SSB Contest
Feb.	16-18	YLRL Int'l. SSB QSO Party
Feb.	17-18	ARRL CW DX Contest
Feb.	**23-25**	**CQ WW 160 Meter CW Contest**
Feb.	24-25	U.B.A. CW Contest
Feb.	24-26	YLRL YL-OM CW Contest
Feb.	25-26	Winter QRP QSO Party
Mar.	2-3	ARRL SSB DX Contest
Mar.	9-10	QCWA SSB QSO Party
Mar.	12-13	CLARA HF Contest
Mar.	16-17	Bermuda Contest
Mar.	30-31	CQ WW WPX SSB Contest

January's Contest Tip

What happens when you drink coffee? You have a hard time sleeping, right? Have you ever wondered why you have trouble getting a "quality" nap the afternoon before a 48-hour contest? For me it's that morning coffee. After I stopped the Friday habit, I was able to physically prepare for the contest in a much improved way. Save the coffee for 0000Z that evening. You'll be amazed at the results!

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tions. These were 15 meter rates, not 20! In the first hour of 20 meter running I worked 206 stations—yet another unexpected result.

With constant CQing going on for the first seven sunlight hours, you might expect a low multiplier was going to be one of the bi-products. Feeling relatively guilty about that, I decided to take a brief break from the "runs" and tune 10 and 15 meters. This turned out to be very worthwhile, with 18 new multipliers logged in 20 minutes. Getting that out of my system, I returned to 20 meter CQing for several more hours.

By 2030Z JAs started to mix in with the European callers on 20 (another surprise—at least by the earliness of the opening). This kept the run rate relatively high while allowing for extremely effective use of the second radio. Again, a scenario had developed where I could call CQ more aggressively on 20 meters without my multiplier totals suffering on the other bands.

This period around 21–23Z is a fun part of the contest. It's also one that requires a carefully considered operating strategy. This is one of the only times in the entire contest when all six bands are open at the same time. Deciding how to maximize your efforts is a real challenge. I think I often fall into the trap of DXing during this time, because it's more fun to work the DU, 9M2, VK6, KH0 stations calling in during a JA run than it is to slug it out in an early 40/80 meter opening.

As the first day wound down, operating became a constant switch between bands. I was running stations on 20 meters and calling multipliers on 80. Then within a few seconds I was running stations on 40 meters and calling others on 20. How did we ever do this before computer logging?

The first day ended with a bang on 20 meters. Although the north pole opening wasn't setting new signal-strength records, it was open and I was lucky to work an amazing string of three double multipliers in a row—JT1Z, BV2FI, and HS1BV. Then there's the story of hearing a large pileup building off my run frequency, only to discover it was 5Z4SS—yet another double multiplier! I'll never forget the clock ticking over to 0000Z and sitting back thinking that it just doesn't get better than this!

Saturday night presented its usual slow pace. There really wasn't a good place to consistently run stations, so by 0100Z I headed for my first sleep break. Unlike many other breaks I've taken in the past, I was able to "crash" immediately with this one.

Twenty meters opened slightly later the next day, making my wake-up time somewhat early. And although 20 meters was filled with European stations, the ability to run stations was delayed by nearly 45 minutes when compared to the first day. Twenty meters was absolutely packed on Sunday morning. You'd think that with a big station finding a good run frequency is easy, but not this time. I finally got going up higher in the band by 1115Z, and within 30 minutes stations started coming through on 15 meters—again. Unlike the previous day, 20 and 15 meters opened almost at the same time—a real dilemma for a single operator.

The 12Z-hour turned out to be the most critical time in the contest for me. As I was tuning 15 meters with the other radio, I heard loud and workable European stations. It appeared that even though the bands opened later that morning, 15 was still going to be good and so I figured I had better get up there right away! At this decision point I could not believe my ears. Although K1KI was running stations on 21202.5, there was absolutely nobody on the band edge. Where were all the multi-multi and single-band guys? I couldn't get there fast enough. For a few minutes I waited for W3LPL or someone to tell me that they were there, but it just didn't happen. Instead I began running Europeans at QSO rates paralleling Saturday's pace. It was absolutely phenomenal!

One of the things I do to keep me awake during this period of the contest is to drink fairly large amounts of coffee. Usually that is a good strategy, except when you land on the best frequency on the band and can't/should not leave the operating chair. Well, this reason prevailed over all other biological considerations, and I sat there in pain for nearly four hours running stations at exhilarating rates. The band was absolutely wide open with Asiatic Russians, VUs, and others calling in. By this point, my weekend soapbox was easy to write: "Great contest. Can't wait for the next sunspot minimum."

The remainder of the contest mirrored Saturday for the most part. Twenty meters opened up in style to Europe, and lots of multipliers were available on the second station. Unlike the first day, however, 10 meters was a little more alive. I'll never get over the vast number of LU stations that participate in the CQ WW contest. You can actually obtain a reasonable rate by searching and pouncing on 10 meters with these guys. It's great!

Well, 48 hours had passed like a blur and somehow 3600+ QSOs were in my log. It was one of those weekends that could have just kept going. I'm still trying to fathom how this could have happened at the bottom of the sunspot cycle. And I'm having a harder time trying to imagine what the CQ WW will be like when the next cycle peaks. One thing is for sure: The CQ WW is unquestionably the best contest in the world!

Closing Thoughts

I'm in the process of compiling all of your responses and comments from the recently concluded CQ Contest Survey. You can expect to see the results in the next month or so.

As always, your April "Contest Calendar" submissions must be received no later than February 1st. 73, John, K1AR

ARRL RTTY Roundup

1800Z Sat. to 2400Z Sun., Jan. 6–7

This is the eighth annual all-digital contest sponsored by the ARRL. Any station may work any other station worldwide. You may operate more than one digital mode, but QSOs and multipliers are counted once only regardless of modes used.

Operation is limited to 24 hours out of the 30-hour contest period. Two rest periods must be taken in two separate blocks of time and must be clearly marked in the log.

Modes: Baudot, RTTY, ASCII, AMTOR, and packet.

Bands: 3.5–30 MHz on those frequencies recommended for digital operation (no 10, 18, or 24 MHz).

Categories: Single operator, multi-band—(1) less than 150 watts output, (2) 150 watts or more. And multi-operator, single transmitter, all band.

Exchange: Signal report and QTH. State for the U.S., province for Canada. DX will send a serial QSO number.

Scoring: One point per QSO. A station may be worked once per band for QSO credit.

Multiplier: Each US state (48), each VE province (12), and each DXCC country, counted only once, not once per band (KH6 and KL7 are countries; VO1/VO2 counts as one VE province).

Entries with 200 or more contacts must submit a duplicate QSO check sheet.

Awards: Certificates to the top-single operator, both low and high power, and multi-operator scorers in each ARRL/RAC section, and each DXCC country. Novice/Tech entrant with at least 50 QSOs will also receive a certificate.

Detailed information appeared in the November issue of *QST*. Contest forms are available from the ARRL for an SASE and two units of first-class mail and are recommended.

Postmark your entry by February 7th and send it to: ARRL RTTY Contest, 225 Main Street, Newington, CT 06111.

Japan Int'l DX CW Contest (Low Band)

2200Z Fri. to 2200Z Sun., Jan. 12–14

The object of this one is for amateurs around the world to work as many JA stations in as many JA prefectures as possible. It is sponsored by *Five-Nine* magazine. The maximum operating period is 30 hours (except for JAs, who can use the full 48-hour period) with off periods longer than 60 minutes. This is the low-band edition (others to follow in subsequent months), and operation is limited to 160–40 meters, exclusively.

Classes: Single operator high power, low power, all band, single band; multi operator; marine mobile.

Exchange: JA—RST and prefecture number (1-50). Others—RST and *CQ* Zone.

Scoring: 160 meters 4 points, 80 meters 2 points, 40 meters 1 point per QSO. Multipliers are total prefectures worked per band (DXCC countries for JA). Final score is total QSO points times multiplier.

Awards: Plaques and awards will be sent to the winners in each class around the world. A special contest award will be offered to anyone working all Japanese prefectures during the contest period.

All logs must be postmarked no later than February 28th and should be sent to: JIDX LFCW Contest, c/o *Five-Nine* magazine, P.O. Box 59, Kamata, Tokyo, 144 Japan. Contest results will be sent to anyone who includes one IRC and an SAE.

Michigan QRP CW Contest

1200Z Sat. to 2359Z Sun., Jan. 13–14

This is the 16th annual CW contest sponsored by the Michigan QRP Club. The contest is open to all amateurs and all are eligible for awards.

Classes: (A) Less than 250 milliwatts. (B) 250 milliwatts to 1 watt. (C) 1 watt to 5 watts. (D) Over 5 watts. The same station may be worked on each band for QSO and multiplier credit.

Exchange: RST; state, province, or country; and club membership number. Non-members send power output.

Scoring: Contacts with members 5 points. Non-members in W/VE are 2 points, outside W/VE 4 points. Credit a scoring bonus of 1.25 if power used is either homebrew receiver or transmitter and 1.5 for a totally homebrewed station.

Final Score: Total QSO points × states, provinces, and countries worked per band × power bonus if applicable.

Frequencies: 1810, 3560, 7040, 14060, 21060, 28060, 50060. Novice—3710, 7110, 21110, 28110 kHz.

Awards: Certificates will be sent to the top scorers in each state, province, and country. Use a separate log for each band and include a summary sheet showing the scoring, operating class, and equipment used, plus the usual signed declaration.

Logs must be received no later than February 10th and should be sent to: L. T. Switzer, N8CQA, 654 Georgia, Marysville, MI 48040-1243. Include a large SASE for a copy of the results or for sample forms.

North American QSO Party

CW: 1800Z Sat. to 0600Z Sun., Jan. 13–14
SSB: 1800Z Sat. To 0600Z Sun., Jan. 20–21

The object of this one is to work as many North American stations (and/or other stations if you are in North America) as possible during the contest period. North American stations are defined by the rules of the CQ WW DX Contests with the addition of KH6.

Classes: Single operator and multi-operator, two transmitters. Multi-operator stations must keep a separate log for each transmitter and must have at least 10 minutes between band changes. Use of helpers or spotting nets by single operator entries is not permitted. Single operator entrants may only have one transmitted signal at a time. Output power must be limited to 150 watts for eligible entries. Multi-operator stations may operate for the entire 12-hour period. Single operator stations may operate 10 out of 12 hours. Off times must be at least 30 minutes in length and must be clearly marked in the log.

Mode: CW only in CW parties. Phone only in phone parties.

Bands: 160–10 meters only (no WARC bands). You may work a station once per band. Suggested frequencies are 1815, 3535, 7035, 14035, 21035, and 28035 (20 kHz up from band edge for Novice) on CW; and 1865, 3850, 7225, 14250, 21300, and 28450 on phone. Try 10 meters at 1900Z and 2000Z, 15 meters at 1930Z and 2030Z, and 160 meters at 0430Z and 0530Z.

Exchange: Operator name and station location (state, province, or country).

Scoring: Multiply total valid contacts by the sum of multipliers worked on each band. Multipliers are states (including KH6 and KL7), Canadian call areas (VE1–VE8, VO1, VO2, VY1, and VY2), and other North American countries. Do not count USA, Canada, KH6, or KL7 as countries. Non-North American countries do not count as multipliers, but may be worked for QSO credit.

Team Competition: Team competition is limited to a maximum of five single operator stations (two minimum) as a single entry unit. *Pre-Contest Requirement:* To qualify as a team entry, you must register the name, callsign of each operator, and callsign of the station oper-

ated should the operator be a guest at a station other than his own (e.g., N4RJ op. by KM9P). Teams must be registered with W9NQ.

Penalties: For each unmarked duplicate QSO, you lose that contact plus an additional three contacts. For each QSO for which you are not in the other station's log, you lose that QSO plus an additional one contact; and for each QSO for which the log data is incorrectly copied in any respect, you lose that contact. Entries with score reductions greater than 5% will be disqualified.

Awards: A total of five trophies will be awarded for the high score in each of the following categories: Single Operator CW and Phone, Multi-Operator CW and Phone, and Single Operator Combined score. Certificates of merit will be awarded to the highest scoring entrant with at least 200 QSOs from each state, province, and North American country.

Send CW North American QSO Party entries to Bob Selbrede, W9NQ, 6200 Natoma Ave., Mojave, CA 93501. All SSB logs go to: Steve Merchant, N4TQO, 1795 Cravens Lane, Carpenteria, CA 93013. Entries must be postmarked no later than 30 days after the party to be eligible for awards. Logs may be submitted on disk in the form of MS-DOS compatible ASCII files, only.

HA DX Contest

2200Z Sat. to 2200Z Sun., Jan. 13–14

Sponsored by the Hungarian Radioamateur Society, this is one of several popular Eastern European contests. The contest is CW only and stations may be only worked once per band.

Exchange: RST plus serial number (599001). HA stations will also send a two-letter code corresponding to their county. The possible codes are: BA, BE, BP, BN, BO, CS, FE, GY, HA, HE, KO, NO, PE, SA, SO, SZ, TO, VA, VE, ZA.

Scoring: Count 6 points per HA QSO and 3 points for non-HA QSOs on other continents. Final score is total QSO points times sum of HA counties worked per band.

Entries are due six weeks after the contest. Send them to: Hungarian Radioamateur Society, Box 86, Budapest H-1581, Hungary.

ARRL VHF Sweepstakes

1900Z Sat. to 0400Z Mon., Jan 20–22

This is the 49th ARRL January VHF Sweepstakes. ARRL Headquarters recommends that you use the official log forms. It will make your log keeping and the scoring much easier. A large SASE to Newington will get you the necessary forms.

Complete rules will be found in the December issue of *QST*. They are a bit complicated, so look them over carefully.

YL-ISSB QSO Party

CW: Jan. 19–21 SSB: Feb. 16–18
0001Z Saturday to 2359Z Sunday

This event is open to all, although emphasis is on membership involvement.

Exchange: Signal report, State/Province/Country, Partner's Call, ISSB number.

Categories: Single Operator, DX-W/K Partner, YL/OM Team.

Scoring: Credit 3 points for member con-

tacts within the same continent; 6 points for member contacts in different continents; one point for non-member QSOs. You can credit one multiplier for working both DX-W/K team members, each YL/OM team, US State, Canadian province, DX country, and each VK/ZL call area. Multiply your score by two if you use less than 250 watts PEP throughout the party.

Frequencies: Use the General portion of the bands. Avoid net operations. Check 40/80 meters on the hour.

Awards: Certificates will be awarded to the top three scorers in each category. A special ZL award will be sent to the station working the most ZL prefixes.

Logs must be received by March 30th and should be sent to: Rhonda Livingston, N4KNF, 2160 Ivy Street, Port Charlotte, FL 33952.

CQ WW DX 160 Meter Contest

CW: Jan. 26–28 SSB: Feb. 23–25
2200Z Friday to 1600Z Sunday

Complete rules were published in the November issue. The following is a brief overview.

Exchange: RS(T) and QTH. State for the U.S., areas for Canada, country abbreviation for DX.

Scoring: Contacts with stations in own country 2 points, other countries in same continent 5 points, and with other continents 10 points.

Multiplier: Each U.S. state (48), Canadian area (13), and DX country. (ARRL and WAE country lists and WAC boundaries are the standards.)

Awards: Certificates to the top-scoring stations in each U.S. state, Canadian area, and DX country. And an assortment of 29 plaques for U.S. and world winners.

Penalties: Three contacts will be deleted for each duplicate that has not been removed.

Disqualification: Taking credit for excessive duplicate contacts, and the usual assortment of rules violations and unsportsmanlike conduct.

Mailing deadline for logs is February 28th for CW entries and March 31st for the SSB section. Logs should be sent directly to: CQ 160 Meter Contest, David L. Thompson, K4JRB, 4166 Mill Stone Court, Norcross, GA 30092. **Be sure to indicate CW or SSB on the envelope.**

U.B.A. Contest

Phone: 1300Z Sat. to 1300Z Sun. Jan. 27–28
CW: 1300Z Sat. To 1300Z Sun. Feb. 24–25

This one is sponsored by the Belgium Amateur Radio Union (U.B.A.) and is any station working any other worldwide. Numerous operating awards are available and contest QSOs may be credited towards these awards.

Classes: 5 categories exist—Single Operator, All Band/Single Band, Multi-Operator/Single Transmitter, QRP 5 watts, and SWL.

Frequencies: CW—3500–3560, 7000–7035, 1400–14060, 21000–21060, 28000–28060 kHz. SSB—3600–3650, 3700–3800, 7040–7100, 14125–14300, 21175–21350, 28400–28700 kHz.

Exchange: RS(T) and consecutive serial number. Belgian stations also give their province abbreviation.

Multipliers: All Belgian Provinces, prefixes ON4–9, DA1–2, and European Community countries.

Scoring: QSOs with ON count 10 points. European QSOs count 3 points. All others are 1 point. Final score is total QSO points times total multipliers.

Awards: There are several awards available, including trophies and certificates to the high scorers in each operating class.

Send your final results no later than 30 days after each contest mode to: UBAHF Contest Committee, Galicia Jan, ON6JG, Oude Gendarmeriestraat 62, B-2220 Heist Op Den Berg, Belgium. Note that logs may also be submitted on disk in K1EA's CT or ASCII format.

QRP ARCI Novice/Tech Roundup

0000Z Sat. Jan. 27 to 2400Z Sun. Feb. 4

This is a new one, CW only, sponsored by the QRP ARC International as a replacement for the ARRL Novice Roundup. Operation is limited to a maximum of 30 hours during the contest period in the Novice/Tech subbands.

Exchange: Signal report, ARRL/RAC section, Name.

Scoring: Novice/Technician to Novice/Technician QSOs 1 point; Novice/Technician to others 2 points; all other QSOs 1 point. There is a power multiplier as follows: Under 1 watt = ×3, 1–5 watts = ×2. Final score is total QSO points times sections worked times power multiplier.

Certificates will be sent to every Novice/Technician entry and to the top scorer in each section. Logs must be postmarked within 30 days after the contest and should be sent to: Cam Hartford, N6GA, QRP ARCI Contest Manager, 1959 Bridgeport Ave., Claremont, CA 91711.

BY FREDERICK O. MAIA, W5YI

WASHINGTON READOUT

REGULATORY NEWS IN THE WORLD OF AMATEUR RADIO

Letters—Questions Sent In By Readers

Last month we covered the various amateur callsign systems. We neglected, however, to answer a reader's question concerning callsign format. Let's cover that question and several others that you sent us. Keep those cards and letters coming, folks, since it lets us know what you are most interested in!

Question: Why do amateur station callsigns always begin with the letters A, K, N, or W?—*S.R., Hamilton, MI*

Answer: Actually, that was not always the case. Up until 1927 amateur callsigns began with a geographic number and none had a prefix letter.

The International Telegraph Union was formed by 20 European nations in 1865 as a way to facilitate telegraph message delivery. The system in use at the time was simply to hand a message to another telegrapher at the international border.

In 1927 the ITU made their first frequency allocations. As an aid to enforcement of these allocations, the International Telegraph Union divided up the alphabet with the United States being assigned the prefix letters N, K, and W for station callsign use. The letter "A" is shared with several other countries. The United States got all prefixes beginning with AAA through ALZ. Henceforth, the first characters of a callsign would indicate the country in which the station was authorized to operate.

The Radio Act of 1927 created the five-member Federal Radio Commission. The FRC is the forerunner of today's FCC. With the Radio Act of 1927 came "regulation!" including the issuance of station licenses, callsigns that implemented the ITU plan, frequency band allocations to various services, control of station power, and license examinations.

The International Telegraph Union became the International Telecommunication Union in 1932 to reflect its expanded responsibilities. Once all of the alphabet letter prefixes were allocated, the ITU began assigning station callsign prefixes that contain both numerals and alphabet letters. The International Call Sign Prefix System will be 70 years old next year.

Question: How fast can a person manually copy Morse Code?—*B.W., Williamsburg, PA*

Answer: The official record is 75.1 words per minute set on July 2, 1935 by World Champion telegrapher Theodore Roosevelt "Ted" McElroy, W1JYN, from Boston.

The contest tape was made by the Federal Communications Commission and delivered to the three judges at the Asheville, North Carolina contest site under seal. A few months earlier McElroy had set an unofficial record before the Cape Cod Radio Club in Hyannis, Massachusetts, copying a Boston newspaper news story at 77 wpm without error. He previously had set the World Morse Speed record In 1922 at 56 wpm, but was beaten in 1934. McElroy, a Western Union telegraph operator, was also a very fast typist. Ted could type at 150 wpm. He eventually went into the business of manufacturing telegraph equipment.

In the late 1930s McElroy traveled the country giving code copying demonstrations. One of his favorite tricks was to stop in the middle of a high-speed code copying run, drink a glass of water, and then continue without missing a character.

During World War II McElroy made telegraph keys for the government. He passed away in his native Boston in 1963.

Question: Why do the amateur license examinations change so much? It seems that the questions are constantly being replaced!—*H.L., West Chicago, IL*

Answer: Actually, they don't change as much as it seems. There are five different written examinations: Novice, Technician, General, Advanced, and Amateur Extra Class. The question pools for these examinations are revised every four years on a staggered basis. The Element 2 (Novice) and Element 3A (Technician) exams are revised at the same time, since together they form the total requirements for the most popular Technician license (see Table I).

Note that the Element 4B, Amateur Extra Class question pool was released in December 1995, but these questions will not show up in examinations until July 1, 1996. The Extra Class questions will not be changed again until December 1999. There are about 2000 different questions in all of the five pools. Each pool has about ten times as many questions as will be used on any one examination.

Question: We do not have a ham radio testing team in our area. How do we start one?—*C.T., Gillette, WY*

Answer: It is really quite easy. Almost any three licensed amateur radio operators 18 years of age or older with at least a General Class license can form a Volunteer Examiner (VE) team. VEs must have a clean enforcement record and not be in the amateur radio equipment or publishing business.

There are currently more than a dozen VEC (Volunteer Examiner Coordinator) groups that act as the link between the VE team and the FCC, who grants the license. These VEC organizations operate under a Memorandum of Agreement with the FCC to provide amateur radio operator license testing.

The two largest VECs are the ARRL/VEC and the W5YI-VEC. Together they account for nearly 90% of all amateur radio license examinations. Your author, Fred Maia, heads up the W5YI-VEC. Simply call our toll free 1-800-669-9594 telephone and tell us you want to start an examination team. You will be sent the application forms. Once we receive them back, we will forward to you all of the needed forms, examination materials, and instructions. It's that easy! In addition to already prepared written and Morse Code tests, you will also will be sent computer software that will permit you to make up your own written and telegraphy examinations. These programs require an IBM/compatible PC.

The W5YI-VEC has approximately 1000 VE teams scattered throughout the world. General and Advanced Class VEs may administer the exam requirements for the Novice, Technician, and Tech Plus licenses. Amateur Extra Class level VEs may administer examinations to all license classes.

Question: Why does it take so long for amateur radio rules to be changed? We heard we could select a special station callsign months and months ago! I am still waiting.—*M.P., Lewisburg, TN*

Answer: I can certainly understand your frustration, but don't blame the FCC for being slow. Our government "of the people, by the people" requires that the public be involved in rulemaking and adequate response time must be allowed.

Exam Element	License Class	Ques. in Exam	Current Ques. Pool Issued	Began use in Exams	Next Ques. Pool to be Issued	Begin Use in Exams
2	Novice	30	Dec. 1992	July 1993	Dec. 1996	July 1997
3A	Technician	25	Dec. 1992	July 1993	Dec. 1996	July 1997
3B	General	25	Dec. 1993	July 1994	Dec. 1997	July 1998
4A	Advanced	50	Dec. 1994	July 1995	Dec. 1998	July 1999
4B	Extra	40	Dec. 1995	July 1996	Dec. 1999	July 2000

Note that all question pools are released to the public seven months before they are used in examinations. This is to allow publishers time to prepare study manuals and get them into the marketplace. It also provides time for applicants to study the new material. Use of the new questions in examinations begins in July to coincide with new amateur and school training classes which normally start in the fall.

Table I– Question pool revision schedule for the next five years.

National Volunteer Examiner Coordinator, P.O. Box 565101, Dallas, TX 75356-5101 (817-461-6443)

The process by which all government agencies change their regulations is required by the Administrative Procedures Act of 1946. The Act sets forth specific procedures that must be followed. Part 1 of Title 47 (Telecommunication) details the steps that the FCC must take in order to adopt new rules or change existing ones. The FCC itself may suggest new or amended rules, or the public may submit a Petition for Rulemaking. File numbers are assigned to worthy petitions and a Public Notice issued advising the public of the nature of the proposals. A 30-day period is normally provided for the public to submit their preliminary comments. Any interested person may also file a reply to the preliminary statements in support of or in opposition to the petition. Another 15 days are normally allowed for these Reply Comments.

A formal rulemaking proceeding is then begun by the FCC if it determines that the petition has received sufficient support of the action requested and the rule change is in the public interest. The FCC could issue a Notice of Inquiry (NOI) to obtain more information, adopt a Notice of Proposed Rulemaking (NPRM), or deny and dismiss the proposal. If the petition is not denied, a docket number is assigned and another longer public comment (usually three to six months) and a reply period assigned.

The FCC evaluates the arguments "for" and "against" once all of the comments and replies are in and issues a Report and Order. All rulemaking activity must be scheduled by the FCC staff. And due to personnel and budget constraints, it frequently takes weeks or months before they can get to a specific proceeding. Sometimes the proposal is adopted, sometimes adopted in part, or sometimes denied and dismissed. The Order advises the public of the action taken by the FCC, and its reasoning, and states any new rules.

Any new regulation adopted by the FCC usually becomes effective 30 days after being published in the Federal Register, the daily journal of Government regulatory activity. People opposed to all or part of the new rules may Petition for Reconsideration within 30 days of Order release. Then the FCC must consider any new facts submitted and again issue an opinion.

As you can see, this Notice and Comment procedure is necessarily very time consuming. But the Government is required to abide by it without exception. As a rule of thumb, significant rule changes usually take about two years from the petition to the adoption stage. Some rule changes require Congressional legislation prior to FCC rulemaking, such as the "Vanity" station callsign proceeding. An amateur operator first suggested in 1990 that other amateurs would be willing to pay for a special callsign. However, Congress first had to pass a law that allowed the government to collect a fee. That took three years, since it had to be tagged to another bill under consideration.

That was completed in August 1993, and the required FCC rulemaking to implement the legislation has continued for another two years now! As you can see, the wheels of government necessarily turn slowly. The good news is that the "Vanity" callsign proceeding is now at the "end of the line," and you can expect final action any day now. The next step is that the FCC will issue the special application Form 610-V and instructions on how to proceed. Hang in there!

Question: I keep hearing about OSCAR. Just who is OSCAR?—*P.D., Montpelier, VT*

Answer: OSCAR is the name given to a series of communications satellites designed and built by amateur radio operators from several nations of the world. The name stands for "Orbiting Satellite Carrying Amateur Radio." The first OSCAR was put into orbit in 1961. OSCAR 1 was the world's first non-governmental satellite.

Although amateurs build the OSCAR satellites, getting them into space is another story. Amateur satellites are totally dependent on the world's various launch authorities for rides. Some OSCAR satellites have been "hitchhikers" aboard rockets going into orbit. However, the Phase 3D scheduled for orbit this coming September will pay its own way into space! It is costing the worldwide amateur community a million dollars to launch, and it is not all paid yet. (Contributions are still needed and go to the Radio Amateur Satellite Corp., P.O. Box 27, Washington, DC 20044.)

P3D will be lifted into orbit by the Ariane-5

rocket, the European Space Agency's new launch vehicle, from its South American launch site in Guyana. It will be by far the biggest and most powerful communications satellite ever orbited by the amateur community!

Among other bands, anyone with a Technician Class amateur license will be able to operate 2 meter sideband through the P3D satellite (145.840–145.990 MHz uplink, 145.805–145.955 downlink). Because of its high gain antenna, the 200 watt on-board transmitter has an effective radiated power (ERP) of some 2500 watts!

Question: My local television station wants to rebroadcast amateur radio coverage when there are major emergencies. Isn't this against the rules?—*D.J., Colorado Spring, CO*

Answer: No, it is not. Commercial broadcasters are free to air the amateur radio transmissions that they have monitored. They may broadcast such amateur radio transmissions on a live or delayed basis, with or without the approval of the amateur operators involved. Broadcasters may not, however, become actively involved in the amateur transmissions. That is to say, the radio or television station may not employ an amateur station as it would use a reporter to convey, directly or indirectly, questions or subject matter the broadcast station desires to be addressed. Sec. §97.113 of the Amateur Service rules is clear: " . . . amateur stations shall not engage in any activity related to program production or newsgathering for broadcasting purposes . . . " The only time when broadcasters may use amateur radio circuits is to protect human lives and property when no other means of communication is available.

Question: Can you settle an argument for us? I say that every amateur is required to have a copy of the FCC Part 97 Amateur Service regulations in their possession.—*W.T., Pensacola, FL*

Answer: I asked that same question of an FCC Washington, DC staffer and here is what I was told: "The FCC application Form 610 does indeed state that every amateur should have a copy of the rules but 'should' is not the same as 'shall' or 'must.'" Therefore, you are not required to have a copy of the rules, but you are responsible for following its content. We routinely print updated copies of the Part 97 FCC Rule Book every three months ($3.95 postpaid from The W5YI Group, Inc., P.O. Box 565101, Dallas, TX 75356).

Question: I hear that the FCC is thinking about re-instituting repeater callsigns. Is that true?—*L.S., Davis, CA*

Answer: Yes, it is being tossed around. In 1978 the FCC adopted the "group" callsign system. All callsigns were separated into five group types. Group A (1×2, 2×1, and "A" prefixed 2×2) callsigns were set aside for Extra Class amateurs; Group B ("K", "N," and "W" prefixed 2×2) callsigns for Advanced amateurs; Group C (1×3) to the Technician, Tech Plus, and General Class; and Group D ("K" and "W" prefixed 2×3) callsigns to Novices.

The fifth category, called "Group X," was never implemented. These included certain "2×3" format callsigns. The "WC×3" format callsigns were reserved for RACES (Radio Amateur Civil Emergency Service), "WK×3" were for Club call signs, "WM×3" Military Recreation, "WR×3" Repeater, and "WT×3" Temporary licenses. These five prefixes were eliminated from the Sequential Call Sign System and remain eliminated to this day.

Any Technician or higher class amateur may install and operate a repeater. The rules do not require coordination, but any uncoordinated repeater is responsible for resolving any interference problem should one of them be uncoordinated. In other words, the FCC rules give preference to the coordinated repeater.

There is a great deal of confusion regarding the amateur coordination system and disputes between repeater groups have led the FCC to believe that a more organized approach is desirable. The amateur repeater community has appointed a panel to look into the amateur repeater network—how it should be structured and who should be the overall "single point of contact" for the FCC. This committee is in the process of drafting a proposal for FCC consideration. One of the recommendations is to assign properly coordinated repeaters with a WR prefixed callsign. The FCC is on record as favoring that approach, but it is a long way from a "done deal."

73, Fred, W5YI

In response for a smaller model of the fantastic *C-3*, we put it on a little diet: the *C-3S*.

C-3 Classic 3-Band
20-15-10, plus 17-12
(18' boom)

C-3S Classic 3-Band
20-15-10, plus 17-12
(12' boom)

C-3S NUTRITIONAL INFORMATION PER SERVING

Serving Size (Mtrs)	20-15-10 primary + 17 & 12	Elements (all full size)	6
Net Wt.	26 Pounds (12 kg)	Length of Boom	12'
Power Handling	5KW	Wind Load (sq.ft.)	4.9
Fat	0	Wind Rating (min.)	>80 mph
Average Gain (20-15-10)	4.5dBd	Average F/B (20-15-10)	>14dB
Number of Traps per Antenna	0	Efficiency	>98%
Number of Phasing Lines	0	Average Time for Assembly	1 hour
Pre-aligned elements (on boom)?	YES	Riveted Construction?	YES
Easy-On™ Mount?	YES	Optional Bands per Antenna	40 Mtrs
Standard Packaging	4' box	1:1 Balun or RF Choke Required?	YES

Percentage of Minimum Daily Radio Enjoyment 100%

The unbeatable ***C-3*** performance has been extended to a smaller footprint. The ***C-3S*** incorporates a re-designed 10 mtr section allowing the boom to be only 12'. The trade-off is the ***C-3S*** covers about 1.1 MHz (i.e. 28.200-29.300) with a 2:1 VSWR, where the ***C-3*** covers the entire 10 mtr band. The gain of the ***C-3S*** is within .1 to .2dB of the ***C-3***. The ***C-3S*** can also cover 40 Mtrs, with 130 kHz 2:1 VSWR. This is the ***C-4S***. The ***C-4C*** conversion can be utilized later to make the ***C-3S*** into a ***C-4S*** in the field.

Force 12 has the finest line-up of antennas to cover the classic 20-15-10 bands with a single feedline. The antennas also feature gain on 17 and 12 mtrs, with a VSWR of about 2.8:1, easily matched with any tuner. All are trapless and are acclaimed as outperforming all the various trapped antennas. Included in the line-up is the C-3XL, a composite of larger monobanders.

The complete series of antennas for the classic 3 bands (plus 40 mtrs) is the following:

C-3S 20-10 mtrs, 12' boom ***C-4S*** 40-10, 12' boom ***C-4SXL*** 40-10, 23' boom (includes 2 el on 40)
C-3 20-10 mtrs, 18' boom ***C-4*** 40-10, 18' boom ***C-4XL*** 40-10, 30' boom (includes 2 el on 40)
C-3XL 20-15-10, 32' boom, which has a 3 el 20, 3 el 15 and 4 el 10, all with separate feedlines for maximum versatility.

Force 12 has more than 60 antennas from 160-6 mtrs. They include rotatable dipoles for 160, 80/75, 40, 30; 2 and 3 element yagis for 80, 40 and 30. Several combinations of 40/20, 40/30/20 and 40/30 yagis; the ***MAGNUM 2 / 2*** which has 2 el on 80 and 2 el on 40. Multibanders for 20-17-15-12-10, 20-17-15, 17-15-12-10, 15-10, 17-12; all without traps or phasing systems. There are also magnetic transmitting and receiving loops (***MTR***'s) for 80, 40 and 40-20 made from 2" tubing. They provide an excellent antenna for confined or restricted locations. ***MTR***'s are perfect for regional coverage with NVIS propagation. There is more.

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- LOW PROFILE POWER SUPPLY

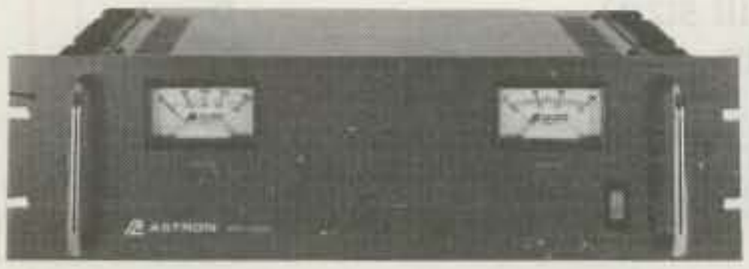
MODEL	Colors Gray	Colors Black	Continuous Duty (Amps)	ICS* (Amps)	Size (IN) H × W × D	Shipping Wt. (lbs.)
SL-11A	•	•	7	11	2⅝ × 7⅝ × 9¾	12
SL-11R	•	•	7	11	2⅝ × 7 × 9¾	12
SL-11S	•	•	7	11	2⅝ × 7⅝ × 9¾	12
SL-11R-RA		•	7	11	4¾ × 7 × 9¾	13

RS-L SERIES

- POWER SUPPLIES WITH BUILT IN CIGARETTE LIGHTER RECEPTACLE

MODEL	Continuous Duty (Amps)	ICS* (Amps)	Size (IN) H × W × D	Shipping Wt. (lbs.)
RS-4L	3	4	3½ × 6⅛ × 7¼	6
RS-5L	4	5	3½ × 6⅛ × 7¼	7

RM SERIES



MODEL RM-35M

- 19" RACK MOUNT POWER SUPPLIES

MODEL	Continuous Duty (Amps)	ICS* (Amps)	Size (IN) H × W × D	Shipping Wt. (lbs.)
RM-12A	9	12	5¼ × 19 × 8¼	16
RM-35A	25	35	5¼ × 19 × 12½	38
RM-50A	37	50	5¼ × 19 × 12½	50
RM-60A	50	55	7 × 19 × 12½	60
• Separate Volt and Amp Meters				
RM-12M	9	12	5¼ × 19 × 8¼	16
RM-35M	25	35	5¼ × 19 × 12½	38
RM-50M	37	50	5¼ × 19 × 12½	50
RM-60M	50	55	7 × 19 × 12½	60

RS-A SERIES

MODEL RS-7A

MODEL	Colors Gray	Colors Black	Continuous Duty (Amps)	ICS* (Amps)	Size (IN) H × W × D	Shipping Wt. (lbs.)
RS-3A		•	2.5	3	3 × 4¾ × 5¾	4
RS-4A	•	•	3	4	3¾ × 6½ × 9	5
RS-5A		•	4	5	3½ × 6⅛ × 7¼	7
RS-7A	•	•	5	7	3¾ × 6½ × 9	9
RS-7B	•	•	5	7	4 × 7½ × 10¾	10
RS-10A	•	•	7.5	10	4 × 7½ × 10¾	11
RS-12A	•	•	9	12	4½ × 8 × 9	13
RS-12B		•	9	12	4 × 7½ × 10¾	13
RS-20A	•	•	16	20	5 × 9 × 10½	18
RS-35A	•	•	25	35	5 × 11 × 11	27
RS-50A	•		37	50	6 × 13¾ × 11	46
RS-70A	•		57	70	6 × 13¾ × 12⅛	48

RS-M SERIES

MODEL RS-35M

MODEL	Continuous Duty (Amps)	ICS* (Amps)	Size (IN) H × W × D	Shipping Wt. (lbs.)
• Switchable volt and Amp meter				
RS-12M	9	12	4½ × 8 × 9	13
• Separate volt and Amp meters				
RS-20M	16	20	5 × 9 × 10½	18
RS-35M	25	35	5 × 11 × 11	27
RS-50M	37	50	6 × 13¾ × 11	46
RS-70M	57	70	6 × 13¾ × 12⅛	48

VS-M AND VRM-M SERIES

MODEL VS-35M

- Separate Volt and Amp Meters • Output Voltage adjustable from 2-15 volts • Current limit adjustable from 1.5 amps to Full Load

MODEL	Continuous Duty (Amps) @13.8VDC	@10VDC	@5VDC	ICS* (Amps) @13.8V	Size (IN) H × W × D	Shipping Wt. (lbs.)
VS-12M	9	5	2	12	4½ × 8 × 9	13
VS-20M	16	9	4	20	5 × 9 × 10½	20
VS-35M	25	15	7	35	5 × 11 × 11	29
VS-50M	37	22	10	50	6 × 13¾ × 11	46
• Variable rack mount power supplies						
VRM-35M	25	15	7	35	5¼ × 19 × 12½	38
VRM-50M	37	22	10	50	5¼ × 19 × 12½	50

RS-S SERIES

MODEL RS-12S

- Built in speaker

MODEL	Colors Gray	Colors Black	Continuous Duty (Amps)	ICS* Amps	Size (IN) H × W × D	Shipping Wt. (lbs.)
RS-7S	•	•	5	7	4 × 7½ × 10¾	10
RS-10S	•	•	7.5	10	4 × 7½ × 10¾	12
RS-12S	•	•	9	12	4½ × 8 × 9	13
RS-20S	•	•	16	20	5 × 9 × 10½	18
SL-11S	•	•	7	11	2¾ x 7⅝ x 9¾	12

*ICS—Intermittent Communication Service (50% Duty Cycle 5min. on 5 min. off)

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DX

BY CHOD HARRIS, VP2ML

NEWS OF COMMUNICATION AROUND THE WORLD

The Antarctic Region

The first two months of the year are the best times for DXers to work stations in the Antarctic region. This is mid-summer in the southern hemisphere, and the scientific and support population in the region soars, taking advantage of the (relatively) good weather. The summer population is typically three times the year-round count. Among the thousands who descend on the region at this time of year are usually many amateurs from the various nations that conduct research in the region. Thus, this time of year is a good time to aim your beam south and catch some of the otherwise rare countries in the region.

The largest, most populated, and easiest to work DXCC country in the region is, of course, Antarctica. In addition to the seasonally staffed research bases, there are many bases that are active all year. However, the summer population of the year-round bases is many times the number who stay through the winter, and therefore much more likely to include an amateur operator. One of the best catches is **KC4AAA**, the Scott Base station at the South Pole. KC4AAA is workable all year. Look for this station running phone patches into the US at the top part of the 20 meter SSB band in early evening local time. At the conclusion of the patches the operators often stand by for a few contacts. At times an avid amateur is stationed at the base, providing contacts on all bands and modes. QSL to NC6J. **KC4/UA3YH** is a Russian researcher at the South Pole station who has been very active this past year. QSL to UA3XBY.

This South Pole station is unique in the CQ Worked All Zones rules, as it may be counted for any of the zones which converge on the pole: 12, 13, 38, 39, 29, 30, and 32. This was especially important for 30 meter WAZ seekers looking for Zone 12, as the only other DXCC countries in zone 12 are Peter I Island, a relatively uninhabited part of Antarctica, and Chilean countries. Until recently 30 meters was not allocated to amateurs in Chile, making KC4AAA the best way to confirm Zone 12 on 30 meters. (Recently, several Chilean stations have been worked on 30 meters, as the band has apparently been opened to amateurs.)

Two other mainland Antarctic US bases are staffed all year: Byrd, with the **KC4USB** club station, and Palmer Station on the Antarctic Peninsula, with **KC4AAC** as the club station. Both are quite active, again mainly running phone patches from the base personnel to their friends and family back home. The QSL routes are via K4MZU and KE9AS, respectively. Incidently, Palmer Station is on Anvers Island, which has an Islands On The Air designation of AN-012, separate from the IOTA of AN-016 for the main island of Antarctica.

Several other US bases on Antarctica occasionally are activated: **KC4USA** at the Little American base, **KC4USW** at Ellsworth, **KC4AAD** at Siple, and **KC4USX** at Little Beardmore, for example.

Many other nations maintain year-round and seasonal bases on the main island of Antarctica. The Australian Mawson and Davis bases frequently include amateurs among the ANARE staff. These Australians typically use **VKØ** callsigns with the suffix being either their initials or that of their regular Australian call. Not all VKØ callsigns are on Antarctica; that prefix is also used for Australia's two other Antarctic region DXCC countries: Heard Island and Macquarie.

In years past the former USSR maintained more Antarctic bases than any other single country, including six year-round bases. They used **4K1** callsigns with a single-letter suffix. However, the Russians have dramatically scaled back their research in the region and the 4K prefix now belongs to Azerbaijan. I haven't heard any Russian stations on Antarctica in more than a year, except for the above-mentioned UA3YH.

Sao Tome amateur complement: from leftt: Col. Fernandes, S92JR; Glenn Britt, S92ZM; Antonio Gamito, S92VG; Luiz Berao, S92LB; and Charles, S92SS, and Lesley, S92YL, Lewis.

Among the other countries having Antarctic bases with amateur activity are the French d'Urville base, with **FT–Y–** callsigns, the number indicating license class; the South Africans with **ZS7– –** calls; and New Zealand stations with **ZL5** calls. The two countries with the most Antarctic bases after the US are Chile and Argentina, both of which claim large, overlapping territories between the southern ends of their mainland and the South Pole.

The Argentine stations use the callsign format of **LU–Z–**. Note that this callsign format is used for all the Argentine Antarctic-region stations, including those on DXCC countries other than Antarctica. The Chilean Antarctic stations use the **CE9** prefix.

Finally, the British retain their interest in the area, including their little dust-up with Argentina over the Falklands/Malvinas. This past fall **VP8CRE** was active from Faraday

Mario, T94DX (left), and Felix, DL8OBC, in Sarajevo.

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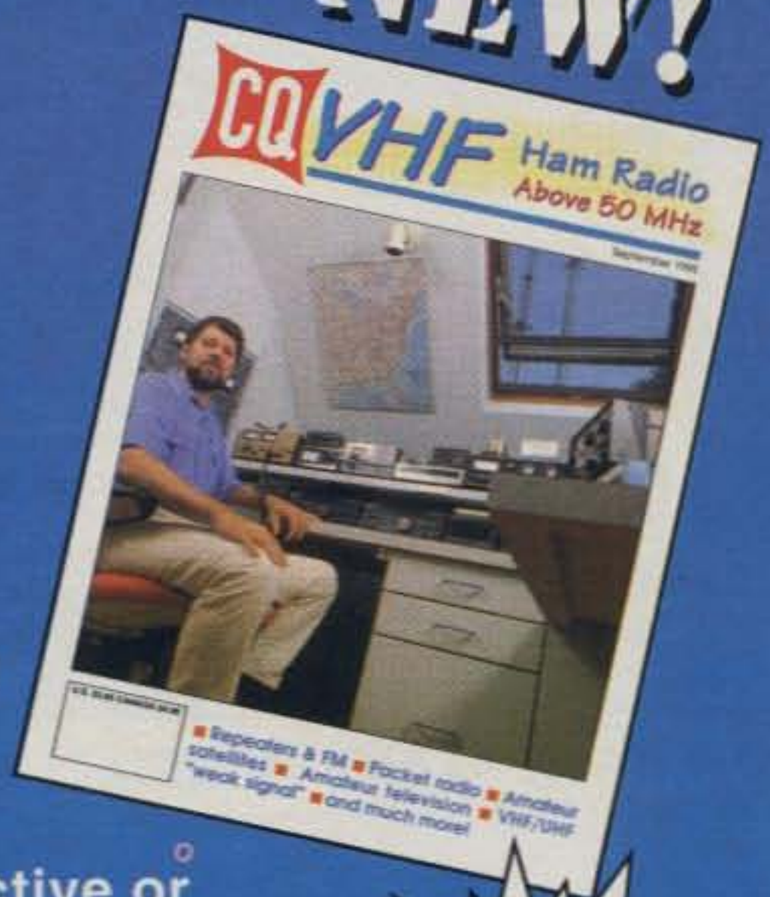

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FT-7200 • 440MHz (35w)

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FT-2500M 2m Mobile (top) • 50w • 31 memories • CTCSS encode • scan • backlit DTMF mic • 6"w x 1⅞"h x 7"d, 1½ lbs.
FT-912RH Mobile (right) • 1.2GHz

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Award of Excellence Plaque Holders with 160 Meter Endorsement: CT1YH, IV3PVE, KA5RNH, ZP5JCY, AB9O, FM5WD, SMØDJZ, DK5AD, SM6CST, I1JQJ, PY2DBU, W3ARK, HI8LC, KA5W, UR2QD, VE3XN, K6XP, LA7JO, W4VQ, K6JG, K3UA, HA8UB, W4CRW, N4MM, K7LJ, SMØAJU, KF2O, SM3EVR, K5UR, UP1BZZ, OK1MP, N5TV, K2POF, W8CNL, DJ4XA, IT9TQH, DL9RK, N6JV, ONL-4003, W1JR, W6OUL, W5AWT, KBØG, F6BVB, W4BQY, YU7SF, W5UR, N4NO, DF1SD, K7CU, I1POR, W8RSW, N4KE, I2UIY, YBØTK, W8ILC, W1BWS, VE7WJ, K9QFR, NN4Q, W4UW, NXØI, G4BUE, LU3YL/W4, I4EAT, WB4RUA, VE7WJ, N4NX, DEØDXM, VE7IG, K9BG, I1EEW, AB9O, CT1YH, IV3PVD, KA5RNH, ZP5JCV, I2MQP, IØRIZ, W5ODD, WX3N, IK4GME, HA8XX, YU1AB, F6HMJ, HB9DDZ, K9XR, KØJN, ZS6EZ, JAØSU, I5ZJK, I2EOW, KS4S, KA1CLV, KØIFL, K9LJN, WT3W, IN3NJB, S50A, UT5-186-2.

Complete rules and application forms may be obtained by sending a business-size self-addressed, stamped envelope (foreign stations send extra postage if airmail desired) to: "CQ WPX Awards," P.O. Box 593, Clovis, NM 88101-9511 USA.

base, giving a QSL route of P.O. Box 260, MPA, Port Stanley, Falkland Islands. Note that VP8 callsigns are used on all the British holdings in the region; you can't identify the DXCC country by the callsign alone.

DXers have an interesting Antarctic target this year. Three Russian teams are attempting to walk across the Antarctic continent. Experienced traveler Fedor Konyukhov is trying to do this solo. He'll operate as **RØFK** during this attempt, which should be in progress as you read this.

There is a small group of islands just off the Antarctic Peninsula that counts as a separate DXCC country—the South Shetland Islands. There is almost always at least one year-round resident amateur at one of the numerous bases in the South Shetlands. This past year it has been a Pole operating from the Arctowski base on King George Island. The base club callsign is **HFØPOL**. The current operator wanted an individual callsign to avoid confusion with previous and future operators. However, the Polish authorities wouldn't issue another callsign. The operator turned to the British, who were more than happy to issue **VP8CQS**. QSL to SP2GOW, when he returns to Poland.

Continuing north, we encounter the British-occupied (and Argentine-claimed) islands of South Orkney, South Georgia, and the Falklands. Of these the Falklands are the easiest to work and can be heard almost daily with VP8 prefixes. Occasional visitors to the other islands may carry amateur gear, but working DXers is usually a very low priority for these researchers. Fortunately, there have been a couple of major DXpeditions to these islands in the past couple of years, and demand for them has dropped considerably.

The WAZ Program

Single Band WAZ

15 Meter SSB

487 ..... IV3GOW

17 Meter SSB

10 ..... K5OVC

80 Meter SSB

68 ..... K6YRA

40 Meter CW

185 ..... JR1CVU

All CW

81 ..... K1OQG 82 ..... AE8T

All Band WAZ

SSB

4299 ..... NG6U 4301 ..... HB9CMB
4300 ..... ON7QF

CW/Phone

7619 ..... OHG1MVO 7622 ..... K1OQG
7620 ..... KS9W 7623 ..... DL2MEG (CW)
7621 ..... NA9A

RTTY

96 ..... AA5AU

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 Manager, Jim Dionne, K1MEM, 31 DeMarco Road, Sudbury, MA 01776. The processing fee for all *CQ* awards is $4.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $10.00 for nonsubscribers. Please make all checks payable to the Award Manager. Applicants sending QSL cards to a CQ checkpoint or the Award Manager must include return postage. Questions regarding the WAZ Award may be sent to K1MEM with an SASE.

Ernie Ong, DU1COO, has worked 288 countries from his Manila shack.

The Argentines used to make an annual cruise through the islands, raising the flag, so to speak, to bolster their claims to the islands. This was often a DXer's best chance to work South Georgia and South Orkney. **LU1ZA** represents many DXers' DXCC credit for the islands. However, these cruises have been curtailed since Argentina's little disagreement with England over the Falklands.

5 Band WAZ

As of September 30, 1995, 426 stations have attained the 200 Zone level.

New recipients of 5 Band WAZ Award with all 200 Zones confirmed:

The top contenders for 5 Band WAZ (zones needed, 80 meters):

N4WW, 199 (26)	RA3AUU, 199 (1)
AA4KT, 199 (26)	UY5XE, 199 (27)
K7UR, 199 (34)	SM6AHS, 198 (12, 31)
NAØY, 199 (26)	UA3AGW, 198 (1, 12)
WØPGI, 199 (26)	VO1FB, 198 (19, 27)
W2YY, 199 (26)	EA5BCK, 198 (27, 39)
W9WAQ, 199 (26)	KZ4V, 198 (22, 26)
W1JR, 199 (23)	K4PI, 198 (23, 26)
VE7AHA, 199 (34)	G3KDB, 198 (1, 12)
W1FZ, 199 (26)	DK2GZ, 198 (1, 24)
IK2GNW, 199 (1)	KG9N, 198 (18, 22)
W9CH, 199 (26)	KM2P, 198 (22, 26)
ACØM, 199 (34)	I1ZXT, 198 (1, 1 on 40)
IK8BQE, 199 (31)	GM3YOR, 198 (12, 31)
JA2IVK,199(34,40m)	OE6MKG, 198 (12, 31)
KA5W, 199 (26)	NN7X, 198 (17, 34)
K1ST, 199 (26)	DKØEE, 198 (19,31)
ABØP, 199 (23)	KØSR, 198 (22, 23)
KL7Y, 199 (34)	

The following have qualified for the basic 5 Band WAZ Award:

KE2PF, 154 Zones

Endorsements:

IV3GOW, 179 Zones F6HMJ, 192 Zones

979 Stations have attained the 150 Zone level as of September 30, 1995.

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 Manager, Jim Dionne, K1MEM, 31 DeMarco Road, Sudbury, MA 01776. The processing fee for all *CQ* awards is $4.00 for subscribers (please include your most recent *CQ* mailing label or a copy) and $10.00 for nonsubscribers. Please make all checks payable to the Award Manager. Applicants sending QSL cards to a CQ checkpoint or the Award Manager must include return postage. Questions regarding the WAZ Award may be sent to K1MEM with an SASE.

Two other DXCC countries in the Antarctic region are major DXpedition targets—Peter I Island and Bouvet 3Y. Both are under Norwegian jurisdiction, but Norway has been very accommodating to DXpedition requests. Because of the weather, the long distance one must go to reach the islands, and the declining number of available ships, DXpeditions to these islands are very rare. Don't expect to see either on the air except in a very limited way until the next century. (An occasional adventure cruise lands a handful of tourists on the islands for a few hours.)

Other islands farther north are often considered part of the Antarctic region. The Australian islands of Heard and Macquarie are among the most difficult to work from the US. Macquarie has a year-round base, and amateurs sometimes volunteer to serve as radio officers there. Graham, **VKØGC**, was the most active such operator in recent times. Macquarie ranks sixth Most Wanted on *The DX Magazine*'s 1995 survey. Maybe we'll see a resident VKØ in the next year or two.

As discussed in detail in the November 1995 column, Heard Island is the target of a major DXpedition. However, the operation did not proceed in November as planned. When the advance team arrived in Australia in October, they discovered that the chartered boat did not offer an adequate safety margin for their needs. Remembering the troubles that VK9NS and company encountered in their Heard Island DXpedition, they declined the charter and searched for a better boat. This delays the operation until this month at the earliest, and maybe into next season.

A major problem is funding. They had raised the money needed to charter the original ship, but were not able to get that money back in time to put a deposit down on another ship. Since the ship charter represents the bulk of the expenses, this has caused both delay and confusion. As I write this column, most of the original group of DXpeditioners are in Australia, attempting to solve these difficult problems. DXers who wish to help may send contributions to DXpedition leader Ralph Fedor, KØIR, at P.O. Box 563, Waite Park, MN 56387.

Incidentally, a couple of DXers have pointed out some correction to that November report. Don Miller's **VK2ADY/VKØ** was **not** accepted for DXCC credit. While it was not disqualified as part of the major disagreement between the ARRL and Miller that included the

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AH-32 2-Meter/440-MHz., Mobile Antenna	66.00
BP-4 Battery Case	28.00
BP-7 13.2 VDC, 425 mAH., Ni-Cad Batt. Pack	88.00
BP-8 8.4 VDC, 800 mAH., Ni-Cad Batt. Pack	87.00
CM-96 8.4 VDC, 1200 mAH., Ni-Cad Batt. Pack	99.00
BP-160 7.2 VDC, 700 mAH., Ni-Cad Batt. Pack	53.00
BP-173 9.6 VDC, 650 mAH., Ni-Cad Batt. Pack	108.00
BP-174 12 VDC, 600 mAH., Ni-Cad Batt. Pack	96.00
BP-180 7.2 VDC, 600 mAH., Ni-Cad Batt. Pack	66.00
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AR-270B 2-Meter/440-MHz., Ringo Vertical	90.00
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A50-5S 50 To 54-MHz., 5-Element Beam	127.00
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RS-35A 13.8 VDC, 35 Amp Int., 25 Amp Cont.	141.50
RS-20M Same As RS-20A, With Meters	108.50
RS-35M Same As RS-35A, With Meters	159.50
VS-35M Same As RS-35M, Variable Volt./Curr.	171.50
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CQ DX Honor Roll

The CQ DX Honor Roll recognizes those DXers who have submitted proof of confirmation with 275 or more ACTIVE countries for the mode indicated. The ARRL DXCC Countries List is used as the country standard. Honor Roll listing is automatic when submitting application or endorsement for 275 or more countries. Deleted countries do not count and are dropped from listing as they occur. Currently there are 326 countries. To remain on the CQ DX Honor Roll, annual updates are required. Honor Roll updates may be made at any time, in any number. Updates indicating "no change" will be accepted to meet the annual requirement. All updates must be accompanied by an SASE for confirmation. The fee for endorsement involving the issuance of a sticker is $1.00.

CW

K2TQC	326	9A2AA	326	N5FW	326	N7RO	324	K9QVB	321	N4AH	315	I1EEW	307	KA2DIV	300	F6HMJ	284
K1MEM	326	N4KG	326	N6AR	325	W7OM	324	W8XD	321	IK2ILH	315	N1HN	307	YU1TR	300	KF5PE	282
W9DWQ	326	OK1MP	326	K8NA	325	W7ULC	323	HA5DA	321	K2JF	314	N3DQN	306	YU2TW	299	G4MVA	281
N4MM	326	WØIZ	326	WA4IUM	325	WØSR	323	DJ2PJ	320	AA2X	314	WB4DBB	306	YV5ANT	299	K7EHI	280
K2FL	326	PAØXPQ	326	KZ4V	325	WA4JTI	323	IT9ZGY	320	4N7ZZ	314	WB4UBD	305	WA8YTM	298	HB9AFI	278
DL1PM	326	W2FXA	326	KB8DB	325	W4OEL	323	K1HDO	320	W5OG	313	I4LCK	305	CT1YH	298	W4UW	277
K3UA	326	SM6CST	326	WA8DXA	325	KUØS	323	KB4HU	320	N5FG	313	N5HB	304	HB9DDZ	297	W3HQU	276
K9BWQ	326	N4JF	326	EA2IA	325	AG9S	322	K4XO	319	KA7T	313	OZ5UR	304	N4OT	296	WF9K	276
K9MM	326	W2UE	326	I1JQJ	325	W7CNL	322	VE3HO	319	K2JLA	312	G2FFO	303	W7IIT	296	YU7FW	275
K2ENT	326	W9WAQ	326	K8LJG	324	K4IQJ	322	WB5MTV	318	K9DDO	312	VE9RJ	303	KØHQW	296		
K2OWE	326	AA4KT	326	IT9QDS	324	NC9T	322	N6AV	318	K1VHS	311	WB6OKK	303	KB3X	289		
K4CEB	326	K9IW	326	W6DN	324	DL3DXX	322	AA6AA	318	G3KMQ	311	K7JYE	302	LA7JO	289		
I4EAT	326	YU1HA	326	G4BWP	324	DJ2PJ	322	N6CW	316	OH3NM	310	WA4DAN	301	YU1AB	288		
K6JG	326	I5XIM	326	WØHZ	324	W1WAI	321	KA5TQF	316	K4CXY	309	HA5NK	301	DJ1YH	288		
K6LEB	326	F3TH	326	N7MC	324	AA5NK	321	VE7CNE	316	VE7DX	309	WG5G/QRPp	301	KE5PO	286		
KD8V	326	IT9TQH	326	WØJLC	324	ON4QX	321	W3BBL	315	K4JLD	309	W6YQ	301	KH6CF	284		

SSB

K4MZU	326	DL9OH	326	W7OM	326	OA4ED	325	K1HDO	322	W6MFC	318	K8NWD	311	WA8MEM	302	IK8BMW	286
K2TQC	326	KSØZ	326	WD8PUG	326	KC8EU	324	N2VW	322	N5ORT	318	ZS6BBY	311	KD4YT	302	NM5O	285
K2FL	326	W6EUF	326	W2CC	326	N4KEL/M	324	TI2JJP	322	XE1ZLW	318	WA9IVU	311	RA2YA	301	CT1YH	285
W9DWQ	326	OE3WWB	326	K2JLA	326	IK8BQE	324	WB4DBB	322	EA8TE	318	K3NEE	311	W2LZX	301	EA1AYN	285
W9SS	326	W2FXA	326	VE2WY	326	W3GG	324	W5XQ	321	K1UO	318	IN3ANE	311	XE2DU	301	EA3BT	285
WA4IUM	326	SM6CST	326	WB4UBD	326	AA5NK	324	KA5TQF	321	KF5AR	318	F1OZF	311	VE6PW	301	N8BJQ	284
DJ9ZB	326	K6YRA	326	IT9TGO	326	K2JF	324	WA3HUP	321	I8IYW	318	EI6FR	311	AB4NS	301	KJ5LJ	284
WB1DQC	326	N4KG	326	AA4KT	326	WB5TED	324	TI2HP	321	NI5D	318	IØSGF	311	WP4AFA	300	CT1BWW	284
XE1AE	326	K3UA	326	PT2TF	326	WZ4I	324	I8XTX	321	KU9I	318	KA5RNH	310	WA5SUE	300	VE3IMO	283
EA2IA	326	OK1MP	326	WB3DNA	326	W2FGY	324	I8YRK	321	KF8VW	318	I2MQP	310	YU2TW	300	XE1ILI	283
K2ENT	326	W6DN	326	KE4VU	326	WØSR	324	K4PQV	321	WB6PSY	317	N5HSF	310	WT4T	300	EA3CWK	283
OZ5EV	326	I2QMU	326	KM2P	326	YV1CLM	324	KS2I	321	WB3CQN	317	HA6NF	310	W7KSK	300	KE6CF	283
KA3HXO	326	PAØXPQ	326	ZL1HY	326	YV5CWO	324	OA4OS	321	9H4G	317	WA2FKF	310	VE3FJE	300	YC3OSE	282
CX4HS	326	N4JF	326	N5FW	326	W5LLU	324	W7ULC	321	WA6DTG	317	OA4QV	310	AB4UF	300	YV1JV	282
F9RM	326	KB4HU	326	I1EEW	326	I8KCI	324	W3AZD	321	PY2DBU	317	W3SOH	309	WB4UHN	300	VE4MT	282
I4EAT	326	KC4MJ	326	K9HDZ	326	I1POR	324	WØULU	321	XE1XM	316	CT1EEB	309	KB8NTY	300	VE7HAM	281
KB8DB	326	OE2EGL	326	W9OKL	326	VE4AT	324	VE7WJ	320	W8AXI	316	EA5RJ	309	I2ZGC	299	WAØQII	281
VE3XN	326	SV1ADG	326	W6BCQ	326	DU9RG	324	IØAMU	320	W6SHY	316	XE1MD	308	NW5K	299	VU2DVP	281
YU1AB	326	CX2CB	326	LA7JO	326	KD5ZM	324	K4CXY	320	KV2S	315	I4CSP	308	WB6GFJ	299	LU6FAZ	281
VE1YX	326	K5OVC	326	VE7DX	326	KØHQW	324	G4ADD	320	WA9RCQ	315	CT1AHU	308	VE3CKP	299	KB5MRT	281
N4MM	326	W4UNP	326	AA6BB	325	W7FP	324	I4WZK	320	KB8O	315	N6RJY	308	EA3CB	299	WN6J	281
N7RO	326	TI2CC	326	K5TVC	325	KA5TTC	324	I4SAT	320	N3ARK	315	K4JDJ	308	DK5WQ	299	N9KAE	281
YS1GMV	326	WA4ECA	326	I8ACB	325	K8YVI	323	I8LEL	320	KA4RAW	315	AB4IQ	307	KQ4GC	298	NXØI	280
K9MM	326	IØZV	326	N6AR	325	NC9T	323	K4JLD	320	KE3A	315	N6AV	306	KJ9N	298	YU1TR	280
4Z4DX	326	I4LCK	326	WD8MGQ	325	KB7VD	323	WE2L	320	K2AJY	315	WD5P	306	VE3XO	294	KK4TR	280
ZL1AGO	326	K7EHI	326	K8LJG	325	KE5PO	323	EA3EQT	320	KX5V	315	TI2TEB	306	KB5WQ	294	WN5K	279
KF7SH	326	IKØIOL	326	K8NA	325	K9HQM	323	WS9V	319	K7TCL	315	VE3DLR	306	IT9VDQ	293	KAØZFX	279
ZS6LW	326	K2JLA	326	IK8CNT	325	KC5P	323	ON5KL	319	IK7DBB	314	W3YEY	306	AA2FN	293	KQ4WD	279
VK4LC	326	IT9TGO	326	AI8M	325	WDØGML	323	WA4DAN	319	AB7AU	314	KF8UN	306	KG6LF	293	HA5NK	279
YV5AIP	326	ZL1HY	326	W4UW	325	WW1N	323	AA6AA	319	NØAMI	314	WA8YTM	306	TI2LTA	292	WØIKD	279
ZL3NS	326	XE1L	326	WB6OKK	325	WB2JZK	323	KI3L	319	OE6CLD	314	XE1MDX	305	K2EEK	291	N5QDE	279
K9IW	326	YU1HA	326	VE2PJ	325	CE7ZK	323	VE3HO	319	OH5KL	313	VK3JF	305	N6ITW	291	WZ3E	279
K6JG	326	VE3MR	326	I8LEL	325	K2ARO	323	XE1MD	319	WDØDMN	313	W6SHY	305	YB1RED	291	VU2CVP	278
WA6OET	326	VE3MRS	326	K7LAY	325	LU7HJM	323	KB1JU	319	F6BFI	313	DL3DXX	305	DJ2UU	291	EA3CWT	278
WA4JTI	326	W4NKI	326	PY4OY	325	KA9I	323	OE7SEL	319	W5GVP	313	NU4Y	305	WA3KKO	290	N6CFQ	278
YV1AJ	326	KZ4V	326	W6BCQ	325	4N7ZZ	323	WDØBNC	319	N6PTI	313	EA5OL	305	OE7KWT	290	K4BYK	277
YV1KZ	326	VE3GMT	326	WØSFU	325	WN5IJZ	322	WA5HWB	319	KD9CN	313	K3LUE	304	I4UFH	289	WN5MBS	277
N6AHU	326	K9BWQ	326	IT9ZGY	325	YV5IVB	322	VE2GHZ	319	K1VHS	313	WF9K	304	EA5GKE	289	VE2DRN	277
EA4DO	326	WØYDB	326	IT9TQH	325	K4SBH	322	K9QVB	318	EA2AOM	313	G4NXG/M	304	IK2PZG	289	GØLRX	277
W9OKL	326	OZ3SK	326	K6LEB	325	XE1CI	322	KB5FU	318	W1LQQ	312	KJ6HO	304	KF7VC	288	KC6AWX	276
9A2AA	326	W4EEE	326	K8CSG	325	WB4PUD	322	AA4AH	318	K4LR	312	WB2NQT	303	TI5RLI	287	NX4Y	275
KD8V	326	KE4VU	326	I2EOW	325	LZ1HA	322	G4GED	318	I8INW	312	WA1DHM	303	OK1AWZ	287	NC3C	275
DL6KG	326	AG9S	326	IK1GPG	325	N5FG	322	W6NLG	318	ZL1BOQ	312	WA9BDX	302	4X6DK	287	F5NBX	275
KZ2P	326	WA4WTG	326	I1JQJ	325	ZS6AOO	322	IK8GCS	318	K8CMO	311	KD5ZD	302	IK2DUW	287	VE2AJT	275

RTTY

K2ENT	320	WB4UBD	291	I1JQJ	273	K3UA	271	KE5PO	254	NI4H	252	W4EEU	250	KB8DB	242	G4BWP	222

famous lawsuit, it was not accredited. Also, **VKØDA** was briefly active in January 1987, with a QSL route of VK9NS.

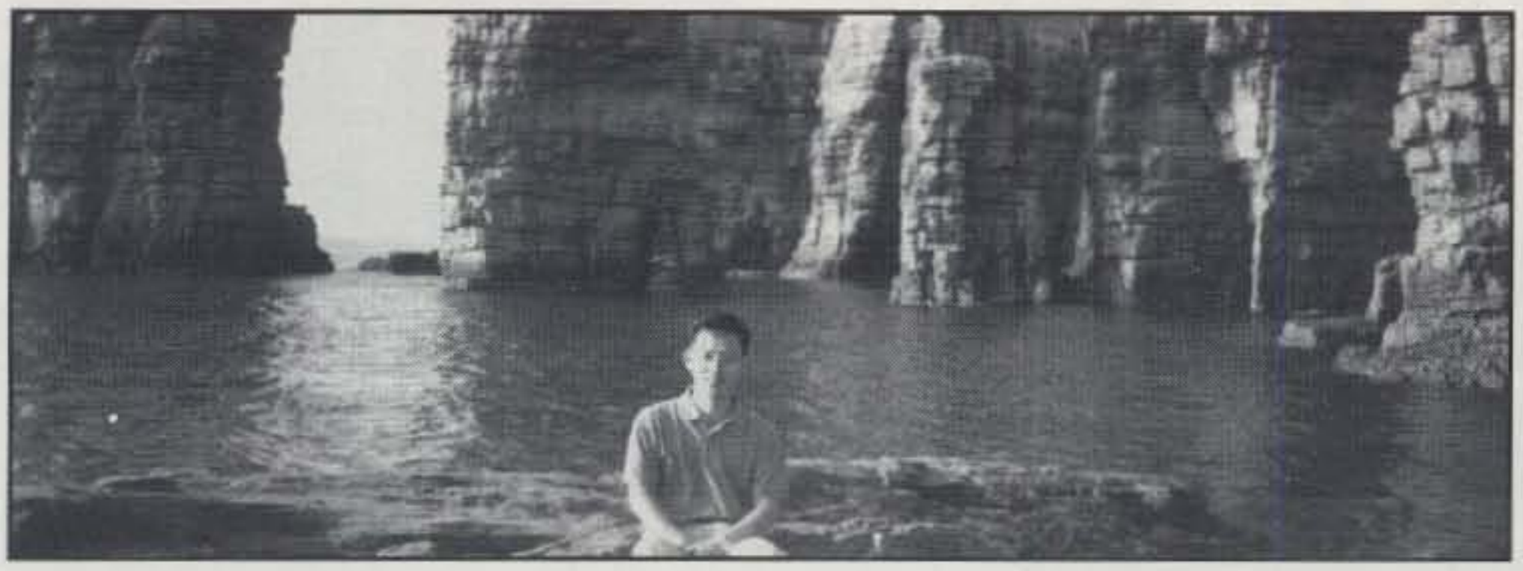
In the same general area as Heard lie several French Antarctic islands. All have year-round bases, and at least one is staffed with an amateur every year. Thus, a patient DXer can eventually, over a period of three to five years, confirm all three—Crozet FT–W–, Kerguelen FT–X–, and Amsterdam & St. Paul FT–Z–. (The number in the callsign represents license class, as it does at FT–Y–.) In the next year look for Jean Jacques, F5SZK, and Samuel, F5IJT, as **FT5WF** and **FT5WG** from Crozet. Also, Jean, FB1LYF, will operate for the next year as **FT5XL** from Kerguelen; QSL to F5NZO. Make the most of this rare opportunity to snag both countries in the same year!

One other island group in the area might be considered an Antarctic group: Prince Edward and Marion Islands **ZS8MI**. There is a permanent research base on Marion, and when the staff includes an amateur, it is relatively easy to work. However, access to the islands is very tightly controlled by South Africa, and DXpeditions to the islands are not allowed. Thus, DXers have to wait for a South African to volunteer for the one-year tour of duty on the isolated spot. There have been two such opportunities in recent years, but there is no amateur on the island this year.

So turn those beams to the south, and make the most of the DX opportunities during the brief Antarctic summer.

Upcoming DX Activity

In addition to the operations mentioned above, DXers can look for the following two operations this month. Thomas Backert, DL9FCQ, plans to operate as **A71AN** from Qatar Dec. 29–Jan. 14, concentrating on CW on 80–10 meters, including the new bands. QSL home call: Freigerichterstrasse 26, 63579 Freigerright 1, Germany. And members of the Central Arizona DX Association have plans to operate from Vietnam this month. Tentative dates are Jan. 23–Feb. 2. They will attempt an operation from the



Dr. Sung-Ki Lee, HL3IWD, operated as DSØDX/2 from Paeng Nyoung Island, which is just off the coast of North Korea.

new Islands On The Air island of Hon Tre during the trip.

QSL Notes

The direct QSL route for **FH5CB** is Elio Fontaine, B. P. 50, 97610 Dzaoudzi, Mayotte, via France.

QSL the Andaman Island operation of **VU2JPS** via Sudhakar Dinkar Paranjpe, VU2AU, 24 Dharampeth Ext., Nagpur 440010, India.

G4ZVJ, manager for **ZD8VJ, ZD7VY, 3D2VJ, T20VJ, A35VJ, 5W1VJ, ZK2VJ, KH8/G4ZVJ, AH8F, HSØ/G4ZVJ, DU3/AH8F, ZD8OV, ZD88V, and GB5VJ**, has a new address: Andy Chadwick, G4ZVJ, 5 Thorpe Chase, Littlethorpe Road, Ripon, North Yorkshire HG4 1UA, UK.

QSL **T32ZB** via the operator: DJ4ZB.

W2KF, listed as QSL manager for many Caribbean and other stations, is a Silent Key. Cards are not being answered.

QSL **ET3AA** to P.O. Box 60258, Addis Ababa, Ethiopia.

The correct QSL address for **YE8TI** is via YB8UMX at Box 612, Bitung 95577, Indonesia.

QSL **UU2JZ** via Slavi Tashkov, LZ1ZJ, Tsanko Tserkovki St. No. 2, Velingrad, 4600 Bulgaria.

US DXers may QSL **UA9FAR** via an SASE to W7YS.

QSL INFORMATION

3D2PN to OH5UQ
3E2G to HP2CTM
3ZØCDP to SP6CDP
3Z2EBG to SP2EBG
3Z4EAK to SP4EAK
3Z4JWR to SP4JWR
3Z9BRP to SP9BRP
4G2X to DU3DO
4K9W to DL6KVA
4U/RW3AH to RW3AH
5B4ABP to OE2GEN
5NØGC to F2YT
5NØT to F2YT
5N3/SP5XAR to SP5CPR
5X4F to KB4EKY
7S6AG to SK6AG
7S6SAQ to SK6DK
9A4A to 9A4AA
9G1YR to G4XTA
9HØDX to DK9IP
9H3PB to DF4EK
9J2SZ to SP8DIP
9K2ZC to KC4ELO
9L1PG to NW8F
9M8PR to DJ8PR
9Q5MRC to G3MRC
9Q5TR to 4Z5DP
9U/EA1FH to EA1FFC
9X/ON4WW to ON5NT
C47A to 9A2AJ
C4MI to 5B4KH
C53HG to W3HCW
CEØZ to KØIYF
CEØZAM to CE3ESS
CN8MC to WB2AQC
CN8TM to JR2ITB
CU3P to CU3AK
CU9B to CU3AV
CY9/K4TVE to WA4DAN
CY9/KW2P to WA4DAN
D2EV to DL3KBQ
D2TT to ON5NT
D3T to ON5NT
DF5JT/HKØ to DF3CB
DU1RAA to DU9RG
ED1IDS to EA1ASR
ED2FPA to EA2CBY
ED5MFS to EA5VM
EG5MDE to EA5BY
EO5ØHZ to W3HNK
ES6Z/Ø to ES6DO
ET3KV to DL1VU
EU3FT to W3HCW
EW1WZ to DL1OY
EX2M to DL4MFM
EX8F to DL8FCU
FY5FY to F6EZV
FY5YE to W5JLU
G4MFW/ZL8 to KA1JC
GB1ØØNT to G4VAA
GB5FI to GWØANA
GU/DL1MIA to DJ3QG
GWØHGN/P to GWØMOI
HC8KU to DK5VP
HD2RG to HC2RG
HH2/N3SIY to KFØUI
HH2LQ to KM6ON
HKØ/DF5JT to DF3CB
HL5KY to W3HNK
HL9DC to N7RO
HSØZAQ to K9ECE
HV4NAC to IKØFVC
II5ONU to I5KKW
IJ7/IK7XIV to IK7IMO
IMØ/IK2GAO to IK2GAO
IUØPAW to IKØSHF
J28JA to F2BU
J3/KBØQNS to KFØUI
JWØK to DL5EBE
JW1CCA to LA1CCA
JY74Z to JY6ZZ
JY8CR to DL4VCR
KC4AAA to NC6J
KG4CM to N5FTR
KP2/VS6CT to AA6BB
LY95BA to LY3BA
LY95DR to LY1DR
LY95DS to LY1DS
M1OOG to RSGB
OA174QV to OA4QV
OD/N4ISV to N4JR
OHØNRG to OH2NRG
OL5PLZ to OK1DRQ
OR4LI to ON4RU
OZ4CHR to OZ1LUR
P39P to 5B4ES
P4ØAN to CX3AN
P4ØCR to CX4CR
PI5ØTUE to PI4TUE
R1FJZ to DF7RX
R1MVI to OH2BU
RA4HW to N7OTR
RA9LI/9 to DL6ZFG
RUØB to UA9OBA
SJ9WL to SMØDJZ
SM/DL1SCQ to DL6DK
T77BL to T7ØA
T88A to I1RBJ
T91CFG to 9A2AJ
T91EGR to 9A2AJ
T92A to S57MX
T94TG to 9A2AJ
T94YS to 9A2AJ
TF/WJ2O to WJ2O
TI5NW to WB3LUI
TKØP to F6AUS
TU4FB to K4ZLE
TY1IJ to DK8ZD
UAØAZ to W3HNK
UAØSMF to DL5OV
UA3YH/KC4 to UA3XBY
UE5ØMIR to UAØMF
UG6JJ to GW3CDP
V31ML to N5FTR
V47NQ to WA4JTK
V73GT to WF5T
VE8TA to VE2BQB
VI5ØPEACE to VK4CHB
VK2CWT/VK9X to JA2NVY
VK9CJ to DJ9HX
VK9XA to JA2NVY
VK9XI to DJ9HX
VP2MDE to K5GN
VP5/JA7AYE to JA7ZF
VP5/PA3BBP to PA3ERC
VP5/PA3ERC to PA3ERC
VP5/PA3EWP to PA3ERC
VP8CRT to G4YXG
VP8CSA to DL1SDN
VS6GA to KG6ZQ
W5IJU/CY9 to WA4DAN
WA4DAN/CY9 to WA4DAN
WW2END to KG7XD
X5BYZ to YU7KMN
XJ1CWI to VE2CWI
XJ3AT to VE3AT
XRØY to WA3HUP
XRØZ to WA3HUP
YB2ARW to W4LCL
YB5ØRI to YBØHZL
YJ8RN to N9DRU
YS1ZV to KB5IPQ
YS4/TI5NW to WB3LUI
YT5ØAT to YU1SZ
YU5ØAAV to YU1AAV
ZA1AJ to OK2PSZ/OK2ZV
ZC4C to OK1RI
ZC4DX to G3OZF
ZC6B to K9JJR
ZK1PN to OH5UQ
ZL6RCS to G3CWW
ZP5XYE to JA7ZF
ZWØJR to PP5JR

Maria Oosthuizen, ZS1AFZ, is the first ZS YL to obtain CQ's WPX Award. She also won sixth place in the 1994 ARRL 10 Meter Contest in the CW-only low-power group. She is looking for Zone 2 and can be found on 80, 40, 20 meters. (Photo via K6ZDL)

QSL **V31MX** to Jerald Hoskelis, KØBCN, P.O. Box 2051, Bandera, TX 78003.

QSL the April 1995 operation of **PXØUP** from Rasa Island via the operator: Joao Batista Guimaraes Mendonca, PY1UP, P.O. Box 3100, Rio de Janeiro, RJ 20001-970, Brazil. QSL his Trindade Island operation of **PYØTUP** in 1994 via the same address.

QSL **ZC4EE** via Nick Langmead, G4OOE, P.O. Box 84, Dherynia 5385, Cyprus.

QSL **ZK1PNX** via operator Bob Rose, K6GKU, 15514 E. Richwood Ave., Fountain Hills, AZ 85168.

QSL **HSØZAA** via KM1R.

QSL **TU4EI, TU5EV, 9L1/TU5EV, 3C1/TU4EI**, and **XT2JB** via Jim Bennett, KM4P, P.O. Box 12141, Arlington, VA 22219.

QSL **V73CO** via Art Hale, V73AX, P.O. Box 60, APO AP 96555.

W8GIO, QSL manager for **C91S, C9RDM, HZØZBJ**, and others, will not answer bureau cards. QSL direct only.

W5JLU, former QSL manager for **FY5YE**, is a Silent Key. QSL FY5YE via Wes Spence, AC5K, 465 Creekwood Dr., Lumberton, TX

CQ DX Awards Program

SSB

2165	CE7AOY	2168	CT1CBI
2166	WB3DLG	2169	CX2CB
2167	N4RXL		

SSB Endorsements

320	CX2CB/326	300	K4JDJ/308
320	WØULU/321	275	KG6LF/293
310	OA4QV/310	150	CT1CBI/155

CW Endorsements

320	W7OM/324	300	WB4DBB/306
320	KUØS/323	300	WG5G/QRPp/301

RTTY Endorsements

320 ..... K2ENT/320

Total number of active countries is 326. The basic award fee for subscribers to *CQ* is $4. For non-subscribers, it is $10. In order to qualify for the reduced subscriber rate, please enclose your latest *CQ* mailing label with your application. Endorsement stickers are $1.00. Updates not involving the issuance of a sticker are made free when an SASE is enclosed for confirmation of total. Rules and application forms for the CQ DX Awards Program may be obtained by sending a business-size, No. 10 envelope, self-addressed and stamped, to CQ DX Awards Manager, Billy Williams, N4UF, Box 9673, Jacksonville, FL 32208 U.S.A. DX stations must include extra postage for airmail reply. Please make all checks payable to the awards manager.

PROPAGATION

BY GEORGE JACOBS, W3ASK

THE SCIENCE OF PREDICTING RADIO CONDITIONS

Mother Nature Cooperates For CQ WW DX SSB Weekend

Happily, Mother Nature cooperated during the *CQ* World-Wide DX Contest SSB weekend. Propagation conditions on Saturday, October 28th varied between Normal and Above Normal, much as predicted. The radio storm expected for October 29th held off for a day or so, and Normal to Above Normal conditions continued through most of Sunday as well, although there was a brief period of radio storminess which affected high-latitude propagation. All in all, conditions were about as good as they can get during years of low sunspot activity.

Table I presents a summary of worldwide HF propagation conditions based on reports jointly made by USAF and NOAA through the Space Environmental Services Center, Boulder, Colorado.

LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for January 1996

	Expected Signal Quality			
Propagation Index.....	**(4)**	**(3)**	**(2)**	**(1)**
Above Normal: 6, 17, 19	**A**	**A**	**B**	**C**
High Normal: 4-5-, 7, 15-16, 18, 27, 29-30	**A**	**B**	**C**	**C-D**
Low Normal: 1-2, 8, 11-14, 20-21, 24-26, 31	**B**	**C**	**D**	**D-E**
Below Normal: 3, 9, 23, 28	**C**	**C-D**	**D-E**	**E**
Disturbed: 10, 22	**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 S9 and S6, with some fading and noise.

D—Poor opening, with weak signals varying between S1 and S3, and with considerable fading and noise.

E—No opening expected.

HOW TO USE THIS FORECAST

1. Find *propagation index* associated with particular band opening from Propagation Charts appearing on the following pages.

2. With the *propagation index*, use the above table to find the expected signal quality associated with the band opening for any date of the month. For example, an opening shown in the charts with a *propagation index* of 3 will be fair (C) on July 1st and 2nd, fair-to-poor (C-D) on the 3rd, good (B on the 4th and 5th, excellent (A) on the 6th, etc.

Sunspot Cycle 22 Progress

The Royal Observatory of Belgium, the world's official keeper of sunspot records, reports a monthly mean sunspot number of 12 for September 1995. This results in a smoothed running sunspot number of 22 centered on March 1995. A daily high of 30 was recorded on September 22 and 24, while the sun was completely spotless six days. A smoothed index of approximately 14 is forecast for January 1996.

Canada's Dominion Radio Astrophysical Observatory in Penticton, B.C. reports a corresponding mean 10.7 cm solar flux level of 72 for September 1995. This results in a smoothed level of 80 centered on March 1995. A level of approximately 75 is forecast for January 1996.

Table II is a listing of smoothed sunspot numbers observed to date for Cycle 22, the present solar cycle, and a forecast of activity expected through 1996.

1996 HF Propagation Conditions

The new year is expected to begin with a smoothed sunspot number of approximately 14, which will continue to drop slowly, reaching approximately 8 by the end of the year. As reported in last month's column, the first spots of the new cycle have already been observed, but its date of beginning is marked when the number of new cycle spots are the same as the number remaining from Cycle 22. The experts estimate that this is very likely to occur during the last months of 1996 or by early 1997. What does this mean for HF propagation during 1996?

HF Propagation—1996

Compared to last year's low level of solar activity, conditions expected on the HF bands during 1996 may be somewhat below what they were at the same time last year, particularly on the higher frequency bands. Here is a thumbnail revue of DX conditions expected during 1996 on each amateur band between 6 and 160 meters.

6 meters: *F-2* layer ionospheric DX openings are extremely unlikely. Improved short-skip openings are expected during the sporadic-*E* summer season.

10 meters: Very few DX openings are expected on this band during 1996, but an occasional *F-2* layer opening may be possible to some areas of the world during the daylight hours of the equinox and winter months. Expect improved short-skip openings during the summer sporadic-*E* season.

12 meters: Should behave very much like the 10 meter band, but open somewhat more frequently.

15 meters: Somewhat fewer openings are expected this year, but it still should be a fairly good band for worldwide DX during the daylight hours of the 1996 equinox and winter months. Few east-west DX openings are expected during the summer months, but some north-south openings should be possible.

17 meters: Should behave much like 15 meters, but open more often, and remain open for DX an hour or two longer.

20 meters: Not too much change from last year expected on this band during the hours of daylight, with worldwide DX openings possible throughout the year. DX conditions on this band tend to peak for a few hours after local sunrise, and again during the sunset period. During the winter months few nighttime DX openings are expected. During the summer months, however, fairly good early evening DX should be possible, although it is likely to be more spotty than last year. Twenty meters will probably be the best all-around DX band during the new year.

30, 40, 80, and 160 meters: These are basically nighttime DX bands, and there is a tendency for propagation conditions to *improve* somewhat as solar activity decreases. Exceptionally good worldwide DX should be possible on 30 and 40 meters from about two hours before sunset to approximately two hours after sunrise during all seasons, and on 80 and 160 meters during the equinox and winter months.

January Conditions

Typically low solar activity, wintertime HF propagation conditions are expected to continue through January. The 10, 12, 15, and 17 meter bands are expected to open somewhat less often than during last January. Twenty meter openings should remain about the same, while somewhat improved band conditions may be noticed on 30, 40, 80, and 160 meters. Atmospheric noise levels (static) are expected to be at their lowest values of the year in the northern hemisphere, and signal levels should be exceptionally strong during band openings.

10 and 12 meters: A few DX openings should still be possible to southern and tropical regions during the daylight hours, with signals peaking during the afternoon. A very occasional opening towards Europe and the east may be possible between 8 and 11 AM, and towards the Far East during the late afternoon. Some short-skip openings, between approximately 1300 and 2300 miles, are also forecast for the afternoon hours.

17 and 15 meters: Fairly good 15 and 17 meter DX openings are forecast to many areas of the world during the hours of daylight. Fairly consistent short-skip openings, as a result of regular *F*-layer reflection, are also expected during the daylight hours for distances ranging between approximately 1000 and 2300 miles.

20 meters: Openings to most areas of the world are forecast for 20 meters sometime between sunrise and the late afternoon hours. Signals are expected to peak for about an hour or two after sunrise and again during the afternoon. Good short-skip openings over distances ranging between 750 and 2300 miles should be possible. Occasionally the band should remain open toward southern and tropical areas into the evening hours.

30 and 40 meters: DX openings should begin during the late afternoon hours, with conditions peaking during the hours of darkness and at sunrise. Both bands may remain open for DX for as long as two hours or so after local

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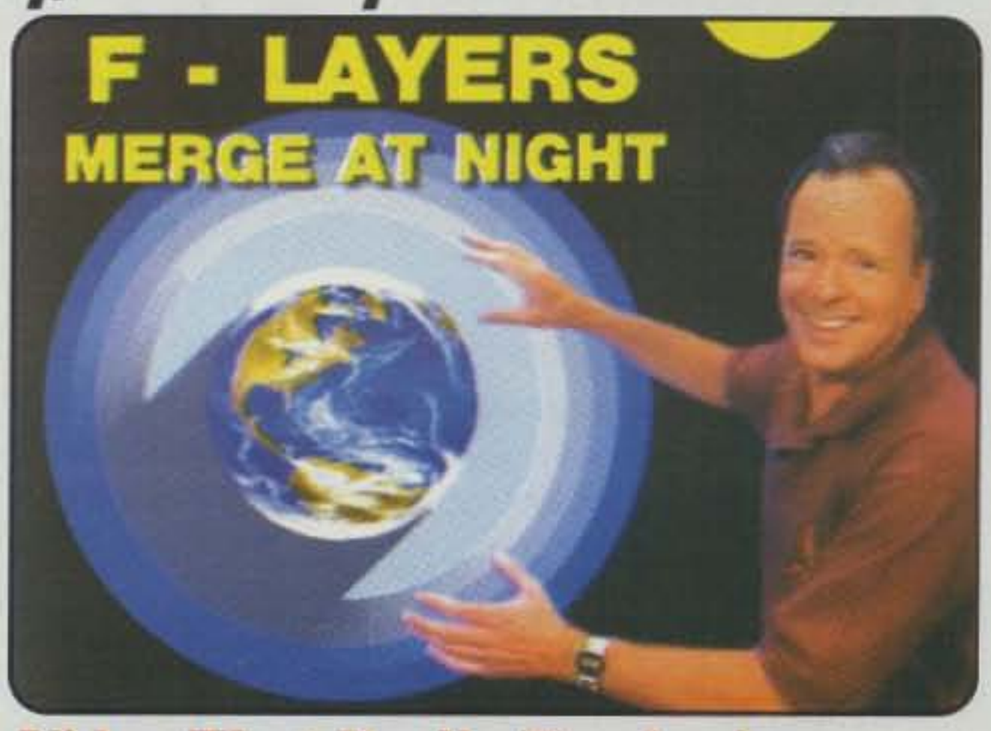

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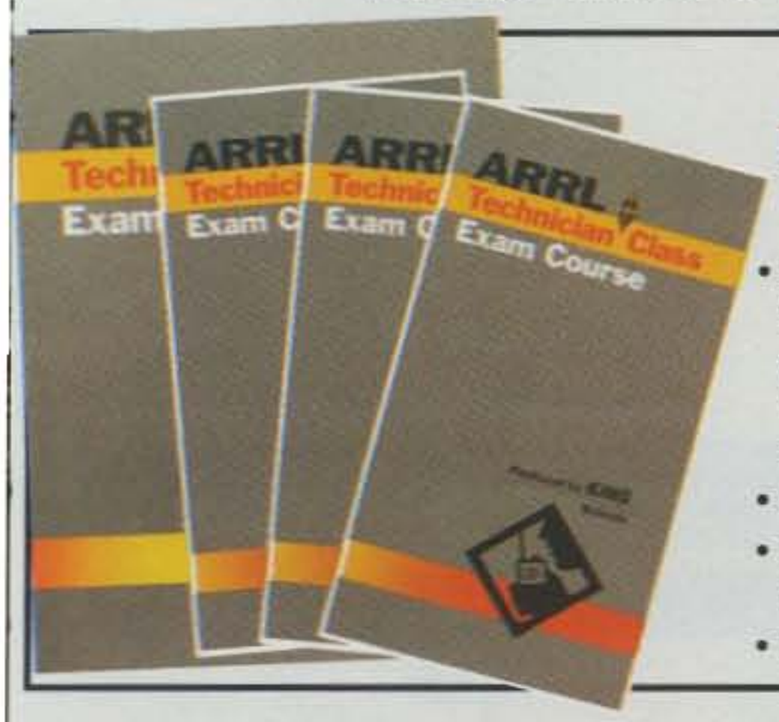

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HOW TO USE THE SHORT-SKIP CHARTS

1. In the Short-Skip Chart, the predicted times of openings can be found under the appropriate distance column of a particular meter band (10 through 160 meters) as shown in the left-hand column of the chart. For the Alaska and Hawaii Charts the predicted times of openings are found under the appropriate meter band column (15 through 80 meters) for a particular geographical region of the continental USA as shown in the left-hand column of the charts. An * indicates the best time to listen for 80 meter openings.

2. The propagation index is the number that appears in ( ) after the time of each predicted opening. On the Short-Skip Chart, where two numerals are shown within a single set of parentheses, the first applies to the shorter distance for which the forecast is made, and the second to the greater distance. The index indicates the number of days during the month on which the opening is expected to take place, as follows:

(4) Opening should occur on more than 22 days
(3) Opening should occur between 14 and 22 days
(2) Opening should occur between 7 and 13 days
(1) Opening should occur on less than 7 days

Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

3. Times shown in the charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 AM; 13 is 1 PM, etc. In the Short-Skip Chart appropriate *standard* time is used at the path midpoint. For example on a circuit between Maine and Florida, the time shown would be EST, on a circuit between New York and Texas, the time at the midpoint would be CST, etc. Times shown in the Hawaii Chart are in HST. To convert to standard time in other USA time zones add 2 hours in the PST zone; 3 hours in the MST zone; 4 hours in the CST zone; and 5 hours in the EST zone. Add 10 hours to convert from HST to GMT. For example, when it is 12 noon in Honolulu, it is 14 or 2 PM in Los Angeles; 17 or 5 PM in Washington, D.C.; and 22 GMT. Time shown in the Alaska Chart is given in GMT. To convert to *standard* time in other areas of the USA subtract 8 hours in the PST zone; 7 hours in the MST zone; 6 hours in the CST zone; and 5 hours in the EST zone. For example, at 20 GMT it is 15 or 3 PM in New York City.

4. The Short-Skip Chart is based upon a transmitted power of 75 watts CW or 300 watts PEP on sideband; the Alaska and Hawaii Charts are based upon a transmitter power of 250 watts CW or 1 KW PEP on sideband. A dipole antenna a quarter-wavelength above ground is assumed for 160 and 80 meters, a half-wave above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the propagation index will increase by one level; for each 10 dB loss, it will lower by one level.

5. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept. of Commerce, Boulder, Colorado 80302.

CQ Short-Skip Propagation Chart
January & February 1996
Local Standard Time
At Path Mid-Point

Band (Meters)	*Distance Between Stations (Miles)*			
	50-250	*250-750*	*750-1300*	*1300-2300*
10	Nil	Nil	10-15 (0-1)	10-15 (1) 15-16 (0-1)
15	Nil	10-16 (0-1)	09-10 (1) 10-15 (1-2) 15-16 (1) 16-18 (0-1)	09-10 (1) 10-12 (1-2) 12-15 (2-3) 15-16 (1-2) 16-18 (1) 18-19 (0-1)
20	Nil	09-10 (0-1) 10-12 (0-2) 12-14 (0-3) 14-16 (0-2) 16-20 (0-1)	07-08 (0-1) 08-09 (0-2) 09-10 (1-4) 10-12 (2-4) 12-14 (3-4) 14-16 (2-4) 16-17 (1-3) 17-18 (1-2) 18-22 (1)	07-08 (1) 08-09 (2-3) 09-11 (4) 11-14 (4-3) 14-16 (4) 16-17 (3-4) 17-18 (2-3) 18-19 (1-2) 19-20 (1)
40	07-09 (0-1) 09-10 (1-3) 10-11 (3) 11-15 (3-4) 15-16 (3) 16-18 (1-2) 18-20 (0-1)	07-08 (1-2) 08-09 (1-3) 09-11 (3-4) 11-15 (4-3) 15-16 (3-4) 16-18 (2-3) 18-20 (1-2) 20-02 (0-2)	07-08 (2) 08-09 (3-1) 09-11 (4-1) 11-15 (3-1) 15-16 (4-2) 16-18 (3-4) 18-20 (2-4) 20-02 (2-3)	07-08 (2-1) 08-15 (1-0) 15-16 (2) 16-18 (4-3) 18-20 (4) 20-02 (3-4) 02-04 (2-3) 04-07 (2)
80	07-08 (1-2) 08-09 (3-4) 09-18 (4) 18-19 (2-3) 19-21 (1-2) 21-06 (0-1) 06-07 (0-2)	07-08 (2) 08-10 (4-2) 10-16 (4-1) 16-18 (4-2) 18-19 (3-4) 19-21 (2-3) 21-06 (1-3) 06-07 (2)	07-08 (2-1) 08-10 (2-0) 10-16 (1-0) 16-18 (2-1) 18-19 (4-3) 19-21 (3-4) 21-06 (3) 06-07 (2)	07-08 (1) 08-16 (0) 16-18 (1-0) 18-19 (3-2) 19-21 (4) 21-03 (3) 03-06 (3-2) 06-07 (2-1)
160	17-19 (3-2) 19-05 (4) 05-07 (3) 07-09 (2-1) 09-17 (1-0)	17-18 (2-1) 18-19 (2) 19-21 (4-3) 21-05 (4) 05-06 (3) 06-07 (3-1) 07-09 (1-0)	17-18 (1-0) 18-19 (2-1) 19-21 (3-1) 21-03 (4-3) 03-05 (4) 05-06 (3-2) 06-07 (1) 07-08 (1-0)	18-19 (1-0) 19-21 (2-1) 21-03 (3) 03-05 (4-2) 05-06 (2) 06-07 (1-0)

ALASKA
January & February 1996
Openings Given in GMT

To:	*15 Meters*	*20 Meters*	*40 Meters*	*80 Meters*
Eastern USA	21-23 (1)	18-22 (1) 22-00 (2) 00-01 (1)	03-10 (1) 10-12 (2) 12-13 (1)	07-11 (1)
Central USA	20-23 (1)	18-22 (1) 22-00 (2) 00-02 (1)	03-11 (1) 11-13 (2) 13-14 (1)	07-11 (1)
Western USA	20-21 (1) 21-23 (2) 23-00 (1)	17-18 (1) 18-22 (2) 22-00 (3) 00-01 (2) 01-03 (1)	02-03 (1) 03-04 (2) 04-06 (3) 06-14 (1) 14-15 (2) 15-16 (3) 16-17 (1)	05-12 (1) 12-14 (2) 14-15 (1) 12-14 (1)*

HAWAII
January & February 1996
Openings Given in Hawaiian Standard Time

To:	*15 Meters*	*20 Meters*	*40 Meters*	*80 Meters*
Eastern USA	07-10 (1) 10-12 (2) 12-13 (3) 13-14 (2) 14-15 (1)	06-07 (1) 07-09 (2) 09-12 (1) 12-14 (2) 14-15 (3) 15-16 (2) 16-17 (1)	17-19 (1) 19-21 (2) 21-00 (3) 00-03 (2) 03-04 (1)	19-21 (1) 21-01 (2) 01-03 (1) 23-02 (1)*
Central USA	11-13 (1)** 07-09 (1) 09-11 (2) 11-13 (3) 13-15 (2) 15-16 (1)	06-07 (1) 07-10 (2) 10-13 (1) 13-14 (2) 14-16 (3) 16-17 (2) 17-18 (1)	17-19 (1) 19-20 (2) 20-03 (3) 03-04 (2) 04-06 (1)	19-20 (1) 20-22 (2) 22-01 (3) 01-03 (2) 03-05 (1) 23-03 (1)*
Western USA	11-14 (1)** 07-08 (1) 08-10 (2) 10-12 (3) 12-14 (4) 14-15 (3) 15-16 (2) 16-17 (1)	06-07 (1) 07-08 (2) 08-10 (4) 10-14 (3) 14-16 (4) 16-17 (3) 17-18 (2) 18-19 (1)	16-18 (1) 18-19 (2) 19-22 (4) 22-02 (3) 02-04 (2) 04-08 (1)	19-20 (1) 20-22 (2) 22-04 (3) 04-05 (2) 05-07 (1) 22-05 (1)*

 # See time conversions for use in other time zones in "How To Use Short-Skip Charts," appearing in the box at the beginning of this column.
** Indictaes best time for 160 meter openings.*
*** Indicates best time for 10 meter openings.*

For 12 meter openings interpolate between 10 and 15 meter openings.
For 17 meter openings interpolate between 15 and 20 meter openings.
For 30 meter openings interpolate between 40 and 20 meter openings.

Note: The Alaska and Hawaii Propagation Charts are intended for distances greater than 1300 miles. For shorter distances, use the preceding Short-Skip Propagation Chart.

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G-800SDX *$25 OFF*	Medium-duty	1½-2½ inches	12½"H x 7½" Dia.	Yes	17 Sq. Ft.
G-1000SDX *$25 OFF*	Heavy-duty	1½-2½ inches	12½"H x 7½" Dia.	Yes	23 Sq. Ft.
G-2800SDX *$25 OFF*	Extra Heavy-duty	1⅞-2½ inches	13⅝"H x 8" Dia.	Yes	34 Sq. Ft.
G-5400B	Azimuth-Elevation Rotator combination	1½-2½ inches (Boom Dia. 1¼-1⅝ in.)	Mounted together 12½"H x 7½" Dia.**	No	11 Sq. Ft.
G-500A	Elevation Only	1½-2½ inches (Boom Dia. 1¼-1⅝ in.)	10½"H x 7½" Dia.	No	12 Sq. Ft.

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Geographical Area	October 28	October 29
Polar	Low Normal	Low Normal
Auroral	Low Normal	Below Normal*
Middle Latitude	High Normal	Low/High Normal
Low Latitude	High Normal	High Normal
Equatorial	Above Normal	Above Normal
10.7 cm Radio Flux	74	74
WW Geomagnetic Ap Index	3	5

**Radio storminess in auroral area from 1200–1800 UTC, October 29.*

Table I– Summary of HF propagation conditions reported jointly by USAF and NOAA during the CQ WW DX SSB Contest weekend of October 28–29.

sunrise. Atmospheric noise, or static, should remain at low seasonal levels during the month, and signals often may be exceptionally strong. Good short-skip openings are also forecast during the hours of daylight over distances ranging between approximately 150 and 750 miles. As darkness falls, the short-skip range should increase to between 1000 and 2300 miles.

80 meters: With low static levels continuing through the month, fairly good DX openings are expected to many areas of the world during the hours of darkness. During the daylight hours short-skip should be possible up to about 300 miles. During the hours of darkness, the skip should increase, with openings possible between distances of approximately 400 and 2300 miles. It may be a toss-up between 80 and 40 meters for the best DX band openings during the late evening and early morning hours.

160 meters: A considerable improvement is expected in propagation conditions on this band during January. Fair DX openings are forecast to many areas of the world from a few hours after sundown to shortly after sunrise. Short-skip openings up to 2300 miles should also be possible during the hours of darkness. Because of extremely high solar absorption in this frequency range, even during the periods of low sunspot activityionospheric propagation generally is not possible on 160 meters during the daylight hours.

Remember the following rule for 30, 40, 80, and 160 meter DX openings. Conditions on these bands maximize as the sun rises on the eastern terminal of a path. For example, for openings between North America and Europe, conditions should be optimum as the sun rises in Europe. For openings between the South Pacific and North America, look for the strongest signals as the sun rises over North America.

VHF Ionospheric Openings

There is a fairly good chance for some meteor-scatter-type openings during the first week of January when the *Quadrantids* meteor shower is expected to take place. This is usually a major shower, and it should peak on the 2nd and 3rd with about 30 to 40 meteors entering the earth's atmosphere each hour.

January is generally a poor month for VHF ionospheric propagation. Auroral activity is usually at a low seasonal level, and there is little sporadic-E activity expected. Best bet for ionospheric openings is on days when HF conditions are expected to be Below Normal or Disturbed. These appear in the Last-Minute Forecast at the beginning of this column.

Short-Skip Charts

This month's column contains a Short-Skip Propagation Chart for use between distances of approximately 50 and 2300 miles. Special charts for use between the mainland and Alaska and Hawaii are also included. Instructions for use of these charts are given elsewhere in this column. DX charts for January appeared in last month's column.

73, George, W3ASK

Month	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
January	—	18	58	142	151	148	124	71	37	24	14*
February	—	20	65	145	151	148	116	69	35	23	13*
March	—	22	71	150	152	147	108	67	34	22	13*
April	—	24	78	154	149	146	103	64	34	21*	12*
May	—	26	84	157	147	146	100	60	33	20*	12*
June	—	28	94	158	144	145	97	56	31	19*	11*
July	—	31	104	159#	141	146	91	55	29	19*	11*
August	—	35	114	158	141	147	84	52	27	18*	10*
September	12	39	121	157	142	145	80	49	27	18*	9*
October	13	44	125	157	142	142	76	45	27	17*	9*
November	15	47	130	158	142	138	74	41	26	16*	8*
December	16	51	138	154	144	132	73	39	26	15*	8*

Table II– Progress of sunspot Cycle 22 and predictions for 1995–1996. Predicted values are shown with asterisks. The peak of Cycle 22 is shown with #. Cycle 22 is expected to end during late 1996 or early 1997. (Based on data provided by the National Geophysical Data Center, Boulder, Colorado).

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Weight:	10 lbs. (4.5 kg)

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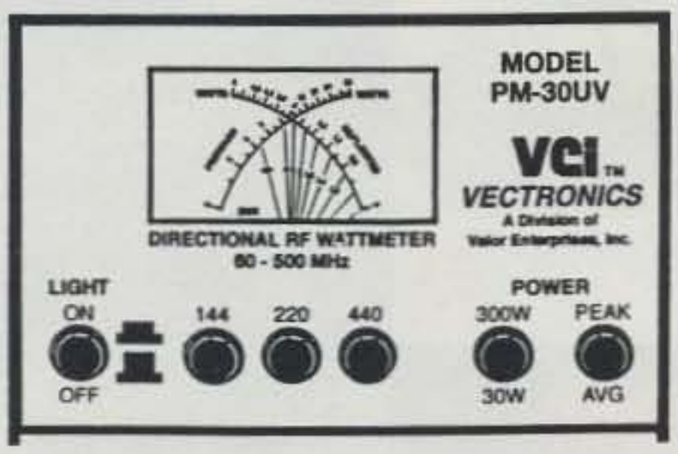

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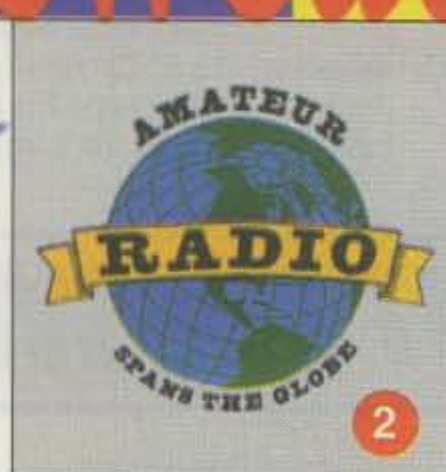

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William Ley, WA4NKL
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Jerry Garrett, W4FVV
Don Fancher
Pete Kelley

his homebrew dual-band vertical. In between QSOs, Troy also enjoys painting. Make sure you say hello next time you hear him on the air!

Dale Maroushek, NØPEY Second Prize Winner

Dale Maroushek, NØPEY, operates from his Maplewood, Minnesota shack. Although Dale has years of military experience in radio and electronics, he didn't join our amateur ranks until 1991. Once he did, however, he really got involved, joining the local 3M Amateur Radio Club. In addition to being vice-president of the club, he was also Field Day Chairman, helping arrange an impressive 18-panel solar-powered setup!

Currently Dale is surrounded by radios and computers at his dispatching job for the local PARA transit operation. According to Dale, though, nothing beats the enjoyment he gets from coming home to his shack and getting on the air. Keep up the good work, Dale!

Congratulations To All!

We thank all the winners, and everyone else who participated, for making the contest such a success and so much fun. Congratulations to all of you! ■

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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.
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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.

CERTIFICATE for proven contacts with all ten American districts. SASE to W6DDB, 45527 Third Street East, Lancaster, CA 93535-1802.

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1996 CALLBOOKS AND CDROMS: "FLYING HORSE" North American, $26.95; International, $26.95. Both $51.95. **Radio Amateur Callbook 1996 CD-ROM,** $36.95. **QRZ!** Ham Radio CD-ROM (Vol. 6), $15.95. **ARRL Handbooks**: 1996 $33.95; 1995 $21.95; Antenna Book $24.95. ADD $3 shipping/order. CA residents: add 7%. Check/M.O. to D. Heise, AA6EE—Callbook Distributor, 16832 Whirlwind/C1, Ramona, CA 92065 (619-789-3674).

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WANTED: Older model bugs, unusual bugs, and miniature hand keys. State price, condition. Dave Ingram, K4TWJ, 4941 Scenic View Drive, Birmingham, AL 35210.

WANTED: Williamson or Ultra-linear output transformer for 6L6s, etc. Bill, W6SAI, 48 Campbell Lane, Menlo Park, CA 94025.

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WANTED: Bird Meters—3127, 3128, 4410A, 4412, 2080, 6810, 2150. Bird QC connectors, adapters. Alan, K6GA, 714-964-3912.

TEST EQUIPMENT: HP 7440A Plotter $200; HP 8410A Network Analyzer Mainframe $120; HP 8413A Phase-Gain Indicator $100; HP 59301A ASCII/Parallel Converter $75; Racal-Dana 9514 100 MHz Counter $150; Fluke 893A Differential Voltmeter $80; Fluke 1920A Frequency Counter $175; HP 3300A/3302A Function Generator $125; HP 3439A/3444A 4-Digit Multimeter $75; HP 59401A Bus Analyzer $400; Sony/Tektronix 308 Data Analyzer $500; Tektronix 5B10N Time Base $100; Tektronix 5B12N Time Base $150; Tektronix 7834 400 MHz Oscilloscope Mainframe $300. List of other equipment available. Jim Stevenson, 3401 Sunny Slope Road, Bridgewater, NJ 08807 (Phone: 908-722-6157; Fax: 908-722-6391).

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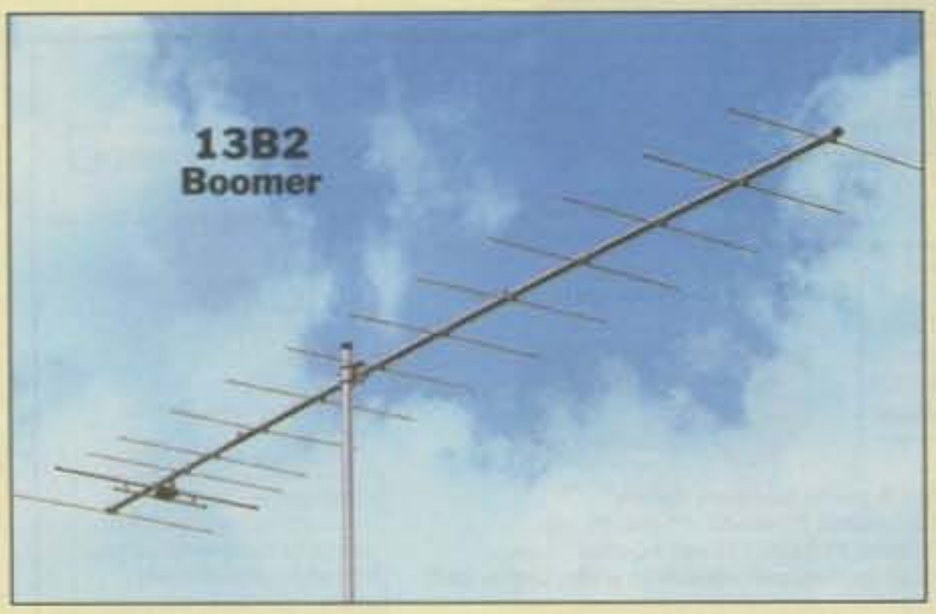

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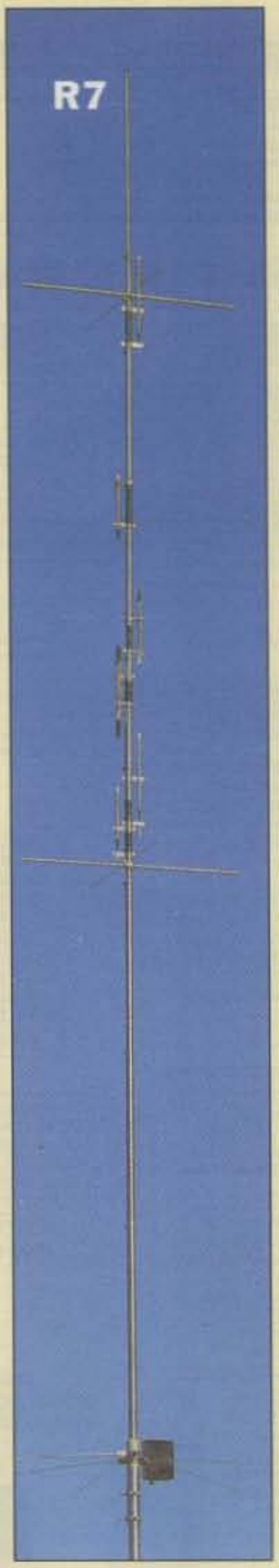

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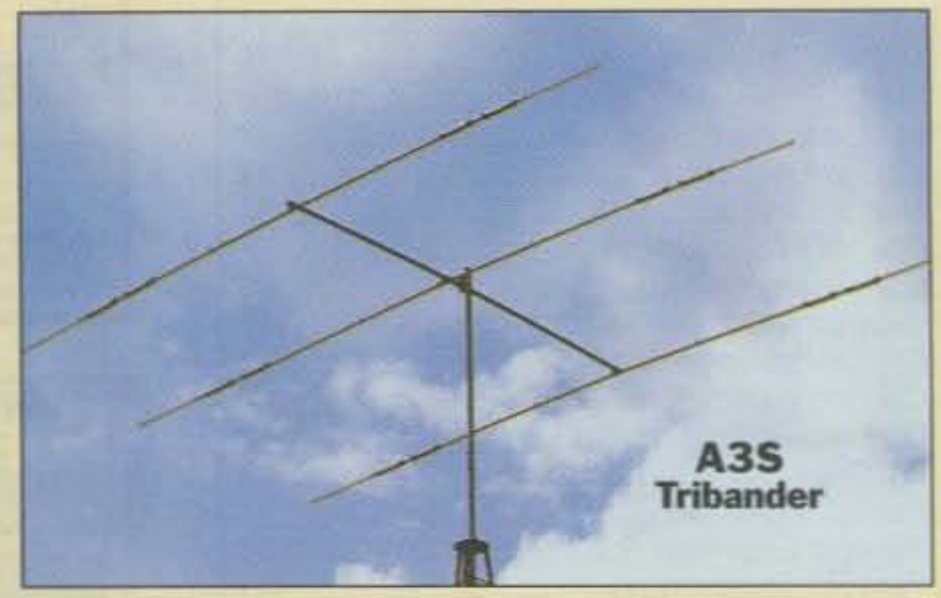

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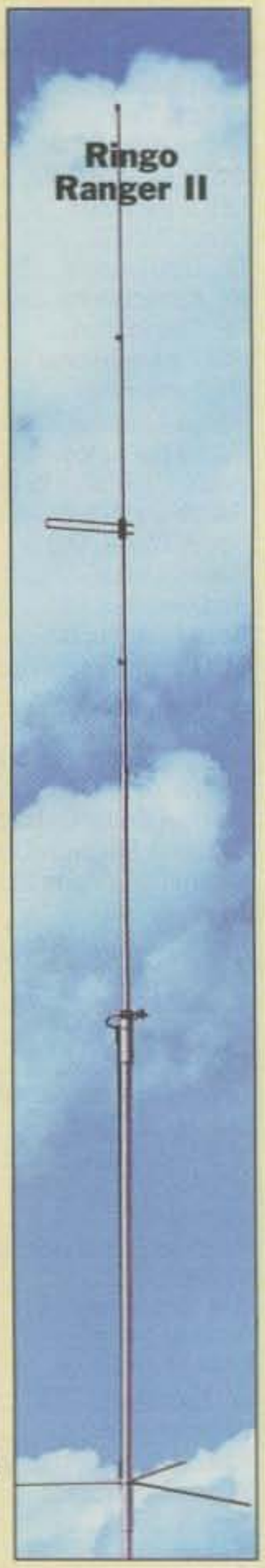

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FT-8500

FT-2500

CUSTOMER: Surrender this coupon at time of purchase to your authorized Yaesu dealer for immediate discount. Limit one coupon per purchase. Coupon is non-transferable and can be only used for products as advertised in this ad and for the discounts as stated. Offers only good at authorized U.S. and Canadian Yaesu dealers.
DEALER: Send this coupon along with a copy of sales receipt to YAESU U.S.A., Sales Dept., 17210 Edwards Rd., Cerritos, CA 90703.

CHECK BOX(ES)

- ☐ $200 OFF FT-1000/D, FT-990/DC
- ☐ $ 70 OFF FT-530
- ☐ $ 50 OFF FT-900/AT, FT-840
- ☐ $ 40 OFF FT-5200, FT-2200
- ☐ $ 30 OFF FT-8500, FT-5100, FT-2500, FT-11R, FT-41R, FT-51R
- ☐ $ 25 OFF FT-G-2800SDX, G-1000SDX, G-800SDX, G-800S

PURCHASE DATE: _____

DEALER NAME/STATE: _____

DEALER SIGNATURE: _____

Offer void where prohibited by law. Coupon has no cash value. Limit one coupon per purchase. Not valid with any other Yaesu offers or discounts. Offers not applicable to purchases made prior to October 14, 1995 or after January 31, 1996.

COUPON VALID FOR PURCHASES MADE BETWEEN OCT.14,1995 AND JAN.31,1996

IT'S HERE!

ONLY $1,560.00! manufacturer's suggested retail price*

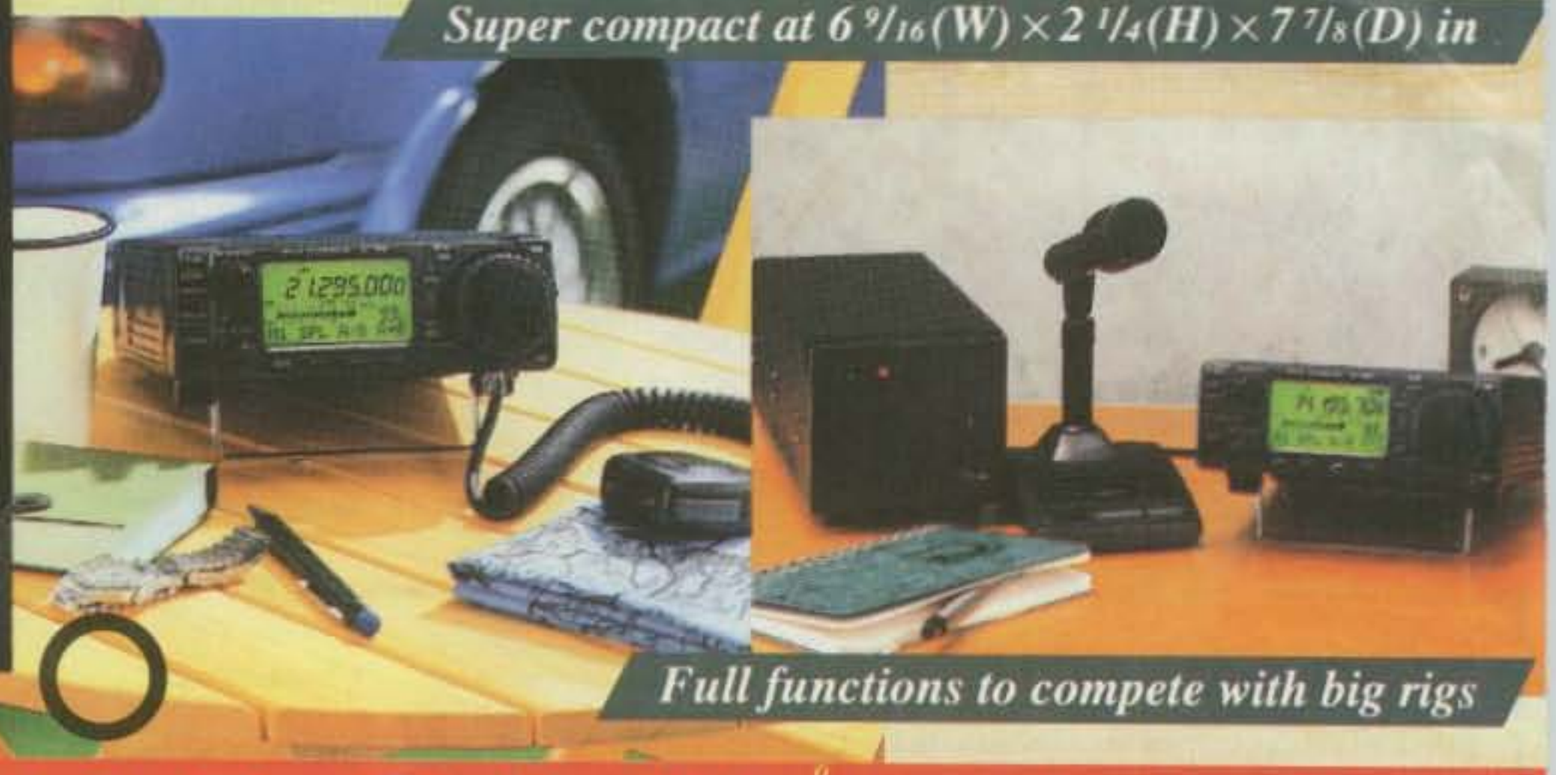
IC-706 • HF+6M+2M! • ALL MODES!

- Powerful 100 W from HF to 50 MHz and 10 W for 144 MHz
- 101 memory channels with dotmatrix display
- All mode including SSB, CW, RTTY, AM and FM.

The front panel photo is **Actual size.**

Detachable front panel mounts any where.

Super compact at 6 9/16(W) × 2 1/4(H) × 7 7/8(D) in



Full functions to compete with big rigs

Visit your ICOM dealer or call ICOM's brochure hotline: (206) 450-6088.
Or contact ICOM Technical Support in the HamNet forum on CompuServe @75540,525 (Internet: 75540.525@compuserve.com or http://www.icomamerica.com). CompuServe is a registered trademark of CompuServe, Incorporated, an H&R Block Company.

CIRCLE 3 ON READER SERVICE CARD

ICOM®

ICOM THE NEXT GENERATION

NOW COLLINS MECHANICAL FILTER BUILT-IN

Compact HF Transceiver **FT-900AT**

A full-featured HF base station, compact enough to go mobile.

Features

- Remote Front Panel Design
- Built-In Auto Antenna Tuner
- Direct Keypad Entry when used as a Base Station
- Large, Bright Omni-Glow™ LCD Display
- 100W on SSB, CW, FM modes; 25W on AM
- 2.75 kHz SSB Collins Mechanical Filter
- IF Shift and 30db Notch Filter
- Digital S/RF, SWR & ALC Meters
- Programmable CTCSS Encode w/Repeater Offset
- Direct Digital Synthesis (DDS)
- 100 Memory Channels
- Frequency Range
  RX: 100 kHz-30 MHz
  TX: 160-10 meters
- CW Full Break-in Keying w/ Adjustable Speed
- Fast/Slow AGC Circuit
- Intercept Point Optimization
- Duct Flow Cooling System
- Twin Band Stacking VFOs
- Built-in Noise Blanker
- Built-in Adjustable Speech Processor

ACCESSORIES:
YSK-900 Remote Mount Kit
MMB-62 Controller Bracket
MMB-20 Mobile Mtg. Bracket
SP-7 Mobile External Spkr.
SP-6 Base Station External Spkr.
DVS-2 Digital Voice Recorder
FP-800 20A HD Power Supply
YH-77ST Headphone

"What a great HF! Heavy-duty heat sink! FT-1000 technology. A serious performer."

"Compact for mobile, too. Snap-off front panel mounts anywhere. Built-in antenna tuner. No extra tuner box to hook up!"

"Yaesu did it again!"

VOX
Exclusive! For simple hands-free transmit/receive control.

Dual Metering Display
Exclusive!
Shows power output, ALC, SWR, signal strength.

Built-in CW Keyer
Exclusive!
Use in semi-break-in or full-break-in modes.

10-Key Direct Frequency Entry
Exclusive!
For quick band/ frequency accuracy.

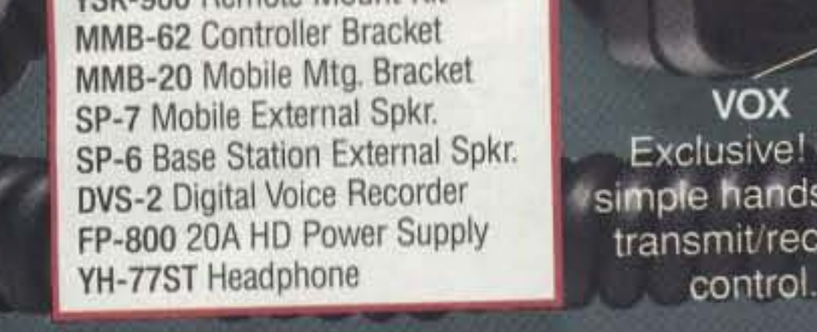
Built with commercial-grade engineering, and a heavy-duty die-cast aluminum heat sink, like all Yaesu base stations – this radio leads the competition in state-of-the-art compact HF technology.

No other radio this small offers 10-key direct frequency entry. Built-in antenna tuner, dual metering in the display, built-in CW keyer, VOX – *and* a heavy-duty heat sink with a duct-flow cooling system that lets you key down longer. As a bonus, to round out the feature-rich FT-900AT, Yaesu's exclusive Omni-Glow™ display provides the best viewing possible under any light condition. Try to find all this on any real HF compact enough to be a mobile. You can't!

Mobile HF has never been better, because the FT-900AT is the first transceiver with true HF technology developed as a base performer and adaptable for simple mobile use. Just snap off the FT-900AT front panel control head and install it just about anyplace in your car, truck or RV. Secure the RF deck under a seat or in the trunk, out of sight and away from critical automotive electronics.

This isn't a cheaply-made, plastic toy! This marvel of Yaesu engineering was built to last. Forged to exacting standards with the performance, sensitivity, and selectivity that have made Yaesu famous for over 40 years, the FT-900AT will provide you with trouble-free performance whereever you travel!

See the new FT-900AT dual-purpose radio at your dealer today. Find out why Yaesu HF is the choice of the world's top DX'ers.



Exclusive! Duct-Flow Cooling System
Internal fan draws air over the power amp unit for continuous cool operation. Eliminates rear panel protrusions which block connector access.

The snap-off remote front panel control head measures only 2¼"H x 9⅛"W x 1¼"D. Mounts almost anywhere in your vehicle.

YAESU
Choice of the World's top DX'ers

2m/70cm Mobiles **FT-2500M/FT-7400H**

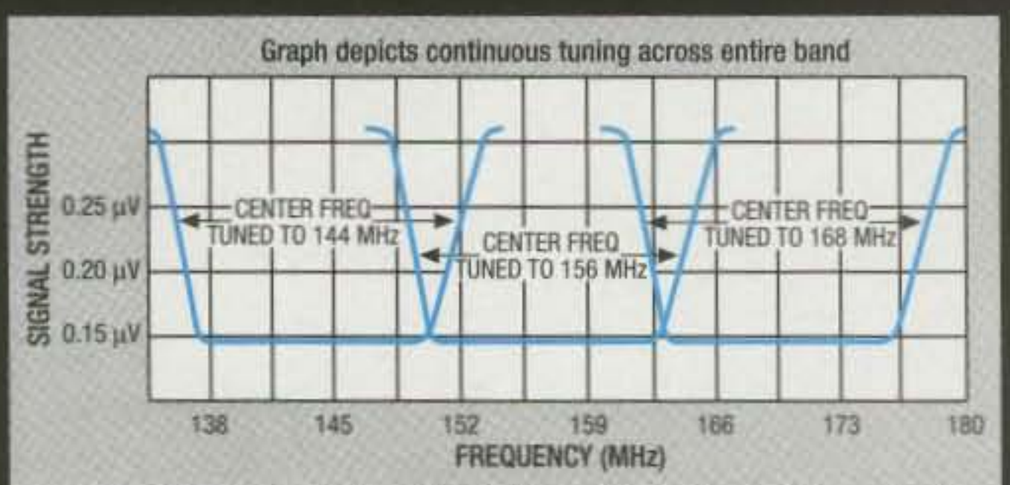
Advanced Track Tuning, Mil Spec, true FM. All in one radio!

Outside, you can easily see why the FT-2500M stands up to the shock and vibration like no other. We engineered the first mobile radio to meet the rigid standards set by the U.S. Military back in the '80s, and that same critical design is in the FT-2500M. From the simplified front panel, rubber coated knobs, durable pebbled finish coating, and huge Omni-Glow™ display to the one-piece die-cast chassis, the FT-2500M can take whatever you throw at it!

Inside, the electrical circuitry meets standards so uncompromising the FT-2500M can respond like no other radio. Built-in 3-Stage Advance Track Tuning (ATT), automatically retunes from 140 to 174 MHz permitting consistent receiver sensitivity across the entire band.

But there's more. Like alpha-numeric display capability! Lets you program a frequency or a 4-character name on any of the 31 memories. With three selectable power output levels and up to 50 watt power output, the FT-2500M extra large heat sink means forced air cooling is not necessary. And, as a bonus, Yaesu's exclusive backlit DTMF mic comes with every FT-2500M.

Experts say the FT-2500M is the only commercial-grade amateur radio available. So, for tough manufacturing standards, inside and out, with true FM clarity, and outstanding performance, the FT-2500M is your mobile.



3-Stage Advance Track Tuning (ATT) – The exclusive 3-Stage Advance Track tuning front end automatically adjusts band width sensitivity across the entire receiver range, while maintaining selectivity specifications. ATT significantly reduces interference from inter-modulation and front end overload.

Specifications

- **Frequency Coverage:**
  FT-2500M
  RX: 140-174 MHz
  TX: 144-148 MHz
  FT-7400H
  RX/TX: 430-450 MHz
- Rugged Military Spec Design
- Advanced Track Tuning (ATT)
- Selectable Alpha-Numeric Display
- Omni-Glow™ Display, largest available
- Power Output:
  FT-2500M 50/20/5 Watts
  FT-7400H 35/15/5 Watts
- Flip Up Front Control Panel hides seldom used buttons
- Backlit DTMF Mic
- 31 Memory Channels
- CTCSS Encode Built-in
- Automatic Power Off (APO)*
- Time-Out Timer (TOT)*
- Manual* or Automatic Backlighting Adjustment
- **Accessories:**

FP-800	20 Amp HD Power Supply w/ Front Mounted Speaker
FRC-6	DTMF Paging Unit
FTS-17A	CTCSS Decode Unit
SP-4	External Mobile Speaker w/ Audio Filters

*FT-2500M

YAESU

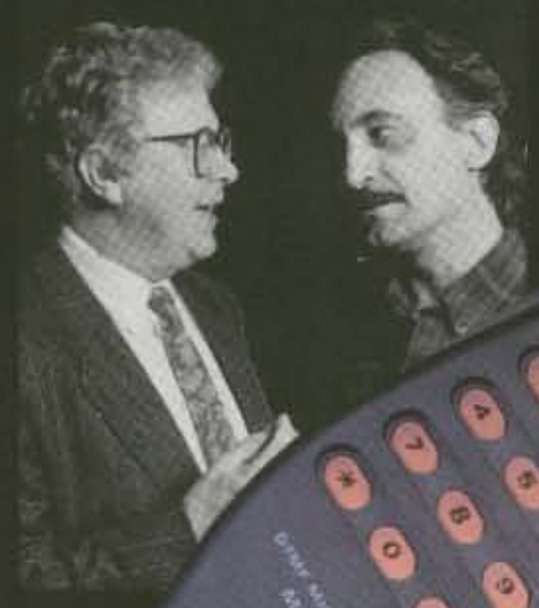
Performance without compromise.℠

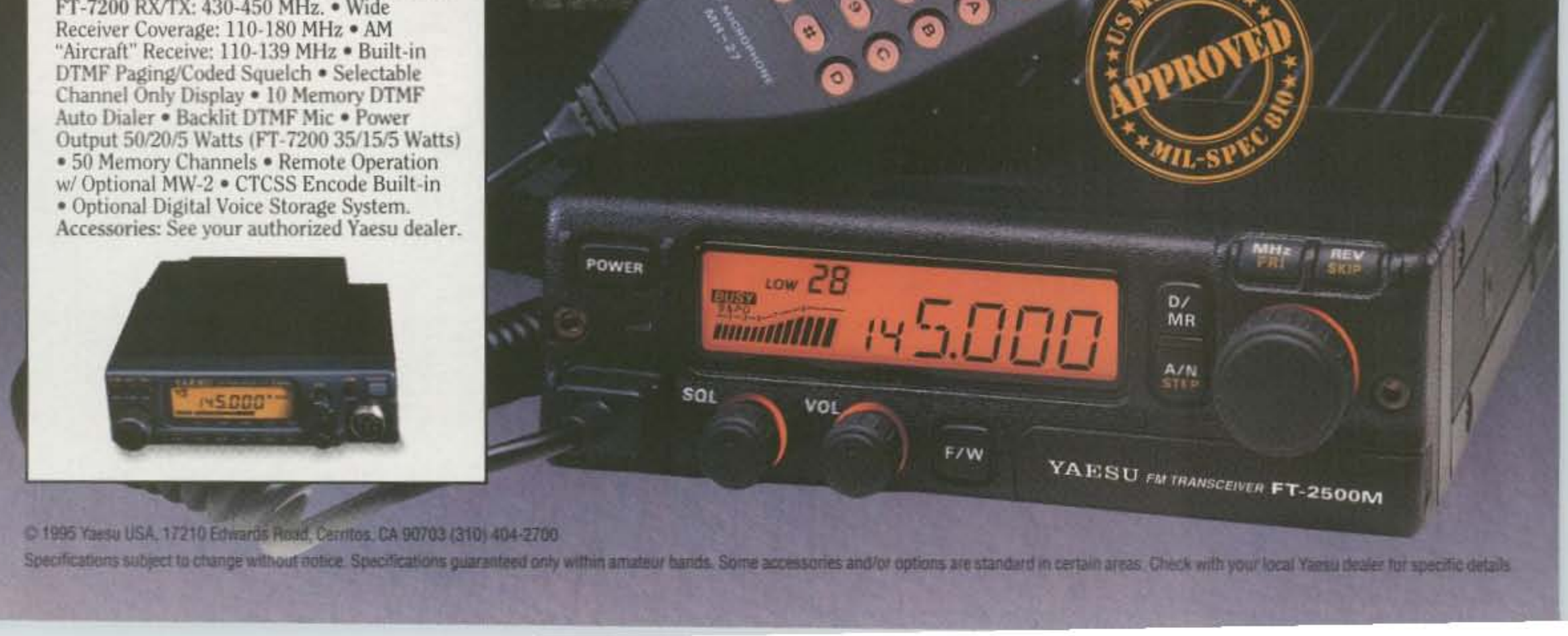
"Just look inside. Military spec really means something to Yaesu!"

"A QST review says 'the FT-2500M exhibited superior 10 MHz offset IMD dynamic range of 103 db!'"

"This Advanced Track Tuning practically eliminates intermod!"

"Yaesu did it again."





$30. OFF SEE YOUR DEALER FOR DETAILS LIMITED TIME OFFER.

US MILITARY APPROVED MIL-SPEC 810

FT-2200/7200

Just 5.5"W x 1.6"H x 6.5"D, the FT-2200/7200 radios are designed to fit into today's more compact cars with ease.

SPECIFICATIONS • Frequency Coverage: FT-2200 RX: 110-180 MHz, TX: 144-148 MHz. FT-7200 RX/TX: 430-450 MHz. • Wide Receiver Coverage: 110-180 MHz • AM "Aircraft" Receive: 110-139 MHz • Built-in DTMF Paging/Coded Squelch • Selectable Channel Only Display • 10 Memory DTMF Auto Dialer • Backlit DTMF Mic • Power Output 50/20/5 Watts (FT-7200 35/15/5 Watts) • 50 Memory Channels • Remote Operation w/ Optional MW-2 • CTCSS Encode Built-in • Optional Digital Voice Storage System. Accessories: See your authorized Yaesu dealer.