

ICD 08241

# Amateur Radio

SERVING AMATEUR RADIO SINCE 1945  
DECEMBER 1998

# CQ

## *Season's Greetings!*

### **In This Issue:**

- **Results of the 1998 CQ WW DX 160 Meter Contests (page 9)**
- **CQ Reviews: The Yaesu G-2800SDX Antenna Rotator (page 20)**



U.S. \$3.99 / Canada \$5.50

12>



0 75470 08241 2

THE RADIO AMATEUR'S JOURNAL

# ICOM IC-706MKIIG

160M  
80M  
75M  
40M  
20M  
17M  
15M  
12M  
10M  
6M  
2M  
70CM

How Could We Make the **BEST**  
even **BETTER?**  
We Listened to **YOU!**

HF/6M/2M/440 MHz  
Worldwide or around the  
town, the new '706MKIIG  
has the power and features  
to take you there

**BACKLIT KEYS**  
For improved nighttime  
operation



**YES, YOU CAN TAKE IT WITH YOU**  
Faceplate shown in optional Remote  
Control configuration. Requires OPC-581  
11 ft. (3.5 m) or OPC-587 16 ft. (5 m)  
separation cable

**IN THE TRUNK, UNDER THE SEAT,  
OR UNDER THE DASH**  
The '706MKIIG is very compact. It  
measures only 6.6 (w) x 2.3 (h) x 7.9 (d) in  
/167 (w) x 58 (h) x 200 (d) cm. It's a mobile  
sized rig with base station capabilities



**SAME GREAT FEATURES  
AS THE PERFORMANCE PROVEN  
'706MKII, BUT WITH**

- **MORE POWER**
- **440 MHz ADDED**
- **MORE FUN!**

- **TONE SQUELCH (CTCSS DECODE)**
- **AUTO REPEATER FUNCTION**
- **DSP INCLUDED • BACKLIT KEYS**
- **50W ON 2 M • 20W ON 440 MHz**

ICOM options required  
for PC operation:  
CT-17 Level Converter  
OPC-478 Connection  
Cable  
Third party software  
also required for PC  
operation



Join the thousands of hams who use ICOM's 706 series  
radios. Contact your authorized ICOM dealer today, or call  
ICOM for a free brochure, day or night. **425-450-6088**

\*This device has not been approved by the Federal Communications Commission. This device may not be sold or leased, or be offered for sale or lease, until approval of the FCC has been obtained.

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**ICOM**  
www.icomamerica.com

COMET specializes in a wide assortment of Mobile Mounting systems that require NO HOLES. A variety of trunk lid, hatch-back, rain gutter, roof rack and window mounts are available along with low loss coax cable assemblies, for the ultimate mobile station!

For a complete catalog of COMET Antenna products call or visit your local dealer. Or, contact MCG Company at 800/962-2611. Use COMET products, and enjoy amateur radio to it's fullest!

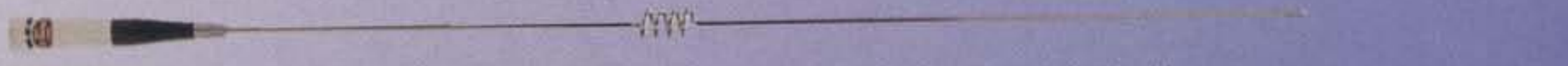
• Gold-Plated Connectors

• High-Quality

Craftsmanship

• Unique Fold-Over

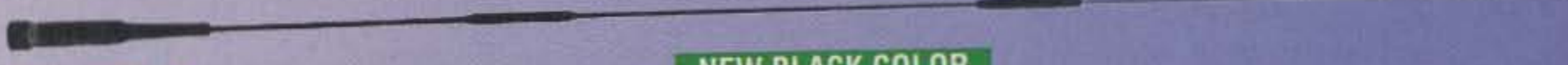
Feature



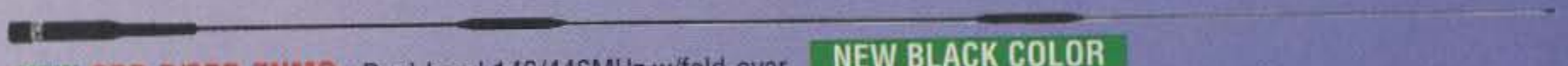
**NEW Z750** • Dual-band 146/446MHz w/fold-over • Includes COMET exclusive theft-resistant lock!  
Gain & Wave: 146MHz 2.15dBi 1/2 wave • 446MHz 5.5dBi 5/8 wave x 2 • Length: 39" • Conn: Gold-plated PL-259 • Max Pwr: 200W



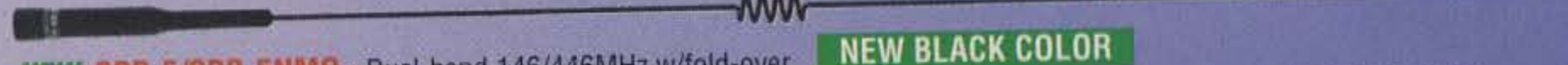
**NEW Z780** • Dual-band 146/446MHz w/fold-over • Includes COMET exclusive theft-resistant lock!  
146MHz 6/8 wave 4.5dBi • 446MHz 5/8 wave x 3 7.2dBi • Length: 62" • Conn: Gold-plated PL-259 • Max Pwr: 150W



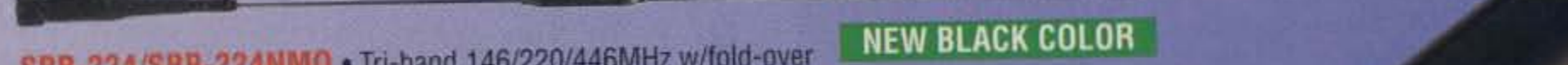
**NEW SBB-15** • Tri-band 52/146/446MHz w/fold-over • **NEW BLACK COLOR**  
Gain & Wave: 52MHz 0dBi 1/4 wave • 146MHz 4.5 dBi 6/8 wave • 446MHz 7.2dBi 5/8 wave x 3 • Length: 58" • Conn: PL-259 • Max Pwr: 120W



**NEW SBB-7/SBB-7NMO** • Dual-band 146/446MHz w/fold-over • **NEW BLACK COLOR**  
Gain & Wave: 146MHz 4.5dBi 6/8 wave • 446MHz 7.2dBi 5/8 wave x 3 • Length: 58" • Conn: SBB-7 PL-259/SBB-7NMO NMO • Max Pwr: 70W



**NEW SBB-5/SBB-5NMO** • Dual-band 146/446MHz w/fold-over • **NEW BLACK COLOR**  
Gain & Wave: 146MHz 2.5dBi 1/2 wave • 446MHz 5.5dBi 5/8 wave x 3 • Length: 39" • Conn: SBB-5 PL-259/SBB-5NMO NMO • Max Pwr: 120W



**SBB-224/SBB-224NMO** • Tri-band 146/220/446MHz w/fold-over • **NEW BLACK COLOR**  
Gain & Wave: 146MHz 2.15dBi 1/2 wave • 220MHz 3.5dBi 5/8 wave • 446MHz 6.0dBi 5/8 wave x 2 • Length: 36" • Conn: CX-224 PL-259, CX-224NMO NMO • Max Pwr: 100W



**B-20/B-20NMO** • Dual-band 146/446MHz w/fold-over  
Gain & Wave: 146MHz 2.15dBi 1/2 wave • 446MHz 5.0dBi 5/8 wave x 2 • Length: 30" • Conn: B-20 PL-259/B-20NMO NMO • Max Pwr: 50W



**B-10/B-10NMO** • Dual-band 146/446MHz cellular look-a-like • Gain & Wave: 146MHz 0dBi 1/4 wave • 446MHz 2.15dBi 1/2 wave • Length: 12" • Conn: B-10 PL-259/B-10NMO NMO • Max Pwr: 50W



**SMA-3** • 146/446/900MHz HT Antenna • Gain: 146MHz 1.2dBi • 446MHz 1.7dBi • 900MHz 3.4dBi • Length: 9.75" • Conn: Male SMA • Max Pwr: 10W



**SMA-503** • 146/446 HT Antenna • Gain and Wave: 146MHz 1/4 wave • 446MHz 5/8 wave • Length: 8.75" • Conn: Male SMA • Max Pwr: 10W



**CH-32** • 146/446MHz HT Antenna • Gain: 0dBi • Length: 1.75" • Conn: BNC

Improve the performance of your FT-50R or VX-1R with these SMA style antennas. Light-weight and flexible, these antennas provide a substantial improvement!

1275 N. Grove Street • Anaheim • California 92806  
(714) 630-4541 • (800) 962-2611 • Fax: (714) 630-7024

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# COMET

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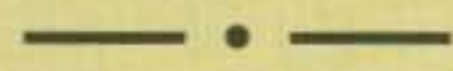
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**ON THE COVER:** Even if you don't have a chimney, Santa will come to the Deserving, filling those stockings with long-awaited QSLs, new toys for the shack, and lots more goodies with which to enjoy the rapidly rising sunspot cycle in the New Year. On the cover, Santa has finished checking out the antennas and shack of Dave Sader, AB7VE, of Amado, Arizona, and has proclaimed him to be among the Deserving!

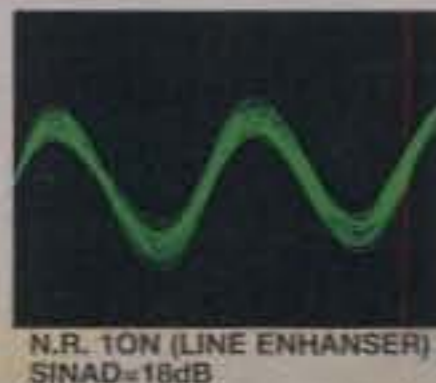
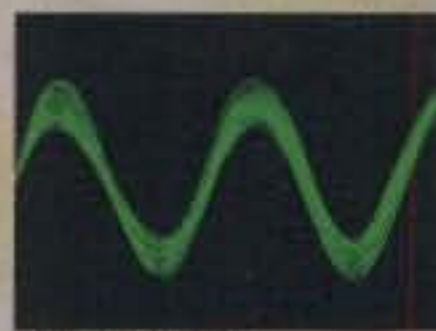
All of us here at CQ want to wish all of you Happy Holidays, and a New Year filled with good health, good cheer, and the ham shack and QSOs of your dreams.

(Photo by Larry Mulvehill, WB2ZPI)

# A Breath of DSP Fresh Air

Kenwood was the first to offer DSP in the legendary TS-950SDX. Now you can enjoy the affordable benefits of Advanced Digital Signal Processing with the all new TS-570D/S(G)

Let the fresh air and sun shine in on your new HF experience.



Advanced Technology Upgrade

## TS-570D(G) HF TRANSCEIVER/TS-570S(G) HF + 6M TRANSCEIVER

Kenwood has not been standing still since the introduction of the TS-570D/S HF Transceiver last year. Now you can command even more of Kenwood's advanced DSP technology with the G model.

The DSP filters and extracts signals with digital technology that is unmatched with standard analog circuits. It provides CD-class transmit and receive audio quality that can be shaped to your needs, and two powerful noise reduction systems: Line Enhancer Method for SSB/AM modes, and Speech Processing by Auto Correlation (SPAC) for CW mode. DSP also enables the CW-Auto Tune feature that automatically zero-beats CW signals.

The Extensive Memory Functions provide a bank of 100 memory positions split into 90 standard channels for general operation and 10 for programmable VFO, programmable scan and long-term memory. Memory contents can be scrolled, copied or locked out. In addition there are 5 quick memories for storing frequencies and modes on the fly, perfect for the busy DX contester.

The powerful Menu System incorporates 46 menu features and an on-line guide for instant reference. The large amber backlit LCD display provides 4 light levels for clear readability under any lighting conditions.

The TS-570D/S has no shortcomings in the construction and performance area. The continuous-duty 100 watt transmitter incorporates a large

heavy-duty heat sink with integrated cooling fan for non-stop operation even under extreme environmental conditions. The wide-band receiver is rock-stable from 500 kHz through 30 MHz with dual pre-amps and dual bandpass filters for exceptional selectivity and sensitivity.

With the features and performance of a high-end radio integrated into an affordable mobile-size package, the TS-570D/S is the perfect choice for the field or to build a full station around at home.

★FREE operating manual via FTP site

- ftp://ftp.kenwood.net
- ▶ Beat cancel
- ▶ 2 position antenna switch
- ▶ CW auto tune adjust (a world's first)
- ▶ Channel scan, program band scan, memory scan with channel lock-out and group channel scan, all with TO (time operated) or CO (carrier operated) resume modes
- ▶ Compact 10-5/8 inch by 3-3/4 inch front panel size for any travel or installation requirement
- ▶ Preset auto antenna tuner with 18 sub-bands
- ▶ Variable electronic keyer (0 and 100 wpm)
- ▶ Packet and FSK features
- ▶ RCP-2 software for PC-based display and memory configurations available via the Internet
- ▶ Full functionality on 6M (TS-570S) including DSP, 100 watts output and preset Auto Antenna Tuner
- ▶ QRP output adjustable from 5 to 100 watts

TS-570D/S (G) new features

- ▶ TX sound quality monitor with 9-step monitor volume for absolute control over voice quality
- ▶ NR1 (SSB) is operator controllable in 9-step increments, or automatically tracks input signal strength
- ▶ New CW DSP Filters (80 Hz, 150 Hz and 500 Hz) give you a total of 11 user-selectable filters
- ▶ NR1 and NR2 settings can now re-configure automatically when changing mode groups (SSB/AM/FM to CW/FSK)
- ▶ Manual weight feature (with built-in electronic keyer) for adjusting the relative length of dots and dashes in 16 steps between 1:2.5 and 1:4.0
- ▶ Equalize receive signals, and use different settings for both TX and RX
- ▶ "One-touch" DSP filter wide mode allows 'resurfacing' to check the band conditions when operating in narrow mode
- ▶ Dual selectable Beat Cancel (BC) works against intermittent beat interference (except in CW mode)
- ▶ CW auto tune mode links only with the RIT frequency without changing the transmit frequency.

Advance Technology Upgrade is available in new production models and for pre-existing TS-570D/S; contact your dealer for details.



ISO 9001  
JQA-1205

Communications Equipment Division  
Kenwood Corporation  
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# ZERO BIAS

## AN EDITORIAL

**N**ot long ago our new calendars arrived. I really enjoy looking through the one with the old gear, except that a lot of it doesn't look so old to me, and I can clearly remember wanting most of it for my shack. Most of it, at the time, was certainly beyond my reach and needs, but I still wanted it anyway, and I always felt that there had to be a way for me to get it. Somehow, my fantasy was plausible and possible to me.

When I look at our calendar featuring magnificent antenna installations, I look back with a great sense of reality in that I've never lived anywhere that could accommodate such arrays. It was never a question of having the money or suddenly finding the means to put up a tower or group of towers over 100 feet, each with stacked mono-banders. Physically there was no place to put it, either vertically or horizontally, even if I could have acquired it. So I still look longingly at the installations and rationalize it by thinking that those hams need them, living where they do. Truthfully, we all "need" them, wherever we live, and we "need" all the gear we can get. It's as simple as that; as hams, we "need" and "want" it all.

What better time of year than the season of conspicuous consumption to have these feelings of missed acquisition, nostalgic longing, unfulfilled expectations, and a genuine desire to improve what we have. As amateurs, we need stuff, and lots of it. If you've gained any wisdom at all to get where you are, you know already how futile it is to try to explain exactly why you need this stuff and why you must have it. This obviously includes all of your near and extended families. By now, we all should be used to the strange looks of disbelief and the subtle though silent expressions of "Why would you want to do that?"

Consider, for a moment, my recent experience at a dinner where the conversation turned to amateur radio. I tried to explain just what it is that I "do" in response to the question "What do you talk about?" Well, I answered that I don't really talk about anything specific. I exchange a signal report and where I am located. Then I try to find out how to get a card which will physically prove or confirm that we had this brief exchange. I went on (when I probably shouldn't have) to amplify this to include rare and foreign countries, counties, certain islands, prefixes (a whole other explanation nightmare), and other exotic award requirements.

"So you mean to say that you really don't talk to these people and get to know them?" was the general response.

"No," I said. "Although some people like to do that, I prefer to chase the illusive."

"All this time, effort, and money just to get what amounts to a postcard?" was the reply.

"Yes," I said, remembering how long it

took to get Zone 23 confirmed on 10 meters, a fact that would have been meaningless to bring up at this point.

"And these contests that you talk about. You do the same thing only at a faster rate and for a lot longer in order to possibly get a piece of paper?"

"Well," I said a bit smugly, "it's not so easy to do."

I'm sure you get the picture. What we do is hard to explain and/or rationalize to civilians. Sometimes even I don't know why I keep doing this thing called amateur radio, except that I like it and it's a lot of fun.

I'm quite sure that whatever area of amateur radio in which you find yourself spending a lot of time would also be hard to explain.

"Come on down to the basement, Fred, and I'll show you my collection of Stackpole resistors. The 4.7K is a real beaut!"

I wouldn't count on Fred or anyone else in your family to add to your collection this Holiday Season. If you're lucky, you might get socks, or a year's supply of dental floss. It's more than likely that whatever we graciously receive this year will be something not at all related to amateur radio. There's no real way to justify or rationalize what we sincerely "need" in the way of good stuff to someone who isn't an amateur. These are the same people, though, who can understand a game where you take a slender stick and hit a little white ball a great distance. Then you trudge along after it, only to hit it farther away. Sure, it's hard to do, but if you got a dog who could retrieve it each time, it would be a lot easier. Breaking through a pile-up is hard, and no dog can make it easier.

Once we are mature enough to realize that most people really don't understand what we do or why we do it, the Holiday Season becomes simple. No, we're not suddenly going to be getting any good stuff, but we are going to have all of our basically dull requirements taken care of. We'll get socks, dental floss, handkerchiefs, bizarrely colored sweaters, and wide ties that we somehow need to see us through the upcoming year. This leaves us free to concentrate on acquiring for ourselves all of the good stuff. We already know why we need it and exactly how we intend to use it, so it's simple and we don't have to explain it to anyone. We, of all people, know the importance of the sunspots being back and what this means to amateur radio. We need the stuff now, and lots of it. So who's in a better position to know, acquire, and enjoy some great new stuff than we are—ergo, buy it for ourselves. I may be crass, but it's always worked for me.

No, the above is not egocentric nor selfish. It presupposes that we as amateurs first provide for our loved ones and significant others by giving them the equivalent of socks, dental floss, etc. Your significant oth-

er probably would like a piece of jewelry or a few of those slender sticks for hitting the little white ball around, while you opt practically for a new upright vacuum cleaner or kitchen appliance. Their confused look (which translates to "What the \*#%@ were you thinking about?"), in case you didn't notice, mirrors yours when you look at the socks. However, they learned long ago to purchase their own "necessities," as we're just too dense or obtuse to pick up on it. It's not chauvinistic or gender specific; it's just the way things are.

With that in mind, and me telling you it's okay (you can always blame me later), it's time to give the lead dog a run for his money. Just check out the ads in this issue, see what Dave Ingram recommends in his column, "The World of Ideas," read about some new products in "CQ Showcase," and find out what Karl Thurber finds exciting in "The Digital Dipole." This past year our other columnists and authors have written about some pretty interesting stuff that's not hard to do and promises to be a lot of fun to try. By now you also should have a whole bunch of catalogs and brochures with items and accessories circled (I know that I do), just waiting for the time to check out prices and availability. While I'm still only able to dream about the 100-plus-foot tower with stacked mono-banders, there's plenty of stuff I can add right now.

I know there's more to the Holiday Season than this—the buying, giving, and receiving of gifts. It's the same as there's more to amateur radio than the endeavors most of us practice, some sensible, others daft. Sometimes we get caught up in the behavior rather than the original intent. With the holidays, the intent is clear and simple, and obviously far less commercial than we make it. With amateur radio, the intent may not be as clear as it once was, and some of us do go at it with the religious fervor that should be reserved for the holidays.

So if you're in line to get the socks, dental floss, or even Grandma Betty's handmade sweater featuring a multi-colored killer clown, be grateful and just as appreciative as you are of your own purchase of a new rig. It's a time of shared joy and family that we celebrate, not the item. Of course, a great item wouldn't hurt, but that's not the point.

Our point is that all of us at CQ would like to extend the warmest of Holiday Wishes to all of you and the brightest and happiest of New Years. May your neighbors never know you're on the air. May the Building Inspector never see your antenna. May the power company think the meter is broken. May the phone company forget your modem line. May these and other joyous things happen to you this Holiday Season, as we all celebrate together. 73, Alan, K2EEK

# MIRAGE... 160 Watts on 2 Meters!

Turn your mobile, base or handheld into 160 Watt powerhouses and talk further, longer, clearer... All modes: FM, SSB, CW... Superb GaAsFET preamp... Overdrive, high SWR, Over-temperature protection... Remote controllable...

B-5016-G  
**\$299**  
Suggested Retail



Power Curve -- typical B-5016-G output power

Watts Out	130	135	140	145	150	155	160	165
Watts In	20	25	30	35	40	45	50	55

The MIRAGE B-5016-G gives you 160 watts of brute power for 50 watts input on all modes -- FM, SSB or CW!

Ideal for 20 to 60 watt 2 Meter mobile or base. Power Curve chart shows typical output power.

Hear weak signals -- low noise GaAsFET preamp gives you excellent 0.6 dB noise figure. Select 15 or 20 dB gain.

B-5016-G has legendary ruggedness. We know of one that has been in constant use since 1979!

Heavy-duty heatsink spans entire length of cabinet -- prevents overheating. Power transistors protected by MIRAGE's Therm-O-Guard™.

Fully protected from high SWR and excessive input power. Has warning LED.

Has smooth adjustable Transmit/Receive

switching with remote external keying.

RC-1B, \$45, Remote Control. On/Off, pre-amp On/Off, selects SSB/FM. With 18-ft cable.

Draws 17-22 amps at 13.8 VDC. 12x3x5 1/2 in.

More 160 Watt, 2 Meter Amplifiers...

B-2516-G, \$299. For 10 to 35 watt mobile or base stations. 160 watts out for 25 watts in.

B-1016-G, \$379. MIRAGE's

most popular dual purpose HT or mobile/base amplifier. 160 watts out/10 W in.

For 0.2-15 watt transceivers.

B-215-G, \$379. MIRAGE's most popular handheld amp. 150 watts out/2 watts in; 160 watts out/3 1/2 W in. For 0.25 to 5 watt handhelds.

**B-1016-G**  
Great for ICOM  
IC-706!

## 100 Watts for 2 Meter HTs

B-310-G  
**\$199**  
Suggested Retail



Power Curve -- typical B-310-G output power

Watts Out	25	50	75	95	100	100+	100+
Watts In	1/4	1/2	1	2	4	6	8

- 100 Watts out with all handhelds up to 8 watts
- All modes: FM, SSB, CW
- Great for ICOM IC-706
- 15 dB low noise GaAsFET preamp
- Reverse polarity protection/SWR Protection
- FREE mobile bracket • Auto T/R switch
- FREE handheld BNC to B-310-G cable
- Ultra-compact 4 1/8 x 1 3/8 x 7 3/4 inches, 2 1/2 pounds
- One year MIRAGE warranty

Boost your 2 Meter handheld to 100 Watts!  
Ultra-compact all mode B-310-G amp is perfect for all handhelds up to 8 watts and multimode SSB/CW /FM 2 Meter rigs. Great for ICOM IC-706!

## 6 Meter Amplifier

FCC Type Accepted



The A-1015-G, \$389, is the world's most popular all mode FM/SSB/CW 6 Meter amplifier. 150 watts out for 10 in. For 1 to 15 watt transceivers.

## 70cm Amplifiers (420-450 MHz)



D-3010-N, \$365, -- 100 W out/30 in. For 5 to 45 watt mobile/base. D-1010-N, \$395, 100 W out/10 in. Dual

purpose -- for handhelds or mobile/base. D-26-N, \$269, 60 W out/2 in, for handhelds.

## Amateur TV Amps



Industry standard ATV amps -- D-1010-ATVN, \$414, 82 watts PEP out / 10 in. D-100-ATVN, \$414, 82 watts PEP out/2 in. (without sync compression).

## Remote Control Head for Amps



RC-1, \$45, remote controls most MIRAGE amps. Power On/Off, preamp On/Off, switch for SSB/FM. 18 foot cable (longer available). 1 3/8 x 3 3/8 x 2 1/2 inches.

## 35 Watts for 2 Meter HTs

B-34-G  
**\$89.95**  
Suggested Retail



Power Curve -- typical B-34-G output power

Watts Out	18	30	33	35+	35+	35+	35+	35+
Watts In	1	2	3	4	5	6	7	8

- 35 Watts Output on 2 Meters
- All modes: FM, SSB, CW
- 18 dB GaAsFET preamp
- Reverse polarity protection
- Includes mobile bracket
- Auto RF sense T/R switch
- Custom heatsink, runs cool
- Works with handhelds up to 8 watts
- One year MIRAGE warranty

35 watts, FM only... \$69.95

B-34, \$69.95. 35 watts out for 2 watts in. Like B-34-G, FM only, less preamp, mobile bracket. 3 1/8 x 1 3/8 x 4 1/4 inches.



**MIRAGE**  
RUGGED!

## Repeater Amps



11 models -- continuous duty all mode FM/SSB/CW repeater amps for 6, 2, 1 1/4 Meters, 70cm, 450 MHz ATV.

## Low noise GaAsFET preamps

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220-225	KP-1/220	KP-2/220
430-450	KP-1/440	KP-2/440

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# ANNOUNCEMENTS

• **Army MARS Operation: Holidays** – Army MARS is sponsoring the eighth annual Operation: Holidays. From mid-November until after the New Year Army Mars has a message service to send holiday messages to all service members, including sailors, marines, and army and air personnel who cannot be home for the holidays. A message either the recipient or sender must be military personnel (active or retired) or other qualified government civil servant or MARS member. The MARS member accepting the message must have the full name and address of the sender, and the full name and address of the recipient with telephone number if still in the US. To locate a MARS operator, try your local ham club. If you cannot locate an operator that way, send an e-mail to <sewald@arrl.org>. To contact a service person, use the following addresses:

*For Europe, Middle East, or Africa:* USO Regional Office Atlantic, Attn: Any Servicemember, Unit 29623, APO AE 09096 USA.

*For those serving in Operation Joint Guard (Army, Navy, Marines ashore):* Any Servicemember, Operation Joint Guard, APO AE 09397-0001 USA.

*For those serving in Operation Joint Guard on board a ship:* Any Servicemember, Operation Joint Guard, FPO AE 09398-0001 USA.

• **1998 ARNS Amateur Radio Publications Contest** – The Amateur Radio News Service will again conduct a publications contest aimed at recognizing superior performance in amateur radio journalism and at evaluating club newsletters with suggestions for improvement. The contest is open to all amateur radio organizations. General circulation magazines and professional journals are not eligible. To enter the contest each club should submit one copy of any issue of their newsletter during the period January through December 1998. Deadline for receipt of entries is March 31, 1999 (early submissions would be appreciated). To receive an application, send an SASE to Bill Edgar, N3LLR, President ARNS, 22 Jackson Ave., Bradford, PA 16701.

• **Are You Cover Material?** CQ's roaming staff photographer, Larry Mulvehill, WB2ZPI, is currently in the early planning stages of his next photo tour. He will be visiting several areas throughout the USA, Canada, and possibly Mexico, shooting cover photos for CQ, CQ VHF, and Popular Communications for use over the next year. In addition, Larry will be shooting photos for the CQ Year 2000 Amateur Radio Calendar. If you have or know of a particularly photogenic shack, QTH, or antenna system, get in touch with Larry at

<CQFOTOG@aol.com> with the details. Who knows? It could be your face smiling back at you from the cover of one of CQ Communications' magazines! Our magazines are read in 146 countries throughout the world.

• **The following Special Events are scheduled for December:**

**WX3MAS**, from Christmas City ARC and Delaware-Lehigh ARC's annual season celebration, Bethlehem/Nazareth, Pennsylvania; from 1300Z Dec. 12 to 0100Z Dec. 14 on 3.970, 7.270, 14.265, 21.365, 28.465. For certificate send QSL and 9 x 12 SASE to CCARC /DLARC WX3MAS, RR4, Greystone Bldg., Nazareth, PA 18064-9211.

**KC5OUR**, from Christmas season celebration, Belen (Spanish word for Bethlehem), New Mexico; 1400Z Dec. 19 to 2400Z Dec. 27 (no frequencies given—ed.), joining other stations from other Bethlehem towns around the world. For QSL, send QSL and SASE to KC5OUR. (For more information contact N5PR at <pridley@anr.net>.)

**WA7USA**, from the Battleship USS Arizona, Mesa, Arizona; East Valley Amateur Radio Group; 1500–2400Z Dec. 6 and 7 on 14.240 and 21.340 MHz. For certificate send QSL and 9 x 12 SASE to EVARG, 3264 E. Carol Ave., Mesa, AZ 85204-3245.

**W9B**, from winter solstice outdoor celebration, Capital Brewery Beer Garden, Middleton, Wisconsin; Polar Beer Club radio amateurs; 1700–2300Z Dec. 19 on 80, 40, 20, 15 meters CW and SSB. QSL to Paul Goemans, WA9PWP, 1508 Sundt Lane, Stoughton, WI 53589.

**W9MKS**, from the commemoration of the 56th anniversary of the launch of the first LST (landing ship, tank) from the Seneca, Illinois Prairie Shipyard; Starved Rock Radio Club, 1400–2200 Z Dec. 12 and 13 on 21.356, 14.256, 7.256, 3.556. QSL to SRRC, P.O. Box 198, Leonore, IL 61332.

**W9WWI**, from a Christmas season celebration, Bethlehem, Indiana; Clark County ARC; 1500Z Dec. 11 to 2200Z Dec. 12 on General 75, 40, and 20 meters. For certificate send QSL to CCARC, 1805 E. Eighth St., Jeffersonville, IN 47130.

• **The following hamfests are scheduled for December:**

Dec. 5, **Jacksonville ARS & Illinois Valley ARC Hamfest**, Turner Jr. High School, Jacksonville, Illinois. Contact Tim, KB9FBI, 217-245-2061.

Dec. 12, **Fifth Annual Columbia County Hamfest & Computer Show**, Columbia County Fairgrounds, Lake City, Florida. For info, contact Colin Boutwell, WA5RKR, 904-755-7960; 1-800-752-7969; e-mail: <wa5rkr@isgroup.net>.

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- Battery Saver
- 112 Memories
- Mil-Spec
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# Results of the 1998 CQ WW DX 160 Meter Contests

BY DAVID L. THOMPSON\*, K4JRB

The top stories in 1998 are two new champs and the QRN during the SSB section in the USA. Martti, OH2BH, travelled to EA8BH, and for the second year in a row the Top CW score came from the Canary Islands. OH2BH scored just over 1.5 million for a brand new world record! On SSB, I2UIY operated P40K to the top score edging out K1ZM by just a few thousand points. The bad weather moved to the SSB section this year, and many of us were afraid to even call CQ at times, as the QRN was 40 dB over 9 even on our receiving antennas. This explains the lower scores from California to Virginia on SSB. K4PI found that he could only stand one night of the noise, as did a number of other contestants. Several potential Top 10 scorers quit early or sent in the log as a check log.

CW activity increased slightly, with 4,598 stations on the master log. SSB activity dropped 10%, with 4,602 stations. Overall, this again is a slight drop from 1997. The drop probably will continue as we approach higher sunspot counts. Don't count out conditions even at high solar activity. This is a great chance to work all states and well over 50 countries in just a weekend or two. You've never really operated 160 meters until you encounter the wall-to-wall stations in North America or Europe over much of the band.

As usual, many worked all 48 states, and 22 competitors worked all 50 states on CW. Only five sidebanders worked all 50 states. The low number was due in part to the QRN. The top DXCC total of 71 was rung up by OH0MAM. Four more CW stations hit 70, and the top USA CW DXCC score was 65 at W1FJ. On SSB DXCC totals were down dramatically, with OT8T hitting 58. Top USA DXCC total was 51 at K1ZM. The gang at W2GD made 1,430 QSOs to lead all CW stations. Thirteen USA stations logged 1,000 QSOs or more. The top DX QSO total was 1,253 at GW3YDX. Eleven DX stations topped 1,000 QSOs. On SSB no one approached the 1,700+ record, but WB9Z led everyone with 1,354 QSOs. Only six stations worked 1,000 or more SSB QSOs, with DX leader LY3BS logging 978 QSOs.

The DX window is a major tool to accentuate the international aspect of the CQ WW 160 Contests. The window again stayed clear for the most part to assist with inter-continental QSOs. Please keep the DX window clear in both sections (1830 to 1835 kHz), including the edges. Also, please be so kind as to move if asked, and please refrain from working your continent in the window.

\*4166 Mill Stone Court, Norcross, GA 30092



DJ6TK, a regular high-scoring entrant from Germany.

There were 132 countries on CW and 120 countries on SSB, so with the right conditions DXCC may be possible. Many noted they had worked new ones again this year. With check logs, there were 812 CW logs and 471 SSB logs. This is down from the past two years, but still great for a year with QRN on SSB and fairly poor conditions on CW. A number of stations were noted in enough logs to possibly have won certificates. Send in your log and you may be surprised at where you place!

E-mail logs certainly cut down the amount of paper, as did logs received with a disk and summary sheet. Thirty percent of the logs are still hand-written logs, and these are readily accepted. Some of these logs are masterpieces of readability. Thanks for taking the time to make them a pleasure to check! Glitches in computer logs still occurred, as KN2T could not pull a complete log and his CW multi-operator was lost. The KC6ETY (CW) and W6A (SSB) diskette could not be read, and after trying both

his FCC address and the mailing address on his summary with no response, his logs were put into check logs. Better luck next time.

There are a few issues that need to be addressed. I still get too many duplicate logs. Please avoid sending me a log two or three different ways. The issue of maintaining a run frequency while roaming the band for multipliers is alright, but if you leave a frequency open for more than 2 minutes, consider your run frequency as vacant. I had several complaints of stations returning 5 or 10 minutes later to try and regain a frequency. This even happened to the director on SSB. If it's in use by another station, the right choice is to QSY. Logs will be addressed in the "Next Time" section, but make sure you can be contacted if we have a problem reading your log. If you don't answer, the log goes to check logs.

The move of the SSB section to avoid the ARRL DX CW Contest happens just once every 10 years. The contest moves back to the last full weekend in February in 1999. We do the shift again in 2008!

A decision was reached to move the CW logs of YT4I and YZ4IZ to check logs. These stations were operating in Bosnia with Yugoslav callsigns. The ITU has assigned T9 to Bosnia. Thus, they are illegal stations. Due to the delicate nature of such operations, a statement was issued in September 1998 by the CQ WW 160 Contest Committee that allows contact credit with these stations *but no multiplier credit*. Please make sure your logging program does not allow credit for either T9 or YU. The committee rule also applies to other such operations, such as 1B or 1X. If you are not sure, leave off the multiplier credit, and the checkers will add a multiplier back if necessary.

This contest is dedicated to three participants who passed away before the results could be published. Eino Soomets, ES5DE, passed away on 30 January 1998 soon after the CW section. Eino's son is ES5RY. Jud Whatley, W4NZJ, was killed in an automobile accident at the end of July 1998. Jud always sent in his log for both CW and SSB, giving credit to the Southeastern DX Club, and was one of the most active hams around. Rod Fitz-Randolph, N5HV, passed away in early September 1998. He told several Tennessee Contest Group friends he would leave them soon, just days before he passed away. Rod was active from several locations (Arizona, Florida, and then Tennessee) and always had an effective station. He was keenly interested in antennas and authored several articles in *CQ* and *QST*. He recently exchanged his W5HVV for N5HV. All three loved 160 meters

## TOP 10 SCORES

### SINGLE OPERATOR

USA CW		USA PHONE	
W3AO	524,862	K1ZM	401,280
W4ZV	499,443	WB9Z	311,610
WB9Z	393,472	K1UO	209,380
K8DX	379,850	K8LN	205,410
KQ2M	351,010	N4RV	200,072
W3BGN	338,416	W3TS	180,857
KV0Q	299,663	W1NA	167,231
K9DX	252,605	KD9SV	159,817
W3TS	251,036	K1PX	129,624
WA1LNP	228,384	K1VW	120,080

VE CW (TOP 5)		VE PHONE (TOP 5)	
VE3EJ	755,352	VE3DO	196,275
VE3DO	312,852	VE6JY	85,364
VE1PZ	302,304	VA2AM	67,166
VE3KZ	296,666	VE3UZ	61,152
VE3KP	209,805	VE3TDG	22,284

DX CW		DX PHONE	
EA8BH	1,502,076	P40K	409,212
P49I	928,408	OT8T	316,438
GW3YDX	900,271	V47KP	289,380
CT3FN	778,752	S58AB	279,510
5B4ADA	687,609	LY3BS	272,160
T11C	673,141	UA2FJ	272,108
EA3KU	671,220	S50A	226,728
8P9DX	647,584	9A2NY	206,092
SP7GIQ	638,456	CT3BX	198,356
OZ7YY	610,080	S54DL	180,048

### MULTI-OPERATOR

CW (WW)		PHONE (WW)	
C42A	1,107,566	C42A	567,693
W2GD	737,734	VE3DC	311,700
W1FJ	731,718	WR8C	278,116
WW2Y	710,160	LX9UN	248,625
OH0MAM	616,176	UA2AA	229,860
UA2AA	610,788	IT9EQO	228,074
9A1A	588,596	N8TR	225,420
OK1KSO	555,900	W3GH	219,268
OT8U	535,440	HB9CXZ	175,825
DK1NO	532,918	N4SF	174,051

TOP 5 CW QRP		TOP 5 SSB QRP	
N0TT	66,906	G0UJG	43,884
WK3I	66,402	UR7M	32,224
LY2FE	65,805	N9SXT	25,272
S59D	57,960	US8IBS	12,330
YT7TY	56,826	US5ESP	11,043

TOP 10 World CW Low Power		TOP 10 World SSB Low Power	
HG1S	321,328	HG1S	145,936
DF9ZP	304,560	UU4JMG	138,624
T93Y	230,376	K1PX	129,402
WA1LNP	228,384	LY2BTA	104,714
HA8BE	228,072	W0AH	87,696
4N7B	200,069	9A2EU	86,853
DJ6TK	180,987	K1NK	82,731
K1HTV	177,650	LY3BA	79,080
K1PX	170,085	WA1LJD	72,930
YL/RZ3BY	165,908	I0SNY	71,568

TOP 5 CW USA Low Power		TOP 5 USA QRP	
WA1LNP	228,384	N9SXT	25,272
K1HTV	177,650	W4TMR	6,408
K1PX	170,085	N1TM	5,625
K1NK	134,865	N8XA	5,040
W1TE	134,862	W8GP	4,896



SSB entrant YV6DBX. Notice the good reading material under the hat.

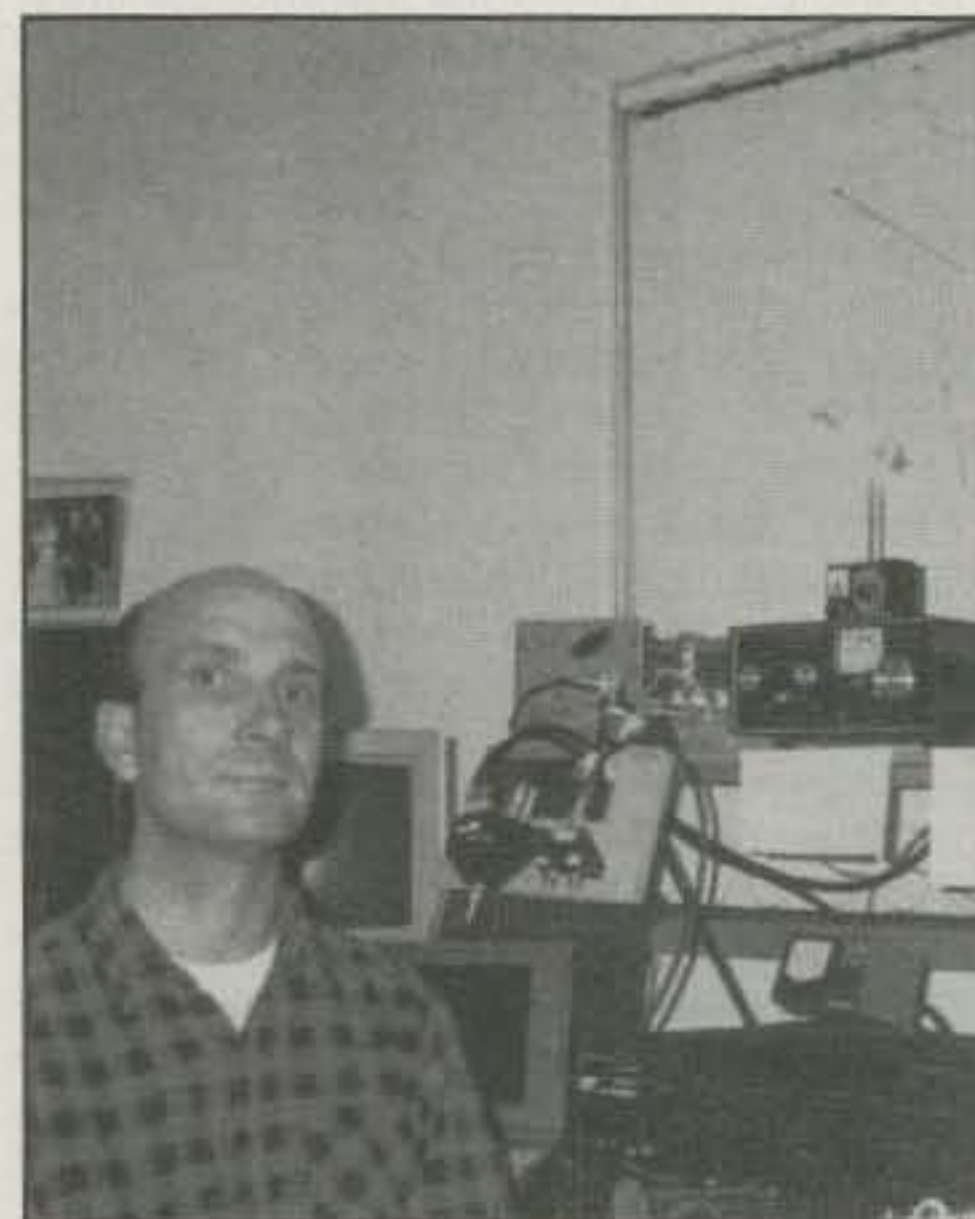
and were the typical hams—the type who make amateur radio the exciting hobby it is today. All go out winners. Rest in peace, gentlemen.

## CW Contest January

OH2BH travelled to the Canary Islands and keyed EA8BH to a new world record score of just over 1.5 million. Being able to reach both Europe and North America as 10 pointers allowed Martti to run away with the top slot. Mike, P49I, used his Aruba location and experience to come in second with 928K. Third place went to GW3YDX with a great European score of 900K. CT3FN placed fourth with a fine score from Madeira Islands. Fifth place went to 5B4ADA in Cyprus. Carlos, T12CF, keyed T11C to a close sixth place and the N4IN North America plaque. Carlos complains of the lack of Latin America and Oceania entries that could aid his (and other North American) scores.

Top USA single operator was W3AO (the W3LPL station). Operator KE3Q bested Bill, W4ZV, by 25K for the honor. W9QA visited WB9Z and placed third with a strong 393K effort from the Midwest. K8DX was another Midwest entrant scoring well by placing fourth with nearly 380K. CQ WW Committee member KQ2M kept his skills honed with a fifth place finish. Special kudos to KV0Q, who placed seventh and to WA1LNP who placed tenth while running low power. As always, VE3EJ ran away with the top VE score. His score was also the fifth World high score. Ivan, VE3DO, placed second. He claims this is his last year with a hand log. He says he may be able to compete better with VE3EJ with computer logging.

Several of the UA2 Contest Club keyed C42A (Cyprus) to the world high multi-operator score of 1.107 million. The secret of their success was the ability to reach 31 W/VE multipliers from Asia. Of course, 1,150 QSOs and fine operating helped, too. There was a three-way race for second place and high USA score. W2GD, operating from the Sandy Hook Navy facility, was a consistent effort and won by the sheer number of QSOs (1,430). Third place, just 6K



Australian CW winner VK6VZ.

points behind, was W1FJ. They led in 10-point QSOs but fell short on total QSOs. Fourth place World and third USA went to Peter and the gang at WW2Y. WW2Y was the first USA entry (often first North America) in the most DX logs. Fifty more QSOs or a few more multipliers could have put them in the top USA slot. A hearty "well done" to three fine efforts. The rest of the Top 10 Multi stations were all from Europe. OH2MAM led a team to Aland Islands as OH0-MAM. Their fifth place score was 616K. UA2AA was close behind with 611K. 9A1A, OK1KSO, OT8U, and G0IVZ all did well, placing in seventh to tenth place. VE7SV was the top VE multi-operator. This is the first time in memory that a west coast VE placed so well. The reliable VE3DC crew placed second.

The number of QRP entries jumped three



World High SSB plaque winner I2UIY at P40K.

fold in 1998. The top three scores were so close that there was just 1K difference between N0TT's first-place 66.9K and LY2FE's third-place score of 65.8K. WK3I in the middle at second place scored 66.4K. Not too far away in fourth and fifth place were S59D and YT7TY. HA1TJ keyed HG1S to the World high low power score at 321K. DF9ZP was not far behind, in second place at 304.5K. WA1LNP was the top USA scorer in fourth place and also placed tenth USA overall. And someone said low power could not be effective on 160! All it takes is a good operator and a great location. All of the top five low power USA stations were from W1 except K1HTV, who is in Maryland.

There were close single operator races in Massachusetts, New York, Georgia, Tennessee, Michigan, the Czech Republic, Finland, and Slovenia. Close CW multi-operator races occurred in New Jersey, Pennsylvania, Russia, Sweden, and again Slovenia. The Slovenia Contest Club sure stirs up the 160 meter activity for this contest. Thanks!

## SSB Contest February

The top single operator SSB score came from that familiar isle just north of South America—Aruba. I2UIY put P40K through the winning paces with a score of just over 409K. ON4AFZ operated from the ON4UN station as OT8T and won the Europe plaque as well as placing second World DX. W2DOX returned to V47KP to place third World DX and win the North America plaque. The rest of the top 10 DX scores came out of Europe, with S58AB, LY3BS, UA2FJ, S50A, 9A2NY, and S54DL placing the spots from fourth to tenth. The exception was the ninth spot taken by CT3BX. Operator Walter (DJ6QT) complained that he did not do as well as he had hoped, but his ninth place also means he won the Africa plaque. Jeff, K1ZM, beat everyone by a wide margin to win the USA plaque. His 401.3K was not far behind P40K. WB9Z got behind the mic and big signal to cruise into the second USA slot with 311.6K. Third place USA went to Maine's K1UO. This was his first effort, and he vows to return with better receiving antennas. K8LN and N4RV also broke 200K for fourth and fifth place USA. K1PX came in ninth using low power. Scores were off, as 120K made the top 10 in 1998.

The C42A gang from Kaliningrad again heated the airwaves from Cyprus for the top multi-operator SSB score. Their score was also the

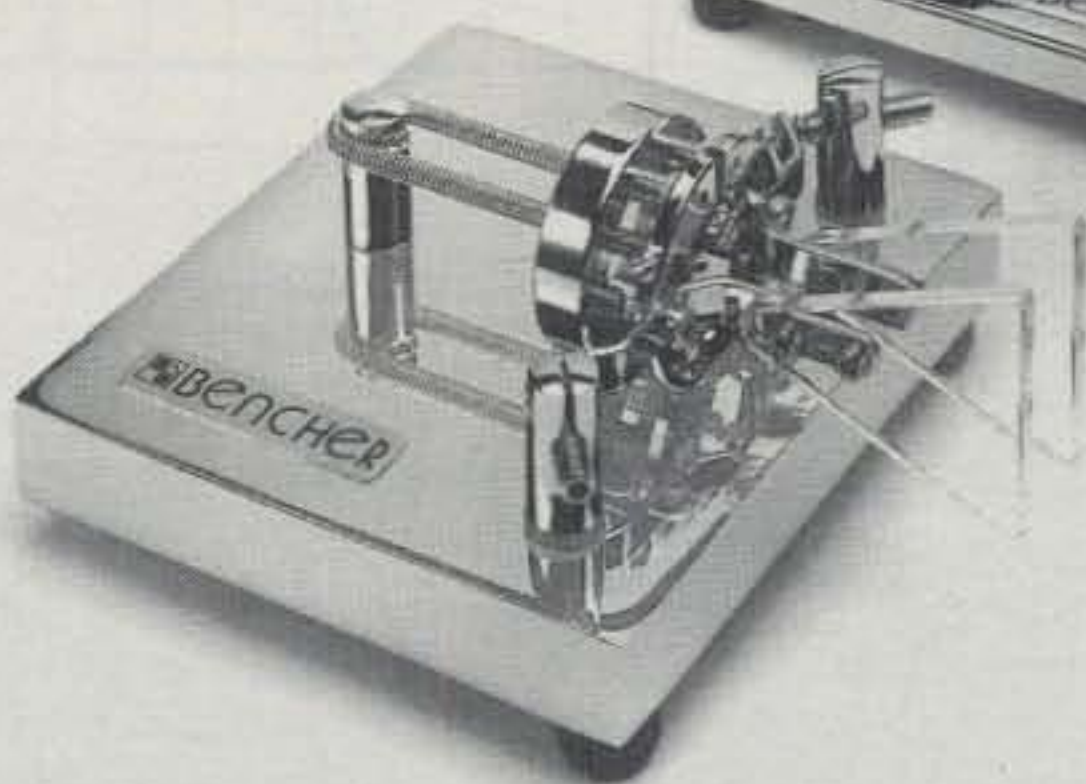
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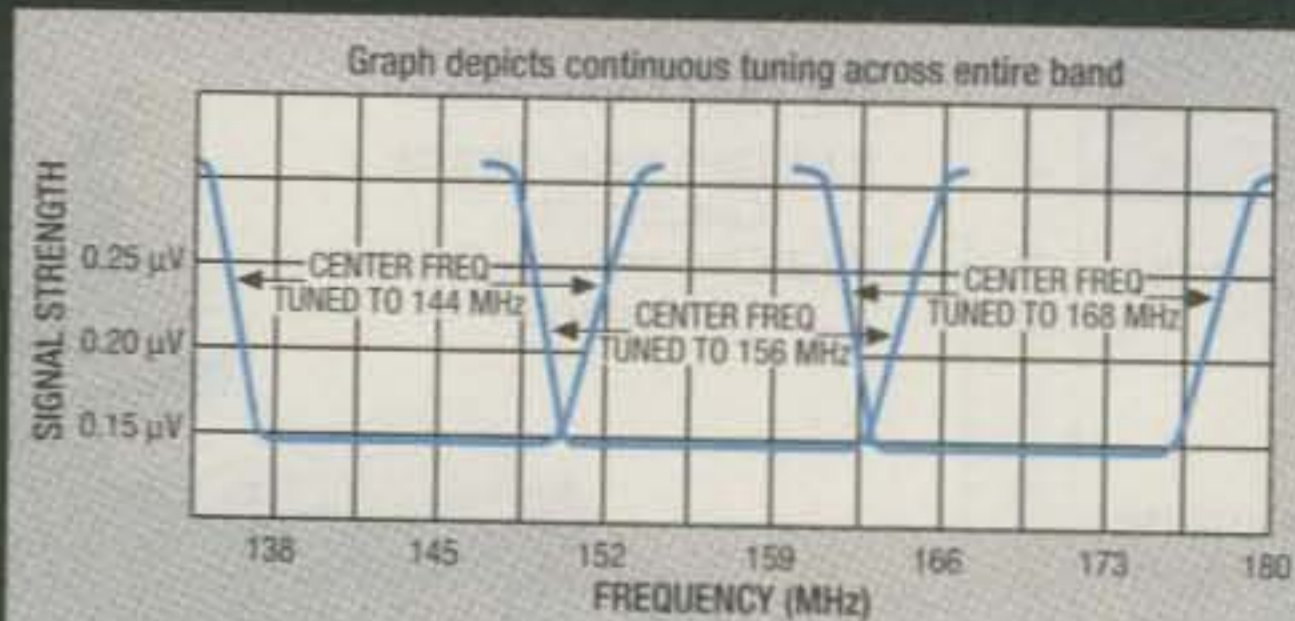
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\*FT-2500M

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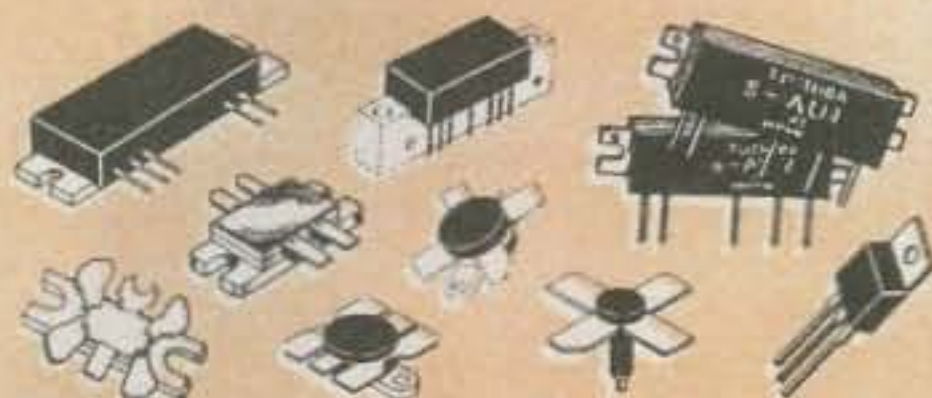
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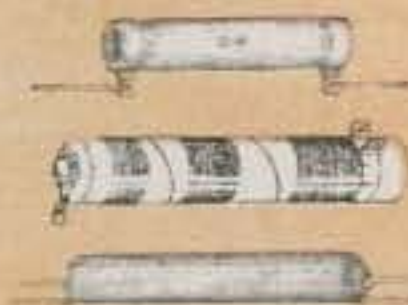


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## PLAQUE WINNERS AND DONORS

### SINGLE OPERATOR CW

**WORLD BY K5AAD (W5MBB MEMORIAL):** Winner Martti J. Laine, EA8BH (OH2BH).  
**USA BY K4TEA:** Winner National Press Radio Club, W3AO (KE3Q Operator at W3LPL).  
**CANADA BY K2UFT:** Winner John Sluymer, VE3EJ.  
**ZONE 3 BY N5IA:** Winner Preston T. Smith, N6SS.  
**ZONE 4 BY K4WA:** Winner Jerry Rosalius, WB9Z.  
**ZONE 5 BY WA4CUG:** Winner William R. Tippet II, W4ZV.  
**AFRICA BY K4MZW:** Winner Hermann Stein, CT3FN (HB9CRV).  
**ASIA BY K4SX:** Winner Ivo Pezer, 5B4ADA.  
**EUROPE BY W8UVZ, W0CD, K8GG:** Winner Ron Stone, GW3YDX.  
**OCEANIA BY K4IS:** Winner Jack Wheeler, KH6CC.  
**SOUTH AMERICA BY W4NU (K4JAG)\*\*:** Winner Mike Greenway, P49I (K4PI).  
**JAPAN BY W4ZV:** Winner Satoshi Hara, JH5FXP.  
**NORTH AMERICA\* BY CQ Magazine (N4IN Memorial):** Winner Carlos Fonseca, T11C (T12CF).

### SSB

**WORLD BY K5AAD (W5MBB Memorial):** Winner Paolo Cortese, P40K (I2UIY).  
**USA BY K4JRB:** Winner Jeffrey T. Briggs, K1ZM.  
**CANADA BY W0ETC:** Winner Ivan Payne, VE3DO.  
**ZONE 3 BY N4TMW:** Winner Duane L. Walker, KE7BT.  
**ZONE 4 BY W4UCK:** Winner Jerry Rosalius, WB9Z.  
**ZONE 5 BY K4ODL:** Winner Lawrence F. Emery, K1UO.  
**AFRICA BY WB4ZNH:** Walter Skudlarek, CT3BX (DJ5QT).  
**ASIA BY AH2BE:** Winner Leonid Welikanov, UN2O.  
**EUROPE BY N4NX:** Winner John Devoldere, OT8T (ON4AFZ Operator at ON4UN).  
**OCEANIA BY N4XMX:** Winner Jack Wheeler, KH6CC.  
**SOUTH AMERICA BY K4EA (AE6E):** Winner Edgar J. Ochea, YV2IF.  
**NORTH AMERICA\* BY CQ Magazine (N4IN Memorial):** Winner Alexander A. Aimette, V47KP (W2OX).

### MULTI-OPERATOR CW

**WORLD BY N4RJ:** Winner Igor Avdeev and UA2 Contest Club, C42A.  
**USA BY K9UWA:** Winner John M. Crovelli, W2GD.  
**Zone 3 BY 4X4NJ:** Horned Toad Acres Wireless Association, N7KQ.

### SSB

**WORLD BY SOUTHEASTERN DX CLUB:** Winner Igor Avdeev and UA2 Contest Club, C42A.  
**USA BY WB9Z:** Winner Stephen D. Kane, Sr., WR8C.  
**Zone 3 BY 4X4NJ:** Winner Horned Toad Acres Wireless Association, N7KQ.

\* North America outside USA and Canada.

\*\* Roy V. Brewer Memorial, W4UUH.

highest overall for SSB. Surprise, surprise as the hard working VE3DC gang placed second this time as well as being the top W/VE multi operation. This group has done well for years and usually enters both modes. Top USA multi-operator was WR8C. They are also known as K8LR or K8MK. European and USA stations claimed the rest of the top 10 slots. LX9UN gave out a nice multiplier and placed fourth. N4SF is a new call to the multi-operator world, but N4SF and AA4V both are well-known South Carolina low banders.

QRP entries increased in the SSB contest, too. GI0UJG switched to QRP and slugged out the top score by about 9K over UR7M. N9SXT had the top USA score. Maybe conditions will be better in 1999 so the QRP gang can make a few more points.

HA1TJ repeated as World high low power score from HG1S. He did have close competition from UU4JMG. K1PX came in third world high and the top USA score. As noted before, he also was ninth overall in the USA. W0AH had a nice score for a station far removed from Europe or the east coast.

Close races on SSB occurred in Connec-

ticut, Maryland, Georgia, California, Arizona, Germany (400 points!), and Yugoslavia. I know there are stations out there that had a better score than some of the certificate winners. Don't hesitate to send in your log next time. Don't miss another certificate in 1999.

Several beefs with you phone guys! Keep the edges of the window clear especially when the band is open for DX. Make sure you leave room to listen between voice keyer transmissions. I heard stations call and the keyer just came on and kept on going. And please don't expect a frequency to be open for long if you are running two transceivers. Last, if one of those nets asks you to move, please try to accommodate them. Frankly, they can work more states and DX by working the contest, but that's their choice and we want to try to stay on friendly terms. Here's hoping that conditions will be good and QRN nil next time.

### Club Competition

The Frankford Radio Club again placed first with a combined score of 6.37 million. The Slovenian Contest Club entries seemed to be



## AGGREGATE CW AND SSB CLUB SCORES

*Minimum of three entries required for listing.*

CLUB	SCORE	CW	SSB	CLUB	SCORE	CW	SSB
FRANKFORD RADIO CLUB	6,366,228	W2GD	V47KP	LY CW CONTEST CLUB	400,413	LY2BTA	LY5A
SLOVENIA CONTEST CLUB	5,138,233	S50A	S58AB	LITHUANIAN DX GROUP	398,935	LY5W	LY1FW
CONTEST CLUB FINLAND	4,294,949	EA8BH	OH1LEU	BAVARIAN DX GROUP	391,935	DL5RBW	DL7MAE
POTOMAC VALLEY RADIO CLUB	3,373,098	W3AO	N4RV	ROCHESTER DX ASSN	364,315	K8FC	W2TZ
UA2 CONTEST CLUB	3,297,574	C42A	C42A	MILE HIGH DX ASSN	342,377	W0AH	W0AH
YANKEE CLIPPER CONTEST CLUB	3,164,409	W1FJ	K1ZM	NORTH TEXAS CONTEST CLUB	339,071	N6ZZ	N5KB
SOUTHEASTERN DX CLUB	2,684,730	P49I	K4PI	CENTRAL ARIZ DX ASSN	332,663	N6SS	—
RHEIN RHUR DX ASSN	2,609,542	CT3FN	OT8T	SO CALIF CONTEST CLUB	295,098	W6UE	N6LL
NORTH COAST CONTESTERS	2,451,050	VE3EJ	N8TR	PDXC (ITALY)	294,658	I0SNY	I0SNY
BAVARIAN CONTEST CLUB	2,349,130	DK1NO	OE2VEL	KENTUCKY CONTEST GROUP	288,026	N4IR	W4CN
CROATIAN CONTEST CLUB	2,311,463	5B4ADA	9A2EU	GRAND MESA CONTESTERS	278,973	K0SX	K0GAS
SOC. OF MIDWEST CONTESTERS	1,997,808	WB9Z	WB9Z	HUDSON VALLEY CONTESTERS	225,599	AA2GS	WB2JQR
KTU RADIO CLUB	1,941,418	LY6K	LY3BS	UARL (UKRAINE)	175,064	UR8IF	US5ESP
MAD RIVER CONTEST CLUB	1,142,007	K8MK	WR8C	KCDX (RUSSIA)	173,292	RK1OWZ	RK1OWZ/9
CAROLINA DX ASSN	879,606	W4ZV	N4SF	FLORIDA CONTEST GROUP	166,140	K1TO	K8PR
SOUTH EAST CONTEST CLUB	877,566	W4WA	WP3X	TEXAS DX SOCIETY	163,406	N5LZ	KZ5MM
HA DX CLUB	851,680	HG5A	HG1S	SALT CITY DX ASSOCC	150,601	NA2Q	NA2A
LOW COUNTRY CRAZY CONTESTERS	767,865	PI4COM	PA3ERC	FOX CONTEST CLUB	148,009	YU1RA	YU1RA
TENNESSEE CONTEST GROUP	762,905	N4ZZ	N5HV	NO ARIZONA DX ASSN	129,908	NN7A	NF7E
RUSSIAN CONTEST CLUB	744,772	RK3AWL	UA3QOG	WEST PARK RADIO OPS	129,694	K8AB	K8AB
MARCONI CONTEST CLUB	669,848	IT9ZGY	IK4QIB	WESTERN WASHINGTON DX CLUB	126,527	K7FR	—
UKRAINIAN CONTEST CLUB	664,559	UY5QQ	UT7Z	CRC CZECH REP	90,113	OK1OKE	—
CDXA (UK)	599,192	G0IVZ	—	CTRICC	72,812	N1HRA	N1RJF
YU CONTEST CLUB	586,213	YU7AU	—	CSVC (VIRGINIA)	49,849	N3JB	—
DARC (GERMANY)	492,156	DJ3RA	DK0IW	LYNX (SPAIN)	36,286	EA5BY	EA8ZS
N. CALIF CONTEST CLUB	447,126	N6RO	K6MO	EIDXA	13,795	W0OF	WB0B



The crew at XE1RCS. Left to right: XE1JG, XW1YAW, XE1YJY, XE1VIC, XE1KK, and XE1MD.

endless and moved them into a solid second place with 5.14 million points. Contest Club Finland placed a strong third place with 4.3 million. For a new group last year those Finns are a quick learn. The Potomac Valley Radio Club placed fourth with 3.37 million. The remarkable UA2 Contest Club from Kaliningrad edged out the Yankee Clipper Contest Club for fifth place. Their six entries averaged almost 550K. The Southeastern DX Club dropped to seventh due to the SSB weekend QRN and the emergence of the South East Contest Club (SECC).

Fourteen clubs had scores over 1 million. Seems it was just yesterday when having three or four clubs score 1 million points was remarkable. We say the club competition is a fun competition, but don't tell that to the top clubs.

If you want to enter the club competition, make sure three entries are submitted. This can be two on CW and one on SSB. Be sure to clearly note the club in a section marked for club competition in the middle of the summary sheet. Use of pre-printed logs with club or organization printed at the top is not sufficient. If clubs send the director a list of members, he will try to get credit for all of your members. The director's address is listed at the beginning of this article.

### Helpers

Joe improved the fuzzy logic checker engine again this year with suggestions from both contestants and the CQ WW Committee. This

saved us many hours in cross checking. I wish I could scan the hand logs to make initial checking 100% computer automated.

Thanks to my XYL, Jean, for her support; to N5IA, NK4U, and W4GTS for their efforts; and to Gail at CQ for pushing me to get out the rules and results on schedule. Only two logs were sent to Helen, N4IN's XYL and widow. Hopefully this will be zero in 1999. Finally, thanks to Bill, W4AN, for the e-mail address.

### Errata

The CQ WW 160 Contest Committee is considering a couple of changes and is looking for your input. The committee did decide to retain the QRP division, although there has been much criticism about honesty. Stations working with improper callsigns (per ITU assignment) were assigned to check log status as discussed before, and there will be no move of either section of the contest. The two issues open for discussion are exchanges for DX stations and possible change in the operating hours. Send any comments to the director at the address listed at the beginning of this article, or send them via e-mail to <cq160@contesting.com>. The time for comments has been extended from 1 December 1998 to 1 February 1999.

### Next Time

The 160 Meter CW Contest will be held the last full weekend in January 1999 (January 22 to 24). The SSB contest goes back to the last full weekend of February 1999 (February 26 to 28). Times for both contests are 2200Z Friday start to 1600Z Sunday end. You penalize yourself if you miss the 2200Z start, as up to 60% of the winning scores are made in the first 6 to 9 hours. Contacts made after 1600Z on Sunday carry a double penalty.

Yes, you can still submit a hand-written log, and you can get a sample log and summary sheet by sending along a business-size SASE or SAE with 1 IRC to CQ 160 Contests, CQ Magazine, 25 Newbridge Road, Hicksville, NY

## GUEST/VISITING OPERATORS

### CW

Call	Guest/Visiting Op	Call	Guest/Visiting Op
4N7B	YU7BJ	OL6M	OK2BOB
9A5Y	9A3LG	P49I	K4PI
9M2NK	JE1JKL	RK3AWL	RV3BA
9M2TO	JA0DMV	RK9CWY	RX9CAZ
DF0FKB	DL2JHM	RZ1AWO	R1A-1400
DF9ZP	DK8ZB	S50W	S52OP
DL0MFL	DL2JHM	T11C	T12CF
DL0SA	DL3KWF	V47KP	W2OX
EA8BH	OH2BH	VE3TDG	VA3SYL
HG1S	HA1TJ	VP2EZ	W5SJ
K2LO	K1IM	W1QS/1	AA4NN
K4VX	N9JF	W3AO	KE3Q
LY2WR	LY2BIL	W5ON	K5LG
LY2ZZ	LY3BY	W7RM	K17Y
LY5W	LY1DR	WB9Z	W9QA
N5IA	WA6CDR	YL8M	YL2KL
OH1AF	OH1NIO	YU1AST	YZ1EA

### SSB

Call	Guest/Visiting Op	Call	Guest/Visiting Op
9J2AM	JA0JHA	VE3TDG	VA3SYL
CT3BX	DJ6QT	V47KP	W2OX
HG1S	HA1TJ	W0AH	N0AH
LY5A	LY3MM	W3GNQ	WI2T
N1HMJ	N1HOQ	W4BCV	K4JRB
OT8T	ON4AFZ	WA1LJD	WA1LNP
P40K	I2UIY	YU1AST	YZ1EA
SP4Z	SP4EEZ		



N5RP at CW multi-operator station N5NZ, top Texas and 5-land score.

11801 USA. Make sure your computer log program puts 40 or 50 QSOs per page and provides totals for QSOs, points, and multipliers on *each page!* Every contact should include a location such as 599GA or 59GW. Multi-oper-

ators should either list the operator on each page or provide a summary of operator/hours. There are only two classifications—single operator or multi-operator. Using packet or a spotting net classifies an entry as multi-operator.

Low power and QRP will be noted as per the complete rules. Multi-operator stations are all listed as high power!

CW mailing deadline is February 28, 1999, and the SSB deadline is March 31, 1999. The only exception is both logs can be sent at the same time to arrive no later than the SSB deadline. Logs with postmarks after the deadline or that arrive after May 1, 1998 are subject to being labeled "checklogs." I prefer a self-addressed envelope or postcard or SAE with an IRC if you want a confirmation. I will also confirm via e-mail if you list your address. To save time and paper, I accept diskettes (I prefer 3 1/2 inch) or e-mail to <cq160@contesting.com>. On diskette or e-mail logs I need the log (ASCII text), full dupe sheet, and summary sheet. On diskettes I need the summary and dupe sheets printed out. Paper logs should be readable and have a summary sheet on the front.

Send all logs to 160 Contest Director David L. Thompson, K4JRB, 4166 Mill Stone Court, Norcross, Georgia 30092 USA. Please indicate CW, SSB, or both on the envelope and send along photos (even if you e-mail the logs). Good luck to all!

73, Dave, K4JRB

### Soapbox CW DX

We need a wider band in Europe to accommodate all the activity . . . G4BYG. Conditions not okay—22 states and 8 countries less than last year . . . OH2HE. Our first DXpedition. It's amazing to be DX (as if UA2 is not DX) . . . C42A. Great opening to Europe the first night . . . VP2EZ. Why no Africa? . . . YU7AU. Really surprised to work so many in North America, especially WB9Z . . . VR98BG. I am 68, so age is creep-

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ing up on operating all night . . . XE1VV. Difficult to hear DX with S9 noise . . . F3AT. Too much noise as it's summer in Argentina . . . LU9VET. Aurora made copy to the south difficult . . . LA8WG. Strange conditions with western USA audible at sunset both days but almost no Europe . . . VK6VZ. Had a great time, although USA difficult and no Europe at all . . . V73GT.

Beat my score from last year . . . G0KRL. 160 is more enjoyable here than in Sao Tome (S92SS), but heard no North America at all . . . SV0LM. Fifteen new DXCC for me on top band . . . SM7TUG. Openings to USA and Europe, but only worked a few stations . . . 3DA0CA. Why does CT log contacts as 1.899 when it is outside the 1820 to 1850 TF allocation? . . . TF3DX. SM5HJZ celebrated his 40th birthday this contest weekend . . . SM5HJZ ops. New Yaesu amplifier and new country (TF) . . . OK1DWC. Every year top band is overcrowded for both nights . . . OL5T. JA's were strong but did not answer my calls . . . RV1CC. Was going to operate causal, but locals pushed me to work a few more for the Contest Club Finland (CCF) . . . OH1AF (OH1NOA op).

My first 160 contest. My antenna at 30 feet will be replaced with a better antenna . . . DL1ZU. Propagation to USA didn't exist, so did not take the contest serious this year . . . UA3AB. Managed to finally work the USA on 160 . . . G0VQR. Can't work with W 1, 2, 3, 4, 8, or 9 from Japan . . . JA2ZJW. This is

my 15th CQ 160 CW entry . . . YU7SF. I extended my 3.5 MHz dipole for 160. Results were better than expected . . . OH6VR. Heard stateside, but my low power could not be heard through the QRM . . . SM6BSK. Worked nine USA stations and one in Europe with 50 watts . . . JS1UMQ. Hear many guys, but they not answer me . . . UA0ANW. Nothing heard from South or Central America . . . VK3IO. My first QSOs ever on 160 . . . SM7GIB.

Plenty of Europe as usual . . . G3KKQ. My birthday is on January 26. Am 15 years old . . . RZ1AWO (R1A-1400/KB2WKE op Mikhail). My antenna is too low (10 meters) . . . UR5FCM. Funny to work on a band where the antenna and tuner should not work . . . SP2UKB. Still need to improve my transmit antenna . . . 4X4NJ. Look for me from BY or XX9 next time . . . EA8BH (OH2BH).

### Soapbox CW W/VE

Good conditions to USA and Canada, but poor for DX . . . K4LQ. Worked two new countries . . . K3SWZ. Broke quite a few pile-ups; must be in a good location . . . W3TDF. Just played part-time; still need better RX antenna . . . WO4O. My first ever contest. I even worked two new states for WAS . . . KF4SXG. Fourth QRP entry. Will give it another in 1999 . . . W4TMR. Had a ball after putting up a new inverted L

. . . K4NR. You are never too old to learn, and QRP is a great teacher . . . W2QIP. Set a new personal record . . . AD9J (ex-WD9IAB). Conditions much better than last year, although hard to pull out DX. CT3FN called me but the pile-up got him . . . KJ5WX. Going back to multi-op with packet next time; missed too many multipliers . . . K3ATO.

Conditions much better than last year . . . W4DMB. 80 meter loop worked fine . . . W2UDT. QRO ops worked hard to pull me through . . . N4EUK. Working EA8BH for my first African contact on 160 . . . N2CG. Part-time effort between parties, sleep, antenna work, CPA work, and visiting other hams . . . K3ANS. Had a blast with my first real 160 antenna, a shortened dipole at 25 feet . . . K3TD. Lots of activity as usual . . . W5KL. Just a beverage away from a competitive score . . . K2LO. Hope to work more hours next time . . . K2YLH. First contest in years . . . K4DLJ. My first 160 meter contest; like the format of both a domestic and DX contest in one . . . NZ5A. Rig was a Ten-Tec Argo with 3 watts to an inverted L. Who says QRP won't work on 160? . . . KC1DI.

My first 160 contest; computer logging much better than paper dupe sheets . . . VE7CPN/W4. Had an enjoyable time . . . N4ROA. QRP to my inverted L continues to amaze me; 44 states and 3 provinces in 9 hours . . . N4CM. Surprised when not too loud CT3FN answered my 5 watt CQ . . . K5RX. Blizzard conditions took out my antenna and put an early end for me . . . VE4JB. Where was DC? . . . N0BB. We need a bigger DX window . . . KJ9C. First time I've stayed up to work the east coast at their sunrise . . . W7YAQ. Lots of DX, but my 75 watts did not cut it with them. Had a real ball, however . . . W6PU. Very pleased to do so well with my modest station . . . K9AY. Still can't break the 700 QSO barrier—ahh, next year . . . W8CAR.

My first test using a computer; sure is easy . . . VE3ABG. Working CW for first time in years. At the speeds the gang was going they must have their keyers plugged into 220V . . . NF7E. Chased Idaho and North Dakota again this year . . . K7DZ. Great to work JA and CT3 with my multiband vertical . . . KQ6ES. Next year we have to see how many ops we can squeeze into a VW Beetle . . . K6OM/Mobile. The thrill was working JH5FXP, then getting his card . . . KI6PG.

### Soapbox SSB DX

Our SSB band is quite narrow in Austria . . . OE2VEL. We could hear many stations, but only 26 heard us . . . PJ8A. Poor conditions, QRN, and low power limited us to 131 contacts . . . T4BRAC. Need to have better TX antenna . . . CT3BX (DJ6QT). Conditions poor this year . . . OK1DWC. Thanks for accepting e-mail entries . . . S56A. Too much QRM; I hate SSB . . . 9A2OO. 160 is an interesting band . . . US8IBS. Low score means a challenge for next year . . . YV6DBX. Made five more QSOs this year but three less countries . . . IK2ZVU. I could hear W's, but they could not hear me . . . OZ5EV. Contest should last 48 hours as USA gets more hours of darkness . . . 9A2EU. My first SSB entry years ago used a Viking Ranger with 50 watts of AM (16 QSOs) . . . KH6CC. Too much QRM in Europe . . . PA0IJM. Good conditions first night, real bad the next . . . YV2IF. Squirrels ate the radials I carefully laid out the week before the contest . . . G3SVL.

### Soapbox SSB W/VE

Our guys really like 160 meters but not the 40dB/9 noise . . . WY3T. Afraid to call CQ late Saturday night for fear of being called an alligator due to QRN . . . K4JRB. Heard Europe but they did not hear us . . . N5KB. Hard to compete with 100 watts. Must improve the antenna . . . NA2Q. Fun even if you are really not competing . . . W4DC. Just getting into computer logging . . . W5FO. QRN too rough for my old ears . . . W4DMB. Somehow the mode on my CT log came out CW and in trying to switch it to SSB lost the file. Luckily I had a printout before the change . . . W2RD. Added two new states but missed Utah, Idaho, and Nevada . . . KB1HC. QRP much easier on CW than SSB . . . W4TMR. 75th year of the Naval Research Lab operating from the rare DC section. N4IN/W3EIS was a

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# The Yaesu G-2800SDX Antenna Rotator

BY ALAN M. DORHOFFER\*, K2EEK

**Y**ou've decided that this is the year to move up to the big time—maybe add a new rig, a couple of accessories, a small (or big) tower with something on top that says here lives a ham who means business. Well, the thing that's responsible for turning and stopping that serious-looking accumulation of aluminum should also mean business.

One of the newest serious, all-business rotators to come on the market is the Yaesu G-2800SDX heavy-duty antenna rotator and controller. The first thing you notice when you take it out of the carton is the quality of the product. It is extremely well made and durable. The control box is stylish, easy to use, and features the familiar compass rose azimuth indicator. Yaesu does offer as an option the GS-23, which is a computer control board for the SDX series of rotators.

The rotor itself is deceptively light (a little over 13 lbs.). It's basically a clam-shell design featuring 106 three-eighth inch dual-stacked circumferential ball bearings, which assures smooth turning ability and no open access for water to enter. Instead of the usual AC motor, the 2800SDX employs a variable-voltage DC motor which obviously negates a temperature-sensitive starting capacitor. After the installation, one of the things you notice most is the quiet. Starting, running, stopping all sounds like a fine watch movement, quiet and assured.

Installing the rotor is straightforward and conventional. You will need to supply your own six-conductor cable (#20 AWG or larger) from the rotor to the shack. The installation kit contains everything else you'll need. If you're replacing an existing rotor, this might also be a good time to replace the coax and old rotor cable. Both probably have suffered from age and weather. While you're investing time and money, there are a few other things you might want to consider before you just change or install a new rotor.

## "Might As Well" Department

Antenna projects are a lot like other projects around the home, including remodeling. Once you get started on some specific area, various options present themselves, beckoning you to expand your horizons (translates into a bit more money). For a few bucks more now, you can add this or that to make most things better, and it is far simpler and easier (translates into cheaper in the long run) to do things while workmen and facilities are on site rather than to add or improve things later on. Changing a rotor or installing one presents the option of deciding how many other things you can do once you've climbed to the top of the tower, dragging up a bucket or two of tools. With safety belt firmly attached, you can look around and see what else would not only be nice, but would also be a definite improvement to the installation.

Yaesu has two options that are certainly worth considering when you want to move up to the G-2800SDX rotor. The first is the GA-3000 Absorber Joint. This is basically a shock-absorbing system which takes up the energy that normally would impact the rotor gear's assembly. Gusts of wind, the start and stop of rotation all have a torque energy which is taken up or absorbed by a rubber-cushion assembly between two steel plates. The unit mounts between the tower rotor mounting plate and the rotor. The GA-3000 sells for \$119.95.

The second item you should seriously consider, especially

\*Editor, CQ



*With any antenna project, remember: safety first. Always use a safety harness. (On the roof: Gary Woodhouse, K2UU.)*



*The Yaesu G-2800SDX as it looks when you first take it out of the box. The workmanship and quality are excellent.*

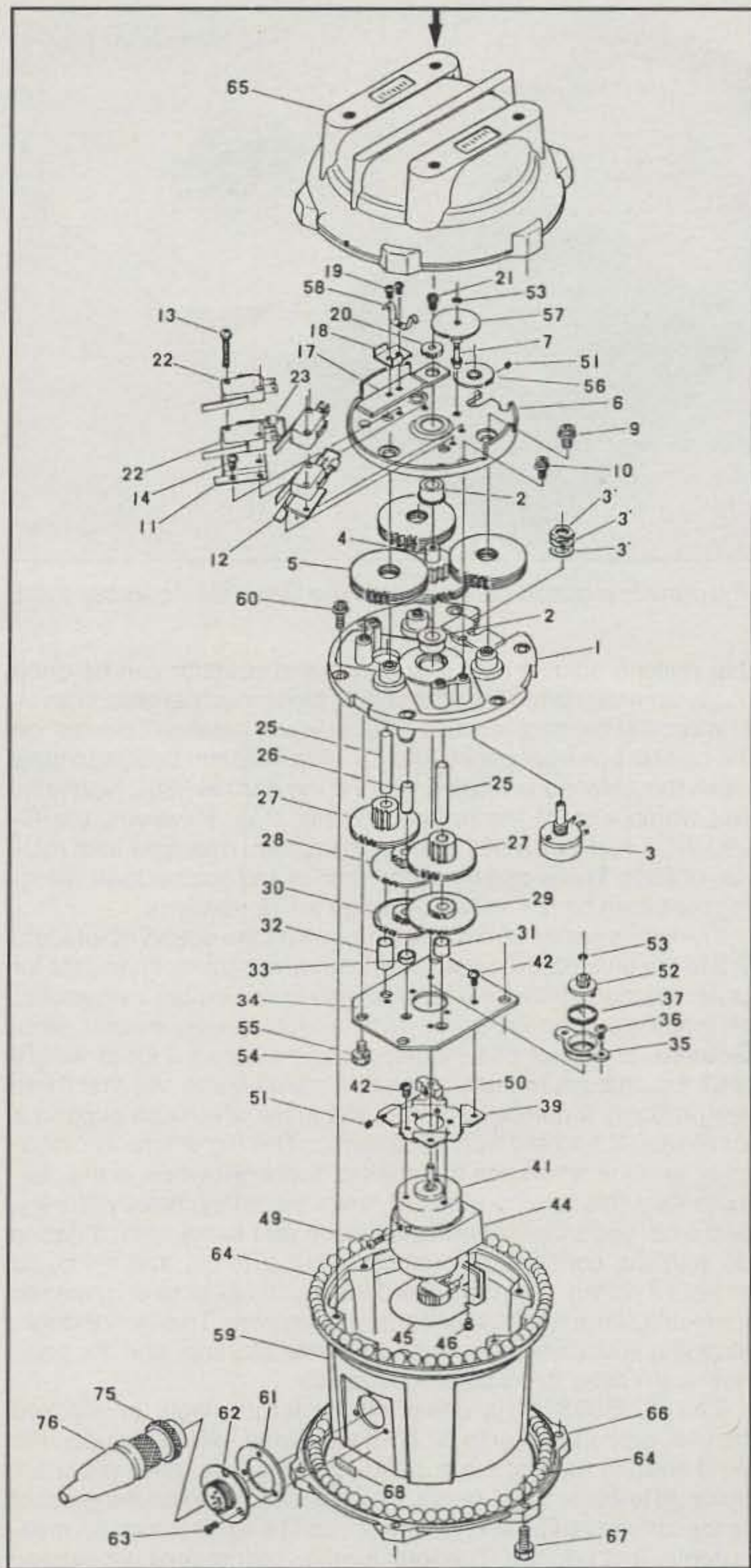


Fig. 1—In case you're curious as to what's inside the rotor, take a look. It's quite an impressive array of hardware in a small package. This is what it takes to do a big job.

when changing or replacing a rotor, involves the thrust bearing. For most people, when they put up a tower and installed their first thrust bearing, it became one of those things you see, but don't see. If you're going through all the effort to improve the installation and are at the point where you easily can access the thrust bearing, then you "might as well" add that job to the list. It doesn't make too much sense to disassemble everything later on just to change a thrust bearing. Yaesu has a GS-065 thrust bearing which you can install easily at the same time, replacing that old rusty one you have now. The GS-065 sells for \$47.65. Using all three products makes a very neat, efficient system that should give you years of service.

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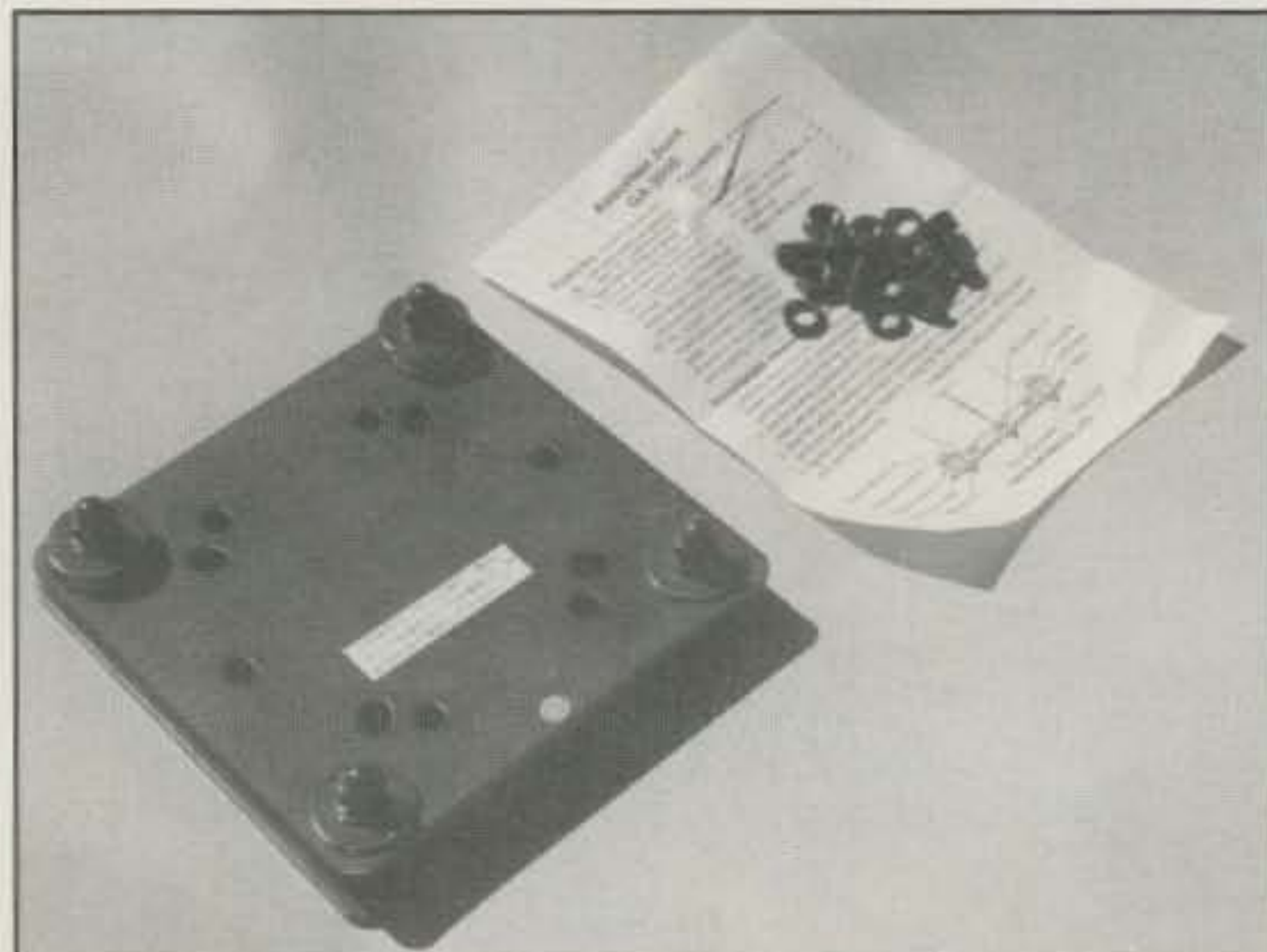
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CIRCLE 54 ON READER SERVICE CARD

Although this sage advice at first may appear to come out of great wisdom, don't be fooled. I did two out of three on this installation and had forgotten about the thrust bearing. The original thrust bearing that I had was now marginal at best and definitely needed replacement. Obviously, I didn't have one handy and had to decide whether or not to wait until I had one before I went on with the project. Obviously, as a true ham, I went on with the project as is, and obtained a GS-065 thrust bearing a month or two later at a hamfest. Also in true ham fashion, it is still sitting nicely boxed in my shack waiting for an opportune moment when I want to take the whole system apart again. It does pay to think ahead. It also pays to check out everything on the ground before you do the installation. This way you can familiarize yourself with alignment considerations and how to calibrate the controller (control box).

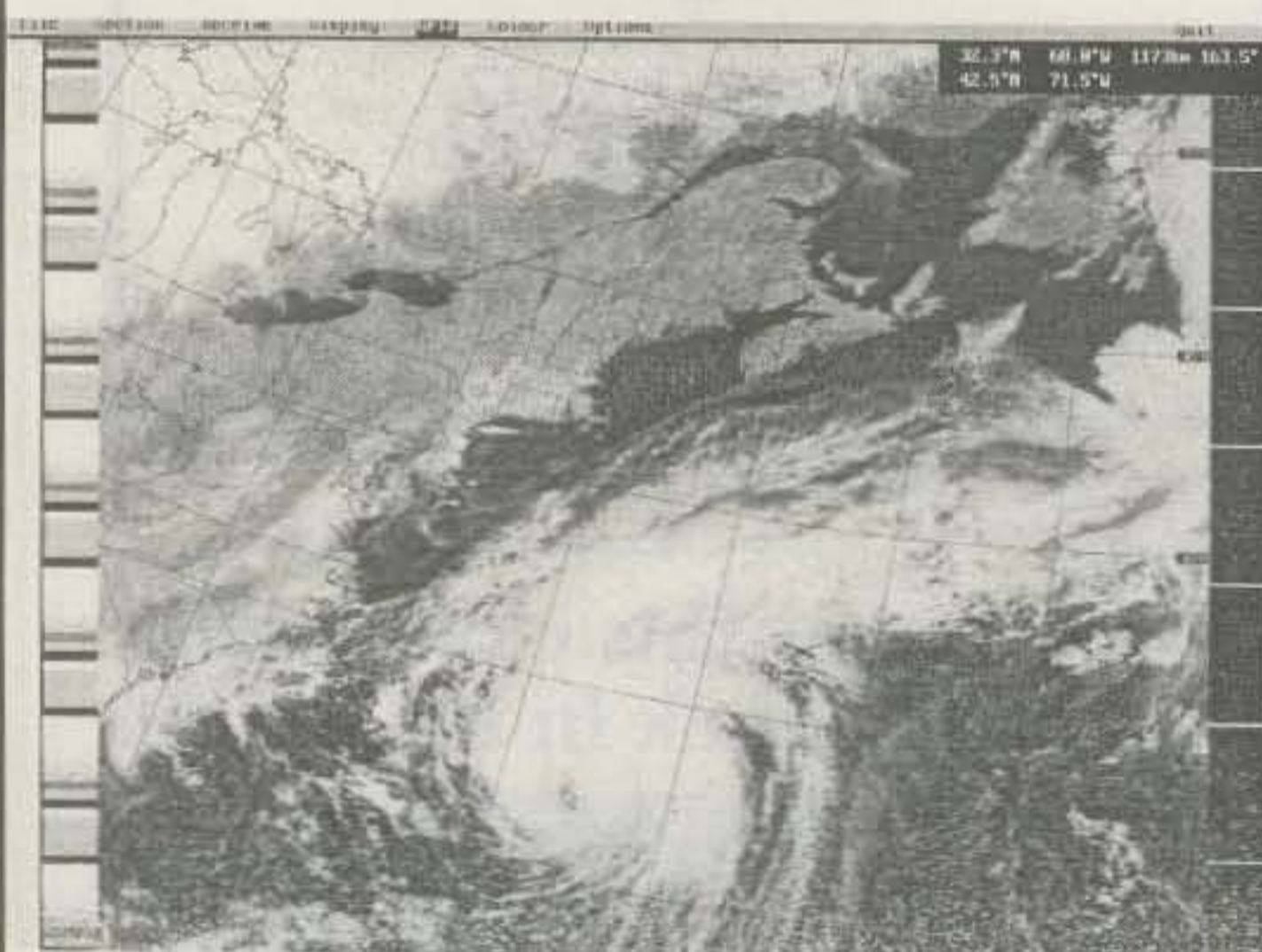
## Operation

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that making adjustments to tracking and azimuth can be done easily from the comfort of your shack, presumably at ground level. The second big plus is a little LED indicator labeled "Overlap" on the control box front panel. The Overlap indicator begins to glow when the antenna is rotated beyond the normal 360°. Normally, you would expect the rotor to simply stop. However, the G-2800SDX features a 90° overlap of rotation, making a total rotation of 450°. This is certainly a lot handier and quicker than swinging the beam back and forth through entire rotations.

There is a speed control which governs the speed of rotation. While the unit features auto slow start and stop mechanisms for faster rotation speed, it's always wise to remember the amount of mass you are trying to turn and stop—especially stop. Granted, a rotor of this magnitude can support a lot of weight (661 lbs. maximum vertical load). It's also fair to say that there are probably a number of rotors out there which can support a lot of weight and still turn an antenna. The big difference, however, and the difference that makes it all worthwhile, is the ability to stop this turning mass of metal smoothly, quietly, surely, and most important, effortlessly, each and every time. It has to do with the concept of moment about a force, and if I could explain it clearly, I would have done much better at engineering mechanics at school and become an engineer. Trust me, though, stopping is usually more important than starting, and the engineers at Yaesu excelled at mechanics.

The G-2800SDX is designed for large single or stacked beams, presenting up to 32 ft<sup>2</sup> of wind load, which includes the wind surface area of the supporting mast. The other important figure to know is the K-factor, which is described as the product of the turning radius and weight of each beam in the array, measured in foot/pounds. The total for this rotor should not exceed 6,870 ft.-lbs.

Rotation direction is governed by a seesaw-type switch located at the bottom right of the control box. Pushing the left side makes the antenna go CCW, and pushing the right side makes it go CW. There is a preset control and switch. The control has an angular scale around it and can be set for any azimuth. Push the switch and the rotor turns to the preset heading. You can override this control simply by pressing the left/right switch. That's it. Nothing else but turning it on and off.

One last suggestion, though, and a point to keep in mind. Since this rotor features a 90° overlap for a total rotation of 450°, leave an extra long drip-loop with enough slack to accommodate that amount of travel. The last thing anyone needs is to have the coax wrap around the mast and rip away from the antenna.

The G-2800SDX is a product of Yaesu USA, 17210 Edwards Rd., Cerritos, CA 90703. It has an amateur net price of \$1329.00.

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## 8Q7AA

# The Central Arizona DX Association DXpedition to the Republic of Maldives

BY WARREN HILL\*, K7WX, AND DARRYL HAZELGREN\*\*, AF7O

Our journey to the Indian Ocean began one evening over dinner at an Indian restaurant. Andy Stafford, G4VPM, and Roger Western, G3SXW, had stopped in Phoenix to visit with their many friends in the Central Arizona DX Association, on their way to the Fresno DX Convention. Andy enchanted us with the story of his recent trip to the Republic of Maldives, operating as 8Q7AS. Over curried cauliflower and boiled potatoes, we learned of a real-life island paradise, complete with warm, friendly people, azure blue skies, and soft tropical breezes. It all sounded very beautiful, but mostly far away, and like some imaginary location that none of us would ever see.

Several months later, a large book on the Republic of Maldives arrived from England. It had been sent by G4VPM, with instructions to look it over and seriously consider a "trip to paradise." Leafing through the pages, one was instantly struck by the fact that this location is exactly as described by Andy. It is not clear just when and how the decision was made to operate from 8Q7; but before long that we were making plans to travel half way around the world to operate from an island nation which just six months earlier was known to us only by its DXCC listing.

### Republic of Maldives

The Republic of Maldives is a narrow archipelago consisting of 1190 coral

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The 8Q7AA DXpedition team (left to right): Oscar Resto, KP4RF; Warren Hill, K7WX; Steve Thompson, N7TX; Dan Brown, NA7DB; Sally Brown-Martinez, KM5EP; Paul Playford, W8AEF; Darryl Hazelgren, AF7O; Rich Chatelain, K7ZV; and Bruce Sawyer, N6NT.

islands clustered into 26 atoll groups. This cluster of islands is located at the junction of the Indian Ocean and the Arabian Sea, 300 miles off the southwest tip of India. Together, these islands form a nearly vertical chain 475 miles long, ranging from just below the equator to eight degrees north. The atolls are renowned for spectacular scuba diving and are considered by many to be some of the most beautiful islands in the world.

For our operation site we chose Alimatha Island in the Vaavu Atoll. At 3° 38' N

and 73° 30' E, this location is approximately 9750 miles west of Los Angeles and has the IOTA designation AS-013. Some of the other islands in the Vaavu atoll are Rakeedhu, Bodumohora, Hingakulhi, Keadhu, Felidu, Tinadhu, Dhiggiri, Kunavashi, Fussaru, and Fotteo. Only a few are inhabited, and most are less than 300 meters across.

### The 8Q7AA team

The 8Q7AA team was a diverse group, representing many different skills. Oscar

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- Bill Sawders, K7ZM

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- Howard Eskridge, K9GYI

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- Paul Helbert, WV3J

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- Alfred Lorona, W6WQC

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- Jay Ostrem, W7CW

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*"How is it? In a word...AMAZING!"* - David Hammond, N1LQ

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Resto, KP4RF, President of the Puerto Rico DX Club, would serve as our bilingual SSB operator, making sure that no one in Latin America would be forgotten. This was to be the third major DXpedition for Sally Brown-Martínez, KM5EP, a dedicated and skilled SSB operator. Her popularity as a YL op would be the same this time as it was during our 1996 Myanmar operation XZ1N. Paul Playford, W8AEF, just recently returned from a CQ WW SSB DX Contest operation in the South Pacific, would handle the complexities of 40 meter SSB. As he did for the XZ1N operation, Rich Chatelain, K7ZV, would be our main 75 meter SSB operator and would custom make several of our vertical antennas. Dan Brown, NA7DB, who coordinated the SSB operators for the Myanmar operation, would do the same for 8Q7AA, and was handling our travel arrangements.

Bruce Sawyer, N6NT, would focus his considerable CW talents on 160 meters, with special attention being paid to North America. Darryl Hazelgren, AF7O, had only recently returned from the 1997 VK9WM Willis Island operation and was equally comfortable with both SSB and CW. On this, his first DXpedition, Steve Thompson, N7TX, would rapidly gain experience as one of our main CW operators, and would originate our web site and serve as the DXpedition QSL manager. Warren Hill, K7WX, would lead the operation and coordinate the efforts of the CW operators.

Although not able to join us, Andy Stafford, G4VPM/8Q7AS, would act as our liaison with the Maldivian government and arrange the many details of licensure through our host, Ibrahim Ahmed, 8Q7QC, currently one of only two regularly active Maldivian amateur radio operators. Dick Wolf, N6FF would act as our North America pilot station, providing us with daily feedback and posting our observations to the Internet DX Reflector. Robert Brown, NM7M, our propagation guru, would remain at home in the state of Washington and guide us through the complexities of working into the other side of the world on the low bands.

### Operating Plan

Although several single-operator "holiday style" DXpeditions had taken place from the Maldives over the course of the past few years, we were well aware that zone 22 remained in great demand for much of North America. We were also told by many that a large-scale operation from the Indian Ocean would be very well received throughout the world. A chance meeting with propagation expert Bob Brown, NM7M, early into planning would greatly sharpen our focus. Based on his recommendations, we scheduled our trip during the peak of the low band season to concentrate on 160 and 80 meters. We timed

# 8Q7AA



Alimatha Island, Vaavu Atoll, Indian Ocean  
REPUBLIC OF MALDIVES

*The 8Q7AA Maldives operation QSL.*

our arrival on January 19th to coincide with the 1998 CQ 160 Meter CW DX Contest, which took place the following weekend. It wasn't until we were actually on the air that the solid foundation behind this careful planning became obvious to us.

### Arrival at Malé

After a 19-hour journey to Singapore from Los Angeles, a 10-hour layover, and another 5-hour trip to Malé, we arrived at the Hulule Airport (little more than an island runway) just after midnight on the morn-

ing of January 18th. After clearing customs, expedited by our host, Ibrahim Ahmed, 8Q7QC, we loaded more than half a ton of equipment and baggage onto several dhonies (pronounced "dough-knees"), the ubiquitous form of Maldivian transport, for the short trip to Malé harbor. These oddly shaped boats are a way of life in the Maldives, serving as car, bus, truck, taxi, and everything else for this small island nation.

Our first ride in a heavily laden dhonie in the dark, early morning hours was a unique experience. Long and narrow,



*Operating site of the 8Q7AA DXpedition looking north towards India and Pakistan.*

without any lighting, they have a shallow draft, causing them to rock and roll with the waves, allowing the elements to reach passengers and cargo without impediment. Although it seemed farther, the capital city of Malé was only a half-mile boat trip west to the capital island of Malé, along the southern edge of the Kaaf atoll.

We rested for just a few hours in small hotel with spartan, but comfortable accommodations. The staff was eager to please and furnished us with a nice breakfast of juice, coffee, and toast. Later that morning we transported our equipment back to Malé harbor for another boat ride across the Fudidu Channel, south to Alimatha Island.

### Alimatha Island

We spent much of our first morning in the Maldives huddled in the shade of a small building on the dock waiting for our ride. It seems the boat originally chartered refused to take us once they saw all our equipment. The situation was eventually resolved by hiring two different boats and splitting up the considerable load between the two.

The two-hour ride was pleasant, and we were totally unprepared for the breathtaking beauty presented to us upon our arrival. Alimatha is one of many postage-stamp-size islands that make up the Vaavu atoll. Surrounded by deep, dark-blue ocean, this island has its own coral reef, which protects a small lagoon filled with clear, warm water teeming with every imaginable variety of tropical fish. Striking white sandy beaches ring the island and give way to lush flora dominated by 50 foot tall coconut palms. Warm temperatures, light breezes, clear blue skies, and brilliant white clouds complete the picture. Sound too good to be true? A personal visit would confirm this description. The 8Q7AA team had arrived in paradise.

We were greeted at the pier by Abdulla, an attentive English-speaking member of the resort staff. He took us to the disco/bar where we were given a much-welcomed cool drink. We learned that there were a total of 90 rooms in 30 separate bungalows on the island, all of which were distributed around its perimeter. Each room had a front entry door opening to the center of the island. The entryway was a small hall/closet area from which opened a nice-size bathroom with very large shower. The main room featured a double bed, nice desk, and a sitting area with a small table with two chairs. A sliding door opened onto a wooden deck looking directly into the Indian Ocean. From the deck it was only a few steps to the water's edge. Each room was air conditioned and had a ceiling fan. What luxury! And a welcome relief from the heat and high humidity that made any mid-day activity quite difficult.

All meals were taken in the main hall at scheduled times and were served as a buffet. Since an Italian company manages the resort, the food was mainly European in style and always excellent, with plentiful pasta at both lunch and dinner. Aside from a vague feeling of sameness after a week's time, the fruits, vegetables, soups, and pastries were about what you would find at any first-class European hotel.

Wine was included with all meals, but it soon became apparent that the only item not included in our group package was bottled water. And this was the only drinking water available! At four dollars a bot-

tle, we quickly understood how the cost of our sumptuous meals was covered. At just a few degrees above the equator, one could easily drink six or eight liters of bottled water per day. However, in a manner for which he has become well known, NA7DB later negotiated a deal with the resort management in which bottled water was included with all our meals.

### Setting Up and Operating

We quickly discovered that Alimatha Island is only 240 meters long and 280 meters wide. With the resort buildings occu-

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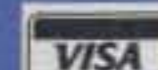
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## The Maldives—A Brief Overview

**Maldives:** Indian Ocean, Asia, CQ Zone 22. Approximately 1,190 islands, of which 202 are inhabited. Population: 255,000. Main island is Malé, which has an area of less than three square miles. Almost all Maldivians are Sunni Muslims and adherence to Islam is required for citizenship.

**Our Location:** Alimatha Island, 240 × 280 meters in size, with the highest point being on 2 feet above sea level. Located at 3° 38' N, 73° 30' E and approximately 9,740 miles from Los Angeles. This small island is part of the Vaavu Atoll and a two hour boat ride south from the capital island of Malé. All of the coral atolls in the Republic of Maldives have the IOTA designation AS-013.

**Local Time:** GMT + 5 hours. 8:00 PM Sunday in Los Angeles = 9:00 AM Monday in Malé.

**Languages:** Dhivehi, English, and Arabic. The Dhivehi language has its own distinctive Thaana script, which consists of 24 letters and is written from right to left. Although reading and writing would be difficult for any visitor, any attempt at speaking even the most simple phrase in Dhivehi was greeted with warm smiles from the all the Maldivians we met.

**Government:** A sultanate until 1958, it is now a republic with executive, legislative, and judicial branches. The current president, Mr. Maumoon Abdul Gayoom, is quite popular and stands for election every five years. From every perspective, the current government is stable.

**Climate:** Tropical monsoon. The rainy season is generally from May through October. Average rainfall ranges from between 100 and 150 inches, with year-round temperatures from 75 to 88°F. Because the Maldives are near the equator, there are constantly shifting air currents, which form surprisingly predictable weather patterns. The Maldivians have divided the year into 27 two-week long seasons known locally as *nakai*.

**Currency:** The Maldivian Rufiyaa. Approximately 11.72 Rufiyaa = US\$1. There are 100 Laari to each Rufiyaa. Dollars are readily accepted. In spite of the recent devaluation of several major Asian currencies, the value of the Rufiyaa has remained constant for many years.

**Power:** 220 to 240 volts/50 cycles.

**Visa:** Not required for United States citizens.

**Diseases:** Current immunity to hepatitis and typhoid are recommended. Consult your physician, or the CDC in Atlanta, for recommendations. Malaria has been absent since 1982.

**License:** Granted by the Ministry of Transport and Communications. Reciprocal licensure is available with most countries. The temporary importation of equipment is usually not a problem.

pying most of this area, there wasn't much room, and our options for setting up antennas were quite limited.

Before our departure, it had been agreed by our tour company that we were to be given a space in which to set up our four stations and ten antennas. Unfortunately, the resort management was not made aware of this arrangement. It took several hours of negotiation, faxes, and phone calls back to Malé before this could be straightened out. Finally, we were provided two rooms at a reduced rate, located at the northeastern tip of the island. This arrangement was perfect for our purposes, as we would be far away from the daily activities of the resort and have an unobstructed path north that would work well for either long path or short path.

The staff moved beds and other furniture out of each room and brought in extra desks for operating positions. Not a surprise, we had to have the resort electrician change out some of the plugs and increase the circuits to give us enough power to simultaneously run four stations, each with an FT-1000MP and an Alpha amplifier. Even with the increased circuits we experienced power outages numer-

ous times. G4VPM sent over a collection of UK-style plugs, allowing us to make up power strips that could plug into local Maldivian 240 mains. In this way all the rigs that ran on 240 volts could still use their American-style plugs. We just had to be sure to label our equipment with the correct operating voltages.

Several sets of Dunestar filters and coaxial stubs were provided at all operating positions, allowing more than 40 dB of inter-station isolation. All of the CW operators brought their own special keyers and paddles. A laptop for computer logging rounded out the necessary equipment on each station.

We were saddened to discover that two of the FT-1000MPs had sustained substantial damage during transit. One transceiver had its coaxial connectors severely bent. The second transceiver had no apparent damage but simply was not operational. After disassembly by W8AEF and KP4RF, it was discovered that the main control circuit board was badly cracked. Paul and Oscar worked miracles to get both of these radios working perfectly. After years in the solid state physics laboratory of the University of Puerto Rico,

it was no surprise that KP4RF was able to meticulously jumper all the broken PC board traces using a microsurgical technique that would make any neurosurgeon proud. After several evenings, he was able to restore an otherwise DOA radio to perfect working order.

## Antennas

We spent the first afternoon on Alimatha Island installing antennas. First up was an R5 vertical, which N6NT put up by his room. He got on the air immediately with his backup radio, an ICOM 706, and started handing out contacts on 17 meters. This antenna was later moved north with the other antennas and performed beyond our wildest expectations.

K7ZV built and quickly erected his custom 40 and 30 meter verticals. These also turned out to be our star performers. Forty meters would become one of our most productive bands, and 30 meters was definitely a favorite of the CW operators. Added to these were Gladiator TL verticals for 80 and 160 meters. All verticals were erected at water's edge and with elevated radials.

The next morning we put up two Force 12 C3 Yagis, one on a submerged coral jetty and the other on a small hill above the beach. These were positioned so that they could quickly be turned to either long path or short path. We had also brought two-element Yagis for both 30 and 40 meters, but after experiencing the outstanding performance of the verticals on all bands, these antennas never even came out of their boxes.

An obvious lesson from all of this was that verticals with elevated radials, placed near the water, work like magic! To our great amazement, the little R5 vertical outperformed the Force-12 Yagis hands down on 20 meters. Next time we go to a small island, we will take only verticals.

## Operating from the Indian Ocean

Instead of a rigid operating schedule, it was worked out among ourselves each day how we would man the stations. We had five operators on phone: Paul, Rich, Dan, Oscar, and Sally. The CW operators were Bruce, Warren, Steve, and Darryl.

Each day our pilot, N6FF, would review the many Internet e-mails he received regarding our operation and would fax a detailed summary to us. His faxes, along with daily propagation forecasts and operating schedules, were posted on the walls of the CW operating room. Each of us would read the faxes, review the propagation sheets, and determine the times we wanted to be on the air. We would then simply post our preference on the schedule and show up to operate. To be sure, this was not as high tech as some DX-

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peditions, but it was highly effective and avoided most conflicts, as we were all anxious to operate. It did not assure that all stations were on the air at all times. However, we did not forget that our main objective was to operate the low bands effectively and to work into North America. Arranging coverage during the sunrise and sunset terminator openings for North America was of major importance, and those times were always covered.

### 160 meters

Propagation for Top Band was to provide the biggest challenge. From the beginning, our stated objective was to have a meaningful presence on the lower frequencies and be available for North America and Europe. After consultation with our propagation advisor Bob Brown, NM7M, we made a pivotal decision which affected almost every aspect of the operation: to travel to the Indian Ocean in late January while propagation conditions were still favorable.

For North America, low band propagation to and from the Indian Ocean is over the polar regions. This makes the position of the auroral polar oval, and the sunrise or sunset terminators, very important.

From our position off the west coast of India, this meant that stations on the east coast of North America would have the best opportunity at working us. For much of Zone 5, the position of the auroral polar oval was not a factor. And when compared to the west and the midwest of North America, the path to the east coast was much shorter.

Local sunset in the Maldives on January 21st was at 13:14 UTC and local sunrise was at 01:25 UTC. For radio amateurs in some parts of North America, their sunrise/sunset and our sunset/sunrise coincided very closely. From our location, we shared many hours of darkness with the east coast at their sunset. For the west coast of North America, there was less than 30 minutes of shared darkness. An analysis of the log data shows that for a station in North America to successfully work 8Q7AA on 160-meters, that station had to have been in darkness for between 90 and 180 minutes. Unfortunately, this condition was never present for the west coast after their sunset.

For sunrise at North America, the east coast could not work us, as there were no periods of shared darkness. Our hopes were high for many west coast contacts, but this was not to be the case. At west coast sunrise, the position of the auroral polar oval was directly in the way of the short path to Zone 3. Also, when the data from the Meanook magnetometer was reviewed, it showed that for much of the time the K-index was high enough to be a factor in limiting propagation to the west



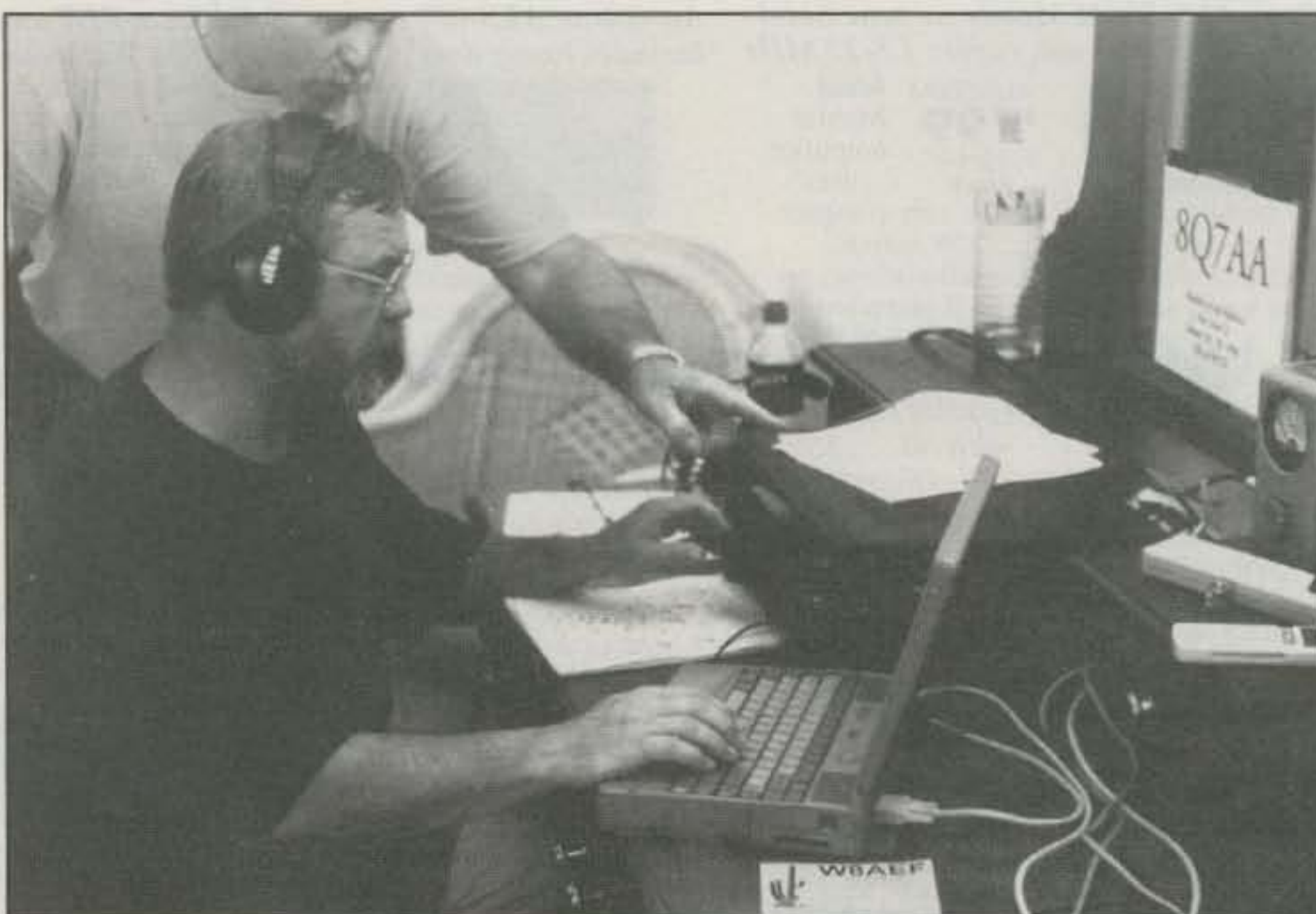
*One of the two Force-12 C-3 multiband Yagis used in the 8Q7AA DXpedition.*

coast. This was exactly the opposite for the east coast, where the Ottawa magnetometer showed mostly quiet magnetic activity for this region around local sunset for Zone 5. For these reasons, we were not able to work a single station in Zone 3 on 160 meters.

Our 160 meter specialist, Bruce Sawyer, N6NT, worked a total of 115 stations in North America. On one run alone, N6NT worked over 70 stations in Zone 5 on Top Band in just 60 minutes! For this outstanding performance if he's not kissed on both cheeks by the fellow in charge of the Top Band Reflector, the President of the FOC may knight him! For the reasons stated above, most of these stations were

from the east coast of North America, and approximately 90 minutes after their sunset. At sunrise for the west coast of North America, it was just too early in the evening from our location off the southwest tip of India to be effective.

Conditions in general for Top Band would be quite different from day to day. Propagation would vary from outstanding (contacts ranging from KH6, JA8, OH2, and YL2 in less than 60 minutes) to so bad that we had to check to see if our 160 meter vertical had been swept away by the tide! Unfortunately, for the weekend of the 160 Meter CW DX Contest, January 23-25, 1998, we had great difficulty being heard much of the



*Rich Chatelain, K7ZV, and Darryl Hazelgren, AF7O, operate 75 meter SSB.*





K7ZV and our host, Ibrahim Ahmed, 8Q7QC, discuss DX.

time and did not work as many stations as we would have liked.

**"Double-dipping" on 80 and 75**

On 75 meter SSB, Rich Chatelain, K7ZV, gave the same outstanding SSB

performance he gave from XZ1N during the Myanmar operation. During one simply amazing 14-hour opening, he worked hundreds of stations on both the east and west coasts of North America, along with a few hundred Europeans thrown in for good measure. Many now have Zone 22

on this band/mode because of his dedicated efforts night after night.

Unlike the 1997 Heard Island operation, there was no North America "dead zone" for us to worry about. For 8Q7AA, with our location near the equator, the terminator was working the right way. In fact, there were two openings each day for at least two thirds of North America—first, as the sunrise terminator swept westward and then again, when the sunset terminator came across.

Many stations took advantage of this situation, and our logs show many instances of "double-dipping"—that is, working 8Q7AA twice on the same band in a single day. The morning opening for the west coast on this band was a long one, while the afternoon opening was briefer, lasting only about a half-hour. An analysis of the logs shows that stations in California, Arizona, New Mexico, Texas, Alabama, Illinois, Iowa, and Montana were able to work us twice on 80 meters in a single day.

**40 meters**

This was our second best band with contacts closely divided between CW and SSB. Region 1 broadcast stations were typically strong, but we were able to effectively dodge them for most of the time. We made a special effort to work into W5 and W7, knowing that these areas would have

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## An Islamic Nation in the Indian Ocean The Maldivé Republic

The origins of the Maldivians are lost in history. Archaeological finds indicate that these islands were inhabited as early as 1500 BC, and there are tales of a legendary people called the Redin who may have been among the earliest of explorers. Attempts to investigate the beginnings of human settlement have been difficult. It is believed that permanent settlements were established in this area around 500 BC by Aryan immigrants from the Indian subcontinent and that the earliest Maldivians were probably Buddhists. In the 12th century, sailors from Arab countries arrived, at which time the Maldivians were converted from Buddhism to Islam. The ethnic origins of the Maldivé people are indeed quite broad, being a collection of Aryan, Dravidian, Arab, and Black African backgrounds.

The Maldivés has been independent for most of its history, although it was briefly ruled by Portugal during the mid-16th century. With the growth of British influence in the region, and the expansion of their empire, the Maldivés were a British protectorate for 76 years. In an unusual arrangement, the British ensured the defense of the islands, but were not involved in the day-to-day running of the country. This close relationship with the United Kingdom ensured complete freedom from foreign interference. During World War II, the British maintained forward military bases in the north and south, and in 1957, the RAF established an air base in Gan, which was closed in 1976.

A sultanate until 1958, the Maldivés became a fully independent nation in 1965, and a modern republic in 1968. To this day, it remains the smallest independent country in Asia. The Maldivés is presently divided into 19

administrative districts and a capital district of Malé. A local island chief, known as a katheeb, rules each of the 202 inhabited islands. Each of the 19 atolls are governed by an appointed atoll chief, known as the atholhu verin, along with his deputies, and an Islamic judge who applies the principles of the Islamic legal code, *shari'a*, to individual cases. All of the atolls which make up the Republic of Maldivés are governed by a single legislative body known as the Majlis, which nominates the president, who is in turn confirmed by a public referendum. The president is both the religious and political leader of the nation. Although the Republic of Maldivés has no constitutional allegiance to the Queen of England, in 1982 this small island nation became a member of the British Commonwealth.

Islam, the official religion in the Maldivés, is fundamental to all aspects of life in this country. In a unique way, the Maldivians have successfully combined the social values of Islam with their own distinctive traditions. The flag of the Maldivés bears the crescent, common to many nations with a Muslim majority. Our visit was during Ramadan, the ninth month of the Muslim year. This is a time of prayer and fasting during which time Muslims may not eat or drink from sunrise to sunset. For this reason, and the fact that devout Muslims must abstain from alcohol, the staff at many resorts which cater to European visitors are non-Muslims from Italy, Sri Lanka, and Bangladesh. In general, we found most Maldivians to be a modest and gentle people. And as would be expected of an entire population that closely adheres to the teachings of the *Qur'an*, all of the Sunni Muslims we met during our time in the Maldivés were kind, thoughtful, and generous.

the most difficulty both hearing and being heard. We are grateful to the many European and east coast North American stations that so very patiently stood by as we tried to make ourselves available to the midwest.

### 30 meters

AF7O, K7WX, and N7TX were busy on this band night after night and racked up thousands of CW QSOs. Our biggest problem was the lack of usable bandwidth, which forced us to manage pileups over the span of less than 5 kHz. It was during these nights that I think that we may have converted AF7O to being a CW-only operator. One would never have guessed this was N7TX's first DXpedition, as he performed like a seasoned CW veteran.

### 20 meters

Not a surprise, this band yielded the greatest number of contacts. KP4RF was able to work hundreds of Spanish-speaking South American and Caribbean stations simply using the R5 vertical. Right

on the water, this small antenna actually out-performed the Force-12 Yagis when pointed directly at Zones 9, 10, and 11. As accurately predicted by NM7M, each morning at our sunrise the long path opening into Zone 3 was astounding, with S9 signals for more than half an hour!

### 17 meters

This was a simply wonderful band for working into Europe from Zone 22. Many Zone 3 stations were worked as well.

### North America

As NM7M would explain to us, for the path to North America from the Maldivés, there appears to be a division along the 107° W meridian of longitude. Locations to the east of that longitude receive their signals coming down from high latitudes to the northeast, while stations to the west of that longitude receive their signals coming down from high latitudes to the north-west.

The 107° W meridian cuts through Montana, Wyoming, Colorado, and New Mexi-

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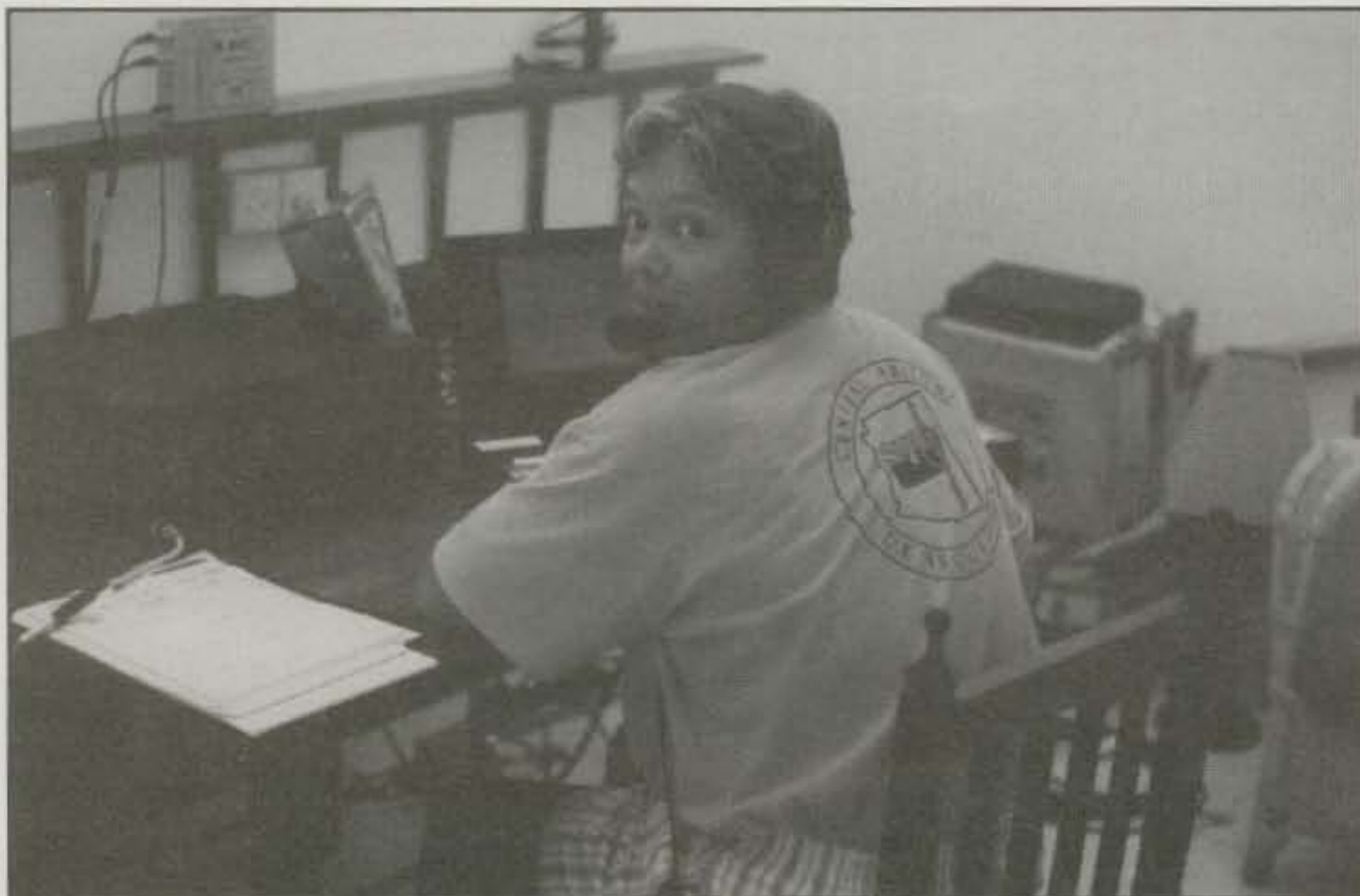
MODEL	CONT. AMP	ICS	SIZE (Inches)	WT.(LBS)
SS-10	7	10	2.3 x 6 x 9	3.2
SS-12	10	12	2.3 x 6 x 9	3.4
SS-18	15	18	2.3 x 6 x 9	3.6
SS-25	20	25	2 <sup>7</sup> / <sub>8</sub> x 7 x 9 <sup>3</sup> / <sub>8</sub>	4.2
SS-30	25	30	3 <sup>3</sup> / <sub>4</sub> x 7 x 9 <sup>5</sup> / <sub>8</sub>	5
SS-25M*	20	25	2 <sup>7</sup> / <sub>8</sub> x 7 x 9 <sup>3</sup> / <sub>8</sub>	4.2
SS-30M*	25	30	3 <sup>3</sup> / <sub>4</sub> x 7 x 9 <sup>5</sup> / <sub>8</sub>	5

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*Sall Brown-Martinez, KM5EP, operating SSB during the 8Q7AA operation.*

co and separates the one third of the USA to the west from the other two thirds to the east. For the bands where ionospheric absorption is a major consideration, such as 160, 80, and 40 meters, this means that the western one third of North America is open for contacts from sunset at the Maldives until local sunrise, as the terminator moves westward. To the east of the 107° meridian, those bands are open for contacts from their local sunset until sunrise at the Maldives. The openings to the eastern portion of North America were much longer than those to the western portion.

Some locations in the southern central region of North America suffered so much daylight along their paths as to make low-band contacts almost impossible.

### Europe

The path to Europe from the Maldives was relatively short and did not involve the polar regions. By comparison, the path to Helsinki was 7493 kms and to Los Angeles was 15,631 kms. For this reason, low-band contacts were plentiful. It is no surprise that Europe comprised 51% of

the total number of our QSOs. Seventeen meters was absolutely outstanding for Zones 14 and 15! For Europe in general, sunset terminator openings on 160, 80, and 40 meters proved the most useful. As with previous operations, just how much power some Italian stations may have actually been running was a frequent topic of speculation.

### Snorkeling

The main attraction of Alimatha is the water, and there is no question that the Maldives is among the best places in the world to enjoy it. The ladies spent a lot of time snorkeling. Janet Brown did a lot of scuba diving and Bruce did a little. The fish and coral were absolutely incredible. Midge Hazelgren said it was like diving into an aquarium at the doctor's office!

### Felidhoo Island

One of our most memorable times of the trip took place on our little excursion to Felidhoo, another of the many small islands in the Vaavu Atoll. Since the country is Muslim, the women and children are not normally out and about where we as tourists would encounter them, and there are none at the resorts. Each resort is staffed with young boys and older men who come to an island to live and work for as much as ten months at a time. So it was nice to be able to see the women and children and more familiar family life on this adjacent island.

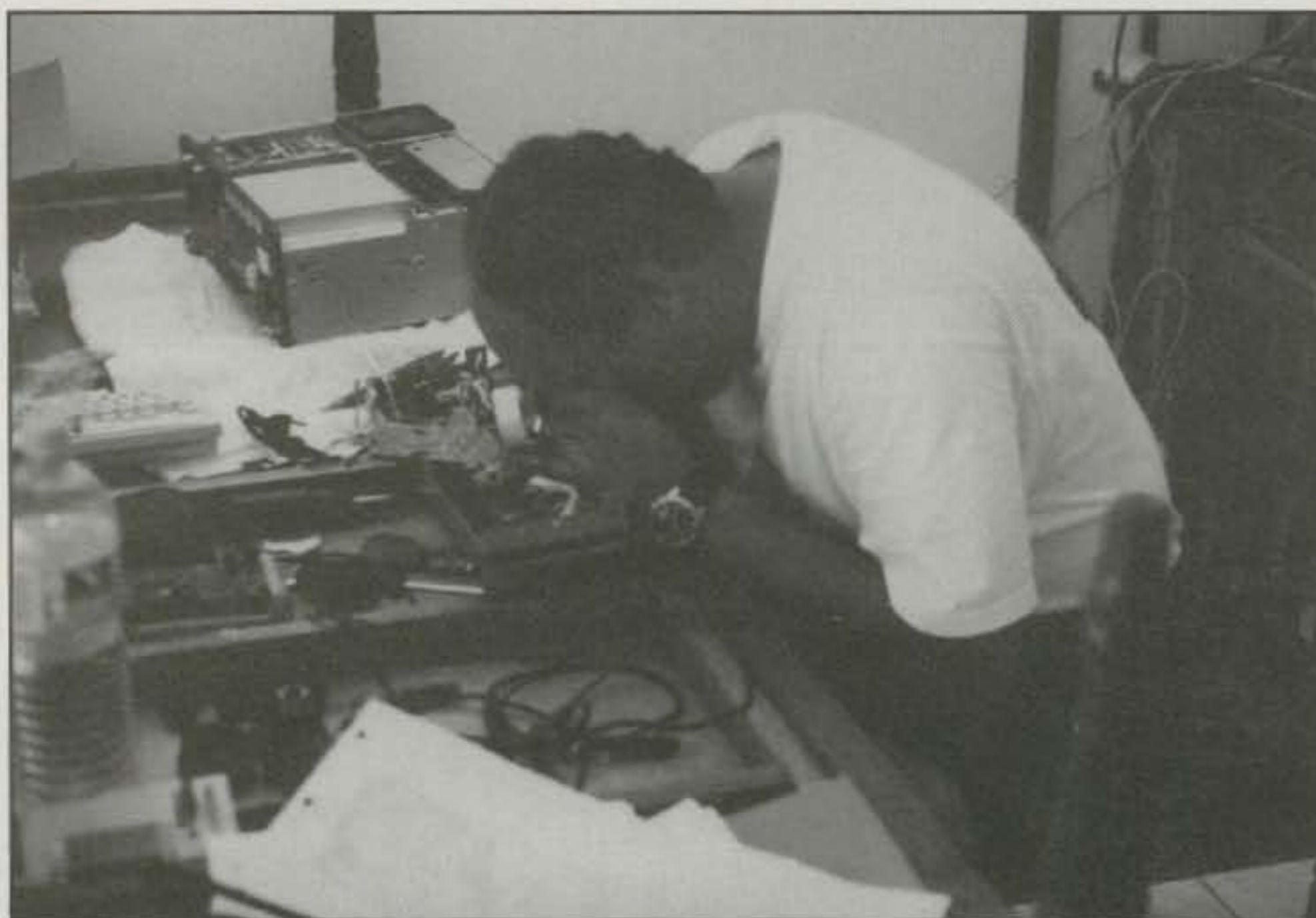
We spent an afternoon wandering around the small village and shopping in their small shops. The children were absolutely beautiful and we were able to take digital photos of many of them. They were shy and reserved, but immediately after taking a picture we would let them see themselves in the viewfinder and they were delighted. Smiles would come to those otherwise solemn faces and sparkles would dance in the previously averted and guarded eyes. We chose a shot of two of the lovely young girls to be used on the QSL card that over 12,000 lucky hams would receive.

### 8Q7DX

It was nice to meet Jan, 8Q7DX, and his wife Ingrid, who are a fine Danish couple living and working in Malé. Jan is in charge of the development of the local reverse-osmosis water system. They have been there for over two years and have another two or so remaining. Aside from Ibrahim Ahmed, 8Q7QC, Jan is presently the only other active ham in the Maldives.

### 8Q7QC CADXA Membership Dinner

The CADXA Board of Directors directed that an Honorary Membership plaque be



*Oscar Resto, KP4RF, was able to meticulously jumper all the broken PC board traces of a damaged FT-1000MP using a microsurgical technique that would make any neurosurgeon proud!*



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## 8Q7AA—QSOs By Continent

	160	80	40	30	20	17	15	12	10	Total	%
Europe	496	899	1,670	1,253	1,484	2,227	760	302	112	9,203	51
N. America	115	944	1,532	343	1,804	385	62	0	0	5,185	29
Asia	144	277	482	376	379	750	72	85	7	2,572	14
Africa	10	16	28	106	27	39	15	11	2	254	1
S. America	0	50	76	24	231	8	29	0	0	418	2
Oceania	19	71	38	132	82	108	12	10	0	472	3
<b>Total</b>	<b>784</b>	<b>2,257</b>	<b>3,826</b>	<b>2,234</b>	<b>4,007</b>	<b>3,517</b>	<b>950</b>	<b>19</b>	<b>121</b>	<b>18,104</b>	<b>100</b>

presented to Ibrahim Ahmed, 8Q7QC, at a dinner given in his honor one evening. Ibrahim is always very happy to meet and assist visiting amateurs. It was his chance meeting of G4VPM when Andy was in the islands, and Andy's contacts with CADXA, that sowed the seeds for the 8Q7AA DXpedition. Ibrahim was very instrumental in local organization for this DXpedition and also operated a bit while he was on Alimatha with us.

### Conclusion

By the time our last contact had been placed in the log on January 28th, most of us felt as though this had been the operating experience of a lifetime. Working into North America from half way around the world, and running thousands of contacts on the low bands, was a thrill difficult to describe. And with 38% of our contacts being on 160, 80, and 40 meters and 29% with North America, we felt as though we had lived up to our original promise. If there was any important lesson to be learned from such an operation, it was that careful planning in terms of propagation can make all the difference. The many important insights gained by working with Bob Brown, NM7M, will be useful to us for the rest of our radio amateur careers. Planning a DXpedition without first working through propagation predictions is much like going to sea with neither a chart nor a rudder.

### Special Thanks

The 8Q7AA team wishes to express their sincere appreciation to Abdullah Rashied, Director of Engineering for the Ministry of Transportation and Communications for his permission to conduct this operation. We are also deeply indebted to Ibrahim Ahmed, 8Q7QC, for his many efforts on our behalf, and Andy Stafford, G4VPM, who served as our liaison with the Maldivian government.

Very important to our success were Bob Brown, NM7M, who provided propagation expertise; Dick Wolf, N6FF, who worked tirelessly as our pilot station; Allen Baker, W5IZ, who generously sponsored one of our team members; and Steve Thompson, N7TX, our patient and devoted QSL manager who continues to sort through Internet and direct QSL requests.

We are also grateful to Alpha Power, Inc., who loaned us a 91-beta amplifier; Dunestar, who sent along their wonderful band-pass filters; Bob Myers, W1XT, of Gladiator Antennas, who provided us with the same 160 and 80 meter vertical antennas used on the VK0IR and the 9M0C operations; the NCDXF, which provided funds for QSL cards; and the staff of Singapore Air, who graciously transported our equipment from Los Angeles to Malé.

To those of you on "the other side" who gave us more than 18,000 contacts, we remain profoundly grateful for your patience and overwhelming interest. ■



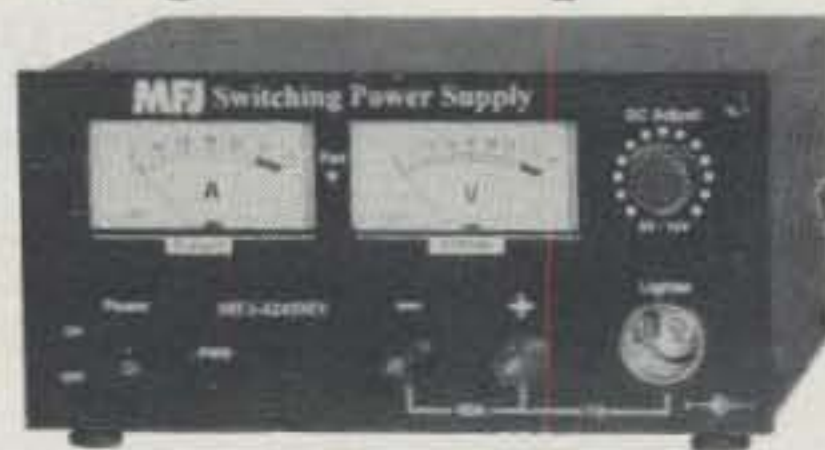
Dhonies, the ubiquitous form of Maldivian transport, shown here waiting for passengers in Melé harbor.

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Your MFJ-4035MV is protected by MFJ's famous No Matter What™ one year limited warranty. MFJ will repair or replace (at our option) your power supply for one full year.

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Power two HF/VHF transceivers and six or more accessories from your 12 VDC power supply

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\$69.95 Add s/h



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Heavy duty aluminum construction. 12 1/2" x 2 3/4" x 2 1/2" inches.

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MFJ-1112, \$29.95. Similar to MFJ-1116. No on/off switch, LED, meter, fuse.

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## An LM386 Audio Amplifier Replacement?

Once again it's that time of year when the old is running down and the new is waiting to be born. With that fact in mind, the old standby LM386 audio amplifier chip that we all have grown to know and love is being threatened by a new breed of devices, one of which we will describe this month.

The new amplifier is the Analog Devices (patented) SSM2211, a simple-to-implement chip that is intended for use in toys, intercoms, hands-free telephones, personal computers, etc., and that will deliver one full watt (rms) of output at less than 2% THD into an 8 ohm load with no heat sink at all! The chip is designed to operate from  $V_{cc}$  levels of 2.7 to 5.5 volts and will even work down to 1.75 volts before quitting. A shutdown mode input is also provided to conserve power when not actually amplifying, such as in transceivers or other push-to-talk applications. In normal operation the device itself (not the load) draws 9.5 milliamperes, which drops to 1.0 milliampere in shutdown mode.

Fig. 1 shows the internal operation of the chip, and fig. 2 shows a typical 1 watt amplifier using the SSM2211. Pins 4 and 3 are inverting terminals of internal op-amp A1, which is in turn connected to internal op-amp A2. The gain of op-amp A2 is set for  $-1$ , which results in an inverted replica of the signal at pin 5, the output of op-amp A1. This results in an overall gain of two times the ratio of the feedback resistors, and more important, no DC offsets between pin 5 and pin 6. Since the DC levels are the same, no coupling capacitor is needed between the chip and the speaker. As you can see from fig. 2, the amplifier does not require very much in the way of additional components. The only drawback is that in fig. 2 the speaker is floating. If a single-ended grounded speaker is desired, a simple rearrangement of the outputs and an additional capacitor are all that is needed. Fig. 3 shows this version.

The SSM2211 contains a shutdown, or "sleep," circuit that can be used to conserve power when not actually amplifying, such as in push-to-talk applications. Fig. 4 shows how to implement this circuit. As long as pin 1 is connected to ground, the amplifier will operate normally. Connecting this pin to  $V_{cc}$  will enable the shutdown mode. Circuitry can be devised to automatically disable the chip at the ap-

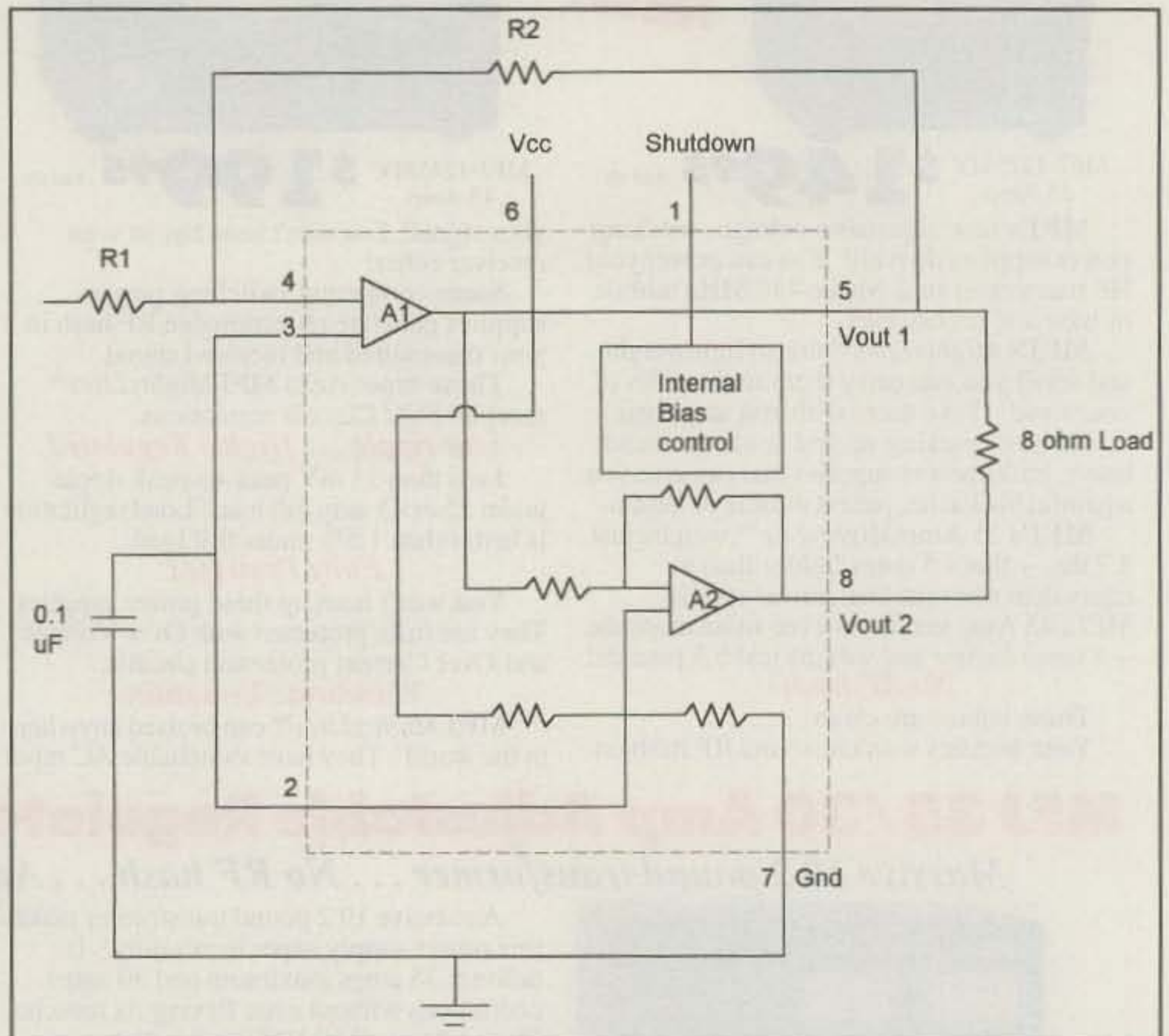


Fig. 1— International block diagram of the SSM2211 audio amplifier.

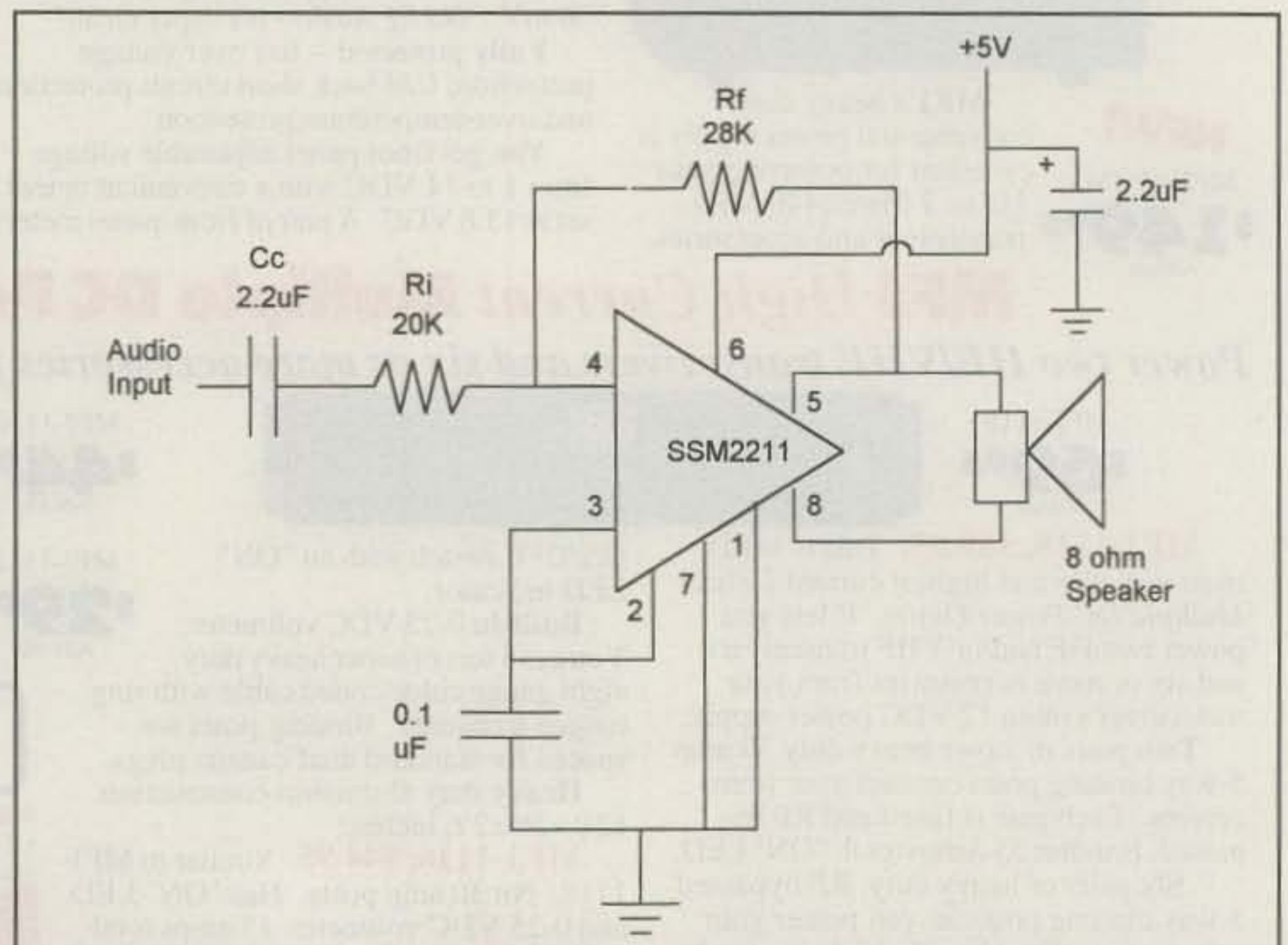


Fig. 2— Simple 1 watt audio amplifier using the SSM2211. Note that the overall gain is equal to  $2 \times R_f/R_i$  and the low frequency cutoff by  $C_c$ .

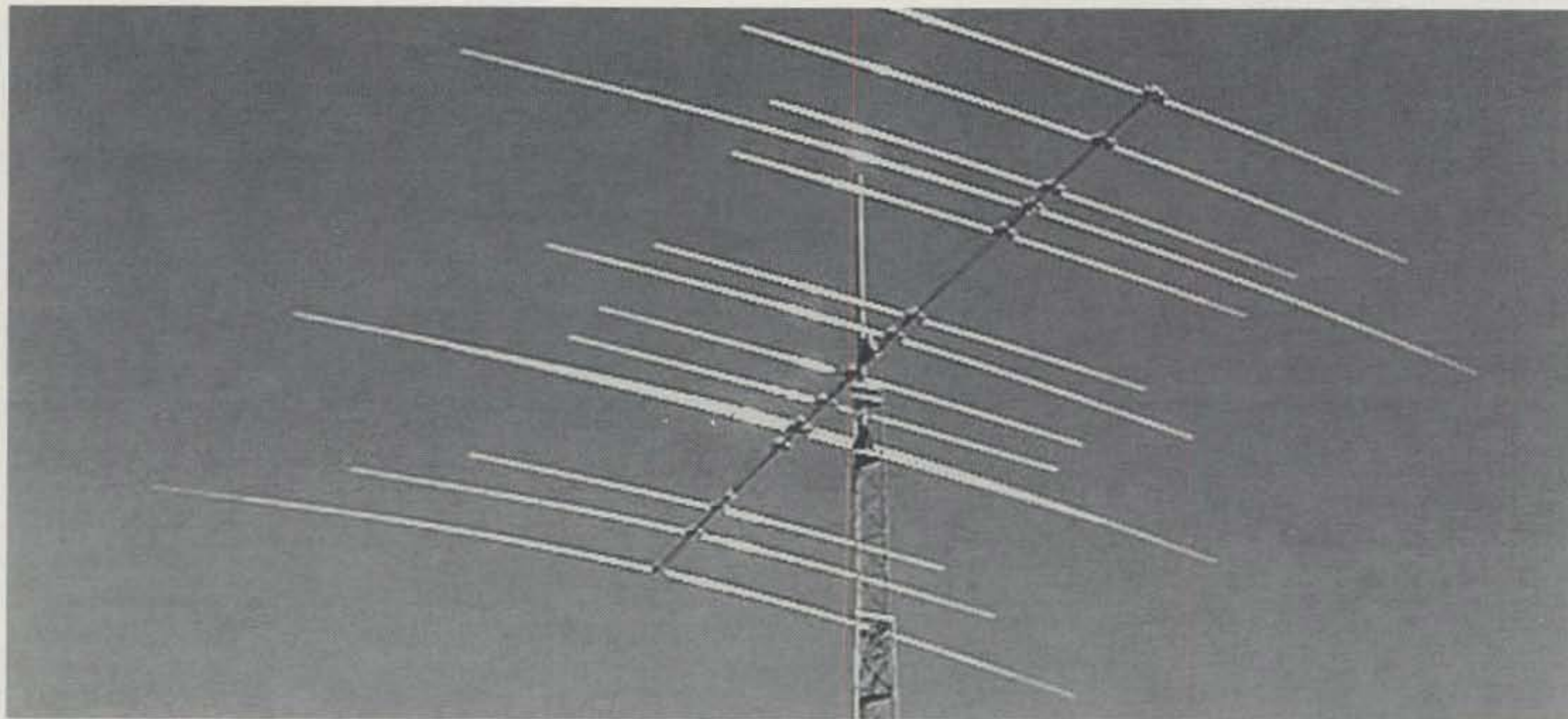
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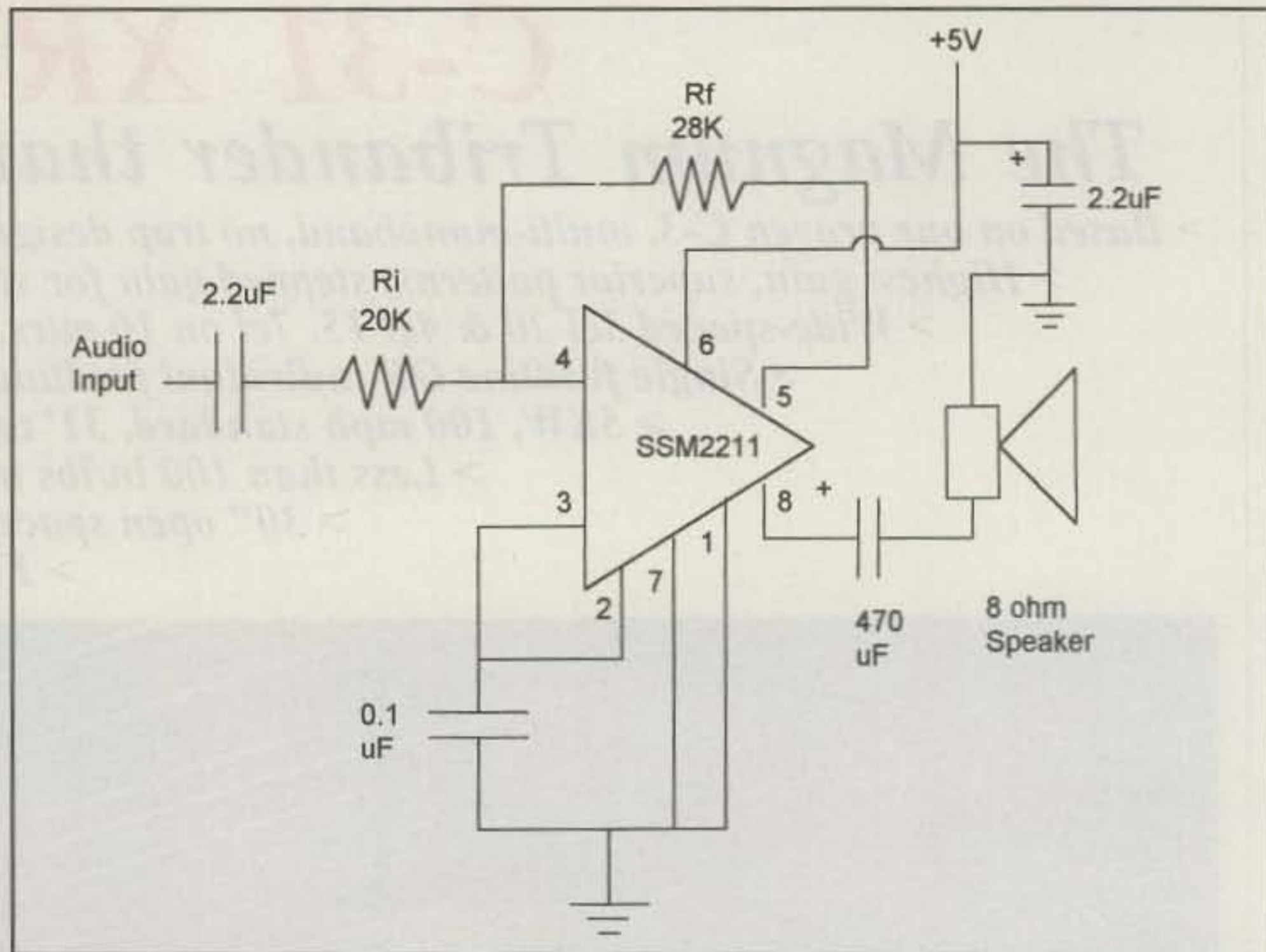


Fig. 3— Single-ended 1 watt audio amplifier using the SSM2211. Note that for this configuration the overall gain is equal to  $R_f/R_i$ .

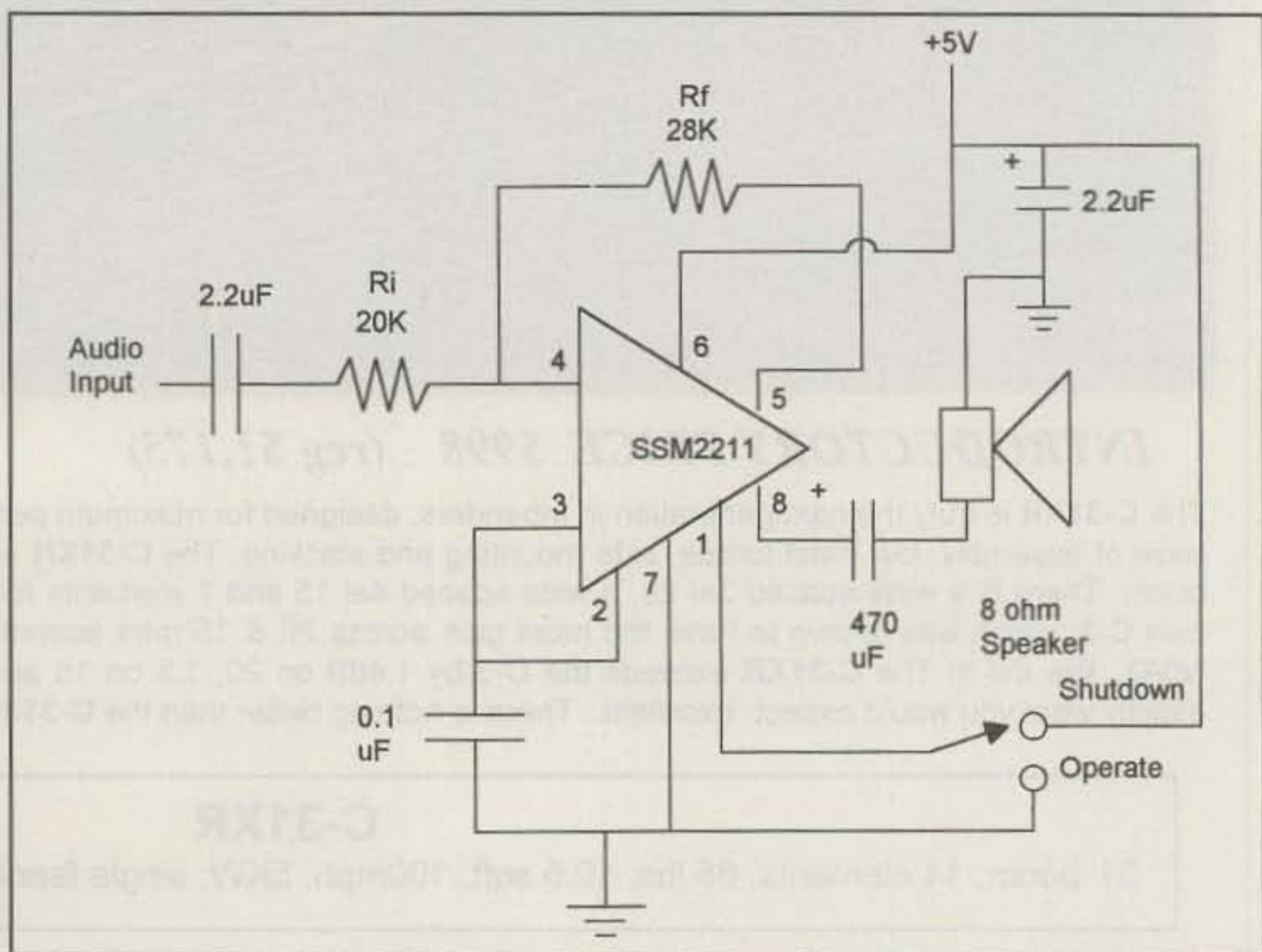


Fig. 4— Implementing the shutdown, or "sleep," mode.

appropriate time, thereby conserving the life of batteries in portable equipment. The data sheet for the chip shows one way to accomplish this.

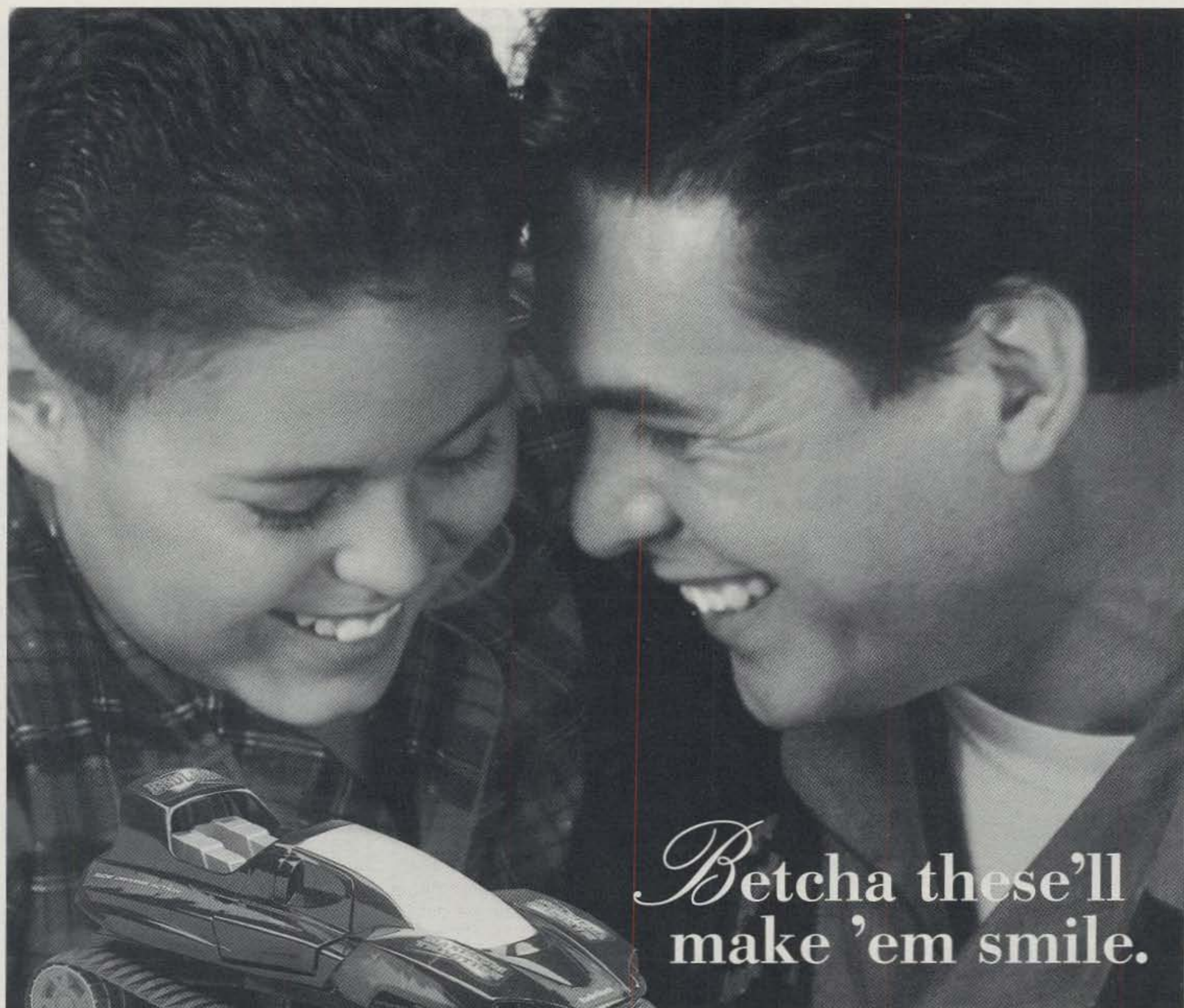
The SSM2211 can deliver one watt of continuous audio output into 8 ohms at ambient temperatures that can range from  $-20$  to  $+85^\circ\text{C}$  due to a propriety process developed by Analog Devices. Distortion is 0.2% at full output as already mentioned, but drops to 0.1% at 350 milliwatts. The chip is available in an 8 pin DIP and also in an 8 lead SOIC. Power output is the

same for the tiny package as well, and cost is only \$0.73 in 100 piece quantities and a buck or so for a few. Hard to beat, huh?

Full details and an elaborate data sheet for the SSM2211 are available from Analog Devices on the Internet at <http://www.analog.com>, or from them at P.O. Box 9106, Norwood, MA 02062-9106.

At this time I would like to wish all of my readers a very happy and healthy holiday season. May all of your wishes come true in the next year.

73, Irwin, WA2NDM



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CIRCLE 132 ON READER SERVICE CARD

# CQ SHOWCASE

## MFJ-259B SWR Analyzer

MFJ has added new features to its MFJ-259 SWR Analyzer, with a new designation, the 259B. Antenna SWR and complex impedance can be read from 1.8 to 170 MHz. The 259B has a built-in frequency counter, side-by-side SWR and complex impedance meters, and smooth reduction drive tuning. Set the bandswitch and tune the dial and SWR and complex impedance are displayed instantly.



The unit has eight new features: (1) complex impedance can be read as series resistance and reactance or as magnitude and phase; (2) velocity factor, coax cable loss in dB, length of coax, and distance to a short or open in feet can be determined; (3) SWR, return loss, and reflection coefficient at any frequency can be read simultaneously; (4) inductance in  $\mu\text{H}$  and capacitance in pF can be read at RF frequencies; (5) NiCad battery charger function is enabled with a jumper inside the unit; (6) battery saver function; (7) low battery warning; and (8) easy access battery panel.

The unit measures 4" x 2" x 6 $\frac{3}{4}$ " and is priced at \$249.95. An accessory package for the MFJ-259B includes the MFJ-29C carrying case, MFJ-66 dip meter adapter, MFJ-1315 100 VAC adapter. For a free instruction manual contact MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762 (1-800-647-1800; <<http://www.mfjenterprises.com>>), or circle 101 on the reader service card.

## Winter Edition 1999 Callbook

The winter edition of the 1999 Radio Amateur Callbook CD-ROM will be available the second week of November 1998. Included are over 1.490 million US and international listings, bearings and dis-

tance for US calls, single maps for each state in the US and new maps for each province of Canada, pinpoint of location of each US call retrieved, ability to print address directly onto an envelope, and search by prefix and/or district.

The CD-ROM is priced at \$49.95 (s&h \$5 within US, \$7 outside US). To order contact Radio Amateur Callbook, 1695 Oak St., Lakewood, NJ 08701 (1-888-905-2966 US only; 1-732-905-2961; fax 1-732-363-0338). For more information, circle number 102 on the reader service card.

## Antique Electronic Supply 1999 Catalog

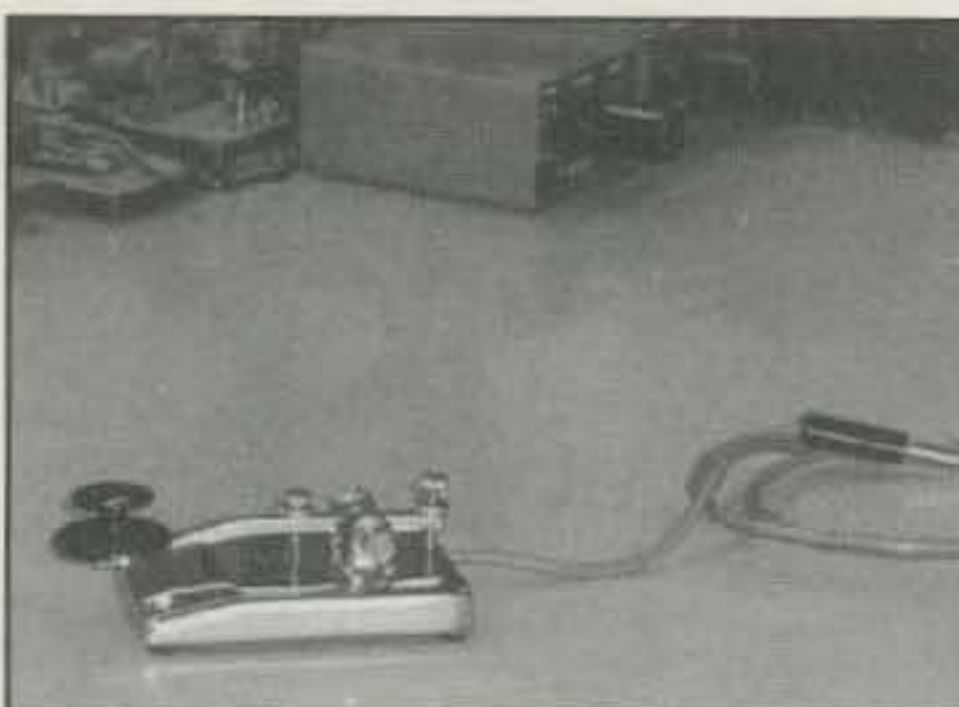
Antique Electronic Supply has announced their 1999 catalog. The catalog is 72 pages and features many new products, including books (one of which is the *Radio Designer's Handbook*), a line of Hammond classic 300 series power transformers, ferrite rods, inductor coils, a line of telegraph keys, and more. There are also product groups known as "Screamin' Deals."

Antique Electronic Supply offers a diverse line of products for all types of tube gear. The catalog is mailed to all active and new customers automatically. To request a copy, contact them at 6221 South Maple Ave., Tempe, AZ 85283 (phone 602-820-5411; fax 602-820-4643, <[info@tubesandmore.com](mailto:info@tubesandmore.com)>) or circle number 103 on the reader service card.

## New Nye Straight Key

A new straight key from Wm. M. Nye Company, the first new product from Nye since the late 1970s, has been introduced. The Model 330C is a deluxe version of Nye's classic Master Key, with a highly polished chrome base, nickel-plated hardware, and Navy Knob. The Model 330C has gold-plated hard silver contacts which are electrically isolated from the rest of the key, and is supplied with cord and  $\frac{1}{4}$  in. phone plug. The key weighs 1 $\frac{1}{2}$  lbs. Each 330C has a serial number stamped in the base.

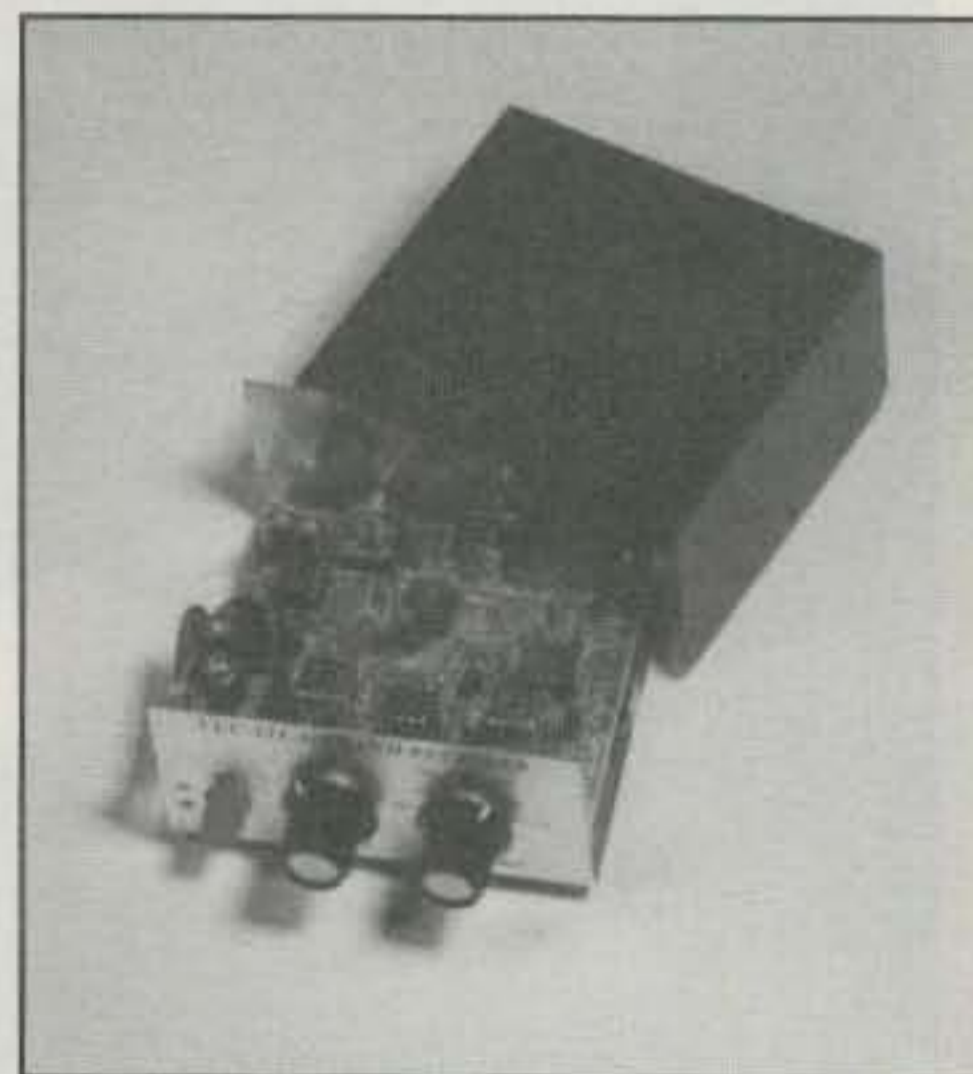
The Model 330C is priced at \$139.00. For more information, contact Wm. M.



Nye Company Inc., P.O. Box 1877, Priest River, ID 83856 (phone 208-448-1762; fax 208-448-1832; <<http://www.skyport.com/rogue-press/nye1.htm>>), or circle number 104 on the reader service card.

## Vectronics Kit Line

Vectronics has announced the availability of over 30 electronic kits in their new line. The line includes kits from shortwave converters, to aircraft receivers, to amateur radio kits, to crystal radio kits. Each kit features a professional-quality epoxy glass PC board with solder mask and screen-printed components legend and high-quality components. Each kit also includes a detailed, easy-to-follow manual which features illustrations, specific instructions, and a schematic, plus how to use your equipment.



Vectronics also offers an optional custom cabinet for most kits, which includes a metal box, knobs, hardware, decals, and protective rubber feet. For more information, contact Vectronics, 1007 Hwy. 25 S., Starkville, MS 39759 (phone 601-323-5800; fax 601-323-6551; on the web <<http://www.vectronics.com>>), or circle number 105 on the reader service card.

## World Watch™ for Windows™ From Express Technologies

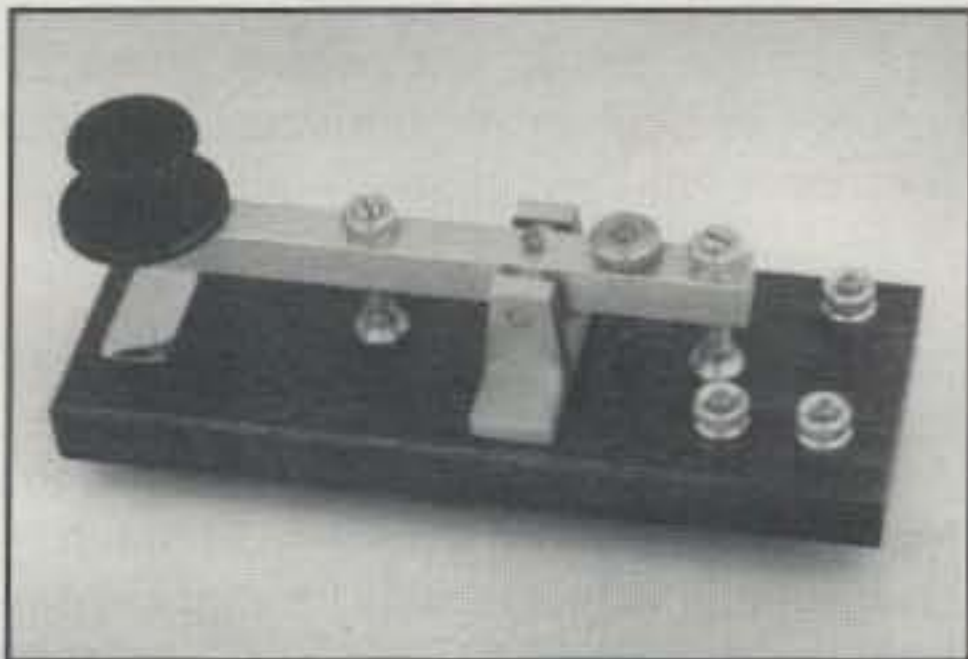
World Watch™ for Microsoft® Windows™ serves as an international timepiece which displays real time for locations around the world. One of its main features is the Night/Day Bell Curve, which shows when and where it is daylight and darkness. The user can see the time for locations he or she creates or selects from over 475 predefined cities. The illuminated pattern on the map delineates those areas of the world that are currently experiencing daylight. The pattern highlights the progress of the seasons and

displays sunrises and sunsets as they happen. Individual digital clocks display local times and update continuously. Global daylight savings time adjusts automatically. User has control of clock and map size, color, and display position.

For Windows 3.1x a 386X or higher microprocessor, 2MB memory, and 2MB hard disk space are required; for Windows 95/NT a 486DX or higher microprocessor and 2MB hard disk space are required. Supports all Windows Video Systems. World Watch™ is priced at \$42.95. For more info, contact Express Technologies Corp., 3753 Howard Hughes Pkwy., #200, Las Vegas, NV 89109 (phone 920-337-1640; fax 920-337-1643; <www.exptech.com>; <info@exptech.com>), or circle number 106 on the reader service card.

### Titanic Key Replica From Alpha Delta

The Model TK-1 is a full-scale working replica of the Titanic Morse code key. Robert Kent of Kent Engineers in England did research on the code key that was used on the Titanic and has produced a machined brass working replica of that key. Each key has a serial number and matching certificate telling of the event. Each is individually signed by Kent for authenticity.



The keys are priced at \$149.95 each plus s&h and are available through Alpha Delta Communications, P.O. Box 620, Manchester, KY 40962 (888-302-8777; fax 606-598-4413), or for more information circle number 107 on the reader service card.

### Nemal Acquires Coaxial Connectors Inc.

Nemal Electronics International Inc. has acquired the assets of Coaxial Connectors Inc. and has integrated the operation into Nemal's North Miami facility. Coaxial Connectors designs and manufactures specialty RF and microwave connectors, adapters, and components. Nemal is a manufacturer and distributor of RF connectors, electronic cable, and cable assemblies.

For additional information, contact Nemal Electronics at phone 800-522-2253; fax 305-895-8178; e-mail <info@nemal.com>; web: <www.nemal.com>.

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HARRY SNYDER W7HC, Quarter Century Wireless Magazine

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STEVEN L. WEINSTEIN, K2WE

a Navy Radioman. I like the radio so much, that my Kenwood TS940SAT is for sale."

WARD TRAMMELL, WA5RD

"We noted extremely low composite (phase) noise - approximately 10 dB lower across the 2 to 22 kHz range than many radios we have tested recently."

QST MAGAZINE

"The 505DSP, in case you haven't heard, is the first big step in the next generation of HF rigs. It not only incorporates Digital Signal Processing technology that meets or surpasses anything available today for ham equipment, but also provides front-end control of the transceiver via a computer-based software interface." RICHARD LUBASH, N1VXW, FOR 73 MAGAZINE

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# THE DIGITAL DIPOLE

FROM SOFTWARE THROUGH ANTENNAS FOR THE SHACK

## Season's Greetings '98

Okay, so we'd better say it now, before we forget: To all our readers, the best of Season's Greetings! That having been said, in this final holiday month of 1998 we'll continue with our customary formula of antenna, software, and book notes. We'll begin where we should, with antennas. Stay with us.

### Antenna Notes

**RF Inquiry CF Series Hi-Q Common-Mode Filters.** According to Tom O'Boyle, N9GUN, OB Communications president, the company is the exclusive North American dealer for the RF Inquiry, Inc. CF Series Hi-Q Common-Mode™ filters for interference reduction and elimination. The filters are built by RF Inquiry in Japan.

RFI is composed of so-called "Normal-Mode" and "Common-Mode" noise. We won't get into the technical details of this distinction at this point, but suffice it to say that most conventional RFI filtering is based on efforts to suppress Normal-Mode RFI problems. Recently, radio transmitter technology has improved, and thus leaks of Normal-Mode noise have decreased. However, countermeasures for Common-Mode noise (signals) have hardly improved, and conventional low-pass filters don't eliminate Common-Mode noise; they expect to attenuate Normal-Mode signals.

Common-Mode noise or signals are radiated by all lines connected to the transmitter, but the coax produces the largest amount of radiation. The classic method to eliminate Common-Mode noise is to effectively increase the impedance of the transmission line against Common-Mode noise. This may be done by winding the coax like a coil or using a ferrite core to act like a choke. However, making adjustments is difficult, especially at VHF.

The CF filters eliminate Common-Mode noise, operating over the range 1.8 MHz to 70 MHz. They also may be used in tandem with conventional, Normal-Mode lowpass filters to further reduce RFI.

OB Communications offers the Model CF250E/CF5KV filters (see photo) in four different configurations, with power handling capacity ranging from 250 watts to 5 kW, and with a choice of UHF or N connectors. Prices range from \$99 to \$139,



*The CF Series Hi-Q Common-Mode Filters are designed to eliminate Common-Mode noise, operating over the range 1.8 MHz to 70 MHz. They also may be used in tandem with conventional lowpass filters to reduce or eliminate RFI. OB Communications offers the Model CF250E/CF5KV filters in four configurations, with power capacity ranging from 250 watts to 5 kW, and with a choice of UHF or N connectors. (Photo courtesy OB Communications)*

depending on power and connector type. UPS shipping is \$6 per unit.

Contact OB Communications, 1112 Bourne Lane, Suite 101, Schaumburg, IL 60193 (phone 1-888-301-8198; e-mail: <teoboyle@uss.net>).

**Rocky Mountain Antennas JP-2M Dual-Band Mobile J-Pole.** Rocky Mountain Antennas offers a broad line of single- and dual-band VHF/UHF J-pole antennas. These cover the 138–148, 144–148, 430–450, 213–225, and 425–450 MHz ranges, and they are priced from \$34.95 to \$69.95, depending on the configuration. All antennas are constructed using high grade, 3/16 inch stainless spring steel.

The antennas incorporate a long-lasting, T-61 black anodized aluminum base plate, and each is fitted with a silver SO-239 coax connector with gold center pin. The J-poles employ a special coil inductive tuning network rather than using standard direct coax matching. The antennas are furnished pretuned and ready to use.

The Rocky Mountain J-poles don't require a ground plane as do most other vertical antennas. Largely because of this characteristic, they perform well in a variety of applications, such as on wheelchairs, handicap scooters, backpack

frames, boats, tractors, automobiles, mobile homes, or trucks.

The newest antenna in the series is the Model JP-2M, a two-element J-pole ruggedly designed especially for mobile, marine, or portable use. The JP-2M antenna is suited for dual-band, 2 meter/70 cm work over the ranges 138–148 and 430–450 MHz. The antenna is rated at 500 watts PEP and claims a significant gain on both bands. It's priced at \$69.95.

For more information, contact Rocky Mountain Antennas, Inc., 1409 Pine St., Everett, WA 98201 (1-888-277-4643).

**CAL-AV Labs Mark V Mobile Spring and EB-1 Balun.** Ken Hirschberg, K6HPX, at CAL-AV Labs, has come up with two very interesting and useful antenna accessories. The first one we'd like to share with you is for HF mobileers, who know well that their vertical antenna's spring often is their "weak link."

CAL-AV Labs offers the MARK-V, a commercial-grade antenna spring of polished, all-stainless construction. The MARK-V reportedly provides improved immunity to side winds, gusts, bumps, and the like, over smaller springs. It's also intended to reduce signal fading due to antenna matching and resonance changes while in motion. The spring is 2 inches in

289 Poplar Drive, Millbrook, AL 36054-1674

diameter by just under 5 inches long, with standard threaded holes in each end; it weighs about 2 lbs. The spring is \$64.95.

The second product is the EB-1 External Bead Balun, designed especially to allow the connecting of a balanced load (such as a dipole or beam driven element) to an unbalanced transmission line, such as coaxial cable. The unit is made of a length of Teflon coaxial cable surrounded by 50 ferrite beads.

At one end of the cable is a UHF coax connector that mates with the popular PL-259 cable-end connector; at the other end are wire leads to facilitate connection to the antenna. The wire leads are color-coded for ease in phasing multiple elements or antennas. The balun is vacuum impregnated and sealed against weather. It's designed for use over the range 1.8 through 60 MHz and handles up to 3 kW, depending on band. Price is \$39.95.

For more details, contact CAL-AV Labs, INC., 1802 W. Grant Road, Suite 116, Tucson, AZ 85745 (phone 1-888-815-0400; e-mail: <calav@flash.net>; web: <http://www.cal-av.com>.

**Online Antenna Resources Update.** We were alerted to two web sites as excellent sources of antenna information by our colleague Steve Morris, K7LXC. Steve mentioned them in his July/August 1998 "Up the Tower" column in *CQ Contest* magazine.

The first web site we visited is the W4RNL Amateur Radio site, which is operated by antenna expert L. B. Cebik, W4RNL, at <http://funnelweb.utcc.utk.edu/~cebik/radio.htm>. Among other things, the site covers a variety of general antenna topics, as well as HF antenna modeling, transmission lines, and traps. There also are links to other web sites specializing in antennas.

A second site of interest is the aptly-named "How to Become an Antenna Guru" site operated by Dan Warren. It specializes in a very readable and instructive, hypertext-linked presentation on antenna fundamentals that is well-suited to both beginners and advanced antenna designers alike. Check out the site at <http://www.borg.com/~warrend/guru.html>.

### Soft Stuff

**ASAPS Version 4 from IPS.** As we have noted in the column several times, computer-based propagation prediction programs have much to offer the aggressive contester and DXer. There are several good propagation programs you can use to supplement the predictions that appear in the propagation charts in George Jacobs, W3ASK's *CQ* "Propagation" column. In past columns we have noted several commercial programs, including MINIPROP Plus™, IONSOUND PRO™, CAPMAN, SKYCOM, ASAPS, and several others.

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In April 1994 we described DOS-based ASAPs, the top-end Australian propagation forecasting software. ASAPs, which means Advanced Stand Alone Prediction System, is a government-sponsored program produced by IPS Radio and Space Services of the Australian Department of Industry, Science, and Tourism. Jacques d'Avignon, VE3VIA, is the North American distributor.

ASAPs became available as Advanced Stand Alone Prediction System for Windows™, which we highlighted in April 1997. The program allows predictions for any HF circuit worldwide. It includes management databases for antenna types, circuits, frequency sets, station configurations, terminals, and "T-indices"; a variety of specialized reports; your choice of solar/ionospheric indices; and more. Version 4 (priced at \$275 US plus \$20 s/h to North America) is a powerful upgrade that features useful "point-to-area" HF predictions; 3-D antenna gain patterns; and a comprehensive, step-by-step printed tutorial.

For more details, contact Jacques d'Avignon, VE3VIA, 248 Towerhill Road, Peterborough, ON K9H 7N1 Canada; (705-750-1636; e-mail: <monitor@rac.ca>). Also check out the IPS Web page at <<http://www.ips.gov.au/asaps>>.

**NuTest 1.50.** In December 1995 we highlighted a very capable, Windows-based Morse code practice program, NuMorse, written by Tony Lacy, G4AUD. As we noted, the shareware program had many excellent features for code study and practice.

Tony later introduced an equally capable Windows-based exam preparation program, NuTest, which we featured in February 1997. Its purpose was to help people practice for the FCC written exams at all levels. A complete learning package, it has explanations for all of the answers in the FCC question pools, and it contains the entire FCC Part 97 rules as searchable online help files. The program can set on-screen tests, or you can just browse the question pools if you like.

Recently Tony advised that he had updated NuTest to Version 1.50 to include the new General class materials that were required from July 1, 1998. Tony distributes NuTest as shareware, and it's available at several sites, including Tony's own NuTest page at <<http://www.btinternet.com/~tony.lacy/NuTest/nutest.htm>>.

You can test-drive the software, but you need a registration key to gain access to some features, such as the new General class materials. The NuTest registration fee depends on the number of license classes and ranges from \$14.95 to \$29.95 (for "unlocking" all four classes). There also are special deals, such as registering NuTest and NuMorse at the same time.

You can register NuTest on CompuServe, charging the fee to your Compu-

Serve account; to do so, GO SWREG. You also can register using a credit card by calling NorthStar Solutions at 1-800-699-6395 or e-mailing them at <[Starmail@compuserve.com](mailto:Starmail@compuserve.com)>. Upgrade discounts are available to previous users of the NuTest software.

For more information, Contact A. Lacy, G4AUD, 58 Bilbrook Road, Codsall, Wolverhampton, United Kingdom WV8 1ER (phone 044 1902 842557; e-mail: <[tony.lacy@btinternet.com](mailto:tony.lacy@btinternet.com)>; web: <<http://www.btinternet.com/~tony.lacy>>).

**CAT CONTROL.** It would be nice to sit in front of your personal computer (PC) and control your radio directly from it, wouldn't it? You can do just this, and many amateurs employ "smart" computer control of radio (receiver or transceiver) functions. Many radios have interfacing ports that allow such control of most functions using software and/or hardware "remote computer control" systems. Several firms have developed user-programmable interfaces to control the scanning pattern and other functions of ICOM, Kenwood, Yaesu, JRC, AOR, and other radios.

The field now is a fairly crowded one, and it became more crowded with the introduction of Neil I. Sternstein, K2RCH's CAT CONTROL at this year's Dayton Hamvention. The software is available for the Yaesu FT-920 HF/50 MHz transceiver as well as the Yaesu FT-1000 MP transceiver. Both products are custom software tools designed to implement the entire transceiver command set available from Yaesu for the specific radio.

The programs give you excellent control from the PC without having to learn much about additional software. The controls on the software's graphical user interface (GUI) work much like the ones on the transceiver, the idea being a near-zero learning curve in which the PC's mouse becomes a sort of "virtual finger."

Neil advises that the original releases of CAT CONTROL were labeled as "Lite" to let the purchaser know they were basic implementations of the command set. By the time this column appears in print, enhanced versions will be available that boast many additional features not found on the transceiver. (Neil explains that there isn't enough physical room on a transceiver panel to handle a number of complex tasks, and he adds that radios should do what they do best and they should leave certain functions for the PC to handle. Excellent advice!)

For more detailed information and pricing, contact Neil at Computer Assisted Technologies, Inc., P.O. Box 5798, Deptford, NJ 08096 (609-374-0606; e-mail: <[CatControl@yahoo.com](mailto:CatControl@yahoo.com)>; web: <<http://CatControl.com>>).

*Update:* As this issue went to press, Neil advised us that full versions of his programs are expected to be available in mid-



1999 and should be priced between \$100 and \$125.

**Postscript:** If you're really into remote computer control and are using your PC productively in your radio ham shack, flip back to our February 1998 column. In it, we described a new ARRL book, *Personal Computers in the Ham Shack*, co-authored by Paul Danzer, N1II, and Richard Roznoy, K1OF. The book explores the many ways you can enhance your enjoyment of amateur radio with PCs.

In addition to the book's seven chapters which cover the gamut of PCs in the radio shack, the book contains a separate Resources Guide chapter that describes a wide range of available resources. Also, four appendices detail filenaming conventions, explain computer terms, describe related ARRL books, and show how to use the online ARRL Technical Information Service (TIS). The book is \$18 from the American Radio Relay League, Inc., 225 Main St., Newington, CT 06111-1494 (telephone 860-594-0355; e-mail: <pubsales@arrl.org>; Internet: <http://www.arrl.org>).

## From the Bookshelf

**Finding Statistics Online.** We have often mentioned that the Internet is a great repository of just about any kind of information and statistics. The problem is, of course, to easily and quickly *find* the stuff you want. And that's not always so easy, as we have found over and over again.

Paula Berinstein's new 356-page book *Finding Statistics Online* addresses the problem of finding stats on the net. It provides clear and easy-to-follow instructions on using the Internet and online services to ferret out statistics on almost any subject, in business, science, technology, and most other fields. The book includes a handy "Quick Start" section.

For a copy of the book, contact your local bookstore or Information Today, Inc., 143 Old Marlton Pike, Medford, NJ 08055-8750 (telephone 1-800-300-9868; web: <http://www.infotoday.com>).

**Windows 98 Books from Macmillan.** Okay, so Windows 98 was not such a major update from its predecessor, Windows 95, as was from Windows 3.X. But Win 98 is jam-packed with new features not in any previous operating system, and most computer book publishers wasted no time in getting Win 98 "how to" books on the shelves. Interestingly, many of the titles were available the *very day* in June when Windows 98 was released to the public!

Macmillan Publishing USA, reportedly the world's largest computer publisher, with its several imprints (Que, Sams Publishing, New Riders, etc.), is in the process of introducing some 38 new Windows 98 related titles. These offer support for the new operating system (even if it is, like its predecessors in the

Windows family, fairly intuitive to use in most respects).

The publisher provided your columnist with some interesting statistics: Some 100 million individuals became Windows 95 users after its August 1995 release, and it runs on about one third of all PCs worldwide. Amazingly, Windows 98 is expected to boast two times the "consumption rate" of its predecessor! The publisher says that its top Windows 95 book titles *alone* have accounted for 10 percent of total computer book industry sales!

Macmillan sent me four heavy-duty, Windows 98 oriented monster tomes, which we'll note from skinniest to thickest. The thinnest one, at a "mere" 644 pages, is the Sams book, *Peter Norton's® Complete Guide to Windows® 98*. This book, at \$29.99, provides friendly and personalized guidance—in very readable, jargon-free language—from one of the world's leading Windows experts, Peter Norton. It's for intermediate users.

Somewhat fatter (at 870 pages) is the Que book *Special Edition Using Windows® 98*, by Ed Bott and Ron Person. Billed as a "must have" reference, the \$39.99 book/disc combination includes a CD-ROM with the publisher's "Windows 98 Knowledge Base," a variety of utility programs, and a Windows 98 vendor resource kit. The book offers a task-oriented approach to learning, with many tips, real-world solutions, and techniques.

Topping the kilopage mark at 1090 pages was the Sams book *Windows 98® Unleashed*, by Paul McFedries. It's for intermediate to advanced users, especially professionals who need in-depth topic coverage. The \$34.99 book provides detailed information on how to install, control, and master Windows 98.

Most massive of the four Windows 98 books we examined was the hardback, 1108-page *Platinum Edition Using Windows® 98*, also by Ed Bott and Ron Person. Built on the authors' "smaller" soft-cover book, noted above, this \$49.99 book/disc combo is all that and more, the "ultimate reference for all of the Windows 98 features." It includes two CD-ROMs (the same as in *Special Edition*, plus the Microsoft TechNet Sampler CD-ROM).

Check out these two books in your local bookstore, or contact Macmillan Publishing USA, 201 West 103rd St., Indianapolis, IN 46290-1097 (1-800-858-7674; e-mail: <info@mcp.com>; web: <http://www.mcp.com>).

## Wrap-Up

That's all for this time, gang. Next time, more Digital Dipole topics of current interest. See you then.

*Overheard:* Those hard and trying times are precisely the times when you should try all the harder.

73, Karl, W8FX



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FNB-31 pack	4.8v	700mAh	\$31.95
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FNB-26 pack (NiMH)	7.2v	1500mAh	\$32.95
FNB-27s (5w NiMH)	12.0v	1000mAh	\$45.95
BC-601a	Rapid/Trickle Charger		\$54.95
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FNB-11 pk. (5w)	12.0v	600mAh	\$24.95
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For ICOM IC-2SAT / W2A / 3SAT / 4SAT etc:			
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BP-90	6-Cell AA case		\$15.95
BC-79A	Rapid/Trickle Charger		\$52.95
For ICOM 02AT etc & Radio Shack HTX-202 / 404:			
BP-8h pack	8.4v	1400mAh	\$32.95
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IC-8	8-Cell AA NiCd/Alkaline Case		\$15.95
BC-350	Rapid Charger		\$52.95
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## *Don't Wait Until A Storm Strikes!*

This month I'm going to completely fill a void for the ARES, RACES, SkyWarn and other related organizations across the nation and around the world. It's been one hurricane after another: Bonnie, then Danielle, and so as not to leave out the male ego, along came Earl and then Georges, which is wreaking havoc as this is being written.

There always will be one smart-aleck in the crowd who wants to out-shout the rest of the screaming seasonal storms. We've seen a couple come and go with limited damage, yet a couple of them have been devastating. If it's not the east and north-eastern Atlantic coast, then it's the gulf coast taking the brunt of the storm action. There is no other way to describe the destructive force of these savage storms. To add insult to injury, the radio, TV, and newspaper forecasters are telling us that we are in store for an unsettled weather climate for the next six to eight years.

It's time to do some house cleaning—or is it "housekeeping"? The storm season caught many of the emergency groups unprepared. This is not one of my "I told you so's." It's a reminder and a call to arms, or maybe just a wake-up call to some wannabe disaster communications groups.

Some of these groups seem to be in the "disaster preparedness" program for the glory of it. Well, my friends, it's time to get a grip on reality and understand that there are no roses for those who jump up and down and tell everyone how great their group is, and then when the real beast shows its head, hide under a rock for fear they might have to respond. It's time to get serious about saving lives and protecting health and property.

Not far from my QTH in an nearby state is a group who built a network that is supposed to operate as a statewide emergency network. They do not allow anyone to use the network unless there is a disaster or an emergency. From time to time they may conduct a "drill" or S.E.T. on it, but for the most part it is dormant.

Not long ago they actually had a reason to use their network to pass emergency traffic. Because the network had not been in use (except for emergency), they discovered that several of their nodes and digipeaters malfunctioned. When an emergency happens, it's too late to make

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repairs, especially when there are three or more links down and no way around them.

### **A Pattern for Successful Communications**

On the other hand, there is an eleven state network that is called the Southeastern Emergency Digital Association Networks (SEDAN). The SEDAN system node operators actually encourage the (keyboard to keyboard) use of their network so that any discontinuities can be spotted before there is an actual emergency.

In addition to the 145.770 MHz port for local access into the SEDAN, there is a backup network that is truly a high-speed backbone that is almost complete across these eleven states. The 6 meter backbone operates at 9600 baud, and unless you've experienced 9600 baud across several states, don't even begin to think it is slow. I read and hear where many networks are implementing 56 Kb into their network only to discover the 56 Kb backbone consists of three or four nodes and supports a link or two that deliver traffic across some metropolitan area.

I'm not talking about a local city dwel-

ler's 56 Kb, 2 watt toy. I'm talking about more than sixty 9600 baud, wide-area nodes, each with a transceiver that is running more than 50 watts. This is a backbone that truly delivers the goods across several states.

I and many of the SNOs of the SEDAN have had lots of questions as to how well the 9600 baud backbone works at 6 meters. The answer is verifiable for anyone who wishes to give it a try. Simply connect to one of the 145.770 MHz nodes and issue a connect to another SEDAN node in a neighboring state. The speed of the connect will astound you as you realize you've connected across hundreds of miles in less than 5 seconds. I'm talking "ping" time—there and back.

For the ARES, SkyWarn, WeatherWatch, and RACES organizations, here is the good stuff. Being a SkyWarn and WeatherWatch operator myself, when it comes to communicating weather-related, and life-saving information, I make sure I have the best set of tools to work with.

Local TV or radio stations may not have the latest information we need when we are trying to gather close-in storm information. It might also serve the public interest if the local radio and TV stations added

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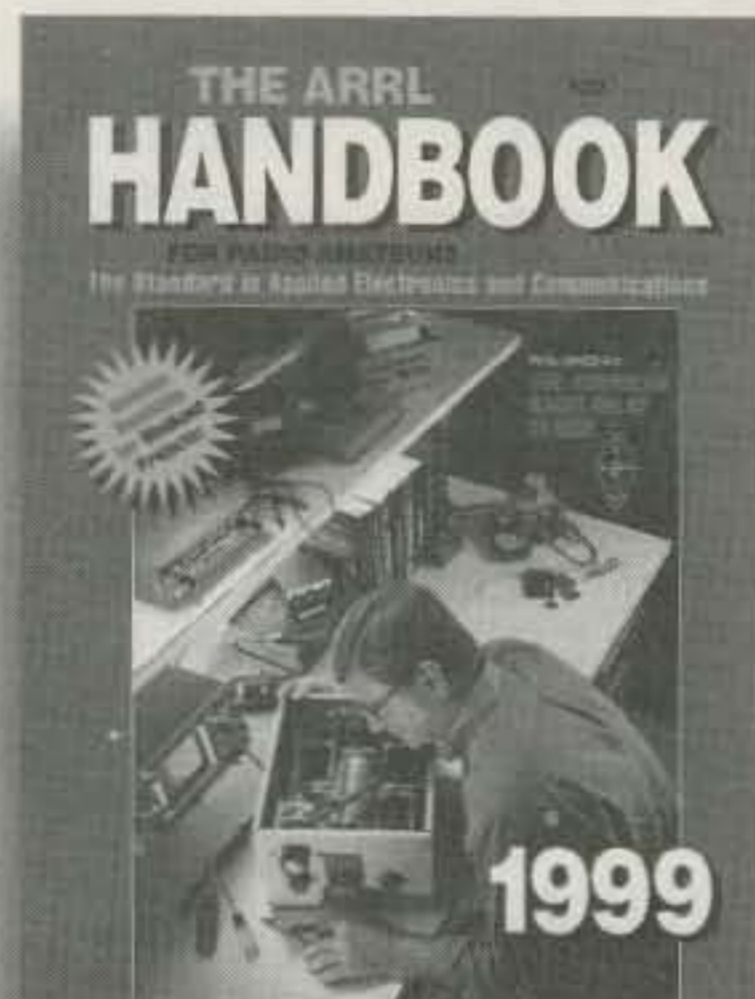
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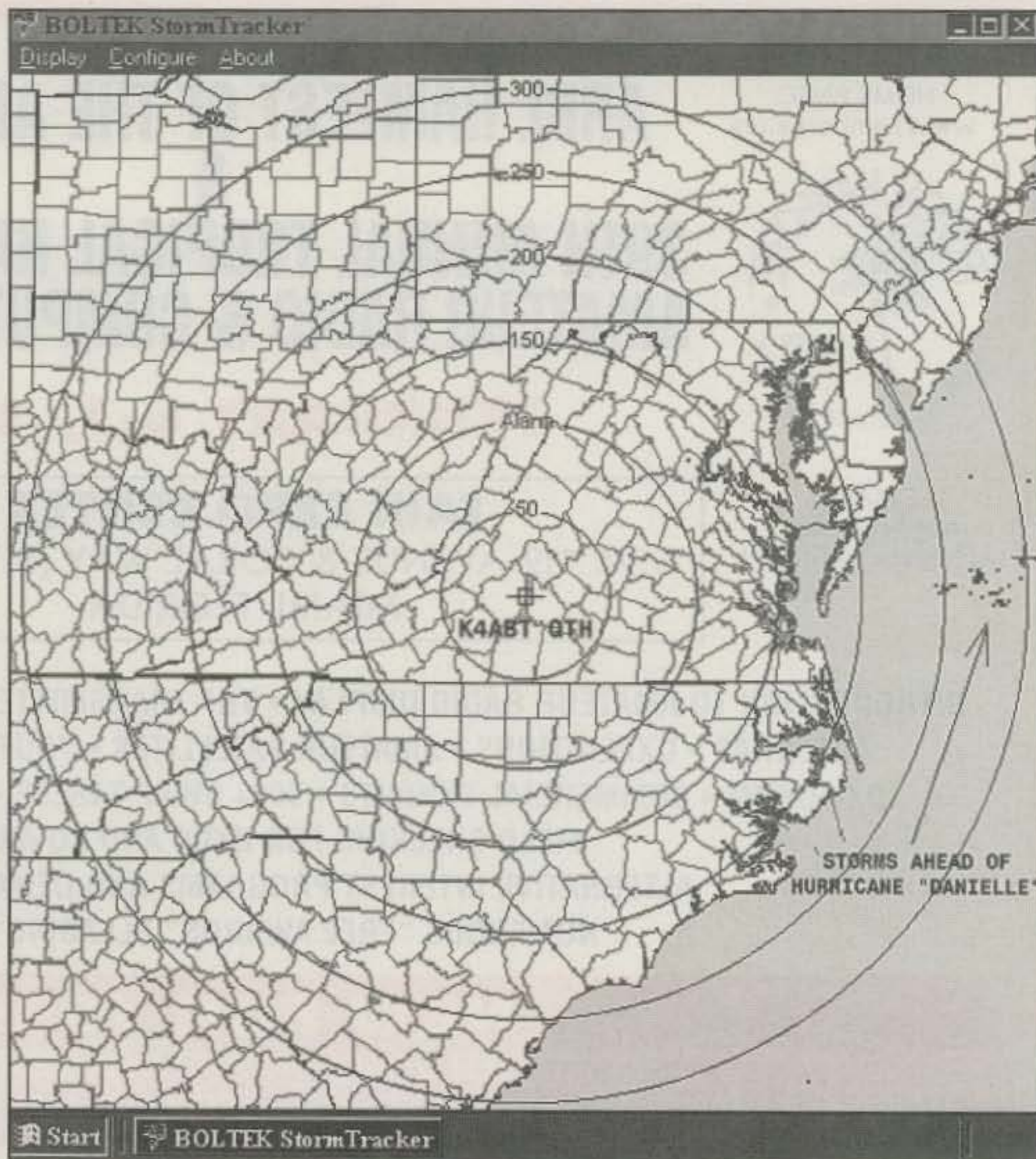
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*A typical picture received by K4ABT from the weather node broadcast in his area.*

these same tools to their repository of weather-prediction devices and software.

**Let's Add Some Help  
To Our Networks**

Enter the Boltek StormTracker and the Xenocode WeatherNode weather graphics broadcast system.

Boltek's StormTracker uses state-of-the-art technology to make real-time lightning detection affordable for most Skywarn and WeatherWatch groups. I use the StormTracker here in the Evinston and Lynchburg, Virginia area to gather information on approaching storms. With the ability to see storms over 300 miles away, I'm able to see the hurricanes while they are still at sea, before they make landfall. After landfall I can observe the smaller storms that are spawned from a hurricane, and then I can track the course of these storms as they move inland.

How does the StormTracker work? StormTracker uses a direction-finding antenna to receive and locate the radio signals produced by lightning. The strength of the received signal is used to calculate

approximately how far away the strike is. The combination of direction and distance allows the strike to be plotted onto a radar-like screen, the receiver location being the center of the screen with distance increasing outward from the center.

StormTracker is an add-on PC board to your IBM PC or compatible computer, allowing you not only to tell if lightning is near, but to see where it is. StormTracker detects lightning strikes up to 300 miles away and plots them in real time on an overlay map of your area.

With StormTracker you are actually detecting the lightning strikes themselves. There are no on-line or recurring charges of any kind. StormTracker has two built-in alarms. The Close Storm Alarm will activate if a thunderstorm is detected closer than a (user) preset distance. The Severe Thunderstorm Alarm activates if the number of lightning strikes per minute exceeds a (user) preset limit.

You will find StormTracker to be a useful tool in determining if there is lightning in your area, for finding the location of storms, and in determining whether storms are coming your way.

As well as showing the current lightning activity, lightning data may be replayed in fast motion, displaying several hours of storm activity in a few seconds. This gives the animated "look" or appearance that you see when the weather channel™ displays the movement of several storm cells or the motion of a hurricane at sea. You can see the natural progression of storms as they form and later die out.

All lightning strike data is logged to your computer's hard disk to allow a replay of past events or continuous looping of current data. Now there is no more guessing if the storm is heading your way, as with audible warning type systems. You instantly can see where the storm is and in which direction it is heading.

StormTracker may be run without a background map, but most users find the display to be much more useful and interesting with a map. You can make your own map using a paint program such as Windows™ Paintbrush or order a set of maps from Boltek. Maps are stored as PCX files for the DOS software and MAP (Boltek's vector format) or BMP files for the Windows™ software. Several sample maps are provided with the StormTracker system to get you started if you plan to make your own map.

I foresee a day soon when many homes and businesses will have just such a device on site to serve as a severe storm detection and warning system. With a StormTracker in place, this could ultimately protect families and employees.

StormTracker consists of: a half-size receiver board which you install into your computer, direction-finding antenna, 50 foot antenna cable, software on 3 1/2 inch disks, and manual.

The antenna may be mounted indoors or outdoors. The antenna for my StormTracker is mounted in the attic over my lab. It is important that the antenna be mounted as shown in the manual. The orientation marker is to the north. Once it is in place and the antenna orientation is correct, all the other storm coordinates fall into place.

Try to mount the antenna as high as possible (without making it a lightning rod). Mounting the antenna high will keep it away from noise sources and will improve the maximum range. In a wood-framed house, the second floor or attic is often a good location for the antenna. This places the antenna above the most common sources of interference: televisions, lights, and appliances—yet leaves it in a good location to receive lightning signals. Mount the antenna to the drywall or attic rafter away from screws, nails, electrical wiring, and other metal objects. If your house has aluminum siding (vinyl siding is okay), foil-lined insulation, or any other metal coating, you might have problems receiving with the antenna indoors, as the

metal may shield radio waves from the antenna.

The manual is well defined and covers every aspect of the StormTracker installation, software setup, and antenna installation. StormTracker complete with software is priced at \$479.95.

StormTracker includes software for both MS-DOS and Windows™. The DOS software may be run under both MS-DOS and Windows™. Windows™ can run DOS StormTracker in the background, and many people prefer the DOS software interface. The Windows™ software is a 16-bit Windows™ application which runs under both Windows™ 3.1 and Windows95™. StormTracker will not run under Windows™ NT, since the NT operating system prevents the software from

accessing the StormTracker hardware.

For more information about the Boltek StormTracker, visit my home pages at <<http://www.packetradio.com>>. Then scroll down the page to the Boltek StormTracker icon; click on it, and go to the Boltek StormTracker page at <[www.boltek.com](http://www.boltek.com)>. You can also write, call, FAX, or e-mail Boltek Corporation using the following information:

US: 2316 Delaware Ave, Suite 254, Buffalo, NY 14216453.

Canada: Thorold Road, Suite 123, Welland, ON L3C 3W7 Canada.

For both addresses: phone 905-734-8045; fax 905-734-9049; e-mail: <[info@boltek.com](mailto:info@boltek.com)>.

73 de Buck4ABT  
e-mail: <[k4abt@packetradio.com](mailto:k4abt@packetradio.com)>

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CIRCLE 42 ON READER SERVICE CARD

Announcing:

# The 1999 CQ World-Wide 160 Meter DX Contest

CW: 2200Z January 29 to 1600Z January 31  
SSB: 2200Z February 26 to 1600Z February 28

The objective of these contests is for amateurs around the world to contact other amateurs in as many U.S. states, Canadian provinces, and countries as possible on the 160 meter band.

**Classes:** Single and multi-operator only. Use of packet, a spotting net, or logging assistance makes an entry multi-operator. Multi-operators should show the actual operator for each QSO. Under single operator there will be a designation of power level: H = power over 150 watts, L = power under 150 watts, and Q = 5 watts or less. There will continue to be only listings per state or country, but if there is sufficient activity or if a high enough score is made, then a separate certificate will be issued. Minimum score for the separate certificate is 5,000 points! Multi-operators will all be considered high power.

**Exchange:** RS(T) and state for USA, province for Canada, and either prefix or country abbreviation for DX. Contacts without some location indicator will be ruled invalid.

**Scoring:** Contacts with stations in own country, 2 points. Contacts with other countries on same continent, 5 points. Contacts with other continents, 10 points. *Maritime mobile contacts count 5 points. There is no longer any multiplier value for a maritime mobile contact.*

**Multiplier:** Each continental U.S. State (48), USA District of Columbia (DC), Canadian area (13), and DX country. KL7 and KH6 are considered DX and not states for this contest. DX countries are DXCC plus WAE (IT, GM Shetland Islands, et al). Canadian areas include VO1, VO2, NB, NS, PEI, VE2, VE3, VE4, VE5, VE6, VE7, NWT, and Yukon. Do not count States and Canada as separate countries. Remember that maritime mobiles no longer count as a multiplier.

**Final Score:** Total QSO points times the sum of all multipliers (states, VE, DX countries).

**Penalties:** Three additional contacts may be deleted for each unacknowledged duplicate or unverified contact removed from the log.

**Disqualification:** A log may be disqualified for violation of amateur radio regulations, unsportsmanlike conduct, or claiming excessive duplicate/unverified contacts or false multipliers. Logs that shrink more than 5% are subject to disqualification or warning. The calls of those warned or disqualified may be printed with the results.

**Awards:** Certificates will be awarded to the top scorers in each class by state, Canadian area, and DX country. Runners-up with high scores over 100,000 may also receive certifi-

cates. Low power or QRP entries may also receive certificates if there is sufficient activity or the score is outstanding. The following plaques, with donating sponsors as indicated, will be awarded for exceptional efforts.

## 1999 PLAQUES SINGLE OPERATOR

	CW	SSB
World (W5MBB Memorial Plaques)	K5AAD	K5AAD
USA	K4TEA	K4JRB
Canada	K2UFT	W0ETC
Zone 3 USA	N5IA	N4TMW
Zone 4 USA	K4WA	N4UCK
Zone 5 USA	WA4CUG	K4ODL
Europe	K9UWA	N4NX
Africa	K4MZW	WB4ZNH
Oceania	(TBA)	K4IS
Asia	K4SX	AH2BE/NT4TT
Japan	W4ZV	—
S. America	W4NU	AE6E
N. America (N4IN Memorial Plaques)	CQ	CQ

## MULTI-OPERATOR

World	N4RJ	SE DX Club
USA	W8UVZ, W0CD, K8GG	WB9Z
Zone 3	4X4NJ	4X4NJ

The plaque procedure is the top scorer in the indicated area wins the plaque. However, a station can only win one plaque per contest section. The plaque is then awarded to the next highest scoring station. For example, WX8ZZZ wins top World multi-operator. Then the next station in the U.S.A. wins the U.S.A. plaque.

**Intercontinental DX Window:** 1830 to 1835 kHz should be left clear for DX stations for intercontinental QSOs in both contests. This is still voluntary but essential if the contest is to continue to attract rare DX as entries. **USA, Canadian, and European stations should refrain from using the window for local contacts.** Please stay away from the window edges, too. This is a gentleman's contest and band, so let's help make intercontinental contacts happen.

**Computer Logging:** Please send us your computer disk. IBM, MS-DOS compatible disks are encouraged. E-mail logs are also accepted. The format preferred is the log in ASCII text, a summary page, and the dupe list (all calls in alpha sort order). Please *do not* send .bin types of files. The committee will require, on request, a disk for any possible high score, provided that the paper log or dupe checking material as originally submitted was a computer printout. The outside of the disk should be clearly labeled

with the call of the entrant, the files included, the mode (SSB or CW), and the category. Disks **must** be accompanied by a paper summary and dupe sheet, or are subject to **penalties or disqualification.**

**Manual Logs:** Sample log and summary sheets may be obtained from CQ by sending a large SASE with sufficient postage to cover your request. You can make your own with 40 contacts per page with columns for GMT, exchanges, multiplier, and points.

**Dupe/Check Sheets:** All logs over 200 contacts must provide a check sheet or dupe list. A check sheet or dupe list is a list of all calls in alpha sorted order.

**For All Logs:** Show the multiplier only the first time it is worked. Each page must have sub-totals for multipliers, contacts, and points. A running total below the sub-total on each page is recommended. Dupe or check sheets with every entry are requested and are required with over 200 QSOs. Include a summary sheet with your entry showing the scoring and other essential information. Include a printed name/ mailing address and a signed declaration that all rules have been observed. Please put the summary sheet at the front of the log. All logs should clearly indicate total multiplier, W/VE multiplier, and DX multiplier.

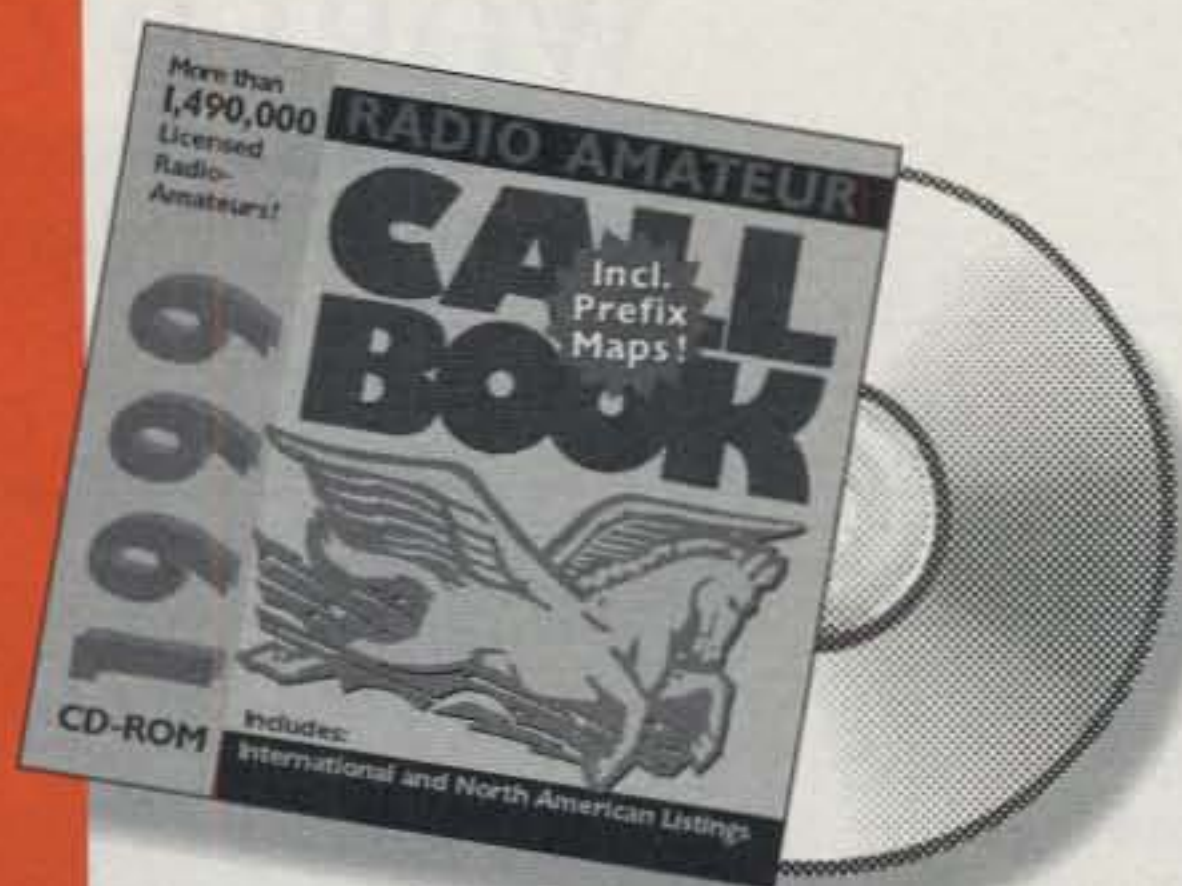
**Club Competition:** Any club that submits at least three logs can enter the Club Competition. The name of the club must be clearly identified under club competition on the summary sheet. Club competition is a "for fun" competition to foster more activity. There is a separate listing for the club scores.

**Log Submissions:** Mailing deadline for CW entries is Feb. 28, 1999; for SSB entries the deadline is March 31, 1999. *Exception:* You may send both logs in one package as long as the CW log is received by March 31, 1999. Try to mail early to assure receipt. For a return receipt enclose an SASE or SAE with postage or 1 IRC. Avoid the registered postal route, as this delays getting the log until someone can sign the receipt! Proofread your log before submission. Each year many errors are corrected that you should catch! Logs or sections of a log that are unreadable will be disqualified.

Send e-mail logs to: <cq160@contesting.com>. Remember to send text logs, summary sheet, and alpha sorted dupe list.

Send all other logs to 160 Meter Contest Director David L. Thompson, K4JRB, 4166 Mill Stone Court, Norcross, GA 30092 USA. **Please indicate CW or SSB on the envelope or e-mail header.**

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CIRCLE 145 ON READER SERVICE CARD

# WORLD OF IDEAS

A LOOK AT THE WORLD AROUND US

## Horizon-Expanding Treats for The Holidays

**S**uper Season's Greetings, friends, and may the deluxe-featured rig and accessories of your dreams, plus unlimited time to enjoy operating them, become reality for you during the holidays and continue for many years!

In support of those glad tidings and cheerful wishes, we once again make our annual shift in topics to highlight some neat new Christmas gifts and goodies for amateurs. This year's theme is expanding your horizons by investigating some unique or new-to-you area(s) of amateur radio enjoyment. Some examples are re-discovering CW romance, exchanging pictures worldwide by SSTV, QRPing, SWLing, and more—something for everyone and every budget. Yes, and the thought-whetting views continue throughout advertisement pages here in *CQ*. Just keep an open mind and think creatively. Opportunities for super hamming fun and enjoyment are everywhere! Bear in mind, I am simply your tour guide in this venture, and featured items are available directly from their manufacturers/producers, not from me. Remember, too, early ordering of desired items ensures a delightfully stuffed Christmas stocking. Some exciting new items are lined up for discussion, so lean back, start thinking of trying new waters, and let's get started!

### (Re)Discovering The Joys of CW

Do you tend to operate SSB more than CW, possibly because Morse code seems more awkward or uncomfortable to use than just talking? No one should lead such a sheltered life! Factually speaking, working CW is both enjoyable and a proud skill, especially when using a neat little key and copying incoming code in your head. Further, DXing is more productive on CW than SSB. Really!

Getting behind a new key always rekindles interest in CW, even if you are not a high-speed operator, and G4ZPY's new mid-size "Brother" pump key shown in photo 1 is ideal for such casual-paced activities. The key sports a highly polished brass mechanism positioned on a glossy black plastic base with bottom felt cushion, and looks like a piece of jewelry. The arm is fitted with fine pitch adjustment screws for both travel and gap, and piv-



Photo 1—New "Brother" hand/pump key from G4ZPY. Item measures 1.5"H x 2"W x 3" D has silver-tipped contacts, a very good "feel," and makes a dandy gift for any true radio amateur.

ots in "white metal" bearings at the fulcrum. The knob is also brass, with a white teflon washer adding a classy touch while insulating it from the arm. Operating of the key is also first rate with a superb "feel" and a softly sophisticated "click-click" sound during use. Reflecting true British style and influence, the rear tension spring pulls down rather than pushing up from the arm's front like a U.S. key. Nice! This new key is available in a polished-brass or nickel-plated version (approximately \$60 or \$65 U.S.). Want one for Christmas? Write to or ring up Gordon Crowhurst, G4ZPY, 41 Mill Dam Lane, Burscough, Ormskirk, Lancs, England L40 7TG; telephone 0044 1704 894 299.

Say your Morse expertise and copying ability are way down (or non-existent) and you thought a key was only used for tuning up a rig? Don't throw in the towel. A good Morse training package can bring you up to speed in short order. One of the most impressive ones I have seen (translation: it really works!) is the Codemaster V available from Marshall Emm, N1FN, of Morse Express and shown in photo 2. This software and tutorial package is especially designed to take you (or anyone unfamiliar with the code) from 0 to 20 words per minute in 90 days—guaranteed! If you are already familiar with the code (copying around 5 wpm), Codemaster V can also help increase your speed to 15, 20, 40, or even 50 wpm. Thirty minutes of consistent practice daily does the trick. Codemaster V runs on an IBM-compatible computer with 640K of memory and any version of DOS or



Photo 2—Codemaster V package from Morse Express will make you a CW whiz in record time and has the proven-successful track record to back up that statement. Package covers both learning Morse and increasing speed—all the way to "contest pro level"!

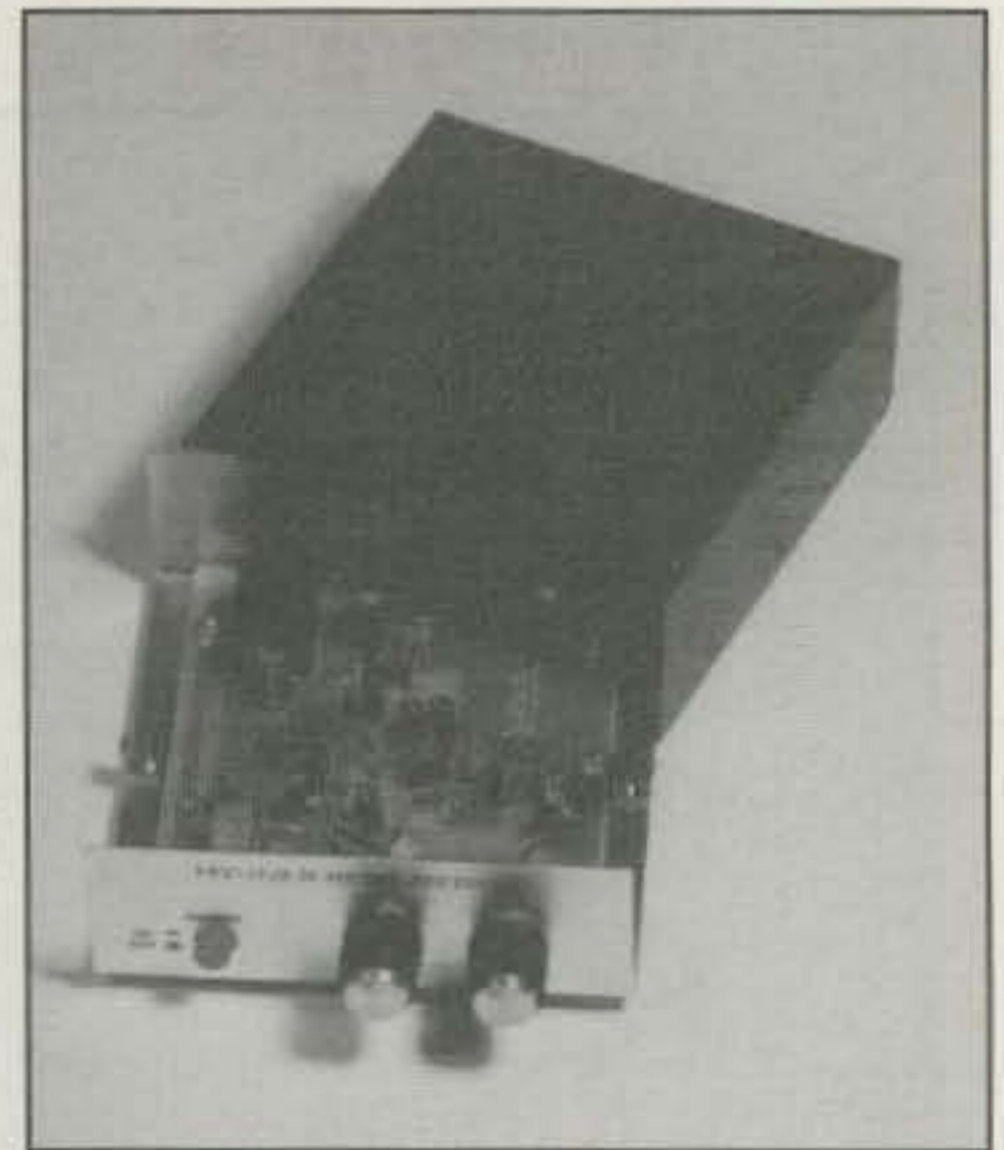


Photo 3—New Vectronics portable/QRP receiver kit. Item operates from a 9 volt battery that fits in its optional 1.5"H x 4.75"W x 5"D case, and is ideal for on-the-spot hamming. Receiver is available in 80, 40, 30, or 20 meter versions.

4941 Scenic View Dr., Birmingham, AL 35210



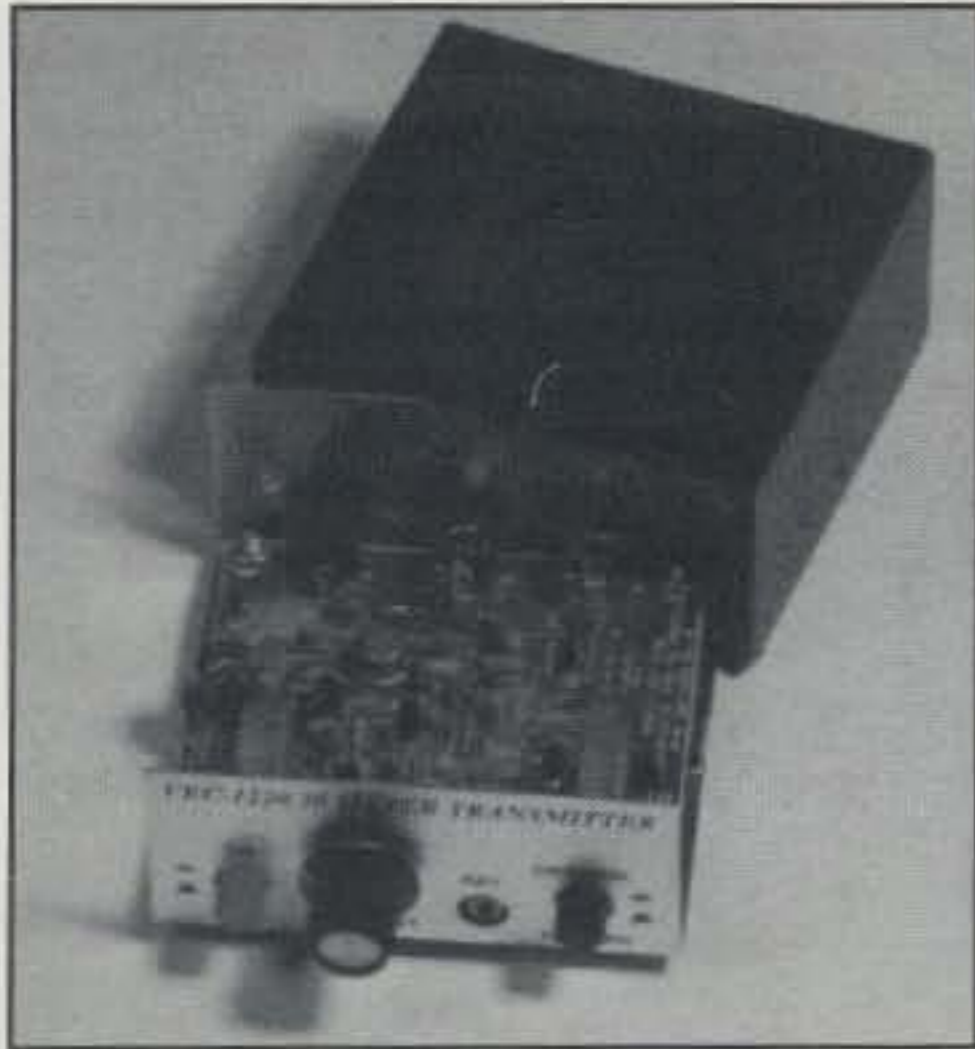


Photo 4— The matching Vecronics portable/QRP transmitter kit. Little tyke operates from an external 12 to 15 volt DC source, delivers around 1.5 watt output, and is supplied with a crystal for QRPing on 80, 40, 30, or 20 meters. Optional case is 1.5"H x 3.5"W x 3.5"D.

Windows. It is also priced right (only \$29.95 plus \$5 shipping) and is available from Morse Express, 3140 S. Peoria St., Unit K-156, Aurora, CO 80014-3155; telephone 1-800-238-8205. Morse Express also handles keys, kits, and books relative to CW and QRP, so ask for their catalog, too.

### New QRP Kits—And More!

Once on the CW bandwagon, a number of additional doors of opportunity or areas of special interest open to you—like working the world with your own kit-assembled QRP rig. Exciting? You bet! Not only is QRP hotter than ever (and increasing in popularity daily), it is the perfect low-budget way to enjoy getting on the air with the latest or newest rig of the day. QRP rigs are so affordable, in fact, you can put one in every room of the house!

So what's the latest news in kits? Vecronics. This well-known company is joining the game with a full line of easy-to-assemble and well-documented kits. Two of their special offerings—a monoband CW/SSB receiver for 80, 40, 30, or 20 meters, and a complementing monoband CW transmitter—are shown in photos 3 and 4. The receiver is direct conversion with an NE-602 "front end" and LM-386 audio section, and sports VFO tuning over an adjustable frequency range. The transmitter is VXO controlled, with 1 to 1.5 watts of output power and a built-in T/R switch for interfacing with an external receiver. Both units are in the 35 to 45 parts or approximately "3 to 4 hours for assembly" category, and optional metal cases are available for each unit. Neat! More details are coming in future columns. Meanwhile,



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# RADIO WORKS

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- SuperLoop 40, 56' long, 40-10 m. Ready for DX \$84.95
- CAROLINA WINDOM 80, 80-10 m, 132' long \$84.95
- CW 40, 40-10, 66', helped set 40 m records - terrific! \$82.95
- CAROLINA BEAM 80, 80-10m, 100' long. Powerful \$105.95
- CAROLINA WINDOM 160, 160-10m, 252' Big Bang \$119.95
- BigSig 40, 3/2 wave loop, 40 m, 110' A Sizzler \$69.00
- G5RV Plus, 80-10m, 102'+ High Power Current Balun \$57.95

## Current Baluns

- B1-2K 1:1 2 KW 80-10 m Current Balun \$20.95
- B1-5K 1:1 5 KW 160-10 m Precision \$31.95
- B1-1KV 1:1 1 KW 15-2 m VHF Current Balun \$25.95
- Y1-5K 1:1 5 KW 160-10 m The YagiBalun™ \$33.95
- B4-1KXV 4:1 1 KW 15-2 m VHF Current Balun \$29.95
- B4-2KX 4:1 2 KW 160-10 m 4:1 Current Balun \$42.95
- RemoteBalun™ High Power Current-type, 4:1, 160-10 m \$49.95



For really tough RFI and RF feedback problems, you can't beat the new T-4 and T-4G Ultra Line Isolators. It's isolation factor is 50% higher than previous models. The T-4G goes even further with a built-in ground strap for direct Line Isolator grounding. Before coax enters your station, stray RF is shunted directly to ground. Use with Vertical antennas, install two T-4's between transmitter, line and tuner to break up ground loops. Use the T-4 with any antenna to reduce feedline radiation. **This is the RFI Big GUN. T-4G \$33.95**

## New! VHF Baluns

- B1-1KV 1:1 and B4-1KXV 4:1 Line Isolators T-6 and T-6G
- Line Isolators, 50 Ohms, High power
- T-4 Ultra Line Isolator, maximum RFI protection \$29.95
- T-4G Identical to T-4G without direct grounding \$33.95
- T-6 VHF version of T-4 15-2 meters, 1 KW \$25.95
- 4K-LI Line Isolator, SO-239 in and out \$21.95

## December Specials

- PL-259 Silver & Teflon \$1
- RG-8X Premium, 95% 13¢
- RG-213 Mil-type, 95%+ 33¢

## Antenna Wire and Parts

- PL-259ST Silver-Teflon, USA **SALE \$1.00**
- PL-259GT Gold-Teflon, USA \$1.49 or \$30/pk of 25
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- Coax & Cable Prices <100'/100'+
- RG-8X Premium grade, 95% braid, **SALE 19¢/13¢**
- RG-8X Plus 95% shield, type IIA non-contaminating 26¢/22¢
- RG-213 Plus Enhanced, 96%+ super jacket 45¢/38¢
- RG-213 Top Quality, 95% **33¢**
- ExtraFlex Flexible, 9913 type **57¢**
- R1 Rotator 8 conductor (2 x #18, 6 x #24) **SALE 26¢/20¢**
- R2 Rotator 8 conductor (2 x #16, 6 x #18) **SALE 47¢/35¢**
- #14 HD Stranded, 7 x 22 hard-drawn 8¢
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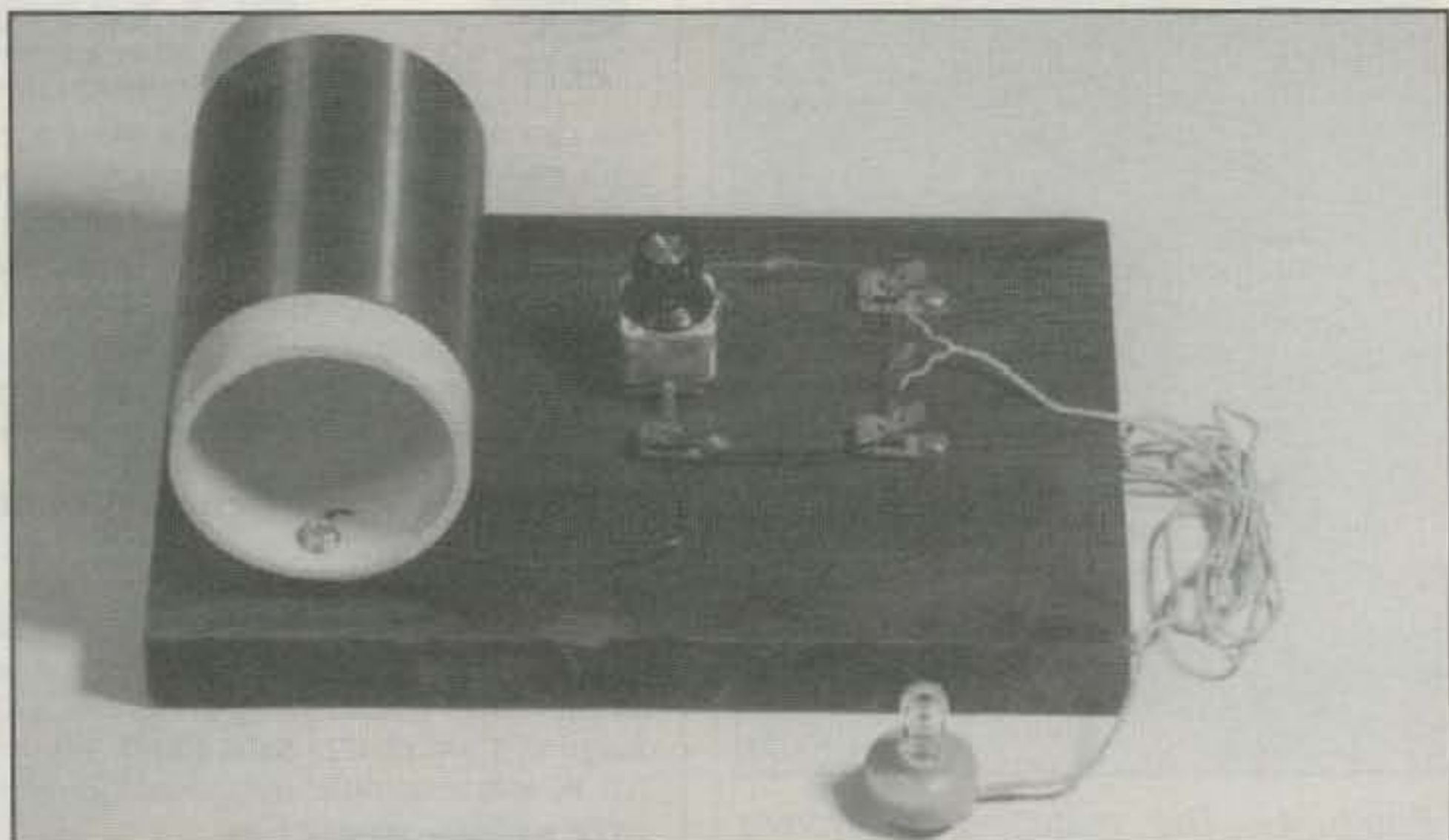


Photo 5— Vectronics classic crystal radio kit can be assembled without a soldering iron, comes complete with earphone, and brings those fun days of yesteryear back to life in fine style. Receiver is even good for late night listening to clear channel AM stations nationwide.

whip together your own Vectronics QRP station and check out the Spartan Sprints and Flight of Bumblebees contests. These portable rigs and outdoor operating stints are a perfect match!

Our available space is now tight, but some additional Vectronics kits of interest warrant quick mention. These include 2, 6, and 10 meter FM receiver kits; a 5 watt, 2 meter FM transmitter kit; low-noise pre-amps; tunable SSB/CW filters; CW keyers; an intelligent battery charger; a miniature TV transmitter; and the irresistible little crystal radio set shown in photo 5. Vectronics kits and catalogs are available from amateur radio dealers nationwide or from Vectronics, 1007 Hwy. 25 South, Starkville, MS 39759; phone 1-800-363-2922. Bet you can't stop with just one (kit)!

### Try High-Band QRPing

Many amateurs habitually associate QRP with HF activities, but this rapidly growing area of special interest is also gaining favor and turning heads in today's VHF/UHF world. What is the special attraction to high-band QRPing, you ask? Just like low-band operations, it embraces the ability to communicate from places and situations where using only tiny and ultra-portable gear is feasible or holds special merit. Hamming while moving between business appointments and carrying a full HF plus VHF and UHF setup unnoticed in coat pockets while traveling are two good examples of that fact. Yes, and as modern FM talkies get smaller and smaller, the possibilities for impromptu-style operations becomes more and more appealing.

So what is the hottest micro talkie in VHF/UHF today? Alinco's new DJ-C5



Photo 6— The ultimate pocket rig! Alinco's DJ-C5 2 meter/70cm FM talkie is the size of a regular charge card and actually gets lost in a thin shirt pocket. Unit has a built-in speaker, screw-off flex antenna, and pumps out 300 milliwatts of band commanding power.

shown in photo 6 gets my vote for top banana. This dual-band FM transceiver is the size of a regular charge card and only three or four charge cards thick. It covers 2 meters and 70 cm with enough receive overlap to tune in AO-27's downlink. (Now



Photo 7— Two guaranteed to please reads destined to become collectibles are my new QRP Now! and KEYS II books. Copies of both are ready to zip from my house to yours. I will even autograph your copy, if desired.



Photo 9— Concerned about severe weather emergencies and unexpected power outages during the days and months ahead? BayGen's wind-up/freeplay AM/FM/shortwave radio will keep you posted on "what's happening." The batteryless radio is also handy for tromps to the beach.



Photo 8— Like to add worldwide video transmitting and receiving capabilities to your HF setup? Kenwood's new VC-H1 makes it possible, and it is also reasonably priced. (Details in text.)

reception of public service, marine, and NOAA weather bands to the rig's capabilities. It's like a miniature high-band communications center in your shirt pocket! Every well-dressed amateur or all out QRPer should have one! Alinco DJ-C5 tiny talkies are available from amateur radio dealers nationwide, and at a QRP price. If you can't find them or need more details, check with Alinco U.S. at 438

Amapola Avenue, Suite 130, Torrance, CA 90501; telephone 310-618-8616.

If you enjoy CW and QRP, incidentally, may I also recommend two special books for your holiday (and beyond!) reading pleasure: my self-published KEYS II and all new QRP Now! shown in photo 7. KEYS II is loaded with highly detailed views and information on the world's most unique, rare, and exotic keys, bugs, and

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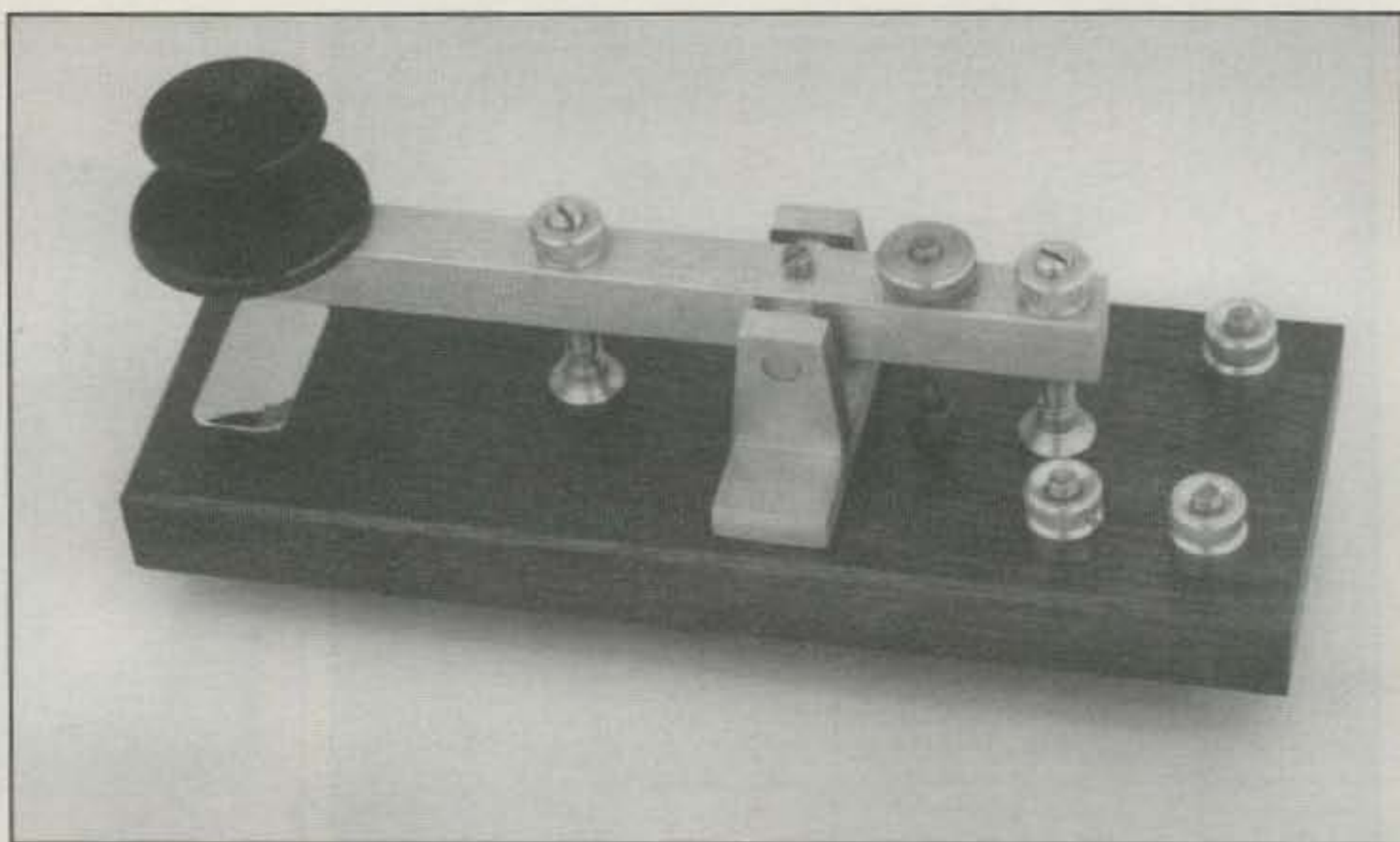


Photo 10— Brand new from Alpha Delta Communications for Christmas '98 is this authentic in every detail Titanic Key. Item is a full-size, custom-crafted, and smooth-working reproduction of the famous 5 KW spark key used on the Titanic in 1912. It makes a terrific conversation piece for the home shack or office desk.

paddles, new and old. It also has dating and pricing notes plus photos and descriptions of the full Vibroplex line since "day one." Many featured keys are in private collections and are seen only by a handful of folks during trades. If you like keys to any extent, you will go bonkers over *KEYS III! QRP Now!* describes what is happening in QRP right now, today: the clubs, contests, and on-the-air activities you can join; the hot rigs, kits, and accessories for 1998 and 1999; QRP-worthy antennas; secrets to QRP success; and much more. Whether you are a newcomer or a seasoned pro QRP'er, this 100-page book "brings you up to speed" and/or "keeps you rolling" in high style.

Each book is priced at \$15 plus \$2 book rate or \$3 Priority Mail, and copies are ready to zip right from my house (Dave Ingram, K4TWJ, 4941 Scenic View Dr., Birmingham, AL 35210) to yours. You will love them!

### Expanding Your Views With SSTV

Ready to investigate yet another captivating area of special interest in amateur radio? Gear up for video communications with Kenwood's new VC-H1 portable SSTV system shown in photo 8 and start exchanging views with other SSTV'ers both locally and worldwide. Pictures aired daily on popular HF SSTV frequencies such as 14.230 MHz include everything from in-shack views of gear to scenes of distant landscapes, places of historical significance, and sunsets over tropical QTHs. It's fascinating!

Until recently, joining Slow Scan TV

action was a rather expensive venture requiring some "exotic" equipment. Now Kenwood's new VC-H1 is making SSTV more affordable and easier to use than ever before. This palm-size unit consists of a digital scan converter, video monitor, and LCD camera (all color, no less!) in one "under 500 bucks" package. Although advertised for portable operations with an FM talkie — interfacing cable, the VC-H1 also has sockets for connecting regular (1 volt peak-to-peak) Fast Scan TV input and output like an external camera and big screen monitor. You can also purchase an optional plug and cable to mate the VC-H1 with a TS-870, TS-570, or any other SSB/CW transceiver via its microphone and speaker sockets. The VC-H1 works with today's popular formats for SSTV: Robot 36 and 72 second color, Scottie S1 and S2, Martin M1 and M2, and AVT 90/94. You can also change rig interfacing cables and plugs, and use the VC-H1 with various /future transceivers for many years ahead.

Watch my "How It Works" column in *CQ VHF* during forthcoming months for more details and notes on SSTV, FSTV, and the VC-H1. Meanwhile, order your own VC-H1 from amateur radio dealers nationwide or contact Kenwood Communications at P. O. Box 22745, 2201 East Domingues St., Long Beach, CA 90801 for more information.

### Thinking Preparedness

Have you ever noticed how investigating one particular area or item of merit can spin off interest in another even more important area or item? A good case in

point is the BayGen windup radio shown in photo 9. First the novelty of a battery-less or "crank-to-listen" AM/FM/short-wave receiver for staying abreast of world affairs and dinking with QRP projects catches your attention. Then you realize the additional benefits of emergency preparedness during unexpected power outages—those times when your "backup" batteries are almost dead from occasional (and forgotten!) use during previous power outages. Viewed from that standpoint, this freeplay radio from South Africa could prove an asset to folks and families near and far.

The BayGen is enclosed in a quite durable black plastic case measuring 10"H x 13.5"W x 5.5"D and seems like a real toss and go radio. It tunes the 500 to 1715 kHz AM band, the 3 to 12 MHz shortwave range (AM mode only), and the 88 to 108 MHz FM band. It has an internal ferrite antenna for AM, pull-up antenna for shortwave and FM reception, a 3.5 inch internal speaker, and a slide-rule/analog dial with knobs for both fast and slow frequency tuning. Sensitivity and selectivity on AM and FM bands is reasonable for the BayGen's price (approximately \$100). Shortwave performance is "adequate" but not lavish (on par with a good Hallicrafters S-38 or S-40, I would say). The built-in generator and winding mechanism is quite clever. You just fold out the crank, wind it up (30 seconds of winding will give you 30 minutes of play time), and start tuning and listening. No worries about batteries with this tyke. Yes, and it even shuts itself off (actually "runs down") if you fall asleep while late-night SWling. BayGen freeplay radios are available from BayGen Power, 80 Amity Road, Warwick, NY 10990, or can be ordered by calling 1-800-WIND234. Holiday sale price is \$99.95. Check them out!

### Eleventh Hour Magic

After writing this month's column, and only a few hours before zipping it off to *CQ*, details on a new and exciting item worthy of immediate recognition arrived from Alpha Delta Communications, Inc. The item, shown in photo 10, is called the "Titanic Key," and it is an exact replica of the famous spark gap key used aboard the *Titanic* on its maiden voyage to America in 1912. The Titanic Key represents a true piece of history you can hold in your hand, it works smoothly enough to use on the air, and it is also an ideal conversation item for relating true tales of our telegraphic roots to future generations. It is a very special Christmas gift indeed!

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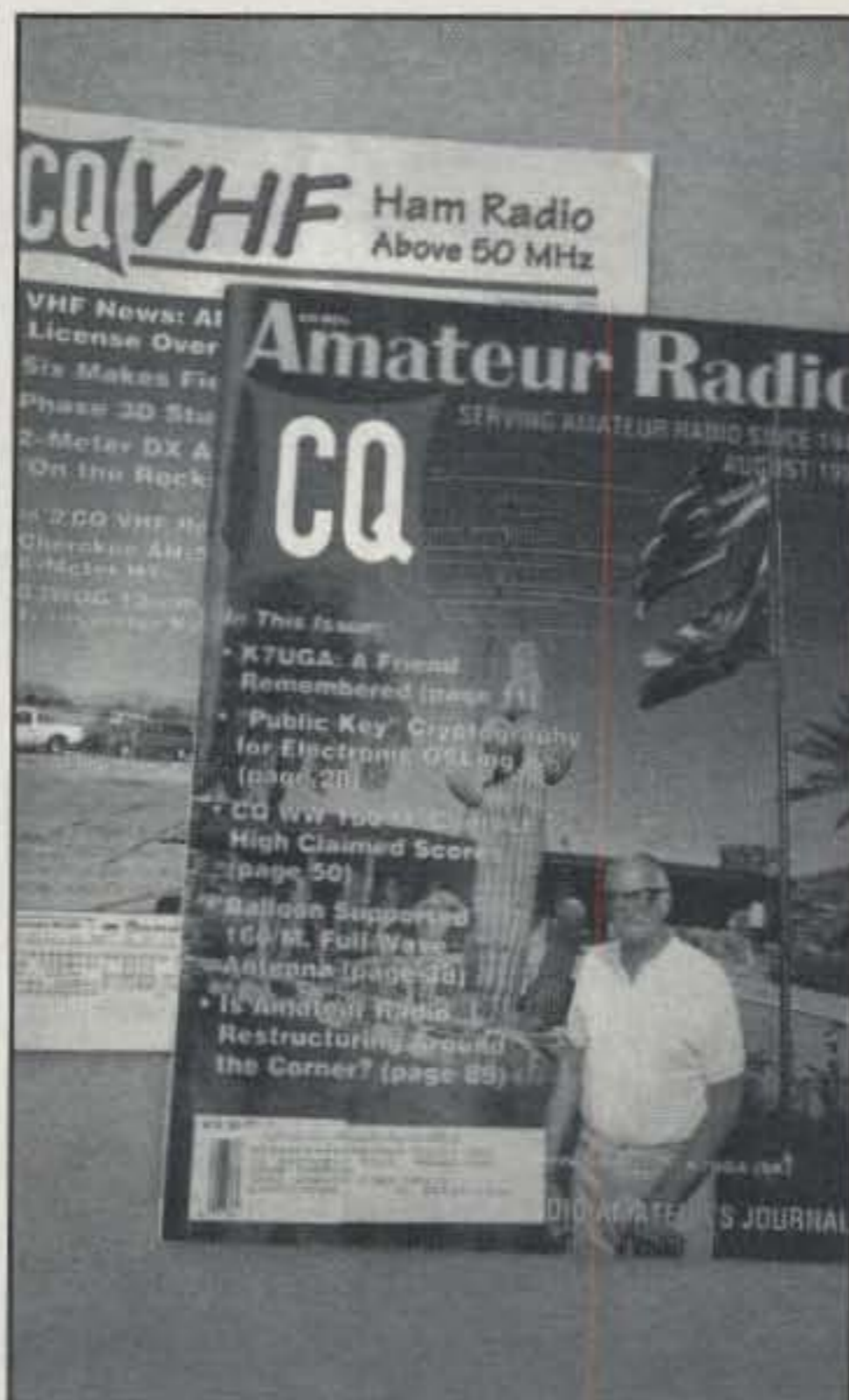


Photo 11—Two special gifts that keep on giving month after month throughout the year: *CQ* and *CQ VHF*. Have you subscribed or renewed lately?

priced at \$149.95 plus \$5 s&h in the U.S. They are available from Alpha Delta Communications, Inc., P.O. Box 620, Manchester, KY 40962; telephone 606-598-2029 for information, or 1-888-302-8777 for toll-free ordering.

### Closing Notes

Once again we are down to the closing wire and must bow out for this month. Before signing clear, however, I sense some readers asking what is the best way to stay informed of the latest news and developments in some of our highlighted areas of special interest. I heartily recommend subscriptions to *CQ* and *CQ VHF* (photo 11). Both magazines are geared toward the active and enthusiastic amateur, and as a monthly columnist for both of them, I hear each one will be featuring some hot ideas and items during the coming months. Subscriptions or renewals are good investments in long-run enjoyment, and go to CQ Communications, 25 Newbridge Rd., Hicksville, NY 11801; telephone 516-681-2922.

Finally, everyone is invited to join my traditional on-the-air Christmas party presently slated for 1900 and 2300 GMT December 19 and 20, on or near 14.205 MHz. Meet you there!

73, Dave, K4TWJ

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*AO 6.5* automatically optimizes antenna designs for best gain, pattern, impedance, SWR, and resonance. *AO* features 3-D pattern and geometry displays, 2-D polar and rectangular plots with overlays, automatic wire segmentation, automatic frequency sweep, skin-effect modeling, symbolic dimensions and expressions, current sources, and polarization and near-field analysis. *NEC/Wires 2.0* models true earth losses, surface waves, and huge arrays with the Numerical Electromagnetics Code. Best for elevated radials, Beverages, wire beams, giant quads, delta loops, and LPDAs. *TA 1.0* plots elevation patterns for HF antennas over irregular terrain. *TA* accounts for hills, valleys, slopes, focusing, shadowing, reflection, diffraction, and ground constants. Use *TA* to optimize antenna height and siting for your particular QTH. *YO 6.5* automatically optimizes monoband Yagi designs for maximum forward gain, best pattern, minimum SWR, and impedance. *YO* models stacked Yagis, dual driven elements, tapered elements, mounting brackets, matching networks, skin effect, ground reflection, and construction tolerances. *YO* runs hundreds of times faster than NEC or MININEC. *NEC/Yagis 2.5* provides reference-accuracy modeling of individual Yagis and large arrays. Best for EME arrays. One antenna program, \$70; three, \$120; five, \$200. 386 + 387 and VGA required.

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# VHF PLUS

ALL ABOUT THE WORLD ABOVE HF

## VHF-Plus Contesting from San Clemente Island—Part I

One of the neat aspects of operating on the VHF-plus amateur bands is that one can become DX under what HFers would consider to be "ordinary" circumstances. One such DX location is San Clemente Island, off the coast of southern California. The following is by Kent Tiburski, WA6TBO. Others (such as Dave Bostedor, N8NQS) have operated from San Clemente Island in the past and have published their accounts elsewhere. However, Kent has documented his contest operation over several years and has offered his documentation for inclusion in this column, for which your editor is deeply grateful. It is presented in two parts, the second part to appear in a future "VHF Plus" column.

San Clemente Island is located approximately 70 miles from the southern California Coast. The island is home to the U.S. Navy's training ranges and facilities. It is utilized extensively by the DOD for year-round training and has been used since World War II for such.

Ideally situated off the southern California coast, San Clemente Island is an excellent radio location. However, because of its ownership, few outsiders are allowed the privilege of operating from this secluded QTH. Fortunately, I've been allowed to operate and contest from there, as my company is contracted to operate and maintain the training ranges. My island QTH has power, hot showers, a lounge (which is transformed into the shack!), and all the amenities of home.

In 1990 I brought out my trusty FT-290 and 4-element Yagi while still on active duty with the Navy. I managed several contacts, but since I never advertised the fact I'd be there, activity was low. The first contact from DM-02 was Laddy, N8EWU. I heard several stations from the San Francisco Bay area, but was unable to get their attention with my puny antenna and low power (2 watts). I was excited, as I've never heard stations that far away so loud! Sure beat my QTH in San Diego. I dreamt that someday I'd come back and operate a contest from there. That day eventually did come.

**The Paper Trip:** The beginning of most trips is the paperwork. Whether it is to se-

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Internet jlynch@post.cis.smu.edu  
Compuserve 72124.2734@compuserver.com

### VHF Plus Calendar

Dec. 3	Full Moon and perigee.
Dec. 5	Highest Moon declination.
Dec. 5-6	ARRL EME Contest second weekend.
Dec. 10	Last quarter Moon.
Dec. 12	<i>Geminids</i> meteor shower predicted peak. Fair to poor EME conditions.
Dec. 15	Moon apogee.
Dec. 18	New moon.
Dec. 19	Lowest Moon declination. Poor EME conditions.
Dec. 22	<i>Ursids</i> meteor shower predicted peak.
Dec. 26	First quarter Moon. Fair EME conditions.

cure permission, acquire licenses or inquire as to the legalities, it's a necessary evil. Funny how a trip starts off with paperwork, generates it while you're there, and ends with it. And they call this a paperless society!

To get access to the island I first had to get permission from my company to use the berthing and lounge facilities for contest weekends. The next step was filling out the required forms and letter of request to the Navy. Everyone going is held to strict guidelines while on the island.

After writing a letter requesting permission to operate from the island, I had an interview with the Ground Electronics Officer. This was really a formality, as he was familiar with amateur radio. The Navy wants to be absolutely certain that no harmful interference will cause problems to the island's airfield radios. Fortunately, I had a Naval Aviation background and work also with ordnance, so answering their questions and easing their concerns was easy. My answer to him was there would be no problems. My request was approved subject to certain restrictions.

All guests are required to sign an affidavit that they are in good health and also sign a release of liability with the Navy. This was my second hurdle, which I completed in short order.

After all of the paperwork to get permission was done, next came manifesting for the flight to and from the Island. Since we would be space-available passengers, there was the chance that we wouldn't make the flight. There are a sufficient number of island workers who want to get off the island for the weekend, so there are a lot of empty seats going out. Unlike civilian airlines, the air terminal workers are really particular about bag size and weight, as Mike Staal, K6MYC, would find out in June of 1997. But that's another story.

**The First Contest:** Where to go and what class to contest in are key questions you ask yourself when planning. Everything seems to revolve around these two questions in the early planning stages.

It was 1993, and I was considering the June contest. For me, the "where" was easily answered. It was to the island! Because my first trip was to be more exploratory, I decided to bring my friend Bill Jakubowski ("Jake"), N6XIV, with me. We had equipment and antennas for 6 and 2 meters already, so we decided just to keep it simple with only two bands.

We carefully packed everything we needed for our trip in bags that could be carried on the airplane out there. We had scouted the place where we planned to operate and found several pipes and poles that could hold our antennas. That made for a more "streamlined" evolution.

Now for the next hurdle: to get permission. We had to get permission of the Officer in Charge (OIC) by filling out numerous forms. Because at that time I was still on active duty, getting some things done was a little easier.

I was fortunate that some contractors I used to work with allowed Jake and me to stay in their trailers. The location wasn't bad. However, we could have tolerated most anything, considering that we would be operating from DM02!

The trailers were located about 500 feet above sea level and had an unobstructed view of the northwest, north, and east—directions we needed. There was some blockage to the west, but we figured the likelihood of a Hawaii opening to be rather slim. With permission from the OIC arriving in the mail and a place from which to operate, we were ready!

Our gear was simple and effective the first time there. We brought an FT-290 (25 watts) and 5-element Yagi for 2 meters. For 6 meters we brought an IC-505 and

130 watt brick amp. The antenna was a homebrew two-element quad lashed to a 25 foot pole. Both stations were meager in comparison to those of most folks. However, for us they really were impressive!

During the contest we worked as far north as CM-99 and east out into Arizona with the little 2 meter station. Six meters was equally rewarding, hearing stations the locals couldn't and above all, no noise. We determined that someday maybe with a "real" station we'll do even better!

**Single Op January 1995:** I retired from the Navy in November 1994 and was hired immediately by the government contractor who ran the island facilities. Lucky me! I thought to myself that with my good fortune, maybe I even would get to operate from there.

My first planned contest was a single-op for January 1995. It would be larger in scope than June 1993. The station would include more bands and more power. For this contest I would bring my new FT-736, and a 200 watt 2 meter amp, a 130 watt 6 meter amp, and a loaner 100 watt 70cm brick amp. The antennas included 5 elements on 6 meters, 13B2 Cushcraft on 2 meters, and a KLM 30LBX for 70 cm. Finally some decent antennas! It's really amazing what a little power and antenna gain can do.

I did very well that contest despite the problems getting my 2 meter Yagi up. I used a rather heavy pole, and in the course of erecting it, the wind took over, sending it to the ground. I spent a half-hour bending back the elements into place (another 45 minutes doing an "attitude adjustment"). Fortunately the boom and driven element were not bent. I checked the SWR and attempted to erect it again. The second time would be the charm. As it turned out, the antenna would be used to bounce the first signals off the moon from DM02.

Signals were very strong coming over the salt water, as expected. What I didn't expect was QRM from Bay area stations! Normally they are weak in San Diego, but from DM02 they were anything but weak. Working north was easy. I did hear a station in CN82, but didn't have enough power to get his attention.

My best DX was Larry, K6AAW, in CN80. Larry was easily worked once we went off the calling frequency on 2 meters. Working east was equally rewarding. Tommy, W7RV, was an easy one on all bands. I made a mental note on the distances worked on 2 meters and 70 cm, which were nearly identical. The lack of stations on 70 cm accounts for my lower numbers. As it turns out, 6 meters was a locals-only band except for Sunday morning, when I worked a couple of W5's on meteor burns.

It was very encouraging to work the distances I did and cover a larger number of

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grids than I thought might be possible. This contest would be the precursor to bigger ones in the years to come.

**June 1995, Multi-Op:** After the successful single op attempt, I was ready to take on a more adventurous kind of operation. After some brainstorming and discussions with my friends, I decided the next trip to San Clemente Island would be to operate in the Limited-Multi category.

My co-conspirators (Dan, KB5MY, and Matt, NF6L) and I concluded that geographically to place nationally in the contest we would be more competitive in the Limited-Multi category. Demographics and geography weighed heavily in our decision process. Once the category was decided upon, it was time to tackle the station configuration. This was predicated on bands we would operate.

What bands would be most beneficial to our effort? We concluded that 6 and 2 meters would be the moneymakers here. Our third choice was 70 cm. However, the fourth would become a toss-up. For simplicity and logistical reasons we picked 220. Though limited to FM only (which later turned into a bad choice), we figured we'd work more QSOs than on 1296 MHz.

**Logistics—The Core Of All Operations:** For us, the partying was over! We now had embarked on a grander scale than ever before. Logistics can make or break a good operation. Extensive pre-planning is essential to a successful and fun DXpedition. One word comes to mind when planning an operation of this magnitude—*redundancy*.

Although it's nice to bring extra equipment and supplies, sometimes there is a tradeoff when it's not feasible or possible. Considerations we looked at were having backup rigs, amps, and antennas for 6 and 2 meters, our "bread and butter" bands. My FT-736 was a natural for this trip, as it had a 6 meter module, making it the backup rig. We brought along an IC-275 as the 2 meter backup. The 222 MHz and 70 cm bands were the only two without backups.

We were confident that we could work most stations on in a few hours early on in the contest and decided if something did happen it wouldn't be too significant in scoring. Our intuition paid off. Although our rigs never broke, we would find nearly all of our activity on 6 and 2 meters.

We opted to bring brick amps for 2 meters (200 watts) and 70 cm (100 watts). For 6 meters Dan had converted a Cliperton V amplifier. He gutted the tank circuit to accommodate a 4CX250 or 8930, the latter having a little more power. It was a reliable desktop amp that worked well and has been used by us in every contest so far.

Antennas were a long topic of discussion and concern. We asked each other what type of operations would we be doing and what other factors might lead us to

pursue a different approach. Since we ruled out EME mainly due to our power level, the choice for 2 meters was simple.

We brought my Cushcraft 17B2 long-boom Yagi, which had decent gain and was easier to work with. It proved to be a great performer and represented a compromise. Because Dan and I had a KLM 30LBXs, we brought one for 70 cm. For 6 meters we had another easy choice. Dan had built a W2PV-style 4-element Yagi, only slightly shorter than the original design, that was on a 12 foot piece of aluminum tubing. For anyone going portable or looking for a second antenna at home, this one is a great choice.

We had scouted around the island prior to our trip, looking for pipes, towers, and mast material. We were rewarded with several pieces of material that allowed us to get the 2 meter and 70 cm antennas up 22 feet. They were lashed to the operating trailer, keeping the feedline runs short. From our experience, we learned the following: don't use 1/2 inch heliax for portable short runs. For short runs at medium power levels (<1kw), 9913 or LMR-400 is a better choice. It's also easier to pack up for shipment.

The 6 meter Yagi was placed about 40 feet from the operating position and was up at 30 feet. No interaction was noted due to antenna spacing and geometry. In spite of not bringing any filters, we didn't have any intermod. How fortunate!

Transportation for this trip was via a small charter flight. My company had chartered a Cessna 310 to pick up some fellow employees already on the island. We had the plane to ourselves on the ride out. Dan and Matt thought I really pulled some strings to make that happen! Not really. Just good fortune.

**The Results:** All of our dedicated efforts toward constructing a competitive station paid off. During the contest we experienced some good single hop openings on 6 meters. We worked 110 grids over the two-day period. We had a tremendous opening both days into the Pacific Northwest. Numerous stations commented on how we were the only southern California station they could hear. Others even asked if any other stations our way were active. The location certainly helped this time!

An unexpected treat was hearing Hank, K2GAL, calling CQ off the moon! It was Saturday afternoon, and the moon was coming up. We all looked at each other and said, "Why not?" Hank was S-3 with very little QSB. Guess the saltwater helps with this. We called but only got a QRZ. It was fun anyway.

In the end, we placed sixth in the nation and first in the division. Not too shabby. In fact, we scored higher than anyone west of the Mississippi regardless of class. Really enjoyed the contest that year. Next



year in 1996 we'd challenged ourselves even more.

(To be continued)

## Jennifer Nugent, N7TUA Silent Key

The following is from Tim Marek, K7XC: "It is with great sadness that I report the loss of Jennifer Nugent, N7TUA, my significant other, fellow Rover, Microwave engineer, and best friend.

"She was Unique! A self-taught Microwave engineer who built a one-of-a-kind design 432 EME array just to prove a theory to herself and never owned any 432 equipment! Her knowledge of VHF/UHF/Microwave was sizeable, leading to some heated debates on things such as antenna theory and the physics of RF propagation. She had a different way of looking at problems and came up with some of the most original solutions I have ever seen. Had she faced her demons instead of giving up, I'm sure she would have made many notable and innovative contributions to amateur radio VHF and above weak signal work. As it is now, we will never know. In the nine months we were together I had never seen anyone as passionate about VHF/UHF and Microwave (her favorite) as she was. Look in the December 1998 QST, June VHF contest

results, for her first (and only) Rover score.

"In honor of her memory, the N7TUA Rover Station has been established. The Rover station consists of a TR9130, TR9000, HTX100, driving a 6 meter xvtr. It has amps for 6, 2, and 432, and with a few donations will have KB6KQ loops for all bands. Eventually it will be packaged in a fiberglass transit case for shipment to anyone in North America who is serious about trying Rover for the first time or who lacks the equipment to operate on his or her own, etc.

"Over time I will endeavor to upgrade the equipment with donations, hopefully shrinking the size down by obtaining a 706mkII or the like to where the package shipped is smaller and more economical.

"A local VHF club is receptive to using her call, N7TUA, as the club callsign with myself as trustee. They're a young bunch who spend most of their time on FM Simplex—hence their name, "Reno Area Metro Simplex," or "RAMS." Jennifer's family is for the idea and will provide the necessary paperwork to make it happen."

For more information, contact Tim via his CB address or via the Internet at <K7XC@vhf.reno.nv.us>.

## F2 Propagation Precursors

The following is from Pat Dyer, WA5IYX,

via the VHF reflector: "Probably the highest E-W F2 MUF's across North America so far in Solar Cycle 23 occurred here on Oct 7th. Though largely a seasonal effect, the minor geomagnetic storm during the day may have enhanced it. The Lowell digisonde plots also indicated "off scale" traces.

"By 2020Z 37.54 (likely the Maine hydroelectric companies) was coming through well. As this is <2000 miles, the maximum one-hop F2 MUF for a coast-to-coast path might have exceeded 40 MHz (37.10 MHz was evident over the shorter path from Massachusetts.). Scores of 33 MHz New England, New Jersey, and New York fire departments were heard through their 6 PM (EDST) nightly test, and some isolated ones well past 2300Z. The 'new' genre of call letters (4 letters—3 numbers) has now grown from being a quaint rarity to very common!

"It had been feared that many of these 33 MHz entities had moved up to the '800 MHz Motorola Trunkland.' For sure, some have (e.g., Barnstable County, MA, which used to have a couple of dozen on 33.70), but for the moment there seem to be plenty left to provide a very reliable MUF benchmark indicator (as they have for me now for over 30 years).

"As the veterans of past solar cycles well know, it will still be a long while before



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North American transcon MUFs hit 50 MHz. It's not very likely to occur this season—barring a *huge* jump in solar flux and/or a severe magnetic storm timed just right."

## UA9SIX Slim

Willem, PA0HIP, reported that he worked UA9SIX on 21 MHz. During their QSO, the operator told him that he never was QRV on 6 meters. Unfortunately, it appears that the one everybody worked was a pirate.

## Cross-Band, Cross-Equator QSO

The following is from Ed Rodriguez, WP4O: "On Wednesday, 14 October 1998, I had a contact with LU5EJU on 50.110/144.300 MHz, respectively. Signals were very distorted on 2 meters, but we did complete a full QSO—even on 6 meters."

## Bill Tynan, W3XO Retires as AMSAT President

The following is from the ARRL Bulletin Service: AMSAT-NA President Bill Tynan, W3XO, was set to formally announce his retirement from office during the AMSAT-NA 16th Annual Meeting and Space Symposium on October 15–19 in Vicksburg, Mississippi. An announcement also is scheduled to appear in the next issue of *The AMSAT Journal*. Tynan, who turned 72 on Columbus Day, helped found AMSAT-NA in 1969 and has headed the organization for the past seven years. "I think it's time," he said, although he expressed regret that he did not get to see the Phase 3D Amateur Radio satellite get into orbit during his tenure.

Tynan said he'll recommend to the AMSAT-NA Board of Directors that Executive Vice President Keith Baker, KB1SF, be appointed to replace him. "He knows the organization, he's been my right hand," said Tynan. He said he plans to continue serving on the AMSAT-NA Board at least until his term expires next year and intends to remain active in AMSAT.

Tynan said the outpouring of support for the Phase 3D project was the highlight of his time in office. "The support of both the League and all our members to get where we are is the most gratifying and significant accomplishment," he said. Tynan noted that the Phase 3D satellite is completed and will undergo some final testing this month in the Washington, DC, area. However, he said there was "nothing new at all" to report on the possibility of a Phase 3D launch opportunity. Tynan said he'll be among those keeping a close eye on the European Space Agency's Ariane 503 test launch set for October 20. "One of our primary hopes is for an Ariane 5

launch," he said. Tynan said he's optimistic about the future of amateur radio in space.

"Licensed since 1945, Tynan edited the "Above 50 MHz" column in *QST* from 1975 until 1992. In 1988 he retired as senior engineer from the Johns Hopkins Applied Physics Lab. In 1996 he was honored as Dayton HamVention's Amateur of the Year.

Tynan remains active mostly on the VHF and UHF bands. Once he's free of the day-to-day affairs of AMSAT, he said he hopes to spend more time on the air, especially on 6 meters.

## One Person's First EME QSO

There is something about the thrill of your first contact. There is an added dimension when it is your first "off the Moon." The following is from Rees Roberts, K9UUT, via the Moon Net reflector and tells the story of one op's first EME QSO. If you've had one, do you remember yours?

"The following is the story about my first moon bounce experience. I hope this doesn't bore you guys too much.

"Last Friday, October 9, I had the good fortune of putting up an M<sup>2</sup> 18XXX 2 meter antenna. That evening, during moonrise, I heard F3VS, SM5FRH, and IK3MAC. I tried to contact them, but alas, I was not running much power. Saturday during moonset, I concentrated on contacting Dave, W5UN. Lo and behold, he came back to me, but he heard K9VU instead of my call (K9UUT). I ignored his O's and called again. Lo and behold he came back yet again (amazing), this time calling K9UU. I ignored his O's once more. I tried yet again. Lo and behold he came back with K9UU? (this has possibilities). But time was running out. The ground gain I was having gave out, and soon after the moon finally set. Frustrated but encouraged as well, I vowed to try again the following day, Sunday. Dave was there again. I noticed that I could hear him when the moon was lower than 15 degrees (no elevation control here). But his signal started to come up below 12 degrees. As luck would have it, Dave was ending a contact with W9JN just as ground gain was coming up for me. Gosh, Dave was a full S2 on my S-meter. It was now or never. I called him and bam—he came back to K9UUT. (There is a God!) He sent me his O's and I sent him RO's. He sent me R's and 73 and that was that. Unbelievable! You see, when I put up my antenna last Friday, I measured the output out of my FT-847 on my Bird watt meter. It was 45 watts forward. Nothing back. And so, to those who might be monitoring this board, it can be done.

"I am grateful to Don, WA9KRT, who as luck would have it, I had a great conversation with last Saturday morning. He took the time to explain to me the protocols of moon bounce and the finer points. Thank

you, Don. I am also grateful to Mike, K6MYC, who was good enough to not only encourage me to try moon bounce with his M<sup>2</sup> antenna design, but was helpful in working out "perceived" problems which were only in my head (grin).

"So, I'm hooked. I have a 2 meter KW amp that has been collecting dust for some 20 years. I will just have to take that thing out of moth balls and put it to some good use. But I must say, there is a true sense of accomplishment working someone moon bounce with QRP. True, Dave's system is one to bow to, but having just a single Yagi and 45 watts is a neat way to work EME. Thank you, Dave, for your dedication to EME.

"So, that is my story. I would suspect that most of those who monitor this list-server are old hands at this. I just wanted to share with you what it feels like again just in case you have forgotten. It was truly a dream come true for me."

### Current Contests

Speaking of EME, the second half of the ARRL EME Contest is December 5-6. Complete rules are in September QST.

### Current Meteor Showers

Two showers occur this month. The first, the *Geminids*, is predicted to peak around 0440 UTC, 12 December. It has a broad peak and is a good north-south shower, producing an average of 100-110 meteors per hour at its peak.

The second, the *Ursids*, is predicted to peak around 1900 UTC, 22 December. It is an east-west shower, producing an average of greater than 12 meteors per hour, with the possibility of upwards of 90 at its peak.

### Delayed Space Station Schedule Postpones Ariss

The following is from the "ARRL Letter" electronic edition of October 9, 1998: "Delays in the start of construction for the International Space Station will postpone the permanent presence of ham radio in space. After meeting with a NASA delegation late last week, the Russian Space Agency rescheduled the launch of the first crew to early next year. Originally set for launch next summer, the first crew now will go into space in January 2000. 'So, you won't have an amateur radio signal coming out of the ISS until then,' said NASA's SAREX Principal Investigator Matt Bordelon, KC5BTL.

"The first crew will consist of US astronaut William M. Shepherd, as the expedition commander. Shepherd is studying for his ham ticket. Accompanying him will be Russian cosmonauts Yuri Gidzenko and Sergei Krikalev, U5MIR. All three have previous space flight experience. The

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crew has been training for their launch on a Soyuz vehicle and a planned five-month mission on the ISS.

"The change in launch date was blamed on budget-based delays in Russia's completion of the Functional Cargo Block or service module for the ISS. Launch of the service module now is set for next July.

The service module is the section of the ISS in which astronauts and cosmonauts will live during construction and will be ham radio's first permanent beach-head in space. Russia's financial woes have put its space program well behind the curve in recent months.

"At the same meetings between US and

Russian space officials last week, Russia agreed to sell its research time aboard the first phase of the ISS and unspecified hardware to the US for \$60 million.

"The latest delay means that permanent amateur radio on the International Space Station (ARISS) equipment will not be on the air until after the Russian service module is in space and occupied. However, amateur radio has been manifested aboard the ISS as 'necessary crew equipment.'

"Once aboard the ISS, ham radio, through the SAREX program, will serve as an educational tool through worldwide school contacts and as an outreach to the general public."

### And Finally . . .

Tim Marek, K7XC's loss of his best friend, Jennifer Nugent, N7TUA, is something we all in the fraternity share. Life is fragile. It can end so very quickly—and often without understanding on our parts as to why our friends or family leave us.

To Tim I have privately expressed my deepest condolences over his loss. My thoughts and prayers continue to be with him and Jennifer's family.

We humans were uniquely created. We have the ability to love and to hate, to console or to agitate. Unfortunately, it has been my observation—both from over the air and via that Internet—we seem to be becoming experts in the latter on both counts. Too often we are quick to hurt our fellow ham rather than assist in his or her healing. Fortunately for those who are hurting, such as Tim and another VHF plus operator who recently lost members of his family, I have observed that there are friends who do step in and say kind words of comfort.

Yet the bickering does continue. As I write this, there is a terrible fray about an action taken by SMIRK's Board of Directors concerning its support of expanding the 6 meter DX window. Yes, there is controversy about the window, and yes, there is controversy concerning the board's decision. Yet none of this controversy calls for such personalized negativism as witnessed on the reflectors.

I've said it before in this column, but I will say it again: Please think twice before hitting the send key on your computer or opening your mic or tapping on your key. Once whatever you have said is out there, there is no way to take it back.

As we end this year and enter into the new year, may we think about how each one of us can be doing a better job of specializing in the areas of love and healing. Hopefully, as we spend the last months of this millennium working on these goals, we can begin the new one with a much healthier attitude toward our fellow hams.

Until next month . . .

73, Joe, N6CL

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# CONTEST CALENDAR

NEWS/VIEWS OF ON-THE-AIR COMPETITION

## Measuring Contesting's Bandwidth

### December's Contest Tip

As I've been doing some recent maintenance work lately, I learned an old lesson yet again: label the cables. So much of success in contesting can be controlled by preparation that has nothing to do with the actual process of operating. Nothing is more frustrating than experiencing a malfunction during a contest and spending more time deciphering your cabling scheme than actually fixing the problem and getting back on the air. Remember, your contest score will only increase when you're transmitting and not debugging. Take the time to anticipate malfunctions by clearly labeling everything in your shack. You'll thank yourself later!

Few topics are more contentious than the issues that come from the way we utilize our precious frequencies. With conditions finally heating up again, it's time to be thinking about this critically important subject. Perhaps now, more than any other time in the history of our hobby, the amateur spectrum is being threatened by the encroachment of commercial and other interests. The problem is further compounded by the way we sometimes trivialize examples such as the loss of a portion of the 220 MHz band a few years ago. After all, many of us have never even seen a transceiver display a frequency above 28.900 MHz, right?

I strongly believe that the amateur spectrum is on watch by predatory interests. Having said that, take a few minutes with me to consider amateur spectrum use from a contesting perspective.

Let's be honest with ourselves and call a spade a spade. There are many contest weekends where the operating event dominates the majority of our HF amateur bands—albeit usually only on one mode. Obvious examples include the CQ WW, CQ WPX, ARRL DX, and ARRL SS contests. In contrast, it's also fair to say even with contests taking place nearly every weekend of the year, the vast majority are not disruptive to "non-contest" operating. Is this acceptable to amateurs? This is one topic that definitely brings opinions out of the woodwork!

Before I go on, I think it's important to point out that contests are not the only area of our hobby that amateurs find disruptive. There are few active amateurs who can forget the chaos that has origi-

### Calendar of Events

Nov. 28-29	<b>CQ WW DX CW Contest</b>
Dec. 4-6	ARRL 160M Contest
Dec. 5-6	TARA RTTY Sprint
Dec. 5-6	EA DX Contest
Dec. 12-13	ARRL 10M Contest
Dec. 19-20	Croatian DX Contest
Dec. 26-27	Stew Perry Topband Challenge
Dec. 27	RAC Canada Winter Contest
Jan. 1	ARRL Straight Key Night
Jan. 2	Kid's Day Operating Event
Jan. 2-3	ARRL RTTY Roundup
Jan. 8-10	Japan Low Band Int. DX Contest
Jan. 9-10	Hunting LIONS in the Air
Jan. 9-10	North American CW QSO Party
Jan. 9-10	YL-OM Mid-Winter Contest
Jan. 16	LZ Open Championship 1998
Jan. 16-17	MI-QRP Club January CW Contest
Jan. 16-17	North American QSO Party
Jan. 17	HA DX Contest
Jan. 29-31	<b>CQ WW 160 Meter CW Contest</b>
Jan. 30-31	REF CW Contest
Jan. 30-31	UBA SSB DX Contest

nated from some of the major DXpeditions in recent years. Operating practices such as listening on 20 meter SSB from 14200–300 come to mind. And while I'm not here to judge the value of that approach, it most certainly has an impact on our use of the bands. There are still others who feel the increasing growth of DX nets is poor use of our bands. And haven't you heard some folks complain about the seemingly inefficient emergency/traffic nets operating at the high end of 20 meters? The point is that everyone has a view on the proper use of our valuable frequency spectrum. DXers and contesters are not going to go away, so the operative strategy better be one of coexistence for all of us.

Probably the most commonly proposed suggestion on contest frequency spectrum use coming from my contest surveys and scores of telephone calls/personal conversations is the idea of a "contest-free operating zone." While in theory this idea may have some merit, it really doesn't address the fundamental issue, which is the growing size of contest participation. From my experience, although contest activity does extend itself all the way to the upper edge of certain bands (e.g., 15 and 20 meters), it dramatically trails off well before that point. For example, I am so confident about the availability of a clear channel in upper parts of most bands that I use them myself as a safe haven for passing multipliers. Rarely has there been a time when I could not have a normal

QSO with a new multiplier (and casual contester) on any band and at any given time. Sure, I wasn't running a phone patch, but the techniques for getting someone to move off my frequency were no different than any other mid-week type operating scenario.

As I've said, contesters' use of frequency spectrum is directly related to the amount of participation. In the 1970s and 80s it was a rare occurrence to witness someone calling "CQ Contest" on 21405. However, the broadening of spectrum use in recent times is not because contesters are inherently inconsiderate. Rather, it has happened because the amount of operating interest and activity has grown, warranting its use.

The beauty of amateur radio is that our use of spectrum is not pre-programmed. We are not like a radio or television network, with strict guidelines for what we say and when we can say it. Amateur operating activity is defined by what the majority wants at any point in time. When a DXpedition such as Peter I (3Y) comes on the air, you can bet that the majority at that time will want to call and try to work them. You also can count on the fact that during the next CQ WW Contest the bands will be filled again with great DX, fine operators, and more participants than ever.

Let's close with one final consideration, however. Setting aside the debate on whether or not the majority vote is spoken for during contest weekends, contesters have an obligation to show courtesy and consideration to their fellow amateurs. While it's easy to get caught up in the heat of competition, we should view our operating practices by asking two key questions: (1) Would my operating practices be acceptable if I were on the other end (especially the non-contester), and (2) Do my operating methods mirror the way I am on the air outside of contests? If you can honestly answer "yes" to these two questions, then by my definition you pass the operating fairness test. What do you think?

### Final Comments

Although hard to believe, the holiday season is already upon us. My family (Barbara, Timothy, Katelyn, and Kendra) and I wish you a safe and joyous time with friends and family. And as always, please remember that the deadline for the April issue is February 1st.

73, John, K1AR

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## ARRL 160 Meter CW Contest

2200Z Fri. to 1600Z Sun., Dec. 4-6

This is the 28th year for this "Top Band" activity. QSOs are between US, VE, and DX stations. DX to DX QSOs are not permitted for contest credit.

**Classes:** Single operator, high- and low-power, QRP; and multi-operator, single transmitter.

**Exchange:** RST and ARRL section for W/VE. DX stations send RST only. ITU Region is to be sent by maritime and aeronautical mobiles.

**Scoring:** Contacts between stations in ARRL sections count as 2 points, with DX stations 5 points.

**Multiplier:** Determined by the number of ARRL sections and DXCC countries worked (for W/VE). DX use ARRL sections only.

**Final Score:** Total QSO points times the ARRL section and DX country multiplier.

**Awards:** Certificates to the top-scoring single operator station in each ARRL section and DXCC country. Awards also available for the top-scoring multi-operator station in each ARRL Division and continent.

You may submit your contest entry on diskette in lieu of paper logs. The floppy diskette must be IBM compatible, MS-DOS formatted, 3.5 or 5.25 inch (40 or 80 track). The log information must be in an ASCII file, following the ARRL Suggested Standard File Format, and contain all log exchange information (band, mode, date, time in UTC, call of station worked, exchange sent, exchange received, multipliers [marked the first time worked] and QSO points). One entry per diskette. An official summary sheet or reasonable facsimile with signed contest participation disclaimer is required with all entries. Additionally, you may submit your contest entry via the ARRL BBS (860-594-0306), via Internet to <contest@arrl.org>, or anonymous FTP to <ftp.arrl.org>.

Official log forms are recommended and are available from the ARRL. A large SASE and 45 cents postage, or 2 IRCs, will get you a supply for more than 300 contacts.

The usual grounds for disqualification (violation of established rules, excessive duplicate contacts, etc.) will prevail. Mailing deadline for logs is 30 days after the contest to: ARRL 160 Contest, 225 Main Street, Newington, CT 06111.

## TARA RTTY Sprint

1800Z Sat. to 0200Z Sun., Dec. 5-6

This is the eighth running of the TARA RTTY Sprint sponsored by the Troy Amateur Radio Association, Inc. Contacts are encouraged with as many stations as possible using RTTY only on 80-10 meters (no WARC bands). Any station may work any other station.

**Classes:** (A) Single Operator, Multi-band—One person performs all operating and logging functions. Use of spotting nets (operating arrangements involving assistance through DX-alerting nets, etc.) is not permitted. Single operator stations are allowed only one transmitted signal at any given time: (1) less than 150 watts output or (2) 150 watts output or more.

(B) Multi-operator, Single-Transmitter, only—More than one person operates, checks for duplicates, keeps the log, etc. Once the station has begun operation on a given band, it must remain on that band for at least 10 minutes; listening time counts as operating time. Multi-operator stations are allowed only one transmitted signal at any given time.

**Exchange:** U.S. stations—signal report and state. Canadian stations—signal report and province. DX—signal report and serial number starting with 001. Both stations must receive and acknowledge the complete exchange for the contact to count.

**Scoring:** (A) QSO Points—count one point for each completed QSO (anyone can work anyone). A station may be worked once per band for QSO credit (but not for additional multipliers). (B) Multiplier—count only once (not once per band), each US state (except KH6 and KL7), each VE province (plus VE8 and VY1), and each DXCC country. KH6 and KL7 count only as separate DXCC countries. The U.S. and Canada do not count as DXCC countries.

**Awards:** Certificates will be awarded to the top three stations in the low power and high power categories, worldwide.

Entries must be postmarked no later than 41 days after the end of the contest. Any entry making more than 200 total QSOs must submit duplicate check sheets (an alphabetical listing of stations worked). No late entries can be accepted. Use ARRL RTTY Roundup forms or a reasonable facsimile. Entries may be submitted on diskette or via e-mail to: <MRBILL1953@aol.com>. Paper entries should be mailed to: William J. Eddy, NY2U, 2404 22nd Street, Troy, New York 12180-1901. Check out the new TARA web page for more information at: <<http://generators.com/tara/rtty.html>>

## EA DX Contest

1600Z Sat. to 1600Z Sun., Dec. 5-6

This popular CW-only event is sponsored by the Spanish URE and is open to amateurs worldwide.

**Classes:** Single Operator and Multi-Single.

**Exchange:** RST + serial number. EA stations send province abbreviation (A, AB, AV, AL, B, BA, BI, BU, C, CA, CC, CO, CR, CS, CU, GC, GE, GR, GU, H, HU, J, L, LE, LO, LU, M, MA, NA, O,

OR, P, PM, PO, S, SA, SE, SS, SG, T, TE, TO, V, VA, VI, Z, ZA).

**Scoring:** Count one point per contact with an EA station. Multipliers are each EA province worked per band. Final score is total QSO points times total multipliers.

Send logs within six weeks after the contest to: URE, EA DX Contest, P.O. Box 220, Madrid, Spain.

### ARRL 10 Meter Contest

0000Z Sat. to 2400Z Sun., Dec. 12-13

This is the 26th annual 10-Meter Contest organized by the ARRL. It's an extremely active competition in which stations can work each other within their own country as well as around the world. With 10 meters heating up, this year's event should really be good!

A maximum of 36 hours operating time is permitted out of the 48-hour contest period for all stations (listening time counts as operating time). The same station can be worked on SSB and again on CW for QSO points.

**Categories:** Single Operator, Mixed Mode, SSB only and CW only. Additionally, there are three power categories: QRP, 5 watts output or less; low power, 150 watts output or less; high power, more than 150 watts output. Finally, there is a Multi-Operator, Single Transmitter, Mixed Mode only.

**Exchange:** W/VE stations (including KH6 and KL7) send RS(T) and state or province. DX stations (including KH2, KP4, etc.) send RS(T) and QSO number starting with 001. Maritime or aeronautical mobile stations use RS(T) and ITU region. Novice/Tech stations must identify themselves with a /N or /T designator.

**Scoring:** SSB QSOs 2 points; CW 4 points; Novice/Tech CW QSOs 8 points.

**Multiplier:** U.S. states (50 plus District of Columbia), Canadian provinces (NB, PEI, NS, VE2-8, VY1, VO1, VO2), DXCC countries, and ITU regions (1, 2, 3).

**Final Score:** Total QSO points times the sum of U.S. states, Canadian provinces, DX countries, and ITU regions, per mode.

**Awards:** Certificates will be awarded to the top-scoring single operator station in each category (including /N and /T) for each ARRL section and DXCC country. Additionally, the top-scoring multi-operator station in each ARRL division and each continent will receive certificates.

Indicate a new multiplier only the first time it is worked. Dupe sheets are required for logs with 500 or more QSOs. Note: The frequencies from 28.3 through 28.35 MHz are designated as a non-contest window (This means that stations may not call "CQ contest" in this window.). The usual disqualification criteria will be enforced. A large SASE will get you log and instruction forms. The standard ARRL policy for elec-

tronic logs applies to this contest (contact the ARRL Contest Branch if you have any questions). Logs may be uploaded as ASCII entry files, following the ARRL Suggested Standard File Format, to the ARRL BBS (860-594-0306); or via the Internet to: <contest@arrl.org>

Mailing deadline for all entries is 30 days after the contest to: ARRL 10 Meter Contest, 225 Main Street, Newington, CT 06111.

### Croatian CW Contest

1400Z Sat. to 1400Z Sun., Dec. 19-20

This is another fairly new one for December, sponsored by Hrvatski Radio Amaterski Savez of Croatia. December is typically a slow contest month, so this should add some excitement to the end of the year for many.

**Classes:** Single Operator, All Bands—High Power, Low Power (<100 watts); Single Operator, Single Band—High Power, Low Power (<100 watts); Single Operator, All Bands—QRPP (<5 watts); Multi-Operator, All Bands, one TX; SWL. The minimum time of operation on one band is 10 minutes, although a quick band change in order to work a new multiplier is allowed.

**Exchange:** RST and serial number.

**Scoring:** 10 point contacts with 9A stations on 1.8/3.5/7 MHz, 6 points on 14/21/28 MHz; 6 point contacts with other continents on 1.8/3.5/7 MHz, 3 points on 14/21/28 MHz; 2 point contacts with own continent, including entrant's own country on 1.8/3.5/7 MHz, 1 point on 14/21/28 MHz. Multipliers are DXCC and WAE countries per band. Final score is total QSO points times the sum of multipliers worked on each band.

**Awards:** Certificates will be sent to the highest scoring station per category/DXCC country. Plaques will be awarded to the first, second, and third highest scoring station in each category, depending on sponsors.

Mail the logs within 30 days to: Hrvatski Radioamaterski Savez, Croatian CW Contest, Dalmatinska 12, 10000 Zagreb, Croatia. You can also send your log via e-mail: <hrs@hztel.hr>. Your log and summary sheet must be in plain ASCII file.

### Stew Perry

#### Topband Distance Challenge

1500Z Sat. to 1500Z Sun., Dec. 26-27

This is the third edition of this new one and another fine example of "grass roots" contesting. The idea, spawned by N6TR and W4AN (among others), was conceived to take advantage of winter activity on 160 meters, honor one of the band's heroes, W1BB, and most important, to have fun!

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Operation is limited to 160 meter CW only. A maximum of 14 hours of operating time is permitted. Only one break may be taken between your first and last QSO and the break must be at least 30 minutes in duration.

**Classes:** Single- or Multi-Operator. Only one signal shall be transmitted at a time. Remote or packet spotting is not permitted.

**Exchange:** Four-digit grid square only. An RST report may be given, but it is not required for a complete QSO.

**Scoring:** There are no multipliers. QSO points are based on the distance between the two stations. Credit a minimum of one point per QSO and an additional point for every 500 km between you and the other station worked. Note that all of the major

contest logging programs will support this calculation automatically (i.e., NA, TR, CT). If your logging software does not support this scoring method, they will compute your score for you if you submit your log electronically. You can also use the public domain program spscore.exe, which can be found via anonymous ftp to jzap.com in the pub/n6tr directory. Final score equals the total number of QSO points. Stations using less than 100 watts can multiply their score by 2. QRP stations (less than 5 watts) multiply score by 4.

Your log can be sent via the internet to <TBDC@contesting.com> or via diskette in MS-DOS/Windows format by January 28, 1999. Entries submitted by mail should be sent to: Boring Amateur Radio Club, P.O. Box 1357, Boring, OR 97009

U.S. Diskette-based logs must be in ASCII format. A summary sheet may be sent, but is not necessary.

### RAC Canada Winter Contest

0000Z to 2359Z, Sun., Dec. 27

This is a popular year-end affair sponsored by the Radio Amateurs of Canada. Amateurs all over the world are invited to participate.

**Classes:** Single Operator (All Bands, Low Power, Single Band) and Multi-Operator. Multi-Operator stations may operate on multiple bands simultaneously.

**Exchange:** Canadians send RS(T) and province/territory. All others send RS(T) and serial number.

**Frequencies:** QSOs may take place on 160-2 meters (no WARC activity). Suggested operating frequencies are: CW 25 kHz up from the lower band edge; SSB 1850, 3775, 7075, 7225, 14175, 21250, 28500 kHz. Check for CW activity on the half-hour.

**Scoring:** QSOs with Canadian stations are worth 10 points. Contacts with stations outside of Canada are worth 2 points. QSOs with official RAC stations (i.e., VE3RAC) are worth 20 points. You may work stations once per band and mode. Multipliers are Canadian provinces/territories and may be counted once per band/mode. Final score is total QSOs points times your multiplier count from all bands.

**Awards:** A number of plaques will be awarded to winners of each category, including the top foreign entry, who will win the Jorge Bozzo, LU8DQ, memorial plaque sponsored by Alan Goodacre, VE3HX/VE2AEJ.

All entries must be postmarked by January 31st and should be sent to: RAC, 720 Belfast Rd., #217, Ottawa, ON K1G 0Z5 Canada. Final results will be published in the *The Canadian Amateur*, which will be sent to all certificate winners.

### ARRL Straight Key Night

0000Z to 2359Z, Jan. 1  
(7 PM Tues. to 7 PM Fri., EST)

This is a friendly meeting on the air using a straight key only. Suggested frequencies on 80, 40, and 20 meters are 60 to 80 kHz up from lower band edges, 10 kHz from lower edge of Novice bands.

Use SKN instead of RST in the exchange to "clue-in" other stations. Include a list of stations worked plus your vote for the best fist heard during that period (not necessarily one you've worked). This is not a contest, so any additional chatter is encouraged.

Send your report and vote for "best fist" and "most interesting QSO" to ARRL SKN, 225 Main Street, Newington, CT 06111 by January 10, 1999.

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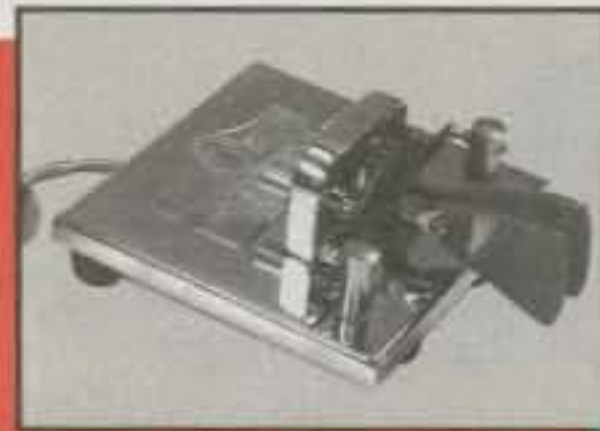
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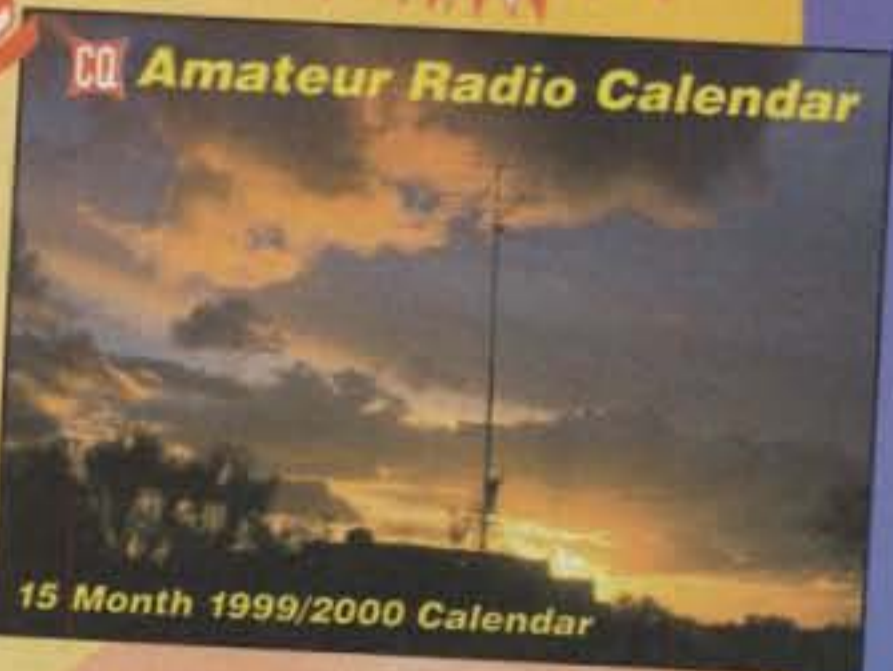
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# AWARDS

## NEWS OF CERTIFICATE AND AWARD COLLECTING

The USA-CA certificate is a very large, colorful, and in every way impressive certificate. About a third to a half of the applications that come across my desk are for all 3076 counties. Let me remind you that the certificate is yours to display with wonderful bragging rights in your shack for working and confirming the beginning level of just 500 counties. You can display the certificate years before you submit your final endorsement request. I don't know why more stations don't take advantage of this. Compared to most awards, the fees are modest and so are the endorsements. If you're in a position to apply at a lower level than the 3076, I urge you to do so. I've even followed my own advice (see the 500 listing) and plan to endorse it every month for the next several months.

### Awards Available

**Lithuania's LRMD-60 Award.** Talk about good timing! This information arrived on my deadline day for writing the December column, in late September. No sample was provided. The stations should be active for a full month after you receive this issue.

The award commemorates the 60th anniversary of the Lithuanian Amateur Radio Society. Europeans need to make six contacts with different special LY stations (which will be using the LY60, LY61, LY62, LY63, and LY64 prefixes). Non-European stations need only three such QSOs. On VHF/UHF, only one contact needs to be made. The special LY stations will be active during the period of October 1, 1998 to December 31, 1998. Send a log extract plus fee of \$US5 or 10 IRCs by April 1, 1999 to: LRMD Awards Manager, P.O. Box 1000, Vilnius, Lithuania 2001.

**Poland's WARZAWA 2000 Award.** This award commemorates the 700th anniversary, in the year 2000, of the granting of civil rights to Warsaw, Poland. To earn this handsome multicolored certificate showing old Warsaw, you must earn 700 points by the following schedule: each station from Warsaw = 300 points; each station from SP5 District (WA) = 200 points. You have a six-year window to work a minimum of three Warsaw stations for the award.

Contacts must be made during the period beginning January 1, 1997 and ending December 31, 2003. GCR list and fee of

65 Glebe Road, Spofford, NH 03462-4411  
e-mail: k1bv@top.monad.net

### USA-CA SPECIAL HONOR ROLL

Gene Imbler, NØKGX  
USA-CA All Counties #954  
September 8, 1998

Charles E. Ralph, W3CR  
USA-CA All Counties #955  
September 15, 1998

Rodney D. Crawford, WD8CTX  
USA-CA All Counties #956  
September 23, 1998

Jake L. Freeman, WD5DMH  
USA-CA All Counties #957  
September 24, 1998

### USA-CA HONOR ROLL

**500**  
N5KUC .....3035  
NØKGX .....3036  
K2YJL .....3037

G3LPS .....3038  
W3CR .....3039  
WD8CTX .....3040  
WD5DMH .....3041  
N9STL .....3042  
K1BV .....3043

**2000**  
N5KUC .....1135  
NØKGX .....1136  
AA3DP .....1137  
W3CR .....1138  
WD8CTX .....1139  
WD5DMH .....1140

**1000**  
N5KUC .....1487  
NØKGX .....1488  
W3CR .....1489  
WA5VGI .....1490  
WD8CTX .....1491  
WD5DMH .....1492

**2500**  
N5KUC .....1062  
NØKGX .....1063  
W3CR .....1064  
WD8CTY .....1065  
WD5DMH .....1066

**1500**  
N5KUC .....1236  
NØKGX .....1237  
W3CR .....1238  
WA5VGI .....1239

**3000**  
N5KUC .....972  
NØKGX .....973  
W3CR .....974  
WD8CTY .....975  
WD5DMH .....976

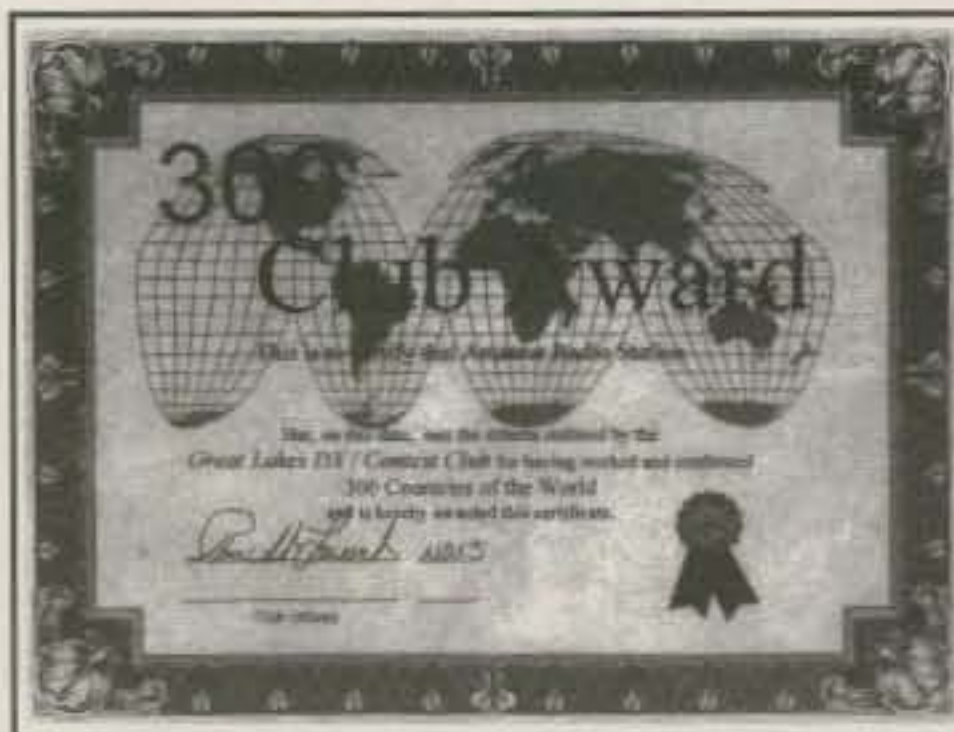
The total number of counties for credit for the United States of America Counties Award is 3076. The basic award fee for subscribers is \$4.00. For nonsubscribers it is \$10.00. To qualify for the special subscriber rate, please send a recent CQ mailing label with your application. Initial application may be submitted in the USA-CA Record Book, which may be obtained from CQ Magazine, 25 Newbridge Road, Hicksville, NY 11801 USA for \$2.50, or by a PC-printed computer listing which is in alphabetical order by state and county within the state. To be eligible for the USA-CA Award, applicants must comply with the rules of the program as set forth in the revised USA-CA Rules and Program dated March 1, 1997. A complete copy of the rules may be obtained by sending an SASE to Ted Melinosky, K1BV, 65 Glebe Road, Spofford, NH 03462-4411 USA. DX stations must include extra postage for airmail reply.



The WARZAWA 2000 award, which commemorates the 700th anniversary of the granting of civil rights to Warsaw, Poland in the year 2000.

\$7US (\$8US for airmail) or the equal amount in IRCs. Apply to Piotr Brydak, SP5PB, Okolnik 9a m16, 00-368, Warszawa, Poland.

**USA 300 Club Award.** I certainly remember my beginning DX hunting days when the goal of 300 countries was an almost impossible plateau set in a distant future. Here's an award which commem-



Sponsored by the Great Lakes DX/Contest Club, the 300 Club Award is issued for contacting 300 countries.

orates your achievement of this goal. It's sponsored by the Great Lakes DX/Contest Club, which plans to use the proceeds from the fees to help fund future club DX-peditions. All that's required is to request the application form and return it with the fee of \$5US. You must have worked and possess at least 300 DXCC countries. The cards aren't needed; just return the application form with the certification of two other amateurs attesting to the fact that the 300 countries have been worked and confirmed. Apply to K9PXV, Great Lakes DX/Contest Club, 10058 Oak Island Drive, Laingsburg, MI 48848.

**USA WARC Band DX Award Series.** Jim Mackey, K3FN, is well known as a supplier of foreign postage for DXers seeking to make it easy for stations in rare locations to reply to their QSLs. He also advocates increasing activity on the WARC bands, and currently sponsors the following three awards to encourage DX chasing on these new and lightly used bands. Each award requires the use of a



The WARC Band Awards are available for each of the three WARC bands. A minimum total of 300 countries is required for each award.

special listing, available for \$2 or 4 IRCs.

The WARC Band Awards are multi-colored certificates, one for each band. The WARC 100 and 500 Awards are an attractively etched plaque and wood combination which confers great bragging rights on your shack wall. Endorsement plates are attached to the basic plaque. Cards aren't needed, just the completed application. The fee for the WARC Band Award is \$10US, and the fee for each plaque is \$50US or 100 IRCs. Apply to: James E. Mackey, K3FN, P.O. Box 270569, West Hartford, CT 06127-0569.

The WARC Band Awards are available for each of the three WARC bands. A minimum total of 300 countries is required for each award. An honor roll designation is possible with these awards, depending on interest.

The WARC 100 Award is available to all amateurs who have made valid two-way QSOs with 100 or more CQ Zones on the WARC bands (30, 17, and 12



The WARC 500 Award is available to all amateurs who have made valid two-way QSOs with 500 or more countries on the WARC bands.

meters). The basic award is for QSOs with 100 zones. A total of 40 zones per band is possible. The award is endorsable in five zone increments after the 100 zone level has been attained.

The WARC 500 Award is available to all amateurs who have made valid two-way QSOs with 500 or more countries on the WARC bands. The basic award is for QSOs with 500 or more countries. No distinction as to mode. The award is endorsable in 100 country increments after the 500 level has been attained.

## URL of the Month

A very comprehensive Islands On The Air

(IOTA) listing may be found at the EI5DI site at the following URL: <<http://www.iol.ie/~okanep/>>. About two thirds of the way down the page look for the item which mentions IOTA Island References. There is a separate listing for each continent. Paul is well known for his contest logging program, which is available for downloading on his home page.

Coming next month we will have details on the ZL2000 Award for New Year's 1999. Also featured will be part one of the New Zealand (NZART) series. Please continue to send in award samples from your club or organization.

73, Ted, K1BV



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Packaged in a custom rugged plastic hand-held plastic enclosure, the CIA-HF is meant to be used in the field or laboratory with eight internal AA batteries or an external 12 - 16 VDC power source. The unit is small enough to take up a tower to place right at the feed-point of an antenna under test or to use on a lab bench without taking up much space. The graphical Liquid Crystal Display operates in low light or direct sunlight environments.

The frequency range for the standard CIA-HF is **400 kHz to 54 MHz in one kHz steps**. The impedance, resistance and reactance ranges are **0 to 1000 ohms in three ranges**. In addition to the graphical presentations, the CIA-HF will show the following parameters in digital format: Relative Q factor, **2:1 SWR Bandwidth**, Phase Angle (**theta**), **Minimum SWR** frequency, Sweep width/division, SWR at center frequency (**Fc**), **Return Loss**, Rough indication of Inductance or Capacitance values, **DC Voltage (2 to 25 volts)**, (50 ohm) normalized impedance and the **distance to first short or open** in coaxial cable.

A **serial port** is provided with firmware drivers to communicate with a Personal Computer for purposes of controlling the CIA-HF and for downloading data and graphs to a PC for future reference. Possible applications include but are not limited to **tuning: antennas or RF resonate circuits, feedline stubs, RF filters, MRI circuits, baluns and matching networks**. Use an external loop on the end of a short piece of coax to make the CIA-HF operate like a stable and backlash-free **grid dip oscillator** with a graphical display of the relative Q factor. A beeping tone gives **audible feedback of SWR** at a single frequency for hands-free tuning of an antenna or resonate circuit without even having to look at the CIA-HF.

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## Amsterdam Island

This month stateside DXers have a rare opportunity to work one of the Most Wanted DXCC entities. Eric, F5SIH, and Mehdi, F5PFP, will operate as **FT5ZH** from Amsterdam Island (AF-002) November 27 to December 25. The pair will use the services of the *Marion Dufresne*, the same ship that successfully ferried the Heard Island **VKØIR** DXpedition a couple of years ago. The two French DXers will fly to Reunion Island in early November and meet with local amateurs before boarding the ship. Their journey takes them to both other French Antarctic outposts: Crozet and Kerguelen. Weather permitting, they expect to land on Amsterdam on November 25 and have an extensive antenna farm up within the next two days.

Their gear includes two FT-920s, kilowatt amplifiers, 3-element, 20 meter Yagis, 4-element tribanders, and a Titanex vertical for the low bands. They plan to operate around the clock until their departure on December 25. They return directly to Reunion, and will be back in France by the end of the year.

The QSL route is via F6KDF, either direct or via the French REF bureau. This is a radio club, with several people helping with the cards. Either U.S.\$1 or two International Reply Coupons (IRCs) should provide sufficient return postage. Donations are welcome.

Eric and Mehdi will operate RTTY as well as CW and SSB, but not during the first days of operation. Because they have limited communications facilities (other than amateur radio), they will not be posting logs during the DXpedition. Logs may be available after their return to France.

Amsterdam and its companion islands pose a special challenge to stateside DXers. They lie near the antipodes, that spot on the Earth farthest away from the U.S. If you draw a line from the U.S. through the center of the Earth, it will emerge near Amsterdam. This means even the short path between the two points is a long one. Amsterdam lies more than 11,000 from California, for example.

Very long propagation paths are difficult for two reasons. The first is that the signal-to-noise ratio is likely to be very low after more than a half-dozen hops. Look for the FT5ZH signals to be weak, even with the amplifiers and beams. Second, long propagation paths require that your



The Marion Dufresne will once again feature prominently in an Indian Ocean DXpedition.

antenna concentrate radiation in very low angles. The only way to do this is to get the antenna higher above the ground, something most DXers find difficult. Antennas less than a wavelength above the surrounding terrain will make working FT5ZH even more difficult.

There is some good news, however. Many thousands of amateurs were able to work the VKØIR operation, and the FT5ZH DXpedition is operating from nearby Heard, with substantially better propagation. Compared to the propagation during the VKØIR trip, this month should see much higher solar flux, with correspondingly longer and stronger band openings.

DXers on the U.S. east coast should look east for FT5ZH (but see below). The low bands will be best 22-0200Z soon after local sunset. Try 30 meters 2000-0100 and 20 and 17 meters 1800-2400Z. If band conditions are good, there is a chance of a 15 meter opening around 1800Z. The best long-path opening is at sunset in Amsterdam—1400Z. Try both 30 and 20 meters.

West coast DXers should try the low bands at Amsterdam's sunset (1400Z) and 30 meters in the couple of hours thereafter. There should be a brief opening on 20 and even 17 meters around 1800Z. Note that west coast DXers should look to the west for Amsterdam. Otherwise the long path, which isn't much long-

er than the so-called short path, should provide contacts from 22-0100Z on 20 and 30 meters.

DXers in the middle of the country can try the low bands 22-0200Z and 30 meters 20-0200Z. Both 20 and 17 meters should be open 16-0200Z with the greatest possibility of a 15 meter opening from 18-2200Z.

While band conditions have improved dramatically since the VKØIR Heard Island operation, working Amsterdam from the U.S. will not be easy. As with VKØIR, DXers may have to resort to the long path for a contact.

When working stations near the antipodes, one has to pay particular attention to antenna direction. The peak signal direction may be other than the most direct path. Signals may peak in the opposite direction, or even at a skew path. When listening to FT5ZH, keep your antenna moving, searching for the strongest signal. Especially on the west coast, this direction may change minute to minute. Keep on your toes, and good hunting!

Eric and Mehdi did not have operating permission for Crozet and Kerguelen as of mid-October. However, they will attempt to obtain same for the brief stops on those spots. Helios, FT5XN, begins another tour of duty on Kerguelen in January, and Gilles, F5AGL, should be active for the next year as **FT5WH** from

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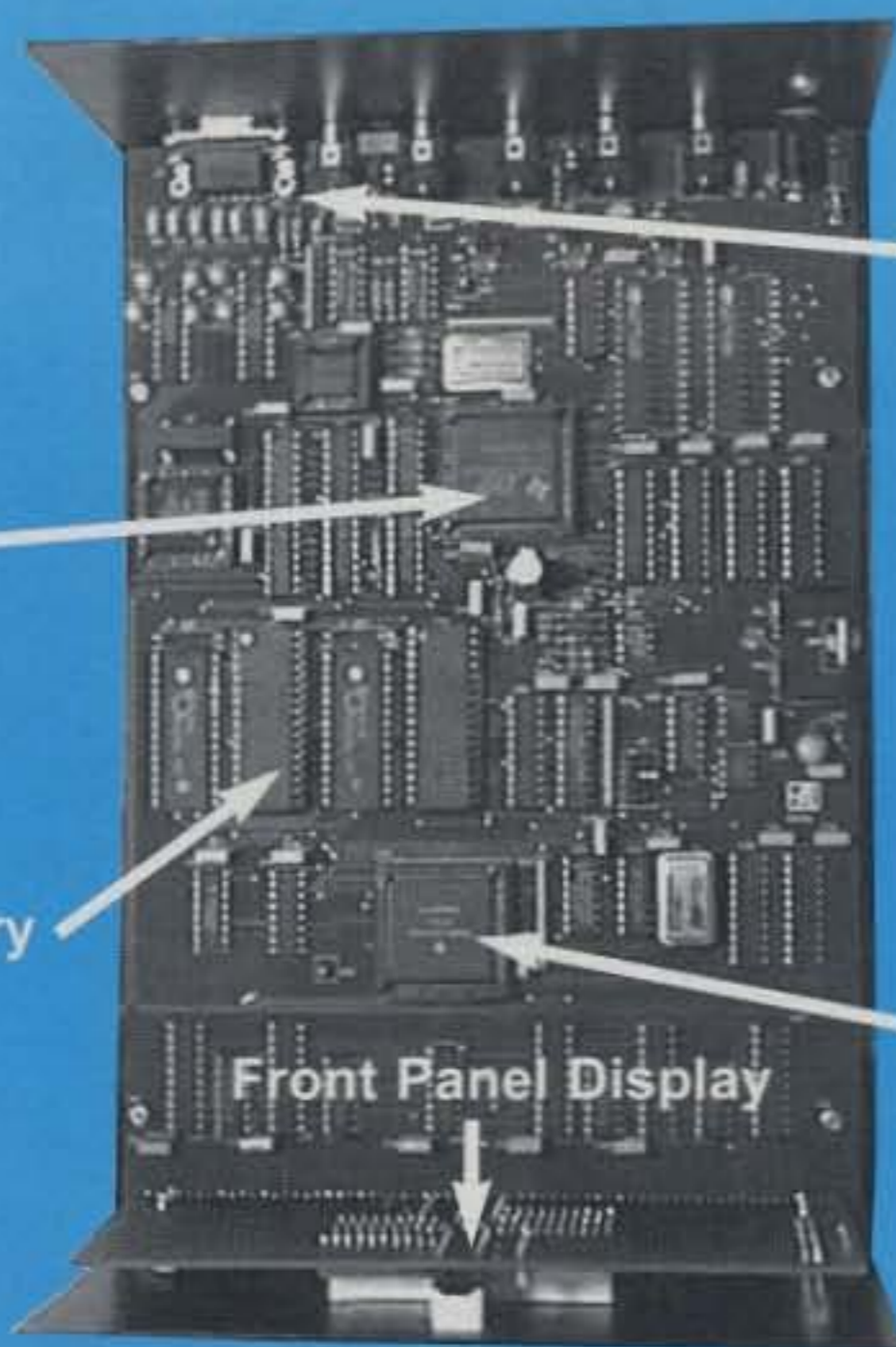


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## The WPX Program

### SSB

2686.....CT1ESD 2688.....I2VWG  
2687.....LA8ZJA 2689.....HJ3PXA

### CW

2994.....OK2PKY 2996.....SV1CDP  
2995.....I8QFK

### Mixed

1819.....JR3ADB 1820.....I8QFK

**CW:** 350 OK2PKY, I8QFK. 400 OK2PKY, I8QFK. 450 OK2PKY, I8QFK, AI9L. 500 OK2PKY. 1950 OZ5UR. 2000 OZ5UR.

**SSB:** 350 CT1ESO, I2VWG. 400 CT1ESO, I2VWG. 450 CT1ESO, I2VWG. 500 CT1ESO, I2VWG. 550 CT1ESO, I2VWG. 600 I2VWG. 650 I2VWG. 700 I2VWG. 2350 KD9OT.

**Mixed:** 450 I8QFK. 500 I8QFK.

20 meters: AI9L.  
80 meters: OK2PKY.  
160 meters: DJ4GJ.

Europe: OK2PKY.

**Award of Excellence Plaque Holders:** K6JG, N4MM, W4CRW, K5UR, K2VV, VE3XN, DL1MD, DJ7CX, DL3RK, WB4SIJ, DL7AA, ON4QX, 9A2AA, OK3EA, OK1MP, N4NO, ZL3GQ, W4BQY, I0JX, WA1JMP, K0JN, W4VQ, KF2O, W8CNL, W1JR, F9RM, W5UR, CT1FL, W8RSW, WA4QMQ, W8ILC, VE7DP, K9BG, W1BWS, G4BUE, N3ED, LU3YL/W4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SM0DJZ, DK5AD, WD9IIC, W3ARK, LA7JO, VK4SS, I8YRK, SM0AJU, N5TV, W6OUL, WB8ZRL, WA8YTM, SM6DHU, N4KE, I2UIY, I4EAT, VK9NS, DE0DXM, DK4SY.

UR2QD, AB9O, FM5WD, I2DMK, SM6CST, VE1NG, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, HA8XX, K7LJ, SM3EVR, K2SHZ, UP1BZZ, EA7OH, K2POF, DJ4XA, IT9TQH, K2POA, N6JV, W2HG, ONL-4003, W5AWT, KB0G, HB9CSA, F6BVB, YU7SF, DF1SD, K7CU, I1POR, K9LJN, YB0TK, K9QFR, YU2NA, W4UW, NX0I, WB4RUA, I6DQE, I1EEW, I8RFD, I3CRW, VE3MS, NE4F, KC8PG, F1HWB, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, KC7EM, YU1AB, IK2ILH, DE0DAQ, I1WXY, LU1DOW, N1IR, IV4GME, VE9RJ, WX3N, HB9AUT, KC6X, N6IBP, W5ODD, I0RIZ, I2MQP, F6HJM, HB9DDZ, W0ULU, K9XR, JA0SU, I5ZJK, I2EOW, IK2MRZ, KS4S, KA1CLV, WZ1R, CT4UW, K0IFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, OE1EMN, W9IL, S53EO, DF7GK, S57J, EA8BM, DL1EY, KU0A, K0DEQ, VR2UW, 9A9R, UA0FZ, DJ3JSW, OE6CLD, HB9BIN, I7PXX, N1KC.

**Award of Excellence Plaque Holders with 160 Meter Endorsement:** K6JG, N4MM, W4CRW, K5UR, VE3XN, DL3RK, OK1MP, N4NO, W4BQY, W4VQ, KF2O, W8CNL, W1JR, W5UR, W8RSW, W8ILC, K9BG, W1BWS, G4BUE, LU3YL/W4, NN4Q, VE7WJ, VE7IG, W9NUF, N4NX, SM0DJZ, DK5AD, W3ARK, LA7JO, SM0AJU, N5TV, W6OUL, N4KE, I2UIY, I4EAT, VK9NS, DE0DXM, UR2QD, AB9O, FM5WD, SM6CST, I1JQJ, PY2DBU, HI8LC, KA5W, K3UA, K7LJ, SM3EVR, UP1BZZ, K2POF, IT9TQH, N6JV, ONL-4003, W5AWT, KB0G, F6BVB, YU7SF, DF1SD, K7CU, I1POR, YB0TK, K9QFR, W4UW, NX0I, WB4RUA, I1EEW, ZP5JCY, KA5RNH, IV3PVD, CT1YH, ZS6EZ, YU1AB, IK4GME, WX3N, W5ODD, I0RIZ, I2MQP, F6HJM, HB9DDZ, K9XR, JA0SU, I5ZJK, I2EOW, KS4S, KA1CLV, K0IFL, WT3W, IN3NJB, S50A, IK1GPG, AA6WJ, W3AP, S53EO, S57J, DL1EY, K0DEQ, VR2UW, DJ3JSW, OE6CLD, HB9BIN, N1KC.

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.

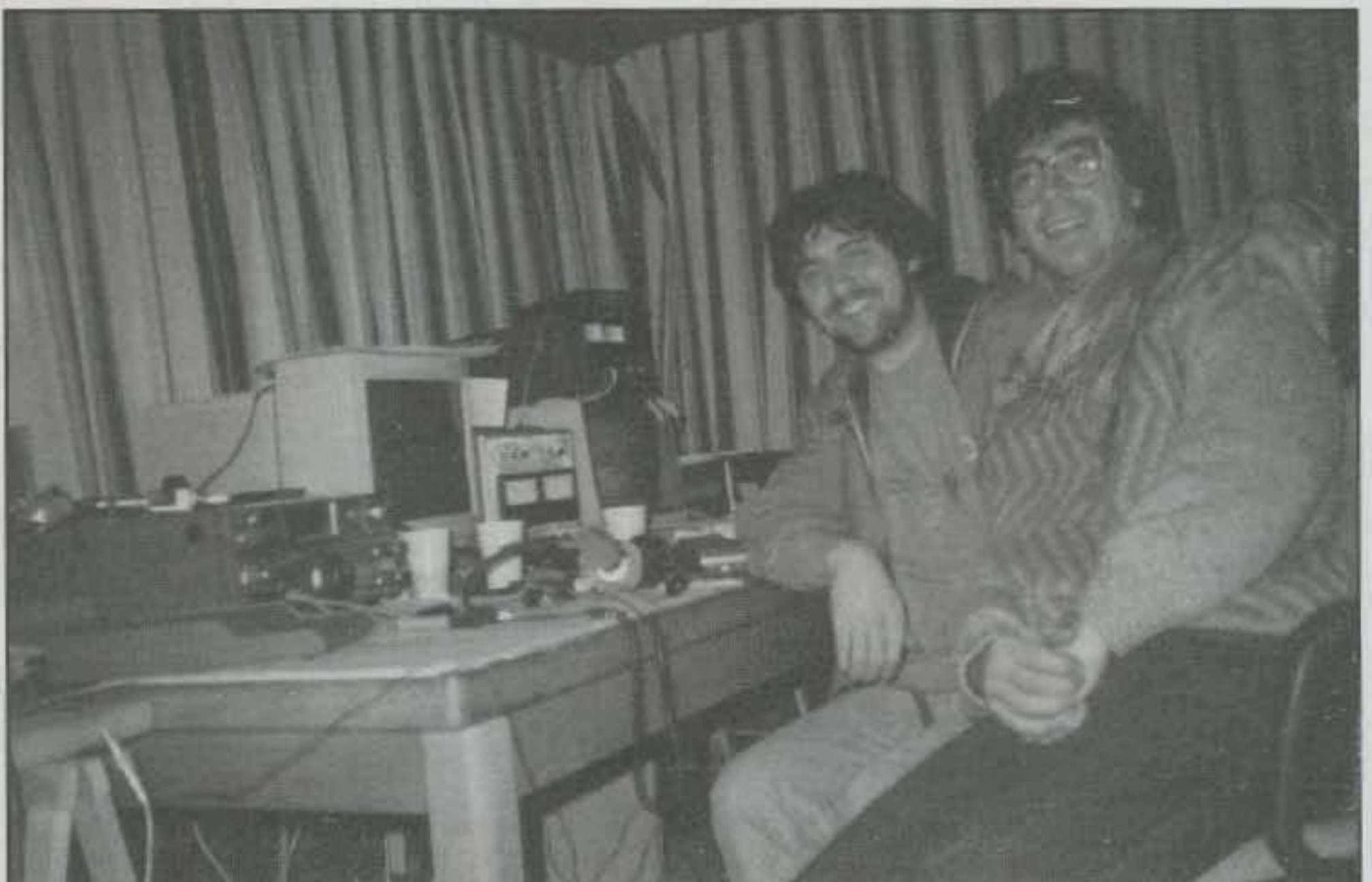
Crozet. QSL cards for FT5WH will be handled by the F6KDF club.

Thanks to Jeffery Pawlan, WA6KBL, the pilot station for North America, who provided much of this information.

The French Antarctic islands have been claimed by France since the late 18th century. Until recently, they were havens for whalers and fur hunters. The French have established small weather and research

stations on three of the islands, the largest on Kerguelen. The islands are off normal shipping lines, and their only visitor is the twice-yearly supply ship, currently the *Marion Dufresne*.

Fortunately for DXers, there is usually at least one amateur at one of the bases during the long Antarctic winter. This year with two resident amateurs and the month-long operation of FT5ZH, stateside



On4WW (left) and ON6TT at the 10 meter station of the multi-multi OT\*A (the number changes every year).

DXers should have an excellent opportunity to bag all three, perhaps driving these islands out of the top 50 Most Wanted.

### Rates Increase

The ARRL is increasing its fees for the Outgoing QSL Service, effective in 1999. The rate per pound (or portion of a pound) will climb by 50%, from \$4/pound to \$6/pound. The rate for 10 cards will remain at \$1. Bill Kenamer, K5FUV, ARRL Membership Services Manager, says this still remains a good bargain, with the ARRL picking up more than a third of the cost of the service. The last increase was three years ago.

Also, DXers should note that U.S. domestic postage rates are set to increase to 33 cents on January 10, 1999. This means that any self-addressed, stamped envelopes (SASEs) that might come back after January 10 should have 33 cents in postage. DXers who keep their own envelopes at their incoming QSL bureau should send some one cent stamps to the bureau. Of special note is the letter-valued stamp the USPS typically issues at a rate increase. I think we're up to the G stamp now. Whatever the letter, this stamp *cannot* be used for any foreign postage. You must use a stamp with a numerical value for any overseas postage.

The USPS also says that international postage rates will probably change (increase) some time in 1999.

### DX News

Dave Heil, K8MN, is off to Africa again, this time for a three-year assignment in Tanzania. Look for Dave as **5H3US** with a big signal on all bands and modes. His initial effort will be with an R5 vertical and an HF2V, but his tower will be up soon. QSL 5H3US to Ken "Shep" Scheper WA8JOC, 5875 Cedaridge Drive, Cincinnati OH 45247. Shep prefers SASEs and processes same immediately. Donations toward postage are cheerfully accepted; such donations will go toward paying bulk postage for the cards received via the bureau, which he handles a couple of times per year.

Phil Weaver, G4JMB, best known for his efforts as **VR2CT**, is now in Thailand. He is presently active as **HS0/G4JMB**, but hopes to get his requested call of **HS0Z** soon. Phil says his former addresses are no longer valid. DXers wishing to QSL **HS0/G4JMB**, **9M6CT**, **VR2CT**, and **G4JMB** should send cards directly to Phil at P.O. Box 7, Patpong Post Office, Bangkok 10506, Thailand. Look for Phil as **9M6CT** from East Malaysia December 7-January 16 and again in March-April.

Regular DXpeditioners (and Scuba enthusiasts) Paul Young, K1XM, and Charlotte Richardson, KQ1F, will be

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ELNEC is a MININEC-based program with nearly all the features of EZNEC except transmission line models and a limitation of about 127 segments (6-8 total wavelengths of wire). Not recommended for quads, long Yagis, or antennas with horizontal wires lower than 0.2 wavelength; excellent results with other types. Runs on any PC-compatible with 640k RAM, CGA/EGA/VGA/Hercules graphics. Specify coprocessor or non-coprocessor type.

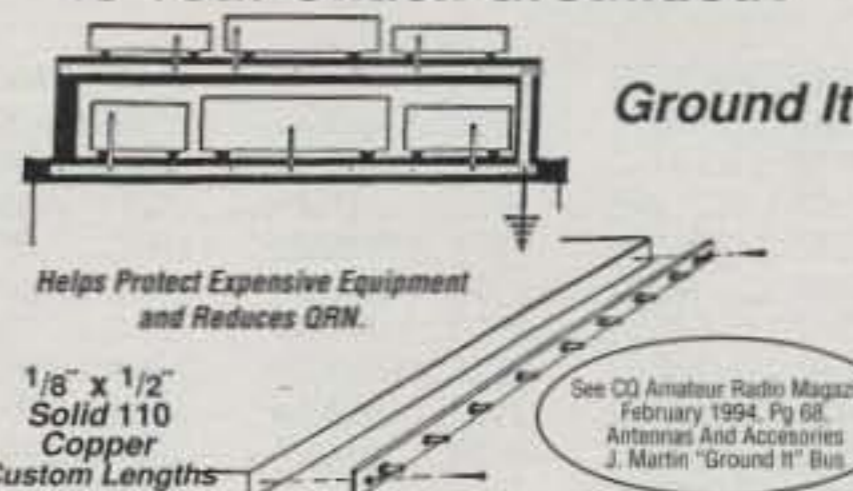
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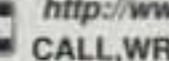
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### MIXED

4774.....F9RM	3390.....I2PJA	2990.....HA8XX	2645.....I2EOW	2254.....S58MU	2019.....G4OBK	1711.....I2EAY	1371.....F6HMJ	1151.....VE6BMX
4740.....9A2AA	3386.....N9AF	2966.....YU7SF	2631.....IK2ILH	2229.....K5UR	2001.....OE6CLD	1696.....PY2DBU	1328.....W9IAL	1142.....VE6FR
4030.....W2FXA	3363.....N4MM	2940.....K9BG	2574.....S53EO	2218.....F6IGF	1919.....SM6CST	1653.....AE5B	1324.....AA1KS	1110.....W2CF
3899.....EA2IA	3345.....SM3EVR	2926.....YU7BCD	2573.....K0DEQ	2187.....9A4RU	1875.....HA9PP	1628.....JN3SAC	1311.....WB2AQC	1100.....KB5OHT
3775.....W1CU	3262.....N5JR	2852.....I2MQP	2546.....SM6DHU	2175.....W9IL	1851.....VE4ACY	1625.....K0NL	1307.....NH6T	1074.....W2EZ
3664.....K6JG	3240.....9A2NA	2831.....KF2O	2512.....JH8BOE	2169.....W8UMR	1836.....F5BBX	1607.....OZ1ACB	1293.....W0IZV	1073.....JR3TOE
3623.....N4NO	3183.....YU1AB	2776.....W2ME	2500.....HA5NK	2168.....N6JM	1778.....DJ1YH	1478.....I1-21171	1257.....WT3W	1059.....RA0FU
3538.....F2YT	3103.....I1EEW	2776.....I1POR	2484.....K8LJG	2165.....W6OUL	1767.....I0AOF	1396.....YU1ZD	1245.....N1KC	989.....US7MM
3504.....N6JV	3039.....WA8YTM	2736.....WB2YQH	2376.....HA0IT	2140.....YU7JDE	1765.....K5IID	1389.....K0KG	1198.....S52QM	906.....N3KR
3413.....VE3XN	3005.....PA0SNG	2660.....4N7ZZ	2264.....K2XF	2138.....W4UW	1732.....LU8DY	1378.....Z32KV	1197.....KW5USA	

### SSB

4122.....I0ZV	2772.....N4NO	2382.....CT1AHU	2088.....K5RPC	1714.....K2XF	1489.....K3IXD	1265.....LU5EWO	1016.....WT3W	894.....EA5DCL
3743.....VE1YX	2757.....I4CSP	2378.....KF2O	2033.....IN3QCI	1703.....N6FX	1489.....I3ZSX	1243.....T30JH	1010.....K17AO	869.....JR3TOE
3656.....ZL3NS	2731.....HA8XX	2360.....EA5AT	1956.....W4UW	1681.....YU7SF	1489.....K8MDU	1241.....SV3AGR	1004.....LU3HBO	804.....AG4W
3405.....F6DZU	2725.....I1EEW	2296.....I8KCI	1906.....K5UR	1659.....K8LJG	1451.....IT9SVJ	1229.....YC2OK	965.....DJ4GJ	792.....EA5GMB
3404.....K6JG	2714.....N5JR	2291.....YU7BCD	1881.....SM6DHU	1649.....EA5CGU	1450.....K2EEK	1196.....K0NL	954.....EA1AX	778.....N3DRO
3384.....I2PJA	2673.....I2MQP	2281.....I2EOW	1867.....OE6CLD	1590.....KS4S	1395.....EA5KY	1182.....W2FKF	936.....I2EAY	697.....I2VGV
2976.....F2VX	2612.....PA0SNG	2260.....JD8IT	1809.....LU8DY	1536.....HA5NK	1353.....K5IID	1145.....K4CN	933.....DF1IC	675.....VE6BMX
2949.....N4MM	2507.....9A2NA	2257.....I1POR	1802.....OE2EGL	1535.....CT1BWW	1346.....W9IL	1127.....EA8AG	924.....N1KC	660.....F5LIW
2935.....EA8AKN	2434.....LU8ESU	2189.....KF7RU	1760.....GA9UT	1522.....W6OUL	1336.....G4OBK	1030.....NH6T	921.....HA9PP	613.....SM5DAC
2921.....OZ5EV	2385.....4X6DK	2138.....EA1JG	1754.....W2WC	1518.....AE5B	1288.....I3UBL	1027.....DL8AAV	919.....CP1FF	608.....KY3GK
2911.....EA2IA	2383.....WA8YTM	2131.....CX6BZ	1741.....KB0C	1497.....DK5WQ	1243.....DF7HX	1017.....IK4HPU	894.....EA3EQT	605.....N7VY

### CW

3843.....WA2HZR	2674.....YU7SF	2124.....JA9CWJ	1906.....G4SSH	1730.....IT9VDQ	1457.....I2EAY	1156.....4X6DK	1006.....9A3UF	820.....K3WWP
3489.....N6JV	2468.....W2ME	2050.....KA7T	1876.....HA0IT	1690.....DJ1YH	1430.....IK5TSS	1136.....I2MQP	993.....HA9PP	759.....VE6BMX
3176.....N4NO	2465.....VE7DP	2046.....HA8XX	1871.....OZ5UR	1671.....LU26A	1411.....SM5DAC	1124.....LU3DSI	949.....K2LUO	741.....DL3NEO
3105.....VE7CNE	2423.....N5JR	2035.....HA5NK	1863.....N6FX	1641.....G4OBK	1349.....N1IA	1074.....W9IL	906.....YU1TR	730.....WT3W
3098.....UA3FT	2401.....G4UOL	1980.....KF2O	1816.....SM6CST	1641.....W6OUL	1298.....EA6AA	1058.....DF6SW	884.....PY4WS	725.....K0NL
2933.....K6JG	2362.....YU7BCD	1973.....G3VQO	1798.....W2WC	1603.....IK3GER	1270.....K5IID	1042.....W4UW	870.....HB9CSM	678.....IK8VRP
2837.....EA2IA	2350.....N4MM	1956.....K8LJG	1755.....K5UR	1537.....JN3SAC	1268.....DJ4GJ	1041.....W9IAL	847.....NH6T	603.....OE6CLD
2881.....N4UU	2335.....WB8YTM	1954.....S58MU	1750.....K2XF	1527.....EA6BD	1175.....EA2CIN	1033.....I2EOW	844.....JK1AJX	600.....N1KC
2857.....YU7LS	2196.....VR2UW	1954.....T14SU	1744.....I7PXV	1514.....EA5YU	1168.....AC5K	1033.....LU7EAR	821.....RA0FU	
2811.....K9QVB	2194.....9A2NA	1927.....SM6DHU						

joined by Ann, WA1S, for a late-November trip to Kosrae (OC-059), Micronesia. They will operate multi-single in the CQ WW CW, perhaps with a special call. Look

for them before the contacts as well, with their individual calls: Paul, V63YP, Charlotte, V63HC, and Ann, V63HO. After the contest they travel to Pohnpei (OC-

010) and Chuuk (OC-011). QSL their home calls.

Ted **NH6YK** plans to be active from Midway **NH4/** December 20 – January 2. Ted reports that he should have more time for radio this trip. QSL home call.

Denise **F6HWU** will operate as **D68WU** from the Comoros November 15 – December 2. Activity will be mostly CW and RTTY. QSL home call.

Jorgen **OZ8AE** will operate **OX/** from Greenland to December 2, including an entry in CQ WW CW. QSL via home call.

John, NZ9Z, Dave, KJ9I, and Rudolph, NF9V, will operate from Pelau December 8–17 as **T88II**. They will be on all bands 160–10 meters, emphasizing Top Band. QSL to Dave Schmocker, KJ9I, N7298 County Trunk Hwy F, Oconomowoc WI 53066-9040. Contributions appreciated.

Den, JI1FLB, will operate from Ogasawara December 30 – January 3 as **JI1FLB/JD1**.

Shinichi Mako Toyofuku, JA1OEM, plans to operate from the Ivory Coast TU November 26 – December 5. He then goes to the Gambia where he holds the call sign **C56HP**, until Christmas. Try 3 or 13 kHz up on CW and 3795, 7043, 14145, 18115, 21245, 24945, and 28475 kHz on SSB. QSL direct to Mako at Box 9, Sawara 287-8691, Japan.



*Vlado, Z32KV, remains active from Macedonia (former Yugoslav republic).*



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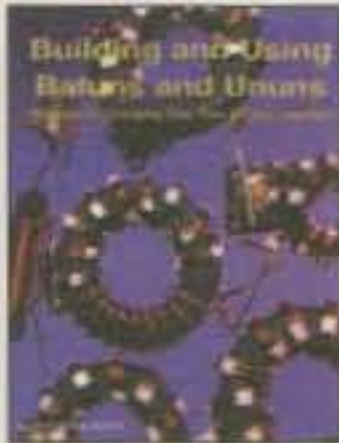
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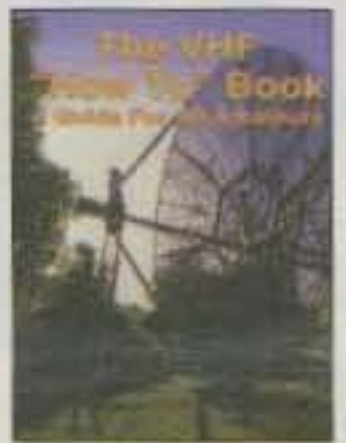
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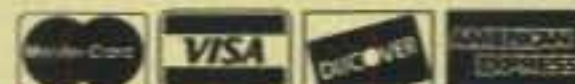
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 63, Cheong Ju 360-600, Korea  
 HL3EPH to Suh Pil Won, P.O. Box  
 67, Suwon 440-600, Korea  
 HL3EPI to Kim Young Ju, P.O. Box  
 67, Suwon 440-600, Korea  
 HL4GKR to Ki Bong Park, Ga-202,  
 Daemyung APT, Sosohak-dong,  
 Wansan-gu, Chonju 560-130, Korea  
 HL4GMJ to Young Ok Ha, Ga-202,  
 Daemyung APT, Sosohak-dong,  
 Wansan-gu, Chonju 560-130, Korea  
 HL5UOK to Lee Young Su, P.O. Box  
 20, Dong Taegu, Korea  
 HS1CKC to Winit Kongprasert,  
 49/203 Jangwattana Road, Prakret,  
 Nonthaburi 11120, Thailand  
 HS1NRU to Noppachart  
 Limpaphayom, 567 Nakornchaisri  
 Road, Dusit, Bangkok 10300,  
 Thailand  
 HS9CA to Somchai Limphanudom,  
 275 Thamanoonvithi, Haadyai,  
 Songkhla 90110, Thailand  
 JI1FLB/JD1 to Seiichi Tanaka, 2-12-  
 20 Nishimizumoto, Katushika-ku,  
 Tokyo 125-0031, Japan  
 JQ1SUO/JD1 to Eiji Shinoda, 3-3-17,  
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*The table of QSL managers is cour-  
 tesy of John Shelton, K1XN, editor of  
 The GOLIST, P.O. Box 3071, Paris  
 TN 38242 (phone 901-641-0109; e-  
 mail: <golist@wk.net>).*

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### CW

981.....KB6CQ

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 320.....4N7ZZ/320    200.....YV5NWG/206  
 300.....EA3BHK/307    200.....KKØDX/204  
 275.....LU3HBO/299    28 MHz.....KKØDX  
 275.....WZ3E/290

### CW Endorsements

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 320.....K2JLA/325    310.....K7JS/311  
 320.....4N7ZZ/324    275.....KKØDX

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275.....11JQJ/289

Total number of active countries is 327. 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.



Alfred, Z31AA, has been licensed since 1958. He home brews much of his station. (Z32KV photo)

Reunion Island amateurs will mark the 150th anniversary of the abolition of slavery December 18–20 with the special call of **TO150**. They will operate from the 10,000 foot Piton des Neiges mountain.

Thanks to "The Daily DX" for much of the news. This is an electronic DX newsletter published by Bernie McClenny,

W3UR, 3025 Hobbs Road, Glenwood MD 21738. See the Web page at <dailydx.com> or e-mail to <bernie@dailydx.com>.

Look for the WAZ charts to return next month. K1MEM is still recuperating and catching up on the mounds of backlog.

73, Chod, VP2ML

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# WASHINGTON READOUT

REGULATORY NEWS IN THE WORLD OF AMATEUR RADIO

## *Changes Are Coming to Amateur Radio!*

### *FCC issues more on their Restructuring proposal and Universal Licensing System*

The Commission has released a 13-page Errata of their Notice of Proposed Rule Making (WT Docket 98-143) which looks toward restructuring the Amateur Service. The Errata corrects the proposed rules in the appendix, which were released on August 10, 1998.

The Commission said, "The purpose of the correction is to conform the proposed rules to the proposals discussed in the text of the Notice. In addition, the proposed rules in the released document, in some instances, included rule sections where there was no proposed change. In the interest of clarity, we have deleted those rule sections and have included in this erratum only those rules where a change in the rules is proposed."

#### **The Birth of the NPRM**

To understand what happened, it is important that you know how FCC rulemaking takes place. Even though the FCC Commissioners release proposed rulemaking, the actual job of preparing the document falls to their staff, which is divided into several bureaus. In the case of Amateur Service rules, the "staff" comes from the Wireless Telecommunications Bureau and more specifically, their Public Safety and Private Wireless Division.

The FCC's intention to restructure the Amateur Service has its roots in three Petitions for Rule Making filed by the American Radio Relay League.

In RM-9148, the ARRL requested additional opportunities for volunteer examiners (VEs) to prepare and administer license examinations. In RM-9150, the League proposed to create a private sector complaint procedure for resolving cases of malicious interference in the Amateur Service. And in RM-9196, the ARRL wanted changed the Morse code waiver procedures that lead to high-speed telegraphy examination credit for the handicapped.

The Commission elected to address these petitions as part of their 1998 Biennial Review of regulations that no longer serve the public interest.

What follows here is what we believe happened. It is based on information received from highly placed ARRL and FCC officials. Some of this account we pieced together.

The ARRL filed their proposal to make it more difficult for handicapped amateurs to obtain telegraphy waivers a year ago (on September 23, 1997). It was two months before the FCC assigned it a rulemaking file number (RM-9196) and asked for preliminary comments, which closed on December 29th.

The ARRL petition requested a provision in the Part 97 Rules which would change the procedural requirements in Part 97 covering the way Morse code exam exemptions for severely handicapped applicants are handled prior to granting examination credit. The League wanted a supposedly disabled candidate to be required to attempt the CW test—with any and all necessary accommodations—before being granted an exam waiver based on a physician's certification. Also, Volunteer Examiner Coordinators (VECs) would be required to request from the certifying

physician and review medical information pertinent to an applicant's handicap and had to have the medical records on file before the application was forwarded to the FCC for processing.

In support of their petition, the League made four arguments. The ARRL (1) characterized these two changes as minor which (2) would stem abuses of the higher speed telegraphy examination waiver system, (3) limiting its use only to severely handicapped individuals and (4) without putting an unreasonable burden on examinees or the VEC System.

The VECs were aware that the ARRL would be making this request, since earlier in the year the ARRL Executive Committee had adopted a position (later confirmed by its Board) precluding VEs who had not passed a regular code exam from administering code examinations to others.

At their 1997 conference the VECs discussed the proposal and did not endorse the League's position. One of the questions raised was "What were the VECs going to do with the medical information once, and if, they got it." The VECs tabled the ARRL proposal without action or vote.

On February 5, 1998 the FCC released a list of 31 initiatives that would be explored as part of the 1998 biennial regulatory review. The review, mandated by the Communications Act, requires the FCC to review all of its regulations applicable to its licensees in every even-numbered year to determine whether certain rules are overly burdensome and no longer necessary. One of the initiatives listed was amending the Part 97 Amateur Service rules "... to privatize further the administration of the Amateur Radio Services and to simplify the licensing process." This, it turned out, referred to the three ARRL petitions seeking privatization of Amateur Service enforcement, changes to VE/VEC matters, and a general streamlining of the Amateur Service.

Shortly thereafter, a high-level meeting between the FCC's Private Wireless Division's staff and top ARRL leadership—including League president Rod Stafford, W6ROD—took place in Washington, DC. One of the things discussed was the ARRL petition on telegraphy waiver handling. League leadership came away from that meeting with the opinion, or were told, that the FCC was considering or would be reducing all code speed requirements to 5 words-per-minute as a way around the need for telegraphy waivers.

At the Dayton Hamvention in mid-May, FCC staffer Bill Cross talked about the FCC biennial proposal. He said, "There seems to be a consensus that our structure has too many classes of licenses, relies too heavily on code proficiency, and may be unnecessarily complicated." That was more or less the tip-off as to what was coming. By summer, amateurs became very curious and concerned about what the FCC specifically had in mind and rumors were rampant that 5 wpm would indeed be the top code speed tested for any amateur license.

There was a general belief that the NPRM would be released before the VEC Conference scheduled for early July, since we had heard that the rulemaking had been forwarded to the Commissioners for approval and release. The VECs wanted to discuss the rumored Amateur Service remodeling at their conference and how it impacted them. Just before the conference I telephoned the Commission to determine if the NPRM would

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indeed be released in time for us to consider. I was told that it would not be available, since the document had been returned to the staff " . . . for additional work."

FCC Division Chief D'wana Terry was limited in what she could say about the NPRM at the VEC Conference, since the Commissioners had not yet released it. She did tell the VECs, however, that one of the things the FCC was looking at was a reduction in the Morse code examination speed as a way around the need to grant code waivers.

The ARRL Board of Directors meeting took place the week following the VEC Conference. Apparently, they saw the handwriting on the wall and voted to seek reduced telegraphy proficiency and fewer license classes. A letter proposing four license classes with reduced telegraphy speed requirements was written by the ARRL's attorney to the FCC before the NPRM could be released.

The "work" that the FCC staff had to do turned out to be a major overhaul. The NPRM was hastily revised into a combination proposal and inquiry containing a list of questions. We still feel certain that the original proposal was to reduce the code speed to a maximum of 5 wpm.

But now, instead of specifying lower code speeds, the FCC asked questions such as "Should we continue to have three different levels, or should these be reduced to one or two, and if so, what should be the required speed?"

The revised document was sent back to the Commissioners and was released on August 10th. However, many errors, omissions, and unnecessary wording crept into the NPRM during the revision phase.

### New Proposed Rules From the Errata

Of particular interest was the restoring of the high-speed Morse code examination waiver provision (Section §97.505(a)(10)) to

disabled amateurs who because of a handicap were unable to pass the 13 or 20 wpm telegraphy examination. This section had been taken out of the original version of the NPRM. In the new version, the FCC invited comment on this issue and on the earlier ARRL proposal, RM-9196.

The following are now the only rules that the FCC proposes be changed. Everything else stays the same.

#### The New Proposed FCC Part 97 Rules

*Section 97.9 is revised to provide for five classes. (Novice Class remains as a renewable license. Tech Plus does not.)*

#### § 97.9 Operator license.

(a) The classes of amateur operator licenses are Novice, Technician, General, Advanced, and Amateur Extra. A person who has been granted an operator license is authorized to be the control operator of an amateur station with the privileges of the operator class specified on the license.

(b) A person who has been granted an operator license of Novice, Technician, General, or Advanced Class and who has properly submitted to the administering VEs an application document, FCC Form 610, for an operator license of a higher class, and who holds a CSCE indicating that the person has completed the necessary examinations within the previous 365 days, is authorized to exercise the rights and privileges of the higher operator class until final disposition of the application or until 365 days following the passing of the examination, whichever comes first.

*Section 97.13 (paragraph "B") is amended by changing the term "EIC" (Engineer-in-Charge) to "District Director" and revising the footnote after the table in (c)(1) to clarify that transmitter power is:*

\* Power = PEP input to antenna except, for repeater stations only, power exclusion is based on ERP (effective radiated power).

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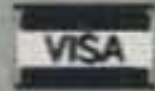
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Section 97.17 now provides for only four "new" (first time issued) licenses. New paragraph (c) states that no new Novice or Tech Plus licenses will be issued.

**§ 97.17 Application for new license or reciprocal permit for alien amateur licensee.**

- (b) \*\*\*
- (1) FCC Form 610 for a new Technician, General, Advanced, or Amateur Extra Class operator/primary station license;
- (c) No application for a new Novice or Technician Plus Class operator/primary station license will be accepted for filing.

Section 97.21 now states that Technician Class licenses will be issued to Tech Plus operators when they renew. The last line in paragraph (a)(3)(i) and paragraph (b) prohibits the renewal of a RACES license.

**§ 97.21 Application for a modified or renewed license.**

- (a) \*\*\*
- (3) May apply for renewal of the license for a new term. Application for renewal of a Technician Plus Class operator/primary station license will be processed as an application for renewal of a Technician Class operator/primary station license.
- (i)\*\*\*\* No application for renewal of a RACES station license will be granted.
- (b) A person who had been granted an amateur primary, club, or military recreation station license, but the license has expired, may apply for renewal of the license for another term during a 2 year filing grace period.\*\*\*\*\*

Section 97.301 is amended by removing the Technician Plus Class from the table of frequency bands. Paragraph (e) provides for current Novices or Technicians that have passed a code exam to operate on the Novice bands.

**§ 97.301 Authorized frequency bands.**

- (a) For a station having a control operator who has been granted an operator license of Technician, General, Advanced, or Amateur Extra Class: \*\*\*\*\*
- (e) For a station having a control operator who has been granted an operator license of Novice Class or Technician Class and who has received credit for proficiency in telegraphy in accordance with the international requirements (Element 1(A), 1(B), or 1(C)):

Wave-length	ITU Reg. 1	ITU Reg. 2	ITU Reg. 3	Sharing Requirements
	MHz	MHz	MHz	§97.303 Paragraph
<b>HF</b>				
80 m	3.675-3.725	3.675-3.725	3.675-3.725	(a)
40 m	7.050-7.075	7.10-7.15	7.050-7.075	(a)
15 m	21.10-21.20	21.10-21.20	21.10-21.20	
10 m	28.10-28.50	28.10-28.50	28.10-28.50	
<b>VHF</b>				
1.25 m	—	222-225	—	(a)
<b>UHF</b>				
23 cm	1270-1295	1270-1295	1270-1295	(h)(i)

Section 97.313 is amended by revising paragraph (f) to change the term "EIC" (Engineer-in-Charge) to "District Director" read as follows:

**§ 97.313 Transmitter power standards.**

- (f) No station may transmit with a transmitter power exceeding 50 W PEP on the UHF 70 cm band from an area specified in footnote US7 to § 2.106 of this Part, unless expressly authorized by the FCC after mutual agreement, on a case-by-case basis, between the District Director of the applicable field facility and the military area frequency coordinator at the applicable military base. \*\*\*\*\*

Section 97.407 is revised by changing the word "frequencies" to "frequency segments."

**§ 97.407 Radio Amateur Civil Emergency Service (RACES). \*\*\*\*\***

- (b) The frequency bands and segments and emissions authorized to the control operator are available to stations transmitting communications in RACES on a shared basis with the amateur service. In the event of an emergency which necessitates the invoking of the President's War Emergency Powers under the provisions of Section 706 of the Communications Act of 1934, as amended, 47 U.S.C. § 606, RACES stations and amateur stations participating in RACES may only transmit on the following frequency segments:

Section 97.501 is amended by revising the introductory text and paragraphs (a), (b), (c), and (d). Applicants will no longer be able to qualify for a Novice or Technician plus license.

**§ 97.501 Qualifying for an amateur operator license.**

An applicant must pass an examination for a new amateur operator license grant and for each change in operator class. Each applicant for the class of operator license grant specified below must pass, or otherwise receive examination credit for, the following examination elements:

- (a) Amateur Extra Class operator: Elements 1(C), 3(A), 3(B), 4(A), and 4(B);
- (b) Advanced Class operator: Elements 1(B) or 1(C), 3(A), 3(B), and 4(A).
- (c) General Class operator: Elements 1(B) or 1(C), 3(A), and 3(B);
- (d) Technician Class operator: Element 3(A).

Section 97.503 paragraphs (b) and (c) provide that Element 3(A) will now contain 65 questions.

**§ 97.503 Element standards.**

- (b) \*\*\*
- (1) Element 3(A): 65 questions concerning the privileges of a Technician Class operator license. The minimum passing score is 48 questions answered correctly.
- (2) Element 3(B): 30 questions concerning the privileges of a General Class operator license. The minimum passing score is 22 questions answered correctly.
- (3) Element 4(A): 50 questions concerning the privileges of an Advanced Class operator license. The minimum passing score is 37 questions answered correctly.
- (4) Element 4(B): 40 questions concerning the privileges of an Amateur Extra Class operator license. The minimum passing score is 30 questions answered correctly.
- (c) The topics and number of questions that should be included in each written examination question set are listed below:

	Element			
	3(A)	3(B)	4(A)	4(B)
(1) FCC rules for the amateur radio services.	15	4	6	8
(2) Amateur station operating procedures.	5	3	1	4
(3) Radio wave propagation characteristics.	4	3	2	2
(4) Amateur radio practices.	8	5	4	4
(5) Electrical principles as applied to amateur equipment.	6	2	10	6
(6) Amateur station equipment circuit components.	4	1	6	4
(7) Practical circuits employed in amateur station equipment.	3	1	10	4
(8) Signals and emissions transmitted by amateur stations.	4	2	6	4
(9) Amateur station antennas and feed lines.	6	4	5	4
(10) Radiofrequency environmental safety practices.	10	5	0	0



Section 97.505 is revised to show that Element 2 (Novice written examination) is now included in with Element 3(A). Existing Technician Plus operators receive credit for Element 1(A) (5 wpm code) and 3(A) (new combined Elements 2 and 3(A)). Existing Novices receive credit for Element 1(A).

**§ 97.505 Element credit.**

(a) The administering VEs must give credit as specified below to an examinee holding any of the following licenses and documents:

(1) An unexpired (or expired but within the grace period for renewal) Advanced Class operator license: Elements 1(B), 3(A), 3(B), and 4(A).

(2) An unexpired (or expired but within the grace period for renewal) General Class operator license: Elements 1(B), 3(A), and 3(B).

(3) An unexpired (or expired but within the grace period for renewal) Technician Plus Class operator license (including a Technician Class operator license granted before February 14, 1991): Elements 1(A) and 3(A).

(4) An unexpired (or expired but within the grace period for renewal) Technician Class operator license: Element 3(A).

(5) An unexpired (or expired but within the grace period for renewal) Novice Class operator license: Element 1(A).

(6) \*\*\*

(7) \*\*\*

(8) An expired FCC-issued Technician Class operator license document (or proof of having held the document) granted before March 21, 1987: Element 3(B).

(9) An expired, or unexpired, FCC-issued Technician Class operator license document (or proof of having held the document) granted before February 14, 1991: Element 1(A).

(10) \*\*\*

(b) \*\*\*

Section 97.507 paragraph (a) authorizes Advanced Class VE's to prepare the Element 1(B) (13 wpm code) and Element 3(B) (General written examination.) Note that preparing and administering license examinations are two different functions.

**§ 97.507 Preparing an examination.**

(a) Each telegraphy message and each written question set administered to an examinee must be prepared by a VE holding an Amateur Extra Class operator license. A telegraphy message or written question set may also be prepared for the following elements by a VE holding an operator license of the class indicated:

(1) Elements 1(B) and 3(B): Advanced Class operator.

Section 97.509 paragraph (a) adds the words "at least" to the number of VEs needed to conduct an examination session. Paragraph (b)(3)(ii) now provides for Advanced class VEs to administer General Class examinations.

**§ 97.509 Administering VE requirements.**

(a) Each examination for an amateur operator license must be administered by a team of at least three VEs at an examination session coordinated by a VEC. Before the session, the administering VEs or the VE session manager must ensure that a public announcement is made giving the location and time of the session. The number of examinees at the session may be limited.

(b) \*\*\*

(3) Be a person who holds an amateur operator license of the class specified below:

(ii) Amateur Extra or Advanced Class in order to administer a General Class operator license examination.

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Bureau is getting the various radio licenses the Commission oversees issued quickly. This is not a small job when you consider that the FCC processes hundreds of thousands of license applications annually in the various services.

At present, the FCC has many different systems that process applications and issue licenses. The Commission has rethought the entire process and the result is a new common licensing arrangement which combines all separate licensing systems into one. Universal Licensing, which has been under development for nearly two years, represents a major breakthrough in the Commission's use of state-of-the-art technology to support its regulatory functions.

The Commission currently uses more than 40 different forms. The objective is to have one system and an absolute minimum of forms.

The Universal Licensing System (ULS) is web browser-based and contains everything you need for electronic filing. You simply enter the required information into a registration screen. You can also make changes to the licensing database once entered.

The Notice of Proposed Rulemaking (NPRM), WT Docket No. 98-20, entitled "To Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services," was adopted on February 18th and ran to nearly 400 pages. The NPRM carried an extremely short comment period—only 30 days after publication in the Federal Register. Replies closed 15 days later.

### ULS Report and Order Issued

The Commission has now adopted the new ULS regulations (on September 17th), just six months after the public comment period closed on the proposal. The Report and Order (R&O) consolidates, revises, and streamlines the license application procedures for all radio services licensed by the Wireless Telecommunications Bureau, including the Amateur Service.

The Universal Licensing System (ULS) will enable electronic filing of wireless applications, licensing information, and public access to such information for all wireless radio services. This rulemaking is also the first R&O adopted that is part of the Commission's 1998 Biennial Review of regulations which no longer serve the public interest as required by Section 11 of the Communications Act.

When fully operational, ULS will replace eleven separate licensing systems and databases now being used for various wireless services with a single system by consolidating all radio service applications and licensing rules. The FCC said the new licensing system would eliminate

nearly 200 duplicating and inconsistent rules in various radio services.

ULS will fundamentally change the way the Commission receives and processes wireless applications. It will eliminate the need for some licensees in some services to file duplicate applications, and will increase the accuracy and reliability of licensing information.

The FCC said, "The enhanced information collection capabilities of ULS will, in turn, enable the Commission staff to easily monitor spectrum use and competitive conditions in the wireless marketplace and will promote effective implementation of spectrum management policies. . . . ULS will enhance the availability of licensing information to the public, which for the first time will have access to all wireless licensing data on-line."

The Public Notice did, however, say the Commission took the following actions in the R&O:

- The Commission adopted the following four consolidated ULS application forms for wireless services replacing over 40 existing forms: Form 601 is the Long-Form or FCC Application for Wireless Telecommunication Bureau Radio Service Authorization; Form 602 is the FCC Ownership Disclosure Information for the Wireless Telecommunications Services; Form 603 is the FCC Wireless Telecommunications Bureau Application for Assignment of Authorization or Transfer of Control; Form 605 is the Quick-Form Application for Authorization in the Ship, Aircraft, Amateur, Restricted and Commercial Operator, and General Mobile Radio Services. Thus, the FCC Form 610 will be replaced with a new electronic Form 605. There will also be a paper document version. The Commission said they will permit use of existing forms for a period of six months after the effective date of these rules. Since all VECs already file applications electronically, we were told that the Amateur Service would probably be the last service to implement the new Form 605 procedure.

- The Commission consolidated wireless licensing rules currently contained in service-specific rule parts into in a single set of rules in Part 1, eliminating duplicative and unnecessary rules. In other words, instead of having the application filing instructions as part of each service's rules, each service will now be referred to a new section in Part 1, FCC Practices and Procedures, which will apply to all services.

- Electronic filing in ULS will be mandatory for applicants and licensees in services that are licensed by auction, but not for applicants and licensees in other wireless services. As a result, all common carrier services (e.g., cellular) and geographically licensed services (e.g., PCS, LMDS) will be subject to mandatory elec-

tronic filing. However, public safety, private land mobile services on shared spectrum, Amateur Radio, GMRS, Ship and Aircraft, and Commercial Radio Operators will have the option of filing electronically or manually.

- These mandatory electronic filing requirements will take effect on July 1, 1999, or six months after the use of ULS in the particular service, whichever is later. The Commission will first implement ULS on services that do not file electronically. Since the Amateur Service already has workable electronic filing procedures, it could be some time before Amateur Radio participates in the ULS procedures.

- The Commission took steps to ensure that ULS electronic filing and data programs are accessible to persons with disabilities in compliance with its program accessibility rules and the new requirements of the Workforce Investment Act of 1998.

- It will be mandatory for the Volunteer Examiner Coordinators (VECs) to electronically file Amateur Service new and upgraded license applications, but amateurs (or their agents) will be able to renew and/or modify their own licenses on-line. ULS will be used to notify wireless licensees 90 days in advance of license expiration, but all licensees must file a timely renewal application on or prior to the expiration date of the license, regardless of whether they receive such notification.

- The Commission adopted requirements for the submission of Taxpayer Identification Numbers (TINs) in ULS consistent with the requirements of the Debt Collection Improvement Act of 1996. The Commission stated that all TIN information will be kept confidential. It is unclear at this point how this will be implemented in the Amateur Service. The TIN used on Amateur Service applications is the applicant's social security number.

- The Commission adopted proposals made in WT Docket 96-188 to authorize reciprocal operation by foreign amateur radio licensees by rule, pursuant to recent international reciprocal operating agreements. The United States has reciprocal arrangements with 66 countries to allow amateur operators to operate their stations temporarily in the other country. The Commission currently grants annually some 2,000 reciprocal permits for alien amateur licensee (FCC Form 610-AL) to amateur operators from those countries. The visitor must obtain the application form (FCC Form 610-A), which is often difficult to do in a foreign country, and file it with the Commission. No standards are required of these applicants other than possession of the license document issued by their country of citizenship. There is no fee. The FCC-issued permit, therefore, simply confirms that the holder

of the permit also holds a license from his or her home country. For Canadian amateur operators who visit the United States, no permit is required because they are already authorized to operate by rule. The FCC said there is no need to continue issuing the reciprocal permit for alien amateur licensees because the license from any foreign country with which the United States has reciprocity would stand as the proof that the foreign operator is qualified for the reciprocal operating authority. No citizen of the United States, regardless of any other citizenship held, would be eligible under this authorization procedure. United States citizens would

continue to have to acquire an FCC-issued amateur operator license by passing the requisite examinations.

- The Commission identified numerous General Mobile Radio Service (GMRS) rules to be eliminated and streamlined as duplicative or unnecessary to its regulatory responsibilities. The rule changes will also facilitate the conversion of GMRS data collection procedures and databases to ULS.

For more information on the new Universal Licensing System, the Commission's ULS web page can be accessed at: <<http://www.fcc.gov/wtb/uls/>>.

73, Fred, W5YI

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# PROPAGATION

## THE SCIENCE OF PREDICTING RADIO CONDITIONS

### 1998 in Review

#### CQ WW DX CW Contest Bulletin

This issue of CQ should reach most readers in time for the CW weekend of the CQ WW DX Contest, November 28-29. Here is an updated day-to-day propagation forecast for the weekend at press time.

Conditions are likely to be somewhat better than reported last month. Expect generally Low Normal conditions on the 28th, but it now looks like a good chance for mostly High Normal conditions on the 29th. Conditions are likely to rise to Above Normal for openings passing through the equatorial region and the lower latitudes. Expect solar flux readings in excess of 125 and geomagnetic A-indices in the mid-teens or lower. There now appears to be little chance for radio storminess during the contest weekend.

Sunspot cycle 23 rose rapidly during 1998. The year started with a smoothed sunspot count of 44, and it is estimated to reach a level in excess of 105 by year's end. The 10.7 cm solar flux level will have risen correspondingly from a smoothed value of 99 in January to an estimated 129 by the end of the year.

Arbitrarily, a solar cycle generally is divided into these phases of intensity:

Phase	Smoothed Sunspot Range
Low	0-30
Moderate	30-60
High	60-90
Very High	90-120
Intense	>120

In 1998 the Moderate phase ended by mid-year, and the High phase is estimated to have ended during the fall months. We are now in the early phases of Very High solar activity.

The rapid rise of solar activity during 1998 has resulted in a very noticeable improvement in HF propagation conditions. Ten meters has come back to life, and openings on all other bands have lengthened and increased considerably.

#### Sunspot Cycle 23 Observations and Predictions

Table I is a listing of smoothed sunspot numbers observed for Cycle 23 from its beginning through February 1998, as well as predictions made by the National Geophysical Data Center, Boulder, Colorado,

11307 Clara Street, Silver Spring, MD 20902  
e-mail: <gja@gjainc.com>

#### LAST-MINUTE FORECAST

Day-to-Day Conditions Expected for December 1998

Propagation Index.....	Expected Signal Quality			
	(4)	(3)	(2)	(1)
Above Normal: 6, 22-23, 27	A	A	B	C
High Normal: 1, 5, 7, 10, 18-21, 26, 28, 30-31	A	B	C	C-D
Low Normal: 2-4, 9, 11-13, 16-17, 24-25, 29	B	C-B	C-D	D-E
Below Normal: 8, 14	C	C-D	D-E	E
Disturbed: 15	C-D	D	E	E

Where expected signal quality is:

A—Excellent opening, exceptionally strong, steady signals greater than S9.

B—Good opening, moderately strong signals varying between S6 and S9+, with little fading or noise.

C—Fair opening, signals between moderately strong and weak, varying between S3 and S9, with some fading and noise.

D—Poor opening, with weak signals varying between S1 and S6, with considerable fading and noise.

E—No opening expected.

#### HOW TO USE THIS FORECAST

1. Find the propagation index associated with the particular path opening from the Propagation Charts appearing on the following pages.
2. With the propagation index, use the above table to find the expected signal quality associated with the path opening for any given day of the month. For example, an opening shown in the Propagation Charts with a propagation index of 3 will be good (B) on Dec. 1st, fair-to-good (C-B) on the 2nd through the 4th, good (B) on the 5th, excellent (A) on the 6th, etc. Fair-to-good conditions are expected Christmas Day.

for the remainder of the 20th century. We will have a more in-depth analysis of Cycle 23, and specifically the probable date of solar maximum, in next month's column.

The Royal Observatory of Belgium reports a mean sunspot number of 92 for August 1998, with daily values ranging from a low of 64 on August 1st to a high of 121 reported on the 12th. The mean

level for August results in a 12-month smoothed sunspot number of 49 centered on February 1998. A smoothed sunspot number on the order of 105 is forecast for December 1998 as Cycle 23 continues its climb upward.

A corresponding 10.7 cm mean solar flux level of 143 was reported for August 1998 by the Dominion Radio Astrophysical Observatory at Penticton, B.C. This results in a smoothed solar flux value of 105 centered on February 1998. A smoothed 10.7 cm flux level of approximately 129 is forecast for December 1998.

#### Mail Bag

Dear George: I've been earnestly following your propagation forecasts for the CQ WW DX Contest for many years, and I must say they have definitely contributed to my successes over the years, including six world highs in the Single Operator, All Band category, plus several past and current world records. I'll be back to Ascension Island for next month's fun (1998 SSB DX weekend), and I'm taking a group to Costa Rica to try to win the world Multi-Multi for CW. Whenever CQ arrives, your column gets my early attention, and I just wanted to express my gratitude for all you've done for so many years. Happy hunting, George.

Vy 73, Jim Neiger, N6TJ/ZD8Z

Many thanks, Jim. It is compliments like yours that make all of the time I have spent on this column since 1951 worthwhile. Good luck in the 1998 CQ WW Contest!

I have received several pieces of e-mail concerning the selection of the Royal Observatory of Belgium for this year's "salting the ionosphere" as being very appropriate, but also pointing out that while in

#### Smoothed Sunspot Numbers for Cycle 23

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1996	10	10	10	9	8*	9	8	8	8	9**	10	10
1997	11	11	14	17	18	20	23	25	29	32	35	39
1998	44	49	55	60	66	71	78	85	93	99	104	109
1999	114	118	122	128	133	138	142	145	148	150	153	156

Predicted values appear in italics.

\*May 1996 marks Cycle 23's mathematical beginning.

\*\*October 1996 marks the beginning of Cycle 23 according to a consensus of scientists, which NGDC is now using.

Table I—Smoothed sunspot numbers observed for Cycle 23 from its beginning through February 1998, as well as predictions made by the National Geophysical Data Center, Boulder, Colorado, for the remainder of the 20th century.



W3ASK enjoying a Belgian waffle at the Grand Place in Brussels during his recent "salting the ionosphere" visit to the Royal Observatory of Belgium, the world's official keeper of sunspot data and records. (Photo by Bea)

Belgium I must try a real Belgian waffle. The photo in this month's column is proof that I heeded this advice and enjoyed it!

### December Band Openings

Due to rapidly rising solar levels, beginning this month the best times for 6 meter F-2 layer ionospheric DX openings are included in the DX Propagation Charts.

Continuing high solar activity coupled with seasonally peak ionization levels in the northern hemisphere should result in generally good-to-excellent DX propagation conditions on all HF bands.

Excellent daytime DX openings to all areas of the world should be possible on the 10, 12, 15, and 17 meter bands. Also expect exceptional conditions on the 6 meter band, with peak conditions likely towards Europe, Africa, and in a generally easterly direction an hour or two before noon, towards Central and South America and the Caribbean area from an hour or two after noon, and towards the Pacific, Australasia, and the Far East during the late afternoon and into the sunset period. The best days to look for DX openings on 6 meters are those expected to be High or Above Normal.

From sundown to midnight look for DX openings towards the south and west on 12, 15, and 20 meters, and to most other areas of the world on 30, 40, and 80 meters. Fairly good DX openings on the 160 meter band should be possible from the eastern half of the country towards the north, east, and south.

From midnight to sunrise the best DX bands should be 40 and 80 meters, with

openings also possible to many areas of the world on 20, 30, and 160 meters.

DX propagation conditions on the 160 meter band are usually at their seasonal peak during December. The band should open towards Europe and in an easterly direction beginning about 8 PM in all time zones, and continue until 3 AM in the EST zone, 1 AM in the CST zone, midnight in the MST zone, and 11 PM in the PST zone. These openings favor locations in the eastern half of the USA. Openings towards the south, particularly to Central America, the Caribbean area, and the northern countries of South America, should be possible from about 10 PM to 3 AM in all time zones. Openings towards the Pacific, Australasia, and the far East will favor stations in the western half of the country, but it may be worth the time to check for these openings in other areas as well between 4 AM and local sunrise.

Remember the old rule that applies to 160 meter DX openings, and to 30, 40, and 80 meters as well: Optimum conditions occur about the time that the sun begins to rise in the easternmost terminal of the path.

For short-skip openings during December try the 80 and 40 meter bands during the day for paths less than 250 miles, and 80 and 160 meters at night over these distances. For openings between 250 and 750 miles, 40 meters should be best during the day, and both 80 and 160 meters at night. Between 750 and 1300 miles, try 20 meters during the day; 30, 40, and 80 meters from sunset to midnight; and 80 meters later in the evening and until sun-

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## HOW TO USE THE DX PROPAGATION CHARTS

1. Use chart appropriate to your transmitter location. The Eastern USA Chart can be used in the 1, 2, 3, 4, 8, KP4, KG4, and KV4 areas in the USA and adjacent call areas in Canada; the Central USA Chart in the 5, 9, and 0 areas; the Western USA Chart in the 6 and 7 areas; and with somewhat less accuracy in the KH6 and KL7 areas.

2. The predicted times of openings are found under the appropriate meter band column (6 through 80 meters) for a particular DX region, as shown in the left-hand column of the charts. An \* indicates the best time to listen for 160 meter openings. An \*\* indicates best time to check for 6 meter openings.

3. The propagation index is the number that appears in ( ) after the time of each predicted opening. The index indicates the number of days during the month on which the opening is expected to take place as follows:

- (4) Opening should occur on more than 22 days
- (3) Opening should occur between 14 and 22 days
- (2) Opening should occur between 7 and 13 days
- (1) Opening should occur on less than 7 days

Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

4. Times shown in the charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M.; 13 is 1 P.M., etc. Appropriate standard time is used, not GMT. To convert to GMT, add to the times shown in the appropriate chart 8 hours in PST Zone, 7 hours in MST Zone, 6 hours in CST Zone, and 5 hours in EST Zone. For example, 13 hours in Washington, D.C. is 18 GMT. When it is 20 hours in Los Angeles, it is 04 GMT, etc.

5. The charts are based upon a transmitted power of 250 watts CW, or 1 kw, PEP on sideband, into a dipole antenna a quarter-wavelength above ground on 160 and 80 meters, and a half-wavelength above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 dB gain above these reference levels, the propagation index will increase by one level; for each 10 dB loss, it will lower by one level.

6. Propagation data contained in the charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept of Commerce, Boulder, Colorado 80302.

## December 15, 1998-February 15, 1999 Time Zone: EST (24-Hour Time) EASTERN USA TO:

	10/6 Meters	15 Meters	20 Meters	40/80 Meters
Western & Central Africa	07-08 (1)	06-07 (1)	03-06 (2)	14-16 (1)
Europe & North	08-09 (2)	07-08 (2)	06-07 (3)	16-17 (2)
Europe & North	09-13 (4)	08-14 (4)	07-09 (4)	17-19 (3)
North	13-14 (2)	14-15 (2)	09-10 (3)	19-02 (4)
Africa	14-15 (1)	15-16 (1)	10-12 (2)	02-03 (3)
	09-11 (1)**		12-13 (3)	03-04 (2)
			13-16 (4)	04-05 (1)
			16-18 (3)	17-19 (1)*
			18-21 (2)	19-20 (2)*
			21-13 (1)	20-02 (3)*
			23-01 (2)	02-03 (2)*
			01-03 (3)	03-04 (1)*
Northern Europe & CIS	07-08 (1)	06-07 (1)	04-06 (1)	17-19 (1)
Europe & European	08-09 (3)	07-08 (2)	06-07 (2)	19-01 (2)
European	09-10 (4)	08-09 (3)	07-09 (3)	01-03 (1)
CIS	10-11 (2)	09-11 (4)	09-14 (2)	19-02 (1)*
	11-12 (1)	11-12 (3)	14-16 (3)	
	08-10 (1)**	12-13 (2)	16-18 (4)	
		13-14 (1)	18-20 (3)	
			20-23 (2)	
			23-02 (1)	
Eastern Mediter-ranean & Middle East	07-08 (1)	07-08 (1)	07-10 (1)	18-20 (1)
	08-09 (3)	08-09 (2)	10-13 (2)	20-22 (2)
	09-11 (4)	09-11 (4)	13-16 (3)	22-00 (3)
	11-12 (3)	11-14 (3)	16-18 (4)	00-01 (2)
	12-13 (2)	14-15 (2)	18-22 (3)	01-02 (1)
	13-14 (1)	15-16 (1)	22-01 (2)	20-00 (1)*
	09-11 (1)**		01-03 (1)	
Western Africa	07-08 (1)	05-06 (1)	03-04 (3)	18-20 (1)
	08-09 (2)	06-08 (2)	04-06 (2)	20-23 (2)
	09-12 (3)	08-14 (3)	06-13 (1)	23-01 (3)
	12-16 (4)	14-19 (4)	13-15 (2)	01-03 (2)
	16-17 (3)	19-20 (3)	15-17 (3)	03-04 (1)
	17-18 (2)	20-22 (2)	17-00 (4)	22-03 (1)*
	18-19 (1)	22-23 (1)	00-01 (3)	
	08-10 (1)**		01-03 (2)	

Eastern & Central Africa	08-09 (1)	06-08 (1)	01-04 (2)	18-21 (1)
	09-11 (2)	08-12 (2)	04-06 (1)	21-23 (2)
	11-13 (3)	12-14 (3)	06-08 (2)	23-01 (1)
	13-15 (4)	14-17 (4)	08-14 (1)	21-00 (1)*
	15-16 (3)	17-18 (3)	14-16 (2)	
	16-17 (2)	18-19 (2)	16-17 (3)	
	17-18 (1)	19-20 (1)	17-23 (4)	
	08-10 (1)**		23-01 (3)	
Southern Africa	07-08 (1)	06-08 (1)	06-08 (1)	18-19 (1)
	08-11 (3)	08-11 (2)	12-14 (1)	19-22 (2)
	11-14 (4)	11-13 (3)	14-15 (2)	22-00 (1)
	14-15 (3)	13-16 (4)	15-17 (3)	19-22 (1)*
	15-16 (2)	16-18 (3)	17-20 (4)	
	16-17 (1)	18-19 (2)	20-00 (3)	
	08-10 (1)**	19-20 (1)	00-02 (2)	
			02-04 (1)	
Central & South Asia	08-09 (1)	07-08 (10)	06-07 (1)	06-08 (1)
	09-10 (2)	08-10 (2)	07-09 (3)	18-20 (1)
	10-11 (1)	10-11 (1)	09-10 (2)	
	17-19 (1)	17-19 (1)	10-11 (1)	
			17-19 (1)	
			22-23 (1)	
			23-00 (2)	
			00-01 (1)	
Southeast Asia	09-11 (1)	09-10 (1)	06-07 (1)	05-07 (1)
	11-14 (2)	10-12 (2)	07-09 (2)	17-19 (1)
	14-15 (1)	12-13 (1)	09-11 (1)	
	18-19 (1)	18-19 (1)	16-18 (1)	
	19-20 (2)	19-21 (2)	18-21 (2)	
	20-21 (1)	21-22 (1)	21-23 (1)	
Far East	17-18 (1)	09-11 (1)	00-04 (2)	04-05 (1)
	18-19 (3)	16-17 (1)	04-07 (1)	05-07 (2)
	19-20 (2)	17-18 (2)	07-09 (2)	07-08 (1)
	20-21 (1)	18-19 (4)	09-11 (1)	05-07 (1)*
		19-20 (3)	16-18 (1)	
		20-21 (2)	18-19 (2)	
		21-22 (1)	19-22 (3)	
			22-00 (2)	
South Pacific & New Zealand	10-13 (1)	08-09 (1)	12-19 (1)	00-02 (1)
	13-15 (2)	09-11 (2)	19-21 (2)	02-03 (2)
	15-16 (3)	11-15 (1)	21-22 (3)	03-07 (3)
	16-19 (4)	15-17 (2)	22-02 (4)	07-08 (2)
	19-20 (2)	17-18 (3)	02-04 (3)	08-09 (1)
	20-21 (1)	18-20 (4)	04-07 (2)	03-05 (1)*
	17-19 (1)**	20-21 (3)	07-10 (3)	05-07 (2)
		21-22 (2)	10-12 (2)	07-08 (1)*
		22-23 (1)		
Australasia	08-10 (1)	09-10 (1)	07-09 (3)	03-05 (1)
	10-11 (2)	10-12 (2)	09-11 (2)	05-08 (2)
	11-12 (1)	12-15 (1)	11-14 (1)	08-09 (1)
	15-16 (1)	15-18 (2)	16-18 (2)	05-08 (1)*
	16-17 (2)	18-19 (3)	20-22 (1)	
	17-18 (3)	19-21 (4)	22-00 (2)	
	18-19 (4)	21-22 (2)	00-05 (3)	
	19-20 (2)	22-23 (1)	05-07 (2)	
	20-21 (1)			
	17-19 (1)**			
Caribbean Central America & Northern Countries of South America	07-08 (1)	06-07 (1)	07-09 (4)	17-18 (1)
	08-09 (3)	07-08 (3)	09-11 (3)	18-19 (2)
	09-17 (4)	08-19 (4)	11-14 (2)	19-20 (3)
	17-18 (3)	19-20 (3)	14-16 (3)	20-04 (4)
	18-19 (2)	20-21 (2)	16-00 (4)	04-05 (3)
	19-20 (1)	21-22 (1)	00-02 (3)	05-06 (2)
	09-11 (1)**		02-06 (2)	06-07 (1)
			06-07 (3)	19-20 (1)*
				20-22 (2)*
				22-02 (3)*
				02-04 (2)*
				04-06 (1)*
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	06-07 (1)	06-07 (1)	07-08 (2)	19-21 (1)
	07-08 (2)	07-08 (3)	08-14 (1)	21-04 (2)
	08-10 (4)	08-10 (4)	14-16 (2)	04-05 (1)
	10-11 (3)	10-11 (3)	16-18 (3)	21-04 (1)*
	11-13 (2)	11-13 (2)	18-00 (4)	
	13-15 (3)	14-16 (3)	00-02 (3)	
	15-17 (4)	16-20 (4)	02-04 (2)	
	17-18 (3)	20-21 (3)	04-07 (3)	
	18-19 (2)	21-22 (1)		
	19-20 (1)			
	10-12 (1)**			
McMurdo Sound, Antarctica	08-10 (1)	06-09 (1)	17-20 (1)	00-06 (1)
	17-19 (1)	15-17 (1)	20-21 (2)	
		17-18 (2)	21-00 (3)	
		18-20 (3)	00-02 (2)	
		20-22 (2)	02-04 (3)	
		22-23 (1)	04-05 (2)	
			05-06 (1)	
			06-08 (2)	
			08-09 (1)	

\*Predicted times of 80 meter openings. Openings on 160 meters are also likely to occur during those times when 80 meter openings are shown with a forecast rating of (2), or higher.

## Time Zones: CST & MST (24-Hour Time) CENTRAL USA TO:

	10/6 Meters	15 Meters	20 Meters	40/80 Meters
Western & Southern Europe & North Africa	07-08 (1)	06-07 (1)	02-06 (1)	15-17 (1)
	08-09 (3)	07-08 (2)	06-07 (2)	17-18 (1)
	09-11 (4)	08-12 (4)	07-09 (3)	18-01 (3)
	11-12 (2)	12-13 (2)	09-11 (2)	01-02 (2)
	12-13 (1)	13-14 (1)	11-13 (3)	02-03 (1)
	08-10 (1)**		13-15 (4)	17-20 (1)*
			15-17 (3)	20-01 (2)*
			17-19 (2)	01-02 (1)*
			19-23 (1)	
			23-02 (2)	
Northern Europe & European CIS	07-08 (1)	06-07 (1)	04-07 (1)	17-19 (1)
	08-09 (2)	07-08 (2)	07-09 (3)	19-22 (2)
	09-10 (3)	08-10 (4)	09-13 (2)	22-01 (1)
	10-11 (2)	10-11 (3)	13-15 (3)	19-00 (1)*
	11-12 (1)	11-12 (2)	15-16 (4)	
		12-13 (1)	16-18 (3)	
			18-20 (2)	
			20-22 (1)	
			22-01 (2)	
			01-02 (1)	
Eastern Mediter-ranean & Middle East	08-09 (1)	07-08 (1)	07-10 (1)	18-20 (1)
	09-10 (2)	08-10 (3)	10-13 (2)	20-22 (2)
	10-11 (3)	10-11 (4)	13-15 (3)	22-23 (1)
	11-12 (2)	11-12 (2)	15-17 (4)	20-22 (1)*
	12-13 (1)	12-13 (1)	17-18 (3)	
			18-19 (2)	
			19-21 (1)	
			21-23 (2)	
			23-01 (1)	
Western Africa	7-08 (1)	06-08 (1)	06-13 (1)	18-20 (1)
	08-09 (2)	08-10 (2)	13-15 (2)	20-23 (2)
	09-11 (3)	10-14 (3)	15-17 (3)	23-02 (1)
	11-14 (4)	14-17 (4)	17-21 (4)	20-23 (1)*
	14-16 (3)	17-18 (3)	21-23 (3)	
	15-17 (2)	18-20 (2)	23-01 (2)	
	17-18 (1)	20-21 (1)	01-03 (1)	
	09-11 (1)*		03-06 (2)	
Eastern & Central Africa	07-08 (1)	06-08 (1)	07-14 (1)	19-00 (1)
	08-09 (2)	08-12 (2)	14-16 (2)	20-22 (1)*
	09-13 (3)	12-14 (3)	16-17 (3)	
	13-14 (4)	14-16 (4)	17-20 (4)	
	14-15 (3)	16-17 (3)	20-22 (3)	
	15-16 (2)	17-18 (2)	22-00 (2)	
	16-17 (1)	18-19 (1)	00-02 (1)	
	10-12 (1)**			
Southern Africa	07-08 (1)	07-09 (1)	06-13 (1)	18-19 (2)
	08-09 (2)	09-11 (2)	13-15 (2)	18-19 (1)
	09-11 (3)	11-12 (3)	15-17 (3)	21-22 (1)
	11-13 (4)	12-15 (4)	17-19 (4)	19-21 (1)*
	13-14 (3)	15-17 (3)	19-22 (3)	
	14-15 (2)	17-18 (2)	22-01 (2)	
	15-16 (1)	18-19 (1)	01-03 (1)	
	08-10 (1)**			
Central & South Asia	08-09 (1)	07-08 (1)	04-06 (1)	06-08 (1)
	09-10 (2)	08-10 (2)	06-07 (2)	18-20 (1)
	10-11 (1)	10-11 (1)	07-09 (3)	
	18-19 (1)	18-19 (1)	09-10 (2)	
	19-20 (2)	19-21 (2)	10-11 (1)	
	20-21 (1)	21-22 (1)	17-18 (1)	
			18-19 (2)	
			19-21 (3)	
			21-23 (2)	
			23-02 (1)	
Southeast Asia	09-10 (1)	08-09 (1)	06-07 (1)	04-07 (1)
	10-13 (2)	09-10 (2)	07-09 (2)	17-19 (1)
Asia	13-14 (1)	10-12 (3)	09-10 (3)	
	16-17 (1)	12-13 (2)	10-12 (2)	

18-19 (3)	16-17 (3)	00-04 (3)	08-09 (1)
19-20 (2)	17-19 (4)	04-06 (2)	00-02 (1)*
20-21 (1)	19-21 (3)	06-07 (3)	02-07 (2)*
16-18 (1)**	21-22 (2)	07-08 (4)	07-08 (1)*
	22-23 (1)	08-09 (3)	
		09-10 (2)	
Austral- asia	08-09 (1)	07-08 (1)	04-07 (2)
	09-11 (2)	08-09 (2)	07-09 (4)
	11-14 (1)	09-10 (3)	09-10 (3)
	14-16 (2)	10-11 (2)	10-11 (2)
	16-17 (3)	11-13 (1)	11-15 (1)
	17-19 (4)	13-17 (2)	15-17 (2)
	19-20 (3)	17-19 (3)	17-20 (1)
	20-21 (2)	19-21 (4)	20-23 (2)
	21-22 (1)	21-22 (2)	23-04 (3)
	17-19 (1)**	22-23 (1)	
Carib- bean,	07-08 (1)	06-07 (1)	06-07 (3)
Central America & Northern Countries of South America	08-09 (3)	07-08 (3)	07-09 (4)
	09-11 (4)	08-11 (4)	09-11 (3)
	11-13 (3)	11-13 (3)	11-14 (2)
	13-16 (4)	13-18 (4)	14-16 (3)
	16-17 (3)	18-19 (3)	16-23 (4)
	17-18 (2)	19-21 (2)	23-02 (3)
	18-19 (1)	21-22 (1)	02-06 (2)
	09-11 (1)**		
Peru,	06-07 (1)	06-07 (1)	02-06 (2)
Bolivia,	07-08 (2)	07-08 (3)	06-07 (3)
Paraguay,	08-10 (4)	08-10 (4)	07-08 (2)
Brazil,	10-13 (3)	10-13 (3)	08-14 (1)
Chile,	11-13 (2)	11-13 (2)	14-16 (2)
Argentina & Uruguay	13-14 (3)	13-15 (3)	16-18 (3)
	14-17 (4)	15-20 (4)	18-00 (4)
	17-18 (3)	20-21 (3)	00-02 (3)
	18-19 (2)	21-22 (2)	
	19-20 (1)	22-23 (1)	
	09-11 (1)**		
McMurdo Sound, Antarctica	08-10 (1)	06-08 (1)	16-18 (1)
		08-10 (2)	18-20 (2)
		10-12 (1)	20-02 (3)
		15-17 (1)	02-04 (2)
		17-18 (2)	04-06 (1)
		18-22 (3)	06-08 (2)
		22-23 (2)	08-09 (1)
		23-00 (1)	

**Time Zone: PST (24-Hour Time)  
WESTERN USA TO:**

	10/6 Meters	15 Meters	20 Meters	40/80 Meters
Western & Southern	06-07 (1)	06-07 (1)	05-06 (1)	18-20 (1)
Europe & North Africa	07-08 (2)	07-08 (2)	06-09 (2)	21-00 (2)
	08-10 (3)	08-09 (3)	09-12 (3)	00-01 (1)
	10-11 (2)	09-11 (4)	12-14 (4)	19-23 (1)*
	11-12 (1)	11-12 (2)	14-15 (3)	
		12-13 (1)	15-17 (2)	
			17-19 (1)	
			22-01 (2)	
Central & Northern Europe	07-08 (1)	06-07 (1)	05-06 (1)	18-20 (1)
European CIS	08-10 (2)	07-08 (2)	06-07 (2)	20-23 (2)
	10-11 (1)	08-10 (3)	07-09 (3)	23-00 (1)
		10-11 (2)	09-11 (2)	19-22 (1)*
		11-12 (1)	11-14 (1)	
			14-16 (3)	
			16-18 (2)	
			18-21 (1)	
			21-00 (2)	
Eastern Mediterranean & Middle East	07-08 (1)	06-07 (1)	06-07 (1)	07-09 (1)
	08-10 (2)	07-08 (2)	07-10 (2)	18-22 (1)
	10-11 (1)	08-10 (3)	10-14 (1)	
		10-11 (2)	14-16 (3)	
		11-12 (1)	16-17 (2)	
			17-20 (1)	
			20-23 (2)	
Western Africa	07-08 (1)	06-07 (1)	05-12 (1)	18-19 (1)
	08-09 (2)	07-08 (2)	12-14 (2)	18-21 (2)
	09-11 (3)	08-13 (3)	14-16 (3)	21-22 (1)
	11-13 (4)	13-16 (4)	16-19 (4)	19-21 (1)*
	13-15 (3)	16-17 (3)	19-22 (3)	
	15-16 (2)	17-18 (2)	22-00 (2)	
	16-17 (1)	18-19 (1)	00-02 (1)	
	09-11 (1)**			
Eastern & Central Africa	07-08 (1)	06-08 (1)	06-07 (1)	18-22 (1)
	08-10 (2)	08-12 (2)	07-09 (2)	07-09 (1)
	10-13 (3)	12-15 (3)	09-14 (1)	
	13-14 (2)	15-17 (2)	14-16 (2)	
	14-15 (1)	17-18 (1)	16-21 (3)	
	09-11 (1)**		21-23 (2)	
			23-00 (1)	
Southern Africa	07-08 (1)	07-09 (1)	06-07 (1)	18-19 (1)
	08-10 (3)	09-12 (2)	07-09 (2)	19-20 (2)
	10-12 (4)	12-13 (3)	09-12 (1)	20-21 (1)

12-13 (3)	13-15 (4)	12-14 (2)	18-19 (1)*
13-14 (2)	15-17 (2)	14-16 (3)	
14-15 (1)	17-18 (1)	16-18 (4)	
08-10 (1)**		18-20 (3)	
		20-00 (2)	
		00-02 (1)	
Central & South Asia	06-09 (1)	06-09 (1)	06-07 (1)
	17-18 (1)	15-17 (1)	07-09 (2)
	18-19 (3)	17-19 (3)	09-11 (1)
	19-20 (1)	19-20 (2)	16-17 (1)
		20-21 (1)	17-18 (2)
			18-19 (3)
			19-21 (2)
			21-23 (1)
Southeast Asia	08-09 (1)	07-08 (1)	06-07 (1)
	09-11 (2)	08-10 (3)	07-08 (2)
	11-12 (1)	10-11 (2)	08-10 (3)
	14-15 (1)	11-14 (1)	10-11 (2)
	15-16 (3)	14-15 (2)	11-12 (1)
	16-18 (4)	15-18 (3)	15-17 (1)
	18-19 (3)	18-20 (2)	19-20 (1)
	19-20 (2)	20-21 (3)	20-22 (2)
	20-21 (1)	21-22 (1)	22-00 (1)
	15-17 (1)**		
Far East	13-14 (1)	12-14 (1)	00-06 (2)
	14-15 (2)	14-15 (3)	06-08 (3)
	15-16 (3)	15-17 (2)	08-09 (2)
	16-18 (4)	17-19 (4)	09-12 (1)
	18-19 (3)	19-20 (3)	12-18 (2)
	19-20 (2)	20-21 (2)	18-21 (4)
	20-21 (1)	21-22 (1)	21-22 (3)
	15-18 (1)**		22-00 (2)
South Pacific & New Zealand	09-10 (1)	07-08 (1)	04-07 (1)
	10-11 (2)	08-09 (2)	07-09 (4)
	11-13 (4)	09-11 (4)	09-10 (3)
	13-16 (3)	11-15 (2)	10-11 (2)
	16-19 (4)	15-17 (3)	11-18 (1)
	19-20 (2)	17-22 (4)	18-19 (2)
	20-21 (1)	22-23 (3)	19-20 (3)
	15-18 (1)**	23-00 (2)	00-02 (3)
		00-01 (1)	00-02 (4)
			02-04 (2)
Austral- asia	10-13 (1)	08-09 (1)	06-07 (3)
	13-15 (2)	09-11 (3)	07-09 (4)
	15-16 (3)	11-12 (2)	09-10 (3)
	17-19 (4)	12-14 (3)	10-12 (2)
	19-20 (3)	14-15 (2)	12-14 (1)
	20-21 (2)	15-17 (1)	18-20 (1)
	21-22 (1)	17-19 (2)	20-21 (2)
	17-19 (1)**	19-21 (4)	21-23 (3)
		21-22 (2)	23-01 (4)
		22-23 (1)	01-03 (3)
			03-04 (2)
			04-06 (1)
Carib- bean,	07-08 (1)	06-07 (1)	06-08 (4)
Central America & Northern Countries of South America	08-09 (3)	07-08 (3)	08-10 (3)
	09-10 (4)	08-10 (4)	10-13 (2)
	10-12 (3)	10-13 (3)	13-15 (3)
	12-15 (4)	13-18 (4)	15-22 (4)
	15-16 (3)	18-19 (3)	22-00 (3)
	16-17 (2)	19-20 (2)	00-06 (2)
	17-08 (1)	20-21 (1)	
	08-10 (1)**		
Peru,	06-07 (1)	06-07 (1)	05-06 (2)
Bolivia,	07-08 (2)	07-08 (3)	06-07 (3)
Paraguay,	08-09 (4)	08-09 (4)	07-08 (2)
Brazil,	09-10 (3)	09-11 (3)	08-14 (1)
Chile,	10-12 (2)	11-13 (2)	14-16 (2)
Argentina & Uruguay	12-13 (3)	13-15 (3)	16-18 (3)
	13-16 (4)	15-19 (4)	18-00 (4)
	16-17 (3)	19-20 (3)	00-01 (3)
	17-18 (2)	20-21 (2)	01-03 (2)
	18-19 (1)	21-22 (1)	03-05 (1)
	08-11 (1)**		
McMurdo Sound, Antarctica	07-08 (1)	06-07 (1)	16-18 (1)
	08-09 (2)	07-09 (2)	18-20 (2)
	09-10 (1)	09-11 (1)	20-03 (3)
	19-20 (1)	16-18 (1)	03-04 (2)
	20-21 (2)	18-20 (2)	04-05 (1)
	21-22 (1)	20-22 (3)	06-07 (1)
		22-01 (2)	07-08 (2)
		01-02 (2)	08-10 (1)

\*Indicates best times to listen for 80 meter openings. Openings on 160 meters are also likely to occur during those times when 80 meter openings are shown with a propagation index of (2) or higher.  
 \*\*Indicates best times to listen for F-2 layer openings on 6 meters.  
 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.

rise. Try 30 and 40 meters again for about an hour or so after sunrise. For openings between 1300 and 2300 miles, it should be a toss-up between 20, 17, and 15 meters during the day, with 12 and 10 meters running close behind. Try 20, 30, and 40 meters from sundown to midnight, then check 30, 40, and 80 meters until sunrise. Try 30 and 40 meters again for an hour or so after sunrise.

This month's column contains DX Propagation Charts valid through mid-February. Short-Skip Propagation Charts for December appeared last month.

**VHF Ionospheric Openings**

The best times to check for worldwide 6 meter openings on this band were given earlier in this column. They are also indicated by \*\* in the DX Propagation Charts. The combination of high solar activity and seasonally high ionization in the F-2 layer may produce some good DX openings on 6 meters this month. A secondary seasonal peak in sporadic-E ionization should also result in some short-skip openings on this band between distances of approximately 800 and 1300 miles.

There is considerably less likelihood for 6 meter trans-equatorial (TE) openings during December, but some should be possible between the southern tier states and countries deep in South America. The best time to check for TE openings is during the evening hours between 8 and 11 PM.

Quite a bit of meteor shower activity is expected this month, and this should result in improved conditions for meteor-scatter-type openings on the VHF bands for distances up to approximately 1,000 miles. The *Geminids*, a major meteor shower, should begin on December 12th and last for about three days. Maximum intensity is expected at about 5 PM EST on December 13th, with an estimated meteor rate of about one a minute. The *Ursids*, a considerably less intense shower, is expected to take place on December 21st and 22nd. It should peak at approximately 2 AM EST on December 22nd with a meteor rate of approximately 15 an hour.

Auroral displays often increase during December and are most likely to occur when HF conditions are Below Normal or Disturbed. Check the Last-Minute Forecast at the beginning of this column for those days during December that are expected to be in these categories. On these days there is a good possibility for short-skip auroral-type propagation to take place on the VHF bands for distances up to approximately 1,000 miles.

**Holiday Greetings**

I would like to extend an old-fashioned holiday wish far and near for good health, good fortune, and good propagation for the coming season. 73, George, W3ASK

# 160 Meter Results (from page 19)

Number groups after calls denote score, total QSOs, W/VE multiplier, countries worked. Total multiplier is the addition of the W/VE and countries. Multi-op scores follow single-op listings. An asterisk (\*) denotes low power. State, province, and country certificate winners are listed in bold.

## CW RESULTS SINGLE OPERATOR NORTH AMERICA UNITED STATES

CONNECTICUT				
KQ2M	351,010	844	56	54
K1VW	171,095	647	56	39
*K1PX	170,085	788	55	30
N4XR	82,536	377	49	27
N1TM/QRP	39,208	336	46	6
N8RA	38,464	189	41	23
W0MHK/QRP	5,320	95	28	0

MASSACHUSETTS				
*W1TE	134,862	472	54	37
W01N	132,054	613	51	27
W1CSM	74,752	327	49	24
K2LP	21,707	151	34	15
*WG1Z	19,008	170	44	4

MAINE				
KC10I/QRP	6,868	101	34	0
W1CEK	80	4	3	2

NEW HAMPSHIRE				
*W1LNP	228,384	841	58	38
N1KWF	64,448	300	52	24
W1JCC	56,942	242	40	31
K1BV	9,984	144	32	0
*K1WD	1,568	46	16	0

RHODE ISLAND				
*KS1J	126,820	550	53	32
W1WFZ	24,856	203	45	7
*AB1BX	7,479	130	26	1

VERMONT				
*N1RJF	8,400	135	28	0

NEW JERSEY				
N2MM	174,885	646	54	35
*K1NK	134,865	632	53	28
N2ED	124,066	567	53	29
AB2E	90,640	419	56	24
N7UN	43,610	207	51	19
*N2FX	38,450	351	45	5
W1GD	23,265	126	37	18
*N2CG	20,923	179	44	5
AA2WM	17,249	150	41	6
W2EN	15,164	208	34	0
*N2KJM	11,096	134	36	2
*K2YLH	6,664	91	33	1
W2JEK/QRP	3,872	79	22	0
*N2BIM	2,625	51	19	2
*W2UDT	1,958	43	22	0
NN2Y	1,680	39	20	0

NEW YORK				
K8FC	191,400	822	54	33
WF2W	186,010	702	54	35
K2FU	133,496	622	55	27
*W4AA	81,548	426	51	23
*KA2CDJ	76,707	314	51	30
K2ONP	60,588	361	45	21
K2LQ	57,151	322	47	20
*W2TZ	56,227	404	48	11
N2WK	49,216	305	50	14
W2UD	43,659	257	45	18
*WA2RZJ	32,238	267	50	4
*WA2JQK	32,054	213	51	11
*K2CS	25,069	195	46	7
*K2YW	20,727	200	43	4
*W2KTF	18,690	208	39	3
*WB2DVU	18,280	204	37	3
N2UM	15,000	174	38	2
*K2UF	11,286	119	31	7
*NA2Q	9,350	127	34	0
W2QIP/QRP	7,378	119	31	0
*K2MP	5,440	72	31	1
N2VPK/QRP	4,266	73	27	0
*W2ENY	3,874	67	25	1
*W2FR	3,336	65	24	0

DELAWARE				
AA1K	171,236	647	54	35
*N8NA	42,000	316	46	10
W3NX	30,415	209	45	10
N9GG/QRP	1,479	39	17	0

MARYLAND				
W3AO	524,862	1196	59	58
*K1HTV	177,650	814	57	28
N3II	66,598	409	50	17

W3AZ	46,557	302	48	15
N3AM	43,264	374	47	5
W3HVQ	38,006	217	45	17
*K3XZ	27,876	277	44	2
*W3CP	27,072	256	44	4
W3GN	21,915	214	41	4
*WD3A	17,238	203	38	1
*N3UN	14,592	174	37	1
*W12T	12,096	170	31	1
WD3P/QRP	10,179	162	29	0
W3TMZ	5,175	26	0	23

PENNSYLVANIA				
W38GN	338,416	837	55	49
W3TS	251,036	875	56	41
K3UA	186,837	654	54	39
W8FJ	171,456	552	56	40
K3SV	147,015	671	54	27
K3II	103,716	409	51	35
K3ANS	59,202	203	45	33
K3ATO	58,638	419	45	13
NN3Q	53,900	216	41	29
WF3M	50,388	440	46	6
*WW3S	46,626	360	49	8
W3EHZ	24,150	250	41	5
*W3UHP	19,762	223	39	2
W3TDP	18,400	136	40	10
*AD8J	17,598	192	40	2
*K3PP	11,051	114	40	3
K3WWP/QRP	10,013	148	31	0
K3ND	9,600	72	27	13
*NY3Y	8,370	126	31	0
*WT3P	5,012	85	28	0
*K3SWZ	3,000	58	15	5

ALABAMA				
*W4YNG	13,600	173	40	0
K4NR/QRP	6,550	89	34	1
*KF4SXG	2,730	44	30	0

FLORIDA				
N4PN	222,144	767	55	41
N4BP	122,220	519	56	28
W4SVO	115,005	505	53	32
K1TO	84,525	410	55	20
*K4LDR	43,424	321	49	10
*W4ROM	24,910	220	46	7
K4LQ	21,072	183	39	9
*N4EK	9,485	124	33	2
*W4MLA	7,548	81	33	4

GEORGIA				
*K9AY	131,593	684	50	27
K4WA	123,161	591	54	25
*N4DU	58,351	437	49	10
*K4BAI	42,432	366	46	6
W1RR	30,108	258	44	8
*W4NZJ	28,392	244	46	6
W4DMB	26,469	229	46	5
K4UEE	23,968	117	36	20
W4GTS	15,962	159	41	5
N4XMX	13,489	125	41	6
*K3TD	7,786	110	34	0

KENTUCKY				
*K4TO	112,000	543	55	25
*AA2GS	70,728	579	52	4
*KM4FO	18,920	200	43	1
*KC4WQ	16,732	149	42	5
*W00Q	11,856	147	38	0
*K4WW	2,756	50	25	1

NORTH CAROLINA				
W4ZV	499,443	1192	58	61
AA4S	119,520	503	51	32
N4CW	68,835	430	54	11
*KS4S	47,376	369	48	8
K4PB	42,346	266	45	17
N4UH	32,037	208	44	15
W4TMR/QRP	25,529	256	46	3
*K3CV	12,040	160	35	0
AE4IC/QRP	11,592	145	35	1

SOUTH CAROLINA				
AA4NN	153,576	600	58	21
*VE7CPN				
/W4	38,696	307	48	8
*K4DLJ	33,178	279	46	7
W1QS/4	12,126	123	41	2

TENNESSEE				
N4ZZ	165,840	848	56	24
K4RO	162,778	906	56	21
*K1KY	110,887	660	56	17
N4IR	78,690	578	51	10
K0EJ	67,788	471	52	11
W4PA	40,710	254	44	15
N4CM/QRP	35,672	315	47	5
*W040	33,152	240	46	10
N4POV	23,604	243	42	0
W4CZ	16,352	120	48	8

VIRGINIA				
N4RV	195,776	687	56	36
K4ZW	135,675	610	53	28

K40AQ	73,594	531	52	10
W4YE	57,792	360	46	18
K4VW	30,024	237	45	9
*K4MX	26,832	227	45	7
N3JB	24,939	201	40	11
*WA4DAI	21,888	205	44	4
*AD4TJ	21,160	207	42	4
K1GG	19,600	173	43	6
K3OSX	19,306	154	37	12
W2YE	17,664	152	38	8
N4ROA/QRP	16,800	196	41	1
*N3TG	16,211	168	40	3
*N4MM	13,725	116	39	6
*K7ZX	9,922	115	41	0
*W4VC	7,820	109	34	0
W4SD	6,370	118	26	0
*WB4DNL	5,824	79	31	1
*WB4PJW	3,750	66	25	0
N4EUK/QRP	1,232	34	15	1

ARKANSAS				
K50Y	115,850	733	56	14
W5ON	74,460	571	55	5
*K5WX	67,140	496	53	7
W5KL	35,881	328	48	5
*AB5SE	30,056	270	49	3

LOUISIANA				
*AE5T	51,400	463	47	3

NEW MEXICO				
N5IA	218,946	800	56	35
N5UL	83,348	521	52	15
*W6PU	10,626	116	42	0

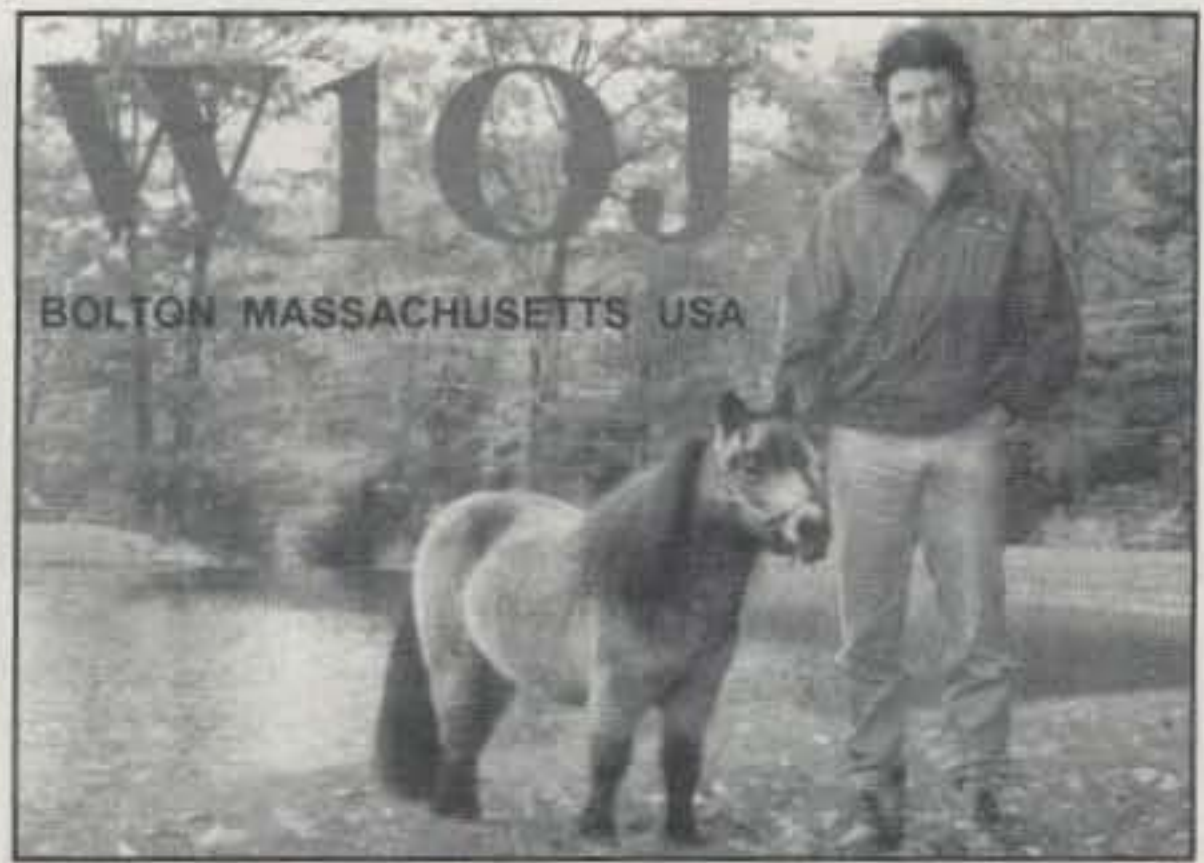
TEXAS				
N6ZZ	124,903	664	53	20
W5PS	99,935	476	55	24
*W5FO	78,592	502	55	9
K5RX/QRP	50,447	364	51	10
N5LZ	40,770	329	47	7
*N25A	34,722	295	49	5
*W5CWQ	30,334	225	49	9
K5ZO	28,000	259	47	3
*K25MM	22,624	161	45	11
*K5KJ	20,145	182	44	7
*NA5TR	13,760	144	40	3
N5SV	9,240	101	36	4
*W5BA	9,048			







<b>ALBERTA</b>				<b>ITALY</b>				*EA5YB/P 990 18 0 11							
VE6JY	85,374	337	48 6	IV30WC	144,160	386	20 48	*EA5AAJ	259	8	0 7				
<b>BRITISH COLUMBIA</b>								<b>SWEDEN</b>							
VE7XD	3,132	36	18 0	*I0SNY	71,568	309	4 44	*SM7ATL	4,600	46	0 20				
<b>MEXICO</b>								<b>UKRAINE</b>							
XE1VV	5,302	73	19 3	IK0YUT	70,180	332	4 40	*UU4JMG	138,624	561	3 54				
<b>PUERTO RICO</b>								<b>WALES</b>							
*WP4LNY	110	5	0 5	*IC8JAH	35,028	160	2 40	UR5DCX	42,560	240	0 38				
<b>ST. KITTS</b>								<b>YUGOSLAVIA</b>							
V47KP	289,380	566	50 41	*IK2YQX	30,831	135	7 36	*YU1AST	18,879	124	0 31				
<b>TURKS &amp; CAICOS</b>				<b>KALININGRAD</b>											
VP5JM	71,240	269	39 13	UA2FJ	272,108	874	7 52	*YU1CC	16,764	100	1 32				
<b>AFRICA</b>				<b>LATVIA</b>											
<b>CANARY ISLANDS</b>				YL2KO				25,120 151 0 32							
*EA8ZS	9,528	42	7 17	YL3GHD/QRP	6,447	63	0 21								
<b>MADERIA ISLANDS</b>				<b>LITHUANIA</b>											
CT3BX	198,356	293	28 40	LY3BS	272,160	978	4 50								
<b>ZAMBIA</b>															
9J2AM	3,080	22	3 11	LY5A	123,119	447	3 50								
<b>ASIA</b>															
<b>ASIA RUSSIA</b>															
*RW9QA	26,818	147	0 22	*LY2BTA	104,714	489	1 40								
<b>KAZAKHSTAN</b>															
*UN20	35,581	203	0 23	LY3BA	79,080	395	0 40								
UN7CR	29,377	111	0 29	*LY2OU	61,152	289	0 42								
<b>EUROPE</b>															
<b>AUSTRIA</b>															
OE2VEL	11,752	89	0 26	LY1FW	55,497	285	0 39								
<b>BELARUS</b>															
*EW8RR	55,145	256	1 40	*LY2FN	36,363	236	0 31								
EW4AB/QRP	9,550	81	0 25	LY1DD	12,810	90	0 30								
<b>BELGIUM</b>															
OT8T	316,438	637	24 58	LY1DS	5,901	60	0 21								
<b>BULGARIA</b>				<b>LUXEMBOURG</b>											
*LZ1DFP	6,600	53	0 24	LX1SP	42,549	217	3 36								
<b>CROATIA</b>															
9A2NY	206,092	532	17 50												
*9A2EU	86,853	327	5 46												
*9A200	2,114	31	0 14												
<b>CZECH REPUBLIC</b>															
OK1DWC	61,272	271	2 44												
OK1FJD	50,355	226	5 40												
*OK2PLK	17,360	117	0 31												
*OK2PHI	9,072	68	0 27												
OK1DJK	4,780	49	0 20												
<b>DENMARK</b>															
OZ3SK	103,774	376	4 49												
OZ5EV	15,720	100	0 30												
<b>ENGLAND</b>															
G3NAS	111,360	311	17 47												
<b>ESTONIA</b>															
ES6MO/QRP	5,740	38	0 28												
<b>FINLAND</b>															
OH1LEU	97,804	394	0 49												
OH3MMH	53,177	259	0 41												
OH1MM	38,200	192	0 40												
OH2MAM	37,791	188	1 38												
OH8LAE	37,474	182	0 41												
OH3JR	33,744	184	0 38												
OH1BV	30,880	159	0 40												
*OH6NIO	20,895	127	0 35												
OH1EH	15,104	100	0 32												
OH2BH	68	4	0 4												
<b>FRANCE</b>															
F58BD	35,520	173	1 39												
*F2AR	6,456	55	0 24												
<b>GERMANY</b>															
*DL2HX	68,551	300	6 43												
*DL8PC	68,126	323	2 44												
*DJ8UVP	45,576	294	1 35												
*DL1SWB	35,256	207	0 39												
*DK5VO	24,827	148	1 36												
DL2DBH	7,544	71	0 23												
<b>HUNGARY</b>															
*HG1S	145,936	503	8 48												
*HA7UG	39,405	214	0 37												
HA3NU	13,717	96	0 29												



W1OJ with his unusual second op.

<b>TENNESSEE</b>				<b>PUERTO RICO</b>			
KF4ZR	43,036	340	53 5	WP3X	149,450	420	49 21
W040	6,837	65	37 6	<b>ST. MAARTEN</b>			
<b>VIRGINIA</b>				PJ8A 2,700 26 14 6			
NS4DX	30,634	260	46 7	<b>ASIA</b>			
<b>TEXAS</b>				<b>ASIA RUSSIA</b>			
W5SB	50,228	382	48 10	RZ9AWW	24,518	108	0 26
N5KB	18,709	156	47 6	RK10WZ/9	5,244	54	0 12
<b>CALIFORNIA</b>				<b>CYPRUS</b>			
NR6R	32,701	265	47 6	C42A	567,693	916	11 52
N7IZM/6	17,732	177	40 4	<b>EUROPE</b>			
W6EEN	15,179	153	39 4	<b>CZECH REPUBLIC</b>			
W6YRA	9,520	115	31 3	OL5T	48,204	251	2 37
<b>ARIZONA</b>				<b>DENMARK</b>			
N7KQ	99,060	674	53 12	OZ9KY	170,886	570	6 51
<b>IDAHO</b>				<b>ENGLAND</b>			
W7II	38,335	310	51 4	G6YB/P	160,480	418	19 49
NA7ID	33,120	294	44 4	G3SVL	101,145	359	10 45
<b>UTAH</b>				<b>GERMANY</b>			
NS7K	23,040	221	42 3	DK0IW	118,440	453	10 46
<b>OHIO</b>				DL7MAE 39,345 183 3 40			
WR8C	278,116	1153	57 35	<b>ITALY</b>			
N8TR	225,420	1083	57 28	IR3R	134,676	450	12 46
W8CCI	15,928	172	40 4	<b>KALININGRAD</b>			
<b>WEST VIRGINIA</b>				UA2AA 229,860 724 7 53			
K8WT	100,800	722	50 13	<b>LITHUANIA</b>			
KB3AUG	5,775	76	29 4	LY7A	78,706	334	1 45
<b>ILLINOIS</b>				LY2TX 40,016 195 0 41			
K0XG	140,140	892	56 14	<b>LUXEMBOURG</b>			
KF9IF	129,430	823	55 15	LX9UN	248,625	731	15 50
K9BG	28,968	304	45 6	<b>ROMANIA</b>			
<b>INDIANA</b>				YO2KAB 56,400 281 0 40			
WN9D	65,984	466	53 11	<b>SICILY</b>			
<b>COLORADO</b>				IT9EQO 228,074 497 24 53			
N0HF	13,455	136	44 1	<b>SLOVENIA</b>			
<b>KANSAS</b>				S59L 12,060 87 1 29			
N0KOV	151,475	894	57 16	<b>SWITZERLAND</b>			
<b>MINNESOTA</b>				HB9CXZ 175,825 506 14 51			
KB0WY	94,878	670	54 9	<b>UKRAINE</b>			
WB3JH	21,936	212	47 1	UT7Z	53,865	273	1 44
<b>MISSOURI</b>							
K0LIR	98,028	706	55 8	<b>SSB CHECK LOGS</b>			
<b>CANADA</b>				Thanks to the following stations for their valuable check logs: DL5ZB, EA4FW, EA5BZS, IZ3BJK, K3SWZ, LA1NG, LA5YV, S57DX, SP2GUC, SP7VCK/7, W4SV0, W6A, VE3BR.			
<b>QUEBEC</b>							
VE2UMS	48,336	261	37 1				
<b>ONTARIO</b>							
VE3DC	311,700	851	57 18				
<b>BAHAMAS</b>							
C6AIE	127,224	443	46 11				
<b>CUBA</b>							
T48RAC	24,814	131	29 9				
<b>MEXICO</b>							
XE1RCS	165,308	495	53 15				

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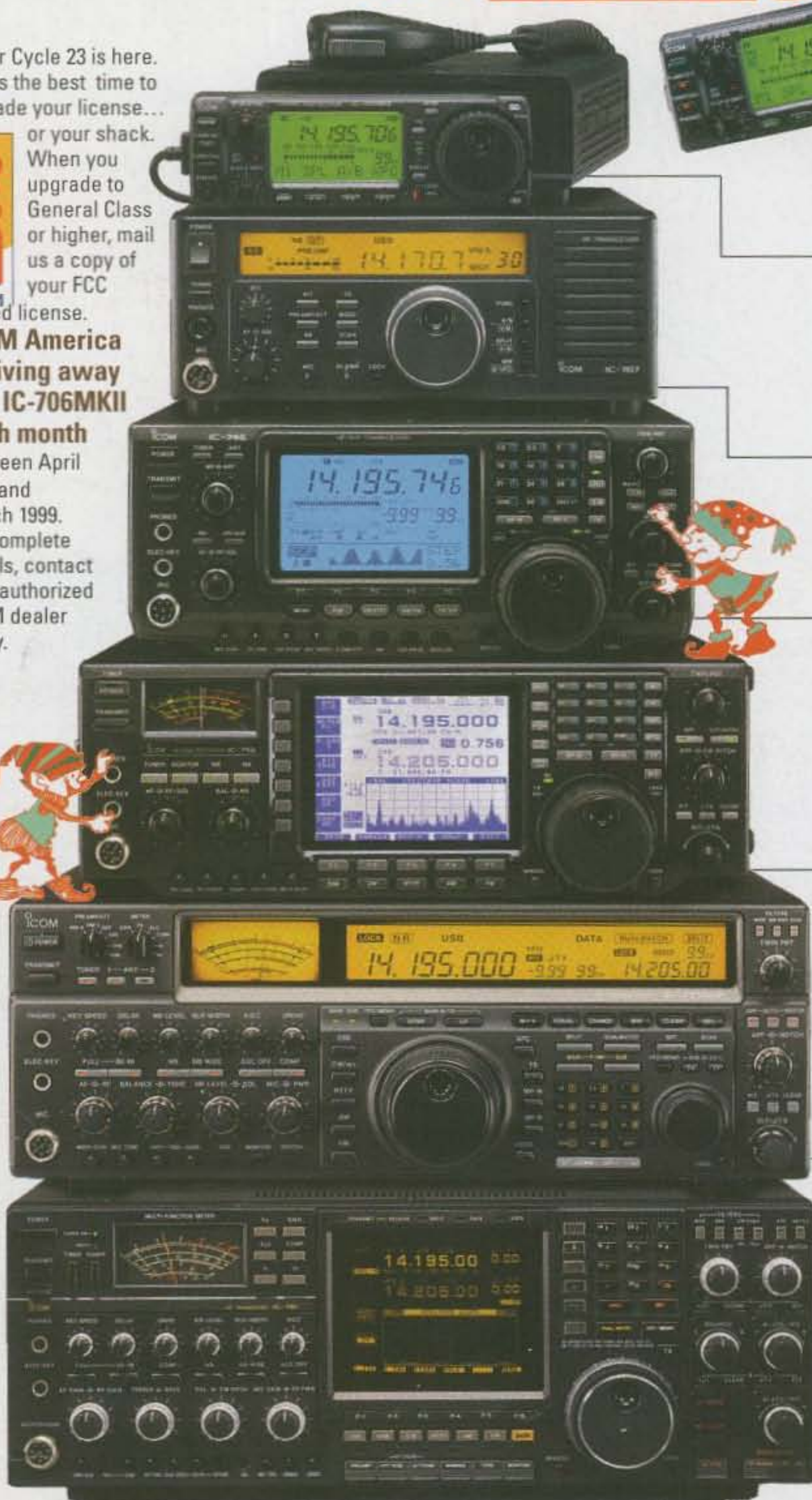
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