

Potomac Valley Radio Club Newsletter February 2007

Visit us on the web at www.pvrc.org
and www.pvrcnc.org

***PVRC welcomes Raj Choudhury, AH0AH, and John Klim, N3KHK.
Both come to us through the Downtown lunch group.***

FROM THE PRESIDENT - by Jim Nitzberg, WX3B

Welcome to the heart of the winter PVRC contesting season! I hope that everyone enjoyed their holidays, your batteries recharged and re-fueled for the upcoming season.

Several of my favorite contests are about to take place, starting with the ARRL DX CW and SSB contests this month and next. Those of you who know me, know that my most serious contest effort from WX3B is the CQ WPX SSB contest. I hope to put a team together that will place us in the Top Ten World in 2007 – which we just barely missed last year.

I can't help but bring back my favorite PVRC topic, our OUTSTANDING performance in the 2006 ARRL November Sweepstakes. You may have seen my latest announcement that after reviewing their claimed scores only to discover several scores not included in their claimed score, the NCCC has declared a "true tie."

PVRC, of course, has one or two "sleepers" out there that I hope made it to the log sponsor even though they weren't part of our "claimed" report. As always, the final results will be determined by the official log checking process. Those of you who helped or participated in any way are truly appreciated.

As unbelievable as this may sound, an enthusiastic group of folks is already talking about making the Sweepstakes effort bigger and better next year!

I am pleased to officially welcome Eric, W3DQ to the Newsletter Editor position. He replaces Pete, N4ZR who has faithfully served us for many years, and brought us into the electronic age by pioneering our .PDF version of the newsletter which most of us receive.

I am also pleased to announce the appointment of Bob Finger, W9GE as the new Annapolis Chapter leader. Bob graciously agreed to take over the position from Dick Wilder, K3DI who has served as chapter leader for many years. Thank you, Dick for your leadership and many years of service.

And thanks to Rich, NN3W for successfully recruiting Jamie, NS3T to speak at our upcoming Vienna, VA Central meeting this Monday evening, February 12. Jamie has a completely automated recorded speech system that he uses to make SSB QSOs – and he will be telling his secrets to this meeting. Rich has been posting the meeting location and information on our email reflector. If you need more information, please contact him directly.

Best wishes to everyone in the winter contest season.

73, Jim Nitzberg WX3B

EDITOR'S NOTE -- by Eric, W3DQ

Taking over the reins of this newsletter from Pete, N4ZR, is an intimidating task. As I'm sure you'll all agree, Pete did a fabulous job writing, soliciting, editing and publishing a newsletter that reflects the interests, passions and foibles of you, the PVRC members. My hope is to continue putting out a newsletter as interesting, valuable and readable as those Pete produced.

Note that this issue as an abbreviated one. In order to get it out quickly, I've resorted to the tried and true (for me) method of working with MS Word instead of MS Publisher (and I thought the learning curve for my Ten Tec Orion was steep!) as Pete did. I've had to omit the regional meeting notes and listings of scores. I hope to have them back in next month, along with some new features.

I encourage you to participate in this effort by contributing your thoughts, ideas, experience, concerns and comments to this publication. If there's anything in particular you'd like to see -- or not -- in the Newsletter, please let me know!

Thank you, Pete, for a great run. We hope to see even more of you on the air!

73, Eric W3DQ

PVRC Contest and Event Calendar — all dates and times are in UTC (Zulu) except as noted

North American Sprint, CW 0000Z-0400Z, Feb 11 (Saturday)

ARRL Inter. DX Contest, CW 0000Z, Feb 17 to 2400Z, Feb 18

CQ 160-Meter Contest, SSB 0000Z, Feb 24 to 2359Z, Feb 25

North American QSO Party, RTTY 1800Z, Feb 24 to 0600Z, Feb 25

ARRL Inter. DX Contest, SSB 0000Z, Mar 3 to 2400Z, Mar 4

North American Sprint, RTTY 0000Z-0400Z, Mar 11

Russian DX Contest 1200Z, Mar 17 to 1200Z, Mar 18

Virginia QSO Party 1800Z, Mar 17 to 0200Z, Mar 19

CQ WW WPX Contest, SSB 0000Z, Mar 24 to 2359Z, Mar 25

AMMUNITION FOR LITTLE PISTOLS – by Bill Axelrod K3WA

Aloha fellow PVRCers. Why aloha? Maybe because it is the middle of January and it is 64 degrees outside right now up in the West Virginia mountains. Feels like Hawaii. Also it is a pretty good day to lay down some more radials under my 160 meter vertical before the 160 meter contest since the ground is soft and damp. But I'm just being a tree slug today – lazy and plinking away at this column. Having established establishing some connection to ham radio and contesting I can now yak about any subject safely.

I tried to set my SO2R setup going this weekend. It was a humbling experience. Yesterday I thought I knew something about radios, antennas, switching systems, computers, et. al. Wow, was I ever wrong.

Today I know I don't know squat. Which, by the way, is way less than nothing. A lot less than nothing.

Despite the conventional wisdom, my general laziness and increasing sloth, and diminished mental capacity, I really did prepare for this adventure. I read all the info I could find on the PVRC web site, read all the equipment manuals.

AMMUNITION FOR LITTLE PISTOLS (cont.,)

And after a frustrating day and a half I finally got it working. Kind of. But it works.

Let's see now. One bad 20 meter relay in the six pack. RF in the shack on 80 meters, unnoticeable until this adventure, kills the CW keyer in the MicroHam MicroKeyer. The VOX in radio A won't work anymore. And I need to move the antenna switch from the top to the bottom of the tower to split out the 40 meter beam's feedline. Oh, and if I turn one or the other radio off my computer hangs up. But it works. Kind of.

Of course, my station is infinitely more complex to operate for DXing and rag chewing than it was before. All in all, a typical ham's weekend. But it works. Kind of. And the shack is ready for the next contest. The real question is "Am I?".

Read next month's column to find out. Or not.

There was a good series of emails on the PVRC reflector reflecting on our early days in ham radio. Certainly did enjoy reading them and reminiscing. As we look at the complex modern transceivers and multi-band antennas that most of we Little Pistols enjoy today I wonder how often any of us reflect on the improvements compared to our early equipment. Crystal control, separate receivers and transmitters, 50 watts output was reasonable power, and nothing but your brain and a pencil to help in a contest. Getting shocked when touching the metal part of your CW key. Even today's most basic station is paradise compared to what most of us started with. But I wouldn't swap that experience for anything. Something to reflect on.

Reading this still-ongoing thread is fascinating. There was a great comment expressed earlier today that we should gather all the inputs and publish them on our web site. Might even make a good book.

Perhaps the next thread out to be about our early days in contesting.

Did you all work the S21? I, for one, didn't. Strange conditions. Guys on the coast, North, South, and Midwest were working him. Just couldn't hear him up here. Rats! Needed S2.

So, little pistols one and all, what have you done to get ready for the upcoming contests? Are you ready?

73 and CU in the 'tests... Bill

This Holiday Season, I was wishing for ...

*At the end of December, your incoming editor solicited the membership for holiday wishes.
Thanks to those who responded!*

From: Bill, K3WA:

This Holiday Season, I was wishing for youth and energy for more antenna projects. Instead I got even older.

Jim, WX3B:

This holiday season, I was wishing for a new girlfriend. Instead I got an Icom IC-7000!

Jim, N3JT: For this holiday season, I was hoping for a 20-year old blonde who would be my second operator in the next weekend contest. Instead, what I got was Nina awakening me when I'd fallen asleep at the shack desk working on contest log files.

Steve, K4EU: This Christmas, I was wishing for a Micro-Ham MicroKeyer. Instead I got a Rachael Ray cookbook.

Tom, K2UOP: This holiday season I was wishing for a new contest rig. I got my wish in the form of an IC-756PROIII. Thank you Santa!

Glenn, K3SWZ: This holiday season, I was wishing for a few new countries on 160 Meters and all I got was Line Noise and poor conditions! (Turning 60 on Dec. 22nd didn't help my frame of mind either!!!)

THE TOOLBOX - by Don Daso, K4ZA

Before I begin, let me apologize...or say I was certainly surprised to receive some feedback via e-mails for last month's column. Two readers wrote in response to my *advocating* using wire ties. This surprised me. Because at no time while writing this column, have I thought or believed that I'm suggesting something akin to gospel. As I like to say, I'm just a guy, a veritable old-timer nowadays, with a lot of ropes, who's climbed a few towers. Mostly, I like to think that what I write about is useful, both time and/or labor-saving, sometimes witty or thought-provoking, and always helpful. A point of departure, if you will, as every ham's experience will be different in some small way. Wire ties are but one method of solving the problem of attaching things to tower legs. In 40-some years, I've never been injured by one, yet this was an expressed concern. So, I'll take that into consideration in the future. And I'll keep in mind that some of you may be reading my writing with more reverence than I considered possible. I shall endeavor to live up to such expectations. Every now and then, something comes your way that's so simple, yet refined, so inexpensive (*okay, cheap*) yet versatile, and so impresses you that you simply have to have it. The subject of this month's column falls into each of those categories.

The ProjectCalc PLUS pocket calculator has to be one of the neatest tools I've found in the past few years. Yes, it's yet another example of "computers being found in everything," from your toaster to the family car, but it's so cool you quickly forget that part, and look around for clever and cool problems to solve. And while there are several such calculators on the market, this one impressed me first with its price. If you need to figure out:

- Paint coverage (surface area, or gallons, quarts or pints)
- Wallpaper (rolls of)
- Tiles (the number needed)
- Concrete (number of bags or mixer loads needed, for tower bases or driveways or fences)
- Gravel (shovels or truckloads)
- Bricks or blocks (number for a wall, driveway, whatever)
- Carpet (length, or surface area)
- Fences (number of posts and rails, boards, wire)
- Cost (using custom or dedicated settings)
- Conversions (for the metrically-challenged or non-US using; it works both ways)

Well...you get the idea. This is one handy gadget! It's the size of your typical pocket calculator—meaning it will, literally, fit easily into your shirt pocket.

A DISCUSSION OF 160 METER RADIALS - by Frank Donovan, W3LPL

[Editors note: this is a compilation of emails from the PVRC reflector on the subject of 160 meter radials. It was instigated by a question posed to W3LPL by Owen, K3CB and later, Fred, W3ICM]

K3CB: Frank, opinions are all over the place. What is a good length for radials being used with a 160M vertical? I'm thinking 120 ft??? More / less?

W3LPL: Hi Owen; Opinions will naturally be all over the map on that question.

The most important factors are how much wire you want to use and how much performance you're willing to give up. For 500 feet of wire, elevated radials are a good choice. They must be resonant length, about 120 feet. They also must be at least 10 feet high, but their performance improves steadily as the radial height is increased to 60 feet.

A better choice is radials laid on the surface. In this case, the total number of radials is more important than their length. The lossy properties of soil eliminate a concept of "resonance" for radials laid on the soil.

This is an excellent time to lay radials on the soil, while the ground is saturated with rain. They will sink into the turf in a few months.

A DISCUSSION OF 160 METER RADIALS (cont.,)

Each of the choices below incrementally improves performance by 1 or 2 dB:

- 4 elevated radials 120 ft long, at least 10 ft high
- 16 surface radials, 50 ft long
- 32 surface radials, 60 ft long
- 16 surface radials, 50 ft long
- 32 surface radials, 60 ft long
- 60 surface radials, 120 ft long
- 120 surface radials, 240 ft long

An often used "rule of thumb" is that the tips of 160M radials should be about 12 ft apart. When I laid out my 60 radials, I surveyed a 240 ft diameter circle, with stakes about every 12 ft along the diameter of the circle.

My 160M station improved dramatically after I replaced my elevated radials last year with 60 radials on the surface, 120 ft long. As you probably know, W3UR uses my 160M antennas more often than I do. At sunrise yesterday, Bernie worked 16 Japanese stations in 20 minutes.

W3ICM: Frank, I presume that the improvements that you talk about are for transmitting... But reciprocity holds true for antennas, but I would expect the received noise level to be high with a vertical antenna. And I presume that Bernie was using your Beverages to receive.

W3LPL: Yes, my e-mail addressed transmitting losses. On receive, radials affect primarily the stability of the feedpoint impedance. Radials have minimal affect on received signal strength. Some very large military HF receiving and direction finding arrays use ground screens and huge quantities of radial wire, but they're not necessary for ham receiving antennas.

The antenna Bernie was using was a 4-square vertical array. It has excellent directivity. Each of the 4 verticals has 60 radials. I also have many Beverages, I'm not sure if Bernie was receiving on the Northwest Beverage or the 4-square for those QSOs on Saturday morning. Both are excellent receiving antennas.

W3ICM: There is an old [1952] but excellent book on verticals, ground radials, ground screens, etc. by LaPorte. I used to have a copy, but I haven't seen it in years.

W3DQ: A PDF of Radio Antenna Engineering by Edmund A. Laport can be downloaded from the Internet. It's 550 pages long. <http://snulbug.mtview.ca.us/books/RadioAntennaEngineering/>

THE VHF CONTEST CORNER - by Jamie Dupree, NS3T

The first big VHF contest of the year is over and hopefully you were able to get on for the January VHF Sweepstakes! As usual, the conditions were a bit were flat, but the bands still came alive for the contest weekend.

Now it's time to think about what worked and what didn't. Did you mainly CQ or S&P? Did you move everyone to other bands or did you just stay on your run frequency? VHF is a bit different than HF when it comes to contesting.

CQ's brought in 44 of my 66 contacts and about a third of those were CW QSO's. CW is still my mode of choice on VHF, because it makes up for my fairly average antenna setup.

But for some VHF ops, CW can be difficult - so why not make it easier?

Brian WC4J says he set up UA9OSV's **CwGet** for his ops, which copies CW through a sound card. There's also a companion program called **CWType**, which will send CW as well. I use **Writelog**, which has a handy CW decoder built into the logging program itself.

One station I was trying to contact could have used a program like that, because they asked me to QRS when I was sending my call at 12 wpm. After a few more tries, I moved on with nothing in the log.

THE VHF CONTEST Corner (cont.,)

Jeff N8II ran into that as well: "I missed 4 grids where the other op wouldn't copy CW."

The bottom line is don't limit yourself to just SSB on VHF! There are software and hardware solutions that can bring you more contacts. CW will also take your signal further and probably help you find some new grids in the process. And remember, you don't have to send and receive at 35 wpm.

We've got four months to get ready now for the ARRL June VHF contest...so start planning those upgrades and repairs and this new column will try to help out along the way.

73 Jamie NS3T

SO2R Beginner's DVD - by Mark Bailey, KD4D and Jim Nitzberg, WX3B

I am pleased to announce that Mark, KD4D (our newest VP) has graciously agreed to act as the "DVD Manager" for NCCC's introduction to contesting DVD.

This DVD is an excellent quality introduction to SO2R contesting, and the introduction by Rick, K6VVA is entertaining and humorous.

The instruction is FOR BEGINNERS - it is just to give you a taste of the basic skills required to do SO2R operation. It is NOT intended for novices or intermediates that already have SO2R stations. It is also NOT a cook-book on how to design and install SO2R systems.

If you are interested in receiving a copy of this DVD, please send an SASE with enough postage/padding to cover return of the DVD to:

Mark Bailey, KD4D
645 Solomons Island Road, #430
Prince Frederick, MD 20678

There has been great interest in this DVD - about 40 of you said you might want one.

Thanks go out to Kyle, WA4PGM, Who has produced the first 20 DVDs, and we have NE3H and W3CB as backup DVD producers on alert.

It may take several weeks for you to receive your DVD so please be patient. If you have any questions - please contact Mark - KD4D directly.

BPL, HOUSE RESOLUTION 462 AND OUR RESPONSE - by Eric, W3DQ, Jamie, NS3T, and Raj, AH0AH

As you all know, Broadband over Power Lines (BPL) is the hot topic in the amateur radio regulatory world. Much has been written and debated on the subject, the end result being an FCC rulemaking, lawsuit filed by the ARRL, and legislation sent to the House of Representatives by Rep. Mike Ross, WD5DVR (D-Arkansas). The "Emergency Amateur Radio Interference Protection Act of 2007," also known as HR 462 calls on Congress "To request a study by the Federal Communications Commission on the interference caused by broadband internet transmission over power lines"

HR 462 and Rep. Ross are in need of co-sponsors and support. Should you feel action needs to be taken, we've taken the liberty to create a letter template for you to send to your Representative, asking that he or she support this Bill. Feel free to modify, change, delete or add to our words.

BPL, HOUSE RESOLUTION 462 AND OUR RESPONSE (cont.)

Rep. _____
U.S. House of Representatives
Washington, DC 20515

Dear Rep. _____,

As a federally licensed Amateur Radio operator in your district, I ask you to co-sponsor H.R. 462, the "Emergency Amateur Radio Interference Protection Act of 2007" introduced by Rep. Mike Ross (D-AR)

This bill calls on the Federal Communications Commission (FCC) to conduct a study on radio interference caused by "broadband over power line" (BPL) systems.

BPL utilizes electric power lines to deliver internet broadband services to consumers. Unfortunately, the power lines can cause interference to legal radio services, including amateur radio and emergency communications.

Despite complaints by groups like the American Radio Relay League, a national organization of ham radio operators, the FCC has ignored evidence that many BPL systems cause widespread interference, endangering radio communications by First Responders, amateurs and others who provide emergency communications services.

The importance of the Amateur Radio Service is documented in the Congressional report on Hurricane Katrina, "A Failure of Initiative." Amateur Radio was one of the few communications services able to operate in Katrina's aftermath. Interference from BPL emissions will significantly disrupt this unique capability.

Please co-sponsor H.R. 462 as soon as possible and help express your concern over the interference potential of BPL to Amateur Radio operators and to public safety licensees.

Sincerely,

[NAME]
[ADDRESS]
[CITY], [STATE] [ZIP]
[Email address and telephone number (optional)]

K4YT OFF TO BAGHDAD - by Karl Renz K4YT

I will be going to Baghdad o/a March 1 for 2-3 weeks to work at the new embassy building. W3ICM had issued me YI9YT a few years ago but I am not sure if that is still valid. Don't know if there are stations in the Green Zone to operate from but I am researching that now. I had operated from YI1BGD years ago but I assume that club station is outside the green zone.

During my last trip to Kabul I was invited to Y68G's UN compound QTH but we were locked down on the embassy compound for 2 weeks and then right to the airport on a high speed run and out of the country. If I can find a station

I will try to get on and I will advise Bernie. We are restricted to very small TDY quarters so I wasn't going to carry a complete station and antenna over. Then in April and May we have 9G1, 9N1, YN and XZ trips.

73,
Karl, K4YT

THE RTTY CORNER - by Mike, K4GMH

Several important RTTY contests were missed in the January 2007 PVRC Newsletter in the "PVRC Contest and Event Calendar".

*** CQ WW WPX RTTY: This weekend Feb. 11/12! This is a 5 million award Contest for the Club. PVRC is sponsoring the club competition plaque.**

There are other RTTY contests to be held the first three months of 2007. Two were already held in 2007, the SARTG New Years Contest on 1 January 2007, and the ARRL RTTY Roundup on January 6/7.

The others later this month and in March are:

- * NCJ NA QSO Party. Feb. 25/26
- * Open UK RTTY Championship. Mar. 4/5
- * NCJ NA Sprint. Mar. 12
- * BARTG Spring HF. Mar. 18/20

Hope to see and work many PVRC members in the CQ WW WPX RTTY this weekend.

73, Mike K4GMH

THE CONTEST EXCUSE QUOTIENT - by Rick, N6XI

[Editor's Note: This item, from 1994, seems appropriate as we gear up and dive into the spring contest season. Enjoy the lighthearted truths that follow!]

With the contest season starting up, perhaps we need a new performance metric - the **Contest Excuse Quotient**, to be included in all contest score listings:

Equipment Issues: You get 1 point per minute lost due to a repairable equipment problem during the contest.

Irreparable problems are 100 points if there is a redundant item available, else 250 points.

Tower climbing counts 3 points per foot (US only) within 6 hours of contest start and 5 points per foot during the contest. Outside the US it is 10 and 15 points per meter. Per metre in the UK.

Martial Status: You get 100 points for being married and another 100 if your spouse is in town on a contest weekend.

Children: If you or your spouse delivers a baby during the contest, count 500 points. Kids under 12 are worth 50 points each for existence and presence. Teenagers are worthless.

Cold: 100 points per sinus blocked throughout the contest plus 100 points per box of tissue.

Flu: 100 points per degree F over normal (200 points per degree C).

Broken bone: 200 points except in sending hand which counts 400 points or off-hand 300 points (for computer loggers only).

Doctor visits: 500 points if your return before end of contest, 1000 points if hospitalized.

Life-threatening illness contracted and diagnosed during contest or 3 days prior: 3000 points (doctor's affidavit required).

Power failure during contest: 10 points per hour (100 points per hour in NA Sprint).

Line noise: 2 points per dB over noise floor per hour (20/hour in Sprint).

New RFI complaints: 1 point per dollar of threatened lawsuit. Complaints that don't threaten a suit or are from previously encountered pre-litigants don't count.

Bad conditions count 10 points per dB below normal of the average of all the 14.100 beacon stations if they hurt you more than your buddy because of the nature of your equipment, antennas, operating style or habits of personal hygiene.

Travel: 100 point bonus if you traveled at least 1000 miles away from home during the 3 days prior to the contest or if you worked (at your job) more than 80 hours in the prior week.

Phone calls/Door Bells: Each doorbell or telephone call you respond to during the contest is 5 points unless it is an RFI complaint which is covered under separate rule above.

THE CONTEST EXCUSE QUOTIENT (con't.)

Contest Excuse Quotients (XQs) are used as follows:

$$\text{Adjusted Gross Score} = \text{Raw Score} * (1 + \text{XQ}/1000)$$

All score listings in the magazines are by AGS. Raw Score may be reported if space permits and there is lots of advertising in the current issue. Contest sponsors are encouraged to establish categories such as Single Operator/No Excuse, Multi Operator/Mega Excuses, etc. Top XQ boxes will be published in the sponsoring journals. NCJ can sponsor an annual Max Cumulative Excuses award. CT, NA and TR will require modification to track Real-Time Excuse Accumulation and to calculate and display AGS.

We will need the following new Q Signals:

QXQ? "What is your excuse?"
QXQ nnnn "My excuse quotient is nnnn."
QXQ 0 "No excuse, Sir."

So, what's your excuse?



"Our catalog includes:

UHF Series, N Series, BNC Series, Adapters, F Series, DIN Plugs, Portable Radio Power, DIN Plugs, Hardline Connectors, Audio Connectors, Microphone Connectors, FME Series, SMA Series, Reverse Thread SMA Connectors, MCX Series, MMCX Series, Adapter Kits, Reverse Polarity (TNC, N, SMA), 39 coax types and 5 balanced lines

THE R. F. CONNECTION

"Specialists in RF
Connectors and Coax"

Tech Support:
301-840-5477

24-hour Fax:
301-869-3680

Order line:
800-783 -2666

Email: rfc@therfc.com

Please visit us at:
[Http://www.therfc.com](http://www.therfc.com)

Tower Works

Specializing in Rohn guyed towers

Don Daso

515 Withershinn Drive

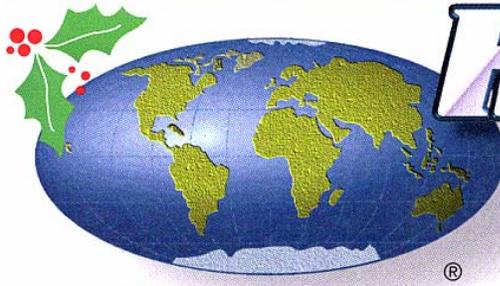
Charlotte, NC 28262

704-594-9853 704-408-7948 (cell)

E-mail: k4za@juno.com

Call or e-mail for rates and availability

Special Holiday Discounts Off Our Already Low Prices!



HAM RADIO OUTLET

WORLDWIDE DISTRIBUTION

ANAHEIM, CA
(Near Disneyland)
933 N. Euclid St., 92801
(714) 533-7373
(800) 854-6046
Janet, KL7MF, Mgr.
anaheim@hamradio.com

BURBANK, CA
1525 W. Magnolia Blvd., 91506
(818) 842-1786
(800) 854-6046
Eric, KA6IHT, Mgr.
Magnolia between
S. Victory & Buena Vista
burbank@hamradio.com

OAKLAND, CA
2210 Livingston St., 94606
(510) 534-5757
(800) 854-6046
Mark, W17YN, Mgr.
I-880 at 23rd Ave. ramp
oakland@hamradio.com

SAN DIEGO, CA
5375 Kearny Villa Rd., 92123
(858) 560-4900
(800) 854-6046
Tom, KM6K, Mgr.
Hwy. 163 & Claremont Mesa
sandiego@hamradio.com

SUNNYVALE, CA
510 Lawrence Exp. #102, 94085
(408) 736-9496
(800) 854-6046
Dan K6DN, Co-Mgr.
Howard, W6HOC, Co-Mgr.
So. from Hwy. 101
sunnyvale@hamradio.com

NEW CASTLE, DE
(Near Philadelphia)
1509 N. Dupont Hwy., 19720
(302) 322-7092
(800) 644-4476
Rick, K3TL, Mgr.
RT.13 1/4 mi., So. I-295
newcastle@hamradio.com

PORTLAND, OR
11705 S.W. Pacific Hwy.
97223
(503) 598-0555
(800) 854-6046
Leon, W7AD, Mgr.
Tigard-99W exit
from Hwy. 5 & 217
portland@hamradio.com

DENVER, CO
8400 E. Iliff Ave. #9, 80231
(303) 745-7373
(800) 444-9476
John, N5EHP, Mgr.
denver@hamradio.com

PHOENIX, AZ
1939 W. Dunlap Ave., 85021
(602) 242-3515
(800) 444-9476
Gary, N7GJ, Mgr.
1 mi. east of I-17
phoenix@hamradio.com

ATLANTA, GA
6071 Buford Hwy., 30340
(770) 263-0700
(800) 444-7927
Mark, KJ4VQ, Mgr.
Doraville, 1 mi. no. of I-285
atlanta@hamradio.com

WOODBRIE, VA
(Near Washington D.C.)
14803 Build America Dr. 22191
(703) 643-1063
(800) 444-4799
Steve, W4SHG, Mgr.
Exit 161, I-95, So. to US 1
woodbridge@hamradio.com

SALEM, NH
(Near Boston)
224 N. Broadway, 03079
(603) 898-3750
(800) 444-0047
Chuck, N1UC, Mgr.
sales@hamradio.com
Exit 1, I-93;
28 mi. No. of Boston
saalem@hamradio.com

**GREAT YAESU
WINTER SPECIALS
Through 12/31/06**



FT-897D VHF/UHF/HF Transceiver

• HF/6M/2M/70CM • DSP Built-in
• HF 100W (20W battery)
• Optional P.S. + Tuner • TCXD Built-in

Call Now For Our Low Pricing!

\$10. HRO Coupon **\$70. mfr coupon** expires 12/31/06

FT-817ND HF/VHF/UHF TCVR

• 5W @ 13.8V ext DC • USB, LSB, CW, AM, FM
• Packet (1200/9600 Baud FM) • 200 mems
• built in CTCSS/DCS • TX 160-10M, 6M, 2M, 440
• Compact 5.3" x 1.5" x 6.5", 2.6 lbs
• FNB-85 NiMH battery • NC-72B included

Call Now For Low Pricing!

\$10. HRO Coupon **\$50. mfr coupon** expires 12/31/06

FT-890R 2M/440 Mobile

• V-U/V-V/U-U operation
• V-U full duplex • Cross Band repeater function
• 50W 2M 35W UHF
• 1000+ Memory channels
• WIRES ready

Call Now For Low Pricing!

\$10. HRO Coupon **FREE YSK-8900 thru 12/31**

FT-8800R Quadband Transceiver

• 10M/6M/2M/70CM • Wires capable
• 800+ memories • Built-in CTCSS/DCS
• Remotable w/optional YSK-8900

Call Now For Special Pricing!

\$10. HRO Coupon **FREE YSK-8900 thru 12/31**

VX-2R 2M/440 HT

• World's smallest Dual-band HT w/ wide RX
• 1.5 W RF output
• WIRES compatible
• 1300 Memory channels

Call For Low Price!

\$25. mfr coupon expires 12/31/06
\$5. HRO Coupon

FT-60R

• 2m/440 HT
• 5W Wide-band receive
• CTCSS/DCS Built-in
• Emergency Auto ID

Low Price!

\$10. mfr coupon expires 12/31/06
\$5. HRO Coupon

VX-7R/VX-7R Black

50/2M/220/440 HT

• Wideband RX - 900 Memories
• 5W TX (300mw 220MHz)
• Li-Ion Battery
• Fully Submersible to 3 ft.
• Built-in CTCSS/DCS
• Internet WIRES compatible

Now available in Black!

\$5. HRO Coupon **\$30. mfr coupon** expires 12/31/06

VX-6R

2M/220/440HT

• wideband RX - 900 memories
• 5W 2/440, 1.5W 220 MHz TX
• Li-Ion Battery - EAI system
• Fully submersible to 3 ft.
• CW trainer built-in

NEW Low Price!

\$5. HRO Coupon **NEW!**

VX-150

2M Handheld

• Direct Keypad Entry
• 5w output
• 209 memories
• Ultra Rugged

Call Now For Special Pricing!

\$10. mfr coupon expires 12/31/06
FREE FNB-64 thru 12/31

FT-857D

Ultra compact HF, VHF, UHF

• 100w HF/6M, 50w 2M, 20w UHF
• DSP included • 32 color display
• 200 mems • Detachable front panel (YSK-857 required)

Call For Low Price!

\$10. HRO Coupon **FREE YSK-857 thru 12/31** **\$70. mfr coupon** expires 12/31/06

FT-7800R 2M/440 Mobile

• 50w 2m, 40w on 440mhz
• Weather Alert
• 1000+ Mems
• WIRES Capability
• Wideband Receiver (Cell Blocked)

Call Now For Low Price!

\$10. HRO Coupon **FREE YSK-7800 thru 12/31**

FT-2000 HF + 6M tcvr

• 100 W w/ auto tuner • built-in Power supply
• DSP filters / Voice memory recorder
• 3 Band Parametric Mic EQ • 3 IF roofing filters

Call Now For Low Pricing!

\$25. HRO Coupon **NEW!**

FT-8900R 2M/440 Mobile

• V-U/V-V/U-U operation
• V-U full duplex • Cross Band repeater function
• 50W 2M 35W UHF
• 1000+ Memory channels
• WIRES ready

Call Now For Low Pricing!

\$10. HRO Coupon **FREE YSK-8900 thru 12/31**

AZ, CA, CO, GA,
VA residents add
sales tax. Prices,
specifications,
descriptions,
subject to change
without notice.

Look for the
HRO Home Page
on the
World Wide Web
http://www.hamradio.com

COAST TO COAST
FREE SHIPPING
UPS - Most Items Over \$100
Rapid Deliveries From
The Store Nearest To You!

