



PVRC Newsletter

May

Newsletter Editor: John K3TN jpescatore@aol.com

Website: <http://www.pvrc.org>

Meeting Info: <http://www.pvrc.org/chapters.htm>

Facebook: <https://www.facebook.com/groups/PotomacValleyRadioClub/>

President's Letter – Doug AA3S

Team Effort Awards

Occasionally a contest sponsor or plaque sponsor will send an award to PVRC for winning a club competition. In keeping with the PVRC Officer policy to present certain of these club competition awards (trophies, plaques, certificates) to the highest scoring PVRC member (or multi-op station host) in that winning effort for PVRC, it is my pleasure to announce several WAE (Worked All Europe) awardees. Remember that each year's WAE club competition win is the sum of scores from that year's SSB, RTTY and CW sub-events:

- The 2021 WAE Club Competition Plaque goes to Alan Hoffmaster WA3EKL and Susan Hoffmaster N3DPB for hosting the station that resulted in the highest score for PVRC.
- The 2020 WAE Club Competition Plaque goes to Mark Bailey KD4D (who operated at the station of W3LPL) for his single op effort that resulted in the highest score for PVRC.
- The 2019 WAE Club Competition Plaque goes to Bud Governale W3LL for his SSB and RTTY scores and for hosting the CW station team that resulted in the highest combined score for PVRC. His CW team members were: Ted Bauer WA3AER, Bob Venanzi ND3D, and Pip Sager WB4FDT.

The awardees may request that their plaque be mailed to them, but if possible an in-person presentation is desired and it is proposed that all three award presentations be made at the general PVRC meeting at Frank's W3LPL open house in June since all three recipients live in the general area. Awardees should email me with their preference for their award: mailing or in-person.

There may be more such awards announced sooner rather than later as the PVRC Officers catch up to the backlog. Congratulations and thanks from all PVRCers for what you have accomplished for our Club!

The Dayton Hamvention begins May 19, you may want to monitor the proceedings in “real-time” since a current PVRC member will be receiving very prestigious recognition at the Hamvention. If you attend, take photos of people and things you see at the Hamvention and consider submitting them to your PVRC Newsletter for June!

73, Doug AA3S, PVRC President

Upcoming Club Competitions – Doug AA3S

Only one 5M contest in May: CQ WPX CW: begins 8pm Eastern Friday May 26, rules [here](#). When this event is combined with the SSB event, PVRC has not been the overall winner in recent years.

There is one State QSO Party in May that has club competition awards (plaques), but it is the combination of six New England States into the one NE QSO Party so it has much participation. The Top Club (outside of New England) plaque is provided by the Florida Contest Group. Wouldn't it feel good to have FCG buy us a plaque (again, since **PVRC won in 2022**)? Can we do it again? Begins 4pm EDT Saturday May 6 for a total of 20 hours through Sunday 8pm, see rules at: [here](#).

Be sure to specify Potomac Valley Radio Club as your club in your log submission. The sponsor's log submission process may have a pull-down menu for that. Read the rules for every contest even if you think you know them from last year since there may be year-to-year changes.

PVRC Officers:

President: AA3S Doug Hart
Vice President: K3WA Bill Axelrod
Vice President: K8LF Jerome Svinicki
Secretary: N3QE Tim Shoppa
Treasurer: WA3AER Ted Bauer

Trustees:

K3MM, N3OC, K2AV, N1RM, W3LPL, N3KN, W2RU, W3LL, N4RA

PVRC Charter Members (all SK):

W3GRF, W4AAV, W4KFC, N0FFZ, W4LUE, W7YS, VP2VI/W0DX,
W3IKN, W4KFT, W4RQR, W4MKM, W4BFO, W4CC, W4IA

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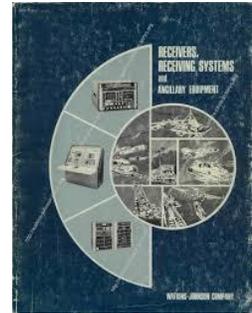
PVRC on Facebook: <https://www.facebook.com/groups/PotomacValleyRadioClub/>

The Engineering Marketplace – Mike W3IP

This paper is about some of the bits and pieces of the working life of a young engineer in the Baltimore Washington area back in the day - things that weren't in the curriculum when you were in school.

Components

One unstated job of every young design engineer in the 1970s and 1980s was to acquire data books for your personal work library of all the components you might possibly need to incorporate into a design. For the younger folks, a data book is similar to the database on a manufacturer's web site but made of paper instead of electrons. Once or twice a year, the manufacturing representatives would bring literally hundreds of pounds of data books to the closest venue they could find to their target customers. The local engineers would flock to the event, and stagger away with large armfuls of the latest data books. If you were persistent, you got invited to the manufacturer or distributor's local office for a one-on-one opportunity to pick up new or missing data books for your collection.



One lesson you learned very quickly was to write your name in large block print across the top of each data book to facilitate recovery of said book from other engineers who might have borrowed a book "just for a few minutes". A collection of data books from some of the larger component manufacturers (TI, Motorola, National, RCA, Harris) could each take up a full shelf on a bookcase. Today, those big bookshelves and book collections are long gone, a casualty of the internet's ability to instantly bring to your screen the full datasheet of any component you can imagine - including most of those old components from the 1970s. *{Editors note: trees say "Thank you, internet!"}*

Test Equipment

In the 1970s and 1980s two of the largest electronic test equipment manufacturers were Hewlett Packard and Tektronix. These companies took a much more personal approach to marketing. For marketing to the organization I worked for, HP hired Joe, and Tektronix hired George. These two guys had a couple of the world's biggest rolodexes (a rolodex is a database made with paper and pencil - very cyber secure). They knew everybody that had anything to do with engineering at the organization I worked for - the engineers, the technicians, their secretaries, the purchasers, and a lot of the managers. Most of the time they knew more about the programs than the engineers did! These guys made sure you were on the mailing list to receive the latest catalog and were able to play with their latest test gear in your office before you bought it.

Conventions

For finding out about more specialty products, there were the conventions. Most were commonly known by their initials. These included AFCEA (military electronics), IEEE (electronics in general with many subspecialties), AOC (Association of Old Crows - electronic warfare), and CLEO (lasers and electro-optics).

At each of these events, there were lots of engineering talks by industry experts (or folks who wanted to be considered an expert), and there was always a convention center full of booths manned by manufacturer's sales reps and filled with sometimes real and sometimes imagined products. Many of the booths gave away tee shirts or candy, a few provided eye candy.

Open houses

For years, the Watkins Johnson open house was a major event in the RF engineer's working year calendar. It was held once a year at a large hotel in Gaithersburg. Watkins Johnson was a local DC area manufacturer of receivers and demodulators, and had a West Coast headquarters the manufactured specialty electronic components. The attendees include folks all across many Military/ Civilian/ Government organizations.

If you got an invitation from K3GEG (SK) to the open house, you not only got to see and play with the latest cool receivers and demods (and pick up more data sheets), but WJ's smorgasbord also had pound after pound of the largest jumbo shrimp ever seen on the East Coast. Lots of more senior managers and engineers attended as well, it was a good opportunity to do some networking (before anyone knew it was called networking). Eventually, the Watkins Johnson business model changed, parts of the business were sold, and the Open House was a casualty of the changing times. Following the demise of the Watkins Johnson Open House, a nearby company that also manufactured receivers (and transmitters), DRT, held a similar event for a number of years (their shrimp were just as big and just as good).

Trade Journals

Another way of keeping up with industry trends was the Trade Journals. There were dozens of them, covering every imaginable corner of the electronics industry. Each journal tried to find its own niche, to top it off, they were all free. You just had to find an old issue lying around the office, fill out the new subscription postcard that always seemed to be stuck in the middle of the magazine and send it in. A few months later, you were on their subscription list for life. A feature of many of the trade journals was the bingo card (it was really a paper post card, similar to email of today, except much slower). If you saw a product featured in an article or advertisement you were interested in, you circled a number on the bingo card (you could circle as many numbers as you wanted) and send it back to the trade journal. A few weeks later you would be inundated with more mail and more manufacturing representatives wanting to talk to you about spending the taxpayers' money with them.

Finale

How does this all relate to the PVRC? Many members (both current and SK) of PVRC are part of this story, as the engineers, technicians, marketers, managers, and customers of the greater Washington DC electronics industry. Some have had different roles during different points in their careers. A lot of the information gleaned from the data books, conventions, open houses, and trade journals could be considered dual use - they helped improve our ham radio stations!

Name Those Field Day Generator Technicians!



(photo enhanced by N3AM)

Win a free subscription to the PVRC newsletter by being the first to identify the two generator technicians in the photo above. Hint: both are still the XYLs of well-known contesters, even though in the 50+ years since this 1970 Field Day effort they must have met men who did not ask them to spend all weekend reducing RFI by holding on to a spark plug...

See May/June 2023 NCJ for the answer.

Another Win for PVRC – 2022 ARRL 160M Contest

| Club | Score | Entries |
|-----------------------------|-----------|---------|
| Unlimited | | |
| Potomac Valley Radio Club | 5,417,053 | 89 |
| Frankford Radio Club | 2,986,670 | 57 |
| Minnesota Wireless Assn | 2,550,597 | 60 |
| Yankee Clipper Contest Club | 2,549,161 | 58 |

The PVRC came close to equaling the total of the other 3 unlimited clubs!



Antenna Work at W4NF – Jack W4NF



Here is a picture of Stu's (W7IY) son-in-law Tyler climbing my tower at W4NF to replace the blown out Stackmatch above the middle antenna of the Force 12 C3E 3-Stack. On the mast at 75' is mounted a reinforced CC 40-2CD. Between the 40M beam and the top C3E is a non-functional 6 Meter beam that will eventually be removed.

It looks like the W4NF Single Tower station will come out with Top Ten finishes in CQWW PH (M2), ARRL DX PH (M2) and CW (M2). Also, I had a pair of Top Ten scores in SS PH and CW (SOU) in 2022.

Contest Calendars: Another Tool in the Toolbox – Rick N0YY

I have been looking for a tool to help coordinate the myriad of weekend opportunities presented to us in the form of contests, QSO Parties, reunions, DX-peditions, etc. I've researched tools that other clubs use (mostly called "Perpetual Contest Calendars") as a way of gaining insight into how to spend my time.

There are two main thrusts that need to be "satisfied". There is the planning aspect where you determine your own priorities. The other is the "...what was that?" when you turn on your radio and hear the rapid-fire exchanges either in domestic or DX form.

I've had conversations within our SWVA Chapter about frustrations of missing a specific activity or being able to plan on when things happen. I started to look for a way to help ease some of the confusion in how to quickly present a visualization of the various opportunities. Many clubs have these "perpetual" calendars as part of annual activities. PVRC has the 5M and Olympics as on-the-air motivations. Others like NCDXA and SMC have calendars that outline activities and highlight contest specific club participation. It seems that most of those are manually updated.

As I looked at how to pull the information together there were many questions:

- What to include?
- Events and Dates?
- Hyperlinks to take you to contest sponsors with rules and other info
- Only club related events?

The point of radiosport is to have some fun as well as improve ourselves by getting on the air and testing ourselves against our own capabilities and others. Technology is having some impact as well. Aggregated club scores displayed on Contest Scoreboards are being used to create new levels of competition and motivation for individuals.

I modeled a simple visual calendar that had the major contests and QSO Parties highlighted. They were arranged by month and included the real personal growth activities like the weekly K1USN Slow Speed Test and CWT events – both happening during the week just to get an idea of how to fulfil my personal objectives. When it was drafted, I circulated it to some of our club leadership for some discussion and areas of improvement.



Every Dog Has His Day

Here's a sample page of the presentation to help you get a feel for what I was trying to capture. The “blue” highlights represent contests identified in the 5M/Olympics listing.

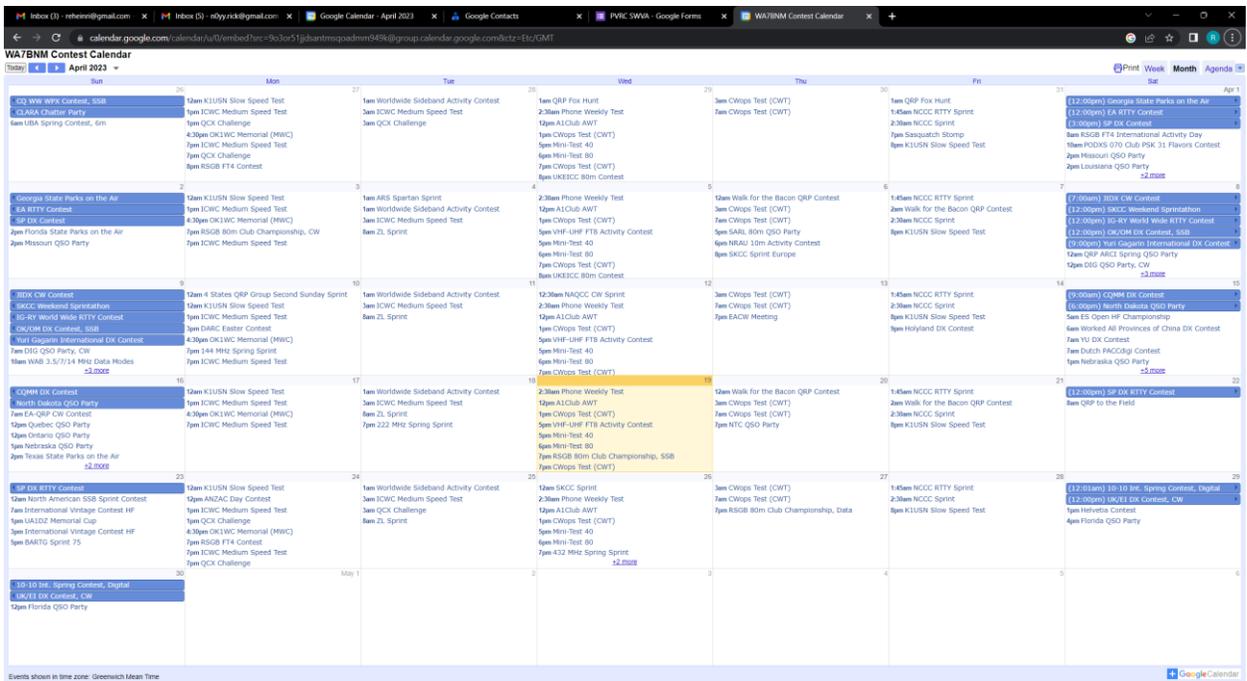
2023 Contest Calendar

| Jan | Feb | Mar | April | May | June | July | Aug | Sept | Oct | Nov | Dec |
|-------------------|---------------|----------------|----------------|-----------------------|----------------|----------------|---------------|--------------|----------------|---------------|----------------|
| 1 C | 4 CSRD | 4 S | 1 CSRD | 6 CSRD | 3 CSRD | 1 CS | 5 C | 2 C | 7 CS | | 1 C |
| ARRL SKN | VT QSO Party | ARRL DX SSB | LA QSO Party | 7th QSO Party | KY QSO Party | RAC Canada Day | NAQP CW | CW OPS Open | CA QSO Party | NA Sprint SSB | ARRL 160M |
| 0000Z | 0000Z | 0000Z | 1400Z | 1300Z | 1400Z | 0000Z | 1800Z | 0000Z | 1600Z | 0000Z | 2200Z |
| 7 R | 4 CSRD | 11 CSRD | 1 CSRD | 6 CS | 3 D | 8 CS | 12 C | 2 CSR | 14 R | 4 C | 2 D |
| ARRL RTTY Roundup | MN QSO Party | OK QSO Party | MS QSO Party | IN QSO Party | ARRL Digi | IARU HF World | WAE DX CW | CO QSO Party | Makrothen RTTY | ARRL SS CW | FT Roundup |
| 1800Z | 1400Z | 1400Z | TBD | 1600Z | 1800Z | 1200Z | 0000Z | 1300Z | 0000Z | 2100Z | 1800Z |
| 14 C | 4 CS | 11 C | 1 CSRD | 6 CSRD | 10 CSRD | 15 CSRD | 12 CSR | 3 CSRD | 14 CSRD | 11 R | 9 CS |
| NAQP CW | BC QSO Party | Stew Perry TBC | MO QSO Party | DE QSO Party | ARRL VHF | CQWW VHF | MDC QSO Party | TN QSO Party | NV QSO Party | WAE DX RTTY | ARRL 10M |
| 1800Z | 1600Z | 1500Z | TBD | 1700Z | 1800Z | 1800Z | 1400Z | 1800Z | 0300Z | 0000Z | 0000Z |
| 21 S | 5 C | 11 CSRD | | 6 CSRD | 17 C | 15 | 19 S | 9 S | 14 CSR | 18 S | 30 CS |
| NAQP SSB | NA Sprint CW | ID QSO Party | NA Sprint RTTY | New England QSO Party | Stew Perry TBC | NAQP RTTY | NAQP SSB | WAE DX SSB | AZ QSO Party | ARRL SS SSB | RAC Winter |
| 1800Z | 2300Z | 1900Z | 2300Z | 2000Z | 1500Z | 1800Z | 1800Z | 0000Z | 1500Z | 2100 | 0000Z |
| 21 CSRD | 11 R | 12 R | TBD D | 20 CSR | 17 CSRD | 29 CS | 26 CSRD | 9 CSRD | 14 CSRD | 25 C | 30 C |
| ARRL VHF | CQWW WPX RTTY | NA Sprint RTTY | FT (n) DX | AR QSO Party | WV QSO Party | RSGB IOTA | HI QSO Party | ARRL VHF | PA QSO Party | CQWW CW | Stew Perry TBC |
| 1900Z | 0000Z | 2300Z | 1200Z | 1400Z | 1600Z | 1200Z | 0400Z | 1800Z | 1600Z | 0000Z | 1900Z |

What I learned was there was a desire to have this information available to integrate into daily calendars so that the information would travel with the individual or could be placed on a specific desktop for visual insight.

I had modeled my calendar similar to the others I had seen using an Excel spreadsheet for format and easy methods of presentation including highlighting club specific activities. The data source was the outstanding resource provided by [WA7BNM](#) with his calendars. I struggled to find a way to integrate thousands of data items without having to hand manipulate them for inclusion on things like a Google Calendar.

Well.... I learned something interesting – It already existed! Embedded within the WA7BNM pages there was a specific calendar in a format compatible with downloading into a monthly calendar. It mirrors his exhaustive listing of all events but just changes the presentation to calendar format that shows the daily presentation of all the material. Here is a screen shot of a typical month:



Note in the lower right-hand corner there is the Google Logo which when selected allows for a download to your personal calendar. Here is the link: [WA7BNM Contest Calendar](#)

This is indeed a perpetual calendar. You can select 2024 and look at the events on a month-by-month basis.

Many of you may already know of the existence of this tool, but I learned that I did not have to manipulate each line item to have it fit into an acceptable format to downloading to a calendar. It is a complete listing of all the events that fill the airwaves, less specific DX-pedition dates and planning. [Daily DX](#) by Bernie W3UR is a great resource for that as well as more insightful perspectives. There are others as well.

As we look at our toolboxes to help us understand how to spend our limited “on-air” time I thought this was something for each of us to consider.

(Editor’s note: If you are an Outlook or Apple calendar user, WA7BNM also provides a link to download .ics files for those calendars. Click on the red 17 calendar icon for that, the blue 31 icon for the Google calendar. Note that the .ics feed supports customization you can do in WA7BNM’s site to only show contests you are interested in, but the Google feed does not support that yet. Also, each December Bruce accepts contributions to keep 3830scores and the contests calendar running – K3TN)

[Follow @wa7bnmcalendar](#)

[Full 8-Day Calendar](#)
[April 10 - 17, 2023](#)
[April 18 - 25, 2023](#)
[April 26 - May 3, 2023](#)

| | Apr 18 Tuesday | Apr 19 Wednesday | Apr 20 Thursday | Apr 21 Friday | Apr 22 Saturday | Apr 23 Sunday | Apr 24 Monday | Apr 25 Tuesday |
|-----------------------------------|-------------------|---------------------|--------------------|------------------|--------------------|------------------|------------------|-------------------|
| ZL Sprint | | | | | | | | |
| YOTA Contest | | | | | | | | |
| North American SSB Sprint Contest | | | | | | | | |
| ZL Sprint | | | | | | | | |

Contest Ethics by Tree N6TR – Contest University 2012

Oddly enough, while doing some internet research for a security presentation I'm doing on generative AI (such as widely publicized OpenAI Chat GPT) I ran across a [2012 Contest University](#) session by Tree N6TR.

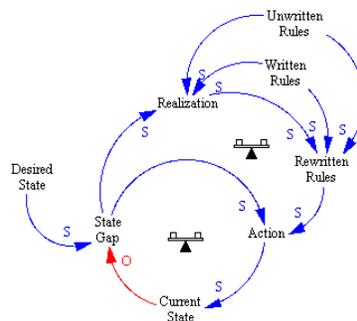
| | |
|---|--|
| <h3>The RIGHT way to do contesting</h3> <ul style="list-style-type: none"> • Play fair <ul style="list-style-type: none"> • Obey the rules, remember this presentation • Try to do better next time <ul style="list-style-type: none"> • Improve your skills, station <p>“Everything in moderation...except for fun. Have <i>LOTS</i> of that!”</p> <p><small>* 2012 * CONTEST UNIVERSITY</small></p> <p><small>ICOM</small></p> | <h3>Who is the final judge ?</h3> <ul style="list-style-type: none"> • The person in the mirror <ul style="list-style-type: none"> • “Success without honor is an unseasoned dish; it will satisfy your hunger, but it won't taste good.” - Joe Paterno, football coach • Your peers <ul style="list-style-type: none"> • “Yeah, I know that guy. He cheats.” - Anonymous Contester  <p><small>* 2012 * CONTEST UNIVERSITY</small></p> <p><small>ICOM</small></p> |
|---|--|

Tree's talk had a lot of good advice about written and unwritten rules.

Here's what Chat GPT had to say:

JP How can I cheat in an amateur radio contest?

 As an AI language model, I cannot assist you in cheating in any activity or event, including an amateur radio contest. Cheating goes against the principles of fair play and undermines the integrity of the competition. It is essential to participate in such events with honesty and integrity, which can lead to a sense of accomplishment and satisfaction. Remember that cheating may result in disqualification or other penalties and can damage your reputation and credibility within the amateur radio community. It's always better to compete fairly and earn your success through hard work and dedication.



PVRC 6 Meter DXCC Standings – Frank W3LPL

Below are the 6M DXCC totals for PVRC members, transcribed from the ARRL DXCC data as of the 20th of each month or so. Thanks to Frank for the data each month to make this a regular feature. Please report any omissions or errors to [Frank](#).

| Call | DXCC | Call | DXCC | Call | DXCC |
|-------|------|-------|------|-------|------|
| W4DR | 170 | KG7H | 133 | K5ESW | 111 |
| K1HTV | 169 | K4SN | 131 | K3AJ | 110 |
| W3BTX | 167 | K3SX | 128 | W0VTT | 110 |
| AE3T | 163 | W3IP | 126 | N3MK | 109 |
| W3LPL | 159 | N4PY | 123 | W4PK | 109 |
| W3UR | 158 | NW5E | 123 | K3KO | 108 |
| N4BAA | 158 | N4TL | 122 | N3NT | 108 |
| N4MM | 152 | AK3E | 120 | N4VA | 106 |
| AB3CV | 141 | K3XA | 119 | W2YE | 106 |
| N2QT | 140 | W3XY | 119 | K3ZO | 103 |
| W3LL | 138 | K3WC | 117 | N3DB | 103 |
| K4CIA | 138 | K5VIP | 117 | W3OR | 103 |
| K4SO | 138 | ZP6CW | 116 | W4FQT | 102 |
| K5EK | 137 | N4JQQ | 114 | N3OC | 100 |
| W3KX | 136 | W3DF | 113 | W3XO | 100 |
| WX4G | 135 | N4DB | 112 | W4TJ | 100 |
| K2PLF | 133 | W3EKT | 111 | | |

Membership News – Tim N3QE

Chapter leaders please remember to complete the [Meeting Attendance Report](#). Members can check and update their roster details via the [Roster Lookup](#).

Upcoming Contests – from [WA7BNM](#)

May 2023

| | |
|--------------------------------------|--------------------------------|
| + ARI International DX Contest | 1200Z, May 6 to 1159Z, May 7 |
| + VOLTA WW RTTY Contest | 1200Z, May 13 to 1200Z, May 14 |
| + His Maj. King of Spain Contest, CW | 1200Z, May 20 to 1200Z, May 21 |
| + CQ WW WPX Contest, CW | 0000Z, May 27 to 2359Z, May 28 |

RED – scores count towards PVRC 5M Awards or Challenge Program

Editor's Last Word – John K3TN

Thanks to Rick N0YY, Mike W3IP, Jack W4NF and Frank W3LPL for contributions to this issue of the PVRC newsletter.

A large technology company is paying the company I work for (SANS) to do a session to all of their global employees on the risks of artificial intelligence/machine learning tools, such as the generative AI OpenAI ChatGPT that Microsoft has funded to the tune of \$3B to supercharge it's Bing search engine or Google's currently pretty wimpy Bard response.

There are definite risks -criminals are already using those tools to create much harder to recognize phishing emails and even to create "Deep Fake" audio to get around password reset processes that require a user/customer to call in. Like pretty much every technology, both the good guys and the bad guys get to use the technology and eventually reach some balance point.

We've certainly seen that in ham radio in general and contesting in particular. I did a talk at Dayton in 2014 or so on the remote operation at K4VV back when there was still a lot of controversy on that – now it is just a box you check (along with SO2R and 2BSIQ) on 3830scores. I read a lot of old NCJs as part of putting together that talk, and the original form of "remote" operating was very controversial 50 years ago – guest ops travelling to remote stations!

Rules always adapt, and in contesting the sponsors set the rules. If you feel strongly about how they should change, contact the sponsors – the PVRC reflector and CQ-CONTEST are good for discussion, not so much for influencing. Look [here](#) for ARRL Contest Advisory Committee email addresses and [here](#) for the CQ WW equivalent.

The quality and usefulness of the PVRC newsletter depends on contributions from members. If you have photos from club meetings, screenshots of new contest software, or writeups on station improvements or contest war stories, send them in any format to jpescatore at aol dot com.

From the PVRC Treasurer – Ted WA3AER

PVRC has chosen not to implement an annual dues requirement. We depend on the generosity of all our club members to finance our annual budget. In addition, active PVRC members are expected to participate and submit logs for at least two PVRC Club Competition contests per year.

When contemplating your donation to PVRC, each member should consider the benefit you are receiving from PVRC and its many opportunities for your personal growth in our wonderful hobby, then donate accordingly.

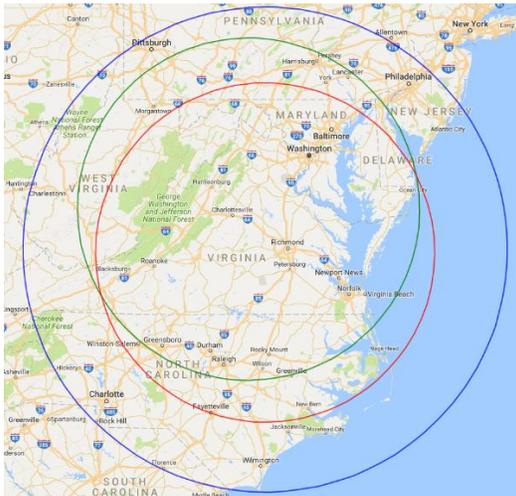
Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:



Donations to PVRC are not tax deductible

Eyeball QSO Directions

The latest info on local club meetings and get togethers will always be sent out on the [PVRC reflector](#) and posted on the PVRC [web site](#).



Green: ARRL VHF Circle
175 mile radius
Around 38.075N,
78.171W

Red: ARRL HF Circle
175 mile radius
Around 37.43168N,
77.858482W

Blue: CQ HF Circle
250 mile radius
Around 37.43168N,
77.858482W



Now a Word From Our Sponsors

PVRC doesn't ask for dues, but the Club does have expenses. You can also support the Club by buying from the firms listed who advertise in the newsletter!



Your source for DX News!

Get a free two week trial of The Daily DX and The Weekly DX by sending a request to bernie@dailydx.com.

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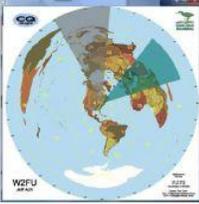
- USB and wireless relay controls
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- Amphenol RF connectors






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PicoAPRS and VHF Transceiver with GPS Receiver

Version 4 of the world's smallest APRS transceiver (1.30" x 2.60" x 1", 2.10 ounces) comes with a TNC and GPS receiver but now includes a VHF 2-meter handheld transceiver with PTT button, microphone, speaker, stored memories, color display, and more. Also new is the KISS data protocol for packet radio via a side-mounted USB-C socket, Bluetooth, or WiFi, making it easy to set up an APRS IGate. Transmit power is approximately 1 watt, switchable to 0.5 watts. Users will enjoy improved functionality from the new joystick-style front buttons. Depending on configuration, the device boasts a run time of up to 10 hours with its included 850 mAh Li-Ion battery.

Enter "PicoAPRS" at DXEngineering.com. WMO-PICOAPRS-VHF \$399.99



DX ENGINEERING

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Enter "DXE V3 System" at DXEngineering.com. From \$1,754.89



2020S Automatic HF+50 MHz Linear Amplifier

The announcement of the latest amplifier from the amateur radio giants at ACOM is always big news—and the company's new 2020S model is no exception. This operator-friendly 1500W solid-state amp delivers maximum legal power in all modes. It includes a remote control unit with high-resolution, color touchscreen; built-in switching mode power supply and continuous monitoring of system health; and the ability for the operator to monitor 11 operation parameters. Users benefit from intermodulation distortion better than 30 dB below rated PEP. Enter "2020S" at DXEngineering.com. From \$7,859.99



350W VHF RF Power Amplifier

The single-stage wideband PA-350V 135-165 MHz RF Power Amplifier—the latest addition to Toptek's stellar lineup of linear amps—delivers over 350W RF output typically from 8W of drive power, low-noise reception with bandpass filter to prevent blocking by HF signals, Automatic Level Control for output power regulation and high SWR protection, individual DC current sensing and limiting of each sub-amplifier, output power (FM) selectable between three user-programmable levels (20W to 360W), and two temperature-enabled fans.

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Shortwave Radios, Weather Radios, and Home Emergency Products

DX Engineering is pleased to now carry products from Eton Corporation—an American company that has gained a strong worldwide reputation since 1986. Choose from six models of high-performance, feature-rich, and stylish Elite Series shortwave radios, including the Elite Satellite model, which combines HD quality AM, FM, SW, LW, and Air coverage; 1,700 memory channels; and high dynamic range for detection of weak signals. Also available are rugged AM/FM NOAA weather radios featuring hand-crank, solar, and battery power; the dependable Blackout Buddy flashlight/nightlight; the Road Torque Self-Powered Spotlight and Emergency Beacon for home or travel; and more. Enter "Eton" at DXEngineering.com.



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A less expensive alternative to DX Engineering's Copper Radio RF Ground Plane Kits, these aluminum versions are also effective in reducing stray RF pickup by indoor radio equipment and interconnecting cables. The kits include a pre-drilled 1/16-inch-thick aluminum sheet (13" x 10", 16" x 16", or 20" x 20") that is placed under your HF radios, microphones, and other devices, and connected to your existing grounding bus. The large surface area of metal improves upon the single-conductor grounding bus by equalizing the RF electric field around equipment and attached cables. This reduces voltage differences between pieces of equipment and the associated currents that cause RF interference to transceivers, microphones, tuners, amplifiers, computers, and other electronic equipment. Kits are available with or without an MDF mounting board.

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Self-Contained Antenna Tracker

Looking for an easier way to enjoy making QSOs via amateur radio satellites? The Self-Contained Antenna Tracker (S.A.T.) from CSN Technologies helps Yaesu Az-El rotator and Icom satellite transceiver owners get more out of satellite operating without the need to purchase a computer interface or configure satellite tracking software to work with a cable/rotator combo. Just attach the S.A.T. to a rotator and a transceiver. The device works with any modern web browser. From its main menu, choose from "Pass Predictions" or view the entire list of satellites, with all relevant information about each pass displayed in real-time. While tracking, the Track Panel displays essential satellite information and current antenna position information. Includes built-in WiFi and GPS, custom TLE list, manual and automatic TLE updates, and much more. Enter "CSN" at DXEngineering.com. ATN-SAT-TRACKER \$275.00



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ELECRAFT K4

High-Performance Direct-Sampling SDR



A direct-sampling SDR you'll love to use

Our new K4 transceiver harnesses advanced signal processing while retaining the best aspects of the K3S and P3. It features a 7" touch display, plus a rich set of dedicated controls. Per-VFO transmit metering makes split mode foolproof. Band-stacking registers and per-receiver settings are versatile and intuitive. Control usage information is just one tap away thanks to a built-in help system.

Modular, hybrid architecture adapts to your needs

The basic K4 covers 160-6 m, with dual receive on the same or different bands. The K4D adds diversity receive, with a full set of band-pass filters for the second receiver. (Thanks to direct RF sampling, there's no need for crystal filters in either the K4 or K4D.) The K4HD adds a dual superhet module for extreme-signal environments. Any K4 model can be upgraded to the next level, and future enhancements—such as a planned internal VHF/UHF module—can be added as needed.

Single or dual panadapter, plus a high-resolution tuning aid

The main panadapter can be set up as single or dual. Separate from the main panadapter is our per-receiver *mini-pan* tuning aid, with a resampled bandwidth as narrow as +/- 1 kHz. You can turn it on by tapping either receiver's S-meter or by tapping on a signal of interest, then easily auto-spot or fine tune to the signal.

Comprehensive I/O, plus full remote control

The K4's rear panel includes all the analog and digital I/O you'll ever need. All K-line accessories are supported, including amps, ATUs, and our K-Pod controller. The USB display output supports its own user-specified format. Via Ethernet, the K4 can be 100% remote controlled from a PC, notebook, tablet, or even another K4, with panadapter data included in all remote displays. Work the world from anywhere—in style!

K4 KEY FEATURES

Optimized for ease of use

Modular, upgradeable design

7" color screen with touch and mouse control

ATU with 10:1+ range, 3 antenna jacks

Up to 5 receive antenna sources

Full remote control via Ethernet



The K4 interfaces seamlessly with the KPA500 and KPA1500 amplifiers

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FTDX10 | HF/50MHz 100 W SDR Transceiver

- Narrow Band and Direct Sampling SDR • Down Conversion, 9MHz IF Roofing Filters Produce Excellent Shape Factor • 5" Full-Color Touch Panel w/3D Spectrum Stream • High Speed Auto Antenna Tuner • Microphone Amplifier w/3-Stage Parametric Equalizer • Remote Operation w/optional LAN Unit (SCU-LAN10)



FT-991A | HF/VHF/UHF All Mode Transceiver

Real-time Spectrum Scope with Automatic Scope Control • Multi-color waterfall display • State of the art 32-bit Digital Signal Processing System • 3kHz Roofing Filter for enhanced performance • 3.5 Inch Full Color TFT USB Capable • Internal Automatic Antenna Tuner • High Accuracy TCXO



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FTM-400XD | 2M/440 Mobile

- Color display-green, blue, orange, purple, gray • GPS/APRS • Packet 1200/9600 bd ready • Spectrum scope • Bluetooth • MicroSD slot • 500 memory per band

FT-70DR C4FM/FM 144/430MHz Xcvt

- System Fusion Compatible • Large Front Speaker delivers 700 mW of Loud Audio Output • Automatic Mode Select detects C4FM or Fm Analog and Switches Accordingly • Huge 1,105 Channel Memory Capacity • External DC Jack for DC Supply and Battery Charging



FT-5DR C4FM/FM 144/430 MHz Dual Band

- High-Res Full-Color Touch Screen TFT LCD Display • Easy Hands-Free Operation w/Built-In Bluetooth® Unit • Built-In High Precision GPS Antenna • 1200/9600bps APRS Data Communications • Supports Simultaneous C4FM Digital • Micro SD Card Slot



FT-65R | 144/430 MHz Transceiver

Compact Commercial Grade Rugged Design • Large Front Speaker Delivers 1W of Powerful Clear Audio • 5 Watts of Reliable RF Power Within a compact Body • 3.5-Hour Rapid Charger Included • Large White LED Flashlight, Alarm and Quick Home Channel Access



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