



# *PVRC Newsletter*

## *September 2016*

### President's Letter – Bud W3LL

**H**ello, PVRC. We're back after an August newsletter hiatus. Here's what's been happening over the past two months:

We had a successful Officer Reorganization, moving Tom K3AJ from VP to Treasurer and adding Dan K2YWE to fill the VP slot left by Tom. As you'll see below it was imperative that we have a full complement of officers on board.

The Internet Presence Organization has been finalized. It can be found on the PVRC website [here](#).

Your Officer Team has been working overtime during our newsletter August vacation.

You already know about the 5M 20 FOR 20 Once In A Lifetime Award. Alan AA4FU took this to the next level: The standings for the new 20 for 20 Award are now on the PVRC web page. You

can get to them by either clicking the 20 for 20 icon at the top of the 5M page or clicking the submit button below "20 for 20 Standings" at the bottom of the 5M page. You can also just use this [link](#): So far there are only two contests from July that are in the system, but the three from August will be added soon.

Our former secretary Vic W4VIC suggested one for the 5M Little Pistols. Your officers immediately jumped on that idea and created the 1M to 4M expansion to the 5M awards. That was on the heels of introducing the 20 For 20 Once In a Lifetime 5M award. We're getting a lot of emails thanking us for introducing this extension to the 5M awards. These emails make us feel good about the work we do for the club.

Now here's an idea from W4MYA that inspired Secretary Tim N3QE: To recognize member achievements in last years' ARRL Sweepstakes, we will be distributing certificates to chapter heads for each member that worked more than 500 Q's combined between the two

modes. This unique graphical certificate not only congratulates each recipient, it reminds them of their numbers last year. And it uses unique graphics reminding everyone to implement W4MYA's famous advice, "run 'em!"

Each certificate will have the operator's callsign and chapter affiliation. You can see the certificate [here](#). Who knows what we'll be giving away after this November's SS results.



The Potomac Valley Radio Club  
recognizes the achievements of  
**N3KN**  
Southwest Virginia Chapter  
ARRL Sweepstakes SSB 2015: 430 Q's  
ARRL Sweepstakes CW 2015: 322 Q's

I hope you recognize that if you have an inspiration for something that affects equally all regions of the club our Officers are likely to give it careful consideration!

I also hope you notice that we officers take very seriously the input you give us via your chapter chairmen for our quarterly leadership conference call-in. If you go back and look at the published list of our goals and objectives that were distilled and summarized by former VP and now treasurer Tom K3AJ from the last quarter you'll notice that we're banging them all out.

Secretary Tim N3QE updated the look and feel of the homepage. The spiffy new look now includes relevant color photos and quick connect buttons to both the roster and 5M page. A real time saver. Neal K3NC volunteered to keep

the new PVRC homepage up to date with interesting material.

Alan AA4FU is at it again. The 5M pages now have the same new look as the PVRC homepage. Check it out [here](#).

The Seasonal 5M Award Winners page now includes everyone at the 1M, 2M, 3M and 4M level.

Take a look at them and while you're looking, notice the new look of the PVRC homepage and matching look of the 5M page [here](#).

Our new treasurer Tom K3AJ has also been working overtime. Tom and I went to the bank to add Tom as a signer to the PVRC checking account. The first thing he did was order all the 5M awards along with the Presidents Leadership Awards. With the 5M awards now in his possession he's working on getting those awards to the chapter chairs for local presentations.

Not to rest on laurels but VP Dan K2YWE is working with suppliers to allow the Club to offer short-sleeved pocket polo shirts with embroidered PVRC logo, name, and callsign to the membership before the end of the year.

Your officers as a team have also been busy. A listing of 400 potential new members was created by Secretary Tim N3QE. Our VP Ted W3TB put the list into an excel spreadsheet and using an excel list of FRC members generated by VP2 Dan culled the list of possible candidates. Secretary Tim N3QE further refined the list by adding to the Excel spreadsheet the first 3 digits of zip and name from qrz.com. The list will now be divvied up between four officers for action.

Your chapter chairmen also work hard every month. Do you know what they

do? Here's some of what they do that you likely don't notice:

Provide information to the webmaster for a description of your chapter to include chapter name, meeting date and time and location information.

Contact information: to include callsign, email address and phone number. Update the webmaster with any permanent changes to chapter information. Have those in attendance sign a sign-in sheet. Review the sign-in sheet for first meeting attendees asking for their interests. Request first meeting attendees to complete the on-line application for membership.

Include Guests in the Meeting Attendance Report. Review the sign-in sheet for second meeting attendees. Ask for a sponsor to provide information on why the candidate should be nominated for membership. Ask for a vote on 2nd meeting sponsor nominations. Include in the Meeting Attendance Report those members who were voted into membership.

At the conclusion of each meeting complete the online PVRC Meeting Attendance Report. Post to the PVRC reflector reminders for each upcoming meeting. Post to the PVRC reflector summaries of the meeting.

Promote 5M contests. Announce other upcoming contest dates and times. Provide guest speakers and/or demonstrations. Conduct a Round Table discussion of what transpired since the last meeting. Recruit members. Keep the club officers informed of any issues or concerns. Understand and comply with the PVRC by-laws found on the PVRC website.

Next time you see your chapter chairman please thank him for his service to PVRC.

This month we had a momentous occasion with the announcement of the newly created Roanoke-Blacksburg PVRC Chapter. Bob McGwier N4HY was appointed chairman of the new chapter. Both Mark N2QT and I had been working diligently toward creating this new chapter for over a year, just waiting for the right person to lead it. We found that leader in Bob!

The W3LPL 10M tower which collapsed during a tornado is now rebuilt to the 200 foot level with the help of PVRC and the Columbia Amateur Radio Association members.

I'm looking forward to Fowlfest this Saturday. Yes I need to get this column to John prior to Fowlfest. This will be the last year that we'll be having the joint regional PVRC event with NCDXA at the home of Jim W3NRJ. Jim and Randy deserve our thanks for hosting this event at their beautiful tree shaded home for the past many years.

A big thank you to everyone who turned out for the August NAQP CW and SSB contests!

September begins the fall contesting season beginning with the WAE SSB, CQWW, CQWW RTTY, SSB, and CW contests and – of course – November Sweepstakes! Remind your family that you'll be on the radio the 1st and 3rd weekends of November.

September will also start the kick-off for PVRC as it relates to the candidacy and election of officers and trustees for the 2017 annual cycle. PVRC Secretary Tim, N3QE will receive via email the October nominations from the chapter chairmen. A list of all nominees received by Tim will be sent to chapter chairmen via email on 01 November. Elections are held at the November chapter meetings. Vote tallies from chapter chairmen are

emailed to the PVRC Secretary not later than 30 November with results posted to the PVRC reflector not later than 31 December.

The PVRC by-laws in accordance with section Elections - Section 2. stipulate the following process:

Elections - Section 2.

The President shall call for the nomination of officers and the Board of Trustees in September. The floor shall remain open for additional nominations until October 31. The Officers and Trustees shall be elected by a majority vote of active, voting members. Election results will be announced by December 31.

PVRC Officers will stand for reelection. I'm waiting to hear back from our trustees regarding their intent to stand for reelection.

Now for the section you've really been waiting for – The Sports Page:

Think the 20 for 20 award might be motivating some additional contesting effort in PVRC land? Could be! The CQ WW VHF contest saw 45 PVRC players in 2016 (including 17 in 4 multi-op entries) vs. 16 (with 7 in 2 multi-ops) in 2015. Here are a few other stats: 47 PVRC operators in NAQP RTTY in 2016 vs. 39 in 2015 and 44 PVRC participants in WAE CW vs. 29 in 2015! Woo-hoo!

The big 20 for 20 inspired turnout for WAE CW included nice showings from the W4AAW multiop (W4AAW, K3TN, NE3H and new remote contester ND3D were the PVRC members there), and top ten US finishes by KD4D, N4AF (at NY4A) and N3QE in SO HP. Those with limited stations take note: another monster score from N3QE who uses nothing but wires and verticals in the

trees in a close in suburban location. Skill trumps hardware. KE3X was second in LP, continuing his quest for WRTC qualification, and K7SV was also top ten in LP.

The CQ WW VHF had N3MK and K3ZO scoring in the top ten in SO AB HP and W3EKT putting up the top score in SO AB LP.

The IARU Championship is not a 5M contest, but it brings out those trying to qualify for WRTC in force, and a bunch of others as well. Nevertheless, there were 39 PVRC players, with big scores from the usual suspects trying to qualify for WRTC and their multiop friends in some cases including KE3X (at the mighty KD4D multiop), N4YDU at NR3X, the N1LN multiop and N3UA, N9NB, K7SV, WJ9B, N8II.

The summer NAQP events are in the books, with great PVRC turnout in all three events. We were in the lead after the winter events for the Club Challenge Cup. Stay tuned for whether or not we were able to hold off SMC and NCCC. We had 93 operators in CW and 97 in SSB. There were strong M/2 entries in both modes - KD4D in SSB (with KD4D, W3CDO, N8IVN, N3QE and K3AJ) coming in a close second and NC4KW (at N1LN) in CW (with AA4FU, N1LN, N4GU and non-PVRC'er N8BR) putting up a strong second place finish as well.

Finally, a big shout out to new member (SW VA Chapter) and contester Stephanie, KD8GKM who operated in her first ever contest in the NAQP CW making 61 QSO's in 23 mults, all on 20M. She says it was only her 5th time on the radio! And did you notice her first contest was on CW? Way to go!

That's it this month from me. See you in the competition.

73, Bud W3LL



Check out the new look of the PVRC website – click [here!](#)

**PVRC Officers:**

President:	W3LL	Bud Governale
Vice President:	K2YWE	Dan Zeitlin
Vice President:	W3TB	Tom Edwards
Secretary:	N3QE	Tim Shoppa
Treasurer:	K3AJ	Tom Valenti

**Trustees:**

K3MM, N3OC, WX3B, W4ZYT, N4NW, K2AV, KE3X, K4ZA, K3WRY

**PVRC Charter Members (all SK):**

W3GRF, W4AAV, W4KFC, N0FFZ, W4LUE, W7YS, VP2VI/W0DX, W3IKN, W4KFT

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

## 6M Propagation Modes – Rich K1HTV



Now that we are past the sunspot max, the propagation modes that we are most likely to experience on 50 MHz are Sporadic E (Es), Aurora (AU), Trans Equatorial (TEP), Short Path Summer Solstice Propagation (SSSP) and Tropo.

Es can occur any time of the year but you will see a peak in number of openings between the months of May through August. If the ionized patches line up properly, 2, 3 or 4 hops can make for some FB DX. I've worked out to the west coast on double hops as early as 9AM EDT and as late as our local midnight. I once worked KH6 on 6M at our local midnight on 4 hops. If there are going to be any European DX multi-hop openings they can occur for us as early as 8AM but usually don't start until after 10AM. I've worked Western Europe as late as 7PM EDT, but that is unusual.

Keep an eye on DXMAPS.COM and click on the MAP, North America and MUF tabs to see where the maximum usable frequency is above 50 MHz. If it occurs out 500-750 miles away from here, it can be a midpoint for contacts in the same direction and at the same distance from the midpoint to the distant station. When the MUF increases to above 144 MHz look out for Es on that band. I've worked out to as far as Texas and Colorado on 2M from my old MD QTH and out to all over W0 land from here in VA. These openings are usually very short, lasting from a few minutes to an hour. More info of sporadic E propagation can be found [here](#).

Aurora can only occur when there is a magnetic storm caused by a major solar eruption or from the plasma which can erupt from a geo-effective (one facing us) solar hole. When a mag storm does occur and it is intense enough, you can bounce 6M signals off of it. The direction can vary but is usually between NNE to NNW and can vary as the aurora is in effect. On super auroras, I've worked stations out west with the beam NW. read more about this mode [here](#).

TEP (Trans-Equatorial Propagation) usually occurs around the Vernal and Autumnal equinoxes. From this area, when it occurs on 6M you will be able to work stations in mid to deep South America. More on this mode [here](#) and also [here](#).

SSSP (Short Path Summer Solstice Propagation) is a rare propagation which can result in very long haul (JA-USA) skip. It is actually a combination of Es linked which some kind of chordal long hop in the middle. It usually centers on the first part of July. Read more about SSSP [here](#).

Tropo is much rarer on 6M vs the higher bands (144,222,432 MHz) but at times you can see extended ground wave out 200-300 miles.

## Tornado to Tower Topping: Two Months – Frank W3LPL

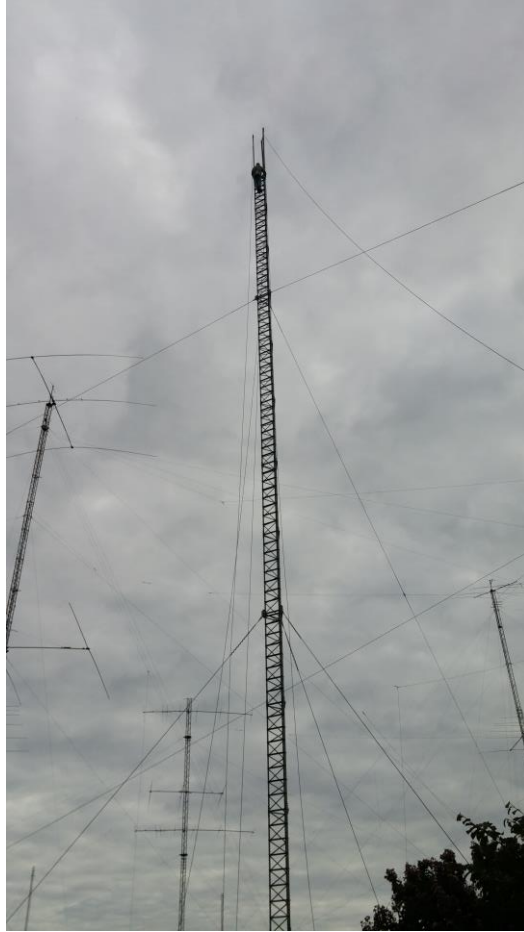


Thanks to very generous volunteer help by dozens of members of the Potomac Valley Radio Club and the Columbia Amateur Radio Association, a new 200 foot tower has replaced the tower at W3LPL that was destroyed by an EF0 tornado that devastated a twelve mile path through western Howard County on June 21st.

An 8 element 10 meter Optimum Wideband Array (OWA) Yagi designed by W8WWV -- a refinement of prior designs by K3LR, WA3FET and NW3Z -- will be installed on top of the new tower in September.



Before



During (Frank W3LPL working at 130')



After



Frank would like to thank the following CARA and PVRC hams (and probably others who've been inadvertently left out) for their efforts in rebuilding the tower:

W1TRT WA3AER K3AJ N3CMS AB3CV K3CXW W3DF K3DUA K3EJJ  
WA3EKL ND3F W3FGD N3HEE W3IDT K3IT K3KU W3KX WA3LKT W3MR  
KF3O N3OC WR3R K3RA AA3S K3SC N3ST K3TM K3TN W3UR K3UOD  
KB3VQC W3YVV N4QQ KG4USN W8AJR

N3RR contributed new heavy duty AB-105 tower legs for 200 feet of tower and 1500 sets of new 1/2 diameter A325 galvanized bolts, lock washers and nuts.

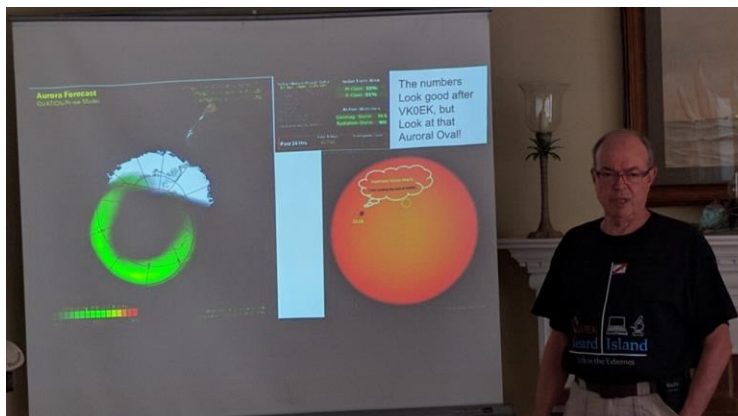
A quadcopter fly-by video shot by W8WWV just a few weeks before the tornado is available on W3LPL's QRZ.com page [here](#).

### SouthWest Virginia Chapter Meeting – Mark N2QT

The SWVA Chapter of PVRC met at KC4D's 'lake cottage' on July 23.

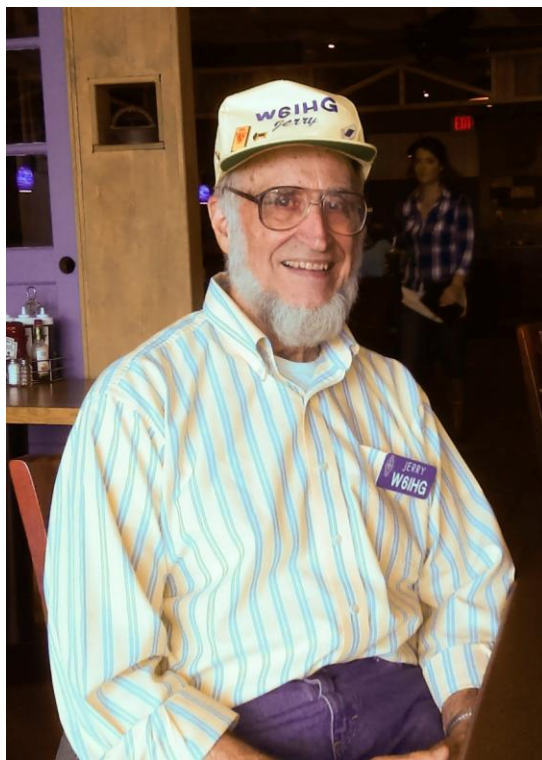


Besides the food and conversation, we were treated to a presentation on the VK0EK expedition by Ken, KG2H. A first time DXpeditioner, Ken talked about all phases of the expedition, including scientific research, educational outreach to schools, as well as giving the deserving a shot at a rare and remote new country. His pictures of the seals, Penguins and the scenery were breathtaking. Ken also described how he prepared for the pileups by operating a contest at NR4M as well as practicing on the computer.



## Purcellville Smokin' Willy Informal Barbecue and Bull Sessions - Mike W4AAW

A group of Loudoun County area hams get together in Purcellville frequently for lunch at [Smokin Willy](#), with the next one planned for Thursday 1 September at noon. Contact Mike [W4AAW](#) for info (*Editor's note: Whenever I'm out that way at the right time, I try to join in - great food and lots of great contesting/operating/ antenna discussions - K3TN*)



Jerry W6IHG at Smokin Willy – photo by W4AAW, enhancement by N3AM.

## No Sunspots, But At Least: Space Lightning Over China – John K3TN

*From Spaceweather.com:*

On Aug. 13th in China, photographer Phebe Pan was photographing the night sky, hoping to catch a Perseid meteor. Instead, he witnessed a spectacular bolt of "space lightning." Working atop Shi Keng Kong, the highest mountain peak in the Guangdong province, "I was using a fisheye lens to capture as much of the sky as possible," says Pan. "Suddenly we saw a flash of blue and purple ejected from the top of a nearby thundercloud. It just looked like a tree with branches, and grew up very fast. So awesome!"



Oscar van der Velde, a member of the Lightning Research Group at the Universitat Politècnica de Catalunya, explains what Pan saw: "This is a very lucky capture of a gigantic jet. It's the first time I've seen one captured using a fisheye lens!"

Think of them as sprites on steroids: Gigantic jets are lightning-like discharges that spring from the tops of thunderstorms, reaching all the way to the ionosphere more than 50 miles overhead. They're enormous and powerful.

"Gigantic jets are much more rare than sprites," says van der Velde. "While sprites were discovered in 1989 and have since been photographed by the thousands, it was not until 2001-2002 that gigantic jets were first recorded from Puerto Rico and Taiwan." Only a few dozen gigantic jets have ever been seen.

Like their cousins the sprites, gigantic jets reach all the way up to the edge of space alongside meteors, noctilucent clouds, and some auroras. This means they are a true space weather phenomenon. Indeed, some researchers believe cosmic rays help trigger these exotic forms of lightning, but the link is controversial.

## Membership News – Tim N3QE

PVRC added several members since the last newsletter – please welcome:

- Carter N3AO, Jay N4NQY, Stephanie KD8GKM, and Knight NJ4Q in the Southwest Virginia Chapter.
- Jeff KQ4LA in the Tidewater Chapter.
- Ken KG4USN in the Annapolis Chapter.

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

## Upcoming Contests and Log Due Dates

### Contests This Month

- Sept 3 – All Asian SSB
- Sept 10 – NA Sprint CW
- Sep 11 – WAE SSB
- Sept 18 – NA Sprint RTTY
- Sept 18 – Scandanavian CW
- Sept 24 – CQ WW RTTY

### Logs Due This Month

- Sept 6 – ARRL UHF
- Sept 27 – YO DX

See WA7BNM's [Contest Calendar](#) for more detail and the latest information.

## From the PVRC Treasurer – Bill N3RR

PVRC has chosen not to implement an annual Dues requirement. We depend on the generosity of all of 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 together will always be sent out on the [PVRC reflector](#) and posted on the PVRC [web site](#).

**NW Region:** Meetings are generally held on the third Tuesday of each month at: [Chef Lin](#), 417 S Jefferson St. Frederick, MD 21701 Phone #: 301-620-0664(2675)  
The meeting begins at 7:00 PM.

Contact: Jim [WX3B](#)

**DC Metro:** Meets monthly the second Monday of each month, except June, July & August). The location alternates between the below MD and VA locations. Pre-meeting dinners start at 6:00 pm and meetings start at 7:30 pm.

VA LOCATION: Anita's, 521 E. Maple Ave, Vienna, VA. Tel: 703-255-1001. Meets at this location during the months of February, April and October.  
Contact: Rich [NN3W](#)

MD LOCATION: Max's Café. 2319 University Blvd W, Wheaton MD 20902. Tel: 301-949-6297 People usually begin arriving at the restaurant around 6:00. Meets at this location during the months of January, March, May, September and November. Contact: Art [K3KU](#)

**The Laurel, MD Region: Bill N3XL** The PVRC get-together is held at the first [LARC](#) meeting each quarter at the clubhouse.

**The Annapolis Crew: Dan K2YWE** Meetings are held on the 4th Wednesday of each month at Broadneck Grill in Annapolis. We gather at about 5:30 PM and order dinner about 6. We break up usually before 8 PM. E-Mail [K2YWE](#) to be put on the e-mail reminder list.

**PVRC-NC:** The **PVRC-NC East** chapter meetings are held at [Manchester's Bar and Grill](#) on the 9100 block of Leesville Rd. in North Raleigh, with "QRM" beginning at 6:00pm and the dinner meeting following shortly thereafter. The meeting is held monthly on the 1st Thursday of most months, cancellations or changes usually announced on the [PVRC-NC website](#).

The **PVRC-NC West** chapter meets the 3rd Monday of each month (except December) at about 7:00 PM at Hams Restaurant, 414 S. Stratford Rd., Winston-Salem on the south end of the Thruway Shopping Center. We meet in the front meeting room of the restaurant. A wide variety of cold 801s and Sports bar menu available. Contact Henry Heidtmann [W2DZO](#), full info at <http://www.w4nc.com>

**Over the Hill Bunch:** The group meets for lunch at noon alternately in Maryland at the Sir Walter Raleigh Inn 6323 Greenbelt Rd, Berwyn Heights, MD or in Virginia at Anthony's restaurant in Falls Church. Meetings generally are held on the last Wednesday of the month and are subject to change. Meetings are announced by E-

Mail. All PVRC members, non-members interested in membership and guests are welcome. For information contact Roger Stephens, [K5VRX](#), 703-658-3991 for Virginia meetings; or Cliff Bedore [W3CB](#) or get on 147.00 for Maryland meetings.

**Downtown Lunch Group:** Meets at noon on the first Wednesday of the month in the downtown area of Washington, DC. Location: R.F.D. Washington, 810 Seventh St., N.W. Closest Metro stop is GALLERY PLACE-CHINATOWN (Red, Green and Yellow lines). Any changes will be sent out on the PVRC reflector. Feel free to contact Eric W3DQ or Brian WV4V for details and directions.

**Southwest VA Chapter:** The Southwest VA group meets each Wednesday at about 8:30 AM at Hardees at 20265 Timberlake Road in Lynchburg, VA. This is an informal gathering, but normally has about 10-12 attendees. Contact Mark Sihlanick N2QT, Tel: 434-525-2921

**Eastern Shore Chapter:** Meets every three months, on the second Saturday of April, July, October and January at noon. In keeping with the tradition established by SK Dallas W3PP we will also meet at the contest station of Eric WG3J one hour before the start of most major contests. Contact Eric Hudson [WG3J](#)

Location: Delmar Pizza, north west corner of the intersection of highways 13 and 54 in Delmar, De.

**Southern Maryland Chapter:** Currently on hiatus, if interested in meeting contact the Chapter Chair, Tom Shelton, [ND3N](#) via email or (240)

**Colonial Capital Chapter:** Meets the 2nd Thursday of each month at 8:30 am  
Location: Hot Stacks Restaurant, 6495 Richmond Rd, Williamsburg, VA 23188  
757-565-1105

Contact: Bill Conkling [NR4C](#)

**The Tidewater Chapter meets** the 3rd Tuesday of every month at Frankie's Place for Ribs located in the Fairfield Shopping Center on the corner of Kempsville Rd and Providence Rd in Virginia Beach. The meeting starts at 7:00 PM.

Contact either Chapter Chair: Don Lynch, [W4YZT](#), or Ron Young, [W8RJL](#) All amateurs are invited.

If you'd like to add or correct a listing, contact [K3TN](#) for inclusion in the Newsletter!

## 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!

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### NPOTA Go Kits, plus Activator and Chaser Combos

We've put together NPOTA Go Kits well suited to portable operation. The Go Kit includes a Yaesu radio, power supply and Heil headset—all packed in a rugged NANUK case.

We also made a pair of combos to address the roles of the NPOTA [Activator](#) and [Chaser](#). The Chaser combo is how we would begin to outfit our base station using Icom's IC-7300 as the centerpiece. The Activator combo demonstrates how to build a portable setup, taking advantage of the IC-7300's small and lightweight qualities.

The combos also come with official ARRL NPOTA station accessories.



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**CY9C 2016**  
St. Paul Island



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**IC-7700 | HF/50MHz Transceiver**

- The Contester's Rig • HF + 6m operation • +40dBm ultra high intercept point • IF DSP, user defined filters • 200W output power full duty cycle • Digital voice recorder



**IC-718 | HF Transceiver**

- 160-10M\* • 100W • 12V operation • Simple to use • CW Keyer Built-in • One touch band switching • Direct frequency input • VOX Built-in • Band stacking register • IF shift • 101 memories



**IC-2300H | VHF FM Transceiver**

- 65W RF Output Power • 4.5W Audio Output • MIL-STD 810 G Specifications • 207 alphanumeric Memory Channels • Built-in CTCSS/DTCS Encode/Decode • DMS



**IC-7600 | All Mode Transceiver**

- 100W HF/6m Transceiver, gen cov. receiver • Dual DSP 32 bit • Three roofing filters- 3, 6, 15kHz • 5.8 in WQVGA TFT display • Hi-res real time spectrum scope



**IC-7100 | All Mode Transceiver**

- HF/50/144/430/440 MHz Multi-band, Multi-mode, IF DSP • D-STAR DV Mode (Digital Voice + Data) • Intuitive Touch Screen Interface • Built-in RTTY Functions



**ID-880H | Analog+Digital Dual Bander D-STAR**

- D-STAR DV mode operation • DR (D-STAR repeater) mode • Free software download • GPS A mode for easy D-PRS operation • One touch reply button (DV mode) • Wideband receiver **D-STAR ready**



**IC-9100 | The All-Round Transceiver**

- HF/50MHz 144/430 (440) MHz and 1200MHz<sup>†</sup> coverage • 100W on HF/50/144MHz, 75W on 430 (440) MHz, 10W on 1200MHz<sup>†</sup> • Double superheterodyne with image rejection mixer



**ID-5100A Deluxe | VHF/UHF Dual Band Digital Xcvr**

- Analog FM/D-Star DV Mode • SD Card Slot for Voice & Data Storage • 50W Output on VHF/UHF Bands • Integrated GPS Receiver • AM Airband Dualwatch • FM Analog/DV Repeater List Function



**IC-V80 | HD 2 Meter FM Transceiver**

- Tough construction • 750mW loud audio • Powerful 5.5W of output power • IP54 and MIL-STD-810 rugged construction • Built-in CTCSS/DTCS • WX channel & weather alert function



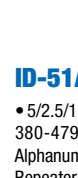
**IC-7410 | HF/50MHz Transceiver**

- 32-bit floating point DSP unit • Double Conversion Super-Het Receiver • Built-in 15kHz 1st IF Filter • Built-in Band Scope • Large, multi-function LCD • RTTY Demodulator/Decoder • USB for PC control



**IC-2730A | VHF/UHF Dual Band Transceiver**

- VHF/VHF, UHF/UHF simultaneous receive • 50 watts of output on VHF and UHF • Optional VS-3 Bluetooth® headset • Easy-to-See large white backlight LCD • Controller attachment to the main Unit with optional MBA-4 • Wideband receiver



**ID-51A Plus | VHF/UHF Dual Band Xcvr**

- 5/2.5/1.0/0.5/0.1W Output • RX: 0.52-1.71, 88-174, 380-479 MHz\*\* • AM/FM/FM-N/WFM/DV • 1304 Alphanumeric Memory Chls • Integrated GPS • D-STAR Repeater Directory • IPX7 Submersible **D-STAR ready**



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\*Except 60M Band. \*\*Frequency coverage may vary. Refer to owner's manual for exact specs. †Optional UX-9100 required. QST OCTOBER 2016. The Icom logo is a registered trademark of Icom Inc. Toll-free including Hawaii, Alaska and Canada. Call will be routed to the nearest store. All HRO 800-lines can assist you. If the first line you call is busy, you may call another. AZ, CA, CO, GA, TX, VA, WI residents add sales tax. Prices, specifications and descriptions subject to change without notice.

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**FTDX5000MP Limited | 200W HF + 6M Txcvr**

- Internal Power Supply • Two Totally Independent Receivers • Super Sharp "Roofing" Filters • High Performance Yaesu Custom-designed 32-bit Floating Point DSP • True Analog Meter Precision



**FT-450D | A100W HF + 6M Transceiver**

- 100W HF/6M • Auto tuner built-in • DSP built-in • 500 memories • DNR, IF Notch, IF Shift **Call For Pricing!**



**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



**FTDX3000 | 100W HF + 6M Transceiver**

- 100 Watt HF/6 Meters • Large and wide color LCD display • High Speed Spectrum Scope built-in • 32 bit high speed DSP /Down Conversion 1st IF **Call For Low Pricing!**



FREE  
YSK-857

**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 Our Low Price!**



**FT1XD | 144/430 5W Digital Transceiver**

- C4FM/FDMA • 1200/9600bps AX.25 APRS & GPS Recvr Built-in • Dual Band Operation w/Dual Receivers (V+V/U+V/V+U) • Wideband Receive/AM Bar Antenna/Aircraft Receive • 1266 Memory Channels w/16 Char Alpha Tagging



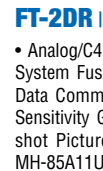
**FT-991 | HF/50MHz/2M/440 Transceiver**

- 160 M-440MHz - SSB/CW/FM/C4FM Digital/AM/RTTY/PSK • 100 W (2M/4440: 50 Watts) • 3.5" TFT full-color touch panel operation • High speed spectrum scope • Roofing filters: 3kHz & 15kHz • 32-bit high speed floating point IF DSP • 160-6 meter high speed automatic antenna tuner



**FT-2900R | Heavy-Duty 75W 2M FM Transceiver**

- Massive heatsink guarantees 75 watts of solid RF power • Loud 3 watts of audio output for noisy environments • Large 6 digit backlit LCD display for excellent visibility • 200 memory channels for serious users



**FT-2DR | C4FM/FM 144/430 MHz Txcvr**

- Analog/C4FM Dual Monitor (V+V/U+U/V+U) • System Fusion compatible • 1200/9600 APRS Data Communications • Integrated 66ch High Sensitivity GPS • Wide Band Receiver • Snapshot Picture Taking Capability With Optional MH-85A11U



**FTDX1200 | 100W HF + 6M Transceiver**

- Triple Conversion Receiver With 32-bit Floating Point DSP • 40 MHz 1st IF with selectable 3 kHz, 6kHz & 15 kHz Roofing Filters • Optional FFT-1 Supports AF-FFT Scope, RTTY/PSK31 Encode/Decode, CW Decode/Auto Zero-In • Full Color 4.3" TFT Display



**FTM-100DR | C4FM FDMA/FM 144/430 MHz Txcvr**

- Power Packed System Fusion Transceiver • High Audio Output Power • Rugged Powerful Transmitter • Integrated 66ch High Sensitivity GPS • 1200/9600 APRS Data Communications • Voice Guide and Recording Function \*Optional FVS-2 Required • Digital Group Monitor (GM) Function • Digital Clock & Timer Functions



**VX-8DR | 50/144/220/440**

- 50/144/220/440 • 5W (1W 222 MHz) • Bluetooth optional • Waterproof/ submersible (3' for 30 min) • GPS APRS operation optional • Li-ion Hi-capacity battery • Wide band Rx



**FT-60R | 2M/440 5W HT**

- Wide receiver coverage • AM air band receive • 1000 memory channels w/alpha labels • Huge LCD display • Rugged die-cast, water resistant case • NOAA severe weather alert with alert scan



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## TS-990S | 200W HF + 6M Transceiver

- World's first dual TFT display • 200W output on all bands •  $\pm 0.1$ ppm TCXO ensures both high stability and reduced power consumption • Triple 32-bit DSP's dedicated to main/sub receivers and band scope • Main receiver employs full down conversion, new mixer & narrow band roofing filters • Third order intercept point (IP3) +40dBm for highest level of RX performance (main receiver)

**Call For Special Price!**



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COUPON**

## TM-D710G | 2M/440 Dualband

- V+V/V+U/U+U operation • Built-in GPS • Built-in TNC for APRS & DX-Cluster operation • 50W 2M & UHF • 1,000 memories • Dual receive • Green or amber backlight colors • Latest APRS firmware w/new features • Sky Command II remote functions

**Call For Special Price!**



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COUPON**

## TS-480SAT/HX | HF + 6M Transceiver

- 480HX 200W HF & 100W 6M (no tuner) • 480SAT 100W HF & 6M w/AT • Rotatable w/front panel/speaker • DSP built-in

**Call Now For Low Price!**



**+\$300  
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## TS-590SG | HF/50MHz Transceiver

- Equipped with 500 Hz/2.7 kHz roofing filter as standard • ALC derived from TS-990S eliminating spike issues • Antenna output function (shared with DRV connector) • CW - morse code decoder function • Improved 1st mixer • New PFB key with multi-function knob • New split function enabling quick setting • LED backlight with selectable color tone



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## TM-V71A | 2M/440 DualBand

- High RF output (50W) • Multiple Scan • Dual receive on same band (VxV, UxU) • Echolink® memory (auto dialer) • Echolink® Sysop mode for node terminal ops • Invertible front panel • Choice of green/amber for LCD panel • 104 code digital code squelch • "Five in One" programmable memory • 1000 multifunction memory

**Call Now For Your Low Price!**



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## TH-D72A | 2M/440 HT w/extended RX

- 5W TX, RX 118-524 MHz, VxU, VxV, UxU • APRS w/built-in 1200/9600 TNC • Built-in GPS, Built-in USB, digipeater • Echolink® compatible, • Mil-Spec STD810

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TS-2000

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TS-2000X

## TS-2000/2000X | HF/VHF/UHF Transceiver

- 100W HF, 6M, 2M • 50W 70CM • TS-2000X 10W 1.2GHz
- Built-in TNC, DX packet cluster • IF Stage DSP • Backlit front key panel

**Call For Special Price!**

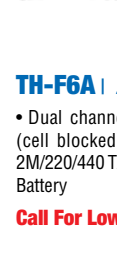


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## TM-281A | 2 Mtr Mobile

- 65 Watt • 200 Memories • CTCSS/DCS • Mil-Std specs • Hi-quality audio

**Call For Special Low Price!**



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## TH-F6A | 2M/220/440

- Dual channel receive • .1 - 1300 MHz (cell blocked) RX • FM, AM, SSB • 5W 2M/220/440 TX, FM • 435 Memories • Li-Ion Battery

**Call For Low Price!**

**+\$30  
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## TH-K20A | 2M Handheld

- 2M 5.5W • VOX • CTCSS/DCS/1750 Burst built-in • Weather alert

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- HF and 6 Meter 1KW Amplifier • Match 3:1 SWR with No Tuner
- User Friendly QSK Operation • LCD Message Display • Single 4CX800a Tube • Vacuum Antenna Relays

**Call For Additional ACOM Products!**



## The SDRplay RSP

ALL MODE SDR RECEIVER

- Continuous Coverage from 100kHz to 2GHz
- 12-bit ADC Technology (not another 8-bit dongle!)
- Built-in High performance Front-end Filters
- Works with popular SDR Software (HSDR, SDR-Console & Cubic SDR)
- Outstanding Reviews on eHam
- Call for special low price



## MA-40

- 40' Tubular Tower

**Call For Latest Pricing!**

## MA-550

- 55' Tubular Tower • Handles 10 sq. ft. at 50 mph • Pleases neighbors with tubular streamlined look

**Call For Latest Pricing!**

All US Towers shipped by truck; freight charges additional.



## TX-455

- 55' freestanding crank-up • Handles 18 sq. ft. @ 50 mph • No guying required • Extra-strength construction • Can add raising and motor drive accessory • Towers rated to EIA specifications • Other models available at great prices!



**218XATC-PL-(length) RG8x (240UF) w/PL259 Connectors Each End. Weather-Proof Heat Shrink Tubing.**

- Stranded Center Conductor.
- 95% TC Braid + bonded 100% Foil Shield.
- Very Flexible, Light Weight, and Smaller than RG8 sizes.
- Non-Contaminating-UV Resistant-Direct Burial-Black Jacket.



**233/2-G4-(length).**

- Unique design (Nickel Grommets 4" Spacing) allows for easy attachment to a vehicle's body or truck bed to create a "ground-plane".
- Good option as a "buss-bar" in the shack.
- 1/2" wide tinned copper 38x48x8/384 10ga 53 Amps.
- Stocked in 1.5', 3', 5', and 10' foot lengths.



## Navigator

The Premier Sound Card Modem!

- Quiet - hear what others miss!
- Proven USB Sound Card built-in
- Precise FSK & Winkeyer CW on board
- Complete - Six FTDI COM ports
- Universal Rig Control for every radio
- Works well with HRD, M110A, Fldigi, WSJT & many more software programs
- Front-Panel Audio & CW controls
- USB connected and powered
- Convenient - No annoying jumpers!

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