



# *PVRC Newsletter*

## *January 2021*

**Newsletter Editor:** John K3TN [jpescatore@aol.com](mailto: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 – Tom K3AJ**

#### **Time for the Handoff and a Milestone Reached**

Maybe because I spent most of my career working for a company that has been in continuous operation for 200 plus years there was always the sense that my work life wasn't an individual event – it was more like a relay race. When my turn came, I grabbed the baton and ran my appointed laps. Finally, the day arrived when I passed the baton off, coasted to a stop, and left the track. Sure, there were things I had done that seemed like accomplishments in their own right, but I left more with a sense of satisfaction that I had helped keep up the services we provided every day, 24/7/365, for more than 200 years during my turn, and that others would keep that going long after I was gone.

Serving these last seven years as an officer of PVRC (as Vice President, Treasurer and President) leaves me with a similar feeling. For more than 70 years PVRC has written a storied chapter in this great hobby of Amateur Radio. It has been a privilege to serve by taking a few laps in the leadership of this great organization.

I am sure that many of you have also experienced what I did during my career – that when taking a new job, it was easy to see the tracks laid down by your predecessors and all the good things they had done. But with the fresh energy and perspective that a new person brings to the job, in time you added your own ideas and accomplishments to leave things better than the way you found them. Or at least we all hope that was the case! So it has been, I hope, during my time as President of PVRC. I can't be so sure about what has been left behind, but I can surely attest to what those before me put in place. And really, it is not so much about me as it has been about the outstanding people I have been privileged to serve with: Mike N4GU, Jay W3MMM, Dan K2YWE and Tim N3QE. They provided most of the ideas and good judgement that has kept PVRC on the rails during my time as President. Not to mention the cadre of oftentimes unsung volunteers who keep the club's machinery running.

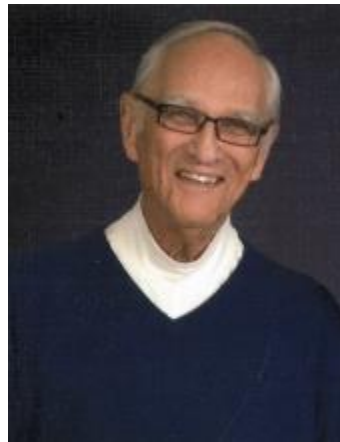
The milestone? Oh. This past weekend, the electronic log I started keeping shortly after joining PVRC in 2011 passed the 100,000 QSO mark. Although never completely inactive for more than a year or two here and there during my 53 years as an amateur radio operator I doubt that I had made even 5,000 QSO's in all that time up until joining

PVRC. But since that time, becoming active (if not obsessed) with contesting it only took 9 years to add 100,000 QSO. I have the club and those of you who have taught and encouraged me to thank. It's been fun!

73 and Go PVRC

Tom K3AJ  
President, PVRC

### **N4MO Legacy Gift to PVRC Scholarship**



In October, we were contacted by Sandra Uthus, XYL of PVRC member and SK Ron Uthus, N4MO about donating his equipment for the benefit of amateur radio. N4MO was a member of PVRC for over 20 years. He was a Korean War Navy veteran and served in both government and private industry in his career.

Ron was a good friend of Dallas, W3PP (SK) and operated at W3PP. Ron also operated in some contests from various Central American locations (TI, V3, HR) and as a SO from his own station. He was actively contesting until 2014 with over 11M points in the PVRC 5M Award Program.

After conferring with Sandra and considering the options, we entered into an agreement with the Anne Arundel Radio Club for the disposition of the equipment and the use of the resulting funds. Ike Lawton, W3IKE, a member of both organizations, agreed to handle the sale of the equipment. The funds were to be split evenly between AARC and PVRC.

The sale of Ron's equipment has been completed and the Officers of PVRC decided to apply PVRC's share of the funds - \$720.00 – as a gift in Ron's name to the PVRC Scholarship at the ARRL Foundation.

We are grateful to Ron's family for this gift.

## A Gaggle of Gavels



The latest crop of PVRC Club Competition Gavels! Four of them are from recent victories – one is an historical artifact.

In keeping with our practice, the gavels are presented to someone who contributed to the victory, with due consideration of other factors such as exceptional effort and past gavel awards to spread the wealth a bit.

The awards are:

- **GA QSO Party 2020** – Awarded to Chuck Hastings, W3PJ, an out-of-circle member from GA who still contributes scores when he can to PVRC.
- **ARRL 160M Contest 2018** – Awarded to Steve Bookout, NR4M, who is threatening to become even more competitive in 160 by building a TX 4-square!
- **ARRL 10M Contest 2018** – Awarded to Fred Laun, K3ZO. The propagation master himself dominated without any help from the sun.
- **ARRL Sweepstakes 2018** – Awarded to Arty Boyars, K3KU. Art's love for, and commitment to SS is legendary.

And the fifth gavel, the “historical artifact?” Not long ago, we were contacted by David Patton N1NN/9, late of ARRL, who discovered it among some property of K4VX, a PVRC member and builder of a contest superstation in Hannibal, MO who became a SK on February 25, 2017. It is the gavel for PVRC's win in the 1970 ARRL DX Contest. As best as we could determine, the following current PVRC members contributed to that win some 50 years ago:

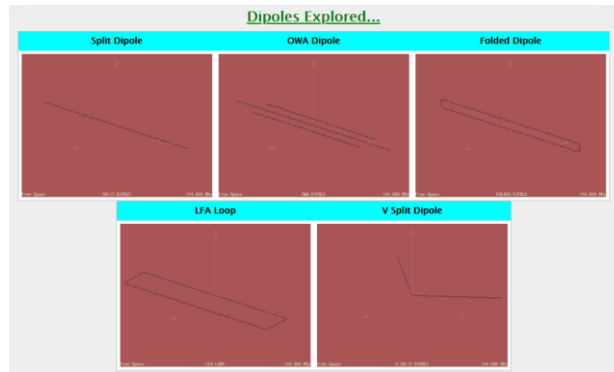
<b>Call Now</b>	<b>Call Then</b>	<b>Notes</b>
NM2O	WA3IAQ	at W3AU
N3CW	WA3GVP	
K3KU	K3OAE	at W4BVV
W1RM	W1RM	at W4BVV
WR3R	WA3AMH	at W4BVV
K3RA	K3GJD	at W4BVV
WB4FDT		at K4CG
W4YE	W4YZC	
N4RV	W3ZKH	
K3RV	WA3HRV	at W3AU
K2AV	K4VDL	at W4BVV
W4JVN		at W4BVV
W3GG	W3CRE	At K3JYZ
N4AF	K4PQL	
N4MM	W4WSF	
W4RX	W4YHD	
K4FJ	K4CFB	at K4CG
K3EST	K3EST	at W3AU
W6UM	W3NPZ	at W3AU
N4FX		at K4CG
K5RT		at K3JYZ
WA3JXJ	WA3JXJ	

We will have a random drawing among those listed at the upcoming PVRC New Year's Eve online get together to provide this gavel with a new home.

<b><u>PVRC Officers:</u></b>		<b><u>Trustees:</u></b>	
President:	K3AJ Tom Valenti	K3MM, N3OC, K2AV, K4ZA, W3LPL, N4MM, N4ZR, W2RU, W3LL	
Vice President:	N4GU Mike Barts	<b><u>PVRC Charter Members (all SK):</u></b>	
Vice President:	W3MMM Jay Horman	W3GRF, W4AAV, W4KFC, N0FFZ, W4LUE, W7YS, VP2VI/W0DX, W3IKN, W4KFT	
Secretary:	N3QE Tim Shoppa		
Treasurer:	K2YWE Dan Zeitlin		

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## Dipole Deep Dive



Winter is always a good time to make antenna optimization plans. G4CQM's [Dipoles Explored](#) site has modeling data on 5 different configurations, along with commentary on their use as yagi elements.

## Results of the First State QSO Party Challenge

The year 2020 will be remembered for many negative things, but on the positive side of the ledger we have the birth of K3TN's grandson, the official start of Solar Cycle 25 and the phenomenally successful inaugural running of the yearlong State QSO Party Challenge.

The full set of statistics can be viewed [here](#), some highlights:

- Over 1.3M QSOs by over 2,100 operators were reported to 3830scores.com
- 1,040 ops qualified for the Challenge by making at least 2 contacts in 2 events.
- Five PVRCCers finished in the top 75: Jeff N8II (6<sup>th</sup>), Bud W3LL (19<sup>th</sup>), Ed K3DNE (34<sup>th</sup>), Dave N3CKI (63<sup>rd</sup>), John K3TN (71<sup>st</sup>) and Kay N3KN (73<sup>rd</sup>).

The biggest state QSO parties by entries and total QSOs:

State	Entries	Rank	State	Tot Qs
California	640	1	California	203,611
Florida	570	2	Florida	135,196
7th Call Area	521	3	7th Call Area	134,000
New England	442	4	New England	102,495
Kansas	367	5	Kansas	66,662
Pennsylvania	333	6	Pennsylvania	60,768
Georgia	329	7	Ohio	48,989
Ohio	327	8	Washington	47,092
New York	311	9	New York	46,913
Washington	309	10	Georgia	42,876

**From the Way Back Machine – 2008 PVRC Christmas Dinner – Jim N3JT**



CW from lower left: Jim N3JT and Nina; Frank W3LPL presenting a 5M award to Miriam K3MIM; Ben N3UM's wife Peggy; Bob W3IDT and daughter Miriam K3MIM; Marty W3YOZ (SK) and Tom W3TOM.

**Recycling Internet Humor – Frank W3LPL**



Central VA Chapter Zoom Meeting – Mark N2QT

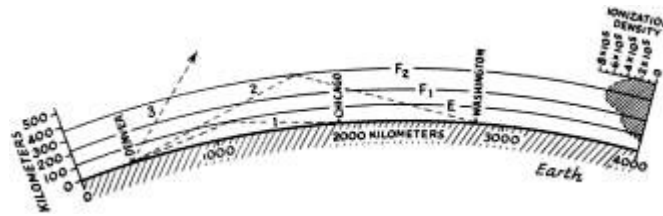


L to R, top to Bottom  
N2QT (with K3LP Trophy), W1IE, N8AID, K4XL  
NN4RB, K4CUE, W4VTT, W2RU  
N3AC, W4VIC, W3MN, K4YCR  
W4WWQ, NJ4Q, N4DB, KC4D

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**Contest University 2021 Propagation Summit – January 23**



(March 1940 QST)

The Contest University will hold the [2021 Propagation Summit](#) webinar on January 23, sponsored by DX Engineering and Icom. The webinar will run from 11am to 3pm ET, feature's PVRC's own Frank W3LPL, and one lucky Zoom attendee will win an Icom 705!

**Antenna Raising at OH0V – Jukka OH6LI**



Video of the OH0V team raising a lot of aluminum [here](#) (requires Google login)





**'Twas the Night Before Ten Opened... - Mike VE9AA**

'Twas the nite before TEN opened, and all through the shack  
 Not a signal was stirring, for outside it was black  
 The dipoles were hung, by the tower with care  
 In hopes that strong signals soon would be there.

The harmonics were nestled, all snug in their beds,  
 while visions of pileups, danced in their heads  
 With me in my PJ's and Mom in her thong  
 We wondered about DX and where we went wrong

When out on the snow, there arose such a mess  
 I sprang from the bed, and forgot to get dressed  
 Away to the window, I flew like a streaker  
 Tore open the amp and became suddenly weaker

The coax was ripped and the new fallen amp  
 fell onto the floor, and the 'Test was now damped  
 But what do my wondering eyes, should suddenly see here?  
 But a miniature stack of 10m yagis and deer !

With that little old man, so adept at the key,  
 this could be our good luck, if only it could be....  
 More QRQ than Hastifisti and with power to spare.  
 Now Dasher, now Dotter, now all deer, he yelled proud  
 We're doing this right, and we're going to be loud!

On Meteor, Aurora and Backscatter too!  
 We'll work everyone, 'til the tubes they turn blue.  
 To the top of the hill, we ran with our tools  
 Now dash away, dot away, lids and QRM fools

As cool dummy loads, that before the current that flows  
 I will rid you of keyclicks, splatter and gosh Heavens knows.  
 So up to the house-top, the signals they flew  
 With antennas and amplifiers and St. Nicholas too.

And then in a moment, I heard on the stairs  
 DX being worked, that was exceedingly rare  
 As I logged with N1MM (plus version of course)  
 St. Nick was working them, SSB and on Morse.

He was dressed all in fur and looking alive  
 And his clothes were all sweaty from working a P5  
 A bundle of hardline, he threw on his back  
 And he looked like a Slim, who would never come back

His eyes how they looked, his cheeks were puffed out  
From a SSB pileup, that he commanded with clout  
His droll little mouth, behind the headset from Heil  
Did not conceal, that rare DX smile

The stump of his pipe, he held tight in his face  
As lots of DX was coming, and this was a race!  
He had a wry smile, a big man among men  
From sitting too much and working W-A-Z on Ten.

He was fast and fat, that right happy King elf  
I looked in the mirror, and imagined myself  
A wink of his eye and a twist of the key  
He said 5NN and worked a B3

He spoke not a word, as he worked the Morse code

This rate behaviour lads, I love the big load  
He filled all the stockings  
Between contacts he said  
Once this is done, Mike, you go right back to bed !

Laying a finger up, the side of his nose  
He started another pileup and the din, it arose  
This is VE9-Santa and you are Five-by-Nine!  
I'll work you all quickly and leave no one behind

He sprang to his sled, and with a nod of his head


He worked the last contact-(Long path to Zed-D-8-Zed !)  
Away the stats flew, to the A-RR-L  
I'll be back next year people -perhaps from KL?

He yelled as he faded, and went out of sight  
MX, 73 and to all a GN!  
-.....-

Merry Christmas from New Brunswick  
de Mike VE9AA and family

QZB\* = You're all zero beat ; pse use ur XIT +/- ! (I actually used this once yesterday)

**What Matters Most to PVRicers – Jay W3MMM**

<b>What Matters Most?</b> If they could only save one thing, what would PVRC members grab?	
<p style="text-align: center;"><b>WX3B - Jim</b></p>  <p>Since insurance covers all the equipment minus \$1,000, I would have to grab the photograph from 1992 of myself and my son Alex!! At age 32 I still had most of my DARK hair!! Alex may deny this, but he loved sitting in my lap listening to CW when he was a baby. To him, it was like listening to music and he would bob back and forth to the dits and dahs and a very young age, even before he was stringing sentences together.</p>	<p style="text-align: center;"><b>WA3AER – Ted</b></p> <p>WWTG (What Would Ted Grab)? I would grab my K3 and pray to God that all the stuff connected to it came along with it, particularly my Begali Sculpture key. The K3 and key would allow me to get back on the air somewhere once I had a power source and some wire for an antenna. If not the K3, then the KX3 and the key. Same rationale and probably easier to take on the run. Gotta Have Radio!</p>
<p><b>K5VIP/KG4BP - Barry</b></p> <p>If my shack was falling down, I'd try to save my computer log with 55K+ QSOs in it. If time permitted, I'd also try to save my QSL cards.</p>	
<p><b>Email <a href="mailto:W3MMM.Radio@Gmail.com">W3MMM.Radio@Gmail.com</a> to add your story!</b></p>	

**The Yamaha CM500 Headset on an Elecraft K3 – Alan WA3EKL**

About two weeks before the Sweepstakes Phone contest I bought Yamaha CM500 headsets because of the great reviews they have been getting on the PVRC reflector.

The headphone plug and the mic plug are both a stereo plug; tip, ring and sleeve. Both are the normal 1/8-inch plugs. The earphones are very comfortable and after 6 hours of SS Phone my ears were not hurting because the ear cushions surround the ears rather than pushing on the ear like my Heil headsets. I wear glasses and the Heil headsets produce greater force against the ears and the glasses causing pain after prolonged use.

The receive quality of the earphones is exceptionally good and needs very little EQ-ing which is easily done with the K3 to one's own hearing preference. However, it's the mic I wish to talk about.

When I first plugged in the mic I got no output. I go through a "home brew" interface box which switches the K3's front panel mic input between mic and computer sound card output

via a relay. The mic is direct. The sound card goes through an isolation transformer and variable resistor so that I can control the level.

The CM500 needs bias which can be supplied one of two ways. Yamaha supplied a small two AAA battery pack, or your radio can supply the bias. The battery pack supplies 3 volts, the K3 supplies 5 volts. When I first plugged the mic into my system, I got nothing out of it. After turning on the bias I still got nothing out of it. Yamaha also supplied an adapter that has a 1/8-inch female jack on one end and a 1/8-inch plug on the other end. So, I plugged the mic into the adapter and the adapter into my system and now it worked but this is just the beginning of my story!

Taking a multi meter and measuring from the tip of the mic plug to the sleeve (ground) I got 30 ohms resistance. Measuring from the ring of the mic plug to the sleeve yielded 30 ohms of resistance also. Measuring from tip to ring was a dead short; zero ohms. I said to myself "Interesting- how does this thing work?"

Next, I put batteries into the supplied adapter box and plugged a male plug into the box where the mic would go. I measured 3 volts only from the tip of the plug to the sleeve or ground thus telling me the mic was getting its voltage from the tip and the ring was doing nothing. Then I built an adapter consisting of a 1/8 inch "inline" female jack and a 1/8-inch male plug. I connected only the tip connection of the female jack to the tip connection of the plug. Then I connected the sleeves together. I did nothing with the ring connection. I put this adapter in line in my system and the mic worked great.

There was only one problem the mic was extremely **hot**. Not physically but output-wise. A quick search of the internet said you should set your VOX gain at 17 and your compression at 17 and start from there. If I set my Mic Gain more than 3 and my Vox Gain more than 3 even my normal breathing kicked the VOX on! What to do??

The first thing I did was remove the wimpy "P" popping foam shield and put on a good shield and that reduced it a little. The mic itself is shaped similar to the HC-5 except it has a small cylinder protruding from the front of it. That cylinder has a slot in it and that is the space where your voice enters. I later discovered there are 4 small holes on the back side of the mic. I tried many mic positions attempting to not get my breathing to kick the mic. The EQ's were almost flat, I will get to that shortly.

After a lot of experimentation, I tried covering the 4 holes on the back of the mic with a piece of Scotch 33 black tape. Amazingly 95% of the breath issue disappeared. I then proceeded to EQ the mic. I always EQ a mic to make the mic exactly reproduce the voice of whom ever is speaking into it. I wrote an article some time ago about that.

The best example I can give is this: We seem to be led to believe that we should cut the lows, reduce the bandwidth and pump up the highs so that we all sound basically the same for good contesting sound. What does that do for us? Have you ever been in a pile up where everyone is calling, and no one is getting through? Then a female voice comes on and the station comes right back to her. Why? Simply because she sounds different or unique from all the rest. Each of us has a unique voice no matter what it sounds like. Adjust your mics so that your voice is crystal clear and unique, so that it stands out in the crowd and see who gets through the pile up first. Now back to my story.

We used the Yamaha head set during SS Phone. I used it ok but one of my other ops had to change back to the Heil because his breath was still kicking the mic even at a VOX Gain setting of "1".

Monday night after the contest I did some deep internet researching on this mic and the K3. I have read through the K3 manual numerous times - nowhere in there do I ever remember seeing that the K3 has an internal mic preamp for very low output microphones or how to even turn this preamp on. I discovered it on a K3 Hints site by accident Monday night. If you punch the MENU key once you get the first menu. (MAIN MENU). Roll the VFO B (small knob) until you see MIC SEL . When you are in SSB MODE if you punch key #1 it will change the Front Panel or Rear Panel from "H" output mic to "L" output mic. But these two mic levels are totally independent of the internal mic preamp. Punching key #2 turns off and on the mic bias. However, punching key #7 turns on and off the internal preamp!! A small dash appears at the top middle of the window under the "T" in TRANSCEIVER when the preamp is turned on.

Now that I have the internal preamp turned off my VOX Gain is at 10 to 12 and the Mic Gain is at 10 where it should be. Even with the excessive gain the EQ settings worked well during the SS Phone contest. I did not get one request for a repeat. Here are the settings I am presently using on the new Yamaha CM500 on my K3's.

EQ1 = -14	Mic = 10
EQ2 = -10	COMP = 17
EQ3 = 0	VOX Gain = 11
EQ4 = +1	ANTI VOX = 25 if the screamer ops are not in the room!
EQ5 = +1	
EQ6 = +2	
EQ7 = +3	
EQ8 = +1	

Interestingly here are my Heil HC-5 settings

EQ1 = +1	Mic = 10
EQ2 = 0	COMP = 20
EQ3 = 0	VOX Gain = 20
EQ4 = +2	ANTI VOX = 25 if the screamer ops are not in the room!
EQ5 = +1	
EQ6 = +2	
EQ7 = +2	
EQ8 = +0	

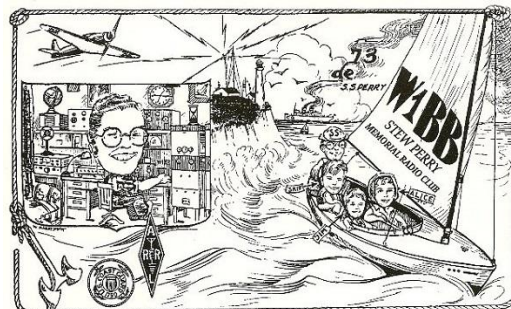
Since the mic bias adapter supplied by Yamaha supplies 3 volts and the K3 is supplying 5 volts that would account for more output and the difference in VOX Gain settings between the Heil HC-5 and the Yamaha CM500.

I hope someone finds this information useful.

**PVRC 160 Meter DXCC Standings – Frank W3LPL**

Below are the 160M DXCC totals for PVRC members, transcribed from the ARRL [DXCC data](#) as of the 20<sup>th</sup> 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	CALL	DXCC
W8LRL	344	W3LL	213	N3KK	144	K3OSX	114
W4ZV	338	W3YY	213	N4GG	144	K5RJ	114
W4DR	336	W3YY	213	K3TN	143	N4DJ	113
W3UR	321	N4MM	212	NR4M	143	K1KO	112
W3LPL	316	N1LN	211	WA2BCK	143	N4TL	112
K4CIA	306	K3WA	209	W2YE	138	W3MR	111
K4ZW	302	AB3CV	206	W3BW	138	N3HBX	110
W4PK	287	W0VTT	206	W4YV	138	NA1DX	110
K3SX	285	W3GG	200	N3OC	135	KA4RRU	110
N2QT	283	K5RT	196	N4PY	135	W3KB	107
KG4W	269	K3JT	193	W4VIC	135	W4ZYT	107
K4SO	268	N4DB	191	AA4NC	132	K3WC	106
K5VRX	256	K4FJ	191	N3KS	129	W2GPS	106
W3DF	252	K2PLF	174	N3RR	129	N4NW	105
N3NT	249	K1GG	174	K3XA	128	W3NRJ	105
WB3AVN	245	W4FQT	172	K5VIP	128	W3TMZ	104
WX4G	239	N4XX	169	N3QE	127	W3EKT	102
K1HTV	236	K3KY	166	W0YVA	127	W4JVN	102
KG7H	236	K4XD	165	KM3V	122	K1BZ	101
K3SWZ	233	K3AJ	165	N3MK	122	KE4S	101
W3KX	225	N4QQ	163	W2GG	121	K3TZV	100
WS6X	221	N8II	153	K2BA	120	KC4D	100
K1AR	219	W2RS	152	W4PRO*	120	N3AF	100
K5EK	219	N5JB	149	W4HZ	119	W4NF	100
K4XL	215	K4RG	147	N3UA	118		
W4NL	214	N3RC	145	N3ND	117		



**2020 Summary Membership News – Tim N3QE**

PVRC voted in 34 new members in 2020. Please welcome:

Dave W3MAM and David W3FOX joined through the Annapolis chapter.

Tom W2SC, Valerii KN4OCB, Cary VE4EA, Avram N3BBF, Karl K4YT, and Ed N1EK all joined through the Maryland Metro chapter.

Gilbert K4JST, Mike K4MRO, Francine KN4KXI, David W4DSR, and Toby KL0SS were voted in at the Colonial Capital meetings this year.

Brian K2ACX, Don K6ZO, and Roy WN3F all joined the Downtown DC Lunch Bunch chapter.

Dave N4CWZ, Chris K4HC, Lonnie K4KZ, Dave N3CKI, John Paul AB4PP, Tripp N4NTO, Ted K2GAV, and Mason KM4SII are all new members in the North Carolina East chapter.

Jay KC3EMA, Marty AG3I, Charles KB8HRT, Allen WA3SFR, and Neil W3ZI were voted in at Northwest chapter.

Dennis WR4I and Andy KK4ADQ are new members of the Rappahannock Valley chapter.

Harry N3MM, Matt KM4VWD, and William K4WWP were voted in at the Central Virginia 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 – from [WA7BNM](#)**

January 2021	
+ Winter VHF Sprint	1600Z-1659Z, Jan 2
+ ARRL RTTY Roundup	1800Z, Jan 2 to 2400Z, Jan 3
+ North American QSO Party, CW	1800Z, Jan 9 to 0559Z, Jan 10
+ North American QSO Party, SSB	1800Z, Jan 16 to 0559Z, Jan 17
+ ARRL January VHF Contest	1900Z, Jan 16 to 0359Z, Jan 18
+ UK/EI DX Contest, CW	1200Z, Jan 23 to 1200Z, Jan 24
+ CQ 160-Meter Contest, CW	2200Z, Jan 29 to 2200Z, Jan 31
+ UBA DX Contest, SSB	1300Z, Jan 30 to 1300Z, Jan 31

**Editor’s Last Word – John K3TN**

Thanks to **Jim N3JT, Frank W3LPL, Mark N2QT, Jukka OH6LI, Mike VE9AA, Jay W3MMM and Alan WA3EKL** for contributions to this issue of the PVRC newsletter. Thanks to everyone who contributed to the Newsletter in 2021, making my job this year a piece of cake! Happy Holidays and a happy, healthy and sunspot-filled New Year to all!

**From the PVRC Treasurer – Dan K2YWE**

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.

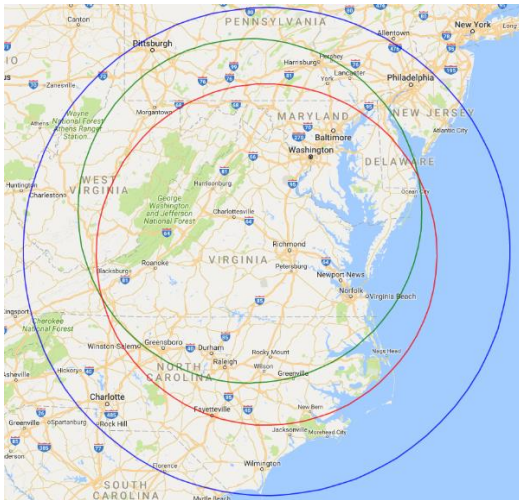
Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:



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**Eyeball QSO Directions**

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78.171W

**Red: ARRL HF Circle**  
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Around 37.43168N,  
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**Blue: CQ HF Circle**  
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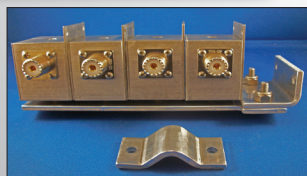
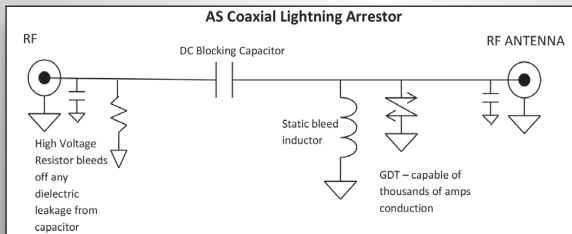
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- DC blocked, DC pass is available as a custom option
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- Models available for 3 kW, 5 kW, 10 kW and higher, details on website. Lower power available.
- FM low power broadcast model AS-303D FM
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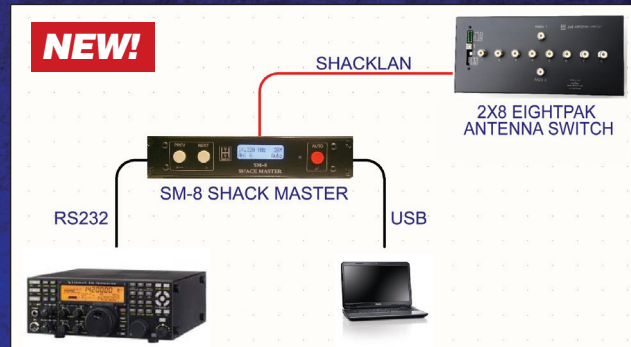
AS-303U



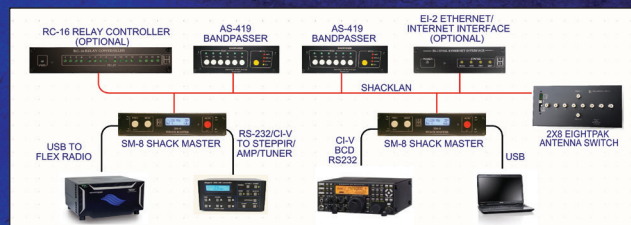
### Hamation Station Automation

Hamation remote and Local Station Control products allow you to automatically or manually select antennas, bandpass filters, and control accessories. Accessories can be StackMatches, Antenna switches, antenna phasing systems, SteppiR controller, turning radios on and off, etc. All of this can be done directly from the Ethernet as well!

Wiring are simple phone cables that daisy chain to all the devices. Wireless control is also available to your tower-located switches. Call us to learn how to set up simple or complex systems. Below is a simple basic system that can switch antennas as you change bands. We can interface to any radio CAT port, not just RS232.

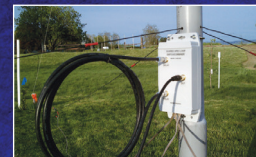


A more complex system could be a SO2R contest station as shown.



### The Shared Apex Loop Array™!

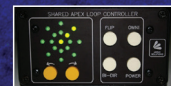
Capture the whole band or the whole HF spectrum at once with the Shared Apex Loop Array 2nd Generation. Can be remote controlled over the internet or in your station. 8 directions of directivity.



The Shared Apex Loop Array™ is a revolutionary receiving antenna that will change the way that you listen to the radio! The patented design provides performance in a size and over a wide range of frequencies that will please both the rag-chewer and DXer alike.

Three models to choose from:

- AS-SAL-30 - optimized for VLF, BCB, 1.8-10 MHz
- AS-SAL-20 - optimized for BCB, and 1.8-30 MHz
- AS-SAL-12 - optimized for 3-30 MHz



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5kW - DC to 6m  
**RATPAK – 1x6**

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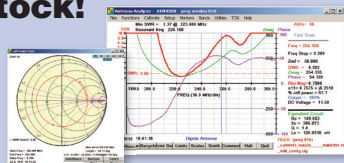
**SIXPAK – 2x6**



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Vector Network Analyzer

5 kHz -1.3 GHz \$1295



### StackMatch

The original, not the imitations. For phasing 2, 3, 4 and even 6 antennas. Also it can be used to combine vertical and horizontal polarized antennas to diminish fading.



### PowerMaster II



RF Power and SWR meter. Couplers for 3 kW, 10 kW or higher available for HF/6 m. VHF and UHF couplers for 1.5 kW. You can connect up to 5 couplers to the display to monitor RF power on different TX lines.



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### IC-9700 | All Mode Tri-Band Transceiver

- VHF/UHF/1.2GHz • Direct Sampling Now Enters the VHF/UHF Arena • 4.3" Touch Screen Color TFT LCD • Real-Time, High-Speed Spectrum Scope & Waterfall Display • Smooth Satellite Operation



### 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



### ID-5100A Deluxe

VHF/UHF Dual Band Digital Transceiver

- 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



### IC-7851 | HF/50MHz Transceiver

- 1.2kHz "Optimum" roofing filter • New local oscillator design • Improved phase noise • Improved spectrum scope • Dual scope function • Enhanced mouse operation for spectrum scope



### IC-705 | HF/50/144/430 MHz All Mode Transceiver

- RF Direct Sampling • Real-Time Spectrum Scope and Waterfall Display • Large Color Touch Screen • Supports QRP/QRPP • Bluetooth® and Wireless LAN Built-in



### ID-4100A | VHF/UHF Dual Band Digital Xcvr

- Compact, Detachable Controller for Flexible Installation • DV/FM Near Repeater Search Function • Apps for iOS™ and Android™ devices • Wireless Operation with VS-3 & UT-137 Bluetooth® Headset & Module • MicroSD Card Slot



### IC-R8600 | Wideband SDR Receiver

- 10 kHz to 3 GHz Super Wideband Coverage • Real-time Spectrum Scope w/Waterfall Function • Remote Control Function through IP Network or USB Cable • Decodes Digital Incl P25, NXDN™, D-STAR • SD Card Slot for Receiver Recorder



### 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

### IC-V86 | VHF 7W HT

- 7W Output Power Plus New Antenna Provides 1.5 Times More Coverage • More Audio, 1500 mW Audio Output • IP54 & MIL-STD 810G—Rugged Design Against Dust & Water • 19 Hours of Long Lasting Battery Life • 200 Memory Channels, 1 Call Channel & 6 Scan Edges



### IC-7610 | HF/50 MHz All Mode Transceiver

- Large 7-inch color display with high resolution real-time spectrum scope and waterfall • Independent direct sampling receivers capable of receiving two bands/two modes simultaneously



### 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



### IC-R30 | Digital/Analog Wideband Xcvr

- 100 kHz to 3.3 GHz Super Wideband Coverage • P25 (Phase 1), NXDN™, dPMRTM, D-STAR Mode • 2.3" Large LCD Display & Intuitive User Interface • MicroSD Card Slot for Voice & Data Storage • USB Charging & PC Connection



### IC-7300 | HF/50MHz Transceiver

- RF Direct Sampling System • New "IP+" Function • Class Leading RMDR and Phase Noise Characteristics • 15 Discrete Band-Pass Filters • Built-In Automatic Antenna Tuner



### 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

### ID-52A | VHF/UHF D-STAR Portable

- Bluetooth® Communication • Simultaneous Reception in V/V, U/U, V/U and DV/DV • Enriched D-STAR® Features Including the Terminal Mode/Access Point Mode • UHF (225–374.995MHz) Air Band Reception

This device has not been approved by the F.C.C.



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**NEW**

### FTDX101MP | 200W HF/50MHz Transceiver

- Hybrid SDR Configuration • Unparalleled 70 dB Max. Attenuation VC-Tune • New Generation Scope Display 3DSS • ABI (Active Band Indicator) & MPVD (Multi-Purpose VFO Outer Dial) • PC Remote Control Software to Expand the Operating Range • Includes External Power With Matching Front Speaker



### FT-891 | HF+50 MHz All Mode Mobile Transceiver

Rugged Construction in an Ultra Compact Body • Stable 100 Watt Output with Efficient Dual Internal Fans • 32-Bit IF DSP Provides Effective and Optimized QRM Rejection • Large Dot Matrix LCD Display with Quick Spectrum Scope • USB Port Allows Connection to a PC with a Single Cable • CAT Control, PTT/RTTY Control



### 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



**NEW**

### 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) • **This device has not been approved by the FCC.**



**NEW**

### FTM-300DR | C4FM/FM 144/430MHz Dual Band

- 50W Reliable Output Power • Real Dual Band Operation (V+V, U+U, V+U, U+V) • 2-inch High-Res Full Color TFT Display • Band Scope • Built-in Bluetooth • WiRES-X Portable Digital Node/Fixed Node with HRI-200



### FT-70DR C4FM/FM 144/430MHz Xcvr

- 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



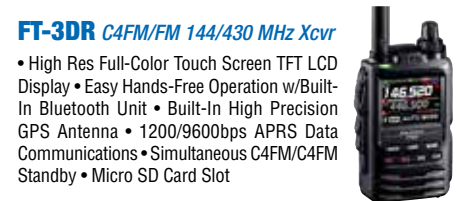
### FT-991A | HF/VHF/UHF All Mode Transceiver

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



### FT-2980R | Heavy-Duty 80W 2M FM Transceiver

- Massive heatsink guarantees 80 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-3DR C4FM/FM 144/430 MHz Xcvr

- 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 • Simultaneous C4FM/C4FM Standby • Micro SD Card Slot



**NEW**

### FTDX101D | HF + 6M Transceiver

- Narrow Band SDR & Direct Sampling SDR • Crystal Roofing Filters Phenomenal Multi-Signal Receiving Characteristics • Unparalleled - 70dB Maximum Attenuation VC-Tune • 15 Separate (HAM 10 + GEN 5) Powerful Band Pass Filters • New Generation Scope Displays 3-Dimensional Spectrum Stream



### FTM-7250DR | C4FM/FM 144/430MHz Dual Band

- 50 Watt Mobile • System Fusion-II Compatible • Operates Advanced C4FM Digital & Conventional FM Modes • 3 Watt Powerful & Clear Audio with Front Speaker



### FT-65R | 144/430 MHz Transceiver

- Compact Commercial Grade Rugged Design • Large Front Speaker Delivers 1W of Powerful Rugged 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



### 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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