PVRC Newsletter
May 2021

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President's Letter – Dan K2YWE

QRL de K2YWE

Yes, your officers and chapter chairs have been busy. Here's what they were doing last month in addition to their day-to-day PVRC responsibilities:

Representatives from all chapters and the PVRC officers met online for two hours. Discussions included

- Recruitment
- Views on the future role of online elections
- Views on the future role of online meetings
- New member sponsorship responsibilities (part 4 of PVRC by-laws)
- Round table exchange of chapter news and activities

The meeting was productive and there will be another late in the year

Officer activities

- Design of PVRC Olympics follow-on program for new contest season - near completion
- Live PVRC calendar - beta test with selected users now running
- Disposition of 2019 PVRC gavels for PVRC club contest wins - recipients selected
- Better website access to PVRC videos and presentations - in process

As always, feel free to directly contact any of the officers or your chapter chair if you have ideas for the club or feedback for the leadership. Go PVRC!

73, Dan K2YWE

It's Back! W3LPL Open House Saturday June 19th – Frank W3LPL

Barring the unexpected it will take place as usual on Saturday June 19th at noon. NCDXA and PVRC members and their guests are welcome; however, Phyllis and I **respectfully request that anyone who is not fully vaccinated not attend this year's event, for our protection and the protection of all attendees.**

For the first time -- and hopefully the last -- this will be strictly an outdoor event. It will be cancelled in the event of rain. Notice will be posted on the NCDXA and PVRC email reflectors not later than 10 a.m. Saturday in the event it must be cancelled due to weather. Attendees are welcome to bring their own sun shelter, such as beach umbrellas or party tents.

Thinking About a New Callsign? K8ZT Call Choice Evaluator

K8ZT has an extensive web page with information on choosing a vanity callsign, including a spreadsheet where you can compare choices. I spent more time than planned in the Florida QSO party and kept running into the same PVRC calls that were the same length as mine, so I entered them into his online spreadsheet:

Enter your Callsign choices below	# of Characters	# of CW Elements	Weighted Length of Characters	Visual Appearance	Letter Clarity	Phonetics Clarity	emphasis letters CW	emphasis letters SSB	CW Rhythm	Total	Average
Calls to Compare	# Char	# El	CW Wt.	Visual Appearance	Letter Clarity	Phon Clarity	CW Emph	SSB Emph	CW Rhythm	Total	Average
	Auto Calculated			Please enter your rating on 1 (best) to 10 (worst) for each. See "Notes" page for descriptions for items.						Auto Calculated (Lowest is Best)	
K3TN	4	4.40	4.60	5	6	6	3	3	3	39.0	4.33
N8II	4	4.40	3.40	1	1	1	6	3	6	29.8	3.31
N3AM	4	4.40	4.60	10	7	6	8	5	8	57.0	6.33
W3LL	4	6.40	5.60	5	3	2	7	5	5	43.0	4.78

Looks like Jeff N8II was the clear winner, John N3AM the clear loser! Now, in John's defense, "Visual Appearance" has to do with how a call looks on QSL cards and license plates – probably not the most important criteria for contesters!

2021 WPX Club Competition – Tim N3QE

Competition for top US club in the WPX contests has been intense recently! The club ranking is based on a sum of CW and SSB scores, and PVRC has narrowly lost to YCCC in both 2019 and 2020. In 2020 the margin between PVRC and YCCC was less than 5%!

Thanks in part to WPX SSB being declared a double-5M contest, PVRC seems to be doing well after the 2021 CQ WPX Contest. 3830scores.com shows PVRC with 67 Million points in 89 logs, as compared to YCCC with 50 Million points in 35 logs. Please plan your Memorial Day weekend (May 28-29 2021) to maximize your WPX CW score!

Noisy Transmitters - NC0B via Frank W3LPL

Rob Sherwood NC0B agreed to freely share his full transmitted composite noise measurements (dBc/Hz). Rob's measurements are limited to only transceivers he has access to. He'll be pleased to measure the performance of any transceiver, but of course he needs access for testing.

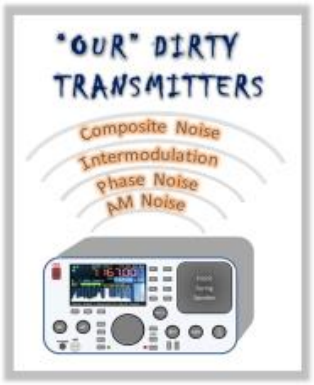
Transmitted composite noise is only an issue in your immediate local area -- such as interference to other hams within several miles if you want to keep them as friends -- or to other transceivers in your own station for SO2R, multi-op or Field Day. Transmitted noise can be controlled by transmitter bandpass filters to reduce noise into transceivers on other bands but a bandpass filter can't reduce noise into a transceiver on the same band such as a CW and an SSB station on the same band during Field Day.

Several members asked about degraded transmitted noise power when the output power is reduced to drive a modern amplifier. Rob shared his data for all of transceivers he has tested for transmitted composite noise at 30 watts output. The noise output from some transceivers -- such as the IC-7300 -- is much worse at reduced output power, most others are degraded from 3 to 6 dB.

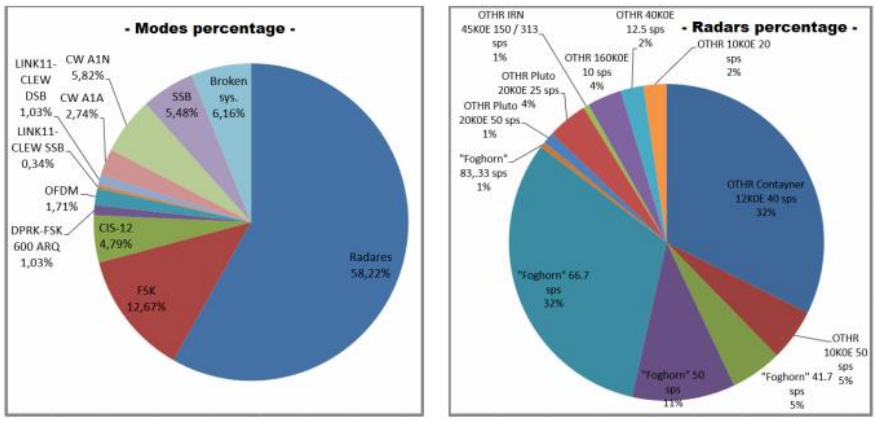
K3S transmitted noise with 30 watts output power is increased by 9 dB at 10 kHz from the transmitter frequency, but noise power at 100 kHz from the transmitting frequency is degraded only 3 dB.

The top of the first page is composite noise output measurements at 100 watts output power. The bottom of the first page is composite noise output measurements at 30 watts output power. The second page is six meter tests on the TS-890S

Editor's Note – DJ0IP has a lot of information on this topic on his website here, including NC0B's report.



What the Heck is That? Probably an OTH Radar – IARU R1 Monitoring



EA6AMM March 2021 interference observations

The IARU Region 1 Monitoring System Monthly newsletter says that 60% of noted interferers in the ham bands are Over the Horizon Radars. Some CW stations noted were believe not to be spy number stations, but instrumentation sending voltage levels in CW!

My Other Hobby – Dave W4JVN

As I wait for the bands to open up, my other hobby is organist. The photo above shows some recent keyboard experience. I'm also currently enjoying the FTdx101MP in recent contests as it is my first new radio in 31 years. I find FT8 interesting and fun.

Editor's note – If you can operate that Wurlitzer keyboard, I think SO2R (or even SO4R) should be a snap! K3TN

Meet the PVRCer – Mike W3IP

Then

and now (On the workbench is a 10 GHz amplifier and sequencer that I am building and testing)

Your Call: W3IP

First Year Licensed: 1965

Previous Calls: WB4ACJ, WA3VVJ

QTH and PVRC Chapter: Purcellville/Bluemont, Va., Blue Ridge Chapter

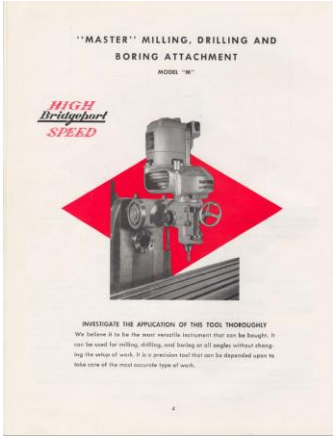
Favorite Contest and Why: 10 meter contest - takes less aluminum to be somewhat competitive than other HF contests

Least Favorite Contest and Why: Any contest requiring a serial number - self explanatory

Favorite part of Ham Radio other than contesting: Designing and building accessories for my station

Favorite thing to do other than Ham Radio: Working on my old Bridgeport mill

Anything else you'd like to say? Go PVRC!



PVRC 6M 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
W3BTX	167	K3XA	119	W4FQT	102
K1HTV	164	AB3CV	118	K3WC	101
W4DR	158	K3SX	116	N4JQQ	101
N4MM	147	K5EK	114	W3KX	100
W3LPL	139	W3EKT	111	W3XO	100
W3UR	139	WX4G	111	W4TJ	100
K2PLF	133	N4DB	110		
N2QT	132	W4PK	109		
K4SN	131	N4VA	106		
K4CIA	126	W2YE	106		
KG7H	123	K3ZO	103		
NW5E	123	K5VIP	103		
K4SO	121	W3OR	103		
W3LL	121	N4PY	102		

More PVRC Wins: ARRL 10M and SS – Dan K2YWE via Facebook

PVRC recently received ARRL gavels for 2019 Unlimited Club wins in the 2019 Sweepstakes and 10 Meter contests. Club gavels are customarily awarded to individuals in recognition of substantial contributions to the related events. PVRC leadership is pleased to announce the following gavel recipients:

- Barry, WR3Z with 375,658 points in the 2019 November Sweepstakes CW+SSB Unlimited categories
- Mike, W3IP with 77,952 points in the 2019 ARRL 10 Meter contest Mixed Unlimited category

The Amazing Delta Loop – Alan WA3EKL

I would like to share with the reader of this article my past 47 years of experience with the triangle loop antenna. I have had great success with the vertically oriented “point up” and “point down” triangle antennas. I learned about these marvelous antennas, by experimentation with them over the years and by the results including direct A/B comparisons to inverted “V’s” and dipoles.

So where did the name “Delta Loop” come from? Forty-seven years ago the term “Delta Loop” did not exist. My first recollection of this buzzword “Delta” comes from an antenna manufacturer that produced a two-element beam. The elements on each side of the boom were bent up at about a 60 degree angle from horizontal and formed a “V.” A wire was strung across the top of each elements and thus the “Two Element Delta Beam” was born. This was the first instance I can remember of the word “delta” being used with such an antenna. After that many triangle antennas began appearing on the internet all bearing the name Delta Loops. However, many of these first Delta loops were only ½ wavelength long. These days the common nomenclature dictates a Point Up Triangle is a “delta loop” and a Point Down Triangle is an “inverted delta loop.” I am just going to refer to these triangles as Point Up or Point Down.

I want to give you the history of how I became aware of this antenna. Back in 1974 Paul Vest, W8GIO (sk), of Bunker Hill, WV gave me an article on triangle loops by L.V. Mayhead, G3AQV entitled “Loop Aerials Close to Ground.” The article was published in Radio Communications, May 1974. Paul, W8GIO and his son, a life long friend, Gary Vest, NW5E, who lived in Arnold, MD at the time and myself who lived in Glen Burnie at the time, all began experimenting with these antennas.

The first triangle I constructed was a Point Up, corner fed, 20 meter loop, the base of which was 4 feet off the ground, fed with a ¼ wavelength of 75 ohm impedance matching section, which then fed a random length of 50 ohm line back to the shack. I was using a Drake “C” at the time running about 100 watts. It was around 2PM on a sunny July afternoon I called CQ in SSB mode and immediately was answered by a station with a 5/9 + report. The station was in Guam in the Pacific! Needless to say, I was hooked on these antennas. That’s how it started - here is what happened after that.

Gary and I put up a 40-meter triangle at his QTH in Arnold, MD on a cold and windy 18-degree day in January 1975. It was a Point Up, full wavelength triangle, no insulators, just hung over a tree branch and ropes for the two bottom ends. The top was at about 45 feet and the base was about 7 feet off the ground. He also used the same ¼ wavelength 75 ohm matching section as I did and then 50 ohms cable back to the shack. With his 100 watts Gary was working Europeans like they were sitting in the back yard. He never experienced anything like that with an inverted V at this QTH.

At that time I had a 65 foot tower in my back yard with a 20 foot aluminum “E” beam horizontally bolted across the top of the tower, which looked like a big “T.” There were pulleys out on the ends of the beam and near the tower for lifting up inverted V antennas for 80 and 40 meters. Both antennas worked well but Gary was having such success with his triangle loop and I was having such success with my 20 meter triangle loop I decided to take to take down the inverted V and replace it with a Point Up, corner fed, loop that spring. My thoughts were simple: If Gary was having such good success with

the top of his triangle at 45 feet then I am going to put the top of my triangle at 65 feet which should get me out even better. That turned out to be a mistake.

First, Mayhead's article is titled "Loop Aerials **Close** to Ground." There is a good reason for that regardless of what any modern antenna program indicates. Second, he stated within his article these antennas **want to be** close to ground. I admit I did not pay attention. Gary was continually working Europeans and I could not get out of my back yard. We both were sitting on Anne Arundel County sandy soil. Both of us were very close in altitude. Each of us had our antennas oriented the same direction and each of us was running the same power. We lived about 15 miles apart. What was the problem?

In June I rigged up a pulley system on the tower with ropes so that from one location on the ground I could raise and lower the triangle up and down the tower. I brought a separate receiver outside that had a step attenuator in it. I then tuned in a foreign broadcast station on 40 meters (there used to be lots of them on 40 meters). After attenuating the station down to about 3 to 4 S units I began to lower the triangle. Amazingly as I lowered the antenna the broadcast station got stronger until I reached a height where the base of the triangle was between 7 to 8 feet off the ground! Raising it higher only lowered the signal strength. I said to myself "This can't be true." So, to prove it for the next two weeks I again performed the same experiment at different times of the day and evening with the same results. Mayhead was correct: these antennas want to be close to ground.

So far, I have only talked about a "point up," corner fed, triangle antenna. This is an excellent DX antenna. There is even a **better** configuration that is easier to match to a 50-ohm line. Next I what to share with you some polar plots from Mayhead's original article. These plots were drawn before we ever had our fancy antenna programs of today and I have not seen any program reproduce these results. However, when I tell you of the results with the various triangles I have constructed, Mayhead's plots surely must be accurate. The original article has been reproduced many times so please excuse the fuzziness.

In the following pictures below please consider Mayhead's plots on the following page. Let's start with the top two plots. Top Left is a horizontal dipole at ¼ wavelength and top Right is an inverted V at ¼ wavelength. Observe that the two plots are almost identical, all horizontal radiation with the dipoles lobe slightly lower than the V's lobe. Bear in mind ¼ wavelength for 80 meters is 66 feet above ground. Any dipole, V or horizontal loop below ¼ wavelength, the radiation goes straight up.

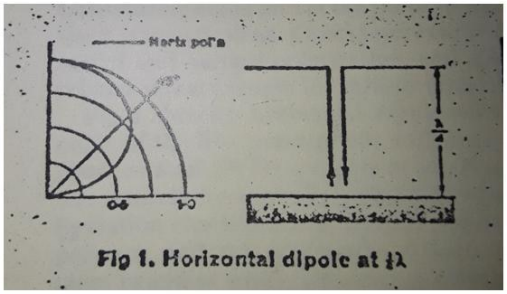


Fig 1. Horizontal dipole at ½λ

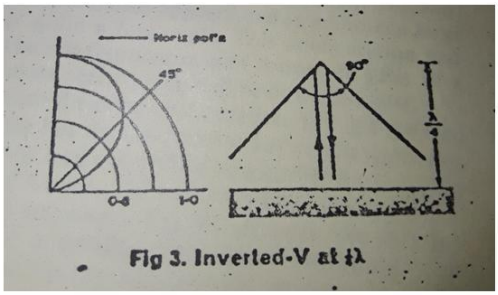


Fig 3. Inverted-V at ½λ

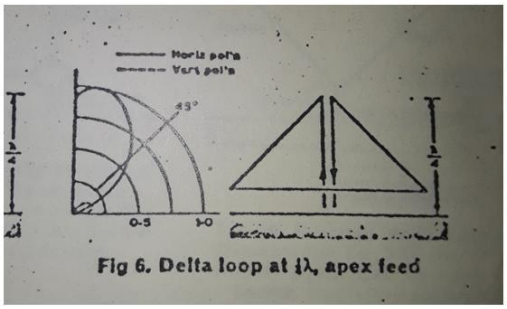


Fig 6. Delta loop at ½λ, apex feed

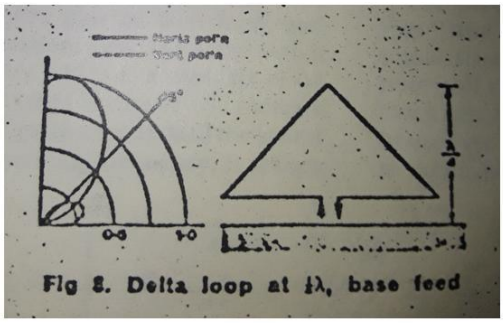


Fig 8. Delta loop at ½λ, base feed

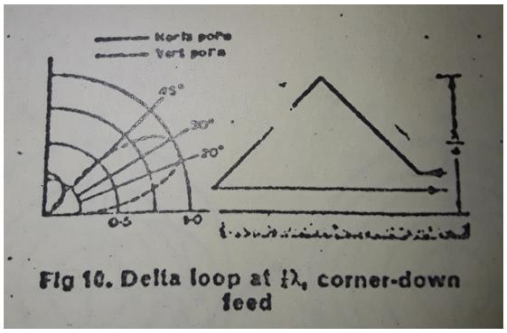


Fig 10. Delta loop at ½λ, corner-down feed

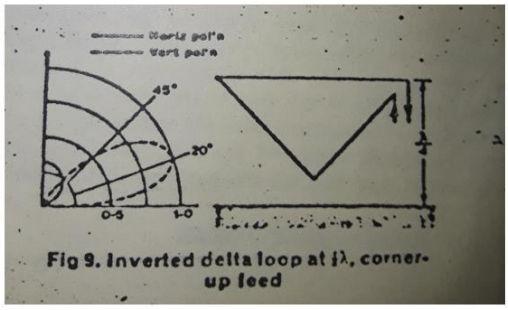


Fig 9. Inverted delta loop at ½λ, corner-up feed

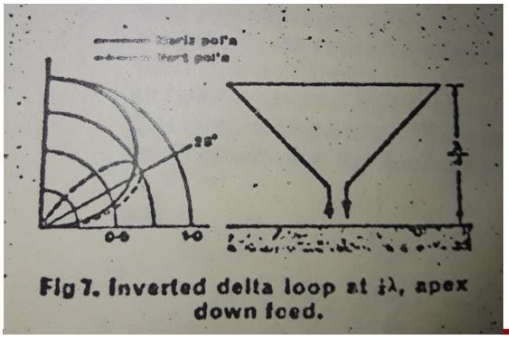


Fig 7. Inverted delta loop at ½λ, apex down feed.

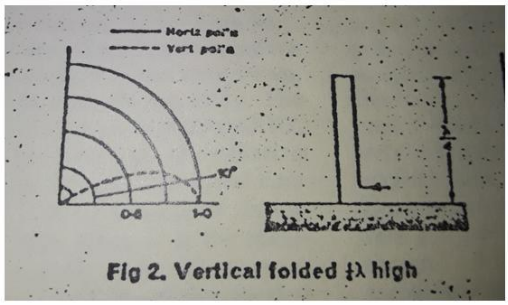


Fig 2. Vertical folded ½λ high

Now look at the next two plots down. The left side is a Point Up triangle fed at the top and the right side is a Point Up triangle fed at the Bottom Center. Both have a large horizontal lobe that is higher than an equivalent height V or dipole. Both produce a tiny vertical lobe with the bottom fed triangle producing a little slightly larger vertical lobe. Therefore feeding a point up triangle at the top is a waste of feedline and erecting a point up triangle, fed at the top or the bottom center is a total waste of time and effort if your intent is to work or hear any DX stations on it.

Now consider the third plot down on the left side; a Point Up triangle fed on a corner side. This is a DX antenna. The feed point is about 110 ohms and easily matched to a 50-ohm feed line with a ¼ wavelength of 75 ohm line. It produces a vertically polarized lobe whose maximum radiation is between 20 and 30 degrees and a minor horizontal lobe at about 55 degrees.

Next consider the third plot down on the right. It is a Point Down triangle, fed on a top corner. Note this triangle produces a major vertical polarized lobe at 20 degrees with a minor horizontal lobe at about 45 degrees. This is a difficult configuration to match easily.

Finally consider the bottom plot on the left side. This is by far the best overall triangle antenna. It is a Point Down, Bottom Fed triangle. The feed point impedance is 200 ohms and easily matched to a 50 ohm feed line with a 4 to 1 balun which can be made out of a ½ wavelength piece of coax or you can buy one of the toroid type 4 to 1 baluns. It produces a broad horizontal lobe and a low vertical polarized lobe at about 23 degrees of equal intensity. The lower vertical lobe works the DX and the broad horizontal lobe works the closer in stations. I have had the best results from this configuration of all the triangles. It is good for DX contests and it is good for Field Day, QSO parties and Sweep Stakes.

The bottom right is the typical pattern of a ¼ wavelength vertical or inverted L as has been depicted for years in the ARRL Antenna Book. It produces a vertical lobe at about 10 degrees.

I have used the Point Down Triangle on Field Day for years where I have also had up Vs and dipoles at equivalent and greater heights and where I could do A/B testing. 95% of the time the loop beat out the Vs and Dipoles hands down. Some years back I had a dipole at about 55 feet for 40 meters which worked great. Then I raised it to 70 feet, and it didn't work as good. I also had a 2 element 40 beam at 93 feet over the dipole on the same tower and a switching network to make each antenna disappear to the other, so I had minimal interaction. Then I replaced the dipole with a Point Down 40 meter, bottom fed loop between two trees. Halfway through the first contest season with the loop I said "why did I not get rid of the dipole sooner."

Many times, when we are running Europeans on the 40 beam and we hear a South American we just switch to the Loop. Then we forget to switch back to the beam and go on running Europeans on the loop. I now know why. My 40 loop is producing a lobe at 23 degrees. A 40 meters dipole or beam has to be at least 90 feet above ground in order to produce a lobe at 23 degrees. My beam is at 93 feet. This why the loop gets into Europe as well as the beam!

Three years ago, I put up a Point Down, bottom fed triangle for 30 meters. In 3 months on FT8 I had worked WAS with just a K3 and 80 watts. In less than a year I had worked DXCC on 30 with just the loop. Then I installed a Point Up, triangle fed on a bottom corner for 17 meters. I started out with a ¼ wavelength matching section of 75 ohm coax but found the SWR was not usable. Then I measured the impedance with my Rig Expert Analyzer which indicated a 200-ohm impedance. Then I installed a 4 to 1 balun which gave me a 1 to 1 SWR. Remember this antenna produces a 20 to 30-degree lobe of vertical radiation. I had a very difficult time working US Stations. VK, ZL deep into the Pacific, China, deep CE and LU, Falkland Islands, all no problem. Anything past 5000

miles was easy and usually the first call with only the K3 and 80 watts. Anything in closer was many calls or no contact. After about 4 month of frustration I re-oriented the antenna to the Point Down, bottom fed, triangle. Suddenly the 0 to 5000 mile range was hearing me and responding but the 5000 plus range did not diminish in the least. In about 7 month I had achieved WAS and in a little over a year I made DXCC still using the K3 at 80 watts on FT8 mode. That only proves to me that Mayhead has been correct all the time that the Point Down Triangle does indeed produce low and high angle lobes both of which communicate very effectively.

Now let us talk about radiation angle and polarization a little. We are all being taught that you must have a radiation angle of 15 degrees or less to work DX. Under what conditions is this correct? If you live on the East Coast and you are trying to work into the deepest part of the Pacific on one hop, then the statement has merit. You can still work the deep Pacific with a higher angle lobe on a double hop! Antenna height above the ground creates the angle of the lowest lobe. However, as you increase the height of the antenna above ground the lower lobe does go lower but you also create more lobes above the lowest lobe equally dividing the total power going into all lobes. Adding director elements moves more energy into the lowest lobe but does almost nothing for lowering the angle of radiation. That is why those with very tall towers have many elements on their top antennas.

How high must a beam or dipole be to achieve a 15-degree lowest lobe? From the formula x = ARC SIN A / 4h where x = the degrees, A = 1 for the 1st lobe, 3 for the 2nd lobe, 5 for the 3rd lobe, etc. and h = height in wavelengths. Or h = ARC SIN A / 4 x, 10 meters needs 52 feet, 12 mtrs – 59 ft, 15 mtrs – 70 ft, 17 mtrs – 82 ft, 20 mtrs – 104 ft, 30 mtrs – 145 ft, 40 mtrs – 206 ft, 80 mtrs – 393 ft, 160 mtrs- 797 ft. This is why we use verticals antennas which normally produce a 10-degree radiation angle for DX on 80 and 160 meters not because vertical polarization works better on those bands!

I have two equivalent, 4 element home brew 10-meter beams at 86 feet and 60 feet. I have two equivalent 4 element home brew 15-meter beams at 97 and 57 feet. For the past 10 years in any DX contest I have consistently worked South West Africa, almost 8000 miles, on the lower 10- and 15-meter beams. The upper beams do not get into ZS6 well at all. I believe the angle is too low; 6 degrees for both the upper 10 and 15 meter beams. The lower beams produce 9 degrees on 10 meters and 12 degrees on 15 meters.

We have also found that once a band is open in a good sun spot cycle the highest beams are almost useless and the lower beams do all the work. Under good conditions QSO parties and SS are almost always better on all three lower beams including the lower 20 beam at 48 feet. My conclusion from my own experience world be that the 15 degree theory is definitely correct for long haul DX work. Closer in contacts can be achieved with somewhat lower antennas and higher angle lobes but these higher angles can also achieve long DX contacts on multi hops under good conditions.

Now let us look at polarization. In VHF and above polarization is very important especially for line of sight communication. A horizontally polarized antenna facing a vertically polarized antenna will experience at least 20 dB of attenuation between the two. However, when you are bouncing signals off the ionosphere it's a whole different story. 80 and 160 meters generally use vertical polarization and now we know why. 20, 15 and 10 meters use horizontal polarization because it's easier to build a horizontally

polarized beam than creating or stacking vertically polarized beams on a tower. The polarizations we are using is due to convenience. The ionosphere does not care what polarization hits it. In fact, the wave can go up horizontal and come down vertical, horizontal or circular. We use verticals, or inverted L's to transmit vertically polarized signals on 160 meters and listen on horizontally polarized beverages. Have you ever experienced rapid QSB? Did you ever think it might be the ionosphere rapidly switching the polarization of the signal you are listen to? These triangles produce medium to low angle lobes which take dipoles and beams much greater heights to achieve. What works especially over time with many testers must be true. Of all the amateurs I have convinced to try a Point Down, bottom fed triangle or a Point Up side fed triangle, not one has ever had a bad thing to say about it.

In experimenting with my own loops and helping Ken KG4USN over the past two years change out all of his dipoles 80 through 10 meters for triangular loops at his QTH we found there is an ideal height above ground where the impedance of the loop will be 200 ohms depending on the band. 200 ohms is very easily matched to a 50-ohm impedance feed line. 10 meters had the lowest height and 40 meters had the highest height for the Point Down triangle. All of Ken's loops are Point Down except his 80-meter triangle which is Point Up, corner fed and the base of which is about 10 feet off the ground. Ken and I also discovered these antennas do indeed want to be close to ground just like Mayhead stated in 1974.

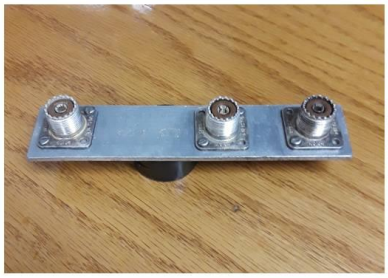
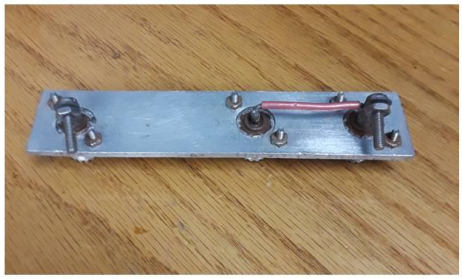
As you move the loop higher the impedance will drop below 200 ohms. Likewise, as you move the loop closer to the ground the impedance will rise above 200 ohms. There is no doubt in my mind that you could find some height where the impedance will be 50 ohms. However, how will it perform higher up? There is little empirical data available on Point Up or Point Down triangles and minimal experimental data. You can put one of these loops high up and it will appear to be working fine but how do you really know? More than one antenna engineer has told me unless you have a dipole at the exact same height as the antenna in question, which is at least 1.5 wavelengths away, oriented in the same direction, with the exact same amount of the same type of feed line running to both antennas, with no antenna tuners in either line and the those feed lines running to an A/B switch where you can instantly switch between the two antennas on a signal you cannot accurately evaluate the new antenna. I have been able to evaluate these loops on a number of Field Days, out in the woods, void of man-made noise, buildings and other man-made structures, in real time as stated above with QRP power. The Point Down loop works well plus a loop it is quieter than a dipole.

My 40-meter loop at present is about 8.5 feet off the ground. The 30-meter loop is 8 feet off the ground. The 17-meter loop is 7.5 feet of the ground and the 12 meter loop is 7 feet off the ground. These are the specific heights at my QTH it takes to get a 200-ohm feed point impedance giving me a 1 to 1 SWR on the feedline through the 4 to 1 balun.

Now let us see how easy it is to build one of these Point Up or Point Down triangles. I use #12 solid insulated copper house wire for the antenna itself. The insulators I bought at my friendly farm supply store. They are labeled "end post electric fence insulators." You can also find them on Amazon. Do not buy the yellow insulators. They break easily. Also check the hole in the black insulators where the wire is going through the hole that it is rounded and not a square so that the wire does not make a sharp 90-degree bend as it comes through the insulator. The 4 to 1 balun is made up of ½ wavelength of RG213 polyethylene inner insulation. Polyethylene has a velocity factor of .659. Foam

lead has a higher velocity factor which means you will need more of it to create a ½ wavelength piece. The standard formula for a ½ wavelength piece of coax is 92 x VF / freq in MHz = Length in feet.

Example: 492 x .659 / 7.15 MHz = 45.35 feet or 45 feet 4 3/16 inches. 45 feet 4 inches from PL259 to PL259 tip is fine. You want to roll this coax up in a coil with a minimum diameter of 12 inches for 40 meters. For the higher bands keep the coil at least a minimum of 10 inches in diameter. You can buy aluminum strip stock at Lowes or Home depot 1 ¼ to 1/1/2 inches wide by 24 inches long and cut it down to what ever size you like. Mount three SO239 chassis mount connectors across the strip. Be sure and connect a wire between the center SO239 center pin and one of the outer SO239 connector pins on your plate like the picture below shows.





The center SO239 is the antenna feed line point. The coil will attach to the two outer SO239 connectors. I used #10 yellow terminal lugs as shown below with the plastic covers removed for the screw mounts on the end SO239 center pins. The terminals fit perfectly down over the pins and can easily be soldered to the pins. The holes in the terminals accommodate a stainless steel 8-32 machine screw, lock washer and nut just fine. You attach the two ends of the antenna to the machine screws. Solder tin the end of the copper antenna wire before wrapping them around the screws.

To keep the antenna from slipping through the insulators look at the second picture down on the right side. You will see in the picture I have soldered a “short” across the antenna wire coming out of each side of the insulator. The normal formula for a full wavelength triangle loop is; 1005 / Freq in MHz = length in feet. However since you lose about 5 inches going through each insulators a better formula is 1030 / Freq in MHz = Length in feet It’s always easier to find a wire cutter than a wire stretcher!

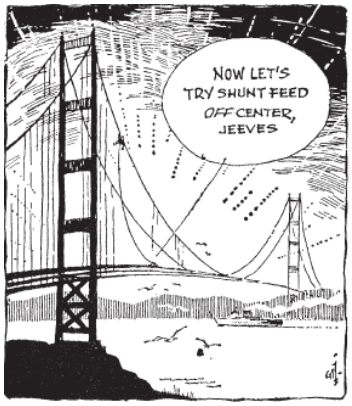
In the pictures you can see the balun plate with the SO239 connectors, the black insulators, the corner feed method I use in the bottom right picture and the finished plate with balun coil I use for the Point Down bottom feed triangle.

For a corner fed triangle you need a ¼ matching section of something like RG11 or for low power RG59 both polyethylene insulation. The formula for a ¼ wavelength section is 246 x VF / Freq in Mhz = Length in feet assuming you are using 70 to 75 ohm coax. At the end of the ¼ wavelength matching section the impedance will be close to 50 ohms provided your antenna is resonant!

Wrap the PL259 connectors with Scotch 33 tape well and then I use Gray Duct Seal to cover and waterproof the top and bottom of the SO239 connectors on the plate. Try to keep the water out.

An equilateral triangle will give you the widest SWR bandwidth. An 80-meter Point Down triangle would require at least 100 foot support points so most people use a single point support, Point Up, corner fed, triangle for 80 and it becomes an isosceles triangle. These work very well. I used one in Glen Burnie at 65 feet and Ken is using one at 75 feet with very good success.

I hope I have convinced some to pull down a dipole and give the Point Down loop a try.



Gil W1CJD QST Sept 1965

Membership News – Tim N3QE

PVRC did not add any new members in the latest reporting period.

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 2021	
+ ARI International DX Contest	1200Z, May 1 to 1159Z, May 2
+ CQ-M International DX Contest	1200Z, May 8 to 1159Z, May 9
+ His Maj. King of Spain Contest, CW	1200Z, May 15 to 1200Z, May 16
+ YOTA Contest	0800Z-1959Z, May 22
+ CQ WW WPX Contest, CW	0000Z, May 29 to 2359Z, May 30

Editor's Last Word – John K3TN

Thanks to Dave W4JVN, Alan WA3EKL, Mike W3IP, Tim N3QE and Frank W3LPL for contributions to this issue of the PVRC newsletter.

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

From the PVRC Treasurer – Jay W3MMM

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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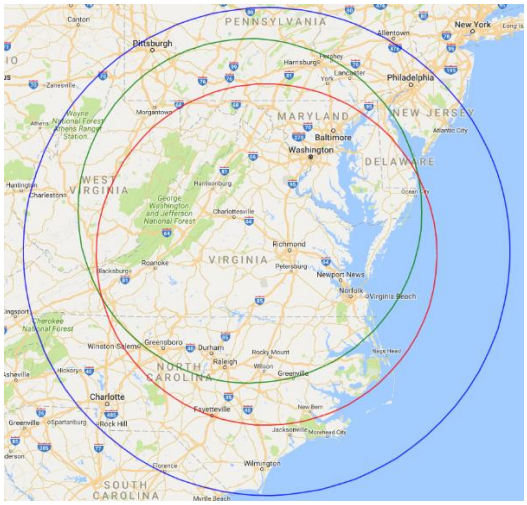
Eyeball QSO Directions

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.



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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These low-loss cable assemblies are available in standard lengths with DX Engineering's revolutionary patented PL-259 connector. Use the online Custom Cable Builder at DXEngineering.com to build assemblies made to your exact specs. DX Engineering's coaxial cable is also available by the foot or in bulk spools.

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Weatherproofing Kits

DX Engineering kits make it simple to protect your coaxial connections from damaging moisture. They include self-fusing 3M Temflex 2155 Rubber Splicing Tape to create a strong barrier followed by 3M Vinyl Electrical Tape for added UV protection. Choose from Super 88 Premium tape, Super 33, or economical Tartan 1710. Each kit will weatherproof 6 to 10 double connections. Also available are kits that include 3M tape and self-adhesive weatherproofing material. **Enter "Weatherproofing" at DXEngineering.com.**

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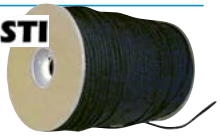
DX Engineering Clamps and Hardware

Tackle your spring antenna projects with high-quality parts. DX Engineering U-Bolt, V-Bolt, Super-Duty and Heavy-Duty Saddle Clamps come in a range of sizes to deliver strong and durable solutions no matter what you're building. You'll also find stainless steel V-clamps; resin support block clamps; Genius clamps that let you create a tower standoff to side-mount an extra antenna; and DX Engineering stainless steel hardware sets. **Enter "Clamps" at DXEngineering.com.**

Guy Line Ropes

MASTRANT ANTENNA GUYING · PHILLYSTRAN · STI



Choose from non-conductive, non-stretching Mastrant ropes for wire antennas, supporting Yagi booms and elements, and guying verticals and antenna masts; Synthetic Textile Industries' double-braided, decay- and mildew-resistant Dacron/polyester ropes; and high-performance Phillystran guy lines made from Aramid fiber with a strength-to-weight ratio five times greater than steel.

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Don't let spring storms zap your station. DX Engineering carries the gear you need to protect your investment, including Georgia Copper flexible copper grounding straps, lightning and surge protectors from PolyPhaser and Alpha Delta, Erico copper-bonded ground rods, and an array of DX Engineering gear: coaxial cable grounding brackets, universal copper grounding clamps, radio RF ground plane kits, and more. **Enter "Grounding" at DXEngineering.com.**

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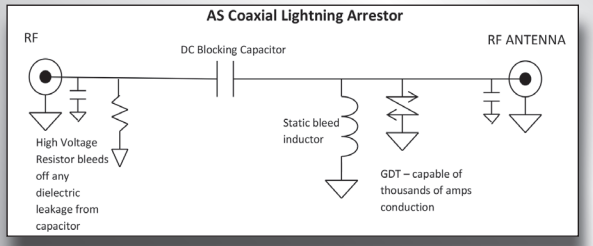
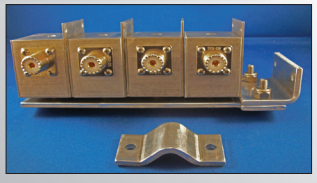
AS-303U

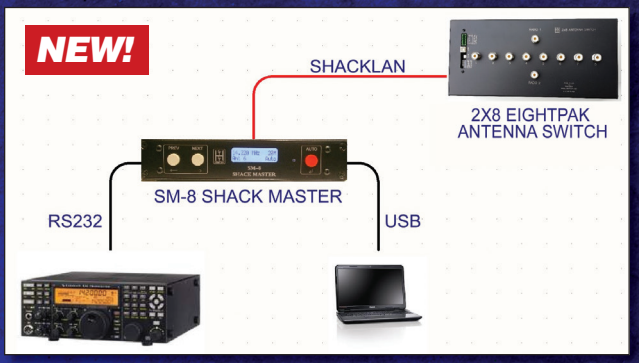




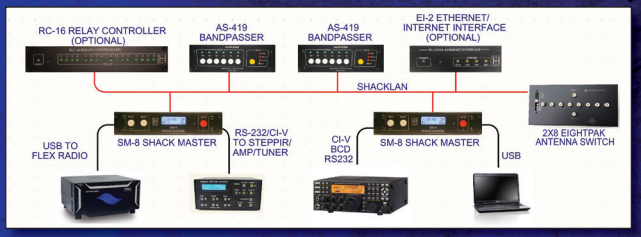
Hamation Station Automation

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 shone.



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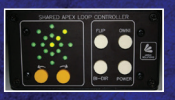
- AS-SAL-20 - optimized for BCB, and 1.8-30 MHz
- AS-SAL-12 - optimized for 3-30 MHz



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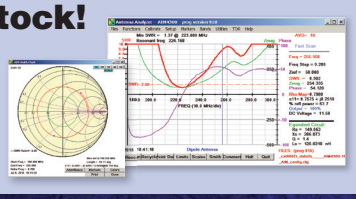

StackMatch

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.

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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

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• 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

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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

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• 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.

FT-991A | *HF/VHF/UHF All ModeTransceiver*

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

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

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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

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• 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-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

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

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 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-3DR *C4FM/FM 144/430 MHz Xcvr*

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