



PVRC Newsletter

November 2020

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

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

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President's Letter – Tom K3AJ

Welcome to the Future!

“Greetings, my friend. We are all interested in the future, for that is where you and I are going to spend the rest of our lives. And remember my friend, future events such as these will affect you in the future.”

Since coming across this quote a few days ago, I have been pondering its applicability to current events in PVRC and contesting in general. How much of what we are doing now will become “future events that affect us in the future,” and how much will just become an historical footnote to a strange 2020?

Contest activity is up for sure. Is that just the temporary result of everybody being stuck at home or will playing more become a (good!) habit? A corollary to all that activity has been an uptick in PVRC members earning awards in the recently completed contest year. All good.

Not many DXpeditions are happening right now, either for contest operations or to activate rare DX. Let's hope that dearth doesn't define the future (heck, I only need one more ATNO for Honor Roll)!

Neither W3LPL or K3LR mounts a titanic multi/multi operation for CQ WW SSB? Everything seems to be spinning out of control! Yet they find a way to play one way or the other, as a big time multi/single or by hosting not one but two competitive SO's. What will Frank and Tim take away from that experience?

And speaking of multiops, it seems that some contest sponsors are struggling with what to do about multi operator contesting in this age of social distancing. The ARRL recently posted an idea for what appears to be a sort of geographically dispersed multiop category for the 2021 ARRL DX contests. Will that lead to something new that outlasts the pandemic?

With everything from business meetings, elementary school classes, religious services, family gatherings and even funerals being conducted by Zoom or some other on-line conference tool, it was inevitable that PVRC chapter meetings would go that way too. I

wouldn't bet the ranch that our members won't want to meet in person to break bread and tell stories as soon as we can (I really miss the Shawarma at Max's Café), but maybe there will be an ongoing role for remote meetings.

In a similar vein, PVRC is about to conduct its first ever on-line election. How will that work out and will that be a one-off or lead to a new way of doing things?

Where did that quote come from, you ask? Those words are uttered by the psychic *The Amazing Criswell* to open the introduction to the 1959 sci-fi horror film *Plan 9 From Outer Space* – sometimes regarded as the worst movie ever made. Not only was Criswell an actual media figure of the era famous for his wildly inaccurate predictions, the first sentence was also used in the opening narration for the General Motors *Futurama* ride at the 1939 World's Fair. You can't make this stuff up.

73 and Go PVRC (now and in the future)

!

Tom K3AJ
President, PVRC

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General Class starting Nov 5 – Rol K3RA

I am starting a General Class course on Zoom beginning Thursday, November 5, and running for 9 sessions. Due to holiday breaks, the course ends Jan 21. Sessions will start at 6:30 and run 3 hours. No charge, of course. These are the classes sponsored by the National Electronics Museum that we have been holding for years. Please publicize this with anyone you know whom you think would be interested. Those wishing to sign up should email me at roland.anders@comcast.net .

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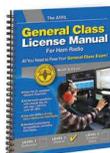
EMAIL: mike@k4dum.com

Text : "The General Class License Manual? by ARRL NINTH EDITION

Class Activities: Classes run from 6:30 to 9:30 PM. We will have regular demonstrations as indicated below in the syllabus. Questions are strongly encouraged. If there is sufficient interest in learning Morse code, we will conduct a code class starting at 6 pm each Thursday. We will use code practice and instruction provided at <https://lcwo.net/>

Due to COVID19, in-person exam sessions are less common, but in the central Maryland area, the Laurel VEC in Baltimore is still doing in-person testing once a month. Sign up early, as slots have been filling quickly – look [here](#). The Laurel Amateur Radio Club Volunteer Examiner Coordinator (VEC) exams are free, while other VECs charge from \$10 to \$15.

Exams are readily available on-line. A list of upcoming on-line exam sessions held by various VECs is [here](#). For details on what is needed and how to proceed, look [here](#). You can sign up with any team that has available slots, no matter the location. Note the various time zones so that you pick a time compatible with your schedule.



Sweepstakes Resources

Dates/times: CW: First full weekend in November (**November 7 - 9 2020**). Phone: Third full weekend in November (**November 21 - 23, 2020**). Contest Period: Begins 2100 UTC Saturday and runs through 0259 UTC Monday. Full rules [here](#).

List of ARRL sections - [here](#) Remember: the new PE section means 84 for a Sweep!

Call History files – PVRC NC site [here](#) (2013) or AZ Outlaws file [here](#) (2019). W4KAZ pointed out the N1MM site has a 2019 file [here](#).

Log Due Dates – 7 days after contest: November 15th for CW, November 29th for SSB.

A pretty good N1MM+ Function Key file for SS CW

F1 RUN CQ,<ss> K3TN K3TN <ss>
 F2 Exch,#~B * 69 MDC
 F3 TU,TU *{CLEARIT}
 F4 K3TN,*
 F5 HIS Call,!
 F6 QSO B4,B4 *
 F7 NR,# B
 F8 ?,?
 F9 NR?,NR?
 F10 CK?,CK?
 F11 Sec?,SEC?
 F12 Wipe,{wipe}

F1 S&P CQ,<SS> ** <ss>{CLEARIT}
 F2 EXCH,#~B * 69 MDC
 F3 SEC,MDC
 F4 K3TN,*
 F5 HIS CALL,!
 F6 CK,69



2019-2020 Olympics Final Results – Mike N4GU

The 2019-2020 PVRC Olympics are in the books and we've started on another year already. But we need to recognize and honor the winners of medals for the 2019-2020 contest season. Congratulations to all and thank you for helping contribute to the success of PVRC.

Gold

AA3S K2YWE K3AJ K3MM K3WA K4FTO K4HQB K4XL K5VIP K7SV N2QT
N3DPB N3KN N3QE N4CF N4CW N4UA N4YDU N4ZR N6DW ND3D W3LL
W3YY W4VIC WA3EKL WT3K

Silver

AB3CV K2WK K3TD K3YDX K3ZO K4MI KB3VQC KK4R N1RM N3AC N3AM
N3CW N3MN N3XL N4GU N4RA NR4O NZ6T W2CDO W3IDT W3IP W3OU
W3UL W4WWQ WA3AER WX3B

Bronze

AJ3M EA5DFV K1BZ K2AV K3MTR K3TC K3TN K4GM K4GMH K4ORD
KA4RRU KC4D KE3X KE4S KG3V N0YY N1WR N3DUE N3HEE N3ND N4AF
N4MM N4PD NC3Y NN4RB NX3Z W1IE W2GPS W3IUU W3LPL W4BBT W4YE
W4ZYT WA4EUL WB2ZAB WB4FDT WK3A WS6X

One station deserves special recognition not only for his achievement but also to correct an oversight. Jose, EA5DFV, earned a Bronze medal - all while operating and contributing to PVRC club scores from his station in Spain. Not only did he do it for 2019-2020 but he also did the same thing for 2018-2019, which we overlooked (my apologies, Jose!). Jose will receive both medals this year. Don't let being 'out of circle' be an excuse

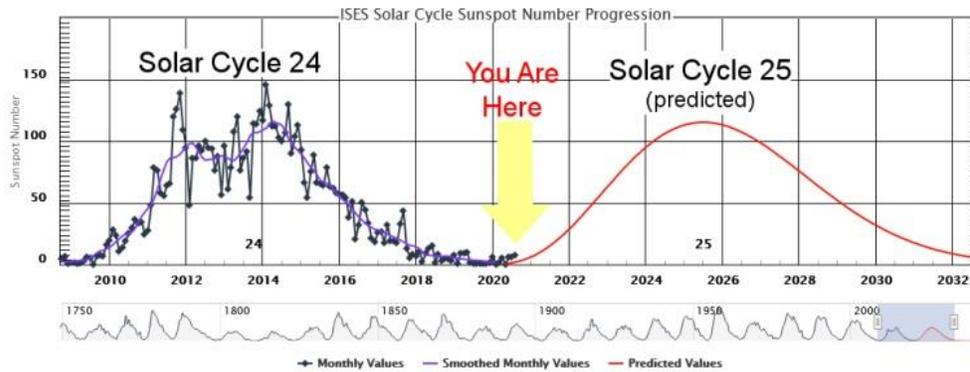
The Olympic rules have changed slightly for 2020-2021. Please review the new rules on the PVRC website so you can plan accordingly.

A handful of members just missed out on achieving medal status due to a lack of activities outside of contests. Please review the rules and see what you need to do besides entering contests. The simplest is to attend one or more PVRC chapter meetings or events and the virtual meetings do count for this. The other easy thing to do is to make a financial contribution to the club. PVRC has no dues and we depend on the voluntary contributions to pay for the 5M plaques and Olympic medals that are awarded each year.

Lastly, if you change your callsign during the contest season, please drop me a note about it. The Olympic results are based on the 5M data collected throughout the year and I need to know to combine your results from both calls for the year.
GL this season and Go PVRC!

Solar Cycle 25 May Look a Lot Like Cycle 24

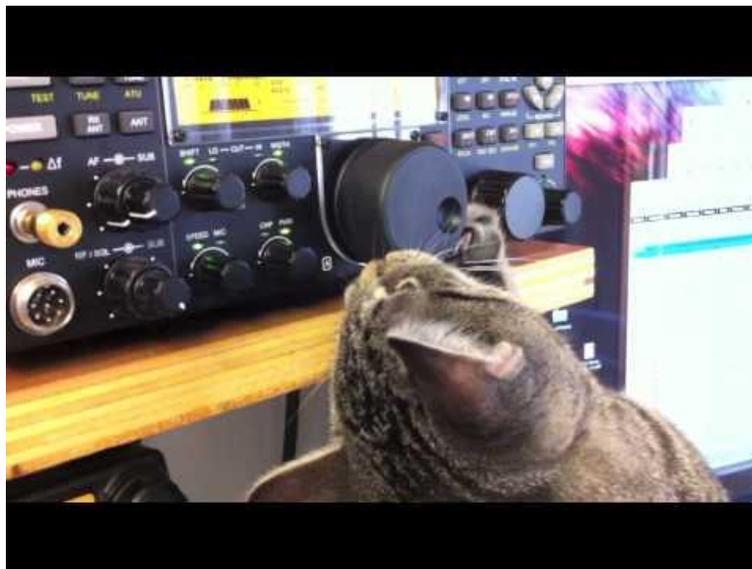
We all hope 2021 looks **nothing** like 2020, but after several years of speculation that the next solar cycle might not show up at all the consensus is starting to be that it may look a lot like, or even slighter more active, than Cycle 24.



Source: [NOAA](https://www.noaa.gov)

A paper with more detail is [here](#).

Video Showing How K9CAT Feels During Sweepstakes Sunday



Analyzing Antenna Alternatives for a Well-Balanced Station - Rick N0YY

Remember when life was easy, and we didn't know what we didn't know? Putting up that first dipole, wire, or vertical and calling CQ and having someone come back was all that it took to keep us stimulated in this wonderful hobby. Ah, but then we mature, learn more, get exposed to the more interesting aspects of this hobby. (Or is it an obsession, hmmm...) For many of us this is the point where we start the "...bigger is better" analysis. For others it is more of "...what will work" or "...what's good enough"?

I recently moved to SW Virginia (Hillsville) from East Central Iowa (Cedar Rapids) to be closer to family in NC. That meant dismantling my antennas and station and moving them east. I started doing all of the modeling and analysis associated with a new location. But I also needed to stare in a mirror and decide a number of things.

- Who am I and what do I want?
- How much am I willing to spend?
- What limitations might influence the decision?
- What do I know and what do I not know?

So, let's start with the first question. Who am I and what do I want?

I am a contester first and foremost. I like to go fast. That implies that I need to be loud as well. That fits the second objective of chasing DX. There my goal was consistent – I wanted to get in and get out as quickly as possible. I did not enjoy the endless hours of calling and not working the subject DX-pedition.

That leads to the second question: How much was I willing to spend? There are a lot of dimensions to this question, beginning with how much to invest in a home with property. I've checked the block on a small city lot and have opted for a more open environment in the country. Now the investment question comes down to towers and antennas. But as everything there is a balance. With more towers and antennas comes more maintenance.

Then there is the personal aspect. Can I commit to 10 or 24 or 48 hours each weekend? I've learned from years of single op and multi-op contesting that I derive more pleasure from the multi-op perspective. The team building and camaraderie are great motivators. In the cases where I choose to enter but likely not for a full-blown effort, I find that I am competing with my own parameters. How many QSOs last year? How many multipliers? How many hours did I operate? I try to beat my own goals. Sometimes those goals are entry class targets – other times they are doing the best I can for the time I chose to commit. It is imperative that I stay engaged to keep the skill set honed, but maybe not tax the "butt in chair" for each contest. Age introduces its own limitations!

Both issues have led me to "right size" my scope and opt for a single tower installation that will support my operational urges and still allow me to be competitive.

These positions have led to the final of the "personality" questions. What did I know? What did I not know? And how to find answers to both of those questions.

I have experimented with antennas for my 53 years of being a ham and for many years as a design engineer. In most cases it was a system of systems perspective that included the radio and the antenna as an operational system. I had a working knowledge of antennas, but what I lacked was the breadth of experience that others might bring to the table. I could think of no better way than to ask successful contesters what worked for them. That was the foundation for my "Informal Poll – Domestic Contest Antennas" that aired on the PVRC Reflector several weeks ago.

I got some really fantastic perspectives. Many were not antenna oriented but really helped me think through the alternatives and how to evaluate those same alternatives. Here are some of the general thought-provoking comments:

1. There is more contribution to score from "butt in chair" (BIC) time than any of the antenna alternatives. So the assessments of antenna alternatives are really part of how to maximize your score if you are already maximizing your chair time.
2. Call CQ. Yes, we all have heard the axiom "...if you aren't CQing, you are losing!" Rate is CQ dependent. Yes, S&P is a key tool as well - but CQing is the best way to optimize your score. And the ability to successfully hold a Run frequency is to be loud enough to both attract callers and to keep the wolves at bay. If you are calling endless CQs you tempt others to encroach on your run frequency. If you are successfully attracting response, the encroachment seems less intrusive. (That is a personal observation.)
3. How much do you want to spend? If you are already maximizing your BIC time and you are calling CQ with minimal S&P excursions, then \$\$\$ become part of the solution set. But before you focus on antennas, what about other technologies? Logging programs? SO2R? Don't get lulled into the "...but I can't do SO2R" argument. Think about Sunday afternoon when you call CQ for two or three minutes between responses. That is a perfect time to do S&P on another band. I am not talking about dueling CQs, but S&P.
4. Match your station capabilities to your operational capabilities. Auto-selected bandpass filters, lock-outs, power splitting, etc. all cost money and introduce complexity to your station. Make sure that your personal capabilities are positioned to take advantage of all those technologies.
5. This next comment deserves some thoughtful consideration. "...you can never have too many antennas." Hmmmm..... More towers, more supports, more antennas hung from a single tower,... That said, you do not want to compromise any given antenna by having another solution that would interfere with the primary antenna! It is key to DESIGN your solution. Know the implications of any given solution or alternative.
6. Don't let the perfect be the enemy of the good. Don't over analyze - try something and learn from that step.
7. RBN is your friend! This speaks for itself. Call CQ with different antennas higher up in the band. Watch the skimmers decode your signal and give you a signal strength as a "score". Switch antennas and call CQ again. Look at the coverage scores between the network of skimmers. Print the results. Record the SFI, A

and K indices, etc. Soon you will get a feel for what works and when. Do that at different times of the day. Overlay that with NAQP or SS and see what works when. Band opening. Path lengthening, etc. You will start to get a picture of your footprint under different conditions. (Note: You can do the same with FT8 by watching your strength score.)

None of these "comments" offered a technical solution but provided a perspective of how to make some of the critical decisions.

This all leads to what and how I would integrate a solution set for DX and domestic contest operations on a single tower. Was it even possible to do this on a single tower?

Modeling plays a key role in how to plan a single tower solution. I chose to start with the DX part of the equation. I modeled our prospective retirement homes using HFTA with a set of "standard" antennas and compared the results.

For reference, this is the baseline of my DX solution for a single tower installation. The tower is an AN Wireless HHD-80. This is an 80-foot-tall, heavy duty tower capable of handling 45 sq ft of load at 100 MPH. I will have a 20-foot 4130 Chrome Moly mast with 12 feet above the top of the tower. The antenna compliment is as follows:

- JK-801 – 80M Rotatable Dipole @ 90 feet
- JK-65 – 5 element 6M beam @ 85 feet
- JK Mid-Tri +40 @ 80 feet
- JK 121730 WARC Beam @ 70 feet
- Stacked M2 Halos @ 52 and 40 feet (omnidirectional coverage on 6M)

I will also have a HyGain HyTower multi-band vertical. This will include 160M / 80M / 40M capabilities as well as an independent antenna should there be a failure on the main tower.

I will also have a RX antenna solution – most likely a DX Engineering RX 4SQ.

From my initial analysis, I believe that the 80M rotatable dipole will serve both DX and domestic contest operations. At 90 feet the antenna has both high and low take off angle contribution. Having access to a full size 80M vertical will augment the high dipole if lower angle radiation is necessary. This leaves the focus on 40M and 20M.

So what are some of the alternatives to consider? Here are some of the comments provided by those responding to the Informal Poll. I am going to break these into three categories: 80M, 40M, 20M, and some general comments.

80 Meters

1. Antennas fall into a couple of categories:
 - a) Dipoles and Inverted Vees - seems like the preferred height is about 50 feet. That may be more limited to available supports than to the actual optimization.
 - b) Dipoles with reflector wires - this is well documented and can be found with internet searches.

- c) Optimum height for low take off angles is about 85 feet. I think that is why most solutions are somewhere between 50 and 65 feet - depending on the tower it is hanging from.
 - d) Vertical antennas - in most cases these were offered as solutions integrated with other horizontally polarized antennas to improve cross continent performance.
2. Non Resonant Antennas
- a) Ladder line fed dipoles - non resonant
 - b) OCF dipoles
 - c) Horizontal full wave loops

40 Meters

1. There are more antennas at play on 40M
- a) Dipoles and Inverted Vees either at 43-45 feet as the "optimum"
 - b) Dipoles with reflector wires
 - c) Crossed dipoles at 45 feet - both antennas were cut for one end of the band - this was not a way to try to enhance bandwidth of an 80/75 meter solution
 - d) 40M beams and rotary dipoles at 45 feet.
 - e) Delta Loops
 - f) Horizontal full wave loops

20 Meters

1. Most high-angle radiators for 20M fell into the following categories:
- a) Low beams (both fixed and rotatable) at 30-50 feet
 - b) Low dipole or Inverted Vee at 20 feet
 - c) Low beam of a stack

General Comments

1. Consider power splitting to increase your footprint. This includes the use of switchable stack matches, etc. This requires some thought. Do you want to change your effective radiated power by an S-unit or more of either radiator by sharing power? If you are a 100 W class station that may be the difference between holding a run frequency or losing it! This may be less an issue if you are a kW station. (Many years ago a regular SS top ten type noted with regard to splitting power/antennas: You may lose 3db in one direction but gain 10db in the other. If you're already S9+20 toward one target, ok....you'll only be S9+17 but you might be S9 the other way, now.)
2. There was an interesting discussion about doing the switching at the tower vs bringing all of the feedlines into the shack and being able to dynamically "rewire" things to match conditions. To me this is an opportunity to mis-wire something and bring the contest to a smoky end - especially when you are sleep deprived. BUT it is more versatile!
3. There were a number of multi-tower responders that appear to have a lot of flexibility with pointing one antenna in a single direction while selecting another antenna at a different height in another direction. Those same towers had different wire antennas at different heights for higher angle radiation. While these are more optimum station designs, they were different than the majority of responders.

- I was also reminded that I needed to consider receiving antennas since I was "focused" on low bands. The responders offered perspectives on large horizontal loops, K9AY crossed loops, SAL-30, and RX 4SQ antennas. Those that commented offered that the SAL-30 was a "better" performer for domestic contests. This will be something to explore further - but is somewhat outside of my high angle transmit antenna query.

What was interesting to me was the lack of full wave loop antennas in the responses. There may be a perception that full wave loops, mounted vertically represent low-angle DX antennas. For clarity, there were references to using horizontally mounted , full wave loops. These loops have different shapes and are installed as NVIS antennas.

I still needed a way to model the different alternatives to help support contests like SS or NAQP. I could not find a modeling tool that was equivalent of HFTA for domestic paths. I have watched the N6BV You Tube video illustrated on the PVRC Resources tab. I need to do a bit more work with VOACAP as it may help resolve some of the decision alternatives.

I also wanted a way to visualize the problem I am trying to solve. Using a map of population density helps illustrate the need for an antenna that helps resolve the close-in capture of east coast stations. From SW Virginia there are three areas seeking a solution. First is the very close in stations in New York/New Jersey and Ohio/Michigan. Then there is another more distant requirement for stations in New England, Florida, and Chicago. And finally stations in Minnesota, Missouri, and Texas might benefit from an antenna that includes the moderate distances. Fig 1. Provide a visual Illustration of the density differences between the eastern and western halves of the US.



Fig 1. Population Density of the United States and Canada

What is important to note is that both rate and multiplier contributions are illustrated by the map. In order to optimize rate, a consistent signal engaging the eastern half of the US is necessary. But equally important is that an adequate signal is presented for the multipliers in the less populated half.

Based on the visual analysis it appears that an antenna that exhibits high angle characteristics is needed for a station in SW Virginia to capture the close in east coast stations. Let's take a look at what antenna heights might lend themselves to radiating with a high angle component.

Being a visual learner, I have been using a graphical representation of takeoff angles for dipoles at different heights. That graphic is shown in Fig 2. The source for this graphic is from [here](#).

It provides a graphical perspective of antenna patterns at different heights. Note that takeoff angles are consistent for all heights up to 0.25 wavelengths. The difference is in terms of loss for very low mounted antennas. At 0.25 wavelengths the loss is neutral.

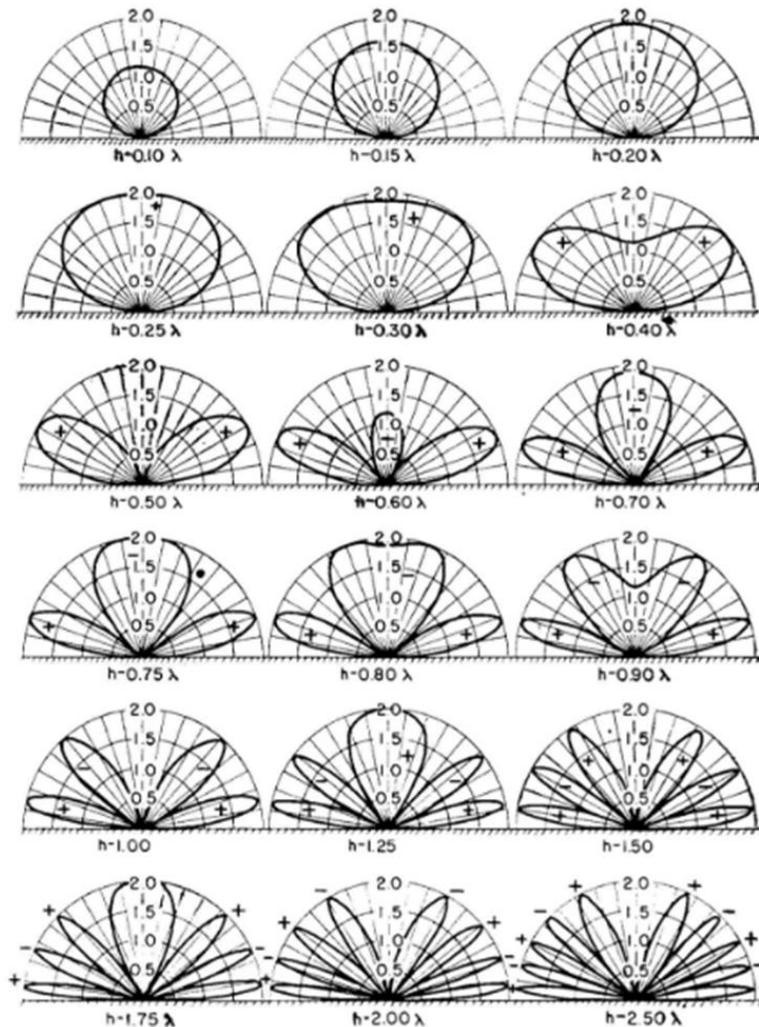


Fig 2. Vertical polar radiation diagrams in the plane normal to a horizontal dipole antenna

At 0.3 wavelengths the takeoff angle is optimized at 50 degrees and stays high through 70 degrees. Using 0.3 wavelengths for 40M the height of the dipole is 43 feet. Similarly, the height for the 20M antenna would be 21 feet. In discussions with different operators they all seem to identify a low dipole is appropriate to supplement a higher beam antenna.

Frank W3LP, offered that W3AO uses AB-577 masts for their Field Day solution with all antennas mounted less than 48 feet in height. This includes their two XM-240 40M beams. This further supports the 43 foot height for 40M antennas.

As you go higher than 0.3 wavelengths, you begin to introduce more low take off angle components. This is an area to further explore for a potential gap in the "near Midwest" trajectory.

I noted with interest that the Poll responses seemed to all indicate dipoles, Inverted Vees, etc. I was a bit surprised by the lack of delta loop or quad loop use for high angle radiation. While the more traditional feedpoints favor low angle radiation for full wave loop antennas, horizontally polarized full loops can be part of the solution sets. Looking at the population density map it appears that an omni-directional antenna with high angle radiation characteristics might fit the bill very well. (To be clear, an equilateral triangle delta loop is not perfectly round in its pattern. It is a bit of a "squashed" circle with about a 1.5-3.0 dB loss off the ends of the loop.)

Enter WA3EKL who offered me of an article from the mid-1070s that outlined some of the radiation characteristics of dipoles and loops. I returned to this article to review the impact of antenna height vs take off angle. That analysis was reported [here](#).

The article "Loop aerials close to ground" by L.V. Mayhead, G3AQC provides some interesting perspectives. (see pages 298 through 301) The article establishes a reference using a dipole, vertical, and inverted vee to remind us of high angle versus low angle considerations. Then a more detailed look at different configurations of full wave delta loops are highlighted. The article discusses apex up and apex down and different feed methodologies.

Alan also offered insight into his many experiments with loop antennas and the impact of feed point, configuration, and height above ground. All of this is very valuable.

Most of us are aware of the apex up, fed a 1/4 wave from the apex for low angle applications of the delta loop (vertical polarization). This is the classic single loop used for low bands. But the focus for high angle radiation comes from the apex or base wire fed in the center (horizontal polarization). Note that these antennas can be "steered" by choosing the height of the antenna to include low angle components. (Yes, you will have to look closely to see the low angle lobe develop on Figures 6-9.) The apex up, apex fed delta loop minimizes the low angle component - Figure 6. For my case the apex would be at 47 feet which would allow the base wire to be 6 feet above ground and a 41-foot vertical profile for the equilateral delta loop. You can adjust the dimensions a bit to "squash" the loop but it comes at a cost of VSWR bandwidth. Feedpoint impedance is described as 200 ohms. (Note: When you look at the pictorial representations you will note that the delta loops are not equilateral and have been "squashed" to fit in a 1/2 wavelength height above ground.)

To be clear, I take the feedpoint impedance, and take off angle elements to be approximations. Height above ground, soil conductivity, surrounding items (e.g. tower vs fiberglass mast vs trees), etc. will all have an impact. But this is the configuration that minimizes low angle components and optimizes high angle components. The loops illustrated are shown to be mounted at 1/4 wave including the base wire being close to ground - that forces some of the dimensional adjustments from a pure equilateral triangle.

For my solution, I am strongly considering an apex up, apex fed equilateral delta loop with the apex at 47 feet and the base wire at 6 feet. I have gotten guidance that I should consider the apex down, bottom fed equilateral delta loop to allow a bit of lower angle radiation. This guidance was offered as a way of extending the "close in" coverage to include the eastern Midwest on that antenna. Again the "base wire" would be at 47 feet and would likely be made from aluminum tubing (very similar to a rotary dipole) with wire ends that come to the feed point at 6 feet above ground. My 2 element 40M beam would be the real low-angle antenna, but my concern is how the apex down delta loop would impact the performance of the 40M beam at 80 feet. But I am reminded of the perfect being the enemy of the good. So, it is likely that I will try both over time. I can evaluate the impact using RBN scoring as noted above.

The 20M solution may be a derivative of this analysis. However, I may orient the 20M antenna perpendicular to the 40M version to optimize the New England/Florida coverage. That 1.5 to 3.0 dB "squash" is not likely to be noticed at the close in "Midwest" coverage area.

The appeal of using the equilateral delta loop is better defined coverage and a known quiet antenna for receive. I am taking note that each of the delta loops should be grounded when not in use to minimize the impact to the primary "DX" antennas. Again, I want to minimize any unintentional degradation of the primary antennas.

And finally, power splitting: I want to experiment with being able to drive the antennas independently and drive them during band changes. Mid-day with the path is shorter, later in the day when the path lengthens, etc. Will the impact be an incremental loss of the power sharing or will it be more. Or as noted earlier, will it provide an enhanced footprint that allows a much better coverage volume. My gut tells me that 40M will be the area with the greatest impact. How will I know the impact of single and dual driven antennas? Yep... I'll let RBN be my friend. I'll call CQ higher in the band and copy the spots from the different Skimmers with their signal reports embedded. I can switch configurations and note the differences in signal strength at different nodes. I'll vary time of day, capture SFI/A/K indices, etc. in an attempt to get an idea of how each antenna performs and to get an idea of its footprint.

From a domestic contesting perspective this will allow me to make informed decisions on what class to enter, how much power to use, etc. Even those with the benefit of having an antenna for a long period of time could benefit from this kind of data collection. Identify peaks and nulls – especially true for non-resonant antennas used on multiple bands. Check your beam – where does it start to perform and where does it fall off. There are great tutorials on how to use RBN. You can do similar data capture using FT8 by noting strengths of signals copied – but my experience is that it is not as precise.

So with all of that said, I again want to thank all of those that responded to my "call to arms" with the Informal Poll. Three that deserve special recognition are WE9V, WA3EKL, and WX3B for their multiple, detailed exchanges that forced me to open my thinking and research.

Low Solar Activity, High Altitude Red Aurora – Spaceweather.com

From [Spaceweather.com](https://spaceweather.com):

STRANGE RED AURORAS: Spoiler alert: We do not know the answer to this question. *Where did all the red auroras come from?* For much of mid-October, Earth's magnetic field has been very quiet. Extremely quiet. There should have been almost no auroras at all, yet around the Arctic Circle, photographers recorded scenes like this:



[Rayann Elzein](#) of Utsjoki, Finland, took the picture on Oct. 17th. "I saw red almost every night for a whole week with similar displays on [Oct. 12th](#), [13th](#), [14th](#), and [15th](#)," says Elzein. "On each occasion, geomagnetic activity was very low (with [K-indices](#) no greater than 0 or 1)."

Red auroras are rare. They form near the top of Earth's atmosphere when particles from space strike oxygen atoms 150 km to 500 km high--much higher than normal green auroras. [As Les Cowley explains](#), at that high altitude, very slow atomic transitions which produce red photons are easily interrupted. Even experienced observers rarely see them.

Elzein has been chasing auroras in Finland for 10 years. He prides himself on going out in all conditions--even when geomagnetic activity is low. "I can't recall ever seeing so much red on top of the green layer before," he says.

In Tromsø, Norway, aurora tour guide [Markus Varik](#) had a similar experience. "Activity was extremely low on Oct. 17th when these pink and red colors appeared. After years of guiding, I have never seen anything like it."



"The auroras appeared milky-white to the naked eye, but on the camera they were vivid pink," says Varik.

The common denominator seems to be ... quiet. "The red was most apparent during the lowest geomagnetic activity--that is, when [Bz](#) was positive and the solar wind speed was slow (at or below 300 km/s)," notes Elzein. "The solar wind was also dense, with proton densities above 15 p/cm³."

From the Wayback Machine: Post-Meeting Dinner – Ed W3EKT

Ed W3EKT was doing some clutter reduction and found this oldie-but-moldie, from the days of going to the Italian restaurant (Topolinos?) after the PVRC meetings at Fred's house or at the church in Temple Hills. Circa 1989 or so – bonus points if you know Fred's 6 character call and Don/John's 4 character calls.... Tnx to N3AM for photo touchup.



Left to right: An unknown HS operator; Fred Laun, K3ZO; Don Daso, WA8MAZ; and John Pescatore, WB2EKK, dine at one of W3GRF's favorite Italian restaurants (or so claims K3ZO), someplace in Maryland.

PVRC 160M DXCC Challenge Standings – Frank W3LPL

Below are the 160M DXCC Challenge totals for PVRC members, transcribed from the ARRL DXCC [standings](#) 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	CALL	DXCC
W8LRL	344	K3WA	209	N4PY	135	N4NW	105
W4ZV	338	AB3CV	206	W4VIC	135	W3NRJ	105
W4DR	336	W0VTT	206	AA4NC	132	W3TMZ	104
W3UR	321	W3GG	200	N3KS	129	W3EKT	102
W3LPL	316	K3JT	193	N3RR	129	W4JVN	102
K4CIA	306	N4DB	191	K3XA	128	K1BZ	101
K4ZW	302	K4FJ	190	K5VIP	128	KE4S	101
W4PK	287	K5RT	188	N3QE	127	K3TZV	100
K3SX	285	K2PLF	174	W0YVA	127	KC4D	100
N2QT	283	W4FQT	172	KM3V	122	N3AF	100
KG4W	269	K1GG	171	N3MK	122	W4NF	100
K4SO	268	N4XX	169	W2GG	121		
K5VRX	256	K3KY	166	K2BA	120		
W3DF	252	K4XD	165	W4PRO	120		
WB3AVN	245	N4QQ	163	W4HZ	119		
N3NT	238	K3AJ	161	N3UA	118		
WX4G	238	N8II	153	N3ND	117		
K1HTV	236	W2RS	152	K3OSX	114		
KG7H	236	N5JB	149	K5RJ	114		
W3KX	224	K4RG	147	N4DJ	113		
WS6X	221	N3RC	145	K1KO	112		
K1AR	219	N3KK	144	N4TL	112		
K5EK	219	N4GG	144	W3MR	111		
K4XL	215	K3TN	143	N3HBX	110		
W4NL	214	NR4M	143	NA1DX	110		
W3LL	213	WA2BCK	143	KA4RRU	107		
W3YY	213	W2YE	138	W3KB	107		
W3YY	213	W3BW	138	W4ZYT	107		
N4MM	212	W4YV	138	K3WC	106		
N1LN	211	N3OC	135	W2GPS	106		

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](#)

November 2020	
+ North American SSB Sprint Contest	0000Z-0400Z, Nov 1
+ Ukrainian DX Contest	1200Z, Nov 7 to 1200Z, Nov 8
+ ARRL Sweepstakes Contest, CW	2100Z, Nov 7 to 0300Z, Nov 9
+ WAE DX Contest, RTTY	0000Z, Nov 14 to 2359Z, Nov 15
+ OK/OM DX Contest, CW	1200Z, Nov 14 to 1200Z, Nov 15
+ ARRL Sweepstakes Contest, SSB	2100Z, Nov 21 to 0300Z, Nov 23
+ CQ Worldwide DX Contest, CW	0000Z, Nov 28 to 2400Z, Nov 29

Editor’s Last Word – John K3TN

Thanks to Rol K3RA, Mike N4GU, Rick N0YY, Frank W3LPL and Ed W3EKT for contributions to this issue of the PVRC newsletter.

Solar cycle 25 is starting to ramp up, 15 meters is starting to come back. By the spring contest season, with any luck we may be talking more about the Sun’s corona and less about the Coronavirus. WWII veterans brought back the terms “SNAFU” and “FUBAR – I think the next generations of hams will say “That P5 pileup was a real 2020” and “That windstorm really 2020ed my 40M beam.”

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](mailto:jpescatore@aol.com).

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.

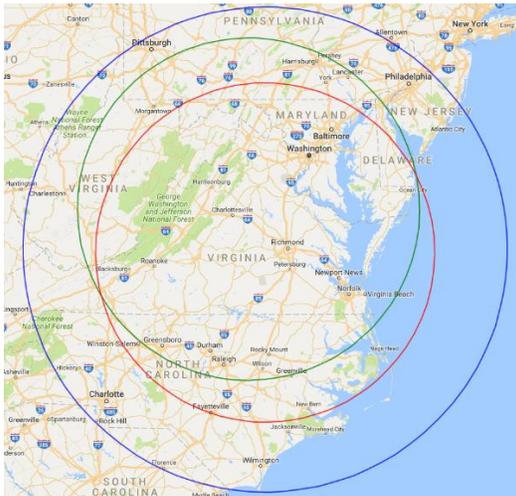
Direct donations to PVRC via Credit Card or PayPal may be made by clicking this "Donate" button and clicking the next Donate button that appears on your screen:



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Eyeball QSO Directions

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



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

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

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



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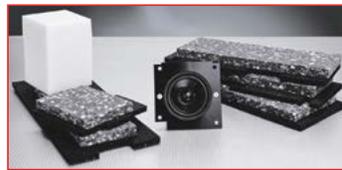
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DXE-DVA-20B-P



PNE-138

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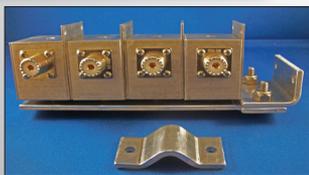
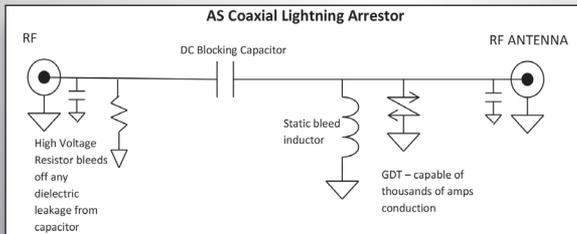
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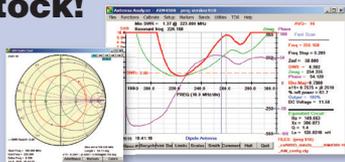
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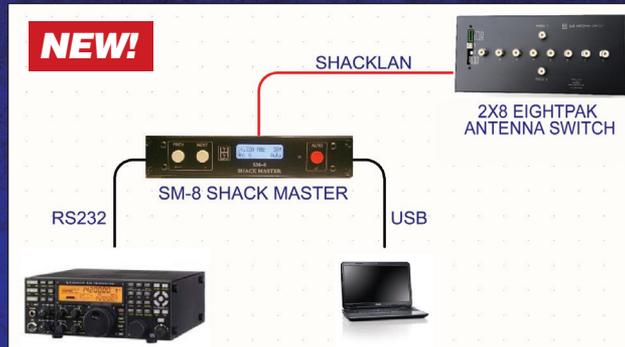
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FTM-400XD | 2M/440 Mobile

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- Packet 1200/9600 bd ready
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- Bluetooth
- MicroSD slot
- 500 memory per band



FTDX3000 | 100W HF + 6M Transceiver

- 100 Watt HF/6 Meters
- Large and wide color LCD display
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- Band Scope
- Built-in Bluetooth
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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



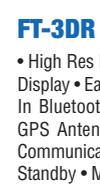
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Call For Special Price!



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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

Call For Special Low Price!



\$700
INSTANT SAVINGS

TS-890S | HF/50MHz Transceiver

- Receive performance on a whole other level from narrow bandwidth roofing filters that only full down conversion can provide
- CW Morse code decode/encode possible with stand-alone unit
- 150dB Blocking dynamic range (BDR)
- Expanded touch operation scope
- Kenwood Sky Command® II Support
- Remote operation achieved without host PC Direct remote-control function (KNS)



\$25
INSTANT SAVINGS

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!

TH-D74A

2M/220/440 HT w/D-STAR!

- D-STAR compatible
- APRS ready w/ built in GPS
- Color weather station information
- Built-in KISS mode TNC
- High-performance DSP voice processing
- Standard compatibility for Bluetooth

Call For Low Price!



\$50
INSTANT SAVINGS

TH-K20A | 2M Handheld

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

Call For Special Low Price!



\$300
INSTANT SAVINGS

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



\$25
INSTANT SAVINGS

TM-281A | 2M Mobile

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

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