Mt. AIRY V.H.F. RADIO CLUB, INC.

CHEESE BITS

ARRL Affiliated Club

W3CCX
CLUB MEMORIAL CALL

Volume LXII **November 2019** **Number 11**

PREZ SEZ:

Are you ready for the January contest? Are your antennas rotor and feedlines in good shape? There's still time before the weather makes working up on the tower completely impracticable.

I had an interesting experience recently with my Pay As You Go cell phone. Using this type of phone allows me to keep my costs to less then $10 a month. Can you say "some HAMs are CHEAP "? Unless you have a credit card on file and have signed up for "Auto Renewal", every three months, you must buy a Card complete with a PIN number to update the phone with 90 days of usage, and additional minutes of talk time. Unfortunately the App that allows me to enter the new PIN (Google Play) became corrupt and will not reinstall. Since I have had the phone for several years and have talked to the HELP DESK in the past, I was aware of a possible back door. If you text 611611 and then type BALANCE in the text box it tells you the current balance. Just for a lark I next typed in ADD. It then asked me "do you want to add to this account (1) or a different account (2)"! I chose (1). It then asked for the PIN on the Card I had purchased. It accepted my entry and told me my account had been updated! Believe it or not, this method was actually easier and updated my account quicker than when using the app through Google Play!

What were some of the takeaways from all this?

A) Maybe I gave up using the COMMAND LINE on my computer too soon and should put up a free version of UNIX in the shack. HI.
B) There's usually more than one way to do something when your using a "computer". When in doubt just try something (just like your grand children would do!)
C) Never give up trying new ways or new things even though "old ways" may be well known and comfortable.

I think this last point is probably the most important as I grow older. It's too easy to just do it the way you have always done it. There's nothing wrong with using AM for some fun on 40 meters or using CW to talk to an old friend. But don't forget to try something different like a "HackRF One" or setting up FT4. Need some ideas? Listen to what some of your fellow Packrats are doing.

The January contest is just around the corner. Need to borrow some equipment for the upcoming contest? Let the club know at the November general meeting. Put the January contest on the Family Calendar. This year the November General meeting will feature "January Contest Planning" as the subject. Mike N2DEQ will lead the evening and call on several other Packrats to help explain this year's strategy. Expect to find Packrat oriented documentation on our web site soon!

One last thing to put on your Calendar is the upcoming MUD conference. Dates are October 15th -18th, 2020 **at the Holiday Inn**

Pack Rats **CHEESE BITS** is a monthly publication of the
Mt. AIRY VHF RADIO CLUB, INC. –Abington, PA.

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PACKRAT BEACONS - W3CCX/B
Located at FN21be except 2304 which is at FN20dh
50.080 144.300 222.062 432.290 903.072 903.3 1296.264 2304.3 3456.200 5760.3 10,368.3 MHz (red = temporarily off the air see https://www.packratvhf.com/index.php/on-air for details)

MONDAY / TUESDAY NIGHT NETS
VHF/UHF Monday:

TIME	FREQUENCY	NET CONTROL
7:00 PM	224.58R MHz	WR3P FN20kb Ralph
7:30 PM	50.145 MHz	N3RG FM29ki Ray
8:00 PM	144.150 MHz	K3GNC FN20ja Jerome
8:30 PM	222.125 MHz	KB1JEY FN20je Michael
9:00 PM	432.110 MHz	WB2RVX FM29mt Mike

Microwave Tuesday:
7:30 Coordinate QSO's on 144.260 for all Microwave bands you'd like to work. Also setup Q's at w4dex.com/uhfqso or **Packrat Chat Page W3SZ.COM**
Visit the Mt Airy VHF Radio Club at: www.packratvhf.com or www.w3ccx.com

Washington-Dulles International Airport, Sterling VA. This will be a joint conference of the Mt Airy VHF Radio Club (Packrats) and the North East Weak Signal Group (N.E.W.S.). More details as they become available.

We need more presenters for MUD. If you have an interesting project consider putting together a presentation. If you are asked to help out with planning or working at the conference, please seriously consider doing so. The club continues to thrive because of the many volunteers.

The December meeting is our annual Packrat Holiday Social. Come early – 6:00pm and come hungry! Encourage your fellow Packrats that may not come to every meeting to attend this one. Bert K3IUV will be showing some slides and films. This is sure to refresh old memories and remind us of old friends that are no longer with us.

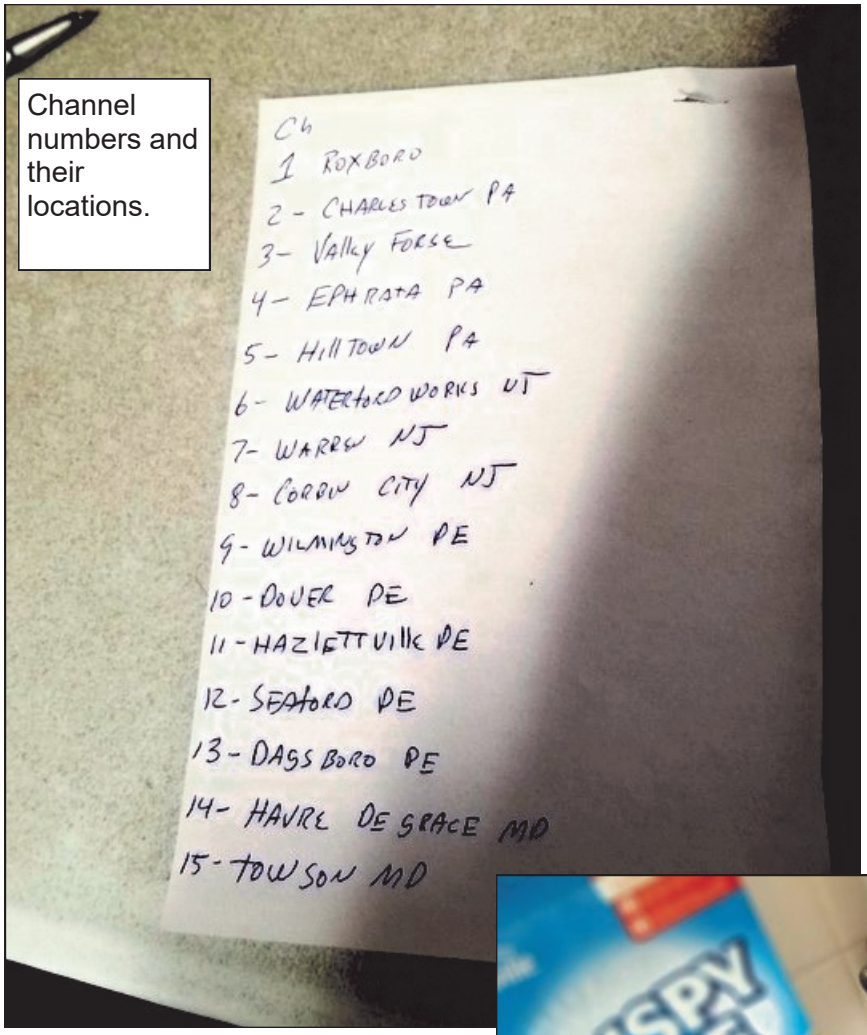
Don't forget to save some time to work on that project buried under all that stuff on your bench. Have some fun, learn more. Build something!

73, George KA3WXV

October "DMR" Meeting Pics

John KA3LAO presenting info and answering questions on what DMR is, how it works and answering (many) questions. This subject is very complex, but fortunately most of the details are handled by experts who configure the repeater interconnections.
Nick N3YMS (not shown) also was part of the presentation.

Setting up "Code Plug" configuration info in some HT's to be loaned out to Packrats

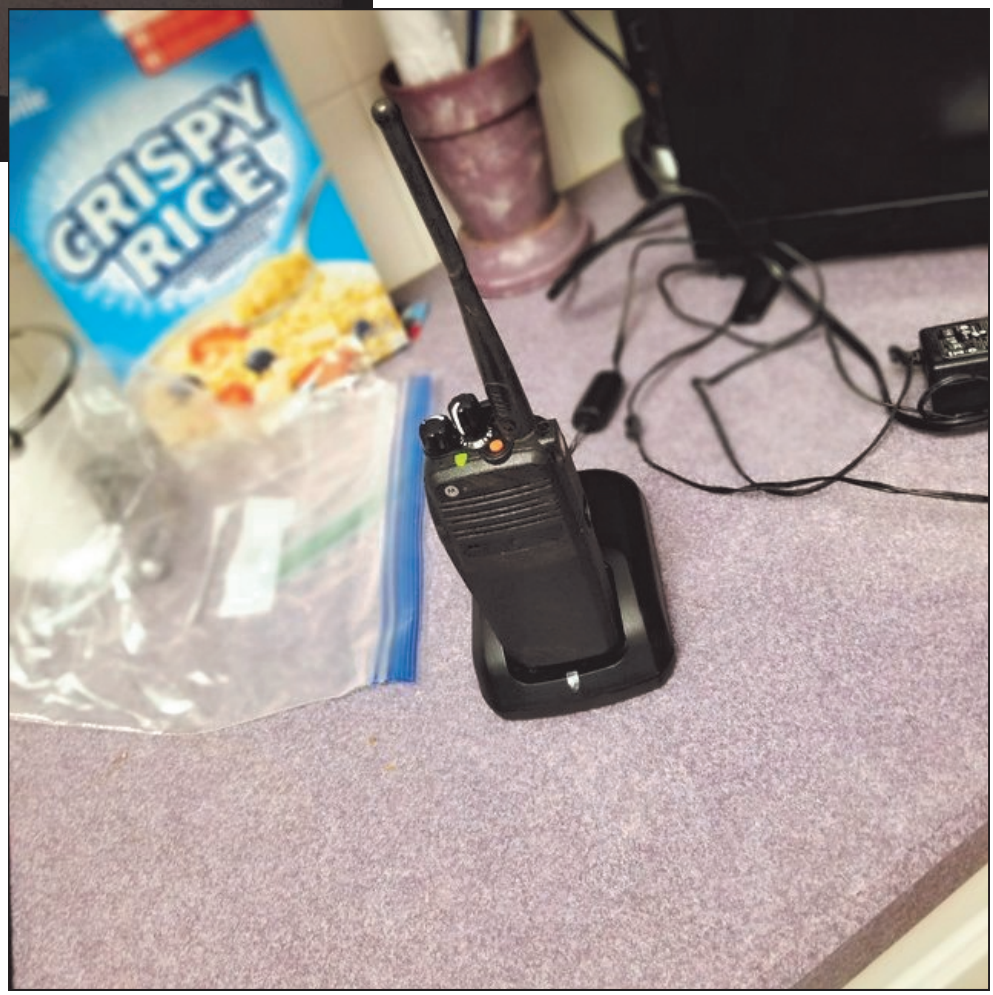


Channel numbers and their locations.

If you log into the "packratvhf.com" website, you will see on the left side of the page a link to an article authored by Jeff DePolo WN3A and John Sichert KA3LAO. It contains their recommendations regarding use of the Packrat DMR talkgroup as a PDF attachment. Their email addresses are at the end of the article if you have questions for them. When John KA3LAO sends me a copy of his slides from the November Packrat general meeting, I will edit it into a PDF and post it to the website. As a reminder, there are a couple of DMR articles in the Tech Articles section of the website.

Jeff, John, Nick N3YMS, and I encourage all DMR capable Packrats to make noise on our DMR talkgroup. Ultimately, it will be a place to reach Packrats near and far.

73, Michael KB1JEY



2 Meter Stacked Dipole Array

(A Great Adjunct to a Directional Antenna)

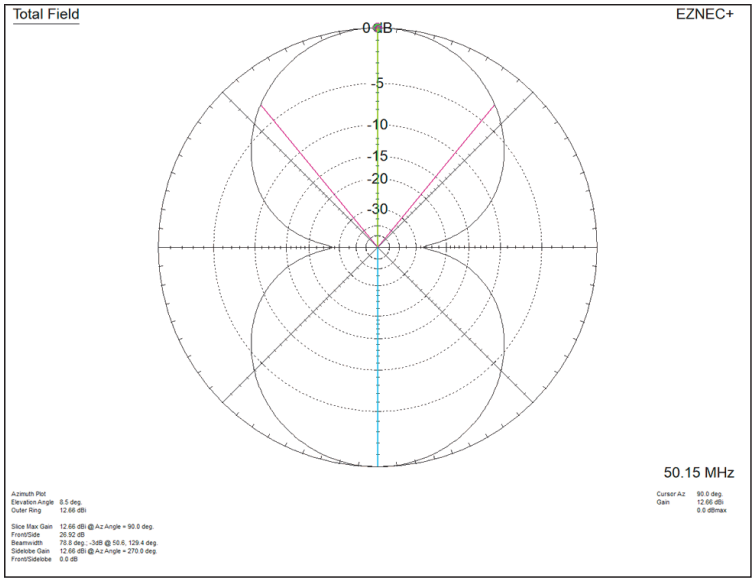
by Peter WW2Y

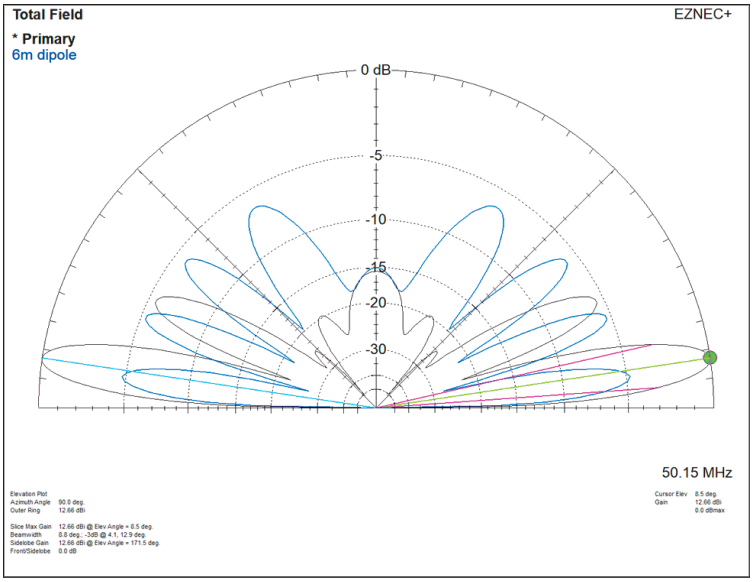
Background

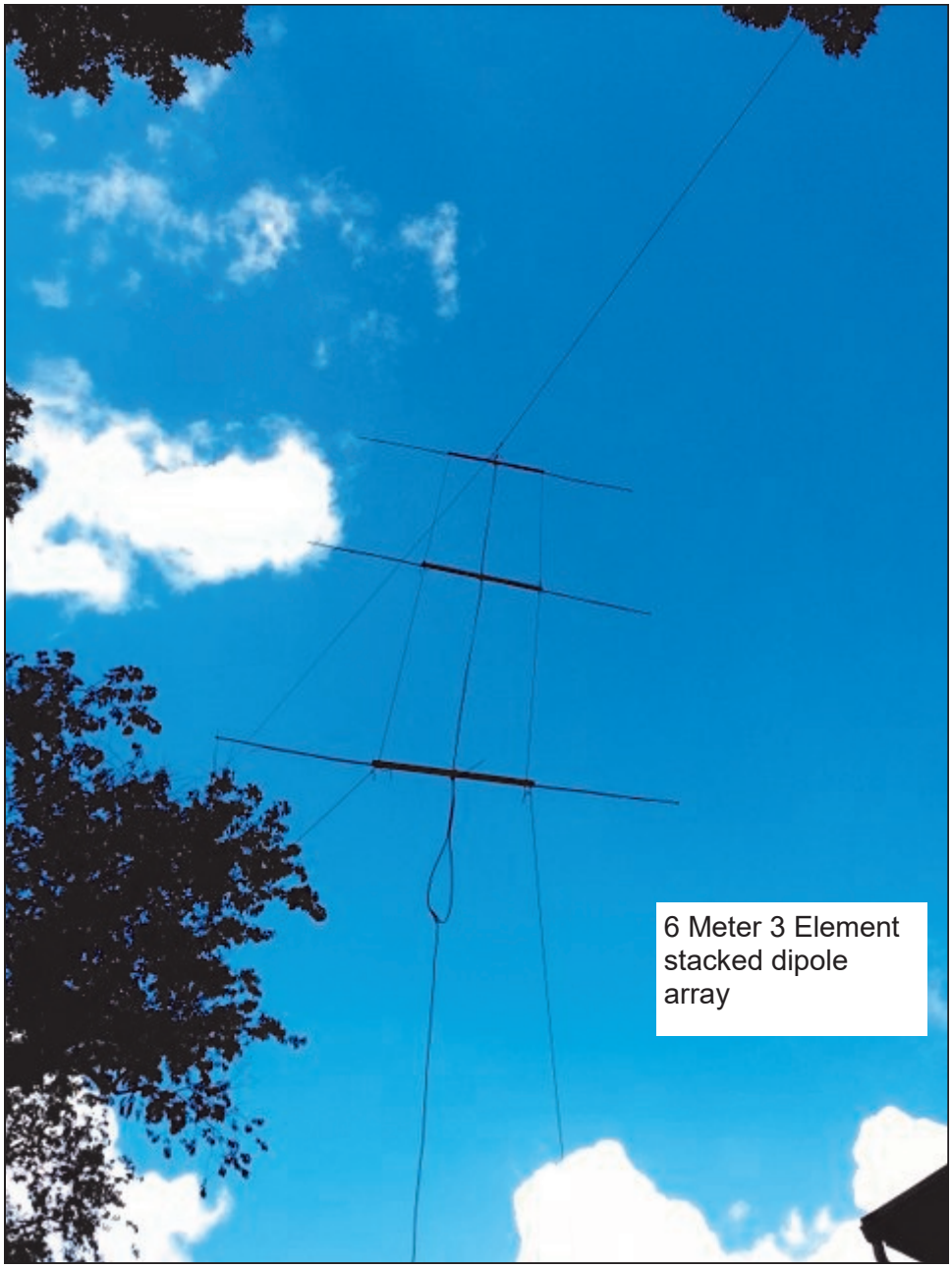
During middle 1980s John, N2NU successfully built a three band Lazy H Array for 20 through 10 meters strung between two relatively tall trees at a height of 65 feet using #12 solid copper household wire and ropes. The array was fed by a 450 ohm balanced feedline attached to the center of a 450 ohm phasing line which was connected between the two coherent phased radiating elements. The other end of the feedline was attached to a balanced antenna tuner to allow coverage on three bands. Spacing between the 34 foot long dipole elements was optimized for 15m at ½ wavelengths apart. Design and construction details came from the W6SAI Radio Handbook from early 1970s. Obviously, it outperformed a single dipole at the same height as the top radiating element of the array. Rob, K2WI and I built a single band 20m version of the same antenna for the multiplier station during our DX contest operations at WW2Y during 1990s (and later at K2WI). It was designed to outperform a three element triband Yagi (as predicted by AO antenna modeling software) that was attached to a house chimney. This array consisted of two half wave dipoles fed in phase by a transposed 450 ohm ½ wavelength balanced line, connected between the elements. Physical spacing between the elements is slightly less than ½ wavelengths, dictated by the velocity factor of the phasing line. The array was fed by coax using a 1:1 balun attached at the bottom element. Around 2010, Rob wanted to improve his UHF TV reception in his living room. He constructed an extended Zepp Lazy H antenna with a planar reflector tacked to a wall. I was intrigued by the small relative size of the array and wanted to build something similar one day.

In August 2016, John, N2NC and I wanted to operate in the 6m Fall Sprint but the N2NT station that we usually borrow wasn't available for that weekend. Andy (N2NT) needed to operate the Work All Europe CW contest to qualify for WRTC that takes place the following summer. On the Wednesday before the contest, I asked John, how about making a three stacked dipole array at your house for the Sprint this Saturday? He agreed. I quickly assembled the antenna elements out of 1' X 2" pine lumber, 1/4" bamboo extensions, #14 THHN house wire and cable ties. I used screw eyes for the 1/8" element support ropes. European terminal strip connectors and two 300 ohm ½ wave phasing lines were used to connect the elements. We assembled the antenna and placed the catenary support rope up 45 feet between two trees on Saturday morning in the scorching heat. It was completed and tuned by 4pm. The antenna resembled a Lazy H, but had a third element that was added for more stacking gain. It was fed at the bottom element and had transposed ½ wavelength phasing lines in between the elements. The feed point impedance was measured to be quite low since the three elements are electrically fed in parallel. A ¼ wave 35 ohm matching section was used to match the 50 ohm feedline. The antenna worked better than expected and it didn't hurt that we had a decent sporadic E opening for the sprint. We took turns operating during the sprint using our separate call signs. Both of us made 167 contacts and over 50 grids combined. The following morning, the band once again was open and several Europeans were worked. John noticed the antenna's usefulness for making meteor scatter contacts using MSK144 due to its broad azimuth beam width. The array exhibits a significant amount of rejection off the sides. The gain of the array is almost 5dB compared to a single dipole when the single dipole is at the same height as the top element of the stack. See azimuth and elevation plots below.

2 Meter Stack cont'd







6 Meter 3 Element stacked dipole array

2 Meter 6 Element Stacked Dipole Array

In late spring of 2017, somewhat flushed with success of N2NC's three element 6 meter stacked dipole array, I wanted to design and construct an expanded array for 2 meters using twice the number of stacked elements for additional gain. I knew from experience in building broadside and end fire driven vertical arrays for 80 and 160 meters with three or more element sets, that wider spacing between the elements would allow them to significantly increase gain by compressing the main lobe. This can be done until the point where the side lobe just starts to become significant.

Antenna modeling showed element spacing in the neighborhood of 1 wavelength between the elements would be optimum for a 6 element array approaching five wavelengths in height. Using 1 wavelength 300 ohm phasing lines between the elements would mostly satisfy this goal. Actual spacing again is dictated by the feedlines velocity factor (about 0.9).

Two challenges would have to be overcome building the array. One is dipole element placement along the phasing lines starting from the bottom without introducing progressive phase errors along its length, and the other is to match the impedance at the bottom of the 5 wavelength phasing line with six elements effectively in parallel.

So the first challenge is to tune the phasing lines. I used a single two conductor European barrier strip attached to the end of a 50 ohm balun on one side. The other side is connected to an untrimmed 300 ohm 1 wavelength phasing line. A 50 ohm terminating resistor is connected to the far side of the second two conductor barrier strip that is connected to the far end of the phasing line. The phasing line and the termination assembly are suspended off the ground and clear from conductors to prevent parasitic coupling effects. An antenna analyzer was used to find the frequency where the 50 ohm resistive match appeared on the swept display. Since the phasing line is 1 wavelength long, there will be a dip at about 72 MHz, since the phasing feedline is ½ wavelengths long or 180 degrees at 72MHz. The second higher dip near and below 144MHz is of interest, (360 degrees). To tune, just disconnect the European connector with the 50 ohm termination and trim back the phasing line. Reattach connector with termination and sweep for the new result on the display and repeat if necessary. Once a dip for 144.250 MHz has been achieved, remove the termination resistor and attach the second untrimmed phasing line in its place. Connect the termination plus the second untrimmed phasing line on the third connector and again check the frequency where the 50 ohm resistive dip occurs. Trim back the second phasing line that is connected to the first one for a dip again at 144.250MHz. Eventually, the swept display dips will become more numerous and sharper in width as the phasing lines are progressively connected together. This tuning method ensures proper element placement at the connector junctions without incurring progressive phase error. Then just repeat the procedure for the remaining 3 phasing lines to be added to the previous two.

The second the challenge is how to match very low feed point impedance to the 50 ohm transmission line. Using folded dipoles for achieving significantly higher individual feed point impedances totaling 50 ohms when six are in parallel would have met this requirement. However, tuning the elements for resonance would be much more tedious than trimming standard dipoles. A solution was to use ¼ wave 300 ohm transformers between the phasing line attachment location and the feed point of the elements. This raised the low feed point impedance of each element to approximately 1600 ohms at each phasing line attachment location. Then a ¼ wave 150 ohm matching section, consisting of two 300 ohm lines in parallel is connected between the bottom end of the phasing line and the 50 ohm balun. The balun consists of two single turn 31 mix ferrite snap on cores spaced about 2 inches apart on the 50 ohm coax next to the 150 ohm line section attachment point.

This antenna was assembled, rigged, and partially tuned in one morning at N2NC's location, we but ran out of time for further tuning and testing. A few weeks later the antenna was raised up at N2NU's QTH during the afternoon to have the 150 ohm matching section trimmed for a better match. I also tuned the elements for resonance at the desired frequency.

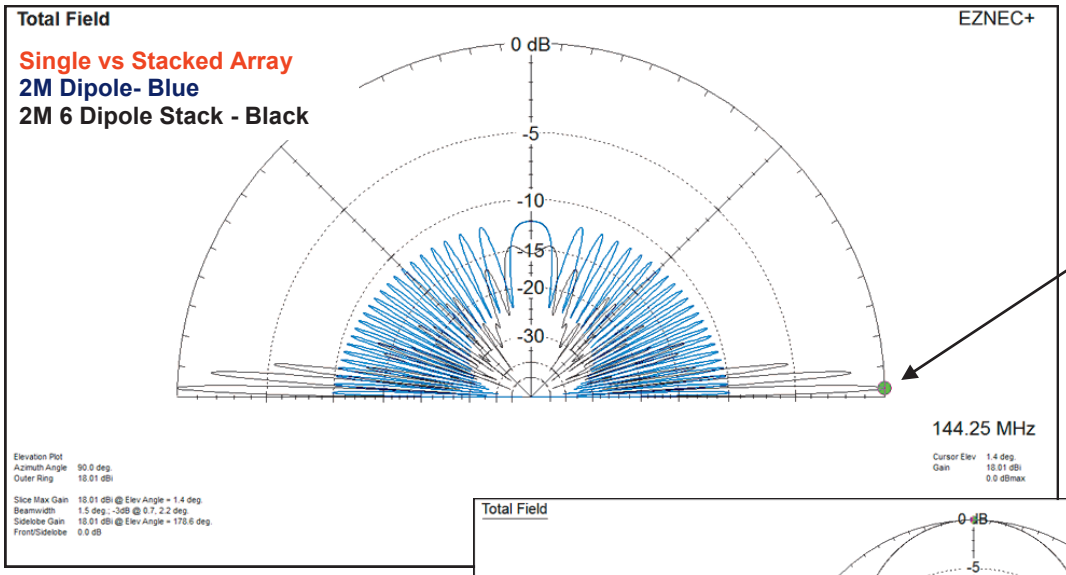
I made a QSO with N2GHR in FN30 on SSB using a FT991 transceiver running at 50 watts to make certain the antenna was working properly. Its directivity was confirmed by rotating the array from ground level by maneuvering two tag lines attached to the bottom element spar of the array. The array was taken down and stored back at my place.

A couple of days before the 2019 Fall 2 Meter Sprint, Dave, W2KV asked me if I'd like to take part in the sprint from his station. He has a M2, 5WL 2 meter beam at 130 feet that works extremely well from his hill top location. The azimuth radiation pattern for this computer optimized antenna is so sharp and clean that its rear and side lobes are significantly suppressed. Knowing that potential contacts, especially the casual ones who get on for a short period of time may be missed during CQs or tuning the band, I thought about trying the 6 element dipole array to complement the beam to cover areas where the beam wasn't pointed. This setup also gives the ability to use the M2 beam to its best advantage by aiming at the longer haul regions towards the West through the Northwest for long periods of time without worrying about missing other potential callers from other directions. This idea of broad coverage is certainly not new since notable stations, such as K8GP, K2LIM, K3YTL, and others successfully implemented multiple short boom Yagi stack arrays pointed to several strategic regions of relatively high population density. Similarly Tony, K3UZY, and Dave W2KV implemented a four stack of Big Wheels rigged to the tower at Tony's station in FN11 back in the 1990s. This system was very successful for 360 degrees of azimuth coverage, which inspired me to try the 6 dipole stack for 2 Meters. It's also an advantage in that it would be portable and easily implemented.

The dipole array was hung by a catenary rope between Dave's tower and a nearby tree at 85 feet high on Saturday afternoon before start of the sprint. Two pulleys were attached near the center of the catenary rope for ease of raising and lowering the array. The Top of the array was hoisted to 80ft and that put the bottom about 50ft high. Adjustment of the element support ropes was made to relieve strain on the phasing lines and to ensure the elements were horizontal and in a same plane. The array was oriented for the Northeast Corridor, NE/SW. A Dow key relay, power supply, and a toggle switch was temporarily jury rigged to the operating position to allow quick switching between the beam and the dipole stack.

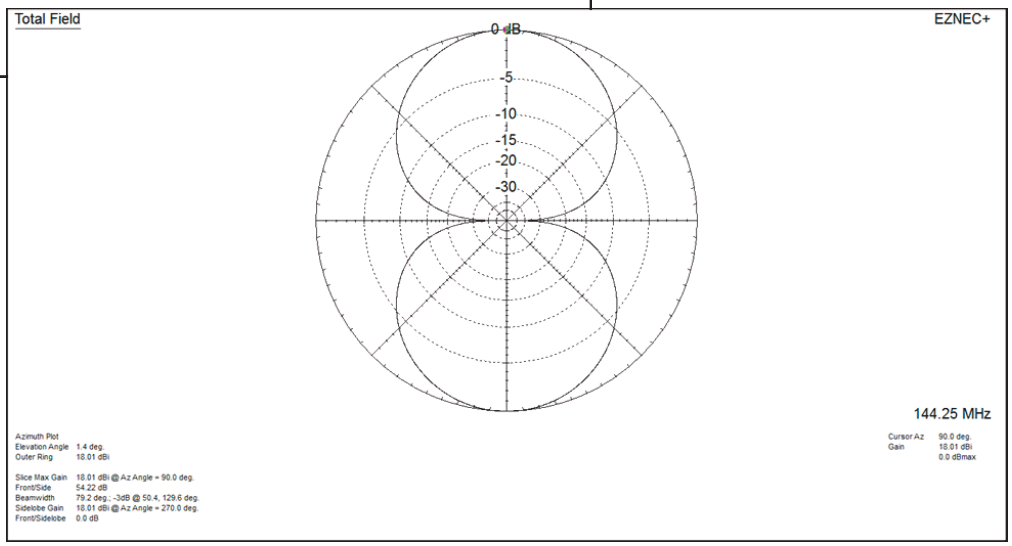
Results

The sprint had begun and we immediately began to notice the utility of the extra antenna while calling "CQ Sprint". Stations would appear loud enough to be heard and worked when the dipole array was switched in. We worked quite a few stations located in rarer grids as well as locals by doing this. Roughly 40 percent of the total QSO count was logged by using the array. Possibly most of the stations eventually would have been worked by using the beam, but not all of them, and it would have taken more effort and time. The array has a bidirectional horizontal 3dB beamwidth of approximately 80 degrees and a very narrow main vertical lobe roughly 2 degrees wide vertically at about 1.5 degrees in elevation. The gain of the array over a single dipole is close to 10dB. See azimuth and elevation plots below.

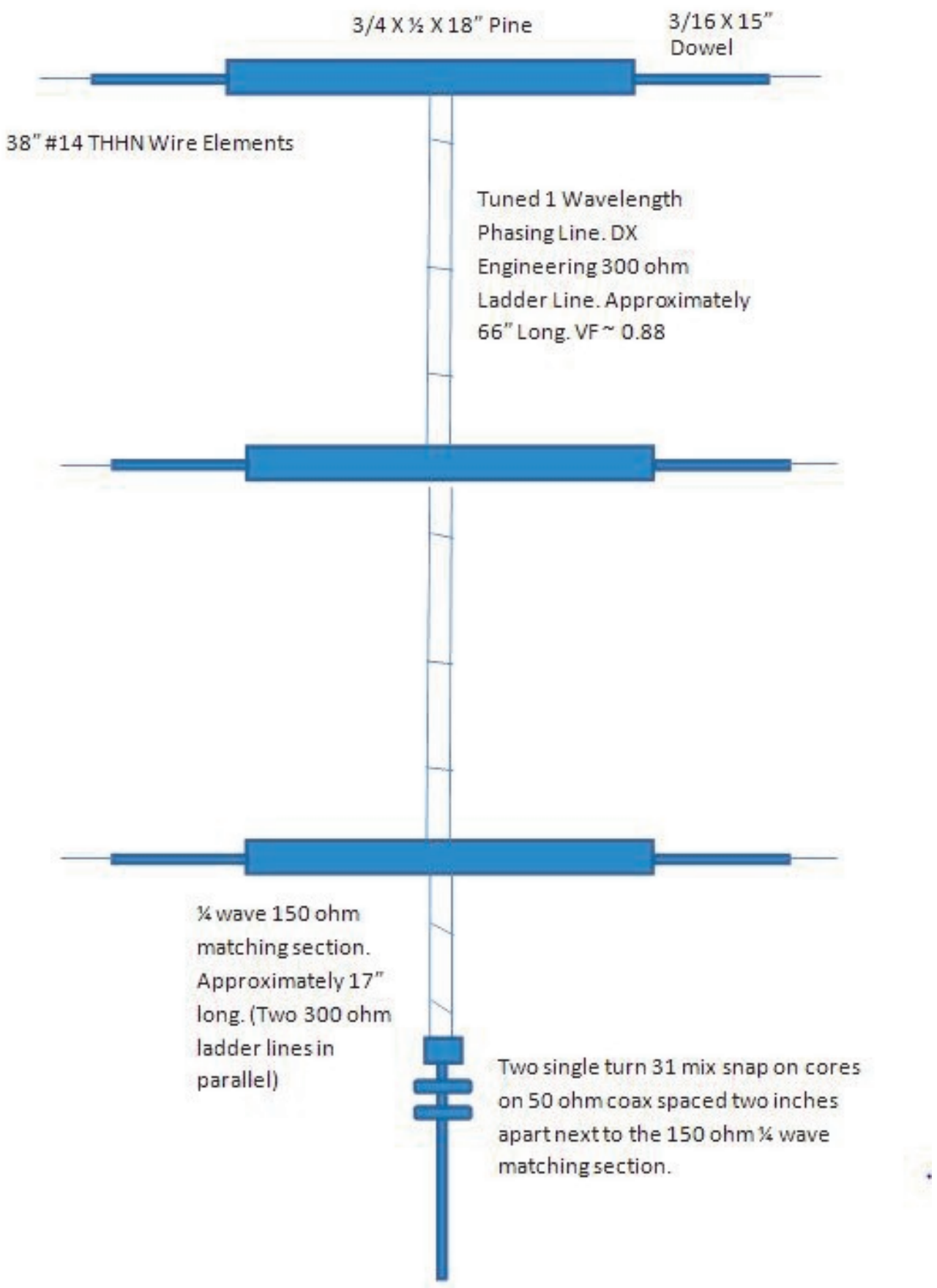


Two wide, low pancake shaped lobes.

10 dBG with 2 degree vertical beam width at 1.5 degree azimuth



Some Construction Details - see text for tuning procedure



GOOD CAP / BAD CAP

By Lenny W2BVH

This story starts early afternoon on the Sunday of the January VHF contest. I lost a QSO because the breaker on one of my power strips popped; something that never happened in previous contests. Earlier in the day, the breaker had tripped, but when I reset it, all was well. But this time the breaker popped every time I switched the power strip on. It didn't take to much debugging to find out that the culprit was my 2 Meter power amplifier. It was the middle of a contest; no time to start diagnosing and repairing a 400 watt amp. I finished the contest using the Mirage brick I had for my mobile rig. I did have to fabricate a heavy gage power cable and a keyline cable, but in less than 1-1/2 hours I was back in business.

So let me tell you about my 2 Meter amplifier. It's homebrew. It's a nice piece of work, but it makes its power using tubes. It has two 4cx250B's in parallel with a beautiful gold on Teflon plate line. Dave W2KV built it well over 20 years ago an I'm the 4th owner (btw, KC2TN was the third). Dave and I call it the "Brownie" -- it's in a brown rack cabinet.

After the contest came a reckoning. I tested the amp one more time and it was still bad (hope springs eternal). I really don't like high voltage. The higher the voltage the less I like it. In fact I'd rather have root canal than work on high voltage equipment. This may stem from an unfortunate encounter I had with the helix voltage on a BWO (backward wave oscillator tube) in the '70s.

Anyway the 2 Meter Mirage brick was still jury rigged in place so it was easy for me to ignore the broken "Brownie" and use the brick through the summer and fall; even if it was on the floor where I tripped over it more than once. At least it didn't have high voltage.

Well it got to be October and I started thinking about next January. It would be a shame not to have the Brownie connected for the January 'Test. Combine that with several queries over the months from W2KV to the effect of "Hey did you get the Brownie going yet?". So that was the motivation I needed to at least diagnose the problem.

The first and easiest thing to do was to put a variac on the Brownie's AC line with a clamp on ammeter and see what was what. For that measurement, at least I didn't have to open up the box. With 39 volts AC going in, the Brownie AC line was pulling 15 amps. So, likely a shorted component in the power supply (or a shorted turn in a transformer). Well, in for a penny, in for a pound, so I decided to pursue things further. With a variac in line I could at least make my test instrument connections and start out feeding the amp with low ac voltage -- and didn't have to face really high voltage until it was absolutely necessary.

W2KV and WA2LTM both independently came up with the judgment that the most likely candidate for a failed component was one of the diodes in the bridge rectifier feeding the tube's plates. So before I even started digging in to the power supply, I ordered a couple of 20KV 1 Amp rectifier modules off eBay (13 volts forward drop on those babies -- must be a lot of diodes inside those modules).

While waiting for the new diodes to arrive, I was able to test the diodes in the Brownie's power supply by feeding it with just a few volts from the variac. Not too scary; just a hundred volts or so going into them. They were all good! Didn't need new diodes. Well they were only $11 for both (plus shipping).

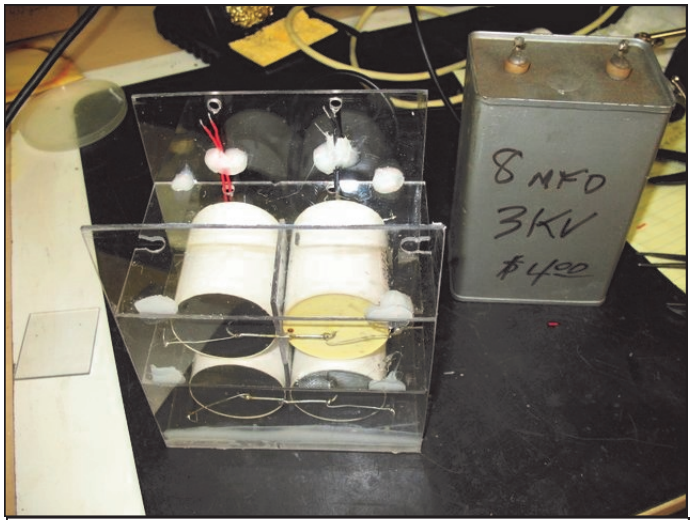
The only components downstream of the rectifiers were the filter caps (4 of them), the plate voltmeter, a homebrew arc-over protection fuse (made of 1/2" of 36 awg wire), the bleeder resistors and the tubes themselves. Of course it could also be a wire with burned insulation. By carefully studying the physical layout of the components I found the easiest spots to remove wires and isolate the different components. Each time, before I removed a wire, to isolate a component, or connected an instrument, I would unplug the

Brownie (not just turn down and turn off the variac) and measure the dc voltage to make sure it was zero. Did I mention I don't like working on high voltage? Anyway, long story (which this is getting to be) short, it took around 2 hours to find out that one of the high voltage filter caps was a dead short.

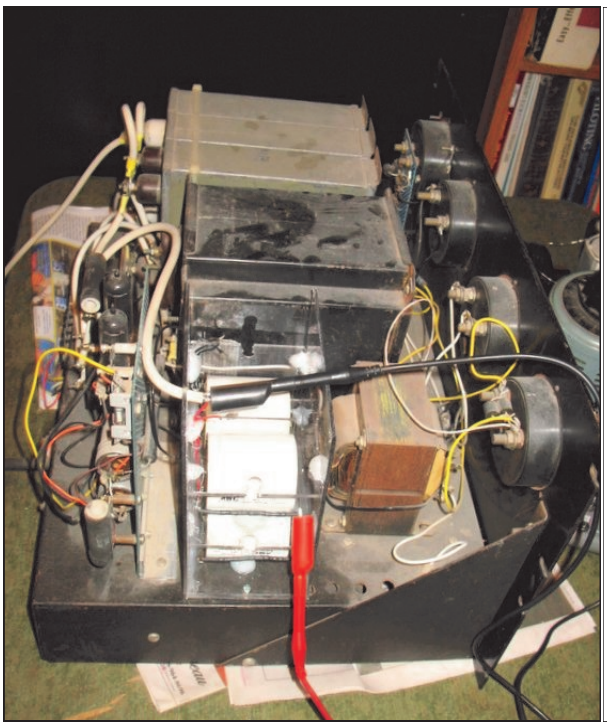
I put word out on the Packrat reflector looking for a 8uF (or more) 3KV cap. Bill K1DY, up in Maine had one but it was too big to fit in the spot where the bad cap was. Al. K2UYH thought he had one but when he found a likely part, it was only rated at 2KV. Ebay had a few possibly usable parts of unknown provenance at definitely unacceptable prices. So it ended up that I had to resort to my Plan "B": using some 10uF 1.4 KV caps that I had laying around. Two sets of two series caps would give me 10 uF at 2.8 KV. Close enough to what I was looking for (I hope). They were supposedly removed from an industrial induction heating machine. There were no datasheets available on the internet for caps with this part number, but there was a description that said they were polypropylene film caps. Datasheets for similar parts show extremely low leakage, and high overvoltage tolerance, so it looked like I was in luck. But these caps would need to be packaged up so they're not too close to each other and isolated from the environment -- don't want myself or any subsequent owner hurt by exposed leads. There's plenty of opportunity for that elsewhere in there.

I packaged the caps in a box I made up from scraps of clear ABS I had laying around. Each cap gets its own little "cell" inside the box. Given the (theoretically) low leakage of these parts, I was tempted to forego any balancing resistors, but as a compromise I put 2.35 Mohms across each cap (five 470 ohm 1/4 watt resistors in series). This is much higher than is traditionally used with elecrolytics, but they have much higher leakage and looser tolerance. I tried measuring the unbalance with 900 volts across each cap but it was un-measurable. So I think I'm OK. Making and installing and testing this composite cap took around 8-10 hours. A lot more than if I had the right part to begin with.

So what's the result? Before the amp broke, It had 2200 V on the plates with just the bleeder resistors as a load and 1850 V with a 200 mA (idle current) load. With the new cap it has 2550 V with the bleeder, and 2200 with 200 mA load. The amp had to be re-biased and re-tuned because of the different plate voltage, but that took just a few minutes. It also seems to have more gain (but not more output). I think the old cap had been deteriorating and had less than the marked capacitance, and that's what may account for the higher plate voltage. So I'm happy. I only hope it lasts. We'll just have to wait and see….I don't want to do this again! -- too nerve wracking!!



New cap (left) old cap (right). I left room on top of the clear box for a third set of caps, just in case. Balancing resistors were shrink wrapped, and short bare leads were left for test clips to measure voltage balance. The box was glued together with bathtub caulk to make it easier to disassemble if needed in the future.



Power supply with the new cap installed. It was screwed down and the end of the clear box was covered with Kapton . Getting this 80-90 pound beast out and onto the card table where I worked on it was not easy. Likewise putting it back. Note the open construction with opportunity for getting injured. DANGER Will Robinson ;-)

Tropo Scatterings

by Jerome Byrd

FT8 the great equalizer:
Although I couldn't participate in the September Contest, the results reported by some who did are very revealing. First let me say that FT8 and future digital modes have as much chance of fading away as ssb did to wishful am'ers. The reason it will become mainstream is not for the many pro/con arguments one hears. It will become mainstream because unlike any technology before, it levels the playing field to such degree that small to medium size stations won't be able to resist the call of the wild. The grid totals in a contest are unavailable by any other means other than by using other digital mode – jt65 on EME, MSK144 for meteors. A station with a small beam and 100 watts might work dx stations ahead of super stations. Super stations can't dominate 50.313 or 144.174 no matter how large their station.

FT8 benefits all stations as far as making more contacts and getting higher grid totals in two ways. The mode itself can copy signals way below the human ear CW threshold. Secondly on ssb/cw one might find only one or two stations that have to be on to work certain grids, while on FT8 many small stations might be available for said grid. Larger stations will be able to work more distant stations than smaller stations as it should be. Smaller stations will work stations they previously had no chance of working.

Example metrics from the September 2019 VHF Contest.
For those of you who don't know Jay, W1VD, he is very active on 144 MHz working weak signals. His antennas are at a high elevation and are on a tall tower. He runs a pair of FO12's to a QRO amplifier. He can and does work out very well on SSB and CW, BUT, his September VHF contest's 2 meter results couldn't be duplicated by those modes short of a major tropo/e-skip opening. Here is his grid breakdown by mode:
CW = 7
MSK144 = 11
Phone = 22
FT8 = 22
Total of 62 grids (centered on FN31)

To put the 62 grid results in perspective – Ron, WZ1V (FN31) got 30 grids, and Jeff K1TEO (FN31) 50 grids. Please note Jay only ran one band and Ron and Jeff had to spread themselves across 5-10 bands. Still I don't think Jay would scold me for saying he would have likely got grid totals in the 30's instead of the 60's without MSK144 and FT8.

Similarly, Bill AA2UK, only has single small antennas on 2 and 6 meters at 30 ft and decent but not superior elevation to his surrounding area. His uses FT8/MSK144 almost exclusively and his grid totals are equal or superior to those of much larger stations.

Although noise is the scourge of all modes, FT8 seems to handle it quite well compared to ssb/cw. Six meters is usually barely worth the effort for me because of noise. I therefore only run a single loop on that band. (to check into nets, etc). On FT8, however, I have at least the possibility of working dozens of grids and qsos. I think a fellow Philadelphian – KC3BVL would say the same.

This and that:
Are you QRV on 1296? Every Monday after the Packrat 432 net several stations led by K1PXE, WZ1V and our own W2BVH, meet at 1296.110 from 9:30 pm local to about 10:30 pm local (best be there early rather than later in that hour). I am usually there as is KC3BVL.

For those who haven't heard, Bill Smith, former Packrat president and major VHF/UHF contester is now

K4WMS from FM17. Other Packrats out of the area are Walt – K3BPP in FM18 and Bill Olson -- K1DY in FN54. If there are other Rats who are out of the area but within 2 meter working distance let me know and I will post.

**** Please edit your QRZ.COM page to at least list your station rundown (see Aa2uk, K3tuf, Wb2rvx, etc.)**

Nets and Schedules:
The following is a rundown of the nets and group meetings in the 'local area" (<= 250 miles, only nets that don't conflict with the Packrats nets are shown).
Mondays: 2130 local – 1296.110 (group schedule with K1PXE, WZ1V, K3GNC, W2BVH, KC3BVL and others. All are welcomed.
Tuesday: 2000 local – "Mud-Toads Net", KD8UD FM17uv net control. 144.250, all are welcomed.
Wednesday: 2030 local - 432.150 – group schedule, WA2LTM, K1PXE, WZ1V, N2SLO, WA2ONK, WB2SIH, K3GNC and others. All are welcomed.
Thursday: 2030 local - 144.250 – N.E.W.S club net, W1COT FN31st net control. All are welcomed
Saturday: 144.205 – 2130 local - Chesapeake Net, W3BFC net control. All are welcomed
Sunday: 1030 local – 144.250, Sunday Morning Memorial Net, Bill AA2TT FN30br net control, all are welcomed, 2030 - - 432,150 – group schedule, WA2LTM, K1PXE, WZ1V, N2SLO, WA2ONK, WB2SIH, K3GNC and others. All are welcomed.

The Lunatic Fringe:
This year I was unable to get setup for the 1st week of the 50-1296 MHz EME contest. I will be active during the 2nd weekend component on November 16th – 17th. I encourage everyone to try and make their first EME contact during the contest. The following stations (several more not listed) can work you at moonrise with your current tropo setup):
144 MHz – I2FAT, HB9Q, UA3PTW (with almost any setup you have like 13b2 and a brick)
If you have more, there are many stations capable – monitor "LIVE CQ" and see who is calling CQ and what frequency they are using. (JT65B)
432 MHz – HB9Q, UA3PTW, DL7APV, K2UYH, single small-medium antenna and 100w. Join HB9Q forum to see who is active on 432 eme. (JT65B)
1296 MHz – Check above mentioned HB9Q forum and select 1296 to see who is active. If you click on the call of stations who are on line, a popup will show their setup. Those with very large dishes are prospects, assuming they will do JT65c and not just cw.
EME Tidbits – For the first 6 hours of a moon-pass Europeans stations are available. The next 3 hours are limited to NA and SA. The final 3 hours feature the Pacific islands, AU, ZL, Japan and the far east at the very tail end of moonset.

Until next time please stay/get radioactive!

7 3, **K3GNC**

"Communication" on YouTube

This interesting recording from the 1940s will be enjoyed by hams everywhere. It is a song called "Communication" by Slim Gaillard. https://www.youtube.com/watch?v=teaxWYRH9A4

For those of you don't know Morse code, I will translate: Dah-Di-Dah-Dit = C, Dah-Dah-Di-Dah = Q
We all know what "CQ" is. And at one point he sings: Dah-Di-Dit = D, Dit = E which is usually what precedes the call sign ID. "DE" is generally considered to mean "from" (from France). But he never sings a call sign. 73 **Barry K2MF** (Sent to Cheese Bits by Warren **WB2ONA**)

Fall Microwave Sprint Results

From Bill AA2UK
I worked some decent CW & SSB contacts in the uWave Sprint on 1296. Conditions were not good; most were complaining saying they were poor. Here are a few high-lights. I worked the usual suspects from FN30/31/20 and Dave K1RZ in FM19. I did not work my own grid and club participation was terrible as usual.
N1DPM FN32qb Fred was S6-7 w/QSB he reported I peaked S9.
N1JEZ FN44ar It took us about 10 minutes using 1 minute sequences but Mike's signals peaked RST 549 at 363 miles this was my best contact.
W9KXI FN12ne Al reported I peaked 599 he peaked 579 here.
KA2LIM/R FN12 Ken and I finished on SSB he peaked S7 I forgot to enter his 6 digit grid square.
K3WHC FN10pa Steve peaked S7 not bad considering he's only running 25 watts.
Heard but not worked VE3DS FN03fq and N2WK FN03xe. Dana reports he's getting tired of hearing me so he's embarked on finishing his 150 watt 1.2GHz amplifier. His 10 watts isn't quite enough although I did hear him twice but not enough for a real Q!
It looks like my AD6IW heavily modified SSB Electronics SP-23 MarkII LNA really helped my RX. I got it just in time yesterday afternoon from Chad N0YK.
Jim, put up my 76 element 2304 antenna Thursday night. I expect to get back on 2304 sometime soon. After I get back on 2304 my next push will be 903MHz. I have a 15' DL6WU Yagi that will need to be installed and I'll need to finish the transverter system integration with the Motorola ELPA 480 watt SSPA.

From Lenny W2BVH
Had a good time in the sprint. Results: 3 bands, 10 Q's, 9 Grids, 1695 KM. I used ON4KST and pack-rats.slack.com to arrange QSO's (though I picked up K1PXE on his CQ on 1296). Not as many reachable stations were on as would be expected, and some usually reachable stations couldn't be worked. For example, WA2VNV is usually a fairly easy QSO and I couldn't hear or be heard. I regret that K1TEO was only on for 0.3 hours and that I didn't work him; he's easy to work (often on phone) on 902, 1296 & 2304. But it was great to work K1RZ & WA3DRC on all 3 of my microwave bands! So in summary, conditions were not that good. But as usual I still had fun. As the fishermen say "That's why they call it fishing, not catching". Same goes for the microwaves. If you weren't on, try the micros next time!

From Dave K1RZ
Fall Microwave Sprint was good for getting us Microwavers together. Conditions not up to par but maybe as should be expected on a 50 to 60 degree day in the fall. Worked 21 separate stations for 40 qso's. Best DX was with Dana VE3DS FN03fq at 524 km's on 902 MHz. Used ON4KST, 144.260, and cell phone / text for liaison. Appreciate having a 4 hour stretch of time to better understand how these bands work under varying conditions. And the day of the sprint was surely "varying". Many thanks to Southeast VHF Society for sponsoring this fun event. Thanks everyone for being on.

From Ken KA2LIM
Operated in my rover-mobile 2 miles up the road from my home. Rain moved in, lots of QSB, no contacts on bands above 1296. Frontal system to my east stopped contacts to 1 land. Had to replace a ptt line on my 2304 unit, why I don't know as it worked just fine when I tested everything 4 days before. With the temp drop, I had to run my electric heater in my van to stay warm. Worked Ray-N3RG in FM29ki, Dave-K1RZ in FM19jh, AA2UK in FM29pv, WA2VNV in FN30kv & WA3DRC in FN20lf on 902/3 and 1296 under really, really poor conditions. Still had "FUN".

From Al W9KXI
4 Q's in two hours, I am ecstatic! This was a personal best! The equipment changes which I have made were beneficial. Band conditions? Not very good. Signal strength was down and there was a considerable amount of QSB. Thanks to the participants and the sponsors.

K1RZ 10 GHZ CONTEST OPS

August 17-18 2019 Block Island Rhode Island FN41ee with the Dale AF1T and Mickie W1MKY team, plus new team member Steve K3WHC.
Contest Saturday morning started with the four of us on the porch before 1000 UTC, looking for the short-term sunrise enhancement that sets up on paths to the mainland early, almost every summer morning. Our first contest QSO was with Ray N3RG, fixed station, in FM29ki at 360 km. Ray has such a consistent 10 GHz signal from southern New Jersey – on Block Island, or from my home QTH, or from the other few sites I have been to in the Mid-Atlantic. By 1115 we had also worked Tyler KM3G portable in FM29ti at the northeast end of the Atlantic City Boardwalk, at 310 km. Tyler had previously only made a 10 GHz contact once - with Rover Rich and Al NN3Q, in the same parking lot. [Then John N9ZL FM08us at 630 km's. Four foot dish and 20 watts! Yikes! Worked John on sideband. We also worked Rene VE2UG at his home QTH in FN35gs for 530 km's. Plus a number of other contacts were completed that day and as we finished the day we felt we had a very good start.

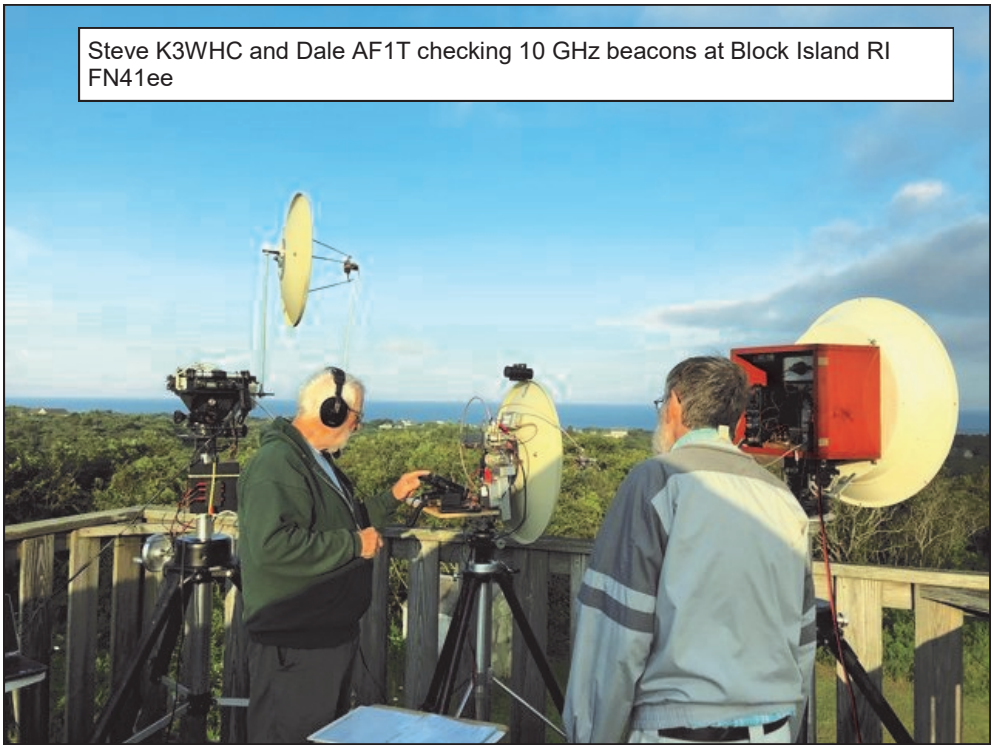
Sunday morning started off same way as Saturday. Everyone on deck at 1000 UTC. Many stations were worked across the Mid-Atlantic, western New York and across all six states in New England. At a certain point in the early afternoon we shut down due to close by lightning strikes near the border of Connecticut and Rhode Island, right on the coastline – not far from us. When we started up again, Steve K3WHC had set up his cell phone as a mobile hotspot, which provided internet service to his laptop. This feature allowed Steve to drive the teams pointing to stations across the region where more high altitude rain storm cells were displayed on the K0SM Rainscatter program on Steve's laptop. And with close liaison, using the cell phones allowed us to instantly share that awesome pointing accuracy with other distant stations. On rainscatter, with Steve "driving the train", we four worked Kevin VE3KH in FN03cg at 713 km's, Peter VA3ELE and Hugh VA3TO both in FN03vw at 621 km's, Steve VE3SMA in FN03bi at 722 km's (our Best DX for the two weekends) and Peter VA3ELE and Hugh VA3TO again now in FN14ba at 602 km's – all on USB with very strong signals. It was a pretty exciting time over a period of almost three hours. In the middle of this time we also worked Andrea K2EZ/R at FN21ia, for what we think is her first 10 GHz contacts. We finished off the evening with a tropo contact with Brian N3OC in FM19le at 512 km's.
My total for the first weekend was 70 contacts, 50 unique calls and about 27,000 km's. Be sure to Work the List.

September 21 2019 at Big Pocono State Park in FN21hb with Bill W2RMA.
We got to the east overlook and set up and again worked Ray N3RG in FM29ki at 316 km's. I used Ray's signal to calibrate the compass rose and we were off and running. Bill was using the Sun Calc app to fix our azimuth with the suns shadow back in the dish. Both worked well, and Bill's app worked even better as we move around the mountain to get to the other overlooks. We quickly worked AF1T, W1MKY, W1GHZ and KB1VC on the islands and Tyler KM3G in SNJ. Then worked the K1GX in CT, K2DH and K2UA in FN42ad, and K1OR, N1DPM & AA1I on the northern tip of Cape Cod. And it was time to move to the northern / southern overlook. This took a little longer than expected, as I had a cable disconnect in the ¼ mile transit. Expected stuff, but accounted for the 2 hours to make the move. Anyways, got back on finally and worked Ray VE3FN in FN26rf on Mont Tremblant for 578 km's. And then Ed W3EKT (my closest 10 GHz neighbor in Maryland) at FM19lg, providing Ed another new grid for his VUCC. We worked many mountain top stations across New England on Mt Washington and Mt Equinox. Plus connected with Peter VA3ELE who was roving over toward Montreal, but he had no south view, so he brought up his remoted home station near Toronto using his cell phone and laptop and gave us FN03dm at 450 km's. Peter confirmed with ARRL that using both his stations could be counted for his score, so this was another **new technology** experience for us. We finished off the afternoon by shifting back to the east overlook and working Dale and Mickie in their other Martha's Vineyard grid, plus George W1JHR and Steve K1IIG in CT. Then folded up everything transited to western PA.

September 22 2019 at Blue Knob Ski Resort in FN00rg with Bill W2RMA, John N9ZL and Steve KB8VAO.
It should be noted that a tropical storm (Jerry) was moving easterly in the western Atlantic toward Bermuda through this weekend. We felt that this depression would definitely modulate the 10 GHz propagation and I think it did. After the day long Blue Knob operations and connecting with many Mid-Atlantic / New England / Upstate New York stations who said those low elevation stations were experiencing S9 10 GHz conditions up and down the coast. At the same time we at 3100 ft ASL could not work many of them, and could only squeak through to some that were 500 to 600 km out. And we found that we were able to work some of the other distant high elevation

mountain top stations in New England with “normal” signals…not strong, but normal. And while we could work the distant islands off Rhode Island and Cape Cod, we seemed to be cut off from the lower elevation stations immediately to our east. In past years I had experienced early to mid-morning conditions where I could not work Blue Knob stations 160 km’s away until an “apparent layer” between my home QTH elevation at 800 ft and Blue Knob at 3100 ft, “burned off”. And at the end of the day on Sunday I never felt the apparent layer burned off. We four ops on Blue Knob were squinched off from most close in lower elevation stations. Perhaps this is an effect of the relatively close tropical depression, departing to the east.

Two experiences on Blue Knob are worth noting. Bill and I found we could do **“Ski Lift Support Pole Scatter”** with strong sideband signals with Kevin VE3KH at FN03cg and Peter VA3ELE at FN03dm, by finding strong reflections coming off a 40 ft high ski lift support metal pole about 100 m from our site, slightly off the direct path to the DX. Such reflections are another part of what makes this band so fun. And then after working K2DH, K2UA and N2MG in FN23nc at 439 km’s, Bill and I heard the amazing “WOW” exclamation from Russ coming over the liaison channel when John N9ZL turned his 20W and 4 ft dish at them. It was obviously a vast increase in strength from the smaller stations that we were using. It was amazing to see what John had built in both dish support structure, software driven positioning, and signal detection and display capability. And then I packed up the tri-pod and made a 4 hour sprint to the home QTH.



Steve K3WHC and Dale AF1T checking 10 GHz beacons at Block Island RI FN41ee

September 23 2019 Damascus Maryland FM19jh at K1RZ
The enhancement my neighbors reported in the middle of the day to the New England islands was no longer in place when I got home about 0030 UTC. I worked Dale and Mickie at 609 km’s and Paul and Matt at 519 km’s very quickly, although weaker than the two other locations I was at through the weekend. Finished the log out by working N3RG, WB2RVX and W3EKT.

Summary
My total for both weekends was 122 contacts, 54 unique calls and 43,621 km’s with total score 49,021.

Afterthought on 10 GHz with JT4F: I should have taken my own advice. Get FT8 /WSJTX running on 40m (7074 kHz) where there are LOTS of signals, then put that same exciter and computer back on your transverter(s) and try VHF / UHF/ microwaves. During the week running up to the contest on Block Island we played radio more than last year, operating mornings and afternoons, and some evenings. One afternoon working closely with Roger W3SZ in FN20ag I got my laptop set-up for WSJTX modes in case an opportunity came up to use these modes for weak signal work on the contest weekend. In order to make that mode play I knew from my HF, VHF and UHF operations at home I’d need to verify those WSJTX modes work with my already disciplined, laptop and an MLINK 5 modem-controlled portable 10 GHz station. Roger’s fixed station had been set up for WSJTX for years so all we had to do was apply finishing touches to get my WSJTX set-up onto an already functioning laptop. Prior to leaving Maryland I worked with Bill W2RMA in EN90xh to learn how he sets up his FT-817 to work WSJTX on his rover tripod station. Bill uses the DG mode on the FT-817 to work me in Maryland over a 267 km path crossing multiple Appalachian mountain ridges – sometimes on FT8 but more often on JT4F. On 10 GHz JT4F mode is more tolerant over a difficult path, or a rain scatter path, or when one or both stations are drifting in frequency slightly. On Block Island that afternoon, after about an hour’s time, Roger and I got my radio sending FT8, but neither of us could get any decodes. We switched to JT4F and got nearly immediate decodes and a QSO on JT4F. [JT4F is not automatic, you have to manually sequence your transmissions]. I was now ready for anyone who wanted to try WSJTX. Did I try WSJTX with anyone in the contest? No. But I am ready now for next year if anyone else has pre-tested their gear BEFORE the contest. The pre-tested part is the take-away. I had tested with Roger, in case really weak signal work would be required on a long distance contact (or if a non-CW contact would be required). The pre-test should have been before the Contest.

KM3G 10 GHz Contest Ops

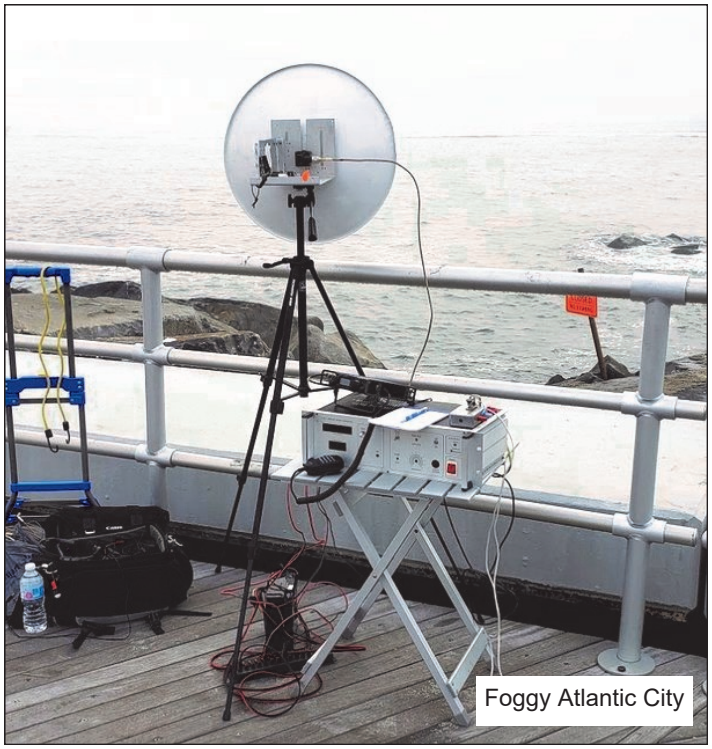
Station: Yaesu FT-817 IF radio. IF radio coax: BNC jumper I bought from Gary(?) at the Pack Rats VHF conference. He had an entire box of them. I'm putting them to good use Gary! Antenna is a center feed 18 inch dish with an odd kind of splash feed. The waveguide comes through the center of the dish and bangs into what looks like a meat tenderizer. Slots on the edges allow spillage to illuminate the dish. I measured about 400 milliwatts coming out of the "final" amplifier. The amplifier was one I purchased at the first VHF Super Conference near Dulles. I had to do some snow flaking to tune it up, per the instructions provided. It needs a negative bias and I never got around to building a negative supply, so my station requires two gel cell batteries. Main power for the IF radio and the 10 GHz transverter was a 17 AH gel cell. The power for the negative bias supply was a 3 AH gel cell. I need to measure the current draw for the transverter just so I know how much it's pulling. I think it has a crystal oven in it. It was rock solid for frequency. The FT-817 uses almost no power. I bought the transverter from Paul, WA3GFZ. It works great! I cannot remember the manufacturer, but it is not a common name. I think it's German, but not Kuhne. It's a bit older. There's also a DEM 10 GHz preamp sitting in front of the transverter.

Pre contest:

I read on the reflector that a few operators were planning on going to Block Island, so I emailed the Packrats to see if operating from Atlantic City with only 400 milliwatts is feasible. The answer I got was a resounding yes. It then became a mad scramble to assemble the station onto a tripod. I took the station out twice prior for the contest, but I only had a small horn antenna. I had purchased a dish antenna with a feed on it a year ago, but it was collecting dust in the basement, with everything else. It needed to be cleaned and mounted to a suitable piece of aluminum bracket that would sit on a tripod. I managed to find a few pieces and mount the dish onto a very cheap tripod. The cheap tripod was tough to use, but this was revision 1 and time was short, so I used what I had at hand.

10 GHz and up, Weekend 1, August 17 and 18:

I booked a hotel just outside of Atlantic City. It started out as a Howard Johnsons hotel, but now it was under a different owner. I'm sure it was nice back in 1972. I managed to get up on Saturday morning at 5 am and head over to the north end of the boardwalk. I was told that any enhancement over the water would be between 6 am and 8 am because of the heating of the air during sunrise. I'm still under the assumption that is true, but I'm still wondering if that is just some sort of newbie operator 10 GHz joke. It was foggy to the extent that you see in the movies. I thought the streets of Atlantic City would be bare at that time, but there were people everywhere, including walking in the middle of the streets. I still had doubts about this working because of the fog and other variables of an untested system.



Foggy Atlantic City

I got everything set up on the boardwalk where Oriental Ave ends and gave Dave, K1RZ a call on his cell. He and others were on Block Island, 194 miles away in FN41EE. He walked me through getting on frequency and azimuth and was a big help! That morning, I made contact with him on CW as well as Dale, AF1T and Mickie, W1MKY, all at the same location. I have K3WHC circled on the notebook as well. Next time I need to take better notes. Contacts were made. The hook was set. Those contacts made at that distance proves the earth is flat! (It's just a joke).

Murphy showed up as well. Some Atlantic City department decided to operate a large piece of equipment 80 yards from me with a nasty back up beeper while I was trying to copy code. Next time I'll bring headphones. The small head on the cheap tripod kept falling over too.

Sunday morning, I packed up and moved south a bit to the east side (FM29qh) and made contact with Ray, N3RG in FM29KI on SSB. (Ray was close) I also have N9ZL circled on my notepad from FM08us, but I have a question mark beside it. (I'm just not a morning person.) I finished out the day at the intersection of New Jersey Ave and E. Orchid Rd in Wildwood Gables, NJ. There's a grass stretch along the water there. Wildwood is a nice place to be on a summer afternoon, but it's also horrible to drive out of on a sunny Sunday summer afternoon.

10 GHz and up, Weekend 2, September 21 and 22:

I planned a bit more for this trip. I brought headphones and another tripod I had laying around. The tripod was older and heavier, but it also had a nice floating head that didn't fall over. It's an old Bogen unit.

KM3G cont'd...

I did quite a bit of looking around on Google Earth. I found a bird watching platform north of Brigantine, NJ. Brigantine is just north of Atlantic City and resembles more of a beach town than Atlantic City. I stayed at a hotel in Brigantine. It was cheaper in September since it was out of season.

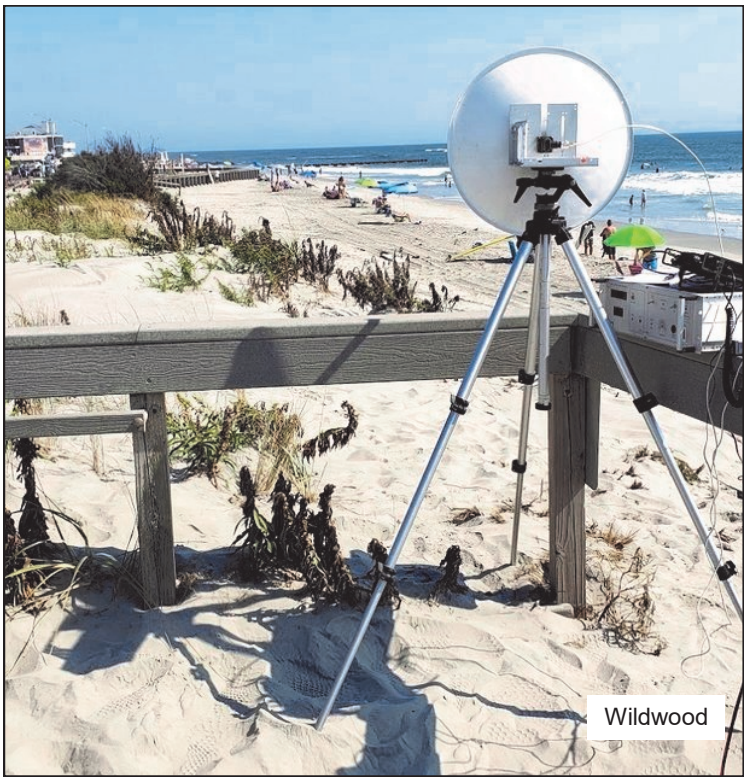
The bird watching platform turns out to be a spectacular location for microwave work. It is under roof. You can drive right up to it. Access is not restricted. The platform puts you above the grasses and beach, so you have a very nice view of the horizon from south west to north east. South is blocked by houses behind you but there aren't a lot of microwave contacts to be made directly to the south. I was warned about the biting black flies in that area, but I didn't see any of them.

I set up on the bird watching platform and looked at the printed out list of people out that weekend. (The K1RZ/W3SZ database) . I gave Ray a call and managed to work him even though there were houses off in the distance. I checked the papers I printed out and started calling people.

Here is what happened
From FM29TK: (bird platform)
N3RG, Ray, FM29KI, 42 miles CW
W1GHZ, Paul, FN41EE, 190 miles (Block Island) CW
KB1VC, Matt, FN41EE, 190 miles (Block Island) CW
K1RZ, Dave, FN21HB, 124 miles (Camelback Mountain) SSB
W2RMA, Bill, FN21HB, 124 miles (Camelback Mountain) SSB
AF1T, Dale, FN41OI, 230 miles (Martha's Vineyard) SSB S9 signals!
W1MKY, Mickie, FN41OI, 230 miles (Martha's Vineyard) SSB S9 signals!

Sunday, I set up down on the beach at Wildwood, NJ in FM28OX. I set up on one of the paths over the dunes, so I had plenty of people asking questions. One lady even wanted to know if I was listening to the Eagles game. It was an 86 degree day and the scenery was much better than on any mountaintop. The enhancement was spectacular as I was talking with everyone up to Block Island and Martha's Vineyard on SSB with S9 signals!

From FM28OX: (Wildwood, NJ beach)
W1GHZ, Paul, FN41EE, 226 miles (Block Island) SSB S9 signals!
KB1VC, Matt, FN41EE, 226 miles (Block Island) SSB S9 signals!
AF1T, Dale, FN41OI, 270 miles (Martha's Vineyard) SSB S9 signals!
W1MKY, Mickie, FN41OI, 270 miles (Martha's Vineyard) SSB S9 signals!


Wildwood

I headed to Cape May, FM28MW, to finish out the day. I stopped and did the tourist thing and climbed to the top of the WW2 concrete observation tower. I almost begged the guy to let me go up on the roof. The answer was no.

I set up on another path that goes over the dunes to get to the beach. I had good visibility from south to north but not to the north east. I made contacts with three guys out at Blue Knob ski area, FN00RG, just south of Altoona, PA. Conditions weren't great, but we made it happen.

From FM28MW (Cape May, NJ)
K1RZ, Dave, FN00RG, 212 miles (Blue Knob Ski area) CW
W2RMA, Bill, FN00RG, 212 miles (Blue Knob Ski area) CW
N9ZL, John, FN00RG, 212 miles (Blue Knob Ski area) CW
There was one other guy on Blue Knob, but his view to me was through a tree, so it didn't happen.

Now how do I mount that dish and transverter to the roof of the van for the VHF contest? For next time: Bigger dish and an amp. However, I have other bands to work on first, so the improvements may have to wait.

It was fun!
73 de KM3G Tyler

ARRL EME Contest Weekends 1&2 Attracts Many Club Participants

by Rick K1DS

Most of you are aware that the ARRL EME Contest is a three-weekend affair. The first weekend on September 20 & 21 was for microwave frequencies 2300MHz and up.

Roger W3SZ participated on 10GHz with his new setup, ably assisted in the set-up by Russ NN3Q and Paul WA3GFZ. He was extraordinarily successful with this first outing, and lit up the moon with about 200W out of a TWT using CW and several of the JT modes.

Al, K2UYH was also active on several uW bands using his super 28' Kennedy dish.

The second weekend took place on October 19 & 20 and this was the time for activity on 50-1296MHz. Although I didn't capture the calls of any club members who operated on 144MHz, I did find that there were several on 1296. Al K2UYH was there, Paul WA3GFZ, Skip W1PV, and Herb WA3FGK were all busy with the JT modes and some CW. I was only on 432MHz for the weekend as my time was rather boxed in and it was hard to get set up for the contest. We arrived in Florida a week prior to the event and our calendar was already filled with golf, canasta, dinners with friends, doctor appointments, and of course, just getting unpacked and settled. With the weather kind of iffy, my best bet for a quick setup was to use 12' military surplus fiberglass mast and a single 5WL vertical Yagi, using manual pointing. Luckily, I found all the necessary parts needed to cable the station together. Five days before the contest, I called "The RF Connection" to order some new coax cable—50' each of LMR400UF and LMR600UF with N connectors. They explained that the LMR600 was back-ordered, but they'd ship the LMR400 to arrive before Friday. On Thursday I got the package tracking notice that the cable was delivered. But I was looking at my doorstep and saw nothing. I checked the tracking notice and behold, it was shipped to my previous home in Blue Bell, PA! Not to be deterred, I called Joel at RFC and he said he'd try to expedite things for me as best he could, as the LMR600UF had just come in. VOILA!!! It arrived overnight on Friday morning. I was able to get everything going and made my first QSO at midnight using JT65B with DL7APV, probably the biggest signal on 432 EME, save for the huge dish at Arecibo. As Bernd was busy making QSO after QSO, I waited about an hour and asked Bernd if we could try a CW QSO. We quickly completed that in short order, with me sending a 559 to him and receiving an "O" report in return. I copied several of the other QRO stations calling CQ and answered, but no-one came back to me. At 2:30AM, I decided to call it a night as the cloud cover inhibited my manual aim for the moon.

It goes up easily and I can steer it with a string. I can see the moon between 20 degrees elevation on moonrise and about 50 degrees moon set.

On Saturday evening, the moon rose an hour later than Friday evening, so I decided to head to the bed and awake at 2 or 3AM to see if I could operate again. It was dark, the moon was not visible through the clouds at 2AM, and there was sort of a rushing sound that I was hearing in the back yard near the antenna. In the dark, I stepped out to see what it might be—I got wet from the sprinkler system that was turned on! Back to bed and woke again at 5AM. Now things were dry and the moon was directly overhead at 86^{o} elevation. I turned on the computer, saw Dmitrij UA3PTW calling CQ and immediately answered him and completed another QSO. Other than DL7APV, I was seeing no other traces, so I crept back into bed and awoke again at 8AM. The moon was still up and the

elevation was now 66 degrees, so I repositioned the antenna and noted that Al K2UYH had just finished working someone on 432. Murphy Time. As I was about to try and send him a message on the logger to look for me, the computer that I was running WSJT on decided it has to update Windows. Really?? "Do not turn off your computer." So I had to wait while it went through its processes and rebooted a few times. By now, Al had QSY'd back up to 1296 and I texted him there on the logger to ask him to come back to 432. "Could you have done this 5 minutes earlier?" he asks. But he did QSY, answered my CQ and reminded me that I have to send both calls in addition to my RO response to his report to me. Well, we did complete. By now It's breakfast time; time to take down the very temporary set-up in my CCR community and put stuff away and get to the 10AM pickleball meeting. After all, it's the time the moon sets behind a big set of palm trees here and the chances of working Asia or Australia are quite slim.

All-in-all it was less than I expected, based upon my experience on 432 EME last year, but nevertheless, I was a participant with three digital and one CW EME QSOs. The third weekend in November gives me some time to arrange to get my mini-tower, AZ-EL rotor and automated moon tracking back in gear and possibly work both 1296 and 144 for the last weekend of this years ARRL EME Contest. I trust that the other Packrats will also share their EME success.
73, Rick K1DS

Addendum and Invitation to Participate
Bernd DL7APV forwarded his partial 432MHz EME contest results; he worked a dozen stations on 432MHz that were **running single Yagis** (14-25 element) and less than 100 watts. Some had no elevation capability and worked him at their moonrise. Since he has a HUGE Yagi array of 128 antennas with approximately 31dB gain, he can work small stations. Please see if you can try to be on 432MHz for the third EME weekend and work him using JT65B. You can sign into the HB9Q EME logger and watch to see where he will be calling CQ. The third ARRL EME weekend is November 16/17. The moon rises in Philadelphia at 7:18PM at 60 degrees azimuth on Friday night. The contest starts at 7:00PM that evening. The next 5-6 hours until midnight or 1AM are the best times to make EME contact with the QRO European stations, or even our own K2UYH in NJ. The moon sets at 10:38AM Saturday morning at 301 degrees. On Saturday evening the moon rises in Philly at 8:14PM at 59 degrees (again, next 5-6 hours until midnight or 1AM are the best times to make EME contact with the QRO European stations, or even our own K2UYH in NJ) and sets at 11:31 at 300 degrees on Sunday morning.

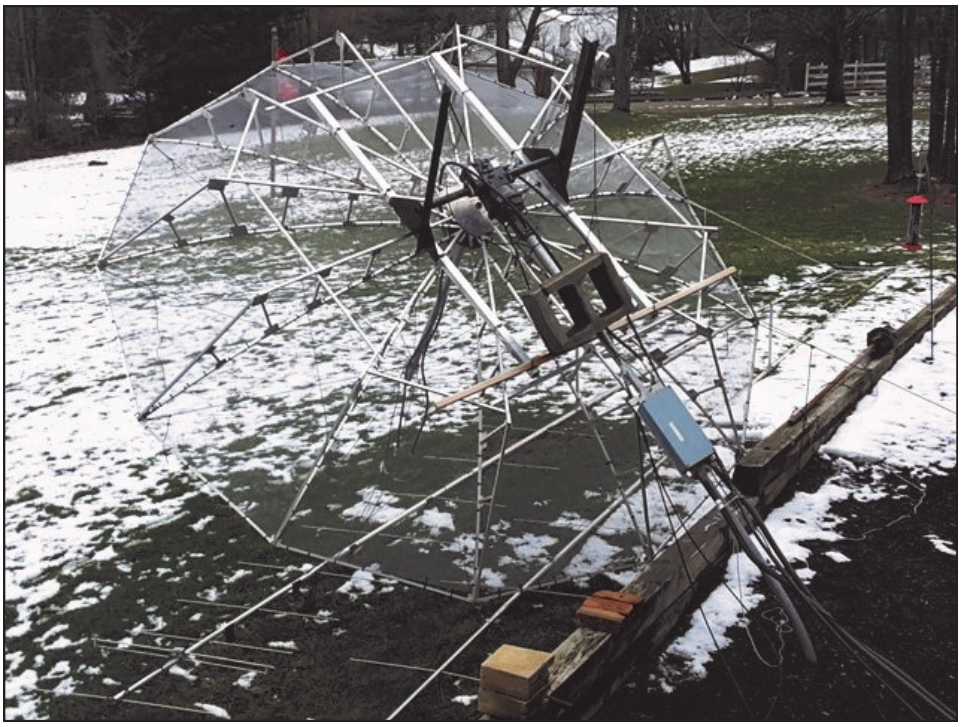
Here is the view looking E from Mt Equinox, VT – FN33kd in Sept during the 10G & up contest. Longest contact was to Ray-N3RG in FM29ki -- 73 Ken KA2LIM

W1PV EME Contest First Weekend

Work on replacing the 2 meter antennas was only half completed so that band will have to wait until mid November. I decided to focus on 23 cm and save 70 cm for weekend 2.

I managed 21 QSOs on 23 cm which was ok considering a prior commitment took away Sunday morning. Ironically, I worked BD4SY the morning before the contest and A21EME just after. Both were new countries for me and would have been nice multipliers. My 23 cm eme station is a Kenwood TS-790 with a W6PQL amp running about 500 watts. Antenna is a 12 ft dish and a septum feed. Looking forward to next month to run 2 meters and add a few on 70 cm.

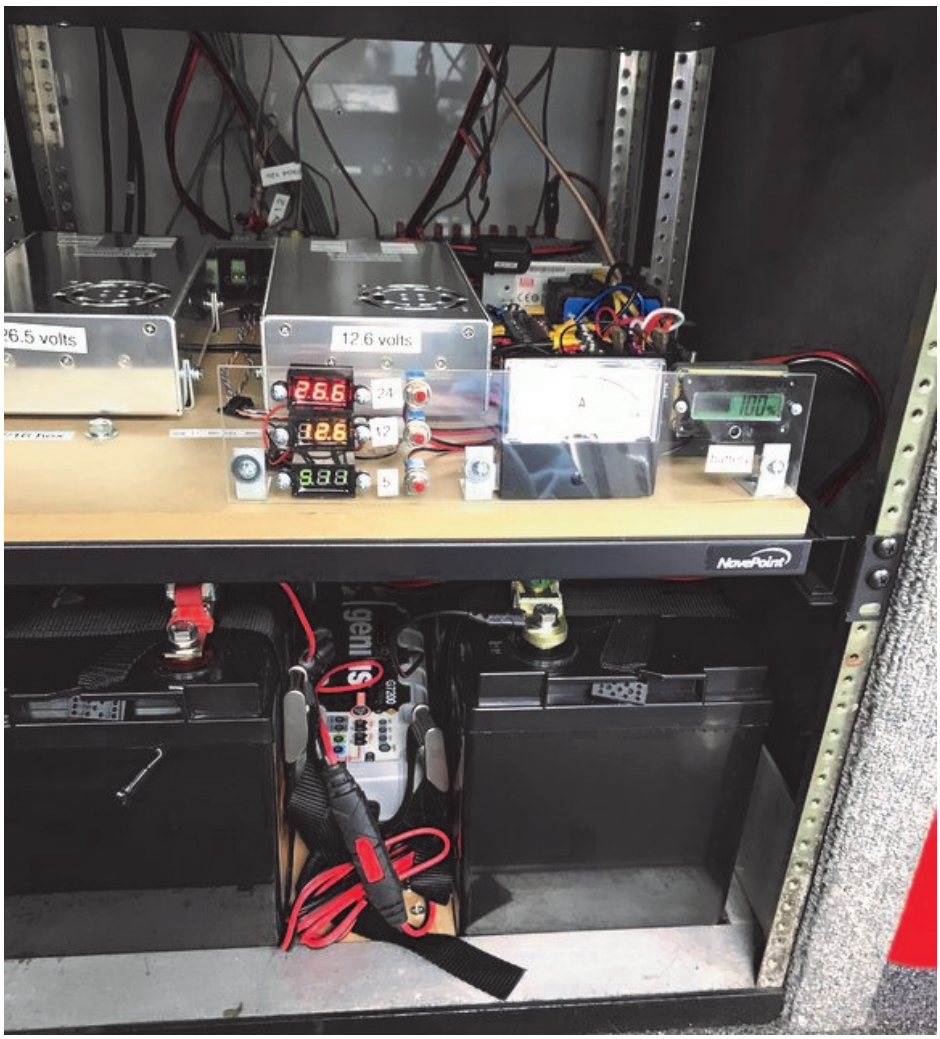
Here are some more details on the antenna. The dish is sort of semi-homebrew. About a dozen were made by Lyle, N4QH, in NE Georgia. According to Lyle, Al, K2UYH was one of his customers. He had one left to sell so he listed it on eBay, no reserve. Big mistake. I was top bidder at $125. I ended up going down to pick it up. Nice road trip. As delivered, it had been assembled, then disassembled with all connecting parts lettered. All I had to do was connect a to a, b to b, etc with sheet metal screws. The original surface was window screening which didn't hold its shape very well. I resurfaced it with 1/4 inch hardware cloth which should be good to 13 cm. A problem with the screening was how quickly wet snow would turn it into a solid dish without the strength to withstand much wind. The dish weighs just 50 lbs plus the mount. Not a Kennedy dish but light enough to handle alone. I rotate with a SPID/RAS az-el rotator and “pstrotator” software.



Skip
W1PV

Rover Van Construction: More Progress

I finally installed the 3-voltage power shelf in the microwave rack in my rover van. The two 12v deep-cycle AGM series-connected batteries were installed on the floor of the van way back in January, part of a discounted purchase of 4 batteries so I could use the other two for sump pump back up. Then I was distracted by improvements to the HF side, international roves to activate parks, and winning (I think) the three QSO Parties I competed in. The power shelf by itself was built by September, but the battery voltage indicator on the far right literally smoked during low current testing. **Twice**. Then I remembered I had to protect against "self induction" when the automotive-type relays were de-energized. The third voltmeter did not smoke after I installed diodes across the relay coils. Then it was challenging getting the tiny 2mm ("M2") metric hardware I needed for mounting that meter with the right length screws ... until I discovered that for about 3x the price of the individual parts I was getting from local hardware stores, I could get a collection of tiny metric nuts and bolts from Amazon that will last for 40 generations. None of the microwave equipment is connected yet to the power shelf because the next step is to build a shelf for switching PTT and IF. 73, **Pete K0BAK**



This morning at 10:20AM (local) on 1296.100 I worked Peter VA3ELE in FN03dm at a distance of 360 miles. Peter's signals peaked at 339 mine to him 539. The contact took about 5 minutes to complete. Peter says the contact was aided by airplane scatter. On my end it seemed like QSB. Dana VE3DS and I have tried to run about 5 times. He always hears me, me not him. We will be trying to complete again once Dana finishes his 150 watt W6PQL amp. He had been trying with just 10 watts. There is too much of a Delta between his current tx power +40dbm vs my +57.85 + or -. I am very encouraged by the number of contacts I have been able to work between 300 to 380 miles in my short time back on 1296 (9/13/19). All these contacts have been made using CW. 73, **Bill AA2UK**

The pdfs of the MUD Proceedings and the Gnu Radio Workshop Proceedings are up on the North Texas Microwave Society web site at www.ntms.org.

Enjoy. 73 **Al W5LUA**

[GREAT articles. Go get it!! --W2BVH]

The second half of my long article about my week-long CNPOTA rove of the Canadian Maritimes was published in the current Nov-Dec issue of the RAC's magazine The Canadian Amateur. **https://www.rac.ca/november-december-2019-etca-now-available/** Page 31 **--Pete K0BAK**

Here are a couple of pictures for Cheese Bits. One is of Steve W1SMS and myself as we visited the Nutmeg Hamfest in Meriden CT last Sunday (October 12th). Never know when you will meet a fellow packrat. The other is the club's recently acquired AB 577/GRC military mast, which I picked up in Mansfield MA. The cage was 95 inches long. When I slid the "copilot" seat forward as far as it would go, I cleared the required 95 inches. Good thing that I did not have any passengers! It has since been transported to Dover Downs DE. 73, **Michael KB1JEY**

K1RZ Fall Sprint Reports

2 Meter
QSOs = 65 Mults = 32 Tot Dist(km) = 1 Total Score = 2,080

144 MHz Sprint was lively with a good turn out from all over the northeast region. Worked 47 stations on USB, 14 stations on FT8 and 4 stations on CW. Enjoyed old and new friends. Looking forward to band enhancement as the season still has some very warm days ahead. Look for everyone in the January contest.

222 MHz
Total: QSOs = 39 Mults = 20 Tot Dist(km) = 806 Total Score = 780

Was fun to catch up with many old friends in the 222 MHz Sprint tonight. Ralph K8RYU EM99 is someone I have worked for years and he was quite active.
And to make some new ones too: Joshua KF4YFM operating near KJ4ZYB, both in EM97 were an unexpected surprise. JR KC4AAW in EM85 showed me again how powerful the FT8 mode is coming in at -24 and peaking at -20. Amazing! My best DX is Ray
WA4NJP in EM84dg at 806 km's on CW. Thanks to all those who got on. Thanks for ON4KST to allow us to easily set up real time skeds. Thanks to the Southeastern VHF Society for sponsoring and making this event a fun time for all.

432 MHz
Total: QSOs = 40 Mults = 21 Tot Dist(km) = 1 Total Score = 840

Good activity - busy until after 10pm. Thanks to the ON4KST crew for letting us reflect to get everyone pointed at each other. Made 19 qso's on CW, 18 qso's on USB and 3 qso's on FT8. Best DX was Mike N1JEZ at 742 km's, followed closely by Joe K9MRI EN70iu at 710 km's and then Paul W1GHZ FN34uj at 696 km's. Thanks for everyone who got on. See you in January, or before.

Packrat John Taylor K3DMA, SK

John D. of Glenside, formerly of Philadelphia, passed away on Friday, September 27, 2019 at the age of seventy-seven. Devoted husband and father, John is survived by his wife Lorraine, his children David (Shannon) and Daniel (Erica), his grandchildren Dawson and Harper, and his brother Richard. He was preceded in death by parents Wilmer and Eleanor and his sister Mary.

John graduated from Drexel University in 1970 with a B.S. in Engineering. He worked as a physicist for the Department of the Navy for forty years. John was a member of the USAR 157th Sep Infantry Brigade (Mech) in Horsham, PA. He achieved the rank of Lieutenant Colonel before retiring after twenty-five years of service.

Donations in John's name to the American Diabetes Association (https://www.diabetes.org) would be appreciated by his family.

RIP.

Andrea K2EZ ARRL Antenna Book Contributor

A new ARRL Antenna book 24th edition showed up on my doorstep Friday unsolicited. The mystery behind this goes back about 6 months. I had gotten an email soliciting information on antennas for rovers. I didn't recall the purpose, and didn't have time to answer, but a week or two later I got back around and wrote my thoughts and a number of other comments to it. There wasn't much organization to it, just tradeoffs between omni's and directional antenna, and my experiences. Here we are 6 months later and this book shows up. I think it can't be, but then I see myself listed among the contributors including a whole bunch of other rover ops. When I answered that email I was just trying to be helpful and thought what I just was giving was some background and a rundown of what I was using and why. I never expected to get any credit much less be given a copy of the antenna book.

Looking thru the rover antenna section I see areas that I recognize were influenced by my input along with influences from lots of others. In it all there is only one direct attribution to myself.

For what it is worth, I have 4 to 5 mpg worth of antenna.
I used to get 19 to 20 mpg highway but now get 15 mpg on the highway

Thanks go out to Ward Silver and the ARRL for the credit and the nice antenna book!!

73 **Andrea K2EZ**

The Wayback Machine
In CHEESE BITS, 50 Years Ago

Nibbles from November 1969. Vol. XII Nr. 11
de Bert, K3IUV
(*author's comments in italics*)

"**Our Prez Sez"**. Prez Ernie, W3KKN, expounded on the makeup of the club members. He listed their area of employment, specialized talents, interests and other attributes (*I had forgotten what diverse group we were / are*). He concluded with "What does this all mean? Our club is a cross-section of fun-type, hard-working guys (*and now gals*) with knowledge of many things, glued together by Ham Radio. This is the Mt Airy VHF Club. I'm pretty proud of it, are you?" (*Well said, Ernie*.)

Antenna Measuring Party. (*This article was written by Walt, K3BPP, who went on to a career in antenna design and testing*). The 2nd annual antenna measuring party was held in Ivyland, at the QTH of Mario, K3UJD. The measurement technique may be of interest, and is summarized as follows: **1)** A commercial calibrated dipole was adjusted to the proper length for each measurement band, and mounted on a rotating mast. **2)** The dipole radiation pattern was recorded on a strip chart recorder. **3)** The dipole was then positioned broadside to the signal source, and then the chart recorder was calibrated in dB referenced to a dipole by using a calibrated attenuator. **4)** The antenna to be measured replaced the dipole. **5)** Attenuation was inserted into the antenna output cable to drop the signal level to that of the dipole. At that point, the forward gain was equal to the inserted attenuation. The antenna was rotated 360 degrees and the gain vs rotation was recorded to provide an accurate measure of the radiation pattern. Some of the results were as follows: K3JJZ, Big Wheel omni for 220, -1dB. K3BPP. 11-element W1HDQ Beam for 432, 11 dB, K3IUV, Rhombic for 1296, 12 dB. Also a corner reflector that measured 5 dB (*still in my basement*!). W3CJU, 7-element club antenna for 144, 9 dB.

Some nice pictures showed the hardware and participants. Captions were interesting. E.g., K3IUV with his 60-cent rhombic (*made from dowel sticks and copper wire*), K3UJD with his homebrew dish (about 5' diameter), K3JJZ assisting K3GAS with his 1296 collinear, K3IPM, K3JJZ and K3UJD checking the mast drive (*Stan, is that your son Matthew next to you*?). The article concluded with a full page plot of my 1296 rhombic pattern. It shows the 12 dB forward gain, the rear gain down about 6 dB, and several side lobes that peaked to 9 dB. (*And yes, I used it for a while, up on my tower*). A good time was had by all.

From the Book Rack." This month, the book review net, conducted by member Paul Behrman, K3WEU reviewed the book "73 Dipole and Long-wire Antennas" written by Edward Noll and published by Sams. $4.50 in paperback, 160 pages. The text described "Practically every type of wire antenna used by amateurs." Dimensions, configuration and construction details were included. Appendices described noise bridges, line tuners, and techniques for

measuring resonant frequency, velocity factor and SWR. A nice addition to your Ham bookshelf.

Technical Topics. "A fix for your silent elements" was the featured article, contributed by K3HSS, Charlie. The reference was to the Cushcraft collinear antennas that many of us used at the time. The problem involved poor connections between the stacking straps and the individual elements. An antenna might work one day, and fail the next. Charlie provided design detail which would ensure a solid connection. A dimensioned layout, description and parts list were included. (***The kind of stuff Lenny is always looking for. Take the time to write an article about your own ideas, and make him happy***).

January 1970 Contest Planning. A table of Coordinators and Teams was provided by the contest committee W3EIF, K3GAS and K3HSS). The club was broken into 12 teams, each with a coordinator (honcho), and between 6 and 8 member in each team. The coordinator's job was to ensure each team member got all the help they might need and had copies of the log and dupe sheets, and to encourage their full participation in the Jan contest. (*You've heard about the results of this detailed planning. Our gavel cases hold the gavels won by the club for nearly every annual contest*).

Swap Shoppe. By W3ZRR. *(Always nostalgia*.) For sale, a Ham Paradise. "Several acres on a high hill in Holland, PA, with 5 telephone poles suitable for a rhombic. Nice for VHF. 5 room masonry Cape Cod, with garage. Former estate of W3BU. Reasonable." *(A bit of history on this item. When W3BU died, W3LHF and I "cleaned out" the Ham stuff. Screwed to his ceiling were 5' strips of wood, with parts jars mounted on the them by screwing the lids to the strip. There were about 15 of these strips, each with about 12 jars. Those of you that have been in my basement and seen them, now know where my strips came from*!) For sale by K3OEJ, Art, a Gonset Communicator II-B with carbon mike and 5 crystals (*no price given*). Also, "Wanted," by K3IUV (*that's me*), QST issues before 1920. (*I finally garnered a **complete collection, starting from Vol 1, Nr 1 in 1915**. Recently, I decided I should start to downsize, and so I donated them to the safekeeping of our own WA2OMY, Gary. Along with a complete collection of CQ, and 73 magazines. I still have issues of VHF Horizons, and 6-up if anyone wants to be the caretaker).*

Meeting Notice. Next general meeting (11/19/1969) topic will be "Apollo 11 Moon Films, 16 mm, color, sound.

Tidbits from the Back Page Ads. The back page ad from "Ham" Buergers in Willow Grove (the store of member W3BAH) featured 100' of RG8 cable for $11.88. (*Try to price that today*!) And Hamtronics in Trevose (member W3MFY) offered an "Economy Vest Pocket Multimeter" for $3.95." (*Not quite as cheap as the ubiquitous Harbor Freight ones, but still a good price "back then*"),

Miscellany. *Postage for this copy (It was from Ernie, W3KKN*) *was still a single 6-cent Roosevelt stamp. (Again 6 double*

Wayback cont'd...

sided, 8-½ x 11" sheets.) As usual, many "folksy" comments about members, their families, and activities were included in this edition of Cheese Bits. If interested, or for more detail on the above items, visit our website (www.W3CCX.COM) and read the full issue scanned by K3IUV (me), and posted on the website by W3SO, our webmaster. Remember, I have also posted the club Officers history, club Membership history, and Packrat Inventory (updated frequently) on the W3CCX website. These files are password protected, and only accessible to registered members. ***Have you registered?*** *I hope you enjoyed reading these bits of nostalgia as much as I did in writing the article. If yes, you might let me know. Thanks to those that did.*

***thirty*, de K3IUV (K3IUV@ARRL.net)**

Events

For inclusion, please direct event notices to the editor.

EME 50 to 1296 MHz Round 2 - Contest - November 16 - 17, 2019. See http://www.arrl.org/eme-contest for details.

Winterfest - Hamfest - January 11, 2020. Harrisburg, PA. http://www.w3uu.org

January VHF Contest - Contest - January 18-20, 2020. See http://www.arrl.org/january-vhf for rules and details. Also see the Packrat web page for club specific info. (Info will be posted shortly).

June VHF Contest - Contest - June 13-15, 2020. Details to follow.

Murgas ARC Hamfest & Computerfest - Hamfest - July 25, 2020. Plains PA. http://hamfest.murgasarc.org

Homemade Radio Telescope

You can track the movement of the Milky Way with the homemade radio telescope described at:

https://spectrum.ieee.org/geek-life/hands-on/track-the-movement-of-the-milky-way-with-this-diy-radio-telescope

It uses a 1 gallon paint thinner can as a feed, aluminum flashing to make a horn antenna and a USB dongle as the receiver. It operates on the 21 cm (Hydrogen emission line) frequency.
A good read and interesting project. **--W2BVH**

Long Distance Network Using Ham Radio

Info on building a (relatively) long distance network connection using ham radio is described in:

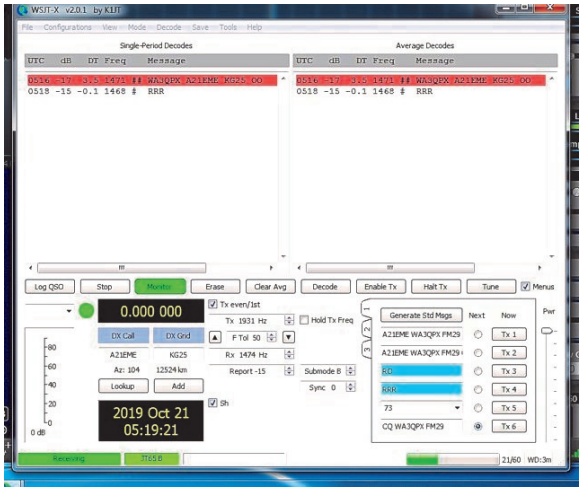
https://spectrum.ieee.org/geek-life/hands-on/build-a-longdistance-data-network-using-ham-radio

Take a look; see what you think. **--W2BVH**

New 2x7 Element 6M EME Array At WA2FGK

I just completed a 2 x 7 el EME array for 50 MHz. Put a 24 foot 4 inch horizontal tube & layed on the elevator. Mounted the ants vertical on the ends of the tube. 73, --Herb

I did not work the eme contest but worked Botswana A21EME this morning (10/21/19) on 2m. Russ, K2TXB, also worked them **Paul, WA3QPX**



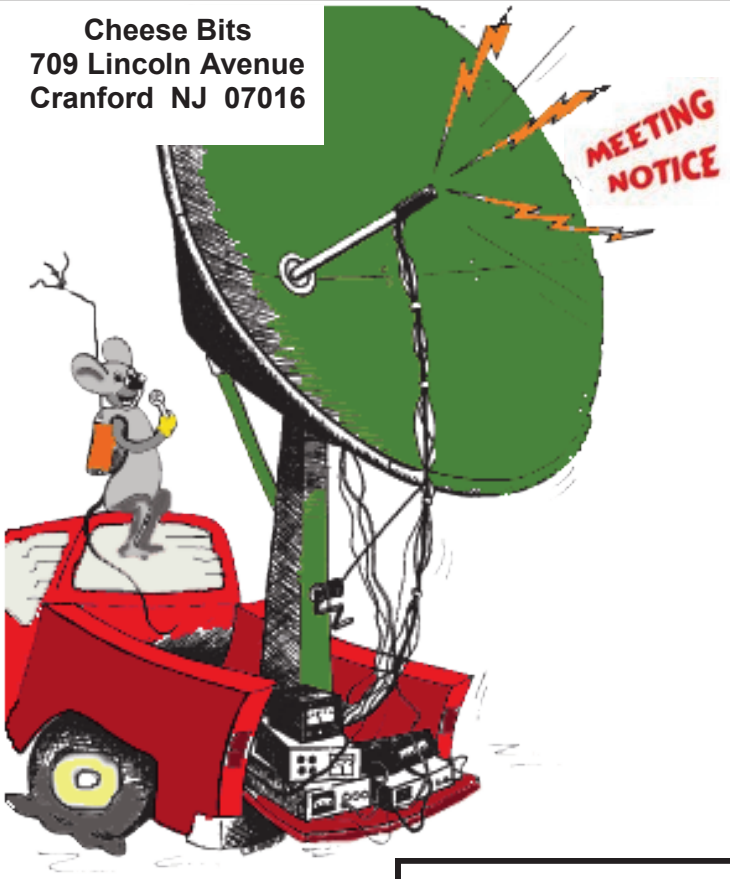
Popular Electronics "Carl and Jerry" Columns Available

Reprints of the popular monthly column "Carl and Jerry" from Popular Electronics magazine, published between 1954 and 1964 are available for sale as collected reprints at **http://www.copperwood.com/carlandjerry.htm**

I read these columns for many years. Fun!

--W2BVH

Cheese Bits
709 Lincoln Avenue
Cranford NJ 07016



TO:

MT. AIRY VHF RADIO CLUB, INC.