



CHEESE BITS

W3CCX
CLUB MEMORIAL CALL

ARRL
Affiliated
Club



Volume LXIII

August 2020

Number 8

PREZ

Prez Sez Thoughts

SEZ: In the Star Wars world 'The Force was always upon them'. Here in Packrat territory the Contests are upon us! Two weeks ago it was the CQ WW VHF Contest on 6 & 2 meters only. If chasing microwave contacts is not in your "Rats nest" yet, this is the contest for you! Over the years CQ WW activity has declined but it certainly was given a shot in the arm with the introduction of FT8/FT4. The digital modes were humming, but a variety of SSB/CW contacts were also available.

This past weekend was the ARRL 222 & Up Distance contest. It has always been one of my favorite contests for years. Sit back, relax, and enjoy a good time without the competitive pressure of having to make a multitude of 6 & 2 meter contacts to keep up with everyone. If chasing microwave contacts with the guys & gals you meet at the conferences is in your DNA, then "this one's for you"! The mix of modes available included SSB, CW, FM, & digital contacts. If you only listened casually on the bands it seemed at times like not much activity was going on. However, the various assistance methods like Packrats Slack and ON4KST chats kept the contest buzzing. It's easy to rack up grids and microwave band contacts through a balanced combination of

CQ's and assistance methods. Remember: "Use all the tools in the toolbox wisely".

But there's more...In the next few weeks look for the 10 Ghz Contests Rounds 1 & 2, September VHF Contest, 2.3 GHz & Up EME Contest and the 50-1296 MHz EME Contest. Together with our regular Monday Night Nets, there is no reason to be bored during the present COVID-19 situation. And...It sure beats perusing the never ending "Honey Do" list!

The August general meeting will be on WebEx video conferencing featuring an entertaining presentation by Ken, K2WB highlighting a previous September Contest operation on High Knob in the Poconos. If you are thinking about planning a new antenna/tower project at home, don't miss the presentation by Mike, N2DEQ - "The Anatomy of an N2DEQ Shack Automation/ Antenna Project". This details the amount of essential pre-planning needed with many good pictures of his recent rebuild. Some will be surprised at how much planning is needed before you call in the troops to help with your project 2 weeks before the contest!

Tired of being cooped up in the Rats nest? The Reading Radio Club will be holding a Hamfest live at Heritage Park in Sinking Spring, PA (992 Clematis St.) on Saturday, August 8th at 8AM Rain or Shine. Look for details about future

Pack Rats **CHEESE BITS** is a monthly publication of the
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PACKRAT 222 MHz REPEATER - W3CCX/R

222.98/224.58 MHz (PL 136.5) Hilltown, 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:

<u>TIME</u>	<u>FREQUENCY</u>	<u>NET CONTROL</u>
7:00 PM	224.58R MHz	WR3P FN20kb Ralph
7:30 PM	50.150 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

hamfests in
Cheese Bits
under "Events".

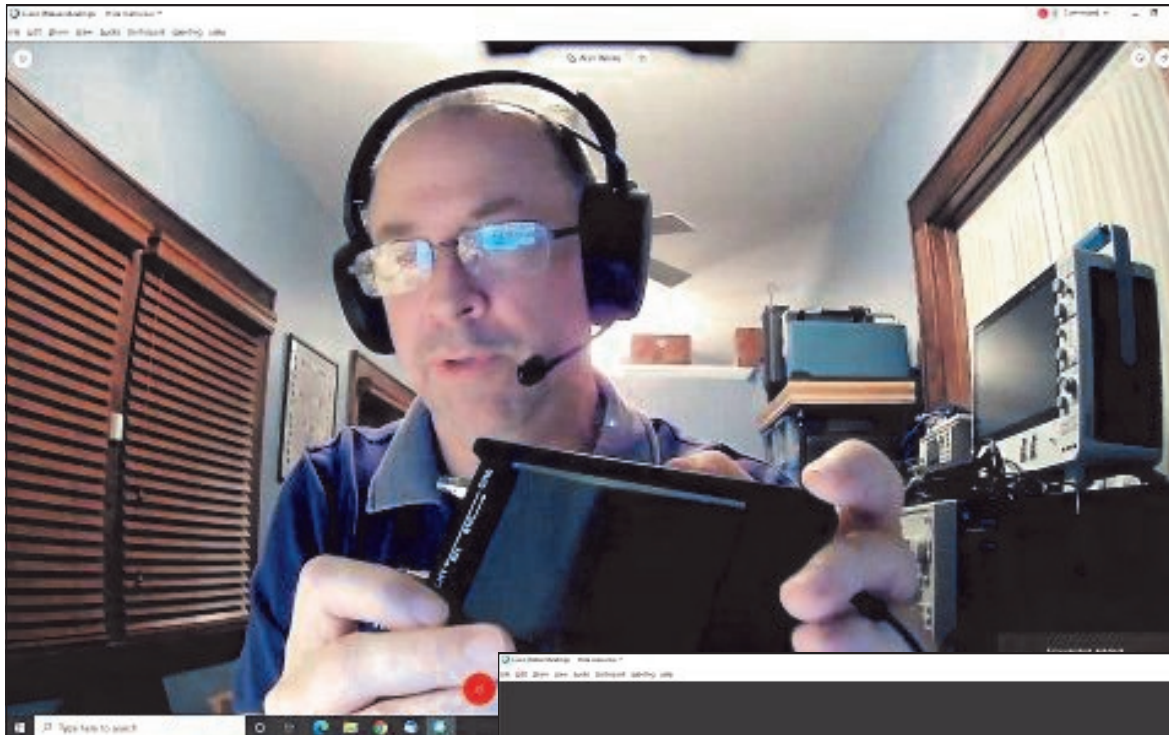
As I have
mentioned
before: This is
your club and all
about you! Please
let me know any
suggestions or
ideas you may have to make the club experience
better for everyone.



Meanwhile, finish a project on the bench, keep
one ear "listening for the weak ones", and the
other on the "Magic Band"!

Vy 73, Bob W2SJ

July (WebEx) Meeting Pics



NanoVNA – more details

- All are 2-Port, 1-Path
- H4 goes to 1.5GHz
- Standalone operation
- PC application available (NanoVNA Saver)
- <https://nanovna.com/>



- 1-Port NanoVNA
- 2-Port NanoVNA
- 2-Port NanoVNA with 1.5GHz
- 2-Port NanoVNA with 1.5GHz and 100MHz
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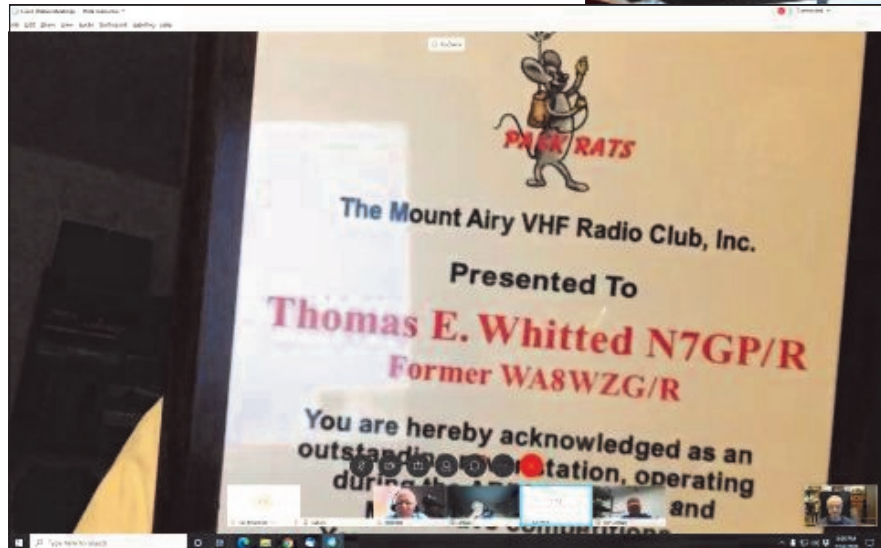
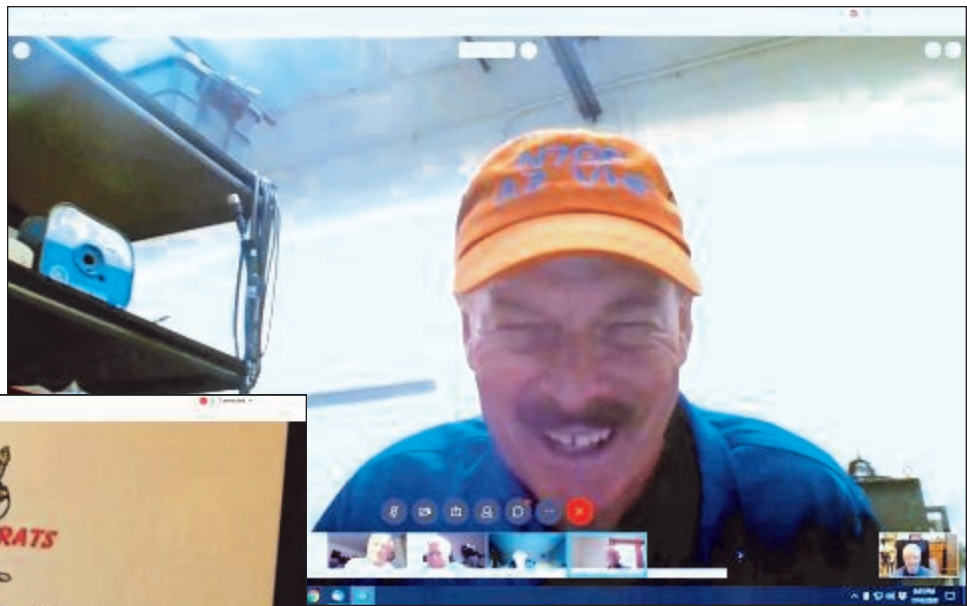
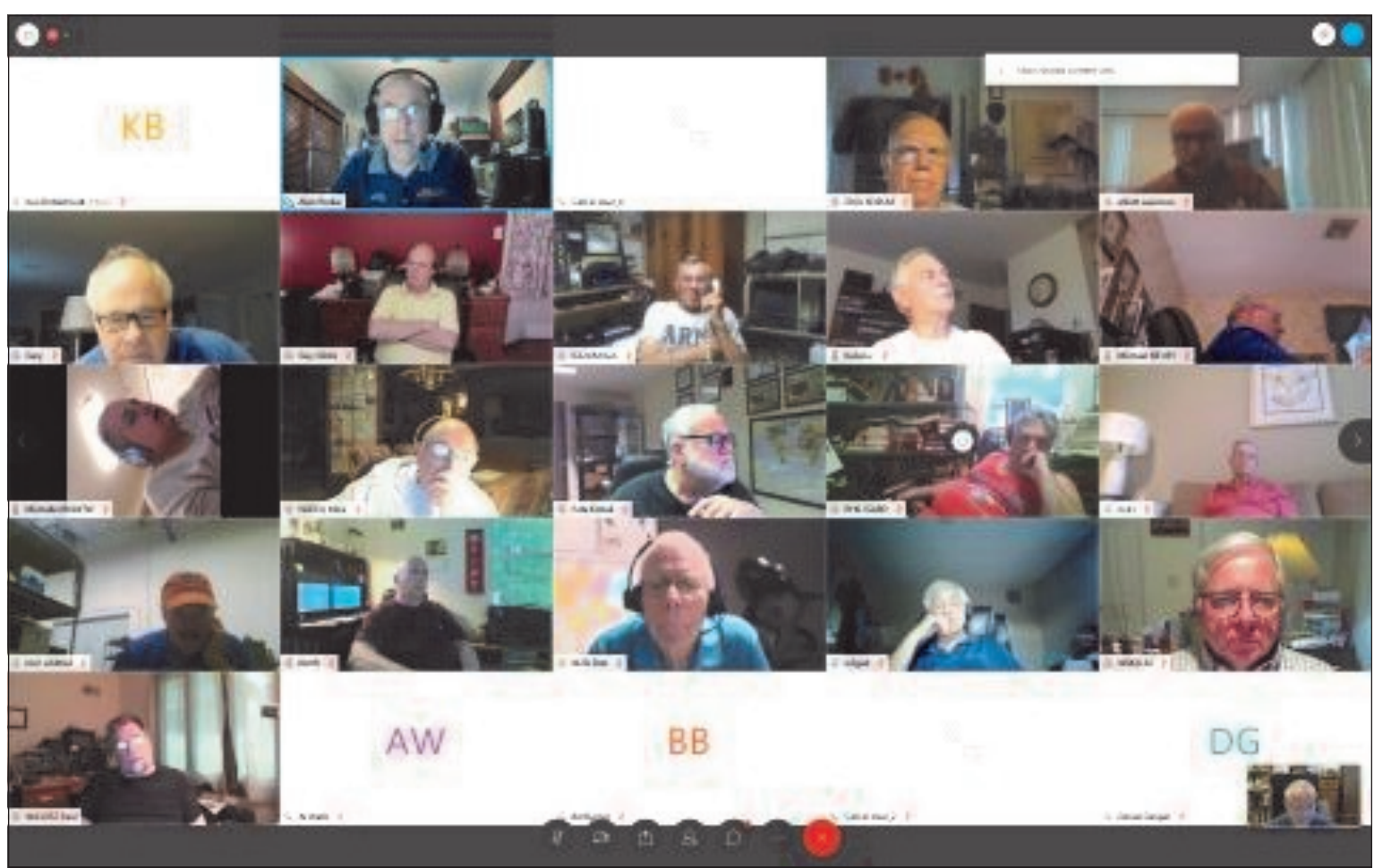
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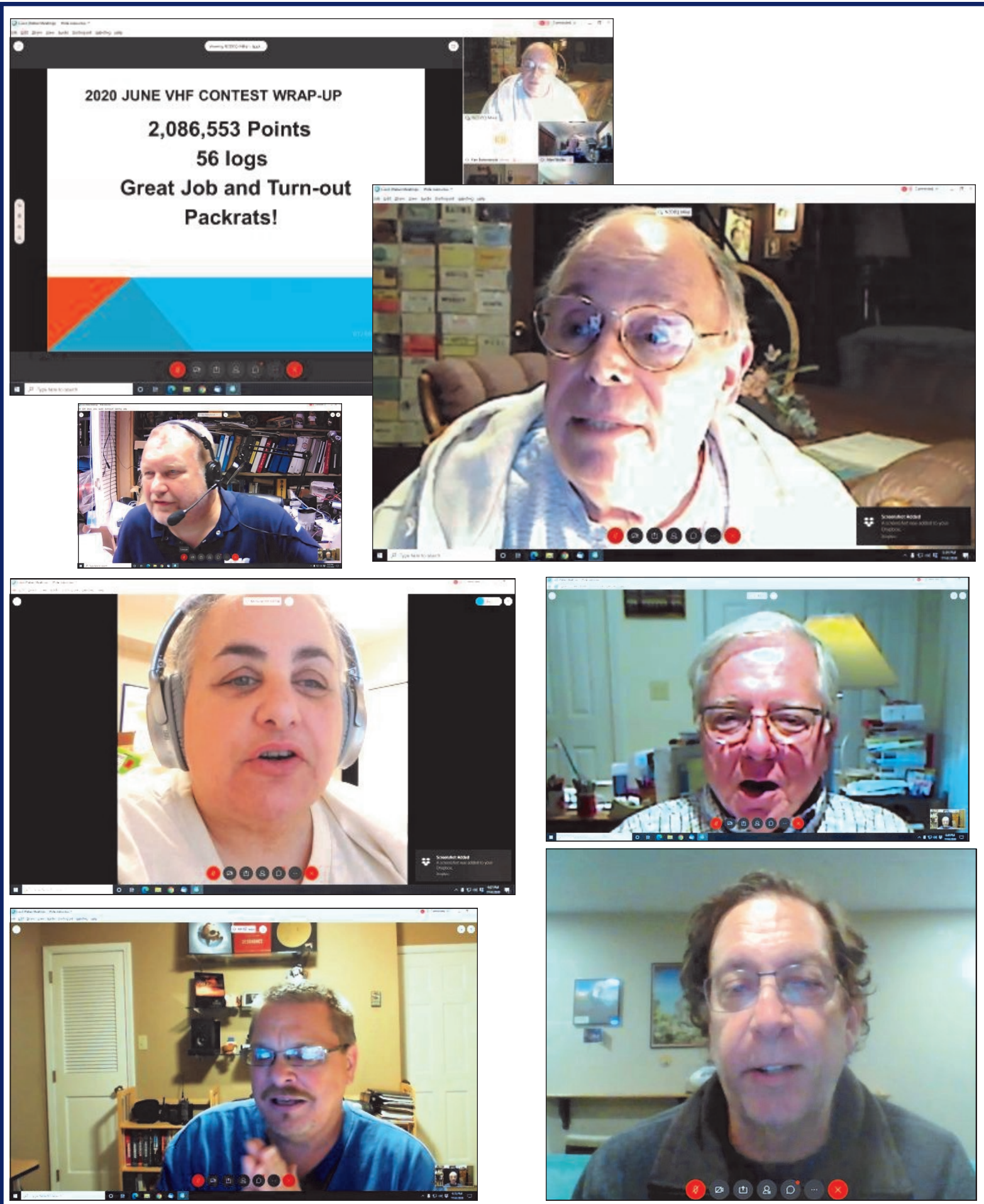
7/16/2020

3rd Order IMD Properties

- Close to fundamental frequencies (in-band problems)
- Amplitude varies 3x faster than input signals







2020 CQWW VHF FN24 Portable

By Peter WW2Y

I caught the FN24 bug during the 2018 CQWW VHF contest while I was at a vacation rental on the other side of Route 30 along the eastern side of Tupper Lake, situated on the western side of Mt. Morris' base, (which is the home of the defunct Tupper Lake's Ski Resort). You can imagine the difficulty of trying to work stations towards the south through northeast where most of the activity takes place. I recall completing only 9 contacts and 5 grids on 2M running a 150 watt brick into a M2 2M9 antenna at 33 ft. for that event.

I returned to the region with 6 and 2 meter KW amplifiers added to the lineup in December, 2018 for the Geminids meteor shower roughly two miles north on Rt. 30 next to the Raquette River Flow. This vacation rental is located at a confluence where Raquette River, Raquette Pond, Simon Pond, and Tupper Lake meet. Fortunately, it was very cold for couple of weeks prior to my arrival so that guy anchors can be secured in the ice for guying each of the two painters' poles that were mounted to the uprights of the dock with zip ties. I wished I brought my hockey skates because the ice was so smooth without snow on its surface and it would have been cool to navigate to all of the frozen waterways right from the dock. It turned out to be a better location for radio as well as a better view of the winter landscape with distant peaks to the east. At this location Mount Morris is still too close and now positioned more to the south.

In early spring of 2020, I began to search for a vacation rental for the upcoming CQWW-VHF contest. Most rentals are not available this year due to the COVID-19 pandemic. I went to the Adirondacks in late April and early May and found a potential site that was situated on a relatively high plateau looking over a river valley towards the south. I thought to myself, this should work.

I returned home and ordered a Penninger Radio "Field Tipper" mast base for the 35ft Tipper mast, and a 6M3 antenna to replace a 2el HB9CV 6m array that had been in use. I also searched for a new rooftop cargo carrier on the web and at camping stores without success due to lack of stock and delayed manufacture shipments during the current health crisis.

In early July, I began to make a list of what equipment to bring and to configure the amplifiers transformer's primary voltage wiring from 240VAC to 115 VAC to be compatible with a Honda EU-2200i generator. I checked and cleaned a Clam Quick-Set shelter that was used for ARRL Field Day last year and gathered tons of camping gear. I tested all equipment powered by the Honda generator under load with several 12 gauge extension cords and two power strips. The load consisted of the FT-991 transceiver, Commander II and Acom 1000 amplifiers, a 450G rotor, a tethered laptop with Win-Test plus WSJT-X software. Everything appeared to be running happily including the generator, even in "Eco Mode"! The generator was able to ramp up very quickly to supply current on demand without having a momentary voltage sag from the transient nature of on and off CW; even working well when keying speed was reduced to 18 WPM. SSB modulation seemed fine and problems with digital modes would have been obvious (there weren't any) .

A week before the planned 350 mile, 6.5 hour trip, I found a used Thule Alpine cargo carrier on Craigslist advertised not too far from home. The cargo carrier would be used for transporting the bulky shelter (6.5 Ft long when folded), a ski bag full of 6 ft mast sections, the 6M3 boom, and some small camping items to fill the voids. I was worried about running out of cargo space in the Subaru Forester, but the cargo carrier turned out to be a life saver!

I finished stuffing the car by 9:30 am Wednesday morning. I was relieved to have an unobstructed view out the rear hatch window with all the "stuff" crammed in every nook and cranny. Off I went hoping I didn't forget something critical. I wanted to make sure this trip would be a plug and play mission. I encountered some heavy traffic near Albany on I-87 which was to be expected for this time of the year. I pulled into the site by 5:30pm. To my amazement, I was standing in waist high florescent green vegetation, including sprouted new trees within the logging trail and in the clearing where the shelter plus antenna site would be placed. I was greeted by a random formation of flies, as if I was a host star of an unorganized solar system that followed me wherever I went. They looked like deer flies, but they didn't draw blood, fortunately. Also, I noticed the place lacked mosquitoes at this point in time; guess it had been fairly dry for at least several days. I applied bug spray just in case. This unforeseen vegetation growth wasn't there two months ago! Mother Nature is impressive, when you think about it. A thought about the unexpected recovery of forests and vegetation near the Chernobyl site popped into my head.

Site Prep and Setup

At this point a sobering reality quickly sinks in recognizing the fact that I have unexpected amount of work cut out for me. It's time to back out of this jungle and head into town to purchase a machete, pair of loppers, and a bush hook. Once that was accomplished, I needed to find a place for a decent meal along with a mug of beer, and to find a hotel for a restful night's sleep. I found a Super Wal-Mart on the main drag and I felt confident they'd have everything I needed for the next morning's bushwhacking experience. Everything on the list was purchased and I had dinner and booked a room.

I woke up at 5:30am, and headed out of Dodge by 6:30am to acquire ice for the cooler, more bottles of drinking water, and some food, and filled the generator plus spare cans with gasoline. Oh yes, I didn't forget to grab beer to reward myself later in the day, hopefully!

I drove to the site before 8am and began hacking away at the brush, removing downed branches and sticks. This took roughly 3 hours to complete and I was already feeling somewhat tired and drenched in sweat, since it was very warm at 89 degrees. It was very muggy too. By noon, the sun's radiant intensity abated somewhat and was replaced by thin clouds rolling in from the southwest. Rain is now in tonight's forecast. Now, I feel energized because I was finally doing something different: installing the mast, antennas, and cables instead of whacking away the brush. I raised and guyed the mast, aligned the antennas with the compass, and grabbed the MFJ-259B analyzer to confirm antennas are tuned properly. The shelter is now in place along with tarp flooring, tables, and a cot. I hauled the radio gear out of the car and connected it all together at the operating position. Finally the generator was placed 75 ft. away and off to the side of antennas. I fired up all of the gear and turned the antennas to check for unexpected noise sources. Both bands appeared to be very quiet, (except for 2 meters while the antenna is pointing at the generator). The rise in noise floor is not objectionable, but I wanted to see if attaching two split beads (31 mix) at the extension cord connecting to the generator would attenuate the noise sufficiently. It did! At 6:30pm I started to cook for dinner and had lots of water before opening the beer.



Equipment checkout

After having dinner, I noticed that Jay, W1VD was on the ON4KST chat page and sent him a message to try working each other on 2M. He replied saying 'I'll call you on CW'. His CW signal appeared and I could hear the FT-991's AGC being pumped. I was immediately excited how loud he was and I sent a quick reply back by sending Jay a 599 report. He replied on SSB saying no need to be on CW. I switched to SSB and had a brief conversation with him. He asked me if I was planning to operate in this weekend's contest. I told him yes. After our contact, I called CQ several times without any replies, then I decided to check out WSJT-X using FT8 to make sure I don't have RFI issues, such as locking up the laptop while being in transmit mode with a KW of power into the ether, etc. WZ1V, Ron answered me on FT8 and that proved all's well. I went back to SSB to call CQ again at 9:40pm on an



empty band and VE2DIV, Francois in FN25 above Montreal came through off the back of the beam with a decent signal. He was curious as to what I was doing in the Adirondacks and I explained to him my setup and intent of being there for the contest. We had a nice chat for around 30 minutes. It was refreshing to meet someone on SSB and have a stimulating conversation with someone as if I was in a time warp when people actually spun the tuning knob and made activity on the band the old fashioned way. After our QSO, I was really exhausted and felt happy that everything was in place and working. I shut everything down and noticed a loud Eastern Whippoorwill blurring out calls near and afar while I was preparing to crash for the night. This bird moved around often and its calls went on for almost an hour. It is one of the coolest things to hear at night.

I fell asleep for some time and I was awakened by the sound of occasional water droplets splattering on the shelter's roof above me at 12:30am. Grabbed my cell phone to see what the weather's current radar map indicated and it showed a green/yellow blob heading my way. I climbed out of the sleeping bag to see if the shelter's sidewall screens had water seeping through and they all appeared to be okay at the moment. I tried going back to sleep and had a hard time doing so, because I began to feel an occasional very fine water droplets splashing on my face and I became concerned for the condition of the equipment. I found an extra tarp I bought for the trip and draped it over the station equipment and went back to sleep hoping the rain would stop by daybreak. I was awake at 6:00am and observed the rain was slightly more intense and water was leaking inside a little. The draped tarp did a good job of preventing the equipment from getting wet. I began to notice mosquitoes intruding in my personal space while cooking eggs under a large tree. I applied bug spray and all was well. I ate breakfast and checked the radar map often to see when the rain would stop so I can have fun on the radio. A slight cold front finally came through at 9:00am and the sun had begun peeking through the broken clouds. Trees were still dripping water droplets for some time due to the wind after the rain had stopped. By 9:15am, I fired everything back up to check 50.260 MHz using MSK-144 mode, my favorite digital mode and nothing was heard for several minutes. I moved to 2M to work Stan, W3XTT briefly on 2M.

FT8. Then I tried to generate activity on 144.200MHz using SSB as well as CW to stir up anyone to no avail so I went to 6m. Same thing occurred there too. I decided to teeter on the FT8 event horizon for a couple of minutes to work John, WA1EAZ in FN42 on 50.313MHz before heading back to the SSB portion of band. On SSB, a CQ was quickly rewarded with an answer from Mike, WB7BVW/m who was traveling in northwestern Wisconsin on vacation. He didn't know what grid he was in, but that was okay. I spent rest of the day Friday on and off the air conserving fuel while making contacts into the Midwest, Southeast, and New England on all three modes as evenly as I could. On 50.313MHz, FT8 is crammed with loud signals in one 3 KHz channel as if people were addicted to a narcotic while playing snake charming flutes in 15 second sequences and didn't want to fall into the gravity well just yet. I tried FT4 on 50.318MHz multiple times and it was vacant every time I checked. Took some time off to go swimming at a nearby river to get refreshed and cleaned up from all of the sweat and grime I'd accumulated for the last two days. My last QSO of the day was hearing Dan, K1TO in EL87 who was calling CQ on FT8 with a S9 plus signal. I exchanged a report with him and sent a TX5 message saying go to 50.130 SSB. He replied saying he's looking for a microphone. A cycle later, another one arrives saying he can't find it. I went to bed early to get some needed sleep for the following day's contest.



Editorial (a slight diversion)

I decline is the fate of the traditional modes as we know it and I'm having a difficult time accepting it. I like the digital modes very much, but I'm greatly concerned about our wide swaths of precious radio spectrum that has been basically abandoned above 28MHz for several 3 KHz channels. CW is practically nonexistent and SSB is becoming scarce during a band opening. This seems to happen even during most contests for long stretches at a time. There was an exception to this in this year's June ARRL VHF contest when 6m was really experiencing a

FN24 cont'd... very rare weekend long Es conditions. CW skimmers are disappearing as quickly as they appeared a decade ago. There has been some talk about possible solutions to this, but no action has been taken. I've been quietly sitting back hoping it's a transient phenomenon that will play itself out. So far it hasn't.

Fortunately, the ARRL has realized that allowing chat room communication between people during VHF contests to coordinate potential contacts has **elevated the activity level greatly** for everyone. I often think about the ones who venture out in their rovers, portable sites, and hill toppers trekking out in remote areas putting in tremendous amount of energy and effort to make themselves and others happy. VHF contesting needs all of the help it can get to survive. Also, I would like to see the Hill-topper category to be less restrictive in the amount of hours allowed to operate and to use a bit more power. Battery technology has advanced greatly in power capacity during recent years for their size and weight. Imagine someone who spends several hours hiking up to a peak with packed gear on their backs only to operate in poor radio propagation conditions for 6 six hours, only to return unsatisfied. It's especially painful if conditions improve afterwards, which happens often. I wish CQWW would deal with these pressing issues.

Pre-contest QSO's

Well before the contest started, I woke up at 7:00am Saturday feeling refreshed and had breakfast. Afterwards, I decided to try my favorite digital mode, MSK-144 on 50.260MHz to see if I can make casual contacts with anyone without checking 2m conditions first. (More on that later). W9DC and N8LRG were being decoded while the latter is having a QSO in progress that was filling the decoded page quickly. I was able to work W9DC and N8LRG easily. K0TPP was a dependable QSO, as usual. Checked out 6M SSB and 2M SSB and didn't hear anyone. On 2M I switched to FT8 at 8:15am and noticed a bunch of decodes showing up from W9VHF in EN71, and others. W9VHF in EN71 went into the log and W1FKF (FN43), N3AAA (EN90), W3XTT (FN01), N2WK (FN03), K1RZ (FM19), KE8FD (EN80), K2DH (FN13), and VE3CIQ (FN15) soon followed. The band closed up at by 12:30Z. I must have caught the end of a decent tropospheric band opening and I wished I had checked the propagation maps earlier. My gut feeling tells me if conditions have been decent on 6 and 2 meters for several days leading up to the day of contest, it'll turn out poorer when contest begins. This is often the case.

Took a break and went into town to replenish ice supply for the cooler, food plus snacks, and refilled generator and fuel cans. After returning to the site and unloading fresh supplies, I headed out again for a swim at the river few miles down the road to cool off, since it was very hot by midday. Came back about an hour later, turned everything back on and parked myself on 50.130MHz. At 1740Z, I sent out a CQ to see if anyone answers. To my surprise, K3KYR, Gordon answers me from Bombay, NY in FN24 who I've seen his call in many VHF contest results from years past. We chatted for good 20 minutes until the start of the contest. He tells me his M2 9 element beam has been in disrepair for some time, but it was somewhat functional. I told him I'll get in touch with him once I return to the area to possibly help him with the repair. He was kind enough to give me the first contact once the bell rang at 1800Z.



Contest operation

I called CQ for several minutes without an answer until 1805Z when I hear a weak N1 calling me off the back of the antenna several times. Then I realize it was Mike, N1JEZ in FN44. We quickly moved to 2m SSB for a double. I spun the dial briefly without hearing a signal and returned to 6m SSB to pick up a few more stations before returning

FN24 cont'd... back to 2m. At 18:35Z, I tune across W3SO FN00 calling CQ with a Q5 signal and he heard me fairly quickly for an exchange of a 383 miles QSO. I bounced back and forth between CW and SSB a few more times before having a QSO with KT1J in FN34 on FT8 and WA2JMG FN23 on CW. Nothing else was heard and went to 6m to work W4SPR on CW at 19:07Z. By this time, 6M FT8 had many red signals on the waterfall indicating the band is open. I tried calling CQ a few more times on SSB and CW without success. At 19:11, switched to FT4 and heard only K0GU in DN70 who was booming in red on the waterfall calling CQ test. He went into the log and I spent time to run and netted almost all distant QSOs on 6M: WO7R (DM32), AA7V (DM43), and K0NR (DM78) within 16 minutes. K0GU continued to bang away steadily and I didn't hear anyone else giving FT4 a whirl. At 19:30Z, switched to SSB and Arliss, W7XU (EN13) had a decent run going and worked him. I moved to CW and netted 2 more stations from New England, W1EAT, and AF1N both in FN34. I QSY'd back to FT4 and N1AV (DM43) went in the log, followed by VE3QN (FN25). I spent the next 10 minutes on 50.318 MHz without having further replies. During the 2200Z hour, on 2M I picked up some more CW and SSB contacts including KD2LGX (FN13), N2SLN/R (FN23), and VE3ZV (EN92).

There were quite a number typically active VE3 stations who were absent during this contest. I miss them. I heard and called W8ZN, EM87 consistently on 6M throughout the day on SSB and FT8, but couldn't get Terry's attention because he was being called by multiple stations whenever I ran across him. I've **learned after the fact** that I should have parked my transmit signal at the bottom of the FT8 spectrum so that the decoder starts decoding signals first while it's in answer first mode. Oh well, maybe another time Terry. Also, I heard and called Bill, AA2UK (FM29) on 2m FT8 as well, but I suspected his noise level was high. I had a mini run of 6M stations on SSB during the 2300Z hour into south Florida, and also a call from KC8KSK in (FM03). The band crashed just before the 0000Z hour. This was probably a good thing, because when I moved to 2M SSB, KA2LIM in FN12 was very strong and had no takers. I called and worked him for a new one. The activity at this point was so low that I asked Ken where everyone is. He said they all must be on digital. I concurred. Spent the next few minutes reminiscing with Ken about the old days when there were stations abounding. Roughly 15 minutes later at 00:20Z, I called CQ twice using CW on 144207 MHz and Howard, WA3EOQ in FM09 answers with a Q5 signal for the most distant contact via the troposphere at 437 miles. Immediately afterwards, VE2GDR in FN25 and VE2OTA in FN35 both moved the bands on SSB for three more new grids. At the beginning of 0100Z hour, I spent the entire time on FT8 calling stations on 144.174 to work new grids, including KG2H (FN33), W1VD (FN31), N2NT (FN20), VE3CIQ (FN15), W3XTT (FN01), and VE2PN (FN46). At 01:50Z, I switched to 6M FT8 for the rest of the night to pick off needed QSOs and grids, which included the only contact in FN21, K3ISH. My last QSO of the night was at 02:30 with K1KA in FN42 and had 58 QSOs in the log. Once I shut down the equipment and generator, the Whippoorwill was doing its nocturnal ritual as usual and I drifted off to sleep. I should have probably stayed up longer but felt quite spent from the last few days. Plus I wanted to be functional in the morning for the MSK-144 aspect of the contest to knock off more multipliers on 2 and 6 meters I've would not have otherwise.

Woke up later than I expected and ate breakfast quickly because I was eager to get back in the chair. Everything was warmed up and running by 10:40Z. I dialed in 144.150MHz using MSK-144 to see if there's any ping activity on meteor scatter. I noticed a strong burn from N4SVC's CQ from EM80 and I was able to complete the contact fairly quickly at a distance of 1102 miles. Next one was with Ray, W9VHF in EN71. I tried a few more CQs for several minutes to no avail. Switched to 6M and snagged 8 more contacts, including VA3SK (FN06), and K1RZ (FM19). Then I switched back to 2M to work W0VTT in EN33. After working VE2HAY in FN35 on 2M FT8, I noticed that K1TEO was booming in and I didn't want to work Jeff on that mode. I loaded up the TX5 message saying go to 195 SSB. He disappeared quickly and I knew he figured it out. In a flash, he started calling me on 144.195 on SSB and worked him with S9 signals both ways. We quickly moved to 6M for a double. Shortly after moving back to 2M SSB, N2SLN/R is now in a different grid for another double. **Rovers really make things fun and interesting** by their contribution. Thanks guys! Ten minutes later WZ1V, Ron calls me on CW for points. I went to FT8 and was called by Charlie, N1RR for a FN41 multiplier. Decided to try 6M SSB/CW for several minutes and nothing heard. Then decided make the move up to 50.313 MHz, FT8 for 6 more QSOs while aiming mostly towards FN42/ FN32 and VE3PJ (FN14) made it into the mix. I gave FT4 another shot and managed to work the gang at N4SVC and Peter, W4IMD (EM84). There was no one else present. I wish everyone who must be on digital would use FT4 instead of FT8. It's a much more efficient mode, especially during the periods of dynamic QSB. It was proven to be **very effective during the ARRL June VHF contest**.

What happened to the momentum? By 14:30Z, AB3CX called me on CW and he was placed into the log, followed by Dave, K1ZZ in FN31. I decided to switch to FT8 for more contacts before returning to 2M at 15:20Z. Signals on 2M seemed to be elevated towards the south. I tried calling AA2UK again on FT8, but I couldn't catch

his attention. N2NT's signal was definitely up now and he noticed I was lurking on FT8. Suddenly, a modified TX5 message pops up saying go to 50099 CW. I knew this had to be John at N2NT and I instantly changed bands to 6M, CW. W1AN was apparently calling CQ on the same frequency and I tuned up and down somewhat to listen for N2NT's call. Guess W1AN realized there was a scheduled contact in progress and he was kind enough to standby or QSY. Seconds later, I hear N2NT calling me and I'm able to copy him pretty well. It took a couple of quick transmission cycles to synchronize for an exchange. He was solid Q5 copy towards the end of the contact. Now he's in the bag. This is the first analog QSO between us after couple years of trying from FN24 on either band. I'm convinced we could have done it easily on 2M when I received that QSY message on FT8. Found W1AN a few KHz lower calling CQ and worked him for a new multiplier as well. I quickly jumped back to 2M FT8 to work Steve, K3WHC (FN10), Dave, K1RZ (FM19) for a couple multipliers and few more contacts. I spent some time calling AA2UK, since his signal was relatively strong at this point and I really wanted the FM29 multiplier. We never succeeded.

Finally at 1823Z, 6M started to show an Es cloud developing somewhere over Maryland and northern Virginia. Found a frequency to run on SSB and Pete, K2PS in EL98 answers me. No one else from Florida followed, but I had a string of contacts from grids EM34, EM60, EM64, EM65, EM66, EM72, EM73, EM74, EM75, EM76, EM77, EM83, EM84, EM93, EM94, EM95, EM96, FM03, FM04, FM05, FM06, and FM14. The marginal opening lasted for about an hour and made roughly 55 contacts during this period. It's not a great rate, but it was the best run of the contest from here and I was happy to take advantage it. I did manage to work a few stragglers on 6M in between 2M FT8 contacts in the next hour including K9IL (EM56) and K2XA on CW, N5RZ (EM00), and W8PAT (EN81) on FT8.

With 20 minutes remaining in the contest, I checked to see if there was anyone else to work on 2m SSB and CW, didn't hear a soul. Switched to FT8 and saw a list of decoded stations that I'd already worked. I knew there were some stations on 6M FT8 to be had. I went back on 6m with the antenna pointed towards New England. In five minutes I snagged K1BZM (FN51), K1DY (FN54), and VE2NR/R (FN26) for the remaining new grids. A few more stations went into the log before the closing bell, including N2SQW (FN22), N4MNV (EM73), KX4HA (EM84), and W5BN (FN33)..

Afterwards...

I shut down the station equipment and generator after letting the 6M amplifier cool down for several minutes. My cell phone alerted me there was a severe thunderstorm warning with strong winds possible heading my way. I'd already heard a distant rumble and observed the darkening of the skies towards the west through the tall pine trees. I quickly disassembled the equipment and hauled the precious cargo including the generator into the car with about ten minutes to spare. I resigned to the fact that I'm leaving the mast, antennas, cables, shelter, tables, stove, chair, cot, cooler, bucket, and other small items in place until next morning. I stayed inside the shelter to ride out the storm which produced a heavy downpour, along with fairly intense lightning and thunder. Fortunately, the wind was not as bad as predicted. This finale lasted for 20+ minutes. Water was seeping through the shelter walls at a magnitude higher than last Thursday night's rain.

Once the storm had passed, I went into town to book a room and went to a local pub to eat real food and drink a cold beer. I was finally relaxed and had some time to reflect about the contest, such as memorable contacts, band conditions, things I should have done, etc. I went to the hotel and took some time to look at the scores that had been already posted on 3830 and then literally crashed for the night. After having breakfast the following morning, I headed back to the site just before 7:30am to tear down the mast, antennas, shelter, and pack everything back into the car. Finally, I headed for home at noon. Arrived home at 7:30pm and had a quick bite to eat before unpacking the stuff for the next 1.5 hours.

I thought it was a great time despite of all the preparation and unexpected chores that had to be completed in order to make it a successful adventure. Would I do it again? Yes, definitely. I want to thank K1RZ, N2NC, N2NT, and W2KV for the encouragement and motivation to make this possible. 73, **Peter WW2Y**

CQ WW VHF Reports

From Dave K1RZ

Activity seemed very high in the northeast. Naturally 144 MHz was enhanced in the days immediately preceding the contest, which seemed to go away Saturday morning. But, with the high level of activity we were always busy working new stations.

Thanks to those who roved (KK4BZ and K5ND), and and to those who went portable in relatively rare grids (WW2Y FN24 and W8ZN EM87). Thanks to CQ for sponsoring this contest.

Q's 288 Mults 123 Pts 47355

From Bill WS3O

Wow, two contests for me this summer. I was able to participate in the CQ WW VHF contest. I only ran 2m for this one. It turned out to be entirely digital modes. I kept checking on SSB, called out a bunch of times, but never heard anyone. That is, except N2NT and K1TEO, but I already had them on FT8. I'd prefer phone, but I will work with digital. I'd also prefer to drive a car with a manual transmission, but those are getting rare too. Doesn't mean I stop

CQWW cont'd...

driving. Single Operator, Single Band (2M): 30 Q's, 14 Mults 840 pts.

I worked everyone I was able to hear.

From Pete K0BAK

My van was not available, so I casually operated the contest from home. At least I contributed a smidgen to the Packrats club score. It was also one of four yearly POTA event weekends, so I would contact park activators till I exhausted their spots, then went on 6M FT8 until those contacts and CQing were exhausted, back and forth. I have no VHF antennas at home, so all I can do is rudely push 6m into a 40m doublet. About 3.5 hours of operating on 6m. 65 Q's 20 Grids 1300 Pts. It seemed like mini openings from one or two distant grids would pop up then disappear, based on the decodes I saw.



VSWR 2.5:1

LITTLE STATION, LITTLE SCORE: KIDS' CQ WW VHF

We had planned to be in Packrat territory for the summer, but COVID-19 intervened. Our plans were modified as we drove here from Florida, arriving on July 8th. I had stored some radio gear at my daughter's home and retrieved it to set it up at our rental apartment at Korman Suites in Blue Bell. The tripod extends to about 7' and I place a 6m dipole on top. It was made from a pair of extendable whip antennas that I bought for a buck at the White Elephant sale a few years ago. The wire beams that I built from the WA5JVB designs were also available, but the rig was unhappy trying to transmit with the 2m beam. I started the contest using FT8 on 6M and the band was open on and off all afternoon. I operated for three hours, making a few contacts each hour as my antenna and power of 50W was limited. On Sunday I added several more digital contacts, including a few using FT4 for the first time—Zip-zap!! I managed to have 2 phone and 2 CW QSOs on 6M also.

I asked George KA3AXV for a loan of his AAI Vector Impedance device to check out the beams, as I had never measured their true resonance when I hastily assembled them right before the January contest. We met Sunday morning and I picked up the device and went to work checking the 4 beams—144, 222, 432 and 1296. With a minor amount of trim of the driven element, I got all the beams to a VSWR less than 1.5:1. The 222 beam needed about 5mm of paper clip added to the driven element end. I quickly found the reason that the 2m beam was creating a problem for the transmitter—there was a braid to center-conductor short where the coax was soldered to the driven element. This apparently developed in storage as the beam worked fine in January. Once I straightened out the short, I had a nice 1.4:1 VSWR at 144.2MHz. Toward the end of the contest on Sunday afternoon, I was able to make 17 FT8 QSOs in 9 grids on 2m with those three elements at 6' and 50W. I rotated the beam manually North, South and West. Here's the little score: 1,403 points 6M 24Q/20 grids 2M 17Q/9 grids. Great to see and hear so many Packrats active with 13 'Rat QSOs on 6M and 10 on 2M. 73, **Rick, K1DS**



KOBAK 50 Volt Van Upgrade and 6m Amp

6m Amplifier History

From my earliest VHF rover outings in the minivan, 6 meters was frustrating in regard to often hearing stations easily who could not hear me. I assume that's because, like most rovers, I can only use low-gain antennas like a halo or Moxon due to the width of horizontal Yagi elements. My very first ham amplifier was bought in 2014 trying to improve my 6m TX to RX ratio: a TE "350" watt model, which in retrospect didn't provide enough gain over 100w to justify its cost since it put out less than 300w when driven reasonably. A few years later I jumped on a good Packrat offer of a M² kilowatt amp. These are not sold new anymore (as far as I know). They normally came with a separate paired power supply, but only the amp was offered—which was good because I needed to supply my own 50 volts DC in a rover. After a while, I got a 50v 20Ah lithium battery for the amp, about the size and weight of four bricks. I figured it had enough energy to run the amplifier for an hour or two on SSB, by only using it when needed for a contact during a contest. That seemed a reasonable approach to reduce battery cost, but I didn't know enough about deep cycle lithium batteries and their battery management systems (**BMS**) to know that their max sustained current is restricted for safety. I had only dealt with SLA/AGM station batteries before, which have no problem delivering enough current to weld metal, so I expensively discovered that the M² amplifier current consumption was constricted by the BMS, reducing max RF power. Another issue was a large inrush current to the amp, enough to see a visible arc and hear a crack when I connected the amp to the battery PowerPole connectors, even though the "power" button on the amp was off. That can't be good for the battery or the connectors; a decent traditional power supply would limit that instantaneous current but the BMS can't react fast enough (apparently).

Although I did use the 6m battery-powered amp in the minivan rover a few times, its time and power limitations were hardly worth the complication and setup time. Then the TV van came along; 9 months later the minivan was decommissioned as a radio station, so the M² kilowatt and its battery was put aside for a few years.

Amplifier Revival and 50 Volt System

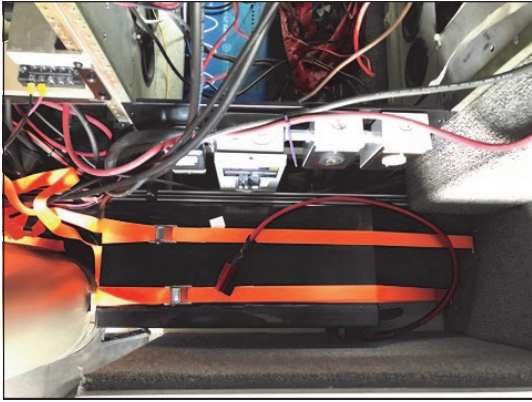
My recent planning for building VHF-band rack shelves for the TV van led me to think about a shelf for my 14-volt TE 6m amp and whether it was worth the rack space. In turn, that led me to decide to use the 6m kilowatt amp instead, and provide a better power source for it. Four deep-cycle 12v AGM batteries in series would be a reasonable electrical option, but their total weight and size was a challenge in my remaining van space. Instead, I decided on the *Bioenno* 50v 50Ah LiFePO₄...their largest stock battery. While it was much more expensive than four good AGMs would have been, it should last longer than the van itself and not require fussy maintenance. More importantly, the single battery would fit mounted sideways on the floor between the back of rack #1 and the enclosure of the built-in generator, an otherwise wasted space in the van. That battery was spec'd for 50A continuous, which allowed headroom for the M² amp's max current draw.

Although I was aiming at the 6m amplifier, having 50vdc capability in the van would allow me to add more power to other bands if I ever "needed" to. With only a 14vdc supply, amplifiers aren't available even on HF for more than around 400w RF; 28v or 50v is needed to break through that barrier. Knowing a 50v power system would allow me more choices in the future helped to justify the considerable cost and build time.

Battery Installation

As I'd done with other heavy batteries on the floor of the van, I cut boards to fit around the battery and screwed the boards into the van floor to constrain the battery horizontally, and installed heavy straps over top the battery for vertical constraint. I bought the same strong battery straps I used on the other van batteries, but it wasn't until later when I realized that I could only use straps on the long side dimension so the straps I bought weren't long enough. Fortunately, I already had straps with a similar strength and buckle for some forgotten project, though much longer than needed for the battery. Lowering the battery into

position wasn't easy since only one person could do the work in the tight space. In addition to the boards and straps, I also pushed a rectangle of dense packing foam into the space between the rear of the battery and the front of the generator enclosure. I'm pretty confident that battery isn't moving, short of a van rollover accident.



Because the battery terminals would be all but inaccessible in its cubby hole, I had installed 6ga zip cord on the stud terminals before installing the battery. The wires were terminated in a "75 amp" PowerPole pair, which look like an oversized version of everyday

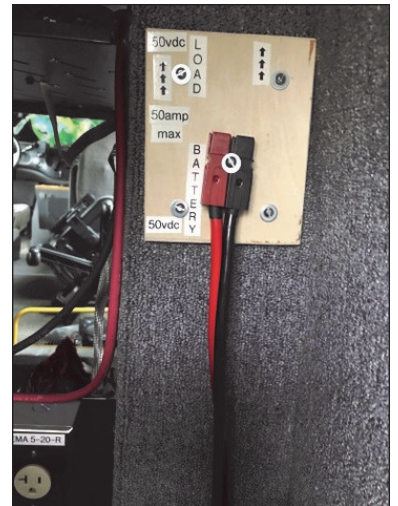
PowerPoles. The PowerPole pair was attached to a board and the board screwed into a van rack wall about 4 feet above the floor. This will serve as the attachment point for the 50v distribution and allow me to remove the battery electrically when I'm not operating 50v amplifiers. The connection point also serves as an emergency cutoff, though a poor one considering I'd have to run to the back of the van to reach it if my 50v components start smoking.



Amplifier Mounting

Originally I had intended to build the switching and monitoring circuit on the same rack shelf as I'd mount the amplifier. But when I started laying out the components on the shelf, I decided that the dense amplifier would make the shelf too heavy. I considered putting the amp on its own front-to-back spanning shelf, but then realized that I could squeeze the 6m amp next to my HF amp already mounted on a strong spanning shelf. Because it would have to overhang the shelf board a little bit, I decided on a "daughter board" mounting scheme. I also wanted a mount that would allow me to remove the amp without deconstructing the main rack, since I had not yet successfully used the 6m amp under hard contesting conditions.

I glued four PVC end caps onto the daughter board to capture the long rubber legs of the amplifier (this was my first use of glue in a van project). Four small eyelets hold the hooks of short bungee cords to constrain the amp vertically. Lastly, four countersunk holes would accept wood screws to hold the daughter board on the main shelf board. The two bungee cords were pretty hard to set because they were at the limit of their stretch, and a wrong move would drive the somewhat sharp hooks into my finger (I know this from experience). Except for the cords, I was really pleased with how well this installation design worked on the existing shelf.



Switching and Monitoring Shelf

With a SLA battery, it's pretty easy to tell how close you are to practical energy depletion: After an initial steep drop, deep-cycle SLAs' resting voltage sags pretty linearly with energy



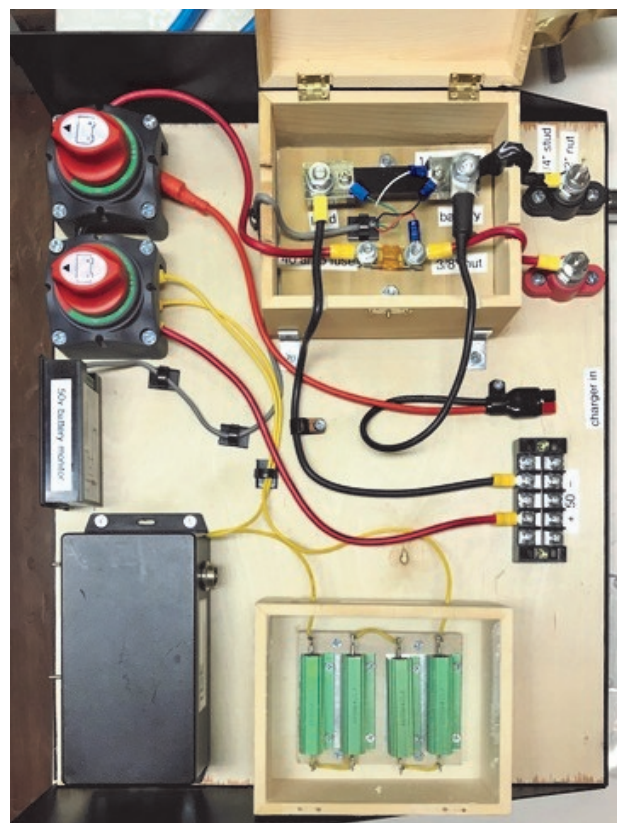
... K0BAK cont'd

use from about 12.7 down to 10.5, so that just monitoring voltage is sufficient to know how much useful life is left. Lithium batteries have an almost flat voltage-to-energy curve, except for an initial steep drop and then another steep drop beginning around 10-15% remaining energy. That flat voltage response is great for powering radios, but not so good for monitoring. If you want to estimate how much useful operation time you have remaining, it's better to monitor total watt-hours; this is also recommended by the battery manufacturer. Of course, watt-hours is harder to measure than just voltage, especially DC at 50v and 30+ amps.

I was aware of the energy measuring requirement back when I used the amp with an undersized Li battery in the minivan. I had bought a *bayite* digital meter that could display DC voltage, current, amp-hours, and watt-hours simultaneously, handling up to 100v and 100a. It used a shunt resistor bigger than the meter itself, which is great for amperage handling and accuracy, but the large mounting bolts and open terminals were mechanically challenging. I installed the shunt and a bolt-mounted MIDI fuse on scrap wood, and the wood board was mounted elevated inside a wood box with a lid. The box was a ~6x6" wooden "treasure chest" from a craft store, and I crudely cut half-circles in the top edge of the box to run the wires out and still be able to close the box. This was a fine piece of hillbilly engineering, but it worked to keep the exposed 50v metal safe while allowing me to monitor the battery at my operating position in the minivan.

My having seen sparking high current when connecting the old battery to the amplifier created a requirement for inrush current limiting. I already had a small collection of power resistors knowing I would do this project someday. I figured four 4-ohm 100w resistors in series would limit current to less than 4 amps, with around 200w dissipation being half of the total rated wattage. The inrush current should fall rapidly as the amplifier's capacitors charge up, so I thought this was a quite conservative design. By the way, that circuit is as complex as my analog designs ever get. I built the resistor circuit on a board, and installed the board into another wooden treasure box with the lid removed. I then glued coarse-weave polyester material on top to allow heat to escape while providing a little protection against fingers or small dropped hardware.

The board would have two double-throw-and-off high-current battery switches rated for 50v: The first would switch between normal operation and charging the battery via a normal-sized PowerPole connector in the back (charge current is 8 amps). The second switch puts the 16-ohm resistor box in series with the amplifier power output (initial inrush position), or directly connects to the output (operating position). At one time I thought about some clever automatic relay circuit for the inrush protection, but decided it would just be simpler with a manual switch—plus a relay that supports 40A at 50v is not common or cheap. I replaced the PowerPoles that were on the amplifier's longish power wires with more-reliable ring terminals, mated with a screw terminal on the rack shelf. With my old shunt box and meter as the core, I built the smallish 14" rack shelf with room to spare. The only tough part mechanically were the switches which were wired close together and connected to somewhat stiff 10ga wires on 3/8" studs. The PowerPole charging connector was part of an assembly that came with the battery charger, meant to screw down on the battery. I built the rest of the 10ga wire assemblies with three different sizes of ring terminals. The input terminals for the 6ga cable from the battery PowerPoles are 1/4" studs. I did not think to include terminal covers with the 1/4"-to-Powerpole wires, so I'll have to build a bespoke cover for the stud terminals later, because I'm not building another difficult 6ga zip wire assembly. To make room on the rack, I had removed a bad-idea rack cover with three meters



... K0BAK cont'd attached. I added one of those meters, a monitor for my 14vdc boost-regulator, on the 50v shelf because it fit nicely.

Installation and Smoke Test

Even though the rack shelf wasn't terribly heavy, it was still difficult to get it screwed into the van rack. Between picking a wrong pair of threaded holes, misaligning holes, and simply my arm muscle giving out, it took four sweaty tries on a hot humid day to get the shelf installed. It's really a two-person job.

Despite my natural pessimism, the shelf seemed to work as designed. The inrush time was only a few seconds till the current settled down, as expected. I only have an HF (30 MHz) dummy load that can handle high power; the dummy load's low-power SWR at 50.1 MHz was about 1.6:1. So I didn't push the amplifier too hard, but did verify the 13dB (20x) gain I had seen before up to 600w with an FM carrier. I'm looking forward to an on-air test, but was happy enough nothing smoked—this time.



222 & Up Mini-Rove

I wanted to be a part of the weekend activity as I still had gear stored here in PA. We arrived back here in PA from Florida on July 8th, delaying until the pandemic situation was better here. We are renting a furnished townhouse apartment in Blue Bell. I planned 3 grids, but I completed 2 of them. I drove up to Camelback and arrived at the top of the mountain just at 2PM. There were no parking spots on the macadam as folks were busy picnicking, hiking and just having a fun time up there. Luckily, the top of the grass and gravel area where we usually have the microwave station placed was empty. Four motorcyclists pulled up beside me for a few hours. I initially oriented the car facing north, set up the tripod and added the three small homebrew WA5VJB Yagis. I set up the two rigs on the passenger seat and sat in the driver's seat to operate. The sun was intense and after my first three QSOs with Alex, KR1ST, I reoriented everything in the other direction, added a sunshade to the windshield and passed the cables through open windows to avoid crimping them in the door closure. The vegetation is growing up there and my measly tripod and antennas just seemed to skim their tops.

All bands were working well and I had 9 QSOs by 3PM. The next hour I added 14 contacts, and 11 more in the third hour up there. Things got quiet and I was about to QRT and drive home when I heard a whistle tuning up on 222.100. I called QRZ and it turned out to be KO4YC with a great SSB signal from FM17. We quickly worked and QSY'ed to 432 and made another SSB QSO. My best distance contact of the day. Before shutting down, I called a few last CQs with no responses. I disassembled the tripod and antennas and had them back in the rear of the SUV. The phone rang and it was AI W9KXI in FN12 looking for a contact. I quickly re-erected the tripod and the 222 antenna, plugged the power back to the 222 multimode rig, plugged in the CW key and tuned, but I heard nothing despite him running a KW! He heard nothing. I started to disassemble things again when I realized that although I set everything up, I FORGOT TO SCREW IN THE COAX CABLE! I quickly put it in and we had great signals on both 222 and 432.

On Sunday morning I went up to the local Nike hill in FN20he. It has views in at least three directions, but the elevation is only about 400' ASL. For most of the Packrats, it's an easy shot, but I also found a nice slot to the north and worked Dale, AF1T in FN43, Jeff K1TEO, Ron WZ1V, and Dave K1ZZ in FN31. In the 2 hours I was there I had 21 QSOs. Thanks to all the Packrats who were active and called me to set up skeds. I was keeping a paper log that I'll convert to Cabrillo and figure out my distances and score using the VHF Rover Log from Dave W3KM. I did take my computer and RigBlaster with me, but I did not try FT8 this outing. Roving is still fun and rewarding when you can add contacts to the fixed and other rover stations. 55 Q's 14555 Pts **73, Rick K1DS**



ARRL 222 & Up Contest Reports

From Dave K1RZ

Thanks for another good distance contest and thanks to everyone who got on to make some UHF+ contacts. Conditions seemed a good combination of normal to enhanced in the mid-Atlantic. Normal in the daytime but definitely enhanced at night, what with the Caribbean hurricane pushing in towards Florida against a high pressure area. Saturday night the APRS VHF Propagation map showed Red from northern Florida to central Virginia, and also Mid-Atlantic to New England. I was fortunate to work my first Florida station in over ten years on 222 and 432 with Steve N2CEI at club station N4SVC EM80MI using FT8 at 1126 km. Thanks Steve, you said you had been copying me for some weeks and I was finally pointed at you. Thanks to Don WA3RGQ/R, Marco KD3PD/R, AI(K3WGR) NN3Q/R, Rick K1DS/R and John N9ZL/R for braving the wild and high parts of PA and VA with UHF and Microwave gear. Thanks to the ON4KST 144/432 Region 2 site for hosting us for setting up real time skeds. And thanks to Joe Taylor and the development team for the WSJTX tool. For FT8 we used the EU VHF Contest template which passed six digit grids. My box score QSO breakdown modes as 123 USB, 58 CW and 29 FT8. 222 Q's 137714 Pts.

From John K3MD

All the hardware worked. MM preamps worked. AM-6154(s) got a little hot on FT8 even on backed-down power. On the air, I heard that some amps fried or near-fried. Very nice to see everyone. Used ON4KST and Packrats Slack, as well as telephone list. Many anti-FT8 comments. FT8 does not seem to have taken over as much as in the June VHF test. As of 3:42 pm on 8/2, the ARRL log submission applet is down (maybe we overloaded it?). Lots of trouble getting WSJY to log this contest to both N1MM+ and Wrirelg. Results: 3 Bands, 42 Q's, 26 Grids, 2444 Pts.

From Lenny W2BVH

Didn't get on until after 3pm. I just finished rearranging the AC wiring in my shack from 4 daisy chained outlet strips to a homebrew grid of 6 (2x3) quad boxes with 2 duplex outlets each. There were a couple of minor kinks to work out. I listened for around 20 minutes on 222 & 432 and heard nothing. Finally started assistance (Packrat Slack page and ON4KST) and things started rolling. Over the course of the contest I was able to put together five 5 band runs, which was very gratifying. Interesting things that happened: W2SJ was much louder (by almost 2 s-units) on 902 and 1296 than he was on 222/432!. Also I was very happy to have worked AA2UK on 5 bands. He had an excellent signal on 1296 and a very usable signal on 2.3 GHz over a far from ideal path. With WA3DRC moving from a slam-dunk-on-the-microwaves location to a pray-for-me location, I'm happy that AA2UK is now around to pick up 1296/2304. Also, I had a rough time working WA2VNV on 902; there was lots of noise directly in his direction. I asked him to QRX while I put a cavity filter in line and the QSO completed with no trouble at all after that. These sorts of things make the 222 and Up contest lots of fun. Results 48 Q's 17669 Pts.

From Ray N3RG

I started the contest about an hour late without a plan but looking forward to having fun. I had a great time and made things up as I went along. Usually I have a spread sheet in front of me with the rovers and their locations listed hourly for the weekend. Somehow my computer ate the file!! So during the contest I began assembling contest tools. First, I went to the K1RZ/W3SZ database and downloaded and printed a file listing stations and locations who would be on for the weekend. I recently recovered from a computer crash and didn't have the Packrat Finder installed so the printout was very useful. Next I signed on to the ON4KST 144/432 region 2 chat page, which turned out to be my biggest asset! I signed into the Packrats Slack chat page, another asset. These programs along with wingrid (used for headings) and QRZ.com for lookups ran on my second computer with a 24" monitor. On my main computer I ran the Flex 5000, N1MM plus for logging, and WSJT-X v 2.2.2, in case the digital folks showed up. Everything worked! So, during the contest I heard voices on the bands (encouraging) and lots of CW (music to my ears) and yes, I even made five digital contacts! I stopped occasionally and chatted with friends, took my time, and had lots

Reports Cont'd..

of fun! I even saved some fun for everyone else! If you didn't get on the air in the 222 and up contest you missed one of the best but I'm sure next year will be even better! "Thank You" to the Rovers who make these contests happen, especially K1DS/R and NN3Q/R. 130 Q's 74,643 Pts.

Some Recent 1296 MHz QSOs at AA2UK

1442 -28 0.2 1360 #* AA2UK KE8FD EN80

1444 -22 0.2 1361 #* AA2UK KE8FD -15

1446 -21 0.1 1357 #* AA2UK KE8FD RRR

Gary was running 50 watts and a single 55 element loop Yagi. We used JT65C

This morning (7/9/20) I worked Gary KE8FD in EN80tj on 1296 using very weak signal mode JT65C. Gary is 410 miles from me. This contact took less time than our initial a few days ago. (see above). I find these modes to be exciting to run and are opening new microwave horizons. In the past this type of contact would require a full blown band opening with well equipped stations at both ends. However this is still a challenging contact for both stations. I agree with the ARRL's opinion about contesting and the numbers don't lie...

1326 -21 0.0 1384 #* AA2UK KE8FD EN80 d*

1328 -30 2.5 1471 #

1330 -24 -0.1 1407 #* AA2UK KE8FD R-29 d*

1332 -16 -0.1 1416 #* AA2UK KE8FD 73

CSVHF "States Above" Contest

The Central States VHF Society conducts an annual contest called "States Above" entrants supply the number of Q's they worked on each band from 50 MHz through light during the period of the contest (1 year) .

Packrat **Andrea Slack K2EZ** came in third this year Congrats!!

If you'd like to participate check out the rules at <http://www.csvhfs.org/index.php/awards-and-programs/states-above-50mhz>

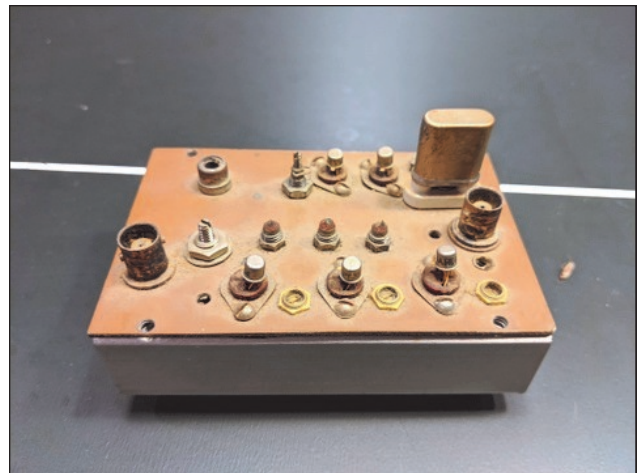
RSGB "RadCom Basics" Available Online Free

I just got a note from the RSGB that there is a free online edition of RadCom Basics available at: <https://rsgb.org/radcom-basics>. —KR1ST

It includes a 2 pager on Sporadic E. Take a look.

Amatuerradio.com has an interesting article about Dr Scott Wright K0MD and his work on using convalescent plasma for Covid-19 at the Mayo Clinic. The article is at <https://www.amateurradio.com/prominent-ham-operators-lead-major-covid-19-pandemic-effort/>

I did not have the heart to toss these... My 2m ssb station built around 1968 to 1970. 14 MHz IF. Handbook tx converter, WB2EGZ MOSFET Rx converter. I was between 15 to 17 at the time. —Ed WA3DRC



Deed Restricted Undaunted -The NE3I Up and Outer

In an effort to improve my Deed Restricted Antennas for the 20 Meter Band, I constructed an "Up and Outer" (hereinafter, the "U&O") on my deck. (I have been using a Tri-Band dipole in the attic and an A99 outside for 10- 20 Meters.) The U&O idea was prompted by my recent construction of a "Buddy Stick." See, W3FF's personal homepage (not, the two web pages that may come up in your search relating to the commercial "Buddy Pole"), for very good detailed instructions on how to make the light and portable multiband Buddy Stick antenna using #18 speaker wire and a few short pieces of PVC. In the process, it occurred to me that I already had a telescoping push up pole lashed to the spiral stairs off of my deck to easily erect the vertical portion of a 20 Meter Up and Outer. The U&O is essentially a Dipole with one Quarter Wave leg vertical and the other leg horizontal. In my case, the horizontal leg ("Radial"/

Counterpoise) runs hidden under the deck. The antenna base and deck are only about 10 feet above ground. (See photos). I erected the 16'7" vertical element and then trimmed the horizontal Radial using an Antenna Analyzer to obtain minimum SWR. Running along the wooden deck beams, the Radial needed to be shortened significantly, (by about 2 feet.) I eventually obtained an SWR of 1.2:1. An article in the G-QRP Antenna Book states that trimming the Radial was related to "the very big difference in capacity to ground which existed between the vertical leg and the low horizontal leg."* Success with the 20 M U&O, prompted attempted modification for dual band operation on 20 and 40 Meters. I anticipated that I would need to modify 40 Meter Coil parameters provided for the Buddy Stick (47 turns on 1" ID PVC) and estimated that a new coil would need 36 turns. (My 20M U&O is 16'7" in vertical length while, the Buddy Stick is about 12 Feet in length thus, the anticipated reduction in coil turns). By splicing in the new

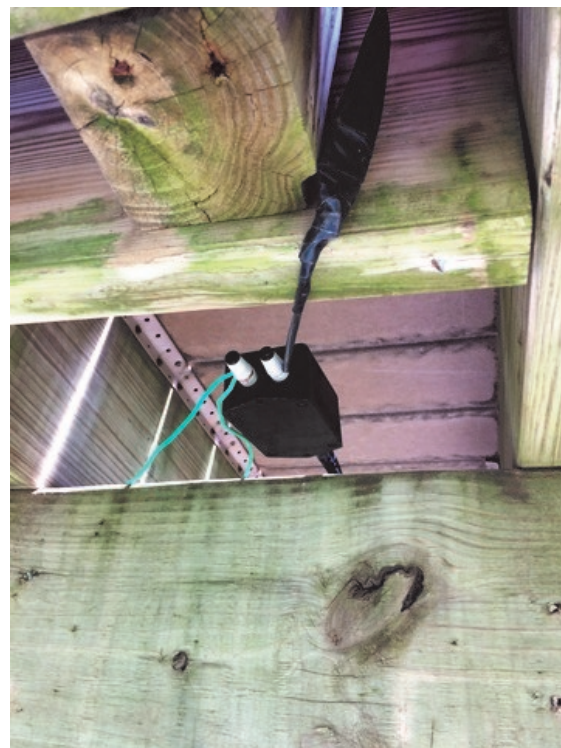


36 Turn 40 Meter Coil and adding and trimming a second 30' horizontal Radial element

below deck, I was able to obtain an SWR of 1.2:1 at 7.075 Mhz and be under 1.7:1 on the entire 40 Meter Band. (The trimming involved removing approximately 4.5 feet from the 40M Radial.)* The lowest portion of the vertical element already consisted of about a 5 foot length of 450 Ohm twin lead I had previously pushed up between the plastic deck railing surrounding one of the 4X4 wooden posts. I surmised that would give me the opportunity to have two parallel 16 '7" vertical elements (one with a coil inserted) for separate bands. Unfortunately, the parallel elements apparently interacted with each other and produced a higher and narrower SWR minimum of 1.7: at 8.5 Mhz and 14.250 Mhz respectively. Rather than go crazy with further trimming and analyzing, I opted to revert to the single vertical element and installed male/female wire connectors to permit insertion of the 40 Meter Coil for interchangeable 40 and 20 Meter U&O



Up and Outer Cont'd... operation. I later added a third coil and radial Wire for 30 Meters and was able to obtain a 1:1 SWR at 10.125 Mhz. The additional Radial did not affect the good SWR on the 40 and 20 Meter Bands. When not in use, the U&O Antenna Wire as well as the 40 and 30 Meter Coils store out of sight inside of the post when the railing cap is on. So far, I have had good on the air results on 20 Meters with the U&O outperforming my A99 even though the A99 is 10 feet higher at its base. Performance preference appears to alternate between the U&O and Attic Tri-Band Dipole depending upon conditions and the distant station's location. My Attic 40 Meter Dipole provides much better signal reception presumably, due to its half wave length. It will be interesting to see whether or not the Vertical aspect of the 40 and 30 Meter U&O proves beneficial in evening and DX environments. In any event, it will be fun to make comparisons. Naturally, given the #18 Speaker Wire and Coils, the U&O is intended only for low power operations and Amateur Radio Operators should insure compliance with RF Exposure Limitations. Up and Outer Antenna concepts have appeared on the web and in multiple antenna publications from the ARRL, L.A. Moxon, G6XN, "HF Antennas for All Locations" and in the *G-QRP Club Antenna Book p. 105-107, (1992). I certainly do not claim novelty with the idea. Perhaps my experience with this simple antenna will be of interest to others who are also Deed Restricted or otherwise antenna challenged. 73. Griff NE3I



The Uncertain Future of Ham Radio

That's the title of an article in the IEEE monthly Magazine "Spectrum". Written from the viewpoint of a non ham and presented to non-ham technologists. Good food for thought. Find it at <https://spectrum.ieee.org/telecom/wireless/the-uncertain-future-of-ham-radio>

Click on a Bubble

All you have to do is click on a bubble, and it will explain where the exact location of the beacon is plus it's frequency.

F4CXO - Balises 50 Mhz - uMap

<https://umap.openstreetmap.fr/en/>

From Herb Krumich / WA2FGK

Just wanted to remind you that Mark Hinkel - WA3QVU and Paul Ceglia - N3TMX have been conducting ham radio swap meets Sunday nights on the Penn Wireless frequency 146.790 (-), pl 131.8 at 7 pm. A lot of the equipment is fairly new as several club members buy stuff then either tire of it or find something better. It is followed at 8 by the PWA tech net. **Note this week I will be hosting it. Come say hello and maybe buy or sell something.** 73 **Michelle KB3MTW**

K1JT 6M JA QSO's

Well, that was quite an opening to the far east last evening (7/11/20), on 6m.

In 42 minutes I worked 27 JAs and HL3GOB, South Korea, for 6m DXCC #117.

Lots of fun!

-- 73, Joe, K1JT

Harry Brown W3IIT, SK

Harry H. Brown of Norristown, age 82 passed away peacefully on July 3, 2020 at his residence surrounded by his wife and children. Harry is remembered by his family as a caring, intelligent, funny and supportive husband and father. Harry was always using his dry wit and quiet nature to show his love and compassion for others. In addition, he was a member of the Mt. Airy VHF Radio Club – the Pack Rats – for many years, broadcasting under the call letters W3IIT (Whiskey 3 Italy Italy Tango). He spent his career in the Aerospace industry working on rockets and satellites since the early 1960's in Cape Canaveral FL, Daytona FL and then King of Prussia PA.



Harry Brown and Chuck Benavides WA3LNH (sk) joined the club in the early 70's and were both working at GE Valley Forge at the time. Both were always very active in club activities. One of which was the moonbounce committee, the first meeting took place at Chuck's house in Perkasio. Harry had worked on Satellite communications at G.E. and transitioned up from Cape Canaveral. Harry was always active in the June QSO Contest particularly the ones in Hilltown. I remember a trip Harry, Tony W3HMU myself and another traveler I think took when we went to the Dayton Hamfest, and brought back a lot of goodies. On returning to Philadelphia from the Colombia Moonbounce Expedition we were provided the greatest hospitality by the Brown's who escorted us the next day to a celebration in Ft Washing at the Packrat Picnic. Harry was also quite involved with the Bucks County Drive Packrat Hamfest. After the event a few of us would gather at the Souza's for a get together. Many times we enjoyed clams brought by Rick Como K1LOG. On one of their visits to or from the winter home in Florida Harry and Rose stopped in at our Cambridge MD home for a visit. In true Packrat tradition Harry dropped off a channel 7 solid state amplifier. A real loss to the radio community and especially the Packrats. We will miss you Harry.

Walt K3BPP

Harry was a member for years and did many things for the club. Our prayers are with the family and may he rest in peace!
Bob W2SJ

Sad news. Very sorry to hear this. Harry was a a very fine person, low key and thoughtful. (and fellow Cheese Bits editor). RIP Harry.

Lenny W2BVH

Very sorry to hear that Harry has gone to his reward. He was a Packrat mainstay for so many years. We will miss him.

Joe, K1JT

Very sad. I took over the editorship of Cheese Bits from Harry, who had done a fantastic job with it for years. We lived nearby and I visited his shack several times. He sold me several items over the years. Jani and I had dinner with him and Rose at El Serape in our neighborhood. They were very much into genealogy, and as a result at their urging, Jani also expanded our family tree. I saw him last when he came to one of our Mid-Atlantic VHF Conferences. Most recently, as I was going through old emails, I saw notes from him. He was a great guy and significant contributor to the club. May the family be blessed with good memories.

Rick K1DS

Harry Brown

I am sorry to hear the sad news. My condolences to the family. Harry was a good friend and a good club member. RIP Harry.

Dave W3KM

So sad to hear of Harry's passing. A great guy and club member. Harry and I shared the same employer GE. We always used to discuss the latest on goings of the company as well as common interest in our hobby. Harry, rest in peace.

Mike N2DEQ

Sorry to hear this, Harry assisted in my employment with GE in the early 80's. His QTH is close to mine here in Eagleville, worked on a lot of projects over the years. Miss the days, and will miss Harry. Gary WA2OMY

Very sorry to learn of Harry's passing. Legendary seems a very appropriate description of Harry's many contributions to the Packrats.

Griff NE3I

Harry helped a great deal getting the W3CCX 432 EME station up and running in Revere PA.. He often joined us for Red Zinger tea in the farmhouse afterwards. I remember talking with him about something technical and someone said (like we all do) well it ain't "rocket science", where upon Harry reflected and said "guess I AM a rocket scientist" (aerospace engineer).. Harry did SO much for the club over the years.. he was also my "QSL checker" (or whatever you call it) for my 2M VUCC! A sad loss - I will miss him.. Deepest sympathies to Rose and the family!

Bill, K1DY

I met Harry 50 years ago. He encouraged me to join the Pack Rats.

We collaborated on many ham radio projects. Harry always had the latest news of the current VHF and UHF amateur technology. We joined our families together for a memorable Thanksgiving 1970. Following that we shared a summer house at the shore for many years, a trip to Canada, and many visits to the Brown's winter retreat in Florida. Harry made many contributions to the Pack Rat Moonbounce Station including assisting with repairs to the 20 ft dish in the rain in February, because in the rain it was warm enough to work and we had skeds to keep. We took components Harry had made to South America, parts of our moonbounce station. 73, Dear Friend..Vaya con Deus,

Tony W3HMU

Very sad news. Harry and I go back a long way. Harry was a friend and mentor. He will be greatly missed.

73, Al - K2UYH

The following went out today (7/17/20) and worked each other: W3HMS, K3WHC, K1RZ, K3TUF, WA3GFZ. We worked a few fixed stations, W3EKT, N3RG, and W3SZ. (10 & 24 GHz). Here is a picture of Paul and I on Mt Penn. Best dx was over 50 miles on 24G between Sam Lewis State Park and Mt Penn. Many other 10g contacts also. They start to pale when you go to 24 GHz.



Warren, WB2ONA paid a visit to Live Oak FL around 7/21/20 and came back with an Aerial Video of the station he operated at. The club station ID is spelled out in huge letters on the ground using 127 truck tires to form the text. Warren's comment on the trip: "There are 137 truck tires in the club station ID. Too hot to be in Florida, but, here I am in Live Oak, playing radio." The video is at <https://www.youtube.com/watch?v=DoaexCxxk-do>

A version of my Cheese Bits article on downloaded ARRL VHF contest logs will appear in the next issue of National Contest Journal. NCJ is now available electronically free to all ARRL members. Pete K0BAK

Thanks Pete & CONGRATS! -W2BVH

DEF CON presentation announcement:

I was invited to give a virtual presentation about my ham van to the Ham Radio Village, a special interest group of the upcoming DEF CON hacking convention (defcon.org). Although this year it is a virtual con for the first time since it started in 1993, I'm still thrilled to be a small part of a small part of an event that I always wanted to attend but never did, despite working 17 years in web security. (see picture below of the DEF CON Jolly Roger flying from my van rotator). Pete K0BAK



Two antennae met on a roof, fell in love and got married. The ceremony wasn't much, but the reception was excellent. —K1DS

K1DS and N1XKT went to a dark sky site to view the NEOWISE comet, a once in 6,500 years spectacular. Here is the picture he took using special camera, lenses and enhancement techniques. Photo courtesy of N1XKT.



New Hope for (Solar) Cycle 25

Cycle 25 will probably be among the strongest solar cycles ever observed, and that it will almost certainly be stronger than present SC24 (116 spots) and most likely stronger than the previous cycle 23 (180 spots).

The possibility of a smoothed sunspot number (SSN) reaching as high as **305** is in the prediction!

Predicting sunspots is like predicting the weather, but not as certain. Let's hope they're right.

Read the article at AmateurRadio.com: <https://www.amateurradio.com/new-hope-for-cycle-25/>

The Wayback Machine In CHEESE BITS, 50 Years Ago

Nibbles from August 1970. Vol. XIII Nr. 8
de K3IUV Bert
(author's comments in italics)

“Our Prez Sez”. Prez EI, **K3JJZ** included a detailed letter of thanks to the “workers” from the outgoing Prez, Ernie **W3KKN**. Ernie summarized the contributions of many members that took on the activities that made the club performance outstanding. Examples given: Committee chairs for the June contest, Ladies night and the Picnic. Also, the monthly tasks of raffles and meeting refreshments. And the transmitter hunts, Cheese Bits, antenna measuring parties and club construction projects. (I note that most of these activities continue today. *(When was the last time “you” volunteered for one of them?)* EI concluded with “let’s keep it up! *(Let’s keep it up in 2020)*).

ARRL Bulletin NR 278, 6/25/1970. Amsat announced “New horizons in amateur radio will be opened through Oscar 6, now in construction. It is expected to have a lifetime in excess of one year, and will be usable for DXing and traffic handling.” *(Remember, this was 50 years ago!)*

ARRL Bulletin NR 280, 6/9/1970. Despite strong protests from nearly every radio service (including the ARRL), the FCC announced a new schedule of application and license fees, to take effect on 8/1/1970.

Calendar. August 9, the annual picnic at Fort Washington State Park. Adult

games added (*think egg toss*). Also, a micro miniature transmitter hunt is planned (*I don’t recall what that was!*). August 19, second outdoor meeting. A “Social Night,” QTH of Bert, **K3IUV** (*ye author*). Members and xyls invited. 9/16, Annual club auction (*lots of good stuff, unlike the earlier white elephant night!*) 9/14 – 9/18, a celebration of Radio Amateur Week, proclaimed by then Governor Schaeffer. One of the largest events was planned for the McDade mall in Glenolden. Army, Navy and Air Force MARS stations will be operating, and passing traffic. Teletype machines will be connected directly to Washington. A model Ham station will be in operation.

Membership. New member: **W3YXF**, Joe Rushton, located in Doylestown. There were 18 visitors at the last meeting.

2 Meter Activity. **W2EIF**, Joe, reported **W1YTW** in Maine was heard with a “very strong signal” on July 1. An excellent opening to the NE of Philadelphia provided contacts with **VE1AFB** and a number of stations in VT. Signals were good through 1296, as evidenced by Bert, **K3IUV**, working **W1GAN** in Salem MA (*north of Boston*), on that band. (*I wonder if that was with my Rhombic, or the small dish, both of which I was using at that time?*)

From the Book Rack. **K3WEU**’s monthly column described “68 Projects for Home and Car,” by Robert Brown. 192 pages, profusely illustrated. \$6.95 hardback, \$3.95 paperback. It included “a variety of gadgets designed to please almost everybody.” Examples included a vibrator

rejuvenator, a splash alarm for the swimming pool (*in case someone falls in?*), and a liquid level control. George gave it a good rating.

Technical Topics. A "Simple 2 Meter Rig" was described by member Randy, **WB2SZK** (now **NR6CA**). Using 4 tubes, including a 6360 output stage, it easily provides 10-watts output. Suitable to use barefoot, or to drive an amp, Randy described it as "Simple to build." A schematic, parts list and construction notes were included.

Swap Shoppe. By W3ZRR. (*Always nostalgia. Now we use the club reflector.*) From **W2AXU**, Jack, a nice group of antennas for 50 through 432. Priced from \$8 to \$13, these probably sold quickly. From a club member's estate, A TX-62 transmitter with a D104 mike, a nuvistor converter, power supply, Dow-Key relay and an ARC-5 VFO (*the VFO of choice in those days of war surplus from Canal street*). All for \$140.

Miscellany. *Postage for this copy was still a single 6-cent Roosevelt stamp. 6 double 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 any of 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)*



With all the wonderful openings to EU lately on 6M, and the openings to Asia, I just wanted to reiterate calling sequence – When calling CQ DX toward EU, please do it on the second sequence. EU will typically be on the first sequence.

For Asia, they will be calling on the second sequence, so we should be on the first sequence.

This will reduce the unintentional QRM and improve all of our chances for DX

73 Scott aka **KB0FHP**

Very nice to see the congratulatory note (1/2 page!) on Page 60 of the August QST to Pete for K0BAK's May 2020 QST Cover Plaque winner. Article title: "Activation of the Canadian Maritimes National Parks".

Congratulations and 73 portable Pete!

K3WGR

Wow, a great presentation by Duffey KK6MC - lots of good data on the January VHF Contest <https://contests.arrl.org/ContestResults/2020/Jan-VHF-2020-FinalFullResults.pdf> Dave W3KM

You'll find a nice pic of Roger W3SZ and Paul WA3GFZ with a large 10 GHz dish and feed on page 75 of the August QST. Take a look. K1DS

Here are some photos of the OK equivalent of the June VHF Contest. https://ok1teh.rajce.idnes.cz/PD_2020_u_OK2KKW_OK2A/

They don't seem to be social distancing :-(
73, AI K2UYH

Starlink Satellites Ruin NEOWISE Comet Photo

An attempt to photograph the NEOWISE comet was spoiled by a swarm of the new SpaceX Starlink satellites which were passing overhead while the photo was being attempted. See the spoiled (but interesting) photo and article at <https://www.extremetech.com/extreme/313200-starlink-satellites-ruin-neowise-comet-photo> W2BVH

New Kenwood ST-995sdr radio prototype. That's a whole lot of buttons and knobs. (From Doug KR2Q).



I am planning on going to Camelback on Saturday August 15th with 10 and 24 GHz weather permitting. If you are inclined to rove, please join me. I will have 2 meters so you just have to bring your 10 GHz setup. If you don't rove and have a 10/24 GHz home station, let me know through the W3SZ / K1RZ page. Haven't figured out a Sunday spot so if you have any suggestions email me. Paul WA3GFZ

Events

For inclusion, please direct event notices to the editor.

Reading Radio Club - Hamfest - August 8, 2020, Sinking Spring, PA. See <http://www.arrl.org/hamfests/reading-radio-club-hamfest-7> for details.

10 GHz and Up Contest Round 1 - Contest - August 15-16, 2020. See <http://www.arrl.org/10-ghz-up> .

September VHF Contest - Contest - September 12-14, 2020. See <http://www.arrl.org/september-vhf> for details.

2.3 GHz and up and Up EME Contest - Contest - September 12 -13, 2020 Details to follow.

10 GHz and Up Contest Round 2 - Contest - September 19-20, 2020. See <http://www.arrl.org/10-ghz-up> .

Gloucester County ARC Hamfest - Hamfest - September 13, 2020 Mullica Hill NJ. Details to follow.

50 - 1296 MHz EME Contest - Contest - October 10-11, 2020. Details to follow

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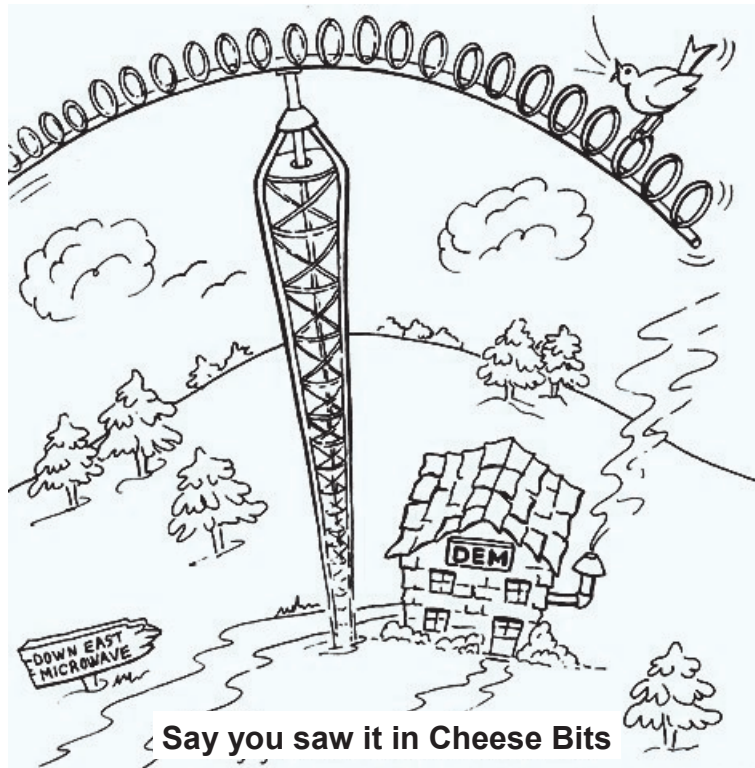
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