



CHEESE BITS

W3CCX
CLUB MEMORIAL CALL

ARRL
Affiliated
Club



Volume LXV

December 2022

Number 12

PREZ
SEZ:

Last year I joined the ARRL Diamond Club. If your finances permit, perhaps you should do the same. One of the benefits of joining the Diamond Club is that members receive a copy of the annual ARRL Calendar. I refer to this calendar at least once every Packrat board meeting when someone asks for the date of an upcoming contest or when Hamvention is scheduled. I love the pictures and stories (especially last year's Cats in the Shack). This year features the Collegiate Amateur Radio Program. It brought back some pre-ham memories.

First Davis on the Microwaves? Some Packrats may be amused to learn that my father was one of the first Americans on the microwave bands. He commanded a Ground Controlled Approach radar system trailer during WWII. The radar system featured magnetron tubes along with a manual on how to properly destroy failed tubes so that if encountered by enemy forces, the remnants could not be reverse-engineered. My Dad gave me one small piece of safety advice. Hold the screw driver by the insulated handle. One day, my dad allowed the tip of a screw driver to short part of a high voltage power supply which sparked and melted the tip into a ball.

My first light QSO? In high school, the physics department had a pair of 1960 vintage Astro-Phone (infrared) Walkie-Talkies. They actually worked pretty well but I would not recommend their use during an ARRL contest due to limited range. The physics teacher tried to tempt me into getting a ham radio license but the extra credit points that offered did not lure me.

My first use of relays? For a high school science fair project, my father suggested that I build a computer "flip-flop". Being a son of a bowling center proprietor, the logical parts to use were multi-pole relays. The brain of AMF pin spotters were built around 12 volt Potter & Brumfield (now TE) relays, which could be liberated for my project. The "flip-flop" was cycled by moving a pair of slide switches back and forth. I wish I could tell you that this exercise led to my current career as a Senior Analytic Data Engineer but that would be stretching the truth.

My first outdoor VHF antenna? Back in 1972, I built a Heathkit AR-14 stereo receiver. It is still with me although it could use a bit of work to eliminate some distortion. I was attending Miami University in Oxford, Ohio and I wanted to receive Cincinnati stations better. I purchased a gold anodized folded dipole antenna and braced it against the window frame. Someone noticed and reminded me that a section of the student

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

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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

144.300 (FN2hd), **222.300**, 432.300(FN20tk), **903.300**, 1296.300 (FN20dh), 2304.300 (FN20dh—reduced power), **3456.300**, 5760.3 (FN21be), 10,368.017 (FM29jw—**status uncertain**). **Note: 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	KC3BVL FM29jw Jim
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

handbook prohibited outside television antennas. I protested that my antenna was for FM audio only. Eventually, I was called into a conference with Dean Etheridge who reminded me that I was a member of the student life staff. So I took one for the team and switched to rabbit ears.



Heathkit GR-64 as laboratory gear? When I traveled to Miami University, I brought my trusty Heathkit GR-64 general coverage receiver and my GD-125 Q-Multiplier. Being the only business student in a Chemistry section with a few hundred students (mostly pre-med), I became friendly with Professor Phillips. One day, we talked about my GR-64 and he asked if he could borrow it for a calibration task. Some piece of chemistry equipment needed to be calibrated to 10 MHz (sounds familiar?). So I brought it over to Hughes Hall, tuned in WWV and beat the laboratory gear against that RF frequency.

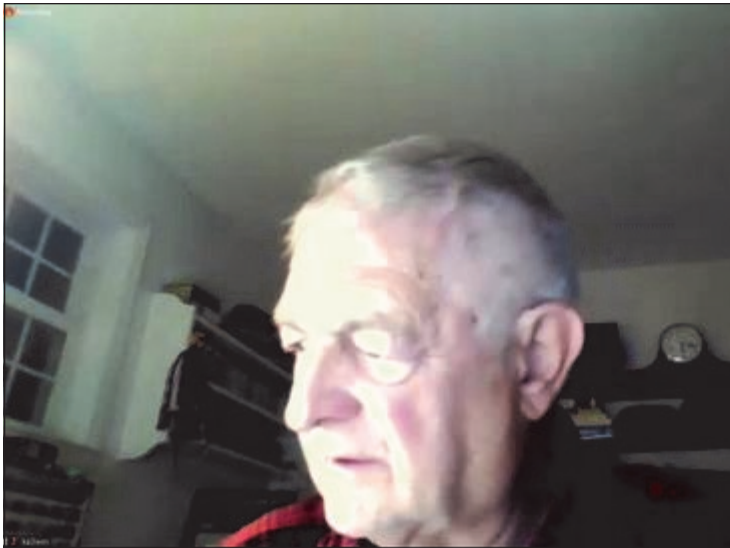
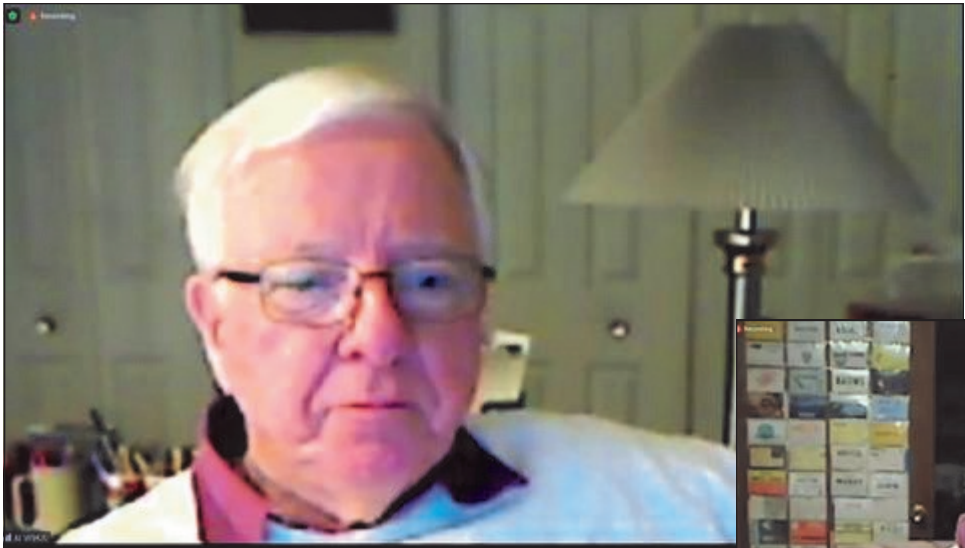
You never know what life experiences will lead you to amateur radio.

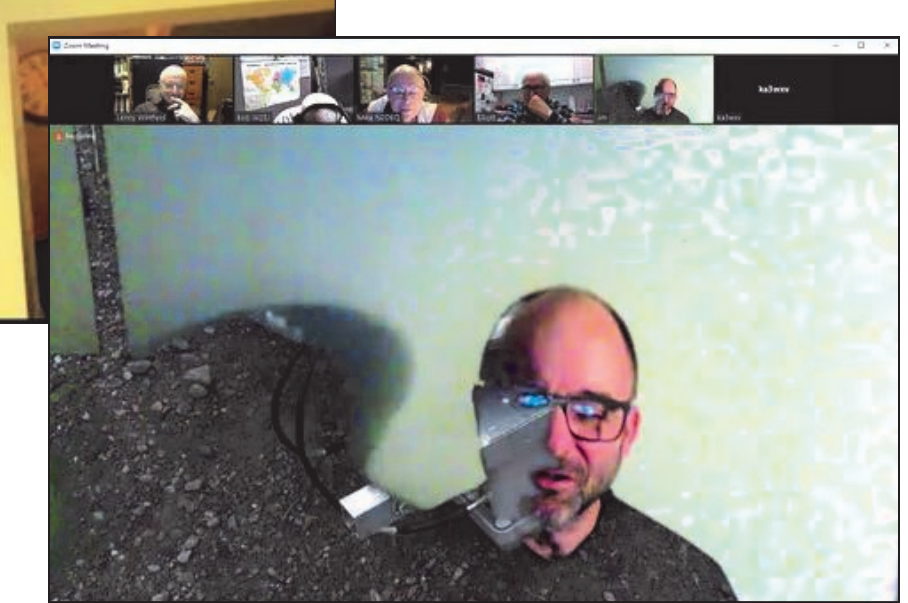
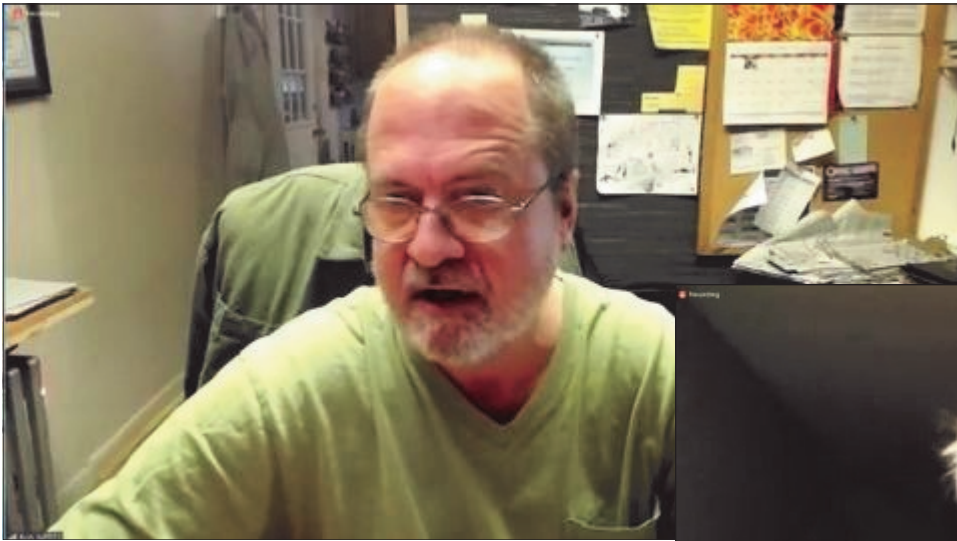
73,
Michael **KB1JEY**

NOVEMBER (ZOOM) MEETING



PICTURES





Selecting a Quench Diode for a Relay Coil

By Tom KA3FQS

Recently a friend asked about the correct way to connect a diode across a DC relay coil. As I was writing an email reply it reminded me of an occasion when another friend insisted that I use a power rectifier diode across a relay coil rather than the small signal diode I had picked up. Perhaps it is a good time to review why it is often required to put a diode across a DC relay coil and what types of diodes are appropriate to use in this application.

The reason that it is necessary to put a diode across a DC relay coil is that like all coils of wire the relay coil has inductance. A simple electrical model of a relay coil consists of an inductor in series with a resistor.

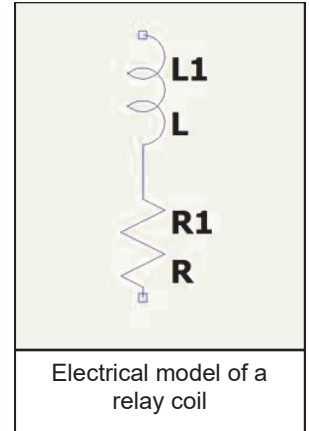
L1 represents the inductance of the relay coil and R1 the resistance of the coil. The inductance of the coil is seldom specified and changes depending if the relay is energized or un-energized due to the gap in the magnetic circuit. In the following circuit diagrams L1 and R1 will always represent the relay coil.

An inductor opposes any change in current through it in much the same way that a capacitor opposes any change of voltage across it. The current through an inductor or the voltage across a capacitor cannot change instantaneously. An inductor opposes the change of current through it by creating a voltage proportional to the rate of change of the current through it. Mathematically it is expressed as $V(t) = L \frac{di}{dt}$ where $V(t)$ is the voltage as a function of time across the inductor, L is the inductance of the inductor expressed in Henries, and $\frac{di}{dt}$ is the first derivative of the current through the inductor with respect to time or the time rate of change of the current through the inductor. Applying this equation for the case of de-energizing a relay coil $\frac{di}{dt}$ becomes negative because the time rate of change of current is negative, it is going from the on state value (the voltage applied across the coil divided by the resistance of the coil) to zero.

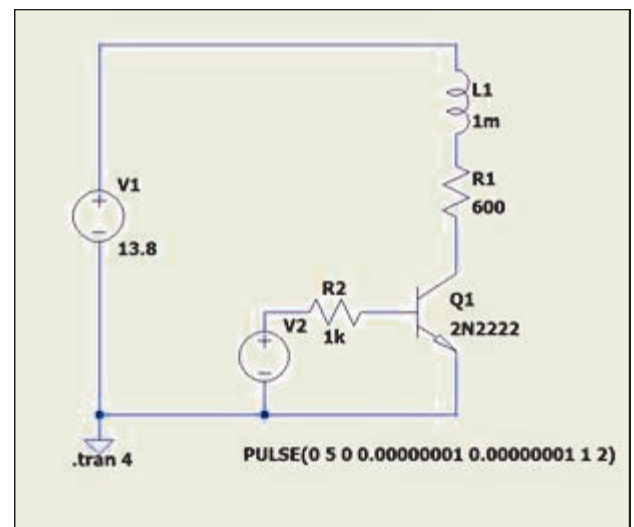
If, as is commonly done, we are using a transistor or FET to control the current through the relay coil the turn off time can be quite short which makes $\frac{di}{dt}$ quite large.

With a large negative $\frac{di}{dt}$ the voltage across the relay coil flips polarity so that it now adds to the applied voltage, $V1$, producing a large voltage spike that appears across the transistor, $Q1$. A simple SPICE simulation was run to illustrate this action.

The graph (next page) from the simulation shows that the turn off spike can exceed 130 V for this simple model. Spikes can be larger than this and may be limited by the transistor collector or drain breaking down which you don't want to happen. The spike exceeds the maximum rated voltage of the 2N2222 by a lot and will probably cause the transistor to fail if not immediately then in a short time.

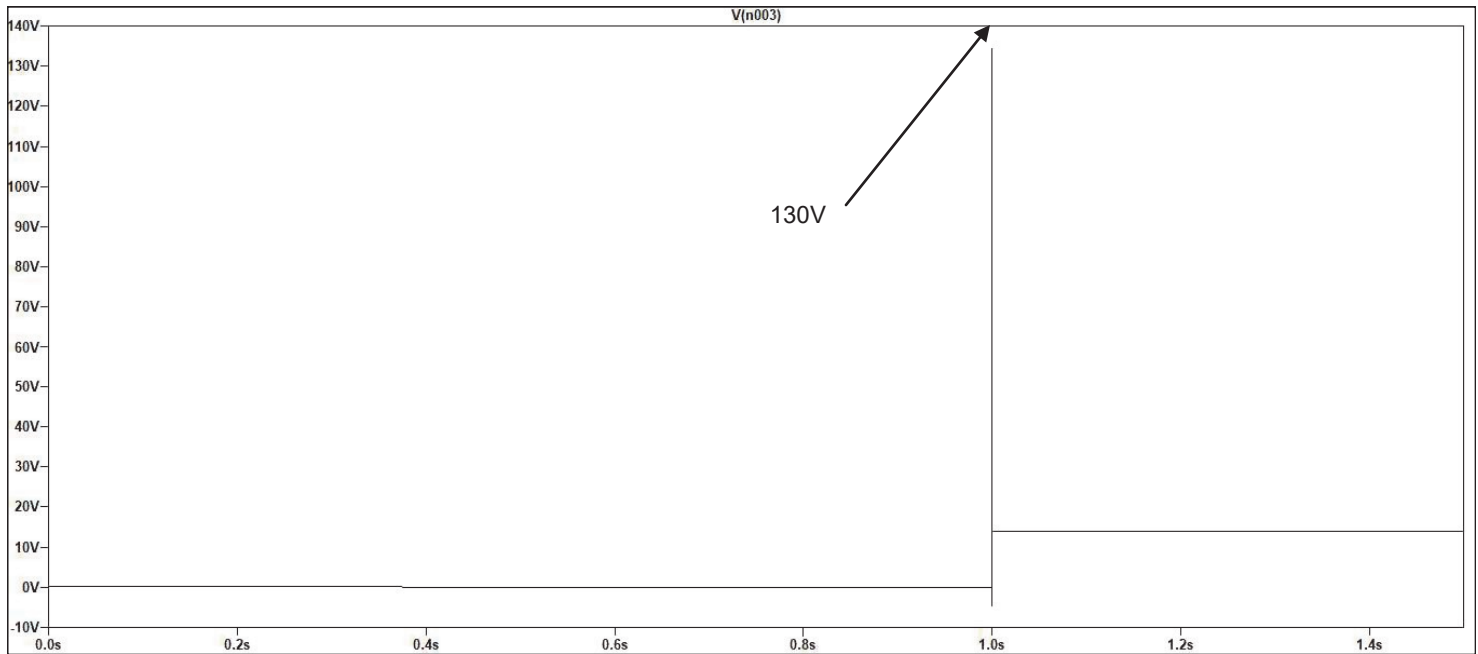


Electrical model of a relay coil



Transistor circuit to control a relay

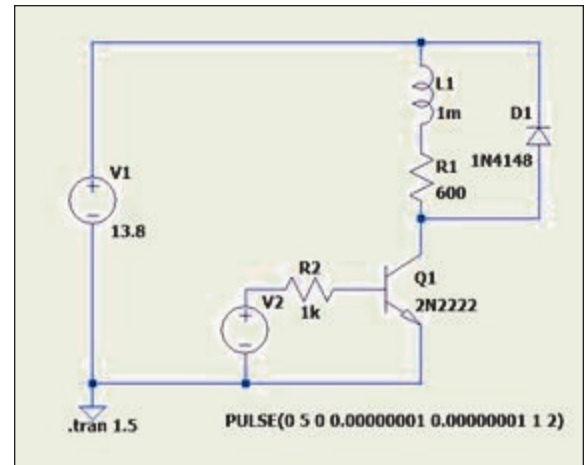
Relay cont'd



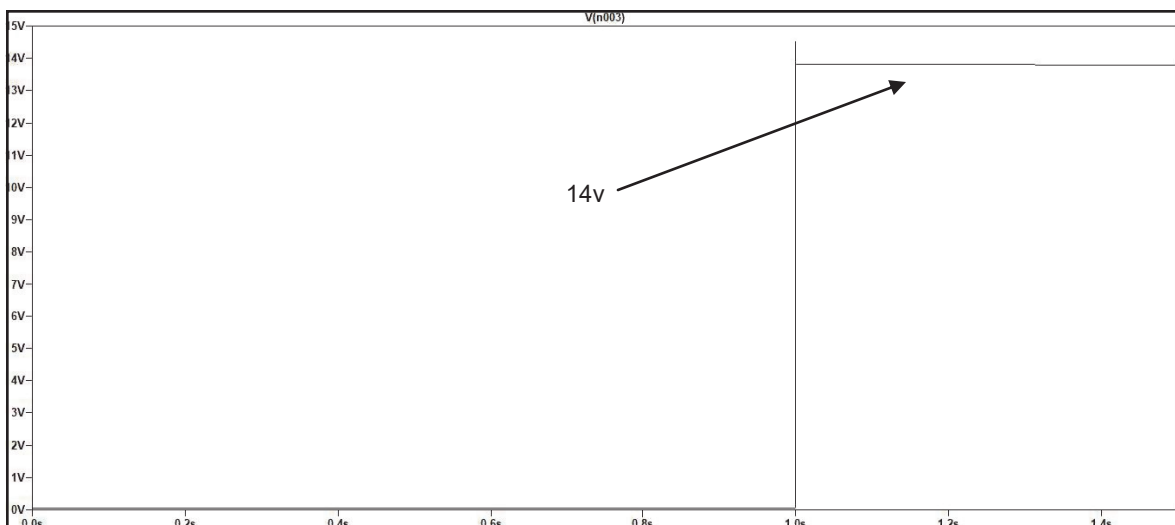
SPICE simulation showing large turn off spike

The usual method of suppressing this voltage spike is to put a diode across the relay coil.

The diode, D1, should be connected as shown in the figure at the right. When the relay is energized the diode is reverse biased and no current flows through it. When the transistor turns off the voltage spike forward biases the diode clamping the voltage spike to the forward voltage drop of the diode, typically 0.7 V. This limits the voltage seen by the transistor to the supply voltage plus the forward biased diode voltage. The voltage seen by the transistor is now, 14.5 V, which is within its safe operating range rather than the high voltage seen in the circuit without the diode as shown in the graph from a SPICE simulation above.



Transistor circuit to control a relay with diode added for transient suppression



SPICE simulation showing a clamped turn off spike

Now that we know why we should use a diode clamp across a DC relay coil the question becomes what kind of diode should we use? Generally a conventional rectifier or switching diode is used although other types of diodes can be used for special purposes such as using a combination of a switching diode and a zener diode to speed up the relay drop out, but for this article we will stick to the common rectifier and switching diodes.

There are thousands or perhaps millions of types of rectifier and switching diodes so which one is appropriate to use? When a diode is selected we usually look at two parameters, the reverse breakdown voltage and the maximum allowable forward current. So let's start with the reverse breakdown voltage. Going back to the schematic diagram with the transistor we see that the relay power supply voltage is applied across the diode in the reverse biased direction except for the brief instant when the coil transient forward biases it so the maximum reverse breakdown voltage need only exceed the power supply voltage by some margin. For silicon junction diodes it may be difficult to find a diode that doesn't satisfy this requirement for the simulation circuit. The 1N4148 has a maximum reverse voltage rating of 75 V which is much greater than the 14 V applied to the relay coil in this circuit so it meets the first selection criterion. The reverse voltage rating is also greater than 28 V for relays that use that coil voltage but it would not be appropriate for relays with high voltage coils such as those found in some vacuum tube circuits.

Now let's move on to the required forward current rating of the diode. The relay coil current is determined by the coil resistance and the applied coil voltage. In the example shown the coil resistance is 600 Ω and the coil voltage is 14 V which results in a coil current of 23 mA. Since the current through an inductor can't change instantaneously the current through the diode will also be 23 mA at the instant the transistor turns off and will decrease as the energy stored in the coil is dissipated in the coil resistance and the forward drop of the diode. This means that the forward current specification for the diode only needs to be greater than the relay coil current, in this case 23 mA. The 1N4148 used in the simulation circuit has an average current rating of 200 mA so it is an appropriate choice for this circuit.

As in the discussion of the voltage rating, if you have some very large relay that draws more than 200 mA of coil current you will need to select a different diode.

So in summary, a diode should be placed across the coil of a DC relay to prevent a high voltage spike from being produced when the relay is de-energized. These spikes can damage the circuit driving the relay and also create a loud pop in your receiver. Many types of junction rectifier or switching diodes can be used as long as the reverse breakdown voltage rating of the diode exceeds the applied coil voltage and the forward current rating of the diode exceeds the coil current of the relay. It is not necessary to use large power rectifiers on small relays as long as the voltage and current ratings of the application do not exceed the ratings of a smaller diode.

TRX-Duo

Ed, WA3DRC reports he's looking into using the TRX-DUO SDR as an I.F. rig. It's a palm size 16 bit DUAL channel transceiver at around \$315. More info at <https://www.youtube.com/watch?v=teks8v3u8F0> and at <https://elekitsorparts.com/>

Have_EBike_No_Car

Here is what Jerome K3GNC is up to out on the West Coast: <https://www.youtube.com/watch?v=G9vT6m0HWJ0>

Looks like fun. Ride safe!!

VA3ELE / VA3TO 47 GHz Rainscatter QSO

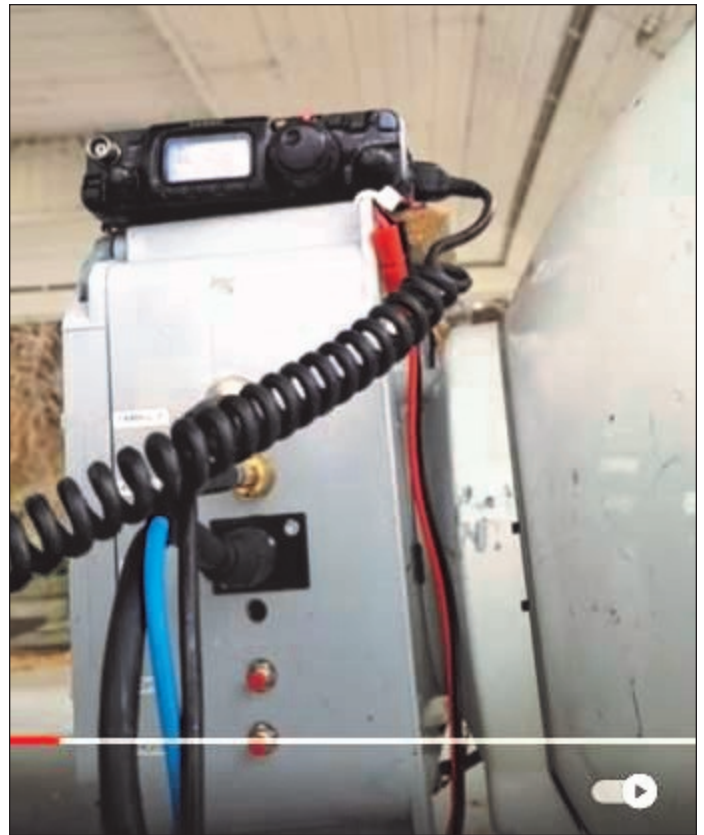
[Here are some comments on a recent 47 GHz Rainscatter QSO by the participants. No record set, but still exciting —W2BVH]

From VA3ELE:

This morning (11/27/2023) Hugh and I did some testing on 24 and 47GHz. Hugh drove to Snowball, ON FN04FA in an attempt to give me the 7th grid on 47GHz. Well, today was the day; signals on 24GHz were really great and we instantly found each other in direct path, but via Rain Scatter. Once we completed a 24GHz QSO on CW with big signals of 58-59RS, we QSYed up to 47GHz. After the QSY, we found each other right away without having to peak the dishes. Hugh was 57 with peaks to 58RS over the path that would otherwise be unworkable over the Oak Ridges Moraine.

I didn't write down the weather conditions, but it was raining at Lakefront Promenade Park FN03FN, where I was operating from under the picnic shelter. I do recall seeing on my tripod mounted temperature sensor somewhere around 6C and 94% humidity, not exactly ideal conditions for 24 or 47GHz. Well, just get out and try is the best way! Here's the proof in the pudding :

<https://youtu.be/wowp10-rtBE>
73 de Peter VA3ELE FN03dm



From VA3TO:

As Peter mentioned, we had a few previous failed attempts to get him FN04 on 47 GHz so there was a little bit of planning that went into yesterday's contact based on what we've learned.

We're making these 47 GHz contacts using low level scattered rain to work adjacent grids that are otherwise unworkable due to blocked paths. Of course moisture is a buzzkill on the higher mm wave bands so this technique is limited in range due to the very high path loss and also the low altitude of the scattered rain showers. But as we've proven, it works well enough to achieve VUCC.

In our neck of the woods we get this kind of rain in the spring and fall. We got 47GHz VUCC early this past spring (in ~ 1 week !) , then the summer humidity kicked in. Now here we are in the fall with cooler temps and more low level rain to try and increase our grid counts !

The Oak Ridges Moraine that Peter mentioned is a geological ridge that runs east-west (like our infamous Niagara escarpment that spans north to south), and most of FN04 is on the other (north) side of it relative to Peter's chosen 47 GHz VUCC location at the shoreline of Lake Ontario in Mississauga (near Toronto). Not only is he on the other side of the Moraine but he's downhill all the way from there. So despite being the next grid to the north, there are absolutely no workable line of sight paths between FN03 and FN04.

A couple of our previous attempts were made from FN04 locations where the Moraine rises sharply so I needed to have a fair bit of elevation on my dish to light up the rain. Unfortunately, the path loss between Peter and the rain that I was lighting up was too great so we were never able to complete. Other times the

47 GHz cont'd... denser rain was closer to him but I might have been overshooting it with the elevation I needed to clear the Moraine. So, the density of the rain and location of it between the two stations are quite critical. It's also important to note that we're doing this through the rain on the direct path.

Another characteristic of low level scattered rain is that it's fast moving. We've had some near misses where we find each other on 24 GHz, switch over to 47 GHz and hear each other but spend too much time fussing with AZ and EL adjustments in attempt to peak for a better signal. In the meantime the density of the rain dissipates and we lose the opportunity. The lesson here is... if you hear each other well enough to complete then just make the contact !

Last week I was looking at the weekend forecast and saw that it was calling for cool temps and sunny skies on Saturday and scattered rain on Sunday. I proposed to Peter that we could either try to extend our tropo DX record on Saturday morning or attempt to get him FN04 on Sunday. He was busy on Saturday so we decided on the latter. I spent some time using a surface elevation tool to scout out an accessible location in FN04 that has the least amount of blockage by the Moraine to allow my signal to reach further between us in the rain. FN04FA was the best I could find so I took a drive up there and lo and behold, it worked !



The next couple of grids are farther away (FN13 & 14) so they will be a challenge. We've done 125km using snowscatter so that may be the next ace up our sleeves. Or, wait 'til next summer for some convection enhanced inversions. 73, Hugh **VA3TO**

[Hugh also commented to me that the “aurora-ish” sound of the cw QSO is the hallmark sound of rain scatter. The droplets of rain scatter the incoming signal and what you hear is like millions of multipath signals that make it sound distorted. The spreading gets worse relative to the density of the rain. Finally I should note that Hugh got his 7th grid on 47 GHz back in August. Congratulations to both! —W2BVH]

222 MHz Is Anybody There?

<https://www.onallbands.com/222-mhz-is-anybody-there/> is a brief history of the 220 MHz ham band. The Rodney Dangerfield (“I don’t get no respect”) of the Ham Bands.

New mast lift compressor for the W3ICC Rover van. Drex’s comment: “Time will tell how well it does the job.”

Watch for a report on the upgrade in an upcoming issue of Cheese Bits.



PACKRAT PARTICIPANTS IN 2022 ARRL EME CONTEST

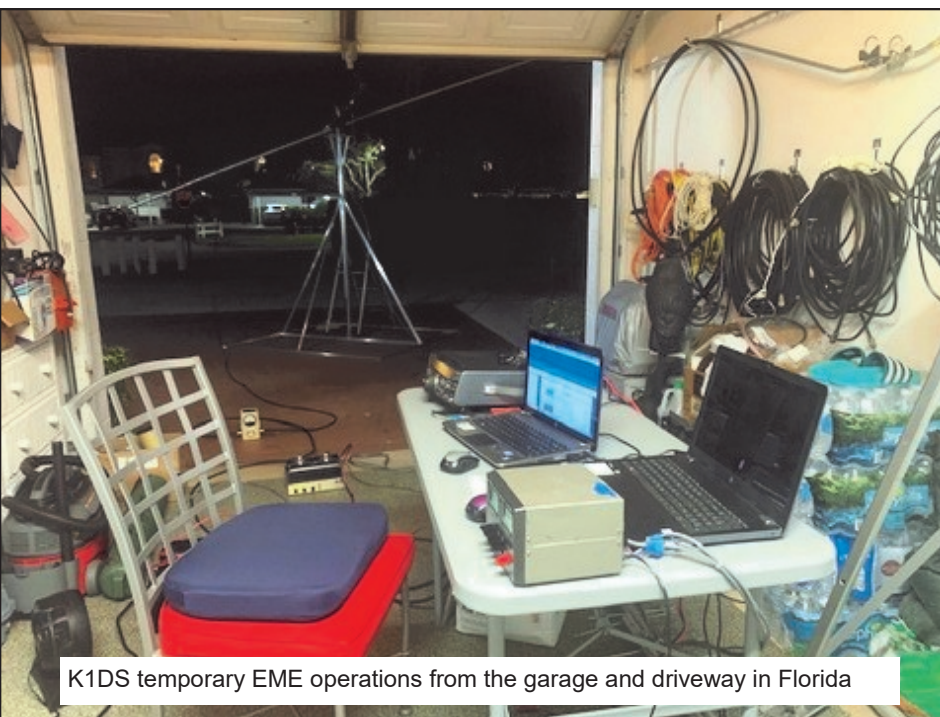
By Rick K1DS

There was a modest change to the ARRL EME contest this year, with Packrats W3SZ and K2UYH taking advantage of the additional weekend of operations on 2.3GHz and Up. Roger had his super 10GHz station operational from the NN3Q QTH while AI was active on 5 bands including 432, 1296, 2.3, 5.6 and 10GHz. The rest of the moonbeamers, including K2TXB, WA3GFZ, WA3DRC, W1PV, W3HMS, K3WHC, K1JT and K1DS were active on bands from 144MHz, 432MHz and 1296MHz. As many VHF enthusiasts have found out, using the newer digital modes, you can make EME QSOs even with a modest station, without the need for antenna elevation, as there are many high-powered EME stations with very large parabolic dishes and Yagi arrays. Those stations can generally work other smaller stations who are using a single Yagi and 50-100W on moonrise, as there is some additional ground gain on 144MHz. Bernd, DL7AVP, running full legal power through a 128 Yagi array on 432MHz has worked stations as small as 50 watts with a 3-element Yagi.

Here in Florida, I was only able to schedule myself for the last 2 moon passes of the contest this year. The weather was wet and windy in the forecast, so I opted to use single Yagis on 144 and 432, doing one band for each of the nights. I worked many of the QRO stations I had worked before, but added two new initial digital contacts, one with RK3FG in KO86 on 144MHz, and the other with K5QE in EM31 on 432MHz. I was glad I did not try to set up the 8' dish as there was a wet and windy rain cell that blew through my area just an hour before moonrise.



10' dish and feed at the DVRA club site with K1JT et al operating W2ZQ on 1296MHz



K1DS temporary EME operations from the garage and driveway in Florida

Steve, K3WHC was active on 1296MHz from the multi-op club call W3HZU in York, PA. Russ, K2TXB had a pair of 2m Yagis and a full gallon of power and managed 87 digital EME QSOs. John, W3HMS completed 19 Q65 contacts on 1296MHz with his 10' dish and 450W. Paul, WA3GFZ was active on

EME cont'd...

1296MHz also and with 210W and a 10' dish had 26 Q65 digital QSOs. I saw Ed, WA3DRC using the EME chat page to set up some 2m JT65 QSOs and he had success with a single Yagi and high power on moonrise without elevation. I'm sure that Skip, W1PV was busy with his 1296MHz and 432MHz capabilities. Joe, K1JT reported great group success on 1296MHz at the W2ZQ Delaware Valley Radio Association club station using a 10' dish and a 250W SSPA. There were many enhancements to the station including a septum feed with a cake-pan choke, an LNA at the dish, and AZ-EL control with a Green Heron RT-21 and PstRotator for moon tracking. They also added enhanced wideband display capability and MAP65 software for better wideband decoding. They had a great results with 128 contacts including 11 on CW and the rest Q65. Participants included AC2YD, AD2CC, K1JT, K3EA, KB2MT, W2HRO, W3LPL and WX2S.

I know that there have been other stations that have been active on EME including N3RG, KC3BVL, N2UO, K2LNS, K3MF, WA3QPX and K3GNC. Is it your turn to join the fun? Get yourself an EME Elmer. You can do it! 73, Rick **K1DS**

K3WHC EME Contest Report

My EME activity as of late has been at the W3HZU (Keystone VHF Club) site a couple miles east of York, PA. Since spring, our EME group has been working on optimizing our 23cm moonbounce station in preparation for the contest weekends. We had been operational back in 2020 making a few contacts with the "Big Gun" stations but we knew there were a lot of refinements needed in both the hardware and software if we wanted a respectable showing in the contest.

Our station consists of a 14.5 ft. Paraclypse dish (0.32 f/d) with the OK1DFC septum feed and a scalar ring. We have a G4DDK VLNA at the feed. The current PA is 140 watts located in an outbuilding near the dish. The IF radio is an Icom 9700 in the main clubhouse.

Our work was rewarded with 74 QSO's for the combined weekends. All except 1 contact was via Q65 using the 60B submode. The lone CW contact was challenging and time consuming but "in the log". There were some exceptionally strong stations where I think we could have made it on SSB. We had a few QSO attempts with the smaller stations that were hearing us but we couldn't get consistent decodes from them.

We had a blast working the contest and there was lots of 23cm activity both weekends. We have a 400 watt PA which we will be installing shortly and a new and improved LNA with 0.3 db noise figure on the Rx side. 73 Steve **K3WHC**

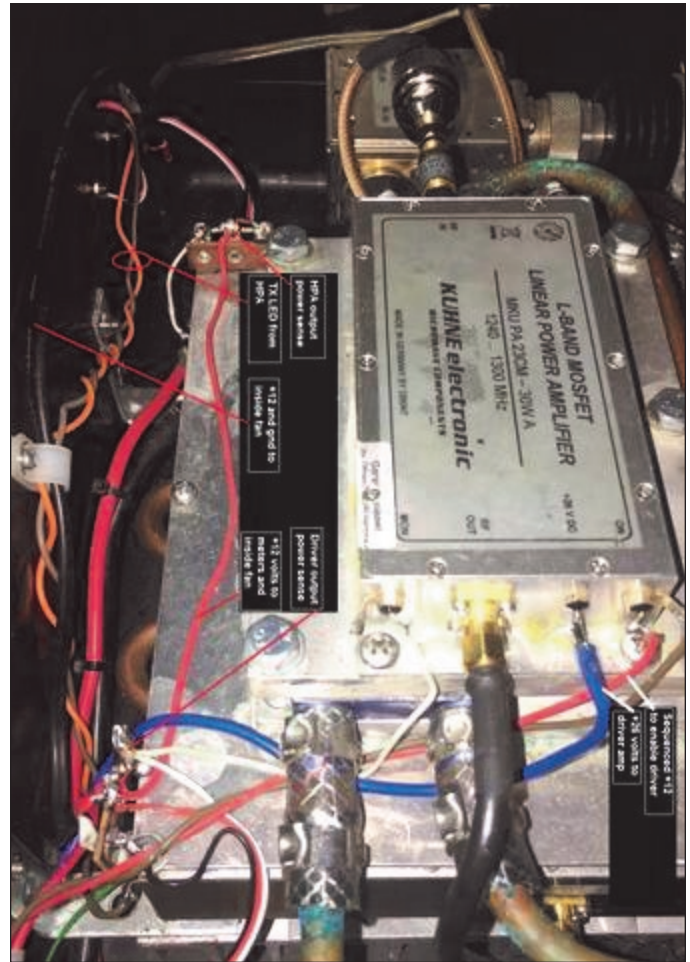


Blown 1296 Power Amp at K2TXB

From Russ K2TXB:

AI, K2UYHg gave me the project of setting up a 1296 MHz solid state amp for him. It's a Kuhne (MKU_PA_23_CM-1000W_CU) 23 cm, 1 KW output amplifier, in a suitcase. Well, not really a suitcase but a weather-protected carry case with handles. The wiring was a mess and not likely to be reliable, so after discussing it with AI, I tore out most all of the original wiring and installed my own. In the process I added a sequencer (like the ones I am selling — see the ad at the end of this months Cheese Bits) to make it all safe. The original builder had done a good job with the mechanical setup, including a water cooling system with pump, tank, radiator and fans mounted on the outside of the case, so I kept all that.

The amp is actually 2 amplifiers, a 30 watt driver mounted on top of the 1 KW final, both water cooled. When it was finally ready to test I set it up at my home station and drove it with one watt from my TS-2000. It made a lot of power very quickly and I found that it would make 500 watts with about 2.5 watts of drive (through about 4 dB of input attenuation). I did not dare to drive it any harder as I was sure my antenna relays would not take it. I did get on the air for a few nights with it and got some great reports from the guys on Monday night. The downfall was when I tried a Q65C sked with a VE3 station. After running for ten minutes or so with him, I stopped and all seemed ok. But later that day I fired it up just to take a picture of the meters when running power. I turned it up to 500 watts, and it went there ok, for about a half second, then the output fell to zero. Further testing showed that the amp was drawing normal current, but no power was being output. What was happening was that the output power was burning up the PC board!



Driver amp mounted on top of the power amp. Cooling water in and out connections are at the bottom of the photo. DC power: 12V for cooling fan and auxiliary boards (such as the sequencer and indicator led's), 26V for the driver amp and 50V for the power amp.

After that I tore it all apart and removed the water jackets and cover, to discover a badly burned circuit board and melted or vaporized metal parts. There was ample evidence to show that the amp had failed in the same way, at some time in the past, and that was the reason for the current failure. I returned the amp to AI where he is having his RF expert work on it. As I understand he is about to start testing... 73, Russ [K2TXB](#)

From AI K2UYH:

I bought the PA used as a complete package. It was built to be operated outdoors at the antenna in a water proof container. It was also designed to be water cooled. After the SSPA was opened, it was clear that it had **failed before** and been fixed. It is a DB6NT 1296 1 kW GaN SSPA, but not the current version. Brian (not a ham, but past student of mine, is a genius when it comes RF/microwave

Amp cont'd...

PAs) is fixing it. [Brian was owner and chief engineer at Stealth Microwave Inc, supplier of high power amps to commercial and military users — W2BVH]. He feels the problem is insufficient grounding near the output connector — a design flaw in the amp. He also feels the original microstrip line should have been heavier. This may be why Kuhne came out with a new model. 73, AI **K2UYH**

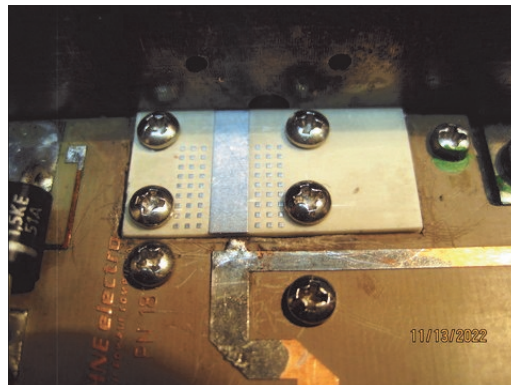
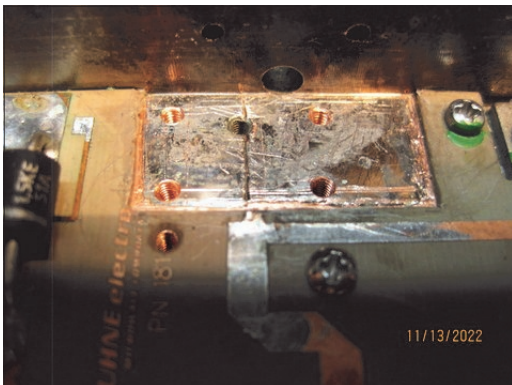
[At this point, the output circuit area has been cleaned up and a new heavier output microstrip line has been installed. As of the publication date, measurement and testing of the fix hasn't started. Watch for a follow up article in Cheese Bits and we'll let you know how it all turned out —W2BVH]



Burnt pcb at the combiner output and the output microstrip



Repair process: Burnt output circuit, removed portion of the main pcb, cleaned copper substrate / heat spreader, patched in new pcb with microstrip and "chicken tracks" for tuning.



Sunday in the Park on 6 Meter AM

By Griff NE3I

On Sunday, November 13, the RF Hill ARC "Field Expeditionary Deployment Squad," which includes fellow Packrats Dan, WA3NFV and Griff, NE3I, made this week's expedition to Franconia Park between Harleysville and Souderton. VHF activity was based around Griff's home brew 6 Meter ground plane and recently acquired Lafayette HA 750 6 Meter Transceiver, both shown in the photos. (If you look carefully to the left of the HA 750 through the windshield, you can see Dan in the distance seated in front of his "TV Tray" 10 Meter vertical and converted CB Radios). Successful QSOs were made using the antique HA 750 (output maybe 2 Watts), on or about **50.400 AM** with Dan, WA3NFV and his converted Walkie Talkie and with John, WA3JRS, in Perkasie some 6 Miles distant. The HA 750 has a crystal on 50.400 \pm ? Hz and a Spotting Switch to more or less "Zero Beat" the crystal using the VFO, the "Fine Tuning" knobs and the rig's small internal meter. Operation Sunday demonstrated that this method is less than perfectly precise. (HI!). (For those of you who are new, in CW jargon, "HI" denotes laughter.) Anyway, operation on Sunday also proved that after zero beating with the spotting switch and meter, it is best to try to peak the received signal by listening and tuning for the maximum quality and amplitude of the signal. Listening and tuning, it takes one back to the nostalgic days of yesteryear and the skill and enjoyment missed as a result of intervening generations of digital readout, menu based push button radios. Thrilled with Sunday's portable operation, NE3I contemplates soliciting Packrat weak signal enthusiasts for more distant 6 Meter AM contacts as well as petitioning the ARRL for an AM only VHF Entry Class in the upcoming January VHF Contest. Note, in case you're wondering, our trip to the park and all contacts were purely for fun, no contest, just a short "field" outing. We go out to local parks most Sundays. The rig came from Ron, N3CHX who is downsizing. 73, Griff **NE3I**



Note: This article inspired comments from quite a few Packrats. They're shown on the following page. You'll note a bit of "subect drift" —W2BVH

Speaking of 6 Meter AM

As we used to say, "... calling CQ and carefully tuning, first around this frequency then up and down the band for any possible calls. Go ahead. Go ahead.". Also I remember Alan Vincent, W3OR, had the "twin" to Pres Funk's tower in Trevoise. He was still climbing it when he was in his 80's!! Bill, **K1DY**

This sure brings back memories for me. A couple years after graduating High School in 1968, I purchased a Lafayette HA-750 at the Lafayette Radio store in Pennsauken, NJ on Route 38 to install in my Fiat auto. Every morning on the way to work, I had a QSO with the original W3OR, Alan (not Ron, W3OR a club member in Delaware who later got Alan's call). Alan lived in Glen Mills, PA with good elevation, a tall "windmill" tower, and a 6 element 6M beam. Alan's station was a Clegg Zeus transmitter and Clegg Interceptor, a real powerhouse in those days. Alan was an old car enthusiast. He would call CQ on AM every morning on 50.4 Mc and would "carefully tune" for me on my "rock" frequency of 50.604 Mc. He would only talk with mobile operators. Alan had a collection of retired call sign plates from mobile stations he worked over the years. To my surprise many years later, I found my old call sign plate (WB2YEH) on the wall of our club member Ron, the second W3OR, in his shack in Delaware when I went to visit him one day. He had obtained the collection of call sign plates from Alan's estate. As Bob Hope would have said "Thanks for the memories", Griff and Bill! 73, Bob **W2SJ**

My memories of 6M AM mobile was in the late 60's with a Lafayette HE-45B 6m transceiver (all tubes). It had the distinction of operating on 12vdc with it's built in vibrator power supply! I had a 1966 VW bug (\$1369 brand new) with a 3 ring halo mounted on the back bumper. Quite the sight in those days. I don't remember making many contacts, but it sure was fun. My call was WA3AXV (1964) at the time. That radio later made it to the top of Mt. Equinox Vermont while on a family vacation one year. Strung a dipole between the weather beaten pine trees and made a few contacts in the middle of the day. Probably the first time I had ever operated portable from a mountain top. I found a 1964 Lafayette Radio Electronics Catalog on line. Quite a wide selection of radio related stuff. The ham stuff is toward the back of the catalog (the HE-45B is on page 56), but lots of memories everywhere. Radio was quite different in those days. <https://worldradiohistory.com/Archive-Catalogs/Lafayette-Catalogs/Lafayette-No-642-Winter-1964-.pdf> Ron Whitsel, **W3RJW**

I also started with a HA-750 in the early to mid-seventies. I remember Ernie (W3KKN) was so loud in SNJ, the speaker would sort of rattle. There was a group of VHF operators in the Gloucester County club. Griff, let us know next time your out on 6 AM, some of us have radios for that. Gary **WA2OMY**

First licensed KN1JDY in 1958, I got my technician and then general license in 1959. My high school friend's dad was a big VHF'er (W1CUZ) and had a Tecraft 6360 transmitter and power supply he loaned me when he moved up to a Globe Hi-bander. I bought a 6M converter from Evans Radio in Concord (NH) and a 4 element beam and was on the air probably around 1960. When I got my drivers license in 1962 I used my lawn mowing and paper route money to buy a brand new Clegg 99'er. This and a vibrator supply on the floor of the passenger seat in my Dad's Ford station wagon and YES!! a Saturn 6 3 ring halo and I was mobile. In the summer some times the band would open for e-skip and I could work them from the mobile. That was REALLY cool!.. Those were the days!! Bill, **K1DY**

In the 60's I was a member of the Haverford Township Pa emergency radio net. We used to do transmitter hunts on 2 meters AM I had. a '60 Chevy convertible and using a Gonset II had a 2 meter cubicle quad I would mount with the convertible top down on the transmission hump in the front of the front seat with the mast strapped to the top of the windshield. The idea behind the transmitter hunts was the first person to find the hidden transmitter and turn it off got to hide the transmitter the next time. One time the transmitter was hidden at the original W3OR QTH in Glen Mills at the TOP of the windmill tower

Speaking cont'd...

The first person to find it (wasn't me) had to climb to the top of tower and turn it off!!! I will never forget that hunt. Sure brings back memories 73 Bill **K3EGE**

Yes, 2m AM foxhunts in Lubbock TX with a Heathkit Twoer and a vibrapack power supply in 1971-73 with the Caprock ARC when I was stationed at Reese AFB. 73 Rick **K1DS**

In northern NJ, beside the ECVHFS, I was a member of the Knight Raiders VHF Club (which my dad called the "Bagel Lancers") in the 60's. I did 2M transmitter hunts with a friend in a '58 Buick wagon with a Twoer and a \$9.99 surplus vibrator from Radio Row in NYC. We started off with a 19" clip-on whip and later progressed to a Gonset 3 from Civil Defense and a 3 element yagi made with aluminum clothesline and a piece of dowel. Being typical teen aged boys, we completely blew one hunt when we stopped at Dairy Queen and met 2 young ladies out for a good time. My 6M experience started off with a TX-62 and a Finco, so I entered 6M as the king of the county. On 2M AM, I vividly remember WA2LTM, K1PXE, K3IPM and WA2FGK when I had the TX-62, a long homebrew yagi, and a Hammarlund with an Ameco nuvistor converter and a 417A preamp. I also remember some of the meteor scatter and aurora guys like K4EJQ, VE2SH, and others from 2M CW. I was WB2KPD at the time, and my dad was WB2PIE. On my first Packrats trip to Camelback a few years ago, I contacted WA2LTM on 1296 (without a cavity!) and when we chatted a bit, he said "wow, that was 50 years ago!" I met Stan K3IPM a few years ago, and he was thrilled to hear that I remembered him from 50+ years ago as the only reliable signal from this area in NNJ. There are so many good memories. 73 Al **KB3SIG**

I remember that story about Alan also. I think he survived the fall, but was not able to climb it after that fall and had to rely on others. Isn't it amazing how a story from Griff about a radio many have never seen, can jog the memories of our members with so many responses! Here's to the old days! Also: Who would have ever thought I would have met Lee, K3MXM at my bucket truck sales and repair shop in Camden, NJ. He was selling wiping cloths, otherwise known as "rags". I purchased rags from him for years. He worked for a company in Barrington, NJ. The company was called "Beautiful Rags". I went by there driving an Uber customer the other day and they are still in business. Lee would always tell me, "you should join the Packrats" He passed away before I joined, but somehow I know he must have taken credit for me joining. 73, Bob **W2SJ**



WAS 1296 MHz. The certificate is due to Frank's NC1I efforts - thank you Frank. When Frank wrote me that he had received 1296 WAS #4, I responded "I can't help be a little envious as I have never received my 1296 WAS certificate despite numerous letters and telephone calls to ARRL. I gave up on them a while ago". Frank was able to make it happen in a few days! When I completed 1296 WAS, I promptly sent my cards, documentations and fee into the ARRL; but I never received my certificate. I waited and waited and finally wrote and then called the ARRL office a few times. I was told the person who handles the WAS awards was unavailable. I was on their list as having received WAS #3; and gave up and assumed I would never receive the certificate.

73 & Happy Holidays, Al - **K2UYH**

The Wayback Machine **In CHEESE BITS, 50 Years Ago**

Nibbles from December 1972. Vol. XIV Nr 12
de K3IUUV Bert
(author's comments in italics)

“Our Prez Sez”. Prez Walt, **K3BPP** noted that the contest is only a month away, and that “you can easily convince yourself that contests can be fun!” He also commented on W2EIF’s November report about his nightly schedule with Ohio on two meters, suggesting we keep it in mind for January. And using CW might help.

Calendar. December 3rd, the moonbounce group will meet at the home of Chuck Benavides, **WA3LNH** (*50 years ago, the Packrats were into moonbounce*). December 20th, the regular club meeting will be a “closed session,” for members only. Contest strategy and plans will be discussed and hard copy will be distributed. Refreshments will be served. Plan to attend. January 6-7, the big CONTEST.

New Products of Interest to Hams.

W3NSI, Lyn’s always interesting article offered up the following new items: 1) A 6-meter FM rig from Regency Electronics, the HR-6 is now available. 25 watts, on 25 channels. Price, \$239. 2) Swan Linear Amplifier for 6-meters. The new model SSL-250 is all solid state (including output stage). PEP of 250 watts, priced at \$299. 3) Swan wattmeter. The new WM-1500 can be switched to 4 ranges, reading up to 1500 watts. A switch allows reading reverse power to display SWR. Price \$49.95.

VHF Report. Joe, **W2EIF** notes that several openings on 2-meters in late October provided ssb contacts with **W8YIO** in Michigan. On October 31 and November 1, a strong aurora opening provided ssb contacts with numerous stations in Maine, Ohio and VE3s. CW offered contacts in Michigan, Indiana, Illinois and Iowa. Additionally, Joe worked **K0WLU** in South Dakota. He also reports that the Oscar 6 satellite has decreased some of the normal low-end activity on 2-meters, but “new blood has appeared because they built equipment for the satellite and found ssb activity on the band.”

Membership Report. Elected to membership was Pete Shavney, **WA3OVH**, located in Glenside. Transferred from Student to Full member was George McCouch, **WA3DNC**.

Tidbits. The Amateur Radio and News Service awarded the Packrats Cheese Bits 1st place in Class A-2 for member contributions and technical articles. Congratulations were extended to EI, **K3JJZ**, the previous editor for his efforts in this regard. Corporal Harry Brick, stationed at the Marine Corps Air Station in Yuma Arizona was recommended for “Man of the Month.” Harry was the son of Frankie, **W3SAO** and Helen. Helen of course was the creator of the first Cheese Bits

ARRL Directors Letter. A detailed report from letter No. 1438, dated September 8, 1972 listed a large number of changes in policy for repeaters and remotes. Too numerous to review here, they included frequency ranges, power levels, licensing constraints, ID, and a

.... Wayback cont'd

host of other details. You might want to read the full information in the copy posted on our website.

Swap Shoppe. By W3ZRR. *(Always nostalgia. Now we use the club reflector.)* For sale or swap by Steve Karpati, a Collins FM Transmitter 108-156 MHz, 150 watts, rack mounted. No price given. From Doc Cutler, **K3GAS**, an R48 Receiver *(the club 220 intercom choice)*. "Fully converted, ready to go. Price \$22. Wanted by Don, **W3CJU**, "Old Dog books, prints, etc. Will swap for HAM equipment." *(Don's wife was a certified Judge of several dog breeds, and they raised Collies in the basement.)* And from George, **WA3MOJ**, a Clegg Interceptor receiver, a Johnson 6&2 transmitter, Eico modulator and Hi Gain beams for 6 and 2-meters. A package deal for \$425.

Ads. *The December 72 issue included the half page back cover ad from club member Ham Buerger (Astatic D-104 microphone less stand for \$15.50.) The usual 27 business card ads were included in this issue, but in addition a full page contained 21 "season's greetings" posts from members. They included ones from El, **K3JJZ** and family, Walt, **K3BPP**, and our west coast member Randy, then **WB2SZK**. I note the current Cheese Bits Ad complement includes only 4 small ads, a ¼ page from Beko and a ½ page from Down East. If you'd like to join them, contact the ad chairman, Bob, **W2SJ**.*

Miscellany. *Postage for this issue was a single 8-cent "Flag" stamp. (5 double sided, 8-½ x 11" sheets). (Don't forget, current postage is going to 63-cents on January 1, and a penny postcard will cost*

*60-cents!) 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 **K3IUUV** (me), and posted on the website by **WS3O**, our webmaster. 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. Are 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 **K3IUUV** (comments or corrections to: K3IUUV@ARRL.net)

Call For Papers

Microwave Update 2023 (postponed from 2020, 2021, and 2022) plus Northeast VHF/UHF Conference April 14 & 15, 2023 Hilton Garden Inn @ Bradley Airport, Windsor, CT

Details for registration and hotel coming very soon at microwaveupdate.org

CALL FOR PAPERS

Presentations and papers for PROCEEDINGS needed (you've had three years, so there must be some good stuff out there).

More info, email me: Paul Wade w1ghz@arrl.org

Events

For inclusion, please direct event notices to the editor.

Winterfest - Hamfest - January 14, 2023.
Sponsored by HRAC. Harrisburg PA. Details at:
<http://www.w3uu.org/winterfest/>

Winter Heat - Operating Event - Runs the month of January 2023. 2M through 33 cm FM.
Information including a hyperlink to the operating guide is available at <https://www.hamactive.com/index.php>

ARRL January VHF Contest - Contest - January 21—23, 2023. See <http://www.arrl.org/january-vhf> for rules and details. Also see the “Contest Info” tab at the Packrat web page (after signing in) for club specific info.

York Hamfest - Hamfest - April 29, 2023. Spring Grove PA. Sponsored by York Hamfest Foundation. See <http://yorkhamfest.org> for details

Firecracker - Hamfest - July 1, 2023. Sponsored by HRAC. Harrisburg PA. Details at: <http://www.w3uu.org/firecracker/>

Sussex County (NJ) Hamfest - Hamfest - July 16, 2023. See <http://scarcnj.org> for details.

2M Spring Sprint -Contest- Date TBA

222 MHz Spring Sprint -Contest - Date TBA.

432 MHz Spring Sprint -Contest- Date TBA

Microwave Spring Sprint -Contest- Date TBA

Rothamel's Antenna Book

Here's a book review of Rothamel's Antenna Book <https://k4fmh.com/2022/11/23/rothamels-antenna-book-an-authoritative-source/>

This 1600 page book is claimed to be the “authoritative source” on antennas and gives Kraus' book a run for its money. Read the review and you decide. —W2BVH

Open Position - Packrat Contest Chairman.

Qualifications: A club member with a strong desire to continue the PR tradition of putting out the best effort every contest.

To make communications a much easier effort. The past Chairman will provide template emails and presentations.

Contact Michael KB1JEY if you are interested in helping out the club in this important position.

KC3BVL Friday Net

Lately Packrat Jim KC3BVL has been conducting a Friday night net with schedule as follows:

7:30 pm	144.160
8 pm	50.160
8:30 pm	222.150
8:45 pm	1296.160
9 pm	432.160
9:15 pm	2304.100

Reminder: there are 3 FT8 VHF / UHF Activity Contests each month. For info see: <http://www.ft8activity.eu/index.php/en/>

For those interested in an online “Contest Only” event calendar for VHF+, see <https://www.qsl.net/n2sln/contestcalendar.html>

1296 MHz Activity Night

There's an informal 1296 activity night in the NY/ NJ/PA/CT region (and beyond) every Monday night starting around 9:30 pm (or so) on 1296.110. No coordination, just jump in and say hello W2BVH

222 MHz Activity Night

There's been an informal 222 activity night in the Northeast (and beyond) every Tuesday night starting around 7 pm (or so) Eastern Time. ON4KST is being used by some to coordinate Q's when direct CQ's are weak. W2BVH

Packrat Resource Program

Don't forget that the Packrats "Resource Program" developed to facilitate technical resources available for members who need help. It has always been the Packrat tradition to help other members when the occasion arises. The Packrat coverage area has been split up into three regions with a Regional Resource Administrator assigned to each region to develop and maintain the resources in his/her region. The program resides on our web site under the Resource tab. There are two main parts to the program; one is a list of help categories with assigned club members that you can call for guidance. The second part is a technical library. The library consists of links developed by members sharing their favorite bookmarks.

If you have a need for some help, take a look see. If you have an interesting technical bookmark that you would like to share with your fellow members, pass it on to me and I will include it into the technical Library.

Mike **N2DEQ**

Stanford 150 foot Dish

Here's a YouTube video describing and exploring the Stanford dish: <https://youtu.be/Zj3ZuphVxsE> Not exactly Arecibo in scope, but still very impressive. It's really a research instrument (that also did a bit of spying on the Russians) but near the end of the video they do a quick EME echo test on 432 MHz with a barefoot IC-910. Echos sound about S3-S4 to my ear. Check it out. —

W2DRZ Controllers Sequencer Special

I have 6 sequencer kits left here that I will sell at a discount to Packrats Club members. Five of them are completely assembled except for mounting the relays and LED indicators (optional). The other one is a complete kit. All parts are supplied. The picture below only shows one relay mounted, as you have a choice of mounting on top or bottom of the board.



I use 4 of these sequencers in my own station, one for each band, although you can use one sequencer for multiple bands if you desire. See my sequencer article in Cheese Bits of May 2020, and on my personal web at: <http://k2txb.net/SequencingForVHFstations.pdf>

For further details about the sequencer, go to: <http://www.w2drz.ramcoinc.com/Sequencers-2.htm>

FOR PACKRATS I will sell the kit at \$45, and the assembled sequencers at \$55 (plus shipping if needed). This is a real bargain as future kits will be priced at \$65 or more due to cost increases.

W2DRZ Controllers by Russ K2TXB

To Order, send email to k2txb@comcast.net or call 856-866-6611

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PLEASE SEND IN 2022 DUES

Club dues are due as of Jan 1st, 2022. Go to
https://www.qsl.net/w3km/MtAiryRC_Dues.htm and
use the "check here" link to see if you already paid.
If not, enter your callsign and click on "PayPal"

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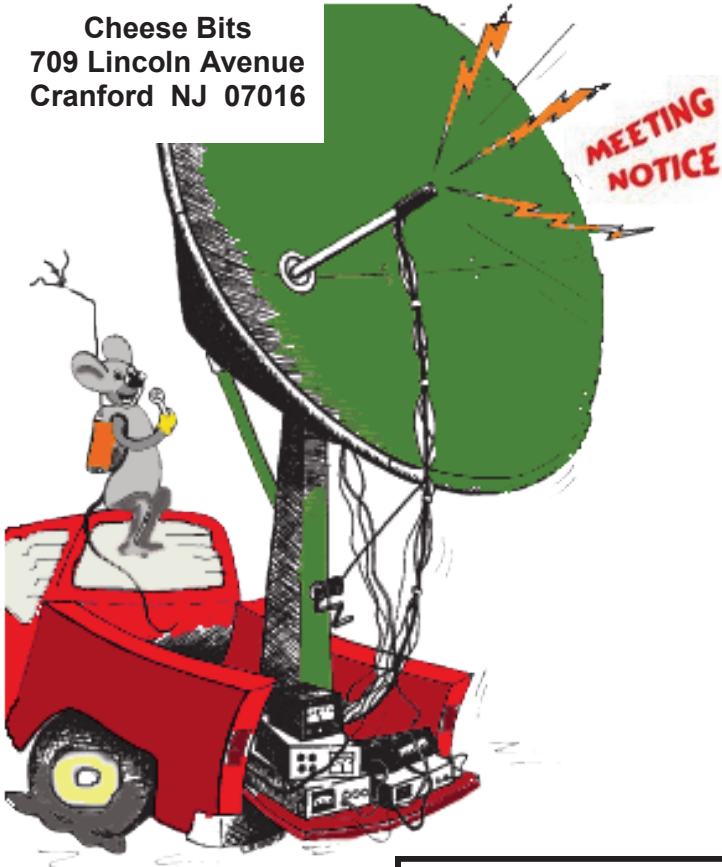
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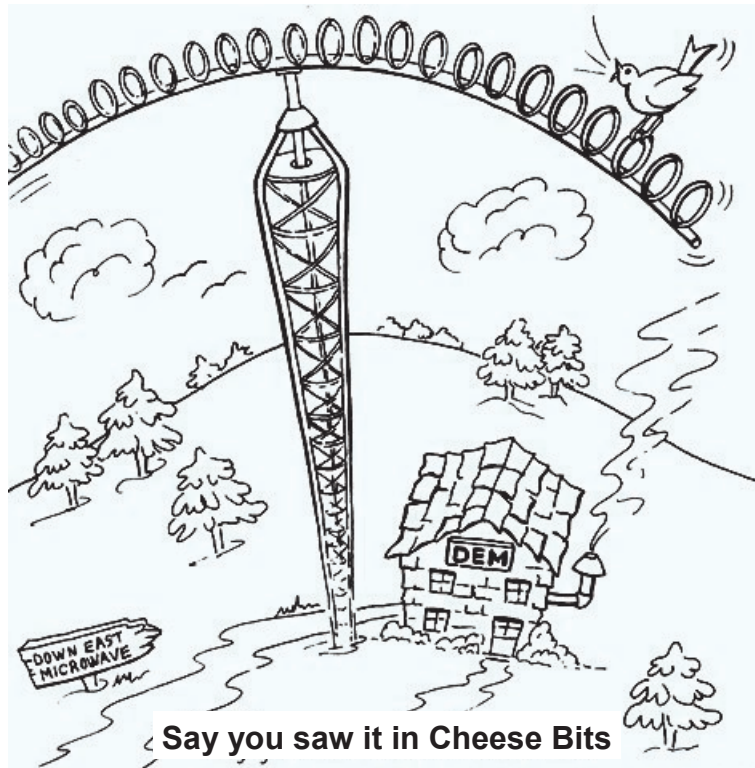
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