



CHEESE BITS

W3CCX
CLUB MEMORIAL CALL

ARRL
Affiliated
Club



Volume LIX

November 2018

Number 11

PREZ SEZ:

The contest is coming! The contest is coming! Many of our Packrat members might not be shouting this but many are obviously thinking about and preparing for the upcoming January VHF contest. I've heard about several tower projects and even participated in one this past month. Others are busy adding or repairing their transverters and station controllers.

Unfortunately I also heard of W0AIH Reverend Paul Bittner and his unfortunate fall while working on one of his towers this past week. Let me pass the club's condolences out to the Bittner family.

We need to plan our tower and antenna work carefully, make sure we use the proper equipment and follow all the safety procedures including prior inspection of tower and guide lines and the use of a trained ground crew. This is not a lecture, just a reminder about something we all know about.

We have a Super Conference coming in April 2019. This will be held at the same hotel as the last one. It's just outside DC near the Air and Space museum. The last one was great and this one should be even better and larger. Stay tuned for more details to follow soon.

December's meeting is our annual Packrat Holiday Social. Come and enjoy a relaxing time with food and friends. We will start serving food

from Giuseppe's at the Senior Center at 6:00. **Please note the early start time.** We will have plenty of food throughout the evening. Don't forget to call that Packrat friend you haven't seen at the meetings for some time and bring them along. We will have a special Mario Table like last year. Now's the time (yes, right now before you forget) to dig through your special items you bought at those HAM fests for the last 10 years. Some were for a project that got shelved or you never found time to complete. Bring them to the meeting, put them on the Mario table.

November is here and the tree leaves have finally changed color and are dropping. It's hard not to think about the coming of winter and the end of the year. It's also time to consider all the efforts the Packrats have put into the club, and for many its been about many years of service to the club. The Packrats are a great club because of YOU. Whether its been the energy you put into the contests or the last conference or the help you gave to your fellow Packrats or - well you get the picture. **Thank You** to the members, for your participation in club activities too. Many of you also belong to other radio clubs and help in those clubs. Thank you for your service to the amateur radio community.

I want to wish all my fellow Packrats and their families a happy Thanksgiving. I know I, like many of us, have much to be thankful for including a great hobby we all share and enjoy, Don't forget to work on your latest project. Have

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PACKRAT BEACONS - W3CCX/B

FM29jw Philadelphia, PA
50.080 144.300 222.062 432.290 903.072 1296.264 **2304.043**
3456.200 **5760.195** 10,368.034 MHz (as of 1/17, red = off the air)

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	50.145 MHz	N3RG FM29ki Ray
8:00 PM	144.150 MHz	K3GNC FN20ja Jerome
8:30 PM	222.125 MHz	KB1JEY FN20je Michael
9:00 PM	432.110 MHz	WB2RVX FM29mt Mike

Microwave Tuesday:

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

some fun, learn more.
Build something!

73, George KA3WXV



OCTOBER MEETING PICTURES



Tim N3TPE had a very interesting presentation on DMR and there was a lively discussion on the topic with the club members.



Tnx K3JJZ for the pictures!!

de W2EA, We Came, We Saw, We Operated and We got Wet

There are two mountain operations that contribute strongly to the good of the club aggregate score. One is on Camelback Mountain in June and the other is on a Mountain Top 20 miles to the north known as High Knob.

High Knob is not a public place and special permission is needed to use the area. But as is our 20-year tradition the group known as the South Jersey Mountain Toppers ARC went to the mountain. We had 4 weather conditions: Wet, Wet, Wet and Very Wet, and did I mention it rained. It is a good thing that all of the Mountain Toppers practice the UAFBAF concept (Up As Friends, Back As Friends). With poor weather conditions this tradition still held.

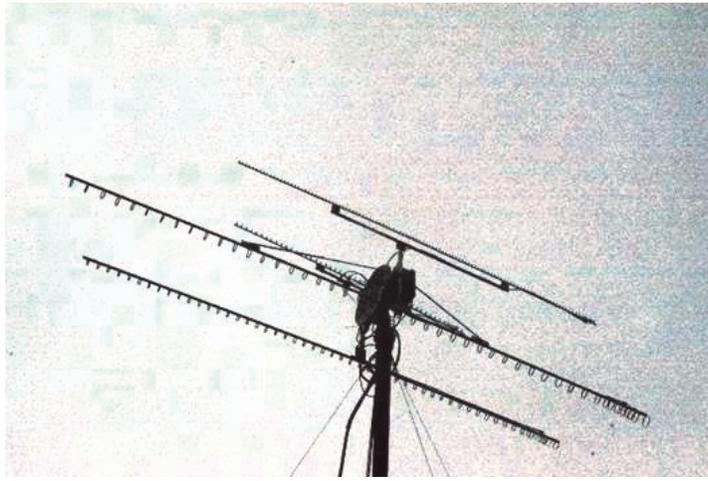
Many believe that the weekend is all about the group picture, and it is.



Left to Right: W2SJ, KB3SIG, K2WB, N3RG, W2TAG, N3AVT, KB1JEY, K3EGE, N2UNI, KD2MPC, KA3WXV, KD2DPV and KE2D. Jon W2MC not shown, he came up on Monday to help take down.

We setup the following antenna configuration.

Band	Tower Height	Elements	Power
6m	50ft	7	700W
2m	50ft	18	600W
UHF (220/432)	50ft	20/24	100W/100W
903 through 10G	50ft	Too many to count	5-100W



We raised 4 AB-577 portable towers. The 2m beam also had elevation and rotation control for potential EME contacts. This year the W2EA operation was spotted in South Africa and Russia off the moon. We are getting closer to our EME contact from our mountain top in FN21.

The 6m and 2m stations were outfitted to run FT-8 and JT-65 at the push of a button. Other than meteor scatter, FT8 did not yield new grids (we already worked them the regular way). However, it was essential that we run these modes.

Bob W2SJ invested countless hours in getting the software and radios ready to make the digital modes happen. Without his help we could not make them.

Our operations are entered in a schedule sheet to maximize the on the air time, while accommodating everyone's personal needs. Why do all this work putting up antennas and equipment and not plan to maximize the score?

There was a ton of work happening behind the scenes. Bob W2SJ and Bill K3EGE both put in a lot of hours sending emails to the Packrats and others to remind them to get on the air. They also worked with as many rovers as possible to arrange QSO's.

The W2EA group are the masters in passing a contact. Passing starts with the first contact in the log. Our configuration is as follows: 6m, 2m, 220 and 432 are in one shelter and everything else in another. Communications between the shelters is done with a 2m voice link. This link was manned by the 222/432 operator. Anything higher was liaised through 1.2 Ghz. This process served us very well. The coordination computer was located in the microwave shelter. Bill K3EGE did a masterful job communicating to everyone on and off the mountain.

We worked 28 packrats, more than 25% of all Packrats. Next year we hope for more. This amounted to around 110 QSO's across all of the bands. Which represents a significant part of our score.

Packrats in the W2EA Log							
Call	Bands	Call	Bands	Call	Bands	Call	Bands
AA2UK	4	K3SFX	2	N3PLM	1	WA3RLT	4
K1DS	4	K3TUF	9	NE3I	2	WB2RVX	4
K1RZ	9	KB3MTW	2	W2BVH	7	WB3IGR	2
K2TXB	1	KC2TN	5	W3SZ	10	WC2K	2
K3GNC	2	KC3BVL	3	WA3DRC	6	WR3P	1
K3JJZ	3	N2DEQ	1	WA3NUF	8	WS3O	1
K3MD	4	N3NGE	8	WA3QPX	1	WX3K	4

Data file provided by Dave W3KM

... W2EA cont'd

On the behalf of the W2EA team I want to thank everyone that contacted the W2EA station and we look forward to working you again next September from FN21kh !

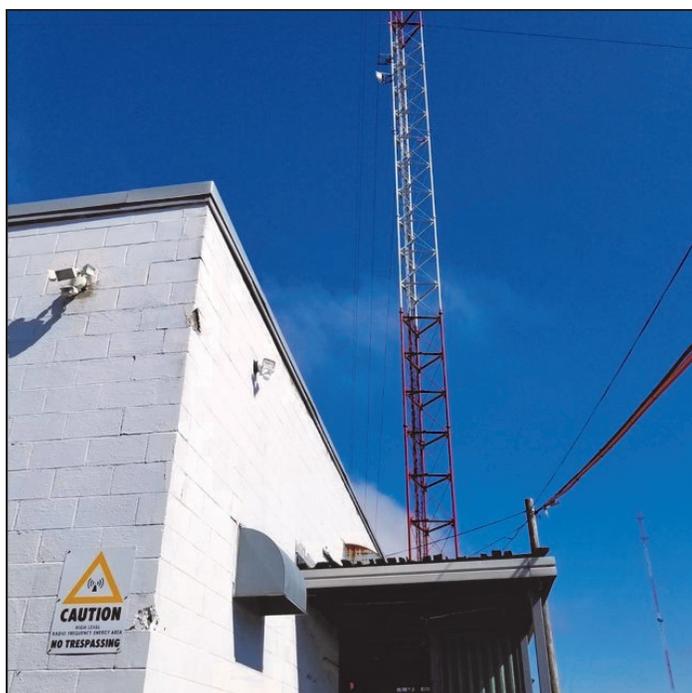
Why is this good for the Packrats? September like January is a club competition. The W2EA group has contributed their score to the Packrats for a number of years. This year we managed a total of **148,640** pts. All of which was put towards the Packrat's aggregate score.

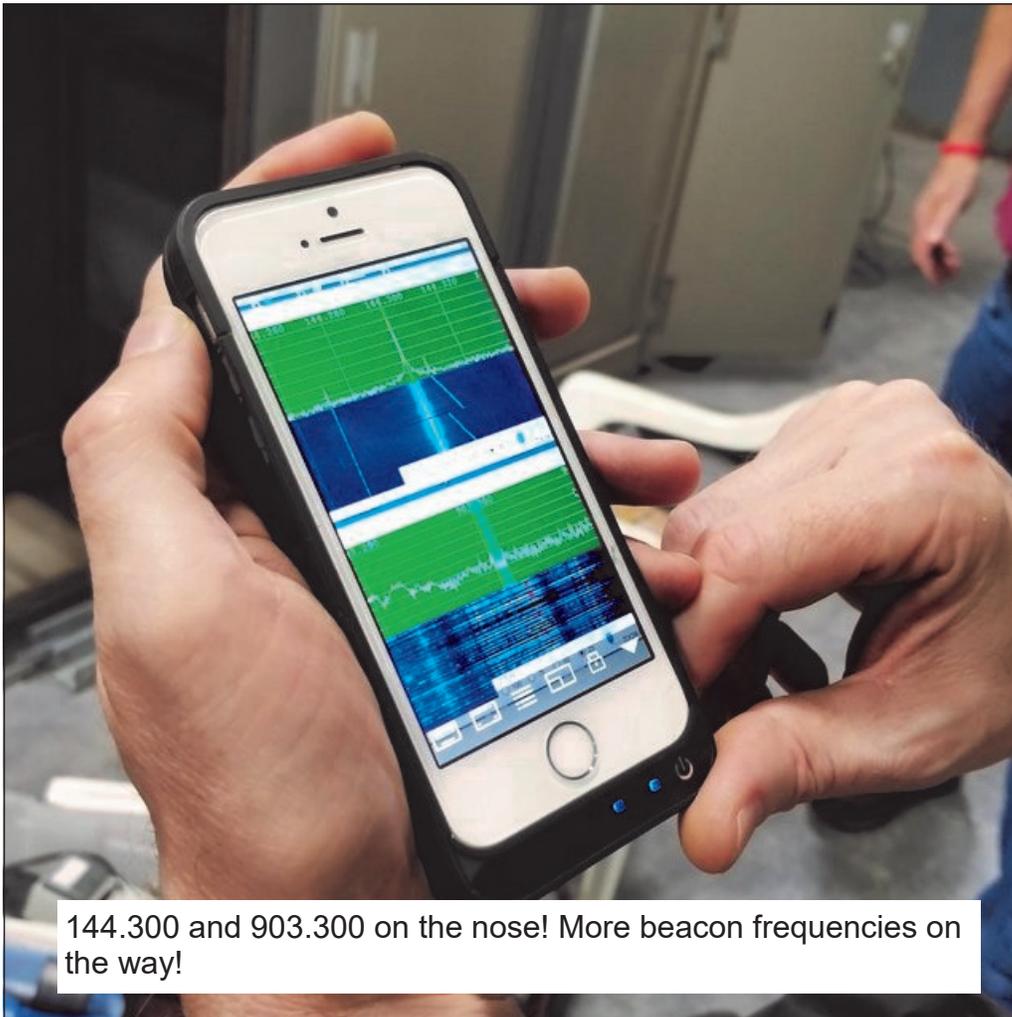
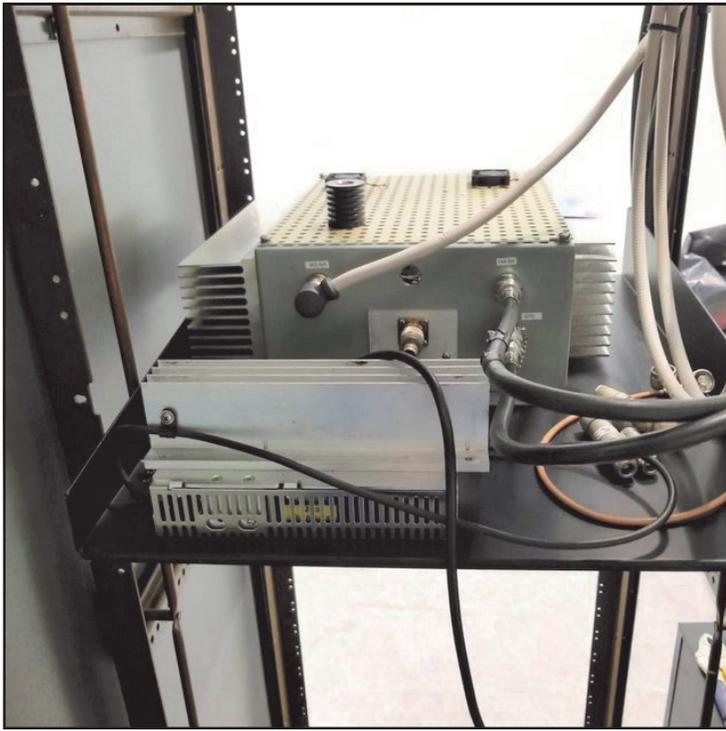
Planning for the W2EA 2019 operation is already in progress.

It was fun and wet!

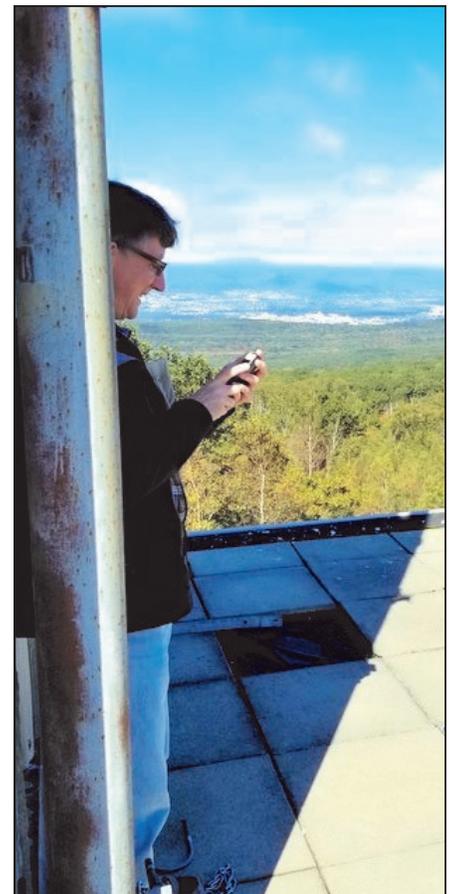
73's
de Ken K2WB

Pictures from Commissioning the New 144MHz and 903 MHz Beacons in October





144.300 and 903.300 on the nose! More beacon frequencies on the way!



KOBAK TV Van Update

Pete Kobak, Oct. 30, 2018

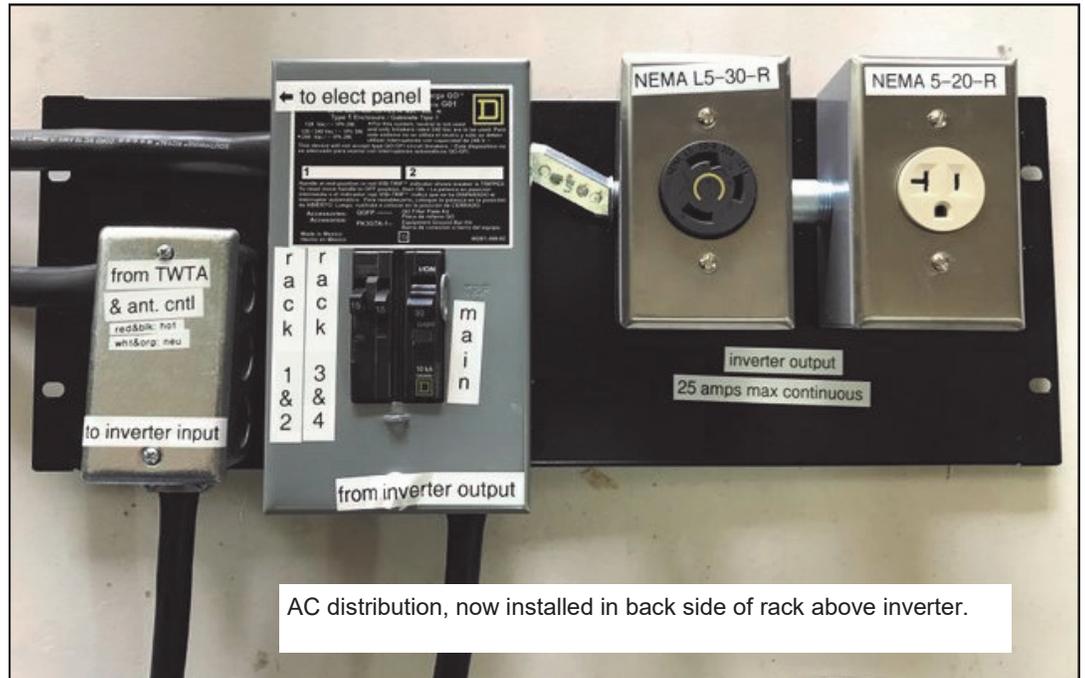
Progress on my TV van continues to be slow. My last report was at home brew night, and since then I've been delayed for good reasons and for bad. A couple good reasons include spending a lot of time training for a 65-mile charity bicycle ride at age 60, and a trip to Europe with a long-time friend. But multiple basement floods was a tremendous time suck for the last three months, prompting sump pump monitoring during rain storms, removal of 30 years' worth of junk and treasures including my home ham station, and multiple contractors doing remediation, recovery, repair, and major water removal system installation. Even though basement work is continuing, I was able to make pretty good van progress over the last month once my personal basement involvement became less intense. As I described at home brew night, AC and DC power distribution was my first priority. A pair of 200Ah AGM batteries was previously installed, including the temporary capability of using those batteries and a voltage booster for a mobile station with 400w-class amplifiers. I participated in three HF state QSO parties and a few park activations, but with a temporary setup.

Power Project

A rover is built on a foundation of mobile power, and I wanted to build a flexible power system the first time, even though I knew it was going to take a lot of time and money before installation of any radio. My initial design was based on testing the two van AC generators a year ago and deciding I should not rely on either generator for most operations.

I also thought I needed to have at least a 400w AC supply at all times to power a PC powerful enough for the Firewire-based FlexRadio model 5000 I originally assumed I'd be using as the high performance radio. Based on these assumptions, a permanent power distribution implementation was planned in three stages.

The first stage was to add 120vac distribution from a 3kW inverter/switch/charger. This included adding two 15 amp circuits from and to the existing van power panel, to route AC (from "shore power" or one of the van generators) to the inverter unit's automatic switch, and AC from the inverter to existing AC circuits going to the 4 built-in racks.



In addition, I installed circuit breakers near the inverter and two types of single outlets supporting 20 and 30 amps AC for a possible future legal-limit amplifier. I added the inverter power in parallel with the existing van circuits to allow inverter power to flow to other van components in emergencies. AC power from shore or generator power flows to the switch/charger part of the inverter box through two 15amp circuits which previously were dedicated lines to support the large satellite dish that is now removed.

...K0BAK cont'd

The second stage was high-current DC distribution from the two large 12-volt batteries, to the inverter/charger and to the radio station DC distribution. I wanted flexibility for using the two batteries, so either or both batteries can supply either the inverter or the station DC. The inverter switch is supplied by 00 gauge cables, and the switch output (and ground return of course) is a huge and expensive 0000 cable since the inverter could consume 300 amps or more. The station DC side is more modest since 12v-class amplifiers demand 80 amps or less, so those connections are

“only” 4 gauge. MRBF fuses are installed on the battery terminals, 200 amps and 80 amps for each cable running to each side the switches. The output of each switch monitored with a digital voltage and current meter – current is measured with a Hall Effect transducer, which just barely fits on the 0000 cable. I am glad put in the ammeters because they are helpful to monitor charging current from the inverter/charger, and of course the volt meters are vital to monitor the charge remaining in each battery during operations.



Bespoke battery switch and monitoring panel, made from an old Ikea bookshelf laminated particle board. Each switch has four positions for the output: off, battery 1, battery 2, or both batteries. The round double meter monitors each battery voltage regardless of switch positions. The voltage and current output of each switch is displayed on the rectangular meters; voltage readings alternate with current readings (voltages shown). The toggle switch turns off all the meters by breaking the ground return, for instance when the van is parked in storage.

The third power project stage is for radio station DC distribution and charging the station battery from the vehicle alternator. There will be a 3U rack panel and full 2-foot deep rack platform for the components. The output of the right-hand battery switch (implemented in stage 2) is the input into the station DC circuit.

Much of the work of stage 3 will be to support alternator charging of the station DC batteries. The plan is to charge the station battery between rover operation stops.

In my minivan rover I found that this significantly extends the useful life of battery contest usage but not enough to fully charge the battery. It is not designed to run the station from the alternator, especially since I'm using an existing 8 gauge cable from the two existing vehicle batteries. I am taking advantage of an

...K0BAK cont'd

...K0BAK cont'd

"ignition" signal available in the existing van panel that is at ~12v when the engine is running. That signal will drive a delay relay (6 seconds), which will then energize two solenoids; this allows the engine to start and stabilize before connecting the radio station battery (theoretically). I will have a rack panel switch that allows me to control whether the ignition signal gets through at all, which controls whether the vehicle alternator charges the station battery.

The core of the station DC supply is an 80amp boost regulator that keeps station power at 14v while the battery varies ~13v-11v. The 14v will go through a switch to allow me to select HF or VHF high-power components; a third branch will supply lower power common components like radio(s), networking, and computer monitor(s). DC distribution to HF and VHF amplifiers will use my old MIDI fuse blocks, and lower current (< 40 amps) will be distributed through my old RIGrunner Powerpole blocks. The raw ~12v from the station battery will be available for future uses such as "remote" 12v boosters and DC to DC power like 5v for TTL logic.

This third stage is currently being built; cutting and drilling the 20 holes in a steel rack blank for the control panel is complete, as is the installation of a particle board base in the rack for the rest of the distribution. This stage is expected to be complete as early as this week.

RF Plans

At this point, you might be wondering if I'm planning to emit any RF from my rover. After completing the power installation, I will turn my attention to RF output. For VHF, I'm planning to first install my 4 low band loops for a minimal capability. But to feed them, I need to route four coax cables out of the van to the roof. I'm hoping I can route them out the existing ceiling hole for the pneumatic mast cables, adding a new roof-top box for watertight coax connections. As a backup plan, I can definitely route coax through the front access hole that is empty after removal of the front satellite dish, but that involves longer coax runs and might interfere with running microwave cables.

Before all that, I want to learn how to make my own coax assemblies. 4 years ago when I began operating I tried but failed to make PL259 cables with soldered connections. Now I want to try to make crimped connectors; I bought connectors, a tool set, and raw coax and hope to begin to learn shortly ... it's a big waste of cable, time, and money to have to order pre-made cables for the many runs expected in the rover.

I now have antennas and a frame and rotator to theoretically mount 6 microwave antennas low on the front of the van. This allows short cable runs to the front rack where I can mount Rick's old microwave equipment. Although it might be possible to get some bands operating by January, given how much longer each step of this van project has taken, the chances are very low.

New home

Last winter I stored the van in an indoor parking garage in Morgantown meant for collector cars. Because it just opened, I had plenty of room to work on the van indoors. But as the garage filled, it became very difficult to get access, and it was getting harder and harder to get out of my parking place. Plus, it was a full hour one way from my home. Over the warmer months the van stayed at home, but it is now in another indoor facility less than a half-hour away. Although more convenient and roomier, this new garage is much more expensive than the other one. As I populate the van with more electronics, it gets more important to keep the van somewhat climate controlled, but the monthly rent adds up quickly and my home garage is not big enough. Not sure how I'll resolve this problem long term, but for now the van is happy among much more expensive vehicles. More to go but good progress so far!

I Just Need a Longer Coax Cable-432MHz EME Portable

The second and third weekends of the ARRL EME contest are for bands 50-1296MHz, and I have my equipment for both 432 and 1296 with me in Florida. For this weekend, I had the Kenwood TS2000x, my TE SSPA running 150W with its built-in preamp, and a 5wl Yagi. I set up my small 6' tower on the grass outside of my patio and got the AZ-EL rotor and 432MHz antenna in place. In order to place the structure where it could see the best moonrise, I moved the tower further from the patio. I brought a long piece of coax with me and once I set it up and checked the SWR, I found it was way too high. The N connector was no longer making good contact to the coax shield so I found a replacement.

Moonrise came, the antenna was aimed, preamp was on, and stations were posting their CQ's on the HB9Q logger. No traces were seen. I checked everything again and all was working. I even tried my spare preamp, but nothing was noted. I twisted the dial to even find a birdie to assure that there was some 432 signal that could be detected, and that's when I found that I had set the receiver on 433MHz, not 432MHz! A quick spin of the dial and I was in business, decoding the QRO stations like DL7APV, HB9Q, K2UYH and NC1I.

During 2 hours Friday night I was able to work 6 stations between 11:30PM and 2AM. The moon was at apogee and many of the EU stations were still active as noted on the HB9Q logger.

I took a few hours to sleep, hoping that I could look westward with the moonset and try to work some hams in Australia or Asia. When I awoke and looked outside, I realized that the position of the tower and antenna would not be able to "see" the moon as it was blocked by another big palm tree. I could move the tower and antenna yet further from the patio, but alas, the



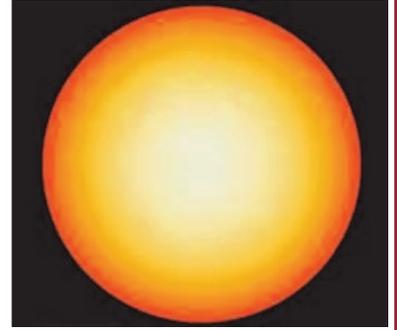
replacement coax was too short! Rather than make repairs on the first coax cable with the limited tools available, I was content to work another 3 European stations on the Saturday night moon pass, and call the weekend a success. I was even able to work PA2V with his 4 Yagi array and his KW power using JT65B.

I'll have time to repair the connector on the longer coax cable before weekend #3 and hopefully operate on 1296MHz with a pair of long loop Yagis that I purchased used from another VHF ham here in Florida. I hope this stimulates others with small stations to try some EME, especially on 144MHz or 432MHz using JT65B. 73, Rick K1DS

FT8 - Tipping Point for Ham Radio?

By Gerald, K5SDR, CEO, Flex Radio

It's October 9, 2018, and I am looking at a NASA photo of a spotless sun but I'm making 10m DX contacts one after another. Zero sunspots but working DX on FT8! Is FT8 creating a "tipping point" for amateur radio at the very bottom of the solar cycle?



Several years ago I was captivated by a book written by Malcolm Gladwell called, *The Tipping Point: How Little Things Can Make a Big Difference*. Merriam-Webster defines tipping point as, "the critical point in a situation, process, or system beyond which a significant and often unstoppable effect or change takes place." In his book, Gladwell describes how, "The tipping point is that magic moment when an idea, trend, or social behavior crosses a threshold, tips, and spreads like wildfire." He shows us how the phenomenon applies to everything from flu epidemics to the explosion of new technologies.

Does the FT8 mode included in WSJT-X software constitute a tipping point in ham radio for good or for harm? There are many ham radio opinion blogs on the Internet that strongly or sometimes sarcastically take one or the other stance. There is even an Internet poll asking, "Is FT8 damaging amateur radio?" At this moment it is 52% yes, 45% no and 3% undecided. All of the articles and videos I have seen agree on one undeniable fact - FT8 has since its introduction in June of 2017 achieved "killer app" or tipping point status. Some think it will kill amateur radio and others believe that such innovations give the hobby new life.

The FT8 digital mode is the latest in a series of weak signal applications for amateur radio. Conceived originally for enhancing esoteric propagation modes such as high speed meteor scatter and moonbounce, Joe Taylor (K1JT) developed a series of applications including FSK144, JT6M, JT65, and JT9. When FT8, jointly developed by Joe Taylor and Steve Franke (K9AN), was announced it was described as being designed for, "multi-hop Es where signals may be weak and fading, openings may be short, and you want fast completion of reliable, confirmable QSO's." Being a 6 meter fan, that resonates with me.

What happened to take an esoteric mode designed for multi-hop E skip on VHF and overnight turn it into a worldwide phenomenon across all bands from 2200m through 70cm? In other words, what makes FT8 a killer app? Here are a few of my observations:

- FT8 counters the current dearth of sunspots
- FT8 opens "dead bands"
- FT8 is addictive - see 'em, click 'em, work 'em. Boom!
- FT8 lets little pistols work DXCC like a big gun
- FT8 lets you work the world from small or deed restricted lots
- FT8 is a weak signal - not a low power mode (power works the really weak ones)
- FT8 lets you work DX on 6m when there would be none
- FT8 is suddenly dominating VHF/UHF contesting
- FT8 lets you work weak signal DX without proficient CW skills
- FT8 decoding to -20 dB SNR is like turning 100W into 10kW
- FT8 is like having constant DX beacons on every band
- FT8 puts the DX, WAS, WAZ, etc. on the air when they might not be
- FT8 let's you work DXCC on 160m without a big station
- FT8 let's you call CQ and become the DX
- FT8 is amazing literally space age technology

... FT8 cont'd

... FT8 cont'd

- FT8 is probably other things I haven't realized yet but some of you have

So, will FT8 kill ham radio as some have posed? True, it is mostly automated. True, it reduces the skill required to make DX contacts. True, it removes conversation from the QSO the same as is true of most DX chasing contacts on any mode. True, it removes some of the human factor. But does that make it bad for amateur radio's future?

In my humble opinion, FT8 is at the very heart of what amateur radio has been about from its inception - amateurs who love the art of radio enhancing the art of radio. The FCC in Part 97 of the rules lists the following as second in the list of five tenets that define amateur radio:

"Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art."

In my humble opinion, what will ultimately kill amateur radio is not FT8. To the contrary FT8 is an example of what will keep it alive and relevant. What will kill amateur radio is if we we cease to innovate, become old and grumpy, and no longer bring new blood into the hobby. I received my novice license over 50 years ago (rock bound CW on a 6L6) and still find new and exciting things to peak my interest. Frankly, technical innovation in amateur radio directly led to my career in technology just as for many of you. I hope that continues long after I am gone.

Amateur radio is alive and well. FT8 is one just one element of keeping it that way. Hope to work you soon on FT8, some other new mode, or maybe a ragchew on SSB when the sunspots come back.

[From Flex Radio web site. Used with permission. Forwarded to Cheese Bits by Jim WA3EHD]

Some observations from Bill AA2UK

For the club it's time to load WSJT-X v2.0.0-rc3 get yourself familiar with the new contest version, it has completely changed MSK144 it's not backwards compatible w/ any previous versions except FT8 in standard mode, FT8 Contest Mode will only work w/ the v2.0.0 rc3.

The good vs the bad or as some call it good vs. evil: I find many that criticize FT8 have never tried it, this same subset say they won't ever try it. How can you say you don't like FT8 or the other modes if you never tried it? I've heard from a few VHF users who know CW who say they won't try it either. To me this is "the theater of the insane". These same users never seem to work outside of their local area and are the one's blaming FT8 for their lack of contacts. I believe FT8 and all the other WSJT-X formats are a positive tipping point for the VHF and above. FT8 still requires some positive conditions to be effective but these events can be short in duration. I have observed many small 6 meter E's openings (called E lite) most days with the larger anchor stations. Contrary to popular belief FT8 is terrible for meteor scatter. If you have meteors MSK144 is what you should be running.

It's a great mode to use in contests where conditions are poor to good. You can get a higher Q rate if the bands are wide open using SSB but you might miss the double hop buried in the QRM/N at much lower levels than the 1st hop. I've been pushing for the members to use FT8 and MSK144 since last year's January contest and MSK144 since the last 2 January contests.

My opinion is you can't beat WSJT-X in a VHF contest for grid multipliers. Let's face it there are fewer veteran operators with big stations since the peak which I think was 2003-05. Why not make the most you can by using WSJT-X? If you are one of the never digital op's at least give it a fair trial before you say you won't ever use it again. To effectively make the best use of FT8 and MSK144 you need to get efficient in it's nuances and knowing who you can realistically work, making schedules more effective and knowing

the prime times for working MSK144. The same goes for running FT8 on 6 thru 432. With use you'll know who you can only work via JT65 modes.

All the big multi operators are now using FT8 & MSK144.

This morning I loaded WSJT-X v2.0.0-rc3. I spent some time on MSK144. I worked a bunch on 6 meters then I switched to 2 meters. On 2 meters I worked Larry K0TPP EM48, followed by Jay KA9CFD EN40 and then Mike KF8MY in EN84. There's no real shower going on and each contact took about 10 mins from start to finish. I'll finish by saying "try it you'll like it!"

Bill AA2UK

Some additional observations from Joe K1JT

Hi Jim, Bill, and all,

Your posts here about FT8 and MSK144 are much appreciated.

It's worth remembering that the original motivation for nearly all of the WSJT(-X) modes was VHF DXing and VHF contesting. Used skillfully, and factored carefully into your overall operating plan, these digi-modes can provide significant boosts to your contact and (especially) multiplier totals in a contest, as well as your states-worked, grids-worked, and DXCC totals.

How best to merge digi-modes into your operating plan, along with CW and SSB, will be different for each station and each operator. But one thing is for sure: downloading the software and trying it out a week before the contest is NOT a good plan, either for you or for those of us who write and polish the software.

You need practice and experience with the software, before the contest. We need your feedback about what works well for you, and what does not.

We get tons of useful feedback from thousands of HF users of WSJT-X. From VHF+ users, not so much.
-- 73, Joe, K1JT

And finally... from your editor Lenny W2BVH

All my antennas (2M - 2304, with 3456 on the way) are on a pole sticking out the peak of my roof. In most directions of the compass the antennas are looking into trees. Some of these are only 15 ft or so away. I used FT8 a lot this summer on 6 Meters and it greatly improved my ability to make qso's. It added effectiveness to communication but more important it added fun. I've heard and been heard in JA on 6M with the above setup! This never happened before! I worked MANY stations that were totally inaudible. If someone offered you a box, for free, that would push your noise floor down 20 dB would you really say "no thanks"? FT8's a good thing for contests, dx and any time you're struggling to make QSOs.

We're a weak signal club working on weak signal bands. How could we say anything but THANK YOU VERY MUCH for FT-8.

--73, Lenny W2BVH

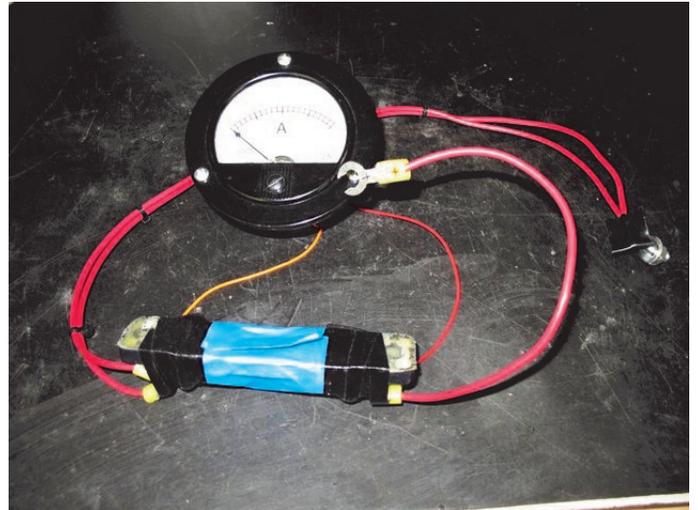
Spray-on Transparent Antennas

Still being developed, but this report in IEEE Spectrum magazine is not a joke:

https://spectrum.ieee.org/tech-talk/telecom/wireless/researchers-create-twodimensional-spray-on-antennas?utm_source=techalert&utm_campaign=techalert-09-27-18&utm_medium=email

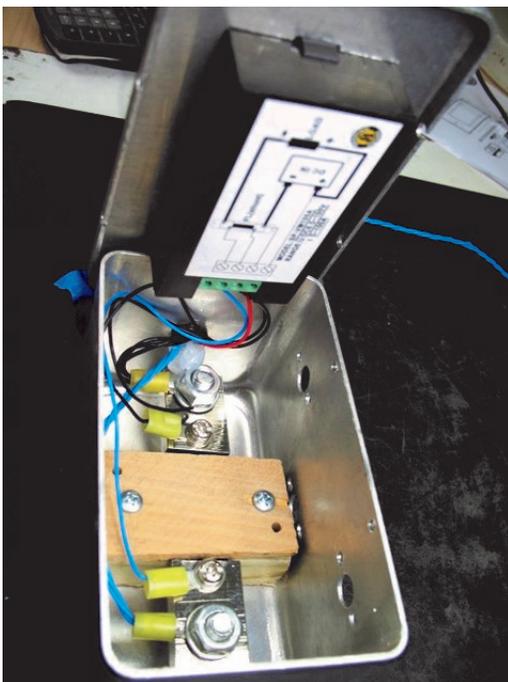
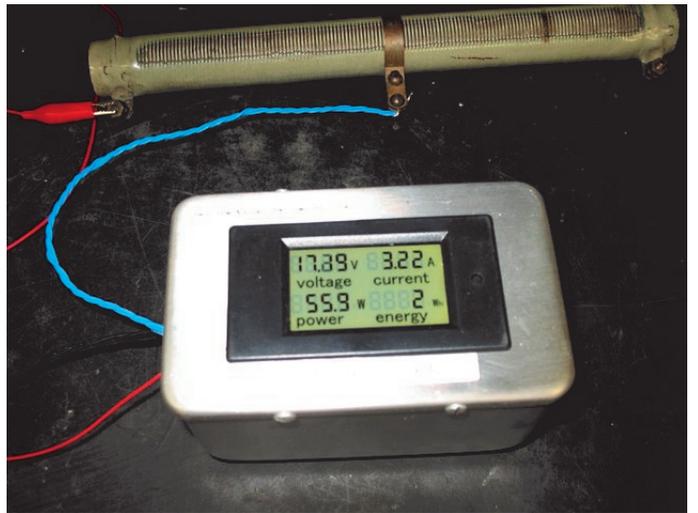
A 21st Century Ammeter

For the last few years whenever I needed to measure high current (say total current used by a power amp) I used this. It's a traditional ammeter (this one's from China, pretty accurate and inexpensive). The only complaint I have about it is the anxiety I have when using it. Somehow it keeps finding its way off the bench onto the floor in the middle of a measurement. So far it's survived. But with jeweled bearings and a hairspring returning the armature to zero, it's not built for my basement "lab" environment. A couple of weeks ago while I was using it, measuring the current into a Toshiba 3456 MHz amp it hit the floor again. It's still working but I decided "that's enough".



20 amp d'Arsonval ammeter with 75 mV=20A shunt

I went on Amazon, poked around for awhile and ordered this meter movement for \$14.99 with free shipping. It reads 6.5 -100 Vdc and 0-100 amps simultaneously, using the included shunt. It also calculates power (Watts) and energy used (Watt-Hours). Current and voltage readings are within 30 mV/mA of the readings I get on my Fluke DMM. No bearings, no hairsprings to worry about. The only negative is it updates only twice per second, but the way I use it that's not a problem. It's a 3 wire device: It takes power for its internal electronics from the load being read, and the shunt it uses is inserted between the low side of the load and ground.



As is common with small projects, the tin work took more time and effort than the wiring. The box from one of the Mario raffles, in used condition (see the extra holes it came with)? Cutting a rectangular hole for the meter movement and polishing out the scratches that came with the box took about 1 1/2 hours. The shunt can't be in contact with the metal box, so I mounted it on a block of wood and sandwiched on another piece of wood to clamp it in position. Even with 100 Amps going through it, it only dissipates 7 1/2 watts so no problems with heating are expected. (I expect most measurements will be under 50 amps and intermittent anyway). Works good so far, and should be concrete-floor-friendly.

--Lenny W2BVH

432 Sprint Results and Comments

From Bill AA2UK

30 Q's and 20 grids. Activity okay I didn't hear or work many club members. KR1ST Alex had a pretty good signal considering he was using his 2 meter beam! He was also the only FN21 station I heard. My best was probably Randy WB8ART who was operating in EN80ee. VE3CRU/R in FN04 was an easy and loud. Stephen VE3ZV in EN92 had a good signal as usual. Mike N1JEZ (FN44) and Dick K1HC (FN53) were my best to the NE.

From Ray N3RG

30 Q's and 16 grids.

Bill, you're right, not a lot of Packrats although I did manage to work a few! I was pleased to work K1HC in FN53 with his solid cw signal and a hand full of VE stations. Not bad for my meager 80 watts! One thing about the sprint I enjoyed was being able to hear almost everyone with the mast mounted LNA. My biggest problem was I could hear stations that couldn't hear me and guess it's time to see how much of the 80 watts is reaching the antenna! I want to remain a low power station so I'll try to get 100 watts out of my amp and see what improvements I can make to get as much as possible to the antenna on 432. The 33 ele home brew K1FO antenna works well so I'm not planning to change it.

From Bill K1DY

Well that was very interesting... Worked the first two hours and the last hour. The band seemed in really bad shape most of the time BUT I did make some long haul contacts with my barefoot FT991A (50 watts). Final tally was 8 QSO's in 7 grids (and 7 states!). Best DX was K1RZ at 553 miles. Next was K3TUF at 470 miles. Did not work my own grid or anything north or east. tried with W1GHZ right at the end for another grid/state but we ran out of time. I can normally work Paul easily so that's how the band was.. kind of "selective". Anyway thanks to all who got on..

From Lenny W2BVH

One QSO, WW2Y around 35 miles away. Didn't hear and wasn't heard by anyone else! A week later I checked and found terrible VSWR on my 432 and 222 antennas. Just in time for winter ;-)

From Dave K1RZ

43 Q's 26 Grids. Glad to be able to join the fun on the 432 Fall Sprint. It was fun as always and was also my only sprint this fall. Fun to chase Andrea K2EZ, the only Rover I worked through her four Grids. And particularly fun to work so many northeast stations W1GHZ, N1JEZ, AF1T, K1HC and K1DY with Bill being my best DX of the evening, and a new grid on 432. I had tried other times to work K1DY but this was the first time we ended in success. Thanks also to K8TQK, WB8ART and K9MRI for being on to the west, plus KF8MY to the far north west. Thanks to the Southeast VHF Society for sponsoring these events, and to everyone for getting on and working me. 73, Dave K1RZ FM19jh

More Repercussions from Lightning Strike

Here's a photo of the Jennings vacuum relay out of my QRO HF amp. As time goes on more and more destruction is showing up. I walked my Beveridge wire and found only a few 20 foot sections. Almost all of it was vaporized. Would have been interesting seeing it happen.

73, Dave W2KV



On the Bands from K3GNC

Sorry to be unable to provide "On the Bands" this month. My remote station is currently down due to the bad internet service at the remote location. I hope to have something to report for December.

The Wayback Machine In CHEESE BITS, 50 Years Ago

Nibbles from November 1968. Vol. XI Nr. 11
de Bert, K3IUV
(author's comments in italics)

- **“Our Prez Sez”.** The prez, Charlie, K3HSS noted that “I would like to thank K3JJZ for pitching is as auctioneer at the September White Elephant Sale.” *(Nothing ever changes – who is our auctioneer today, 50 years later? K3JJZ.)* He also noted that the material for the auction was sparse, but was “disposed of in short order.” He closed by noting that the Board had voted to increase the dues from \$6 to \$8, based on “a pressing need for financial security.”
- **ARRL Bulletin 187, 9/19/68.** The ARRL announced the availability of their annual cross-indexed Net Directory. *(Does this still exist? I haven't heard about it for many years. Would be easy to maintain with today's electronic formats.)*
- **ARRL Bulletin 188 10/26/68.** The United States concluded a reciprocal operating agreement with Barbados.
- **Code Practice.** Now being conducted by K3ZPN, Lloyd, weeknights from 7:00 to 7:30 on 50.2. *(Would it be useful to resume this activity? Who would volunteer as the codemaster?)*
- **The Book Rack.** K3WEU, Paul, conducted a weekly “Book Review Net.” In this issue, he noted that he had requests to include a synopsis of the reviews in the monthly Cheese Bits. He selected the book “Transistor Circuit Guidebook” by Byron Weis for this month's report. His column included a

detailed description of the scope of the book, technical level, and a listing of many of the included circuit applications. *(Paul's net reviews had engendered many purchases by club members and other listeners.)*

- **Hidden Transmitter Hunt.** W3CJU, Don, reported on the results of the September “Hunt”. Held from 1:00 to 3:00 on Sunday the 29th, continuous audio tones were transmitted on 50.4 and 145.2, with Call ID every 10 minutes. The transmitters were hidden by K3BPP, Walt *(winner of the last hunt)* on the grounds of the Bonnie Brook Farms, a riding academy near Furlong. Details of the setup were described. At 1:45, the master snooper K3UJD, Mario *(Mario table fame)*, drove down the approach lane “with one hand on the wheel and one hand on the beam antenna!” All was then quiet until 2:50 when a call was received from K3JJZ, El, asking for help. He had been circling all around but couldn't find the approach path! With a few hints, El arrived with his xyl and two children. He was followed quickly by W3CL, Harry. A good time was had by all the participants. The next rabbit (hider) will be Mario, as a reward for being the “First Finder.” *(Another good article to browse, on the website.)*
- **Proposed Amendments to the Packrat Constitution.** Several amendments were proposed and published in this issue, to comply with the requirement for notifying all members at least two weeks before a vote on the changes. These were submitted by the *(then)* Parliamentarian, K3IUV, Bert *(me)*. They were submitted to “clarify and update the Constitution.” *(Remember, you can read*

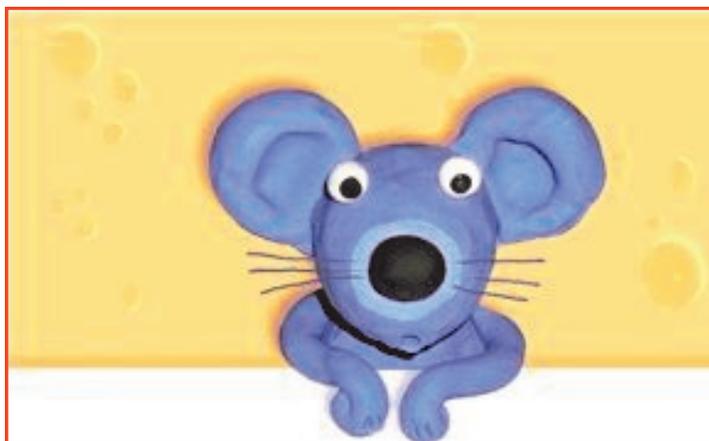
the Packrat Constitution and Bylaws in the "Docs" tab of the W3CCX website.)

- **Membership.** WA3JSR, Ben Gindin, elected to membership. Dropped from membership, K3BGT, Harvey (brother of recently deceased K3CHN, Seymour), and W3KLL, Walt. (No reason given.).
- **January Contest.** In preparation for the 1969 January contest, the chairman K3DUC, Phil, provided a "Plan for a Happy Hangover" check-off sheet to review all the station requirements and show upgrades needed. The sheet included some helpful suggestions which still apply. (e.g., 1. Foot-to-talk operation; 2. Good, clear operating position; 3. A well rested operator on the contest morning, etc.). The "Packrats to Look For in the Contest" list was also included. 119 calls were listed (Regular, Student and Retired members). Each call included the bands available. The following (still active) members were included: K3BPP, Walt (6/2/220/432), WA3EHD, Jim (6), W3GXB, Bob (2/220), K3IPM, Stan (6/2/220/432), K3IUUV, Bert (6/2/220/432), K3JJZ, El (6/2/220/432). *(This type of check-off list is still part of the Packrat contest package.)*
- **Swap Shoppe. By W3ZRR.** *(Always nostalgia.)* A couple of interesting items from W3BRU, Frank Benner. A 35-ft Windmill tower, all-aluminum *(I wonder if that's the one that ended up on top of Ernie's garage?)*, and "assorted junk". No prices shown. Also from K3JJZ, EL, "Wanted. A Big-Wheel antenna for 220, and the 24-pin Power Plug for a Comco Transceiver *(El, did you ever get them.)*
- **Miscellany.** *Postage for this copy (from W3KKN, Ernie,) was a nice 6-cent*

Roosevelt stamp. As in previous editions, many "folksy" comments about members, their families, and activities were included in this edition of Cheese Bits. If interested, or for more detail on the above items, visit our website (www.W3CCX.COM) and read the full issue scanned by K3IUUV (me), and posted on the site (All issues have been restored to the new website, by WS3O, our new 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 member. 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. If not, keep it to yourself! (I received no feedback for the October column. Is anyone reading it?)

- [I am, every month; and would be, even if I wasn't editing it ;-)] -- Lenny W2BVH]

Thirty, de K3IUUV



Events

For inclusion, please direct event notices to the editor.

EME 50 to 1296 (Round 2) - Contest - November 24-25, 2018. See <http://www.arrl.org/eme-contest> for details.

January VHF Contest - Contest - January 19-21, 2019. Details to follow.

Winter Hamfest - Hamfest - February 23, 2019. Big Flats NY. Sponsored by LIM Contest Group. See <http://www.ka2lim.com/7.html> for details

June VHF Contest - Contest - June 8-10, 2019. Details to follow.

Murgas ARC Hamfest & Computerfest - Hamfest - July 7, 2019. Plains PA. See <http://hamfest.murgasarc.org/> for details.

NEWEST PACKRAT ALEX KRIST

Welcome!! / Welkom !!



K2LIM Multi-Multi QRT

Ken KA2LIM is dismantling his contest station this year and will be contesting as a rover in the future. Here's a picture of the ops of one of the last contests at K2LIM. Recognize anyone? (That's I-r Ray-N3RG, Ken-KA2LIM, Al-W9KXI, Warren-WB2ONA).



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Ken KA2LIM sent a photo of the rover van he used both weekends of this year's 10 GHz contest. With his multi-multi station being taken down, this is how we'll work him in the future. Good Luck Ken!



Joel Knoblock W3RFC

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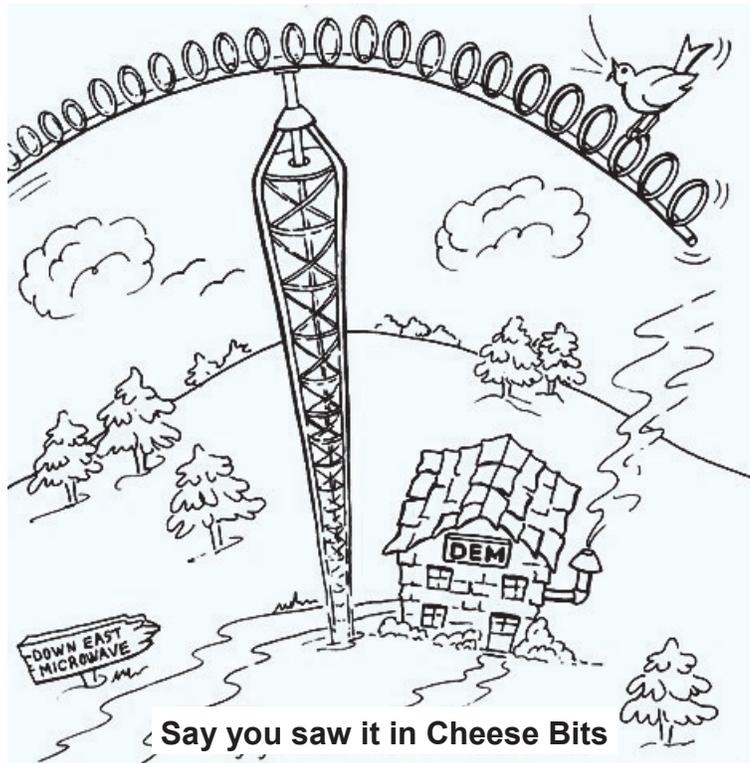
Heads UP: Look for a great multi-part article in Cheese Bits from Roger W3SZ on Phase Noise, starting some time this fall / winter!

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