



CHEESE BITS

W3CCX
CLUB MEMORIAL CALL

ARRL
Affiliated
Club



Volume LV

December 2014

Number 12

PREZ
SEZ:

I trust you all had a wonderful Thanksgiving, time with family and friends, and for those rooting for the Eagles it was a fantastic day.

My weekend was capped with participation in the CQ WW CW contest squeezed in with grand children sleep-overs. What a way to enjoy time off. It's also a great way to sharpen your CW skills, but then we've talked about that one before :-)

This past month has also seen the completion of our vacating the Cotner storage presence. Four Packrats brought the new trailer to the outside tower stash and loaded it up with all of the outside contents. Then we went to the temporary storage facility down the road and finished loading the trailer with all the remaining contents. The trailer is now safely in storage until the June contest. We will have a Spring Picnic Work session to organize and inventory the contents in final preparation for the Contest in June.

From November 9th to the 13th I was in Haiti to complete the first phase of a tower project in the Capital city; we sited the guy anchor points and prepared the local crews for the job of placing the guy anchors. What an experience! I showed a few pictures at this past month's meeting, but will prepare a presentation for a future meeting when the project is complete. The "remote ham" guys were just in HH and are planning a super station from 160 -6m on a location over a mile above sea level. I can't wait to see what we can do with a remote 6m station

on that island.

I know that K2UYH would like to see some 1296 activity off the moon from the island of Haiti as well. Now how would you do something like that? Well this question will be answered if you attend the December meeting where Al will be giving a talk on how to do low power moon activity.

Be sure to be there and spark your interest in communicating off the moon. We'll have dinner before at Giuseppe's just across the parking lot from the meeting location.

Just two months until the January VHF Contest and, as I have noticed in several recent long range forecasts, we still have **numerous days to get antenna work completed. Is your station ready?** I've been working on the outdoor infrastructure and soon it will be time to work on the inside. The contest is later in the month than usual, giving us a little more time to prepare, but also making the possibility of bad weather more likely. We need the rovers, so good weather is a necessity.

Lets have a fun time this year; we'll talk lots about the contest and all of the preparation during our January meeting, so make sure it's on your calendar.

While we're on the subject of contests, it's not too soon to talk about our annual major event, the ARRL June VHF Contest. Mark your calendar for June 12 – 15, 2015 and get your time off request in early for Monday and Friday. With all of our equipment in a trailer now, we won't have the major

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

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PACKRAT BEACONS - W3CCX/B

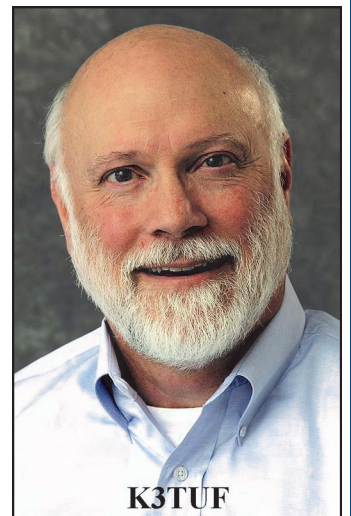
FM29jw Philadelphia, PA
50.080 144.284 222.064 432.286 903.072 1296.245 MHz
2304.043 3456.207 5763.196 10,368.062 MHz (as of 1/08)

MONDAY NIGHT NETS

<u>TIME</u>	<u>FREQUENCY</u>	<u>NET CONTROL</u>
7:30 PM	50.145 MHz	K3EOD FM29II WA3QPX FM29di
8:00 PM	144.150 MHz	N3ITT FN20ki
8:30 PM	222.125 MHz	KB1JEY FN20je
8:30 PM	224.58R MHz	W3GXB FN20jm
9:00 PM	432.110 MHz	WB2RVX FM29mt
9:30 PM	1296.100 MHz	K3TUF FN10we
10:00 PM	903.100 MHz	WA3SRU FN20le

Visit the Mt Airy VHF Radio Club at: www.packratvhf.com or www.w3ccx.com

load and unload from storage to attend to. We all head up (equipment, gear and food in tow) to Mt Pocono State Park above Camelback Ski resort and get on the air from one of the best spots in Eastern PA. Come and enjoy the fun for the weekend. This is a great way to introduce new folks to the joys of weak signal activity. Invite someone to the mountain to observe, there isn't a better place to show it off.



Here are a couple more items for that calendar; October 2-4, 2015 will be the Mid Atlantic VHF Conference and April 15-16, 2016 will be the East Coast VHF Super Conference; keep your eyes on www.vhfsuperconference.com for details as they come available.

It's the time of year for Holiday celebrations and lots of family time. I trust you will balance your life with plenty of time with family; it will make your life more fulfilled, you can't do radio all of the time :-)

Now lets work on lots of bands,

Phil, K3TUF

K3TUF IN HAITI



Phil was recently in Haiti to start setting up a new (used) AM broadcast antenna tower (with insulated base) to replace the one that went down in the earthquake. This first trip involved planning and setting the guy anchors. Permit rules in Haiti are apparently rather informal. The station owner offered to put the station on a backup antenna during 160 Meter ham contests so hams can use the tower for the contests. This is in gratitude for the work in raising the new antenna! Additional details on this project will follow in future issues of Cheese Bits.

Fourth Wheel Solution

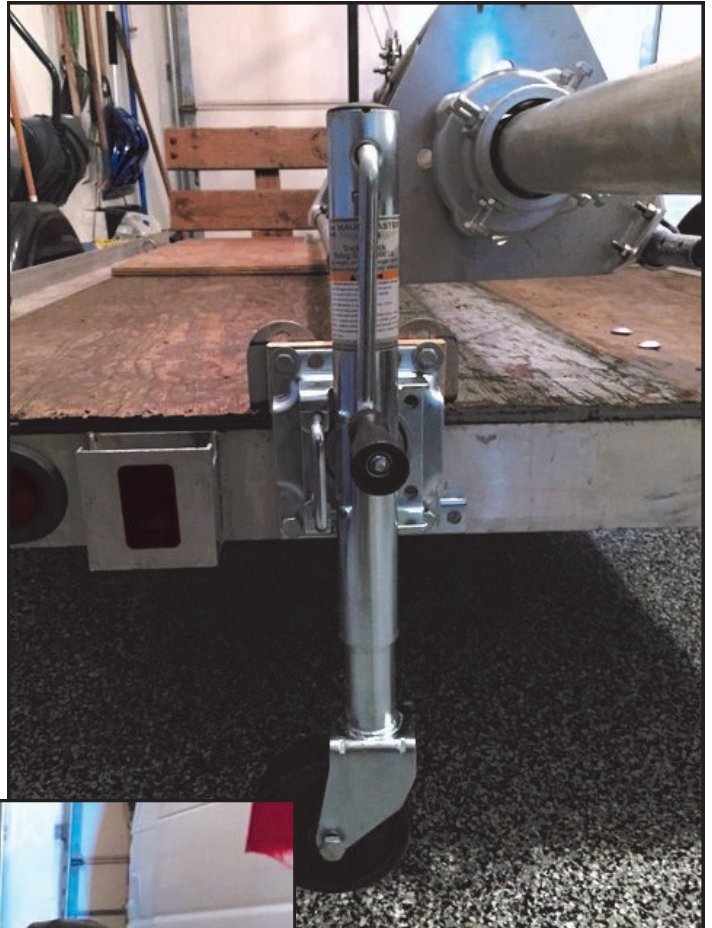
I had some modest problems trying to level my tower trailer that I use for EME. One problem is that it required some adjustable jacks to keep it from tipping backward once the steel ring for the dish was placed into the mast. Due to its heavy weight, the rear of the trailer would start to tip downward, and it went to the ground once the dish petals and feed was in place if the jacks were not in place.

Once the whole works were raised to the upright position, it balanced far better. I also had a problem backing the trailer up into my garage after use, especially since my driveway has about a 15 degree slope to the street. At one point, the rear of the trailer would scrape the driveway.

On occasion, I needed to stand on the trailer deck if it was stable. I noted that W3SZ has the same trailer, and he needed to use 200 pounds of bagged gravel to keep his trailer balanced. Quite a load to bear.

Harbor Freight had the solution for me with a sale item of a wheel on a pivot for trailers. This is usually used on the tongue. I already had one of those attached to the tongue. Adding another such wheel to the rear of the trailer gave me 4 point balance, and some easy adjustability of the level of the trailer.

In order to mount the wheel, I needed to add

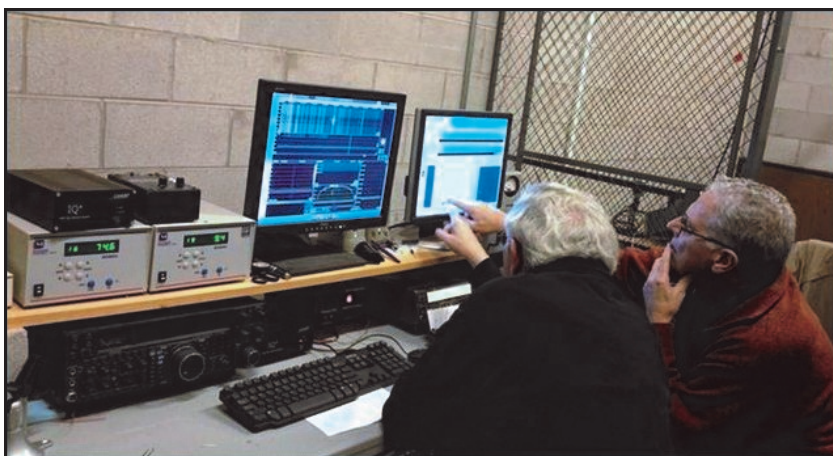


some brackets and a spacer to allow the wheel to clear both the aluminum bracket for the trailer fence mount and the mast. Here are pictures of the mounted fourth wheel that solved my problems. **Rick, K1DS**

EME Contest at the K1JT Multi-Op

The second segment of the 2014 ARRL EME Contest took place on the weekend of November 8-9, and once again the Princeton/West Windsor, NJ multi-op effort was in full swing. We use the setup at K1JT for 144 MHz, at W2PU for 432 MHz, and at K2UYH for 432 and above. The first contest segment (October 11-12) covered the bands for 2.3 GHz and up; the second and third segments are for 50 – 1296 MHz. During the contest we sign K1JT at all three locations. Most of the operating at W2PU was done by Dan, K2QM, and Sunny, AG6GR; Jack, K2BMI joined Al, K2UYH and George, NE2U, to operate the K2UYH station, and Woody, AK2F, and Joe handled 2 meters at K1JT.

This year for the first time we have 432 MHz EME capability at W2PU. We decided to work all the 432 MHz stations we could at W2PU. Operators at K2UYH could therefore spend most of their time at 1296 MHz, moving down to 432 MHz only for a few hours to work stations too weak to work with the smaller antenna at W2PU. This strategy worked well, and we plan to use it again for the December 6-7 contest weekend. The photo, right (taken by Woody) shows Jack and Joe at the W2PU station, just before the contest period started. They are probably arguing over what station to work first on 432 MHz.



Woody's camera captured another essential element of our overall success, the 4 x 14-element dual polarization array on 70-foot tower at K1JT

Most equipment performed well over the contest weekend, although Murphy did make his customary visits. On Friday night, as the moon rose to elevations higher than about 45 degrees the W2PU feedline **rotor loop got caught in the array's counterweight**. As a result, the elevation rotor kept moving but the antenna did not — and signals slowly disappeared because we were no longer pointed at the moon. The nature of the problem was not recognized until several hours later. In daylight the fault was easy to fix, and the rotor loop was safely tied out of the way.

The K2UYH station uses a coax relay to switch the shack end of a 7/8" heliax cable between power amplifiers for 432 and 1296 MHz. This relay overheated and failed during the second moon pass, and the **resulting high SWR killed one of the four transistors in the 500-Watt SSPA**. Fortunately the amplifier still made about 350 W output, so operation was continued with somewhat reduced power.

Totals for the weekend were as follows (multipliers in this contest are DXCC entities, US States, and Canadian Provinces):

144 MHz: 126 QSOs x 58 multipliers
432 MHz: 32 x 23
1296 MHz: 57 x 35

73, Joe, K1JT

ARRL EME 2nd Weekend Report K1DS

The rain Thursday and the wind Friday did not help the EME contest efforts at K1DS. I needed time to get my "Driveway DXpedition" to make some contacts using EME. I started by using just a pair of the 9 wavelength 432 yagis to limit the time it takes to get set-up, with the hope that if there was good activity that I'd put my new 432MHz W6PQL 500W amplifier on the air. It was a challenge to get things done, but by 7PM when the moon was rising over the house next door, I started listening. And I listened, went inside for a bite of dinner, listened some more, came inside to get warm and then went out to listen again. I scanned the lower part of the band from 432.000 to .050. Heard many birdies and a signal sending a continuous stream of OOO dashes that was likely some kind of radar or reporting system. **I was skunked!** It got down to freezing, and there was no magic to be made. Went in and hoped that tomorrow would be a better day.

Saturday had sunshine, and by 1PM there was 50 degree weather. It took only an hour to take the yagis down and start to assemble the 10' dish and feed for 1296MHz. Then I had to change the power supplies, the amplifiers, the sequencing relays, and the preamps. When all that was done, the sun had gone down, so I was lucky enough to have a clear moon to visually align the dish. By 9PM, the moon had risen to where I could start to hear loud signals, and I was able to work I1NDP, OK1CA and HB9Q in the first 20 minutes on CW. I could peak the dish on their 559-579 signals and improve my manual tracking. In the 4 hours that I operated, **I was able to work 13 stations,** including 8 new initial contacts. I was able to more easily work the big guns, who use 30 foot dishes, but **I also was able to work other stations with 10 foot dishes.** I am hoping that the third weekend the ARRL EME contest will bring equally promising results. **Rick, K1DS**



W3HMS EME Report

11 Nov 14

I was on 1296 Fri and Sat nights. The signal reports were great Fri night....had 4 of single digits in JT.....best was -6. I need a better receiver on CW as I missed about 3 who answered my CQs, so I will try the KX-3 for CW RCV only. Rig is 450 w to a 3m dish. Here are the #s:

Friday12 QSOs.....3 in CW and 9 in JT65C
Saturday....5 QSOs.....1 in CW and 4 in JT65C
Total.....17 QSOs.....4 CW.....13 JT

I will work both Dec days.

...73,John, W3HMS

K3MF EME Report

I participated in the ARRL EME contest. Single op, single band: 432 mhz. Worked a total of 32 stations....28 JT65b and 4 CW. There was a lot of JT activity and it was nice to see the small stations participating. Conditions were pretty good, signals were steady and very little fading was encountered. I will be concentrating on the CW stations during the next leg. Using a TS-2000x as the main rig and a **HPSDR as a second receiver**. This allowed me to work JT stations and look for other stations on the SDR. **When a CW station popped up, I was able to see them and QSY.**

This has been the best start I have had since I first started participating in 2009. I had a total of 36 QSO's over two weekends.

Set-up: TS-2000x, HPSDR w/DEMI transverter (receive), 8938 amplifier 1.2 kw, WA2ODO dual stage preamp 47 dBG, 0.4nF, 8 x 25 el K1FO's.

73,
Wayde K3MF

Galvanized Tin 1296 EME Feed

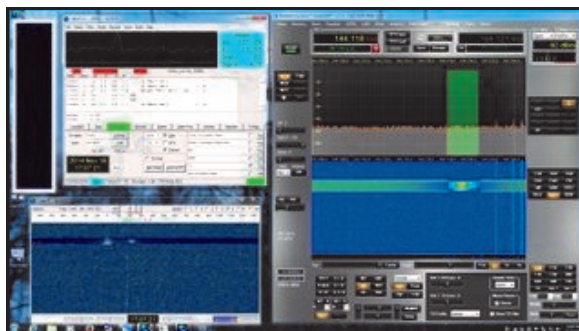
EB3FRN is using galvanized tin fireplace fittings in a 1296 MHz feed for his dish. A nice explanation of the construction is shown at <http://www.eb3frn.net/?p=280>



Tnx to AI K2UYH for the URL

WA3QPX FW5JJ Wallis Island AH16 EME

Paul reports a QSO on 2M November 5th



Atlantic Division Election Results

Well the results are in and Tom Abernathy, W3TOM will be the next Director.

I want to thank all of you who assisted me in this campaign; I appreciate it very much.

For now it's back to the business of the Packrats. 73,
Phil K3TUF

W1SMS Tower Progress

Steve reports: "Gettin' close to liftoff" after a disastrous loss of the previous high iron.



Mobile EME ?



Actually it's a 20 meter long, 10 meter wide, 6 meter high truck carrying one of the 115 radio telescope antennas to the ESA Atacama facility in Chile. See <http://www.scheuerle.de/en/products/new-vehicles/special-transporters/antenna-transporter.html>

Actual Mobile EME Rigs



Roger, W3SZ's.
See <http://www.nitehawk.com/w3sz/W3SZ-10GHzEME.htm> for a nice story

Free Stuff!

Dan has been publishing a monthly column for the benefit of newsletter editors, and I'm happy that I've finally found an opportunity to publish one in Cheese Bits
—W2BVH

By Dan Romanchik, KB6NU

I'm a sucker for free stuff. Below, you'll find links to a free transistor amplifier design program, a free printed circuit board design program, and a free tutorial on antennas. All of these look to be worth a look.

TransistorAmp 1.1

This is free software for designing bipolar transistor amplifiers. I found the link to this software (<http://en.transistoramp.de/>) on the AMRAD mailing list. Phil, M1GWZ, who posted the link, says, "A transistor circuit that I'm developing needed a 5x voltage gain stage. I could have thrown in a single op amp with split power rails and all that DIL8 real estate, but a single transistor stage would suffice. Trouble is, I'm an EE by inclination, not training, and all those calculations - working out those capacitor reactance values - well, I don't do them often enough for them to be easy. And I want voltage gain, not current. And then I found Transistor Amp 1.1."

"It's a nice piece of software," says Phil, "It installs easily and did the job for me quickly and easily. Oh, and when I built the circuit for real - voltage gain of 5x it worked!"

Altium CircuitMaker

CircuitMaker (<http://www.circuitmaker.com>) is a free printed circuit board design tool for hobbyists, people like you and me. Maxfield Parrish of EETimes says, "one key aspect of CircuitMaker is its intuitive and easy-to-use interface -- all of the important "stuff" is presented in an easily accessible manner in a ribbon at the top of the display. Another major consideration is that Altium has decided to

make CircuitMaker all about "Community," so users can easily share ideas and designs, comment on designs and offer suggestions for improvement, and generally help each other along the way."

Free antenna tutorial

For a limited time, Rohde & Schwartz and the IEEE Communications Society are offering a free tutorial on Antenna Basics (<http://www.comsoc.org/form/tutorial-registration-antenna-basics>). This tutorial explains the basic functionality of an antenna, starting with Hertz's antenna model. It also includes a short introduction to the fundamentals of wave propagation, the important general characteristics of an antenna and parameters, such as antenna gain, radiation pattern, bandwidth or VSWR. A more detailed explanation of the functionality of some selected antenna types (e.g. dipole or monopole) is also given.

Maik Reckeweg, Product Manager Antennas, Rohde & Schwarz GmbH, Munich, Germany, who is responsible for all the company's monitoring, measurement and communications antennas is the tutorial's editor.

The video is kind of dry, but I think Reckeweg does a pretty good job of discussing antenna basics. The video is also accompanied by a white paper that delves into these topics a little more completely. Overall, there's a bit more math than in most amateur radio discussions of antennas, but this makes the discussion a little more comprehensive.

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When not scouring the Internet for free stuff, you'll find KB6NU working on updates to his "No Nonsense" study guides, working CW on 40m, or blogging about amateur radio at www.kb6nu.com.

Isolation of Antenna Mounted Preamplifiers

I recently was revising my 432 EME setup and was concerned about adequate preamplifier protection. I have a series of N-relays that I use for my EME setup. Previously, I used a 180W TE amp with a built-in preamp that did its own switching. Now I have a 500W SSPA and a separate preamp (0.35nf, 25 dB gain). The relays I am using are rated at 80 dB isolation and were actually measured at the VHF Conference by Greg from Rohde & Schwarz at 110 dB isolation at 144MHz and 98 dB at 1296MHz. I would use one at the transverter for switching TR from the single output jack, and then another at the antenna splitter for switching from the preamp to the amp. The question is: If the isolation is at least 80dB, is it also necessary to add another relay to the preamp to ground it through a 50ohm load during transmit?

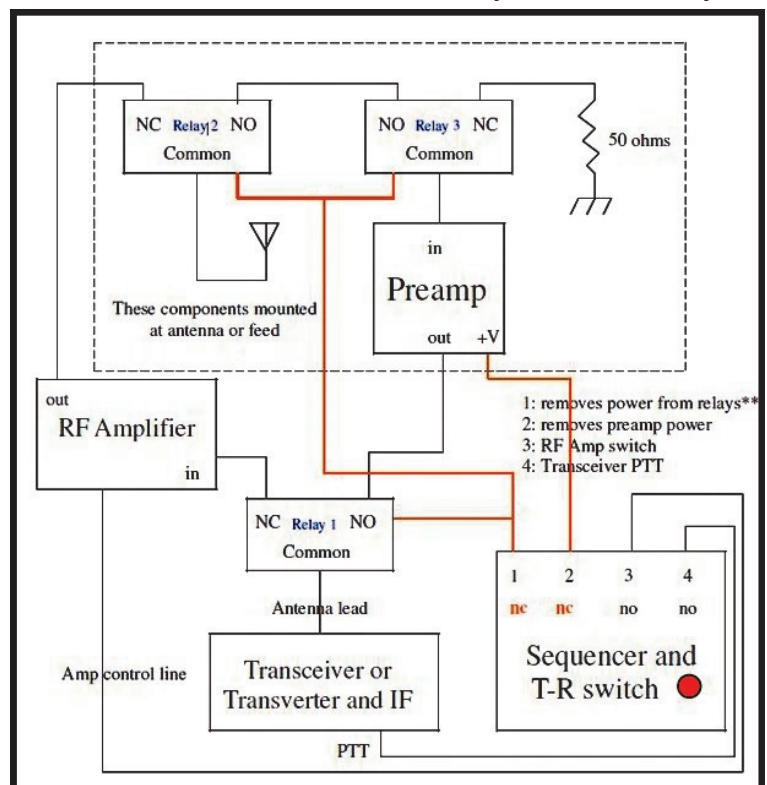
I asked some of the more experienced club members and their thoughtful replies led me to a good result .

Since 500 Watts = +57 dBm, 80 dB isolation means the pre-amp would see -23 dBm. This might be enough to desensitize (saturate) the preamp momentarily, but not enough to kill it. BUT - what is the isolation during the millisecond or so between moving from Tx to Rx? Probably a lot less than 80 dB. Adding a second DC relay or a delay circuit in the relay coil wiring so that the power to the preamp is turned off before the TR relay and TX amp is energized will significantly increase the chances of the preamp's survival. Adding a second relay in front of the preamp plus the DC sequencing described above will make your preamp bulletproof with only a 0.1 to 0.15 dB added loss.

With a decent spectrum analyzer and signal generator you can test the isolation of the RF relays that are a critical element of your system. Not everyone has access to the test gear needed. Most ops simply trust that the relay they bought at the flea market for a bargain price will have enough isolation to protect their sensitive radio front ends. The fact is many relays only have 30 dB of isolation at UHF / microwave frequencies at best. If you don't know the pedigree of the relay you are using, a second isolation relay and good sequencing is **cheap insurance**. In addition: TEST EVERYTHING before you install it in your station.

A signal of 20 mW (+13 dbm) is enough power to generate 1 volt. The input gates of the low noise GaAs Fets and PHEMT devices used in LNA's can be severely damaged by positive voltage of a volt or more. There are many protection schemes built into modern preamps to prevent or limit large signal voltages from damaging the device but they are no match for high power transmitters and low isolation relays. A second relay won't help if there is no sequencing. Terminating the preamp RF won't help much if there is no sequencing. It's not the static isolation, but the split second during transition from Rx to Tx and Tx to Rx that "lets out the smoke." The only purpose of antenna/tower mounting a preamp is to improve the system noise figure. Extra relays and cables may be counterproductive in achieving that goal.

—Rick K1DS



November Meeting Pix



Prof. Dennis Silage, K3DS Did a presentation on antenna modeling with NEC



Newest 'Rat Pete, K0BAK



Al's out and about

New Packrat Contest Trailer



More "Mobile" EME Rigs

This is a shot of moving day in 2006 from old QTH to new at Ed, KL7uW's. So technically the 2.4M dish is mobile.



Others:

See <http://www.rfham.com/g8mbi/mbi.htm>. The top picture at the URL is G8MBI's portable dish with aspirations of mobile ops. Further down the page is G8KBV's Land Rover with mobile EME yagi.

And of course, there **K1DS's** mobile EME shown elsewhere in this issue of Cheese Bits.

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

(Nibbles from December, 1964. Vol. VII, # 9)

de Bert, K3IUUV (*author's comments in italics*)

- “Our Prez Sez”. Prez K3GAS (“Doc”) complained that many members are not checking in or monitoring the net announcements, so they are missing out on current and future club activities (*still true?*). He also mentioned that “member location maps” have been updated and will be available at the next meeting. (*These paper maps of the local area were tagged with member QTH info, to allow quick beam pointing during “tests”. Yes, we have beam heading in our loggers, but this might also be a quick aid*). “Articles for Cheese Bits are needed and welcome”. (***Still true, 50 years later!***).
- ARRL Bulletin 977. Among the Operating Aids available from the ARRL at no charge are the following: Pointers for good operating, WAS map and card record, Net directory, phonetic alphabet, RST system safety code, ARRL countries list, GMT time conversion... (*And a few others. Most are still useful today. Have you requested yours?*).
- A full page memorial headed by “our silent keys” (*with key shown as a drawing*.) honored 4 deceased members: W3CCX, Matt Gelardi, 2/4/58 (*the club call namesake*); K3MTL, Court Manning, 6/9/61; W3ASD, Karl Vincent, 2/25/63 (*the “old fat boy” from Delaware*); and W3AYG,

John Harris, 10/22/64. Helen’s comment “Their voices are stilled, but their friendliness and kindness remain with us forever”. (*All remembered fondly by this writer, as well I am sure by others.*).

- New Products, by W3NSI, Lynn. Special socket available for the new 8458 (*larger version of the 6360 used in our “Barry Rigs” for 220.*) Available from the Allied catalog for 27 cents each (*I doubt they are still listed!*).
- K.U.I. (*keeping you informed*) by W3HKZ, Ed reported on a new system to “transmit voice digitally”. He described the process used (*See the web site Cheese Bits issue, a far cry from our modern complex signal processing techniques.*).
- Nice article by K3PXT, Carmen about the background of new member W3HIX, John Specialny, licensed since 1938. John was an avid Ham. When I first met him he worked in the Philco Applications Department developing applications for the early transistors that Philco was producing at the time (SBT – Surface Barrier, MADT – Micro Alloy Diffused, and others). (*John designed the converters for 6 through 432 that many of us used at the time. Unfortunately, he met an untimely death. Ask me about it.*)
- The Postmaster General announced that the new “Amateur Radio Stamp” will be released for sale, first, in Anchorage, Alaska. This was done “to recognize the great emergency communications provided by Hams after the Alaskan earthquake in March”. (*You saw my copy of the stamp in a previous issue of this*

column.).

- Technical article. An article titled: "Improving VFO Signal Quality" by Doug DeMaw, W8HHS, was reprinted from the "VHFer" (*A small magazine devoted to the VHF operators. Anyone want my collection copies of this magazine?*). The article detailed the various items that contribute to VFO ills, and suggestions for correction. The accompanying schematic showed the incorporation of fixes to the Clapp Oscillator, the type of choice at that time.
- An extract of the recent meeting talk by Atlantic Division Director Gil Crossley described the work of the League in combating the pressure from "all over the globe" for frequency space. (*The pressure still exists, with the League being in the forefront of defense for the amateurs.*).
- Spring 1964 CQ VHF contest. The Packrats "A surprise Contender" edged out the perennial winner, WA2VHF, to take first place in this annual club contest. Among the major contributors to the club score was K3IPM, Stan (*no surprise!*). The trophy custody will be transferred to the Packrats.
- January Contest preparation. The contest chairman, W3LHF (later W3ZD), Dave, wrote a lengthy article on the why's and the how's of contest preparation. Many of the comments and ideas are still valid, and an extract of some of them follows for your consideration: "A few of our brothers seem to feel that this yearly contest and the entire flurry to get ready is a waste of time. Not so, for isn't our station more pleasant to operate when things are working well? ...and don't most of the improvements and repairs remain after the "bean-bag game" is over? ...and how about that new antenna that lets us pick

- up W. VA. for a new state? All these things are fringe benefits to an affair that gives many of us lots of fun and provides us with an opportunity to measure the effectiveness of the old station. And measured we will be, so take a look at the shack right now and ask yourself the question, "How can I improve this pile of Iron?". Can I transmit with the flip of one switch? How about a foot switch? Tromp to talk! Leaves both hands free for other things, and is much faster. Do you have to stand and reach 3' to move the VFO or tune the rig? Its lousy if the answer is "yes". Change it. Need help? Advice? Suggestions? Somebody in the club will help you if you need it and seek it out. Try your coordinator first. Your solution may be only a phone call away. But now is the time to get it done. Help to raise that antenna is going to be hard to find on the morning of the contest!
- A bit of nostalgia. This issue included an updated list of station groupings for the member call-in to the Monday night nets. The groups were assigned names related to their geographic heading from the net controls, and were used in lieu of calling in a certain compass direction. For example, the "Hillbillies" were Northeast in the direction of the Poconos, the Boulevarders in the direction of the Roosevelt Boulevard East (*K3IUV and K3JJZ remain of the original group*), etc. See if you can figure out the others (Red Coats, Sandpipers, Crawlers and Screammers). Hint, K3IPM was a Redcoat.).
 - Japan gives OK to Amateur TV. Brief article announcing Japan's approval for

its first amateur television station to begin transmitting.

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 www.W3CCX.COM and read the full issue posted there by our Webmaster, Ron, W3RJW).



Radio Homebrewing in November, 1928

June VHF Contest Results

The December QST has the full contest rundown.,

Packrats placed third in the Medium Category behind Potomac Valley and N.E.W.S.

K8GP/r took #1 USA rover category. Andy K1RA, and Terry W8ZN did an excellent operation from Central PA West and to the South on their Rove.

Congratulations to the Atlantic division rover winner WA3PTV/r, Joe out of Mercersburg, PA Joe also scored #5 USA Rover category, while our NN3Q/r was #8 USA and second Atlantic Division, followed by Rick K1DS/r.

K1TEO turned in an excellent performance as a single op, high power.

The article includes lots of interesting discussion on propagation, as well as some pointers for proper logging procedures., **Seems like we all have to be extra careful now logging our contacts, and make sure we do so properly (especially when running the bands).**

73 see you all in January 2015
DE K3WGR for NN3Q/r

I also noticed Packrats N3RG and W3HMS cited in the article.....73, **John W3HMS**

W3CCX wins 2nd place nationally Multi Multi That is WITHOUT a linear on 222 and 432!
73, John K3MD

[Well was it 2nd or 3rd?? —Ed.]

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Events

For inclusion, please direct event notices to the editor.

EME Contest 6M - 23 cm (round 2) Contest - December 6-7, 2014. See <http://www.arrl.org/eme-contest> for details.

ARRL 10 Meter - Contest - December 13-14, 2014. See <http://www.arrl.org/10-meter> for details. A good warm-up for January and a fun event on its own.

Harrisburg Winterfest - Hamfest - January 24, 2015. 1 HACC Drive, Harrisburg PA 17110. \$3 admission. See www.w3uu.org or email Tin Lehman kb3oza@arrl.net for details.

ARRL January VHF Contest - Contest - January 24 - 26, 2015. Details at <http://www.arrl.org/january-vhf>

ARRL June VHF Contest - Contest - June 13 - 15, 2015. Details to follow at <http://www.arrl.org/june-vhf>

CQ Worldwide VHF Contest - Contest - July 18-19, 2015. Details to follow.

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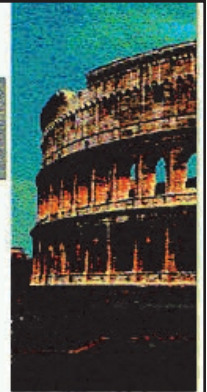
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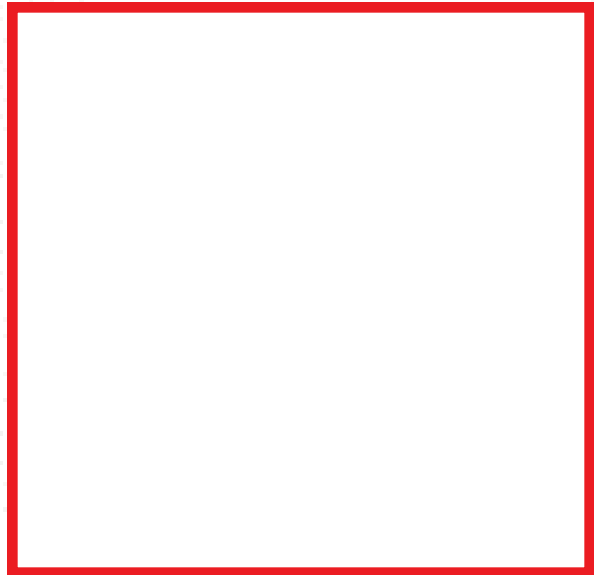
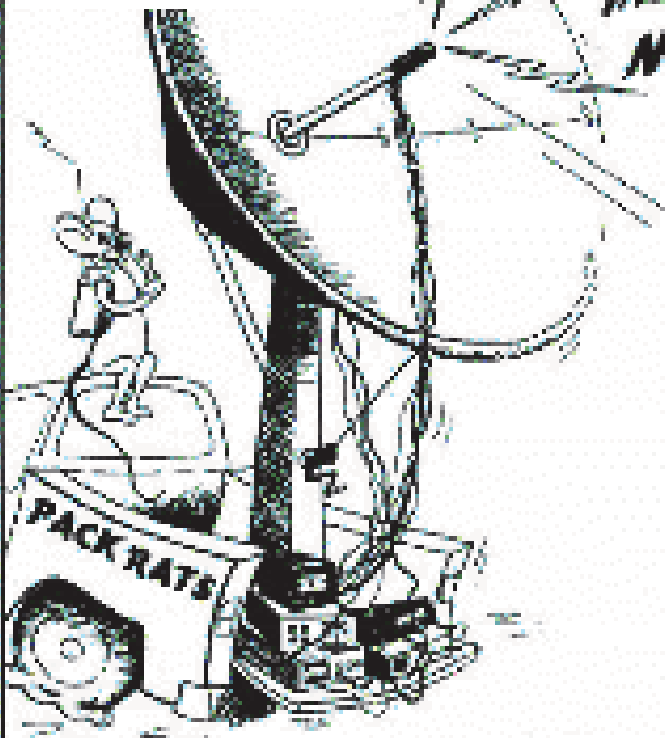
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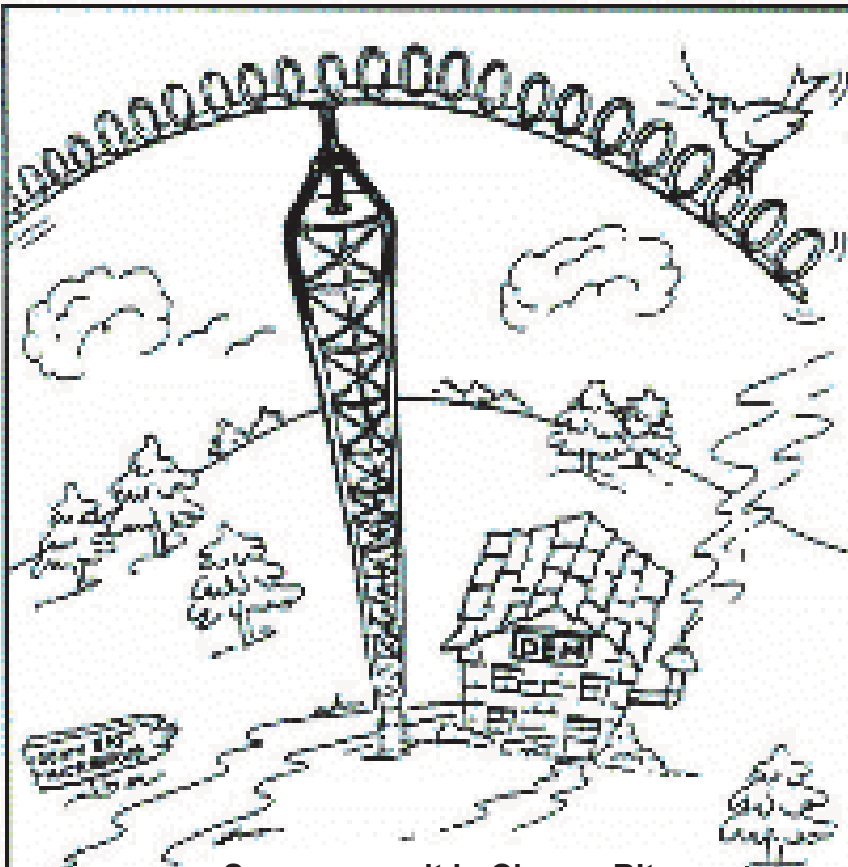
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