



CHEESE BITS

W3CCX
CLUB MEMORIAL CALL

ARRL
Affiliated
Club



Volume XLVI

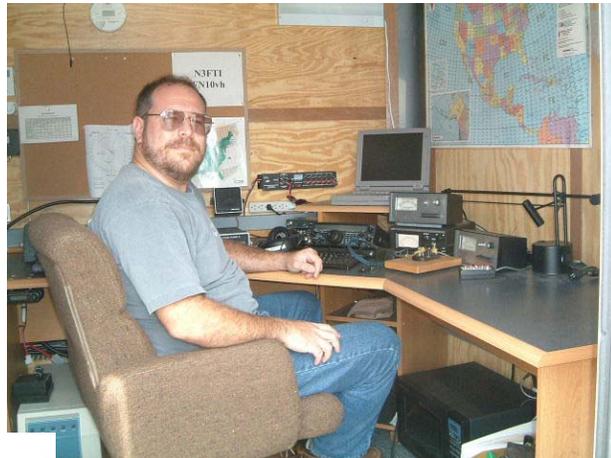
NOVEMBER 2004

Number 11

PrezSez

Kudos to Ed, WA3DRC for running such a nice Hamarama this past month. All systems were “GO” for a great event, with plenty of support staff, food vendor, cooperative weather, and a comfortable crowd. We also thank Mark WA3QVU for providing the PA system setup. Jim, WA3EHD and Ernie, W3KKN were at their posts at the club table, along with our SCM, Eric Olena, and Doc, W3GAD did the talk-in, making sure everyone found the event. Steve, N3FTI was our overnight staffer, and he also used the opportunity to bring his rover trailer and operate a bit of the PA QSO Party from the site. N3PLM headed up the front gate staff, and everyone who helped made entry and parking a breeze. We look forward to continued success in these events in the future, with more vendors and attendees. I managed to find several little treasures and the start of a 47GHz station.

Your new officers and directors are hit-



N3FTI Working PA QSO Party from HAMFEST



So many goodies—so little space for it all

Watch the reflector for that number, time and date.

ting their stride, reviewing our activity calendar, considering options for our 50th Anniversary celebration year, and getting started on January Contest preparation. Your contributions and attendance at the monthly Board of Directors is welcomed. To facilitate participation, especially from some of the more distant folks, we inaugurated a conference call hour for the BoD, which was used by four callers this past month, and was very successful. We are expecting to have the availability of a toll-free call-in at the next opportunity.

PrezSez-continued on page 5

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

222.98/224.58 MHz, Churchville, PA

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PACKRAT BEACONS - W3CCX/B

FM29jw Philadelphia, PA

50.080, 144.284, 222.065, 432.295, 903.071,

1296.251, 2304.037, 3456.220, 5763.190, 10,368.140

MHz (as of 3/1/01)

MONDAY NIGHT NETS

| TIME | FREQUENCY | NET CONTROL |
|----------|--------------|---------------|
| 7:30 PM | 50.150 MHz | K3EOD FM29II |
| 8:00 PM | 144.150 MHz | N3ITT FN20kl |
| 8:30 PM | 222.125 MHz | K3TUF FN10we |
| 8:30 PM | 224.58R MHz | W3GXB FN20jm |
| 9:00 PM | 432.110 MHz | WA3EHD FN20kd |
| 9:30 PM | 1296.100 MHz | WA3NUF FN20le |
| 10:00 PM | 903.125 MHz | AA3GN FN20ig |
| 10:30 PM | 2304.085 MHz | W3KJ FN20hg |

& go to 3.4G & up after FN20hg

Visit the Mt. Airy VHF Radio Club at: <http://www.ij.net/packrats>

Editor's Column

HAPPY THANKSGIVING EVERYONE

Well, this issue is finally assembled and I discovered that I still have a column to fill with my rambling and musing.

The Holidays are upon us with a vengeance—Christmas displays are everywhere Hey! What happened to Halloween and Thanksgiving? With family obligations and shopping we often lose perspective on the big event that follows all the hustle and bustle of the winter holidays. The JANUARY VHF SWEEPSTAKES.

With the holidays comes colder weather so if you need antenna or feed line work you had better get going. As I discovered—you can not count on the weather giving us a small respite from the cold just before the JANUARY VHF SWEEPSTAKES.

AA2UK and K1DS have been beating their drums and the first lists of help need, help and equipment offered has been e-mailed to all members on the PACKRATS members list..

Check out your gear before January by checking into the Monday evening nets. Just look to the left for the times, frequencies and the 6 digit grids square so you can point directly at the net control. Use the nets to verify you receiver performance and practice pointing for the weak ones that have been checking in from FM18, FM19, FM28 (a rare one) and North and East from FN12, FN30, FN31 etc. It is a good exercise to verify rotator calibration and operation too.

Part of my responsibilities is to wander around the internet looking for useful information to share here in CHEESE-BITS. I followed a link from the News Group to N6CA. Ellywn has a very interesting site at: <http://www.ham-radio.com>—Just follow the links to N6CA and then look at his rover activities and articles on microwave beacons and filters. A couple of his more useful, at least to me, bits are included in this issue.

Coming up are big articles from Mark Hoffman K2AXX on his tweaking of the DEMI 10GHz transverters. Not a redesign but a few need modifications as recommended, DEMI and a few additions to improve performance in his rover operation and home station too.

Kevin Kaufhold W9GKA has done a rather thorough look at the VHF contesting and the impact of the club competition for these contests. There are lots of graphs and charts. This would also be a good program for the conference.

Well I have the December issue to get started, a shack to get rearranged for better operation, an IF switching system for headphone, mics, computer and foot pedals and the 2304 transverters to get on the air. Where does all the time go.

Well have to get moving on all this stuff plus the “honey do” list. This year it is the kitchen and living room projects.

I hope you caught some of the 6 meter AURORA on Sunday night 7 Nov. What a blast—lots of good grids worked

Listen for the WEAK ONES

73

W3GAD Doc



Microwave Update 2004 (MUD) by K1DS Rick Rosen

You didn't have to be a microwave techie to appreciate this meeting, as there was something educational, something entertaining, and items to be bought, won or taken for free. Even if those free SMT components weren't your cup of tea, there were lots of national and international microwavers to meet and greet. In all there were about 130 registrants, with an international contingent. The facilities at the Harvey Hotel were excellent, and the hosting NTMS had things very well organized, including the surplus tour, family programs, hospitality suite, sellers' room and flea market tables, antenna and preamp testing, auctions, and banquet, not to mention the actual technical talks and proceedings.

Bob, N4HY, and Paul, W2PED were both significant contributors to the conference, as Bob gave a technical workshop on the SDR, and Paul supplied lots of 24GHz amps and 47GHz filters for the auctions, flea market, and the banquet door prizes. I merely attended, but was pleasantly surprised and honored by being called up to accept our Packrat plaque for achieving third place in the 2004 Microwave Contest, sponsored by the SBMS. I also got to eyeball with some of the folks that I have met at other conferences and through the editorship of Cheesebits, including WA1ZMS, Brian Justin, who has been setting records above 100GHz; VE4MA, Barry Malowanchuk, who has the first 24GHz EME contact and working on the same for 47GHz, K6HIJ, Dick Kolbly, who with the SMBS will be hosting the next MUD in the LA area at the end of October, 2005; Peter Day, G3PHO, editor of Scatterpoint in the UK; and Christophe, ON4IY, who is the rover partner for Bill, W3IY.



W2PED, N4HY, K1DS with K5JL (seated) at MUD 2004

Christophe and Bob and I spent a good part of the hospitality evening chatting about the joys of roving in the Mid-Atlantic region, and the equipment that he and Bill use in the W3IY rover. K1ZZ was there from the League, and he was the recipient of a substantial check for the Spectrum Defense Fund for the ARRL from the NTMS. He also did part of the presentation about the value of the microwave ham spectrum, and how commercial sources are putting pressure on these bands for more pecuniary pursuits. I sat with Gene, K3ZZ, at the banquet and shared some reflections on the multi-op contesting on Spruce Knob and Camelback.



K1DS accepting club award from Pat N6RMJ of SBMS

Some of the presentations that were most interesting to me included those that described stations and their activities, like the 200' rotatable tower at K4TO, or microwaving in the UK, but I also learned a little bit about testing components before installing them, especially when it comes to potential losses at microwave frequencies, and phase noise from various LO's. I really enjoyed the LASER safety talk and demo by Paul, WA5WCP, who made a good point to alert us to the potential hazards of devices that are class IIIa and above that can bring serious harm to one's eyes. Apparently there are many high powered, hazardous devices that have found their way onto the surplus market, and aiming them into unknown spaces may cause significant unintended consequences.

The Friday night flea market had plenty of goodies, and I filled up a sack with small parts that always have a use, coax connectors, circuit boards for the upcoming laser communicators, microwave circuit board LPantennas for power monitoring projects, and a 24GHz Gunn unit that I hope to turn into a weak signal test source.

MUD 2004—continued on page 4

MUD 2004—Continued from page 3

As one ham was opening a small box of 12VDC microwave relays, they were being snatched up before they hit the table, so I missed getting any of them.

Perhaps I was anticipating a Texas style barbeque for the banquet, but we all enjoyed the buffet, and its main courses of lasagna and chicken parmigiana. Somehow the dinner program was foreshortened as the speaker was unable to attend, so the ceremonials were rather brief, and it was right onto



L-R G3PHO Peter, ON4IY Christophe and W2PED Paul the door prize drawings. Steve, N2CEI and Sandy from DEMI had donated several items, and they were among the first to go, in addition to the hot 24GHz prizes that W2PED supplied. By the time my ticket was called, I had to settle for a few SMA attenuators and a travel coffee mug. The 100W 5GHz TWT and PS had just been taken as one of the last “big” items.

For those who weren't able to attend, the NTMS has made the MUD presentations available on their website: <http://www.ntms.org/> This is sure to be a boon to those who are interested, and serves as some reference for many of the technical folks.

Sunday morning it was back to the airport for a short flight to Midland, TX to visit my brother and his family. He did manage to get me to Sam's for some of that fine barbeque I craved, and we had a lunch that I tasted all the way home though three flights back to Philly on Monday. As you survey the topography in West Texas, you realize why they need 1000' high towers for their microwave

MUD 2004—Continued

installations. With hills few and far between, much of the microwave activity is done from multistory parking lots and office roof-ops. I'm psyched for 2005, as they say that the surplus tour for MUD will be great in the LA area. Mark your dates now: October 27-30, 2005 at the Sheraton Cerritos Hotel, Cerritos, CA.

MUD Tidbits:

- There is plenty of useable spectrum in the 2300-2450MHz range that is going unused by hams. This is prime frequency for activity growth. If we don't make better use of it, WiFi probably will.
- WR28 waveguide is quite useable at 47GHz as tested by VE4MA. Even flexi sections seem to have reasonable loss and return loss characteristics. This was designed for the 26-40GHz spectrum, but seems to work well through almost 50GHz. WR22 does do a bit better at the higher frequencies.
- The “ZL” microwave waveguide switches that were recently purchased have an IL of about 2db and RL of 12db at 47GHz, so they should be avoided at this frequency and best used up to 24GHz.
- Check your LO for phase noise. You may be surprised!

HAMARAMA 2004 DOOR PRICE WINNERS

Hamarama buyers \$300 cash prize went to:
Dieter Hauer, K3DK, Trappe, PA.
Hamarama vendors \$100 cash prize went to:
Don Boyer, K3OP, Kutztown, PA.

MUD 2004—Feedback

Thanks to all the crew from the NTMS for the great weekend. I have arrived back all ok with goodies after a long 18 hour flight to VK.

To Wes WA5TKU many thanks for your tour on Thursday around the surplus shops and above all your very dedicated effort in locating and retrieving the “platypus cap”. Please pass the cap on I am sure it can be put to good use no need to mail it back.

Once again thank you to all those involved a great effort and to the technical speakers a special thanks.

I will try and make it for the 2005 MUD meeting.
73s Roger VK5NY

PrezSez—continued from page 1

I was one of three Packrats at the MUD in Dallas, and the write-up is inside. Next year's MUD will be in Los Cerritos, CA, near Los Angeles, late in October, 2005, hosted by the San Bernardino Microwave Society.

We all appreciated K1JT's presentation on getting active with WSJT at the October meeting. With the availability of JT65, it looks like several folks will try to add this capability to their stations. Joe's contribution to improved VHF communications has been tremendous, and I was impressed to see his new 2m grid total approaching the 250 mark, including some of his now 90 EME QSO's.



K1JT presenting the WSJT Suite

Be sure that you attend to hear Steve, N3FTI discuss station band-switching integration at the Nov. meeting.

We also had several sign-up lists for various items at the meeting: club jackets, Packrat badges, Laser communicators, and new Packrat QSL cards.

Please send me an email rick1ds@hotmail.com or

call 610-270-8884 to place your orders, if not already done, as group orders will be made very soon.

Get your antenna work done now! Let your needs for January be known, and stay active.

73, Rick, K1DS

You can tell more about a person by what he says about others than you can by what others say about him.

- Leo Aikman

FCC MAKES CHANGES ON 2.3 Ghz

The FCC has acted to include the first five 5 megahertz of the 2390-2417MHz Amateur Radio Service primary allocation among spectrum it's opened up to accommodate federal users shifted from other bands. The spectrum relocations, which also involved non amateur spectrum at 2 GHz, are aimed at making room for advanced wireless services (AWS), including so-called "third-generation" (3G) wireless systems.

After voting unanimously October 14 to adopt a Seventh Report and Order (R&O) in ET Docket 00-258 and WT Docket 02-8, the FCC called the action "an important step towards the future auction of 90 MHz of spectrum for AWS." The Commission said it worked with the US Department of Defense and the National Telecommunications and Information Administration to reallocate spectrum to allow for relocation of critical military and other operations into the 2360 to 2395 MHz band.

The FCC says its action will make room available to shift federal government aeronautical mobile flight test telemetry (AMT) operations from the 1.7 GHz band to the 2.3 GHz band by extending the primary allocation for AMT to include an additional 10 megahertz from 2385 to 2395 MHz. "Making the additional spectrum available for non-federal AMT will accommodate the higher data rates needed for non-federal flight testing," the FCC said.

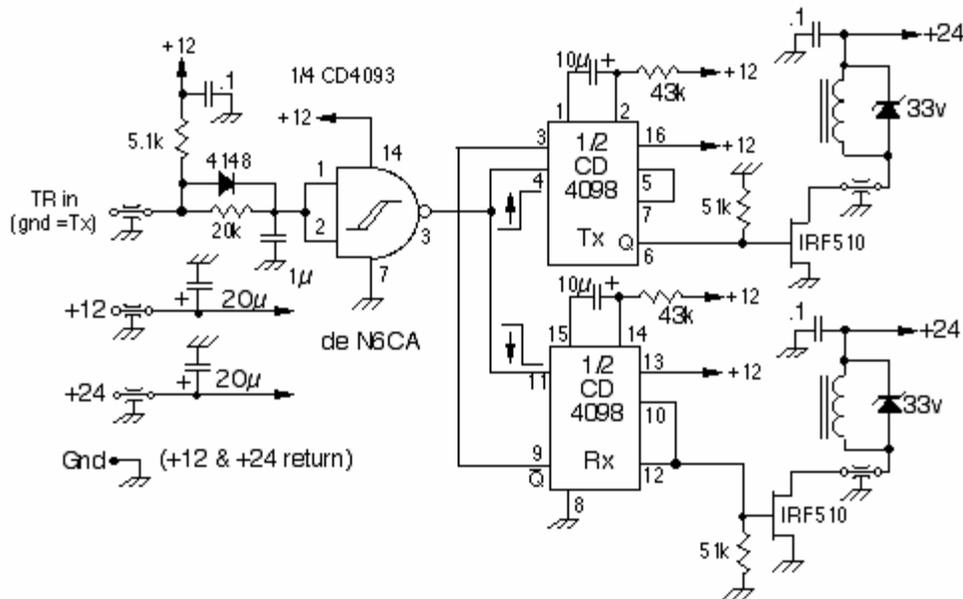
The Commission similarly extended the existing secondary spectrum allocations for federal and non-federal non-aeronautical mobile telemetry operations in the 2360-2385 MHz band to include the 2385 to 2395 MHz band. In addition, it extended the existing federal primary radiolocation and secondary fixed allocations from 2360 to 2385 MHz to include 2385 to 2390 MHz.

Last December, the ARRL announced that it had agreed in principle with the Aerospace and Flight Test Radio Coordinating Council (AFTRCC) to develop coordination procedures. The League told the FCC it could support Amateur Radio sharing of 2390 to 2395 MHz on a co-primary basis with flight test telemetry operations. But it has insisted that 2395 to 2400 MHz remain an exclusive amateur primary allocation.

FROM: The ARRL Letter Vol. 23, No. 43
October 29, 2004

Latching Wave Guide Relay Driver

de N6CA August 09, 2002 updated October 30, 2003

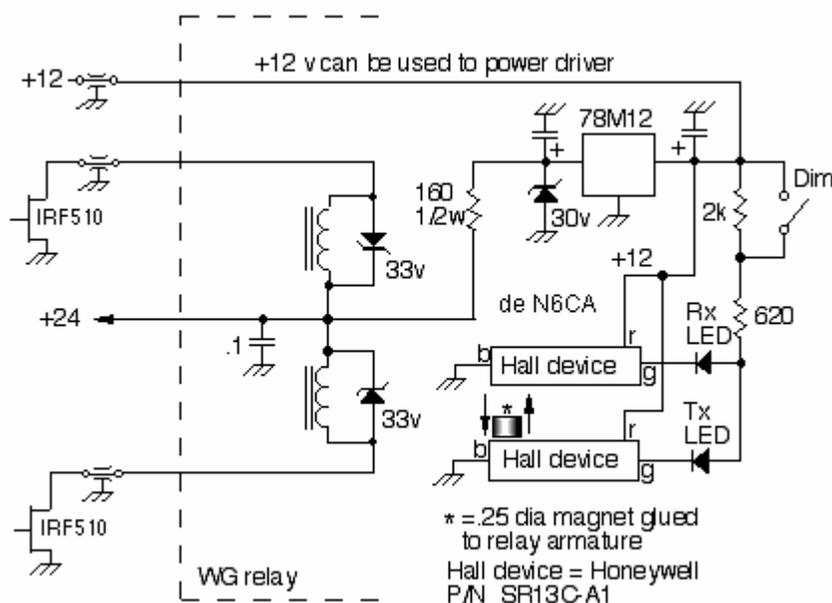


- No heat sinking required
- coil drive pulse width set at about 100 ms
- most 28 v relays will drive ok at 24 v
- resistors 1/4 w
- 33v zeners eliminate positive (>33V) spikes and negative spikes from coils
- use a shielded box with good feed-thru capacitors.....always.

□ The CD4093 and its input shaping circuit eliminate possible contact bounce and the potential for multiple trigger problems from relays etc that generate the T-R command. Latching relays usually require only a pulse to actuate them. 100 ms pulse width seems to be adequate to drive most relays. The dual one shot CD4098 provides the transmit pulse on the leading edge of the TR command and the second half provides the trailing edge triggered pulse to drive the relay back to receive. To assure both coils are not simultaneously driven the Q bar output of the Rx one shot drives the reset pin of the Tx section. This feedback/interlock has another advantage. Upon turn-on or re-turn-on of primary power the 4093 outputs a short pulse (glitch). The positive edge should initiate a transmit pulse but the falling edge triggers the Rx one-shot which makes its Q bar low. This terminates/inhibits the transmit pulse. The result is a full duration reset pulse to the Rx relay coil regardless of the last used state. That means you can leave the latching relay in transmit, remove power and the driver will reset the relay to receive when power is reapplied. I planned it that way....not, We got lucky.....a freebie. The disadvantage (not really) of the feedback is for very short TR commands the transmit pulse will be short as the receive pulse will terminate it. It's no problem as you can't say very much in a few milliseconds anyway.

Hall effect device waveguide relay position indicator

De N6CA



Org/red & green LEDs used for similar output. Very bright 20 mcd for daytime and dimmed for night. Output of Hall devices can be used for interlock on TX if necessary or desired.

NOISE FIGURE MEASUREMENT

An Internet Resource

Measuring noise figure is not the easiest of things to do if you want real accuracy and reliable data. An excellent website resource, well worth a look, can be found at:

<http://www.micronetics.com/noise/source..html>

The pages, which contain a great deal of technical help as well as product information, are those of:

MICRONETICS, Inc.
26 HAMPSHIRE Drive
Hudson, NH 03051
1-603-882-8987 x 346

Patrick Robbins—Manager, Noise Products Division
This resource is from the UK's SCATTERPOINT—Peter Day editor

Joel Knoblock W3RFC

www.therfc.com

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WHAT'S HAPPENING

A LISTING OF INTERESTING EVENTS

11 NOVEMBER 2004—PACKRATS BOARD of DIRECTORS Meeting at the QTH of K3EGE

18 NOVEMBER 2004—Regular meeting of the Mount Airy VHF Radio Club (PACKRATS) at the Southampton Public Library at 8 PM
N3FTI will give an updated presentation on COMPUTER BAND SWITCHING

25 NOVEMBER 2004—Annual Thanksgiving Day 5 Mile run for the benefit of BETHANNA HOME for CHILDREN, Southampton, PA—Event is 8 AM until completed in late Morning—everyone is home before noon. W3GAD is coordinating communications—This is the 15th year for this event..

9 DECEMBER 2004—PACKRATS BOARD of DIRECTORS Meeting

11-15 DECEMBER 2004—NORTH AMERICAN METEOR SCATTER RALLY 000Z on 11 Dec to 0700 on the 15th. Looks like a good time to check out your digital modes before the January sweepstakes. ed

16 DECEMBER 2004—Regular meeting of the Mount Airy VHF Radio Club (PACKRATS) at the Southampton Public Library at 8 PM

13 JANUARY 2005—PACKRATS BOARD of DIRECTORS meeting

20 JANUARY 2005—Regular meeting of the Mount Airy VHF Radio Club (PACKRATS) at the Southampton Public Library at 8 PM

22, 23 AND 24 JANUARY 2005—**JANUARY VHF SWEEPSTAKES 2005** (*That's right - it's NOT the last weekend in January as reported last month*) We have a tradition to uphold—get going on all those repairs, construction and antenna projects. Look for, complete and submit your wants, needs and available equipment listings and get them to Bill AA2UK or Rick K1DS as soon as possible. AA2UK Bill Lentz is Chairman. (We need a co-chair person)

PACKRATS HAMFEST 2004—A Mini Photo Essay from the camera of K1DS



Everyone needs at least one of these
W3GAD



Have I got a deal for you
Or
Same stuff different vendor



GO EAGLES!

LASER COMMUNICATOR KITS Sign up now for 2005

THE KIT PROGRAM -Several of the club members have added to their contest point scores with laser communications. I have heard other express their desires to make one of these, and if there is enough demand, I'll try to "kit" these up again and have a building session, either at a future club meeting, like we did last time, or off-site on a weekend in someone's shack.

Construction is simple, cost is about \$40 per transmitter/receiver combo-BATTERIES INCLUDED!! If we get enough sets. we may even be able to design and print a circuit board, rather than use the perf-board approach as we did last time. Please let me know how many you want to build-email please to respond. rick1ds@hotmail.com

SEEKING HELP TOO -In the meantime, I'm gathering parts for a new and improved system, that may debut at the March Homebrew night. I will also be seeking some guidance from those among you who can help engineer a micrometer adjusted AZ/EL system for the laser, and those with some optics experience to help with collimation of the beam.

Thanks, Rick, K1DS

TRENTON COMPUTER FEST 2005

Call For Papers

The 30th Annual Trenton Computer Festival (TCF-2005) is returning to the campus of The College of New Jersey (TCNJ) as announced last year. The dates will be April 16th and 17th 2005.

2005 is also the 150th anniversary of TCNJ and we are planning some special activities to celebrate our 30th year and the college's 150th anniversary. Your ideas on how to celebration these special events is solicited as well as your support as a speaker and your help in locating other speakers.

We will be continuing the popular poster sessions initiated last year with longer display periods available.

If you can present a talk, or lead a forum or special interest group, please fill out the TCF Speaker Application form at:

http://www.tcf-nj.org/spkr_reg.shtml#form

You can contact me at a.katz@ieee.org or by telephone: 609-584-8424.

Thanks for your continuing support.

My very best regards

Al Katz K2UYH

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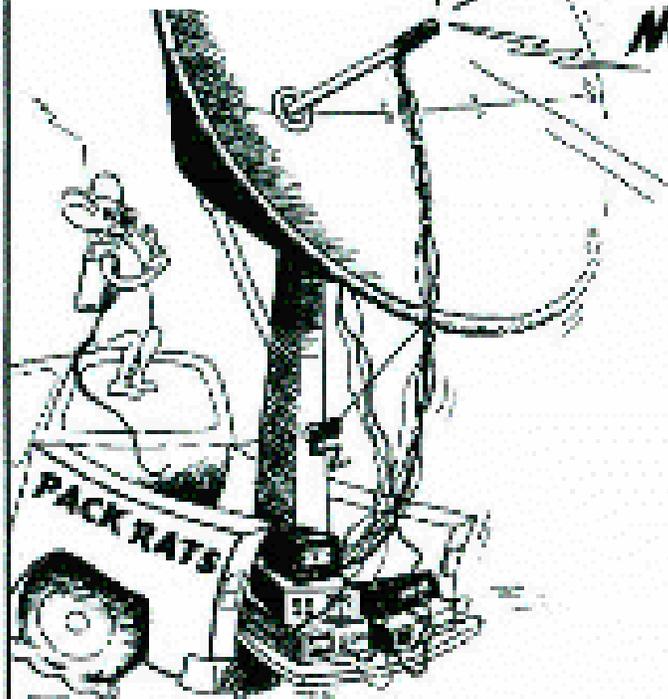
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MEETING NOTICE



LOOKING AHEAD:

JANUARY VHF SWEEPSTAKES
22,23 January 2005

INSIDE:

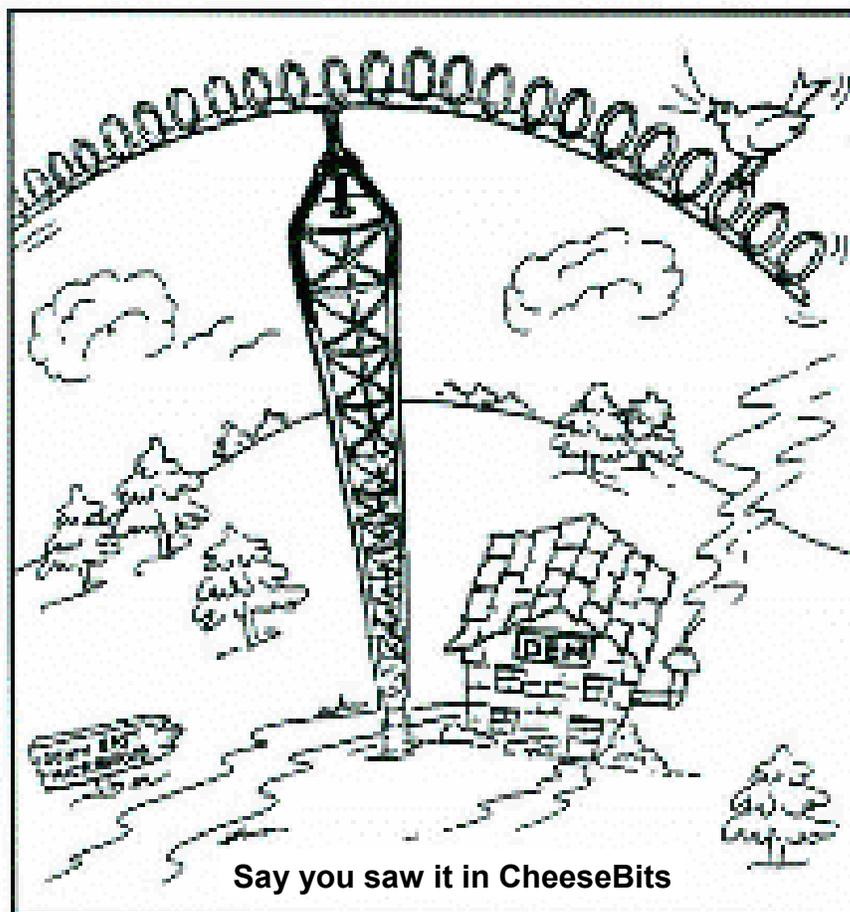
Review of MUD 2004

Relay driver for "latch and hold" relays

Sign up for 2004 Laser Project

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