



# CHEESE BITS

**W3CCX**  
CLUB MEMORIAL CALL

ARRL  
Affiliated  
Club



Volume LI

July 2010

Number 7

## PREZ

Well the big June contest is behind us.

**SEZ:** The PACKRATS rose to the occasion. With plenty of help at the crucial times

we got the towers up on Friday. All the stations were on the air in time to capture the 6 meter band openings and operators kept all the other bands perking during the peak hours.

Lessons were learned and notes taken to make the 2011 effort go even better. This is the PACKRATS way. This is the kind of effort that keeps us on the top of the technical mountain as a club and as individual operators

Many thanks to Al, N3ITT and Phil, K3TUF for their leadership in getting all the bands staffed and in working out the logistics that made the weekend a success.

We have reached the end of the W3KKN Estate Project and I want to thank Phil, WA3NUF and Ron, W3RJW for their leadership in the clean out of Ernie's shack, the removal of the antennas and towers and the disposal of all of the good and not so good treasures. Ernie was a true PACKRAT by any definition.

We just had the annual election and we have a new face on the Board of Directors, with the election of Michael Davis, KB1JEY to a two year directorship, along with a full slate of more familiar faces to guide the club through the next year.

You'll undoubtedly notice that W3GAD is still doing the PREZ SEZ.

Cheese Bits under the guidance of Lenny, W2BVH and Ed, WA3BZT has come up with some top notch technical articles to help us get some of those recently acquired 6 meter amps and 2304 systems on the air in time for the January 2011 club contest.

Speaking of club contests. The **ARRL Contest Bureau has designated all the VHF and UHF Contests as club scored events.** Be sure to submit you logs for each contest and properly list your club affiliation. Any questions on log submissions can usually be answered by Dave, W3KM.

In the past year we have added several new members. Be sure to **greet them at the meetings and offer assistance in getting them on the air** and contest ready.

I am looking forward to the next meeting. It is one of my must attend meetings, even when I am not an officer. On July 15<sup>th</sup> we will gather at GARY's GULCH, home to Gary, WA2OMY for the Annual White Elephant Sale/Auction. EI, K3JJZ our esteemed auctioneer and his assistants will be in fine voice. Gary has superb snacks and beverages and a garage FULL of stuff for the auction. Come on out and bring a friend or two.

The Annual FAMILY PICNIC will be held at the home of Carol and Michael Davis, KB1JEY on Saturday 7 August. YES! We know it is the same day the UHF Contest starts but come anyway, enjoy the company and the food.

Phil, K3TUF has lined up some very interesting programs for the fall meetings. Check the PACKRATS Web site for details

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**PACKRAT 222 MHz REPEATER - W3CCX/R**

222.98/224.58 MHz (PL 136.5) Hilltown, PA

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Quartermaster:	K3IUV	bsoltoff@comcast.net

**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**

TIME	FREQUENCY	NET CONTROL
7:30 PM	50.145 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	K3TUF FN10we
10:00 PM	903.125 MHz	W2SJ FM29LW

Visit the Mt Airy VHF Radio Club at: [www.packratvhf.com](http://www.packratvhf.com) or [www.w3ccx.com](http://www.w3ccx.com)

on future programs.

Thank you all for your support over the past year and I look forward to working with your Board of Directors to make the next year even better. On the mean time, please

“Listen for the weak ones”

73 de W3GAD



**Editors Column**

**Our next meeting** will be next Thursday, July 15, 2010 at the home and back yard of Gary Hitchner, WA2OMY. Gary’s at 39 West Mt Kirk Ave., Norristown PA. Don’t hesitate to call 610-539-6409 if you need directions or get lost on the way.

The meeting is the annual WHITE ELEPHANT auction. For those who may never have attended, the White Elephant Auction is a chance to bid on and win a wide variety of ham equipment, parts, books and other technical goodies. Winning bids are often very reasonable and many winners walk off with substantial bargains for their shacks. The highlight of the auction is the opportunity to bid on “White Elephants”. These are sealed packages with “who knows what” inside. To find out what’s inside you have to be the winning bidder. Almost always the winners are delighted with what they find inside. Our auctioneer conducts a lively and amusing event with many unsolicited comments from the peanut gallery. Some of the material auctioned is donated and the proceeds benefit the club treasury. Fine food and drink are provided by the club free of charge and there’s plenty of time to schmooze with fellow ‘Rats and guests. **Plan to attend**, you won’t be disappointed.

This month we’re trying **another experiment**. Many great pictures from the work at W3KKN’s estate and from the June contest were submitted for publication in Cheese Bits. There were many more than could possibly fit in this month’s issue. I’ve zipped up a larger selection of the pictures for download via the Cheese Bits page on the Packrat web site. We’re not sure if it will work since, we’ve never tried it before. Go to the Cheese Bits page and look for July2010Pix.zip. Wish Ron W3RJW luck in posting it there.

Enjoy this months Cheese Bits. **73, Lenny W2BVH**

# PICTURES FROM THE TOWER AND ANTENNA REMOVAL AT THE QTH OF ERNIE W3KKN



The Work Crew (or most of it anyway)

There was an abundance of very fine pictures submitted to Cheese Bits from the cleanup and tower work at the estate of our friend and long time Packrat Ernie Kenas (SK). We featured some pix last month and we conclude this month with the tower and antenna removal.



Windmill tower removal was a major undertaking

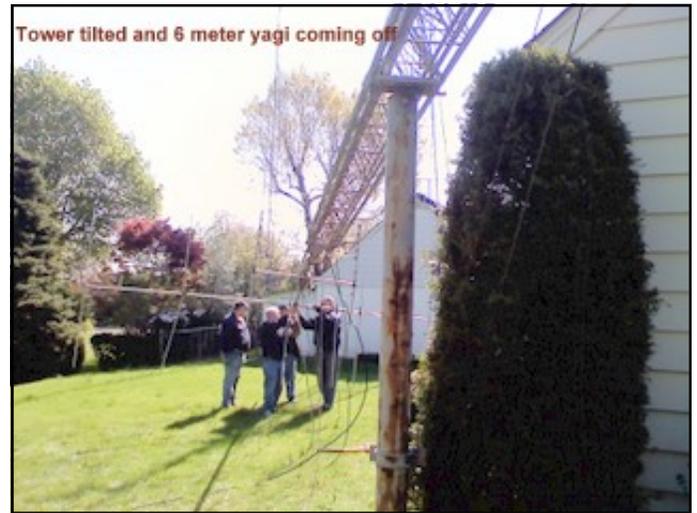
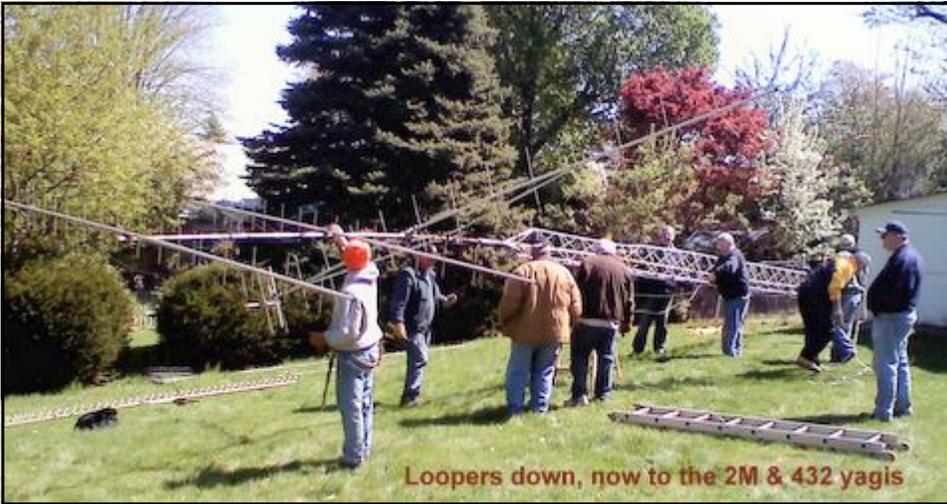


Loopers come off the pole



Major Undertaking !!

... W3KKN Towers cont'd



...Pix K3JJZ

**John, W3HMS** sent a nice parabolic antenna ERP and beam width calculator to your editor in the form of an Excel file. Look for it as "Parabolic2.xls" on the Cheese Bits page of the Packrat web site (<http://packratvhf.com/Cheese%20Bits/cheesebits.html>). Presented below we have the documentation for the spreadsheet along with some background information on the calculations.

## Parabolic Antenna Calculations

By **John Jaminet, W3HMS** and **Curt Wann, K4ITO**

The charts in the ARRL Handbook, the ARRL Antenna Handbook, and the F4DAY Website have the calculations for common size dishes and the formulas. The modern EXCEL spreadsheet just cries out to be used so that a microwaver or EME operator can determine gain and ERP for various dish sizes and ERP power levels. This is very helpful for planning your station. It could also be helpful, after some modification, to permit economic analysis of the best tradeoffs/costs in additional dish size and/or power. We did not do the economic analysis here but we mention the idea as food for thought for downstream use by someone..

### The following explains how to use the spreadsheet.

Bring up the EXCEL file and change the frequency, dish size in feet, or value of RF power at the feed. You can also change k for different feed efficiencies to see what the effect is with a different dish-feed. These actions may answer the question of what will be the ERP with say 250 watts and a dish increase of 1 foot/meter?

The informal conclusion that one-half foot increase equals ½ dB increase is a simple "rule of thumb", at least on 23 cm. We note, as all will recognize, that a power increase does not increase the gain on receive so a dish size increase may have more value than a power increase. Please note that we have addressed only round dish sizes often used by a ham. Others are invited to do the same for offset dishes.!

The EXCEL workbook is based on the dish size in feet but this can be adjusted on any line by "cut and try" to yield a desired metric size, example 3.8 meters.

This EXCEL workbook was developed using the following formulas obtained from the Paul Wade, W1GHZ, Online Microwave Antenna Book, Section 4. The authors would like to **express their appreciation to Paul, W1GHZ and to Rex, VK7MO**, for their helpful suggestions for both this article and the Excel workbook which have been incorporated.

The referenced EXCEL workbook can be obtained by an EMAIL to [W3HMS@aol.com](mailto:W3HMS@aol.com) or at the Cheese Bits page on the Packrat web site: <http://packratvhf.com/Cheese%20Bits/cheesebits.html>

Initial assumptions used:

1. Antenna efficiency, k, is the standard 55%.
2. Frequency is 1296.050 MHz.
3. Dish in meters is feet times 12 inches divided by 39.37 inches/meter, rounded to one decimal place.
4. Wavelength in meters is 300 divided by the frequency in MHz.
5. ERP is CW key down with stated watts at feed.
6. SWR and reflected power loss occurs before the stated power, e.g. 100 watts at the antenna feed point.
7. All round dishes should be 10 Lambda (wavelengths) or more for the calculations to be valid.

Paul nicely added a column to the Excel to show that anything less than this will show in red in both the printed and the on screen versions. Note, for example, that 7.5 ft is 9.7 Lambda.

This Excel workbook shows only the far-field ERP. Rex, VK7MO observed that it should therefore not be used for near-field calculations to meet EMR requirements.

**Formula** to calculate dbi gain,  $G_{dbi}$ :

$$G_{dbi} = 10 \log_{10} \left( \frac{k(2\pi r)^2}{\lambda^2} \right)$$

$k = \text{efficiency}$

$r = \text{parabola dish radius in meters}$

$$\lambda = \frac{\text{speed of light in meters}}{\text{frequency in Hz}} = \frac{3 \times 10^8}{F_{Hz}} = \frac{300}{F_{MHz}}$$

**Formula** to calculate dBd gain,  $G_{dBd}$ :

$$G_{dBd} = G_{dbi} - 2.1$$

**Formula** to calculate power gain factor,  $P$ :

$$P = 10^{\frac{G_{dBd}}{10}}$$

**Formula** to calculate  $ERP$ :

$$ERP = kW P$$

where:

$k = \text{efficiency}$

$w = \text{power in watts}$

$P = \text{power gain factor}$

**Example:** Parabolic dish is 10 feet in diameter (radius  $r = 1.5$  meters), power is 100 watts at the feed, and frequency is 1296.05 MHz.

$$G_{dbi} = 10 \log_{10} \left( \frac{k(2\pi r)^2}{\lambda^2} \right) = 10 \log_{10} \left( \frac{0.55 \times (2 \times 3.14 \times 1.5)^2}{\left( \frac{300}{1296.05} \right)^2} \right) = 29.6 \text{ dbi}$$

$$G_{dBd} = G_{dbi} - 2.1 = 27.5 \text{ dBd}$$

$$ERP = kW P = 0.55 \times 100 \times 10^{27.5 \div 10} = 55 \times 10^{2.75} = 30890.7 \text{ watts}$$

Sources for formulas:

<http://www.sengpielaudio.com/calculatorVoltagePower.htm>

- site provides a calculator to convert DB to watts

<http://www.mogami.com/e/cad/db.html>

- site shows formulas to convert DB back to watts

# Reports and Pix from the Packrats June 2010 Camelback Operations

Report by Rick, K1DS

It's all over--so quickly--OK--so I was only there to set-up, break-down and operate the first 6 hrs of the contest...the exhilaration of the chase has flown. Being on the mountain is SOOOOOO different than being a rover. Especially on the micros. There are few rovers in their first grids trying to get everything working, getting the attention of the big guns and running the bands...well, I did log 24 QSOs between 903 and 1296 before I left. And my notes tell me we had over 350 QSOs in about 100 grids by 8PM on 6m. 2m was active as well as was 432, with 222 a bit slower, but making gains steadily. Micros were all working well, especially after discovering the way water had seeped into the cable joints overnight. Thankfully Ben WA3RLT was there with his network analyzer, and Phil with his, so we knew exactly what, when, why, where and how to fix. I'm glad it wasn't due to the "liquid tape" I applied to the open end of the UT-141 coax cable on the loopers, BUT rather the cheap electrical tape used to "water-resist" dress the rotor loops to the driven elements and feedlines. WA3GFZ had a great set-up for 2G and up with his SDR so we could both see and hear the stations calling.



We did have all the towers and antennas up by Friday eve. KB1JEY's XYL Carol made us a super dinner which she sent to the mountain. We had the

most well-attended BOD meeting at 10PM. Some slept in cars and trucks, others in tents while a few rented rooms at the Chateau. No bugs, no bears, a few deer up and down the road. Believe it or not, all the gear worked. I found only one burnt fuse in the BCD truck. The 6m amp was perking as it always has in the past, 2m station had no problems, the new 222 band captains did well with the AM6155's and a spare, and 432 had the K3MF KW EME amp. We had a steady 100w on 903 and 1296, and a moderate power on 2,3,5,10 and 24G as well as LASER.



The weather was not unreasonable--the usual changes from sun to clouds to fog to rain to cool to muggy and back to warm. Thanks to a full load crew we were in place without a hassle and started the contest on all bands right at 2PM Saturday. Es on 6m made everyone happy, and there were some nice long-haul QSOs on all bands up from there. Rovers were in abundance, and it was nice to have a few stop and visit.



Doc and helpers had the KP duty down to a science and all were well fed and hydrated. The wide variety of international cuisine seemed to suit everyone's palate. (you had to be there). The computer network worked flawlessly, and I even learned how to use space or tab to enter a

6-digit grid square so that the heading would appear correctly. Thanks K3JJZ and KB3GJT. Power was on thanks to WA2YUE. Many Packrats who were at their home stations worked us through all of their bands, and were appreciated. New member N3YMS was handy with all the mechanical stuff and was great support to the effort as a first year participant. It was great to have several tall and strong guys to get the towers erected and the guy stakes driven. The jackhammer, as always made this a less formidable chore. Several visitors included WA3NUF, KB3XG, KU3A, and W3KM with XYL and hound.



K3ESJ and N3EXA were there with the big RV and were helpful throughout the weekend. N3ITT captained most of the load and unload logistics and as always was a beacon of leadership to the team. Several Guest operators were at the mikes as the 100QSO/hr rates start the contest, and they got plenty of action. K3EGE was there with rover and microwave scheds. K3TUF supplied plenty of 2m action and despite his recent back strain was able to tool back and forth on his bike. Thanks for getting those nice operating chairs. KB1JEY, KB3NRL, WA3WXV, WA3BZT, KA3FQS, W1SMS were all steady helpers throughout the weekend. WA2OMY and W3IIT came Monday for tear-down and unload. K3IUU helped out with microwave contacts in addition to set-up.

W3ICC/R did his first rove with his refurbished van. W2PED was there assisting. NN3Q/R team Russ and Al were out on the roads as well an N1XKT/R who put in some operating from 2 grids.

K3IPM's trailer for 222 was great, and we actually did find his Yaesu rotor on Monday. If I left anyone or anything out, it is unintentional, the memory just ain't that great sometimes, especially when you're tired. And I might have missed those that came up on Sunday, as I was unable to be on the mountain due to a family event on Long Island that day. So let's pat ourselves on the back for a great weekend of fun and radio, and make our little lists of what we need more of or less of for next year, and how we can continuously upgrade our efforts and decrease the brawn needed. This is clearly a BIG TEAM effort and it was a pleasure to see how well everyone worked together. **73, Rick, K1DS**

### Report by Bert K3IUU

Rick's summary did a great job of detailing the event and the crew. I'll add just a few



comments. Doc's mastery of the cooking, with varied menus and hot food was outstanding, and helped keep up everyone's spirits despite the gloom of the weather.

A really neat addition to the equipment this year was a propane-fired instant hot water system. Bruce adapted and mounted it to our usual cold water sink, and we enjoyed the "comforts of home" at the top of the mountain.

The cadre of networked computers at each operating position, provided and checked by EI, K3JJZ, made it easy to watch the score pile up in real time.

If you haven't yet made the trek to the operating site, you should plan to do it next year.

Hearing stations that you normally struggle to find from your home location, worked from this great location, is an exciting aspect of the hobby. **73,**

Report by AI N3ITT

Congrats Packrats on another successful June contest effort!! I really think this year's trip to the mountain was one of the smoothest ever. Unlike last year the ground here was firm enough to turn the big truck and trailer around on the field without getting stuck and going thru the ordeal like last year.

We had one small glitch at Bob's when the truck got stuck for a bit in a small swale that crosses the road to the back of the barn where the towers are. Fortunately there were plenty of Packrat's at Bob's to push on the fully loaded kitchen trailer so we could pull right up to the towers.



After Bob's we loaded up at Cotner. With many hands, load-up was quick and we were on our way to the mountain! Despite the two load up sites (first year for that) we arrived only slightly behind schedule.



As setup began, more hands arrived at the mountain. By nightfall most of the towers were up and some stations were on the air. Electric and water were hooked up early in the day. Our hot new technology on the hill was literally that.....an instant hot water heater.

All stations were on the air well before the start time. The only problem was the H2O in 2 of the microwave loopers, which was fixed before the contest. As far as I know all bands were trouble free thru the contest except for some rotor problems on 432.

On behalf of the club and myself I'd like to thank everyone who helped make this event a great success. There are **very few** groups around who can pull this sort of thing off. I can't say enough how proud I am to be a member of a group that can do it in style...the Packrats!

**Thank you to all the Band Captain's, Committee Chairmen , Operators, and the many helpers** who made this come together.

**Special thanks** to Doc,W3GAD for keeping us fed thru the duration, and to our contest co-chair Phil,K3TUF. Also thank you to the rovers and all who worked W3CCX!

Now its **time to start planning next year.**



73 AI N3ITT

Picture credits (in Cheese Bits and on internet):

- WA3BZT
- K3ESJ
- W3ITT
- K3JJZ



# The Wayback Machine

Gleaned from the pages of  
Cheesebits, July, 1960

de K3IUUV

*(author's comments in italics)*

1. The second 6-meter hidden transmitter hunt was held. The "hidrs" (Hares) were W3KKN, W3HKZ, AND K3HWZ. There were 25 "hunters" (Hounds), in 12 vehicles. They included W3CL, K3BPP, K3IUUV & K3EOD. The starting point was the Acme lot in Warminster!
2. After 2 hours, the hunt was over, with no one finding the hidden xmtr. W3KKN announced "come get us, we're in W3CL's crawl space!" Turns out they had connected the xmtr to Harry's TV antenna!
3. ARRL announced the results of the 1960 Jan sweepstakes. SJRA 1<sup>st</sup>, Packrats 2<sup>nd</sup>, and 6-meter Chicago club 3<sup>rd</sup>. *(I think that was the last one we didn't win).*
4. The Pioneer V spacecraft passed 8-million miles from Earth, and the higher power xmtr (150-W) was turned on by a signal from the 250-ft telescope at Jodrell bank, England. Reception was achieved. The xmtr is powered by 28 NiCad batteries, charged by 4800 solar cells!
5. Helen Brick (ye editor) and Frankie (W3SAO) reported on a trip to Smyrna Delaware, to visit Karl, W3ASD. Karl was our sought after Delaware contact for the Jan contest, and lived there on a chicken farm.
6. Packrats picnic announced. Aug 14<sup>th</sup>, Ft. Washington State Park. Registration \$1.00 per family *(inflation has taken its toll).*
7. A lengthy article on avoiding a "pink ticket" from the FCC, for improper station operation. Checklist items included power level, splatter, key clicks, harmonic radiation, and log-keeping *(gone by the wayside).*

8. A dissertation on 2-meter operation, including modes, propagation characteristics, dx possibilities, etc..
9. Alert that FCC has now officially set aside 50 – 50.1 for cw only.
10. Two pages of "swap shop" items to buy, or for sale, including a request by K3EOD for a 1780 volt centertapped xfmr *(no Internet listings then!)*.
11. Schematics of the speech-processing circuits presented at June meeting by Don Lauer, K3GAY were provided.
12. New members voted in: K3KVS, W2EIF, W2KFC and K2SMZ.
13. Election results: Pres, W3HKZ; VP K3HWZ; Rec Sec, W3ZRR; Cor Sec, W3SAO; Treasurer, W3MVF; Directors,

## Ham Radio URL of the Month

The IEEE monthly magazine "Spectrum" has a tie-in web page that is free and it always has some very good material. Currently they have an interesting article called "Free the Radio Spectrum" on the methods currently used to allocate frequencies and on how spectrum may be dynamically shared in the future. It's thought provoking and a little controversial. See <http://spectrum.ieee.org/telecom/wireless/free-the-radio-spectrum>.

Thanks go to Bert K3IUUV for suggesting this URL.

ENJOY! — Lenny W2BVH

## ANTENNAS WANTED

WTB: 432 MHz SSB yagi used 10-20 foot boom. 2M SSB yagie boom under 20 feet

Contact John K3MD [k3md@arrl.net](mailto:k3md@arrl.net)  
570-743-7862

## Events

For inclusion, please direct event notices to the editor.

**Valley Forge Hamfest and Computer Fair Hamfest** - July 18, 2010. See <http://www.marc-radio.org> for details

**W2QW Techfest - Hamfest** - June 19, 2010. See <http://www.w2qw.org/hamfest.htm> for details

**CQ WW VHF Contest**— July 17-18, 2010. See <http://www.cqww-vhf.com/> for details.

**Central States VHF Conference** - July 22-24, 2010. Bridgeton MO. See <http://www.csvhfs.org/conference/index.html> For details

**ARRL UHF Contest** - Aug 7-8, 2010. See <http://www.arrl.org/august-uhf> for details

**JSARS Hamfest** - Aug 8, 2010. See <http://www.jsars.org/?q=node/50> for details

**International EME Conference** - Aug 11-14, 2010 Dallas TX. See <http://www.ntms.org/eme/> for details

**ARRL 10 GHz and Up Contest**—Aug 15-16, 2010. Details to follow

**Pocono Area Hamfest** - Sept 11, 2010. See <http://www.qsl.net/n3is/hamfest/index.html> for details

**ARRL September VHF QSO Party Contest** - Sept 12-13, 2010. Details to follow

**Mid-Atlantic States VHF Conference** - Sept 25, 2010. See add, this page. Additional details to follow.

**Antique Radio Show** - Sept 17-18, 2010, at Renningers Antique & Farmers Market, Kutztown PA. See <http://www.renningers.com/kutzradio.htm> for details

**ARRL 10 GHz and Up Contest**— Sept 19-20, 2010. See <http://www.arrl.org/10-ghz-up> for details

**Mid-Atlantic States VHF Conference**  
**CALL FOR SPEAKERS, PAPERS, ABSTRACTS**  
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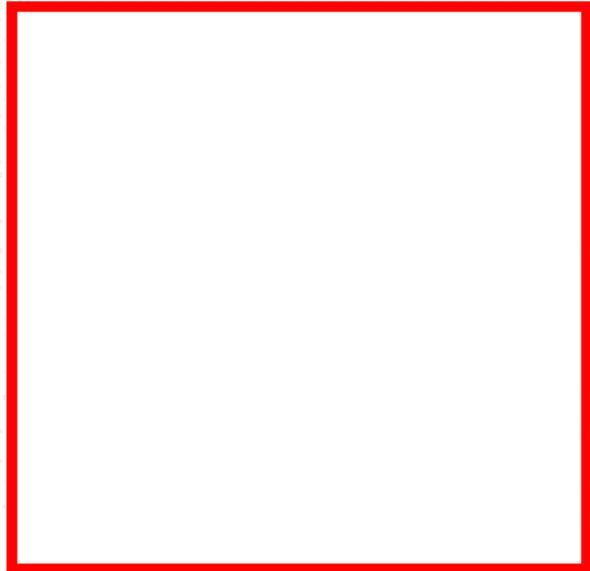
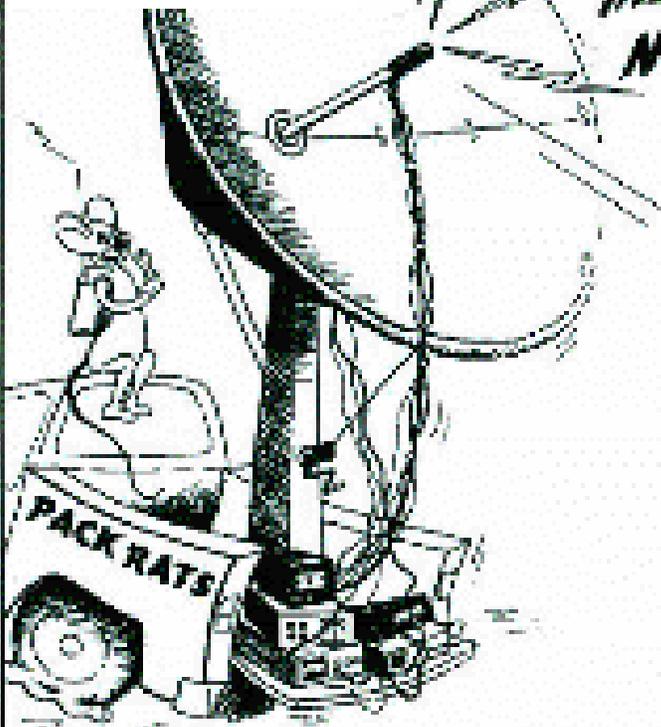
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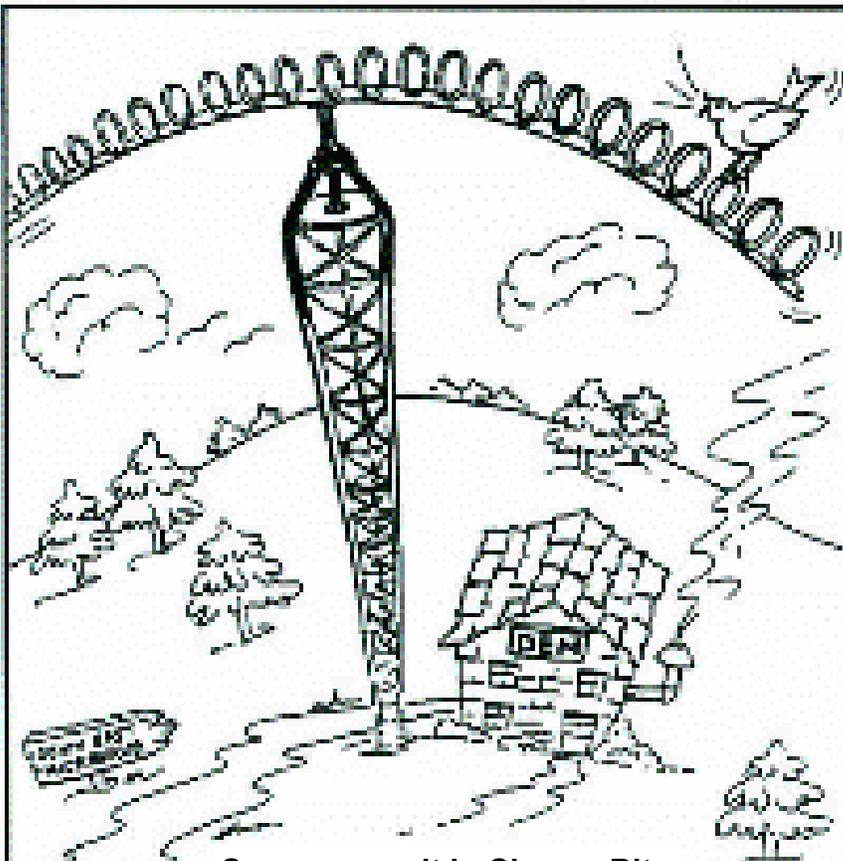
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