Mt. AIRY V.H.F. RADIO CLUB, INC.

CHEESE BITS

ARRL Affiliated Club

W3CCX

CLUB MEMORIAL CALL

Volume L **March 2009** **Number 3**

PREZ SEZ:

I was glad to see so many participants at the meeting last month for both the Crying Towel and the Homebrew. It shows that we are cooking on all burners in contesting efforts and in building our own stuff. I guess that everyone tries to be a comedian for the Crying Towel, but you really don't have to be a great stand-up, as the events that provoke response are so hilarious themselves. As Bill Cosby wrote in one of his books, the jokes are so pungent because you have experienced the situation yourself. Our Crying Towel winner was WF1L, a rover who went out with George, WB3IGR and when his tie-wraps cracked in the cold weather, wound up dragging his antennas on the highway. We're looking forward to having him as a club member in the near future, as he hails from FM18!

Our nominating committee is busy selecting members to fill spots open for the next club election. This is strictly a volunteer organization, and it is your efforts that continue to make this the foremost VHF club in the world. Please say "yes" when the team is there to twist your arm, lest you get broken kneecaps. Hi-Hi.

Three of the NR6CA microwave transverters were on display for homebrew night and he won the "Most Ambitious" award. Despite the fact that Randy is 3000 miles away, he participates at times in the board meetings by teleconference, and is aware of many of the club needs and tries to fill them. Our goal is to have more rover stations for June. Many of you should be able to use these transverters and get rover experience and help boost club contest activity and scores. The K3TUF microwave tower box was another winner. Phil has made a huge investment in his efforts to move up the single-op contest ladder and with the addition of the new 24GHz gear he has a very competitive station. K1JT took the "Technical Excellence" award with his forthcoming chapter on EME for the future ARRL Handbook, WSPR and other notes. There were also other entries that included W2BVH with his homemade headset boom mike. I think everyone can take a lesson from his "something out of nothing" construction techniques.

We look forward to KX9X's visit to the club this month to discuss contesting. Sean is the ARRL contest coordinator and we will be hosting him with a meet the speaker dinner at Giuseppe's Pizzeria and Restaurant, about two blocks away from the senior center. Be sure to let our VP, Phil K3TUF know if you will be coming to that Dutch Treat event at 5:45PM prior to the March meeting.

Thinking about June contesting? What will be the challenges ahead of us for this year? We continue to refine our approach and ease of set-up and take down. Now all we need is people-power and good conditions. I have already booked the Friday and Monday surrounding the weekend as time-off from work—have you? Your help is always needed to make the weekend a success.

The 903 amplifier conversion project is underway. According to K3TUF there are 15 folks (or amps) ready for the project, which we plan to accomplish in short stages at the club meetings. Stay tuned for next steps, and make your payment of $20 to our treasurer W3KM for the parts needed.

In closing this month, I want to add a comment about all the posts on the VHF Contesting reflector regarding the rover categories and grid circling activities.

It is clear to me that VHF contesting is quite a different experience depending on your geography. For those of us here in the Mid-Atlantic and Northeast, there is an endless (almost) supply of stations available on the bands all contest-long, with the usual lulls in the wee hours of Saturday night and mid-afternoon Sunday. If you only worked the local club members on the basic 4 bands, you would easily have about 200 QSOs in the log and about 20 multipliers. As a rover, I do focus my efforts to ensure that the majority of stations within the geography can work me from all the grids I cover, and that the higher microwave capabilities through 24GHz are used.

Now step into the Mid-West, the South-West or the West coast and imagine the VHF station densities there. In order to have a contest experience that is several QSOs per hour, they need to be more aggressive and use techniques to increase the activity and QSO rates. Hence, more rovers on the air, the use of schedules for more distant stations whom they would rarely if ever work randomly, and the use of meteor scatter and EME. Grid-circling and gang-roving are techniques that can keep the operators busy and run up big scores for those expansive areas that are basically VHF dead-zones.

Personally I have always requested that a single-op rover not be placed in the same category as multi-op rover. I also support the fact that grid-circling rovers be in the Unlimited class, even if they use only 4 bands. I do not think rover-to-rover contacts need be limited or scored as zero points, no matter how many you make.

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

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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 FM29ll
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 or www.w3ccx.com

Editor's Column

Next Meeting: March 19, 2009, 7:30pm. At our usual site: the Ben Wilson Senior Center, 580 Delmont Ave., Warminster PA. **ARRL Night**. Sean Kutzko, KX9X, ARRL Contest Manager is special guest from headquarters. His topic: "Growing VHF QSOs From Scratch: Encouraging More VHF Activity". This meeting is sure to promote plenty of ideas on how to expand VHF+ operations. Come on down and see what ideas **you** can contribute based on Sean's comments.

73, Lenny W2BVH

Ps - As always, please send articles, comments, ideas to lennyw@comcast.net

… continued from page 1

Prez Sez

In some parts of the country, that may be the only activity available. The debate of the rover contest scoring will eventually be resolved, but the issues will never make a perfectly level playing field as the issues in VHF contesting are largely dependent on station density and conditions that may favor one geographic area over another.

Let's not continue to bash grid-circlers, let them enjoy what apparently is their self-appointed task. We have already found room to accept a perennial multi-op winner that has multiple rovers who focus on making contact with the mother-ship on a well-orchestrated calling schedule, and single-op stations that use well designed schedules to garner the additional multipliers with those marginal stations.

For me as a rover, the fun has been in making the QSOs with any available stations and running the bands as high as possible. A nice score and certificate is a secondary added attraction, but the real reward is being thanked by another station for the QSOs, especially if on a band or grid that was only available from my activity.

Let's not forget why I rove—I have CCRs at my residence, and the limited attic antennas would severely limit my fun, so I'm out on the road having a blast working as much as I can from as many grids and bands as possible.

Any feedback on these thoughts is appreciated.

73,
Rick, K1DS

Contest Roving on a Motorcycle in the Mountains of the Pacific Northwest

As a follow-on to last month's ARRL January VHF Sweepstakes reports, here is a narrative on contest roving with a motorcycle by Mike Lewis, K7MDL. Mike is located in CN87xt (central Washington State) and is a member of the Pacific Northwest VHF Society:

For me, the June 2008 contest was a quick trial of motorcycle mobile operation with an FT817 and 2 verticals. For the January 2009 contest I assembled a full 4 band station for 50, 144, 222, an 432 at 25W+ on all bands. I carried a wide selection of verticals, loops and beams to test them in this environment. Below is my writeup and some pics. I hope you find them entertaining. I plan to refine this more and do a serious effort in the summer when the high mountain roads open again, including possibly my regular forest road/trail rides as I activate rare grids in the Northwest.

This contest was about testing configurations for a compact motorcycle rover vehicle. I tour the forest roads around the Northwest on a dual sport Kawasaki KLR650 many weekends a year, seeking the great roads, trails and highest rideable mountain tops, several that large vehicles cannot reach due to slides, gates, rocks, ditches, etc. I figured why not take my radio gear with me, and invent another excuse to go riding?

Saturday I tested the gear out in the driveway just after noon. Then headed out east to High Rock Road in CN97, about 900ft. It was just at the top of the dense fog with occasional sun showing. It was the mid 30's when I left the house, but I was dressed for cold, and ended up peeling off the coat, gloves and helmet for the 2+ hours I was on station.

I made 51 QSOs on 50, 144, 222, and 432. It took a while to find some activity on 222. Toward the end I compared my antenna selections with Ray, W7GLF. Activated 2 grids, 3-5 Q's per band, and about 1150 total score submitted. Saturday afternoon I operated from my home station (50, 144, 1296 only) and submitted a separate log for that. Sunday I spent tearing into the bike's water cooling system and found the radiator plugged with what looked like sandblast grit. Not sure how that got there, but it caused me to overheat before I got to my CN97 stop. So Sunday was not a radio day for me.

Mounting antennas on the bike involves some creativity and compromises. So it would not be obvious which antenna would do the best on each band. We found the tri band (144/222/432) vertical did well on 432, but lousy on 222. The KB6KQ loop did well on 222; the stacked loops were poor on 432. I used a Comet duplexer to split the IC-706 VHF output to the 144 and 432 loops. I was also concerned about RFI with the radio only inches to a couple feet from the antennas at 25W+ power levels. I think 432 has issues with this, and in the

future placing the LP beams up higher will hopefully resolve it.

The red yagi is a 6M coax cable antenna. It is an optimization for portability inspired from this article: http://www.hamuniverse.com/K4mmg2and6meter.html. Although the final dimensions for me more closely match the standard formulas for half wave length * 66% velocity factor of RG58A/U. I cannot explain why the web article's final dimensions worked for the author.

For 222 I used the W1GHZ design compact 222 transverter +FT817 driving a new (used) 2 in 25W out linear amp. It did well with the hard keying. During buildout, the RF keying in the amp was often slow so I modified it for hard keying from the transverter key out line.

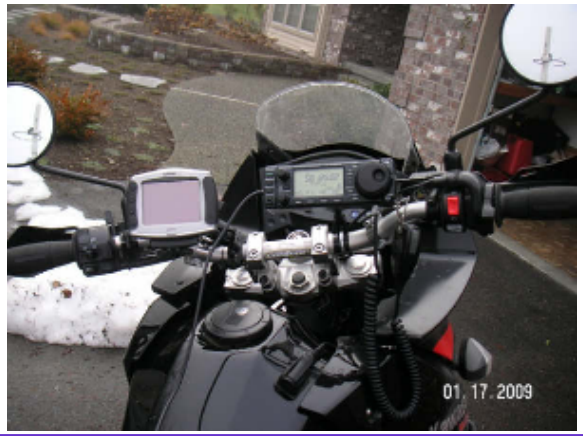
An IC-706mk2G took care of 50, 144, and 432 bands supplying between 25W and 100W. I set them to 20-50 watts due to my close proximity. I used a 17AH AGM battery charged from the bike's electrical system. The charger is a West Mountain Radio Super PowerGate 40S that offers 40amp isolation from my starting battery and a 4-stage charger for AGM/Gel chemistry. I can reconfigure it to run off unswitched or switched 12V if needed and pass through the current. All the gear in the trunk is secured to a board cut to fit the case bottom. It lifts out and can be set up in the house on the station 12V supply for standby power backup and radio comms. Or I can leave it in the Pelican case and drop it in any car, plug the charger into any cigarette lighter and throw up at least a mag mount. It could also be useful for field day and will survive generator refueling breaks. I did not put the wattmeter inline, but the battery voltage after 2 hours, 50 contacts, was about 11.6 volts at last look. More than enough for rovering. The recharge rate is 4 amps for the runs between stops. I think this will work well.

For the next outing I will go with only the ELK Antennas 222 LP beam and 144/432 dual band LP beam, and my home made coax cable 2 element 6M compact yagi. I might add a 3rd element later. It seemed to work OK, at least as well as the vertical, but directional.

I used a 2M 5/8 wave vertical on a non-grounded bracket but it still seemed to do OK. SWR was even OK according to the SWR meter in the IC-706, which was very surprising. It was worse last year bolted directly to the luggage rack. So in summary, no loops, no verticals next time.

All beam antennas pack down into 2 foot long 4" dia sewer pipe tubes that will strap to the Pelican case. Three coax cables and 3 antennas, all mount on a common PVC pipe mast, and rotate together. The PVC pipe slips over a 12" long, 1" dia solid aluminum rod which bolts to a removable platform under the Pelican trunk case. It worked out to be very sturdy. You can easily clamp the PVC in place to prevent rotation, by squeezing the pipe just a bit, it is a close fit to the rod.

I mounted the IC-706 control head on the handle bars via a RAM mount and used duct tape (black for good looks) to ensure it does not pop off the mount while underway.



For the next go around setup will go as follows. When stopped remove the antennas from their tubes, assemble the PVC mast sections, tee fittings along the length of mast mount each of the 3 antennas, open the case lid, stretch out the coax and connect them. Then stretch the IC706 separation cable up to control head. I'll be on the air on all 4 bands in about 10-15 minutes with no antenna switching, and only 2 microphones. I'll be able to do FM as well as CW/SSB.

The real test will be how many stations can hear me when I get out into the boonies. I did hear W7DSA in CN85 Bunker Hill fairly well on the 432 vertical. That was nice.

Soon after the contest KB7DQH swung by to get some rover mini-me pictures. There's quite a contrast between maxi-rover and mini-rover.

73,

Mike Lewis
K7MDL
Grid Locator CN87xt

The Why and How of Microwave Transverters Part 1

By Michael Davis KB1JEY

Introduction: A few days before the January VHF Sweepstakes, my friend Joe, asked if he could visit my shack during the contest to see how microwave transverters are used. While operating in radio contests can be hectic at times, it was hard to say no to Joe. After all, he was kind enough to come out twice in the cold and snowy weather to help me raise my temporary antenna array in preparation for the contest. So Joe stopped by on Sunday for lunch and tour of the shack.
After he left, it occurred to me that Joe was not alone in his questions and concerns. So I wrote this article to share what I explained to Joe and to encourage more hams to move up from the "lower four bands" into microwaves. Among the highlights of the information that I passed to Joe were:

- It is not necessary to open and modify your radio to move up to microwaves
- Second-hand transverters are available and economical
- Hooking up transverters is straight-forward given a little basic knowledge

Why Transverters?: You can pay a visit to the "candy store" and walk out with a radio that will cover three or four of the lower VHF bands (50, 144, 222, and 432 MHz). A few high-end radios designed for satellite work may be equipped with an option to extend operation to1296 MHz. For practical purposes, few commercial "all mode" (SSB) radios are available to cover 222 MHz. In addition, if you want to work other hams at 903 MHz and beyond, you'll probably need a transverter. In fact, some well-equipped hams use transverters because with some switching circuitry, it is easier to move from one band to another using a single "IF" rig (discussed later).

Part of the reason for lack of microwave-ready amateur transceivers is that the cost of the components and required engineering for radios operating at microwave frequencies is more expensive than creating a transceiver that operates only at VHF and UHF frequencies that most amateur radios are operated. Fewer hams operate beyond the 432 MHz so manufacturers have to spread fixed development costs among few units. Hence, the economics explains the scarcity of amateur microwave transceivers from major amateur radio manufacturers.

On the other hand, if we could bring the microwave radio signals down to the tuning range of common amateur radio VHF transceivers (e.g., 2 meters), a couple of good things start to happen. We eliminate the need to engineer, acquire, or make a lot of the circuits that would have to function at microwave frequencies. Second, we may get to reuse the all-mode receiver that we already own and know how to operate.

How Do Transverters Work? You may already understand the answer without realizing it. Consider the principle behind superheterodyne radio circuits. The output from a local oscillator is mixed with the incoming radio signal. A detector picks off the generated intermediate frequencies (IF) and converts the IF to audio.

Similarly, a transverter receives (or transmits) a microwave signal, mixes it with the signal from a crystal controlled oscillator. The resulting IF is fed to the antenna terminal of the IF rig, which tunes it just like an ordinary radio signal.

For example, a transverter designed for 1296 MHz might have a local oscillator that runs at 1152 MHz. When combined with the signal from a 2 meter VHF IF radio tuned to 144 MHz, the transverter will operate in the 1296 MHz band. If we were to tune the IF radio up to 144.100 MHz, we would actually be operating at 1296.100 MHz, which is a popular frequency for this amateur microwave band.

Transverters are typically organized internally into transmit and receive "chains". Part of the reason for this is that the receive chain contains a pre-amplifier which could be damaged by the higher level RF generated by the transmit chain. Other circuits must be switched in or out as we move between transmission and reception. So, mounted in the transverter box or on the outside is a transmit/receive (T/R) relay. It switches between SMA or BNC connectors for the transmit and receive chains of the transverter.

How Is a Transverter Hooked Up? Transverters typical have the following external connections:

- Power: typical required voltages are 12-14 VDC and perhaps 24-28 VDC to power relays and other components
- N connector for connection to the antenna
- BNC connection to the T/R relay. The other end of the coax goes to the UHF (SO-239) antenna connector on the IF rig
- a phono jack to "key" the T/R relay to transmit

If you are new to transverters, you may be less familiar with N connectors (and perhaps BNC and SMA connectors). While PL-259 and SO-239 connectors are sometimes called "UHF" connectors, the truth is that they start to become unsatisfactory at 432 MHz and beyond. N connectors are a better choice at 432 MHz and higher frequencies. They are more moisture-resistant, too.

You will also see BNC ("bayonet"), SMA, and phono ("RCA") on transverters. BNC and SMA connectors often seen as antenna connectors on VHF/UHF hand-held ("HT") radios. They function well when channeling a few microwatts or watts of RF energy. However, when connecting your transverter to amplifiers or antennas, N connectors are the better choice because they handle more RF current without overheating.

On a commercial transverter, the key line will typically be a phono jack connection (other arrangements may be employed on a home-brew transverter). Many, if not most modern VHF transceivers that you might employ as an "IF rig" have an accessory jack that can be connected to the key line. When the key line is connected to the IF rig, the transverters relay(s) switch to transmit when you use your key or squeeze the PTT button on the microphone.

If you key your transverter via the IF radio's accessory jack, you'll want to add a sequencer. Sequencers help insure that the pre-amp is disconnected before transmit power is applied to the transverter.

If you cannot hook up the key line to the accessory jack of the IF rig, you can ground the key line with a switch or alligator clip before you start to transmit. Just be sure to wait a second or so after you key the transverter for transmission before hitting the PTT button or code key.

In Part 2

Well that's it for this months installment. Next month we'll cover the use of attenuators at the input of the transverters receive string, the use of preamps and power amps. In addition we'll cover frequency spotting and some tips on obtaining pieces for your transverter based operations.

73, Mike Davis KB1JEY

Crying Towel Winner

This years crying towel for the most amusing and dramatic sob story from the January contest was awarded to member candidate Bill McCourt WF1L of Reston VA. Bill and George WB3IGR were out roving when the entire frame holding **all** of the antennas let go. The antenna frame was pulled along by the feedlines alone, at speeds up to 50 mph until a suitable and safe place was found to stop the van.

Fortunately (miraculously?) except for a couple of bent and broken elements the antenna array survived the ordeal and the roving was able to be continued.

Congratulations(?) to Bill & George! Next year please try bolts screws **and** c-clamps on the antenna frame!!

There was plenty of competition for the towel. Your editor noted hilarious presentations by Griff NE3I and Mike WB2RVX (who also brought in a finely roasted LNA for show-and-tell) as worthy runners up.

If you missed it, try and make it in for the crying towel session next year.

Homebrew Night

This year, the Crying Towel event shared the spotlight with Homebrew Night in February. We'll have a full report and (hopefully) some pictures of the homebrew winners when the plaques are awarded later this year. For now here are the names of the winners in each category:

Technical Excellence: Joe Taylor, K1JT for his forthcoming chapter on EME in the ARRL Handbook

Best Construction: Phil Theis, K3TUF for his modular equipment box at the 120 foot level of his tower.

Most Ambitious: Randy Bynum, NR6CA for multiple carefully built & packaged microwave transverters.

Congratulations to the winners and to everyone who brought in something to exhibit!

Ham Radio is Growing

For those who might think that Amateur Radio is fading with the years as the internet becomes a way of life: **you're wrong!** An article in this month's ARRL Hudson Division online newsletter refutes that. Here are some statistics: the number of hams peaked in April of 2003 at 687,000. It's currently at 660,000 and is on the upswing compared to 2006 and 2007. For comparison, the number of hams in the US during what many think of as the "Golden Age" of ham radio from the mid '50s to the mid'60s was only around 230,000! By any measure things are good and getting better. For the full article, see www.hudson.arrl.org/beacon/2009/200902hudsonbeacon.htm

Lyn Rowland W3NSI, SK

We reported the death of long time club member Lyn Rowland, W3NSI in last months Cheese Bits. Here are some additional details about Lyn, provided by Mrs. Sally Rowland.

"Lynford H. Rowland, Jr., 78 of Solomons Maryland, formerly of Philadelphia and Toms River, NJ died January 5, 2009 at Calvert Memorial Hospital in Prince Frederick.

He was born Dec. 24, 1930, in Philadelphia to the late Florence G. and Lynford H. Rowland, Sr.

He graduated in 1948 from Germantown H.S. in Philadelphia and attended Millerstown University in Millersville PA, graduating in 1952.

On Nov. 10, 1952 he entered the US Army to serve his country during the Korean Conflict.

He was a direction finder operator in the US Army Intelligence Division and assigned to the 318th Battalion stationed at the Herzog base outside Nuremberg Germany from 1952 to 1955.

He was an industrial arts teacher at North East HS for the school district of Philadelphia.

It was there that he met his future wife Sally Martyska, who was also employed as a teacher at North East HS.

They were married on April 21, 1979, At St. Cecilia's Roman Catholic Church in Philadelphia.

He was enthusiastic about sailing and boating from 1940 and was active on the Delaware River outside of Philadelphia, on Toms River, NJ and on the Barnegat Bay, NJ. He also spent time on the lakes all around Leesburg, FL and on the Chesapeake Bay and Patuxent River. He also sailed on the Atlantic Ocean and throughout the Caribbean.

He became a ham radio operator in 1947. He was a charter member and active in the Mount Airy VHF Radio Club, better known as the "Packrats". His call sign was W3NSI. He built and operated all different kinds of radio equipment.

In May 2002 he and his wife moved from their home in Leesburg, FL, and relocated to Asbury-Solomons, embraced by the beautiful Patuxent River and legendary Chesapeake Bay.

He is survived by his loving and devoted wife of 29 years, Sally M. Rowland.

Services and interment were private.

Contributions may be made in his memory to the American Air Museum in Great Britain, PO Box 97055, Washington, DC 20090-7055 or to the American Radio Relay League, 225 Main Street, Newington, CT 06111-1494"

In a letter to the club leadership, Mrs. Rowland indicated that Lyn asked in his final instructions that his radio gear be made available to the packrats. Details will follow shortly.

HAM Radio URL of the Month

Take a look at www.microwaves101.com/.

The unassuming front page of this site has an incredible amount of material sitting behind it. There's plenty of technical detail on microwave principles, design, construction and software (including web based applets). The microwave encyclopedia has virtually hundreds of introductory articles on all aspects of microwaves. The site has a fun side as well: the slang dictionary at http://www.microwaves101.com/encyclopedia/slang.cfm has plenty of tongue in cheek descriptions of various technical and corporate foibles; not all directly associated with the microwave industry.
Use the navigation hot links at the very top of the homepage to get you started.

Check it out.

Events

JSARS Hamfest - April 5. Toms River NJ. see www.jsars.org

OMARC Hamfest - April 18. Wall Twp. NJ. See www.omarc.org

35th Eastern VHF/UHF Conference - April 17-19 Enfield CT. Spr. N.E.W.S. see www.newsvhf.com/vhfconf.html

SBMS 2+ GHz Contest - May 2-3. Details to follow.

Warminster Hamfest - May 3. see www.k3dn.org/hamfest.htm

ARRL June QSO Party - June 13-14. The countdown has already begun!

ARRL EPA Section Convention + Firecracker Hamfest - July 4. Bressler PA. see hrac.tripod.com

CQ WW VHF Contest - July 18-19. Details to follow

ARRL UHF Contest - August 1-2. See www.arrl.org/contests/calendar.html for details.

ARRL 10GHz & up Contest - August 15-16. See www.arrl.org/contests/calendar.html for details.

Mid-Atlantic VHF Conference - Sept 26 with Hamarama 9/27. Spr. Packrats. Details to follow.

ARRL Sept. VHF QSO Party - September 12-13. See www.arrl.org/contests/calendar.html for details.

ARRL 10GHz & up Contest 2nd Weekend- September 19-20. See www.arrl.org/contests/calendar.html for details.

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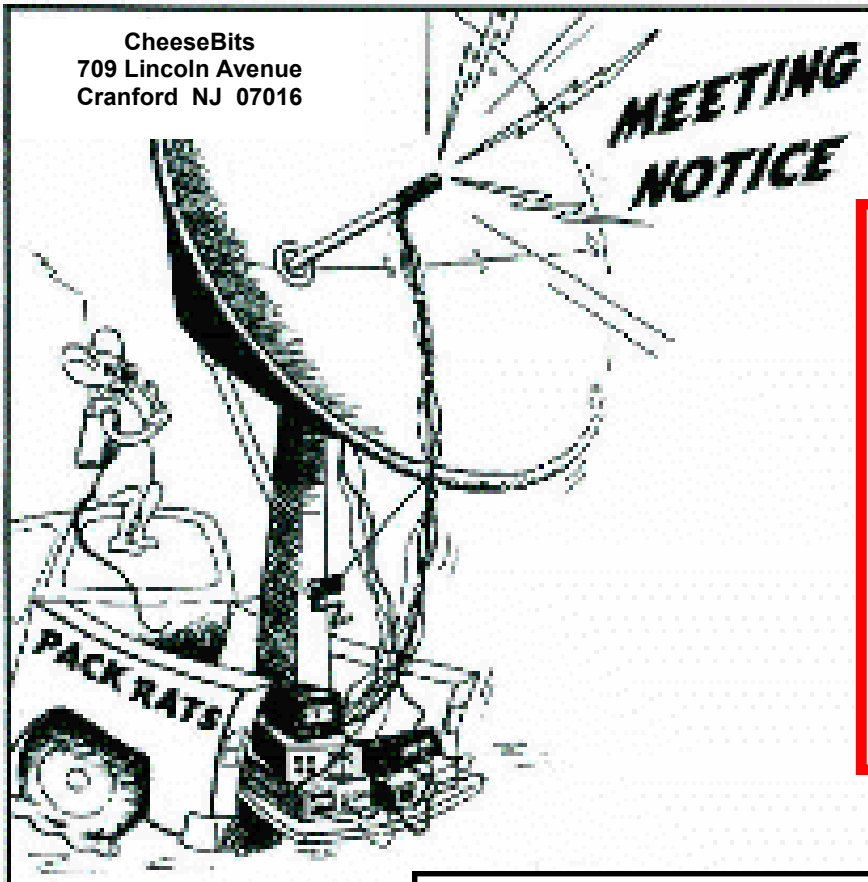

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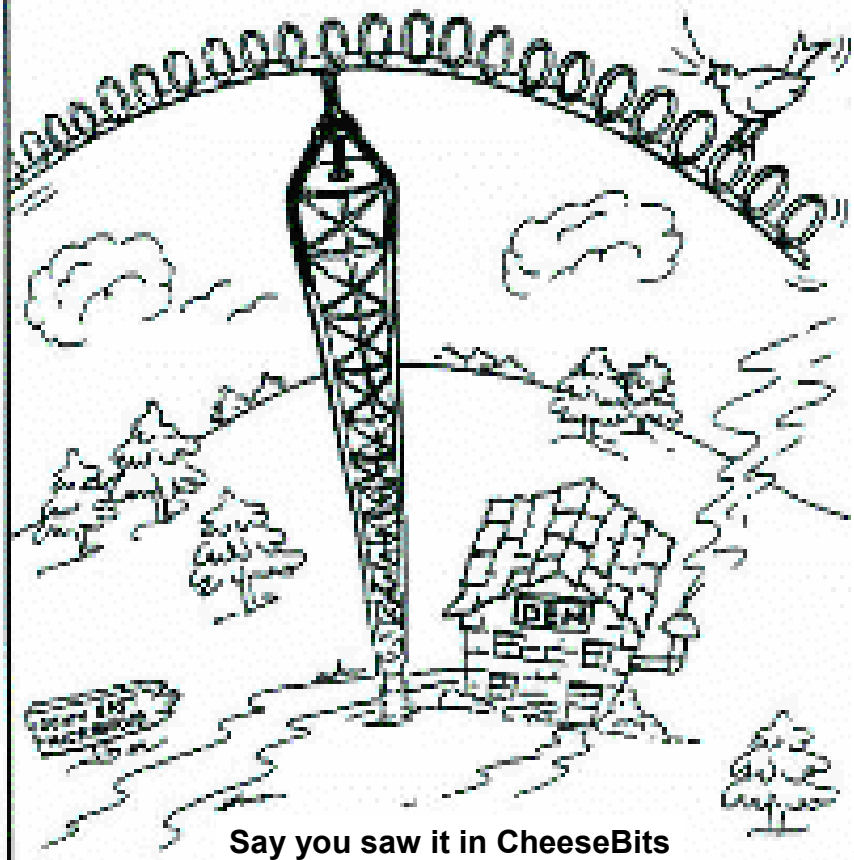

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