



# CHEESE BITS

## W3CCX

CLUB MEMORIAL CALL

ARRL  
Affiliated  
Club



CELEBRATING 50 years of VHF/UHF and MICROWAVE  
DEVELOPMENT and COMPETITION in 2006

Volume XLVII

NOVEMBER 2006

Number 09

# PREZ SEZ

One look under the microscope at the 24GHz amplifier, and I realized that this *is* like brain surgery. Small filaments of gold wire were tickling the substrate of the semiconductor. An errant blob of conductive

epoxy was spread over a few lands. A host of microscopic black and gold designs was fitted into a well. Then the talk by W2PED enlightened us all on how and why this is put together to get 30db of gain with a 2db NF on 24GHz. We are certainly proud to have Paul and others like him as Pack Rats, who are capable leaders and teachers for VHF, UHF and microwave construction and education. I know that all who attended were fascinated with the display, Power-Point pictures and explanations. Thanks again for an excellent lesson!

Next month, Joe Taylor, K1JT, Marc Franco, N2UO and I will present a summary of the EME Conference that was held in Wuerzburg, Germany this past August. As I get more into it, I realize that EME combines some of the biggest challenges and best solutions for power generation, transmission line efficiency, antenna design and construction, pointing and tracking solutions, receive amplification, signal decoding, and some very unique DX-peditions. I hope you'll all be there—I'll have some travelogue pictures of Germany for my portion of the presentation.

Our 35<sup>th</sup> annual HAMARAMA will be history by the time this issue arrives. WA3DRC has headed up the arrangements for several years, and has become expert in the things that need to be accomplished to make the event a success. The support

of all the membership is the second leg, and the attendees and vendors, along with some cooperative weather completes the third. Thanks again for making this an ongoing success.

I especially appreciate members who have stepped forward to take on officer responsibilities, board support, meeting presentation refreshments, and QSL tasks. There are lots of activities that continue to need support; my thanks in advance for all that you give collectively to continue to make this an outstanding radio club. We are in the midst of long-range planning for the 2007 VHF Conference, and this has led to another team of helping hands. Hopefully this will bring bigger and better conferences in the future.

OK, it's truly fall. Antenna and tower projects need completion; the beacons and repeater need some refurbishing, and the rovers need to get themselves ready. Please make your needs known if you need a hand or some gear. We expect a significant effort by all for January. 73, Rick, K1DS

## AFTER THE FEST IS OVER...

Despite the lack of set-up help yesterday (Only Ed, Doc, Al, Paul GFZ and me), and rain this AM, The "committee of the whole" showed up today and we had another relatively successful HAMARAMA. We all know attendance was low due to the weather, but there were no significant problems, lots of stuff exchanged hands, and overall, folks seemed to be enjoying themselves, and it dried up as the morning wore on.

Thanks again Ed for your coordination and leadership, and the greater membership for all your help. Thanks also to Mark WA3QVU for PA help.  
73, Rick

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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**

<u>TIME</u>	<u>FREQUENCY</u>	<u>NET CONTROL</u>
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	WA3GFZ FN20kc
9:30 PM	1296.100 MHz	WA3NUF FN20le
10:00 PM	903.125 MHz	W2SJ
10:30 PM	2304.085 MHz	

& go to 3.4G & up after

Visit the Mt. Airy VHF Radio Club at:

<http://www.ij.net/packrats>

## Editor's Column

Have you been outside lately?

Did you notice the decidedly cooler weather?

The daylight hours are less and the cold of the tower rungs penetrates right through your gloves. Perfect weather for antenna work.

The January contest is just around the corner and time is running out if you are planning to do any improvements to you station for the premier club competition, the JANUARY VHF SWEEPSTAKES. This is the one event the PACKRATS have dominated for almost 50 years. It is one of the reasons the PACKRATS first organized in 1956. Toward that end the Mount Airy VHF Radio Club dedicated them selves to the exploration, development and utilization of the VHF, UHF and Microwave amateur radio allocations.

The PACKRATS still embody that tradition. If you don't believe me, just make known your needs for help with antennas, equipment repair or, in many cases a loaner, and someone in the group will respond with the needed help. But, if you don't speak up, no matter how generous the PACKRATS are, your needs will not be met

Steve Kerns, N3FTI is the Chairperson for January and has been doing a terrific job of matching needs and wants with available resources. Drop him an e-mail or make that phone call so the system can work for you.

As for Doc; the home improvements projects are mostly behind me for this year. I have some commercial work in the shop that must be cleared out before I can turn my attention back to station projects.

I guess I will be burning the mid-night oil to try to keep you up to date on the progress toward the January contest and other club activities.

Vice President Dave Fleming, KB3HCL has been doing a terrific job of filling the meetings with interesting presentations.

There seems to be more interest in EME and meteor scatter for contesting. These two modes of operation have their own competitions as well as being viable additions to your January contest scores. Joe Taylor, and Marc Franco are both excellent sources of information and are quite willing to help you along the path to success in these modes

If you have been getting the traffic from the PACKRATS E-MAIL REFLECTOR you are probably award that THE packrats have been asked to host/run MICROWAVE UPDATE 2007. We had a terrific MUD in 2000 and with the help of all of us we can have an even more successful event next year. A firm date and location information will be announced in the near future. We are counting on you to be part of the organizing. Plan to attend, too.

K1DS has been doing a terrific job as President. He guided us through our 50th anniversary celebration, he is the now working to get all the W3CCX Beacons back on the air. Those above 2.3 GHz will return to their proper place in the near future.

Listen for the WEAK ONES

73

W3GAD Doc



# GLEENINGS FROM CONTESTER'S RATE SHEET

4 October 2006

Edited by Ward Silver N0AX

Published by the American Radio Relay League

Free to ARRL members - tell your friends!

(Subscription info at the end of newsletter)

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...At the Pacific NW VHF Conference this past weekend, the subject of logging while mobile was discussed. As you might imagine, paper logging while mobile got super-low marks in the safety category. The consensus was that most of us had attempted it...once...and decided that it was Not A Good Idea. There are workarounds for logging on the move, but the two best I heard were using a hands-free digital recorder with time stamping set to UTC (Olympus makes one and I'm sure there are others) and for short bursts of operating just noting your stop and start time with QSO times filled in later. Don't jeopardize your own safety and those of other drivers by trying to drive and operate and write at the same time! I don't care how good you think you are, you're seriously distracted and a hazard to other drivers. Pull over or share the operating duties with someone else.

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...Here's a great product announcement - NAOMI, the North American Overlay Mapper has been re-issued as a fully Windows-compatible program. There's more good news: starting with the latest version v1.2, NAOMI is now available for download completely free of charge. Get a FULLY WORKING copy of NAOMI on your computer for as long as you wish to keep it. Among numerous other features, the program contains 47 full-screen (1020 x 650 pixel) maps at 1:2,000,000 scale. 2 full screen overview maps and a comprehensive multi-page Help System and Information Guide. It's available online at <http://www.mapability.com/ei8ic> - wow, thanks Tim EI8IC!

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...Solar cycle 24 could be small. Or it could be huge. This week's news pins the meter on the WEAK peg. Even if it is not, solar cycle 25 (peak 2022) is predicted ([http://science.nasa.gov/headlines/y2006/10may\\_long\\_range.htm](http://science.nasa.gov/headlines/y2006/10may_long_range.htm)) by NASA solar physicist David Hathaway "to be one of the weakest in centuries." (Thanks (I think), Jon N0JK)

"Gleenings continued:

At the other end of the radio spectrum, microwave homebrewers may find a use for the information in the article "Directional Couplers Aid Antenna Power Monitoring" in the Sep 2006 issue of *Microwaves & RF* (<http://www.mwrf.com>) by Andrzej Sawicki. It's a novel design that can be fabricated using amateur-level techniques.

---

Bob K0RC contributed a link to an overview of the new TIA-222-G tower structural standard: [http://beradio.com/mag/radio\\_changes\\_tower\\_standards/index.html](http://beradio.com/mag/radio_changes_tower_standards/index.html)

It contains good background material and how and why the criteria has changed in the updated standard. There is also a link to a PDF file of the new TIA-222-G specification <http://www.mei1inc.com/NAB-2003presentation.pdf> that was prepared prior to formal release of the standard.

## IN MEMORIAM

Our condolences to Bert Soltoff, K3IUV on the passing of his mother. Cards can be sent to Bert's new address:

Burt Soltoff  
229 Farway Drive  
Warminster, Penna. 18907

Thanks to Ron Climas, WZ1V we learned that Joe Sefcik, K1NCO has lost his valiant battle with cancer. He will be missed on our Monday night nets, contests and the PackRats and NEWS Conferences.

Clinton R. (Jim) Spencer Jr. W3BBB died Tues Oct 24. He was a charter member of the Phil-Mont Mobile Radio Club and trustee of the W3QV repeater system that served the Philadelphia area on 147.03 and 444.8 MHz. He created several Amateur Radio stations at the Franklin Institute under the call sign W3TKQ then W3AA, used his many talents to design and build 5 mobile communications vehicles, and a 10 meter AM, 70 cm and 2 meter FM repeater system with 4 site voting. Countless hours were spent at his bench in North Hills, and Lansdale Pa, building, testing, installing and teaching amateur ops on the fine art of the hobby. Many an issue of the *Blurb*, a monthly Phil Mont publication passed across his bench during the collation of this well published newsletter. In between all of this he enjoyed the game of golf. His talents will be missed.

In lieu of flowers, contributions should be made to the Phil-Mont Mobile Radio Club Inc. Scholarship fund c/o Richard Moll P.O Box 88 Abington Pa 19001. This fund sponsors Amateur radio scholarships to worthy licensed young operators seeking a higher education. These scholarships are administered for PMRC by the Foundation for Amateur Radio.

In deep respect for my dad, Rick Spencer N3FD

## VHF Contesting ZL1BQ Style

With the summer contest season starting around the time you read this, a look at how one club, the Auckland VHF Group operates during the December Field Day Contest might stimulate interest and activity. The ZL1BQ Contest site, Maunganui Bluff, north of Dargaville, on the west coast is around 450m above sea level – Maunganui Bluff itself is 460m, but access is difficult with joint DOC/Maori ownership of the land, so we actually operate from a friendly farmers ridge top, some 500m further north.

The site is about 3 hours drive north of Auckland, and our typical 3 to 4 person contest team is seldom away from the city on time! There are always last minute preparations, another antenna to be finished, or equipment issues to sort out just prior to departure. Our aim is always to be on site 2 to 3 hours before the start of the first operating period, but it's usually a little into the first hour before we are ready and on air!

For the past few years, the core team of Peter ZL1UKG, Tim ZL1TN and Vaughan ZL1TGC with assistance from whoever else wants to come along has got setting up and operation from the site down to a fine art.

First priority is to get the tent up. This is an annual loan from Peter ZL1UKG's brother, and is large enough to have one half for operating, the other half for sleeping. Cooking, eating and microwave band operation typically uses the front awning for shelter. Next comes the poles and antenna for 6m, 2m, 70cm. We try to have Yagis both horizontal and vertical for 2m and 70cm, and recently we have had the luxury of rotators to help the fine pointing of beams. Typical power levels run from the site are 100W on 6m, 2m and 70cm, with 10W on 23cm and less on the higher bands. Auckland city is typically due south from the site, with Taranaki about 4 to 5 degrees off to the west. Nelson stations are worked with the beam only a little more to the west. This means that, to work 90% of the stations in the contest, we only have to move the beams through due south and 5 to 7 degrees either side. Sorry you stations over Napier way, but we do listen that way occasionally! Nick ZL1IU in Northland can be

The photos show our operating site set up with the antenna poles anchored to a convenient boundary fence. Power at the site is from a hire generator. Over the years we have found a 3 to 4 kW petrol generator is more reliable than the 2kW models, idles along nicely for the weekend providing 230V AC for the rig power supplies, a battery charger and at night for good lighting. We are able to site the generator about 60m away from tent, behind a circular concrete building used for the local TV translator. This nicely blocks any noise from the generator. The circular tank seen in the photos is part of the farm water supply



The weather is fairly unpredictable, and some years we have had to abandon the site in fairly difficult conditions. These photos taken during the 2005 VHF Field Day, show one of the better contest weekends. We now use a rule of thumb – if it looks like rain in Auckland on Saturday morning, then it will rain on site! With most of the team having got older, but not necessarily wiser, we have now decided that “Plan B”, operation from an alternate site closer to Auckland will be in order if the weather forecast is not good for contest weekend.



Tim ZL1TN can be seen at the operating position with 2m and 70cm multi-mode rigs in use. Outside, the loop Yagis for 1296MHz and 2400MHz tend to stay pointing fairly much in one direction. Peter ZL1UKG is taking a turn on 6m. (Photo on Page 5 ed.)



VHF Contesting ZL1BQ Style continued

We typically have equipment for 6m, 2m, 70cm, 23cm, plus 910MHz (FM), 2400, 5GHz and sometimes 10GHz. Operation tends to be voice only and we have yet to find the time to operate on any of the digital modes. Perhaps this year?



The ZL1BQ team plans to be active again from Maunganui Bluff during December 2006 VHF Field Day Contest. Operation from this site requires considerable organization, logistics and effort. When the band conditions are good, it's a great site to operate from. We look forward to working you!



Amongst the sea of e-mail I receive is the FU-NEWSLETTER which is a collection of Bits about New Zealand VHF and up activity.

The official credit line for this article is: Written by Vaughan Henderson ZL1TGC for NZART- Break In- VHF Scene - September/October

## HAMFEST DOOR PRIZES 2006

When folks go to the PACKRATS HAMFEST everyone is a winner. Two especially lucky hams put their tickets in the barrel and won.

**1st door prize** went to KC2IZK,  
Vince from Fanwood, NJ

**2nd door prize** went to W1GSL,  
Steve from Cambridge, MA

## KIDS DAY 2006 at the QTH of K1DS

Rick Rose wrote: Here are a few pictures that we took on Kids Day, June 17th as my nephews Adam (blond) and Ben (brown hair) Rosen--twins aged 9-1/2 were visiting from Texas with my brother and sister-in-law. Needless to say they were both thrilled and excited to have the opportunity to give amateur radio a try. We made a DX contact with Germany, saw how walkie-talkies worked, made a stateside QSO, and then as my harmonic, Leon, N1XKT was driving home from work, he heard us sign off with the stateside QSO and we continued to chat with him mobile on 20m until he reached home in the driveway. He has an FT857 with the ATAS in his Honda Civic. My rigs at home include the TS850SAT and a TS2000X with a G5RV and a VHF log periodic in the attic. TNX es 73, Rick, K1DS

*Editors note: Unfortunately the attached photos were corrupted in e-mail so we can not add them to the note but Rick is actively promoting ham radio at every opportunity. W3GAD*

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# HEADS UP!!

## January Contest just 11 weeks away

Fellow Rats,

Yes, now is the time to start thinking about January!

First thing on the agenda is to mark your calendars now! Tell your wives, girlfriends, family, relatives, boss, or anyone else who might want you the weekend of January 20-21st 2007, that you will not be available.

Second, take out a piece of paper and write down all the things that need to be repaired, tweaked, or added before the January contest. Now is the time to get busy working on them, or if it is a 2 person job, to ask for help! Don't wait till December to repair your antennas that need attention today!!!

Third, rovers and multi-ops should be planning your strategy. Rovers, make sure you (and everyone else knows!) where you will be going. Also have a back up plan in case of poor wx. Multi-Ops, do you have enough operators to cover all the band for the entire contest. Now is the time to shore up these issues, not a week before the contest.

Lets get started off on a good foot toward another January Unlimited Club victory!

73 Steve, N3FTI, January Contest Chairman

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FROM The ARRL Letter, Vol. 25, No. 41  
October 13, 2006

### \*AMSAT'S PROJECT EAGLE SATELLITE SHIFTS DIRECTION

AMSAT-NA has announced it's revamping the design of its high-Earth orbit (HEO) Project Eagle satellite, currently in the development stages <http://www.amsat.org/amsat-new/eagle/>. The next generation satellite will take maximum advantage of software-defined transponder (SDX) technology to offer a broader range of easily accessible Amateur Radio payloads. The AMSAT Board of Directors okayed the Eagle upgrade plans during the 2006 AMSAT-NA Space Symposium and Annual Meeting held October 6-8 in San Francisco. Eagle Project Manager Jim Sanford, WB4GCS, outlined the changes at his Space Symposium forum October 7.

"The structure which we have been presenting for several years is not going to meet our mission needs," Sanford explained. "We have moved on to a later structure."

Under the new plan, Sanford says, Eagle's communications payloads will include a mode U/V linear transponder for SSB, CW and other modes. A second SSB/CW transponder will uplink on L band (1.2 GHz) and downlink on S1 band (2.4 GHz). Both would be usable over 75 percent of the satellite's orbit by an AO-13 or AO-40-capable ground station, AMSAT says.

Something new to Amateur Radio satellites is a planned low-rate text messaging system similar to cellular telephone SMS. Sanford said the text-messaging capability may prove valuable for providing emergency and disaster communication. It will operate in mode U/V and also will be available to modest ground stations over 75 percent of Eagle's orbit

Eagle will also carry an advanced communications payload (ACP). The ACP will accommodate voice communication using an S2 band (3.4 GHz) uplink and a C band (5.8 GHz) downlink via a single 60 cm dish on the ground. As an alternative -- for stations in those parts of the world where 3.4 GHz is unavailable -- Eagle will provide an additional L band uplink.

The ACP also will offer high data rate communication including the possibility of full-motion compressed video in S2/C mode. The same mode also could support an Internet link. Ground-station antennas for Eagle may even pass muster in neighborhoods governed by private deed covenants, conditions and restrictions (CC&Rs), Sanford suggested.

During a presentation on the ACP, Matt Ettus, N2MJI, said one of the goals of the package is to open up the satellite to a new base of users, not just restrict it to elite satellite operators and sophisticated ground stations. Embracing SDR technology simplifies signal handling, he explained, because going digital is just a matter of transmitting bits up and down. "The satellite doesn't really care what the bits mean," he said. The satellite "just reflects bits," and most policy-type issues will be handled by ground stations.

The satellite's signal will present one wideband downlink containing multiplexed data. "There will be room for many, many carriers in the passband," Ettus predicted. The mix of users would be apportioned among both low and high-rate modes, depending on overall traffic.

Plans call for electronically steering the satellite's antennas to mitigate the effects of the spacecraft's spin and maximize the spacecraft's accessibility. In a subsequent forum, AMSAT board member and well-known satellite expert Tom Clark, K3IO (ex-W3IWI) discussed some of the mathematics and physics that would permit steering a 37-element S band antenna array on Eagle.

"We would intentionally steer that pattern, so the array is always pointing toward Earth," Clark said, regardless of spin factor. He described a system of interferometers to do the pointing on the basis of "master beacon signals" uplinked from different points on Earth's surface. "It [Eagle] will measure where they are and know where to point the beam," he explained.

In a presentation on applying SDR techniques to satellite transponders, Howard Long, G6LVB, described and demonstrated a prototype SDX board. "This is the holy grail of what we've been trying to do," he told his audience. Long showed how his hand-soldered SDX could be configured to accommodate various signal strengths and types within the same passband and even to easily notch interfering signals quickly and flawlessly.

Sanford concluded his presentation by saying it's time to take the AMSAT board's concrete decisions and plan, schedule and build Eagle. "We're about to start spending some serious money," he said. During a later question-and-answer session, Sanford stressed that reliability of the ultimate Eagle satellite is a key goal. "I want no single-failure mission kills on this satellite," he said.

Project Eagle still needs to raise \$33,500 by December. Eagle could launch by 2010. The whole project will cost some \$600,000.

During the AMSAT-NA annual meeting October 8, President Rick Hambly, W2GPS, expressed his enthusiasm for Project Eagle. "I think it will be the greatest thing we've ever done!" he said. The 2007 AMSAT Symposium and Annual Meeting will take place in Pittsburg.

---

### 'Tis the season for POLITICAL WISDOM

Just because you do not take an interest in politics doesn't mean politics won't take an interest in you.  
.....Pericles (430 B.C.)

I don't make jokes. I just watch the government and report the facts.

.....Will Rogers

## dBm - volts - watts conversion (50-ohm system)

<b>dBm</b>	<b>V</b>	<b>Po</b>	<b>dBm</b>	<b>V</b>	<b>Po</b>	<b>dBm</b>	<b>mV</b>	<b>Po</b>	<b>dBm</b>	<b>V</b>
53	100	200W	0	0.225	1.0 mW	-49	0.8		-98	2.9
50	70.7	100W	-1	0.2	.80 mW	-50	0.71	.01 μW	-99	2.51
49	64	80W	-2	0.18	.64 mW	-51	0.64		-100	2.25
48	58	64W	-3	0.16	.50 mW	-52	0.57		-101	2
47	50	50W	-4	0.141	.40 mW	-53	0.5		-102	1.8
46	44.5	40W	-5	0.125	.32 mW	-54	0.45		-103	1.6
45	40	32W	-6	0.115	.25 mW	-55	0.4		-104	1.41
44	32.5	25W	-7	0.1	.20 mW	-56	0.35		-105	1.27
43	32	20W	-8	0.09	.16 mW	-57	0.32		-106	1.18
42	28	16W	-9	0.08	.125 mW	-58	0.29			
41	26.2	12.5W	-10	0.071	.10 mW	-59	0.25		<b>dBm</b>	<b>nV</b>
40	22.5	10W	-11	0.064		-60	0.23	.001 μW	-107	1000
39	20	8W	-12	0.058		-61	0.2		-108	900
38	18	6.4W	-13	0.05		-62	0.18		-109	800
37	16	5W	-14	0.045		-63	0.16		-110	710
36	14.1	4W	-15	0.04		-64	0.14		-109	640
35	12.5	3.2W	-16	0.036					-112	580
34	11.5	2.5W				<b>dBm</b>	<b>V</b>		-113	500
33	10	2W	<b>dBm</b>	<b>mV</b>		-65	128		-114	450
32	9	1.6W	-17	31.5		-66	115		-115	400
31	8	1.25W	-18	28.5		-67	100		-116	355
30	7.1	1.0W	-19	25.1		-68	90		-117	825
29	6.4	800 mW	-20	22.5	.01 mW	-69	80		-118	285
28	5.8	640 mW	-21	20		-70	71	.1nW	-119	251
27	5	500 mW	-22	17.9		-71	65		-120	225
26	4.45	400 mW	-23	15.9		-72	58		-121	200
25	4	320 mW	-24	14.1		-73	50		-122	180
24	3.55	250 mW	-25	12.8		-74	45		-123	160
23	3.2	200 mW	-26	11.5		-75	40		-124	141
22	2.8	160 mW	-27	10		-76	35		-125	128
21	2.52	125 mW	-28	8.9		-77	32		-126	117
20	2.25	100 mW	-29	8		-78	29		-127	100
19	2	80 mW	-30	7.1	.001mW	-79	25		-128	90
18	1.8	64 mW	-31	6.25		-80	22.5	.01 nW	-129	80
17	1.6	50 mW	-32	5.8		-81	20		-130	71
16	1.41	40 mW	-33	5		-82	18		-131	61
15	1.25	32 mW	-34	4.5		-83	16		-132	58
14	1.15	25 mW	-35	4		-84	11.1		-133	50
13	1	20 mW	-36	3.5		-85	12.9		-134	45
12	0.9	16 mW	-37	3.2		-86	11.5		-135	40
11	0.8	12.5 mW	-38	2.85		-87	10		-136	35
10	0.71	10 mW	-39	2.5		-88	9		-137	33
9	0.64	8 mW	-40	2.25	.1μW	-89	8		-138	29
8	0.58	6.4 mW	-41	2		-90	7.1	.001 nW	-139	25
7	0.5	5 mW	-42	1.8		-91	6.1		-140	23
6	0.45	4 mW	-43	1.6		-92	5.75			
5	0.4	3.2 mW	-44	1.4		-93	5			





table of return loss vs. voltage standing wave ratio

RETURN LOSS (dB)	VSWR								
46.064	1.01	13.842	1.51	9.485	2.01	7.327	2.51	5.999	3.01
40.086	1.02	13.708	1.52	9.428	2.02	7.294	2.52	5.970	3.02
36.607	1.03	13.577	1.53	9.372	2.03	7.262	2.53	5.956	3.03
34.151	1.04	13.449	1.54	9.317	2.04	7.230	2.54	5.935	3.04
32.256	1.05	13.324	1.55	9.262	2.05	7.198	2.55	5.914	3.05
30.714	1.06	13.201	1.56	9.208	2.06	7.167	2.56	5.893	3.06
29.417	1.07	13.081	1.57	9.155	2.07	7.135	2.57	5.872	3.07
28.299	1.08	12.964	1.58	9.103	2.08	7.105	2.58	5.852	3.08
27.318	1.09	12.849	1.59	9.051	2.09	7.074	2.59	5.832	3.09
26.444	1.10	12.736	1.60	8.999	2.10	7.044	2.60	5.811	3.10
25.658	1.11	12.625	1.61	8.949	2.11	7.014	2.61	5.791	3.11
24.943	1.12	12.518	1.62	8.899	2.12	6.984	2.62	5.771	3.12
24.289	1.13	12.412	1.63	8.849	2.13	6.954	2.63	5.751	3.13
23.686	1.14	12.308	1.64	8.800	2.14	6.925	2.64	5.732	3.14
23.127	1.15	12.207	1.65	8.752	2.15	6.896	2.65	5.712	3.15
22.607	1.16	12.107	1.66	8.705	2.16	6.867	2.66	5.693	3.16
22.120	1.17	12.009	1.67	8.657	2.17	6.839	2.67	5.674	3.17
21.664	1.18	11.913	1.68	8.611	2.18	6.811	2.68	5.654	3.18
21.234	1.19	11.818	1.69	8.565	2.19	6.783	2.69	5.635	3.19
20.828	1.20	11.725	1.70	8.519	2.20	6.755	2.70	5.617	3.20
20.443	1.21	11.634	1.71	8.474	2.21	6.728	2.71	5.598	3.21
20.079	1.22	11.545	1.72	8.430	2.22	6.700	2.72	5.579	3.22
19.732	1.23	11.457	1.73	8.386	2.23	6.673	2.73	5.561	3.23
19.401	1.24	11.370	1.74	8.342	2.24	6.646	2.74	5.542	3.24
19.085	1.25	11.285	1.75	8.299	2.25	6.620	2.75	5.524	3.25
18.783	1.26	11.202	1.76	8.257	2.26	6.594	2.76	5.506	3.26
18.493	1.27	11.120	1.77	8.215	2.27	6.567	2.77	5.488	3.27
18.216	1.28	11.039	1.78	8.173	2.28	6.541	2.78	5.470	3.28
17.949	1.29	10.960	1.79	8.138	2.29	6.516	2.79	5.452	3.29
17.690	1.30	10.881	1.80	8.091	2.30	6.490	2.80	5.435	3.30
17.445	1.31	10.804	1.81	8.051	2.31	6.465	2.81	5.417	3.31
17.207	1.32	10.729	1.82	8.011	2.32	6.440	2.82	5.400	3.32
16.977	1.33	10.654	1.83	7.972	2.33	6.415	2.83	5.383	3.33
16.755	1.34	10.581	1.84	7.933	2.34	6.390	2.84	5.365	3.34
16.540	1.35	10.509	1.85	7.894	2.35	6.366	2.85	5.348	3.35
16.332	1.36	10.437	1.86	7.856	2.36	6.341	2.86	5.331	3.36
16.131	1.37	10.367	1.87	7.818	2.37	6.317	2.87	5.315	3.37
15.936	1.38	10.298	1.88	7.781	2.38	6.293	2.88	5.298	3.38
15.747	1.39	10.230	1.89	7.744	2.39	6.270	2.89	5.281	3.39
15.563	1.40	10.163	1.90	7.707	2.40	6.246	2.90	5.265	3.40
15.385	1.41	10.097	1.91	7.671	2.41	6.223	2.91	5.248	3.41
15.211	1.42	10.032	1.92	7.635	2.42	6.200	2.92	5.232	3.42
15.043	1.43	9.968	1.93	7.599	2.43	6.177	2.93	5.216	3.43
14.879	1.44	9.904	1.94	7.564	2.44	6.154	2.94	5.200	3.44
14.719	1.45	9.842	1.95	7.529	2.45	6.131	2.95	5.184	3.45
14.564	1.46	9.780	1.96	7.494	2.46	6.109	2.96	5.168	3.46
14.412	1.47	9.720	1.97	7.460	2.47	6.086	2.97	5.152	3.47
14.264	1.48	9.660	1.98	7.426	2.48	6.064	2.98	5.137	3.48
14.120	1.49	9.601	1.99	7.393	2.49	6.042	2.99	5.121	3.49
13.979	1.50	9.542	2.00	7.360	2.50	6.021	3.00	5.105	3.50

# WHATS HAPPENING

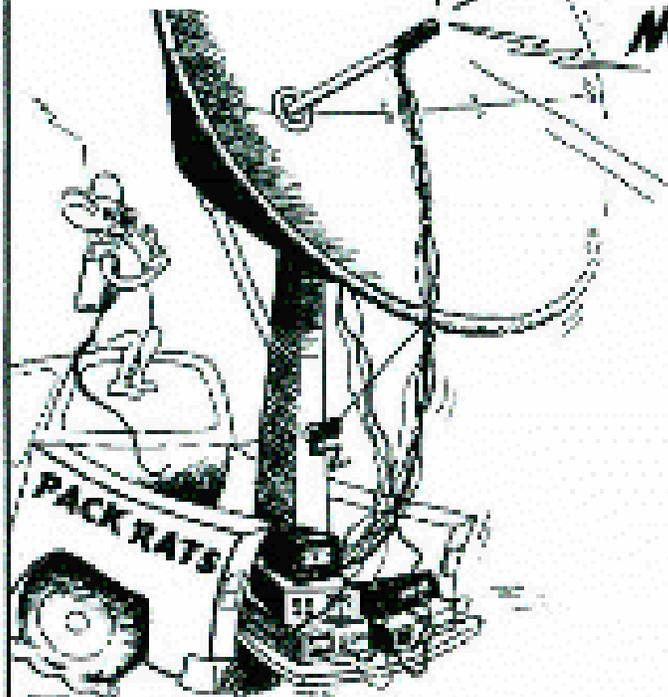
## A LISTING OF INTERESTING EVENTS

- 4 NOVEMBER 2006 MICROWAVE ACTIVITY DAY (MAD)** 8—1300 hrs—With the contest fast approaching get on the air 903 and up, Test your gear and adjust your antenna pointing.
- 9 NOVEMBER 2006 Meeting of the PACKRATS Board of Directors** at the QTH of Rick Rosen, K1DS 206 Kimberton Drive, Blue Bell, PA
- 11–12 NOVEMBER 2006 ARRL INTERNATIONAL EME CONTEST**
- 16 NOVEMBER 2006 Meeting of the MOUNT AIRY VHF RADIO CLUB** — 8 PM at the SOUTHAMPTON PUBLIC LIBRARY—Tom Fredrickson, KA3FQS, will give us some insight into interfacing the ELCRAFT K-2 With Transverters. This is a kit radio that Tom built.
- 23 NOVEMBER 2006—HAPPY THANKSGIVING**— Have a pleasant Holiday
- 2 DECEMBER 2006 MICROWAVE ACTIVITY DAY (MAD)** 8—1300 hrs—With the contest fast approaching get on the air 903 and up, Test your gear and adjust your antenna pointing.
- 14 DECEMBER 2006 Meeting of the PACKRATS Board of Directors** location TBD
- 15 DECEMBER 2006—Hanukkah Begins**
- 21 DECEMBER 2006 Meeting of the MOUNT AIRY VHF RADIO CLUB** — 8 PM at the SOUTHAMPTON PUBLIC LIBRARY—Steve Kerns, N3FTI, January contest Chairperson, will be handing out contest packets. We will review any last minute wants and need before the final push for the January contest.
- 25 DECEMBER 2006 MERRY CHRISTMAS!!**
- 1 JANUARY 2007 HAPPY NEW YEAR**—ARRL Straight key night
- 6 JANUARY 2007 MICROWAVE ACTIVITY DAY (MAD)**- not Just any Saturday morning but the first MAD for 2007. As has been the practice in recent years we will have MAD each Saturday until the contest including the contest morning. 8 AM until?? The customary MAD will resume on 3 February 2007
- 11 JANUARY 2007 Meeting of the PACKRATS Board of Directors**
- 18 JANUARY 2007 Meeting of the Mount Airy VHF Radio Club** Ben Kessel WA3RLT will give us his analysis of the log submitted for the 2006 contest—This is an excellent opportunity for us to see just how important each persons efforts are for the success of the club during the contest. Ben also offers insight on the importance of following the contest clock. See you there.
- 20 TO 23 JANUARY 2007 ARRL JANUARY VHF SWEEPSTAKES**—This is it—the major contest for the PACKRATS to start off another year of success for the Mount Airy VHF Radio Club. Get on the air and work your fellow PACKRATS and everyone else, too.

All meetings are announced on the regular Monday Evening Nets. (See Page 2) - Board meetings of the Mount Airy VHF Radio Club are open to all members. Teleconferencing for members is usually available. Regularly scheduled meetings of the PACKRATS are held at 8 PM in the basement meeting room at the Southampton Public Library on Street Road in Southampton, PA. Meetings are open, not only to the membership, but to any party interested in VHF/UHF/Microwave contesting, equipment design and construction for use on the VHF/UHF and Microwave Frequencies or amateur radio in general.

CheeseBits  
c/o Doc Whitticar W3GAD  
28 Twining Bridge Rd  
Newtown, PA 18940-9704

# MEETING NOTICE

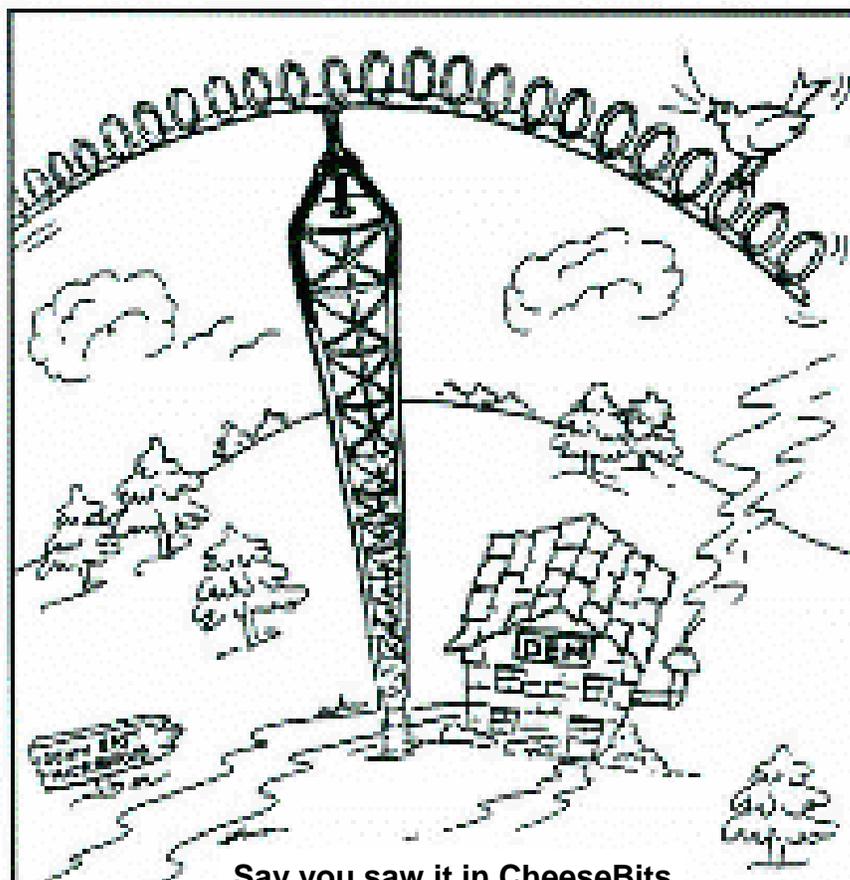


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