



# CHEESE BITS

**W3CCX**  
**CLUB MEMORIAL CALL**

ARRL  
Affiliated  
Club



**Volume XLVII**

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**Number 04**

## PrezSez

It's a pleasure to see a full house at the club meetings to support the notion that we have common interests and goals in our mutual VHF radio interests. Not only is this a clear mandate for the purposes of the club, but also a tribute to those who contribute their efforts of ongoing education and stimulation to the greater VHF-UHF-microwave community with their experimentation and projects. This month's Homebrew Night was no exception, and we had a great mix of new and old, simple and complex, and a few great laughs between the presentations. Kudos to our newest Packrat member, Marc Franco, N2UO, who won recognition for Best Construction with his entry of a pair of water-cooled 2C39's that serves as a driver for his 500W 1296 EME amp (a pair of Russian Triodes, also water-cooled). There were so many unique aspects of Marc's project, that I wanted to make mention of here: All Homebrew construction with the use of unique components for a closed water circulation system, including an aluminum oil cooling manifold from a Citroen, a water pump from a washing machine, a water tank from kitchen plastic supplies, and a "water purity" measurement and metering system, which currently indicates his 6 year old original water aliquot is doing the right job. The added solution of the noise reduction from the brass drainage valve and its proximity to the chassis was also an important lesson. We welcome Marc into the club and look forward to his contributions to our growth and activity.

Walt, K3BPP, gave an excellent recap of his efforts to get on the air for the January Contest with some inexpensive "jiffy construction" beams for 6 & 2, using simple common "Home Depot" materials, and I look forward to seeing his efforts chronicled in a future edition of Cheesebits, QEX or even QST, as his techniques were clever and easily accomplished by any basic handy person with hand tools. We welcomed back Walt, WA3AQA after a long sabbatical from the meetings, and were glad to see him and his gamma-match entry. Jim, WA3EHD explained his new "fail-safe" IF switch box, Lenny, N3NGE gave us a snapshot of the efforts to move his station from single-op to multi-op with 37 clearly identified improvements, and Joe, K1JT showed us his latest updates on the manuals for WSJT, now available in at least 8 languages. Paul, W2PED, went through the machinations of revitalizing the K3EOD 2304 MHz transverter and amp, along with some fun pictures of the LO output spectrum, both before: in broad-band frequency jammer mode, and after, with a clear central frequency and spurs down 40db. I think that won an award. Additional entries from John, KB3XG and Steve, N3FTI showed off their engineering and construction skills in IF and antenna switching capabilities, with the myriad of control circuits, coaxial relays and attenuation schemes that make these boxes so valuable and flexible under a number of varying conditions. Bert, K3IUU won a nostalgia recognition for his two-tube 50MHz amp, '60's vintage, sure to wipe out TVs in the neighborhood for several blocks in all directions. Finally, I demonstrated a unique laser receiver, using an 8" parabolic mirror and IR sensor diode/amplifier, and got the "most unique" designation.

We expect to have a great time on April 2<sup>nd</sup>, honoring our 50 yr member, Ernie Kenas, W3KKN at Williamson's Restaurant, and look forward to seeing you all there. Planning has commenced for our spectrum of spring and summer activities with some work crews needed to help remove the hinge bases for our current mountain towers for replacement to steel bases, and augmentation of the 222 and 432 stations. Jim, WA3EHD is finalizing the Mid-Atlantic States VHF Conference facility details, while several Packrats are soliciting speakers for the program, door prizes and raffle items. Hamarama is also set, and your assistance is required by downloading a copy of the Hamarama Flyer from the packrat website to deliver copied to other flea-markets and hamfests when-ever you attend, making sure to put a copy into the hands of each vendor present, in addition to a notice on their main entry area table.

The Spring Sprints are about to start, and I'm looking forward to getting the rover out of the garage from its frosty January escapade. Take advantage of the on-the-air opportunities in the sprints, on the nets, on MAD (432 & up first Sat AM and Mon PM of the month, coord on 144.260). 73, Rick, K1DS

Pack Rats **CHEESE BITS** is a monthly publication of the  
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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	WA3GFZ FN20kc
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**

The Vernal Equinox has come and gone, ushering in the long anticipated Spring outside construction season. If you are like me there are plans in your head for making those much needed improvements to your antennas, tower and feed lines.

I have a collection of tower sections and to much feed line curled back and forth across the back of the house that needs to stretched out along the side a taller tower so I can better work into the northeast.

Seeing what some of our member have accomplished and presented during HOME BREW NIGHT, I feel inspired to try and get at least some of those many needed improvements completed before the snow begins to fall next winter.

I have receive the parts for few shop projects to repair the 23 cm station and improving the microwave transverter switching. I am still looking for some 13 cm equipment to replace my unreliable SSB antiques. I will see what can be found at Dayton this year.

I have been looking forward to working the Spring Sprints starting on April 4 but I will have to miss the 144 event with a business trip. I am planning to be on the air for the 222 gathering and hopefully work the others as they occur. I hope to work many PACKRATS if my work schedule allows.

I know Al Sheppard N3ITT and Steve Simon KF6AJ have been very active working on many improvements for the PACKRATS now annual trek to Camelback Mountain and the JUNE VHF CONTEST. We need all the support we can get both in manpower on the mountain or with all the bands you can put on the air working us on the mountain top and working the rovers too. We will have a listing of all the rovers in the June issue of CHEESEBITS

Whether you are able to travel to the meetings or only get you information via the nets and CHEESEBITS keep in touch. Let your Board of Directors know if you have a special need, if you need help with your station, or want to participate in one of the many multi-operator stations because you QTH will not allow antennas. The PACKRATS are dedicated to promoting the use of the VHF and up spectrum with several stations working on 10, 24 and 48 GHz equipment and many of us now owning basic laser communications equipment and your needs are part of that dedication.

We have not had a conference for the past 2 years due to our traditional October weekend being so close to other major conferences here on the east coast. This year MICROWAVE UPDATE 2005 will be in California, The EME conference has move back to Europe and the NEWS GROUP has moved their conference and hamfest to April. So clear your calendar for the weekend of September 23 through 25 for the PACKRATS Mid-Atlantic VHF and Up Conference and the annual PACKRATS HAMFEST. Sharpen you pencil and tune up your Power Point presentations and plan to be part of this very informative and fun weekend. Of course, I too will welcome your written efforts.

Have a pleasant and productive April.

Listen for the WEAK ONES  
 73  
 W3GAD Doc



# EME with JT65

Joe Taylor, K1JT

Readers of Cheese Bits already know about WSJT, a free computer program that can greatly enhance your station's capabilities for making distant VHF/UHF contacts. The program was designed with meteor scatter and Earth-Moon-Earth (EME) communication in mind. Anyone who has attempted EME QSOs knows they are not all that easy at amateur power levels — which of course is one reason why they can be so much fun.

Successful EME stations require the very best of amateur engineering. It's always a stretch: we strive for every possible dB of antenna gain and transmitted power, while minimizing



our feedline losses and receiver noise figures. The necessary hardware can be large and complex, and some of it is expensive. Optimizing the various parts of our stations while minding the budget is a game that all EME enthusiasts learn to play.

These days, not all good engineering involves hardware — and that's where WSJT and its operating mode JT65 come in. The JT65 transmission protocol uses state-of-the-art message encoding with powerful error-correcting features, coupled with highly efficient modulation. The combination is much more effective for EME than Morse code and on-off keying. Together with well optimized decoding algorithms, it enables JT65-equipped stations to make QSOs at signal levels some 10 to 15 dB below the minimum required for "ear and brain" CW communication. This huge advantage brings EME capability within reach of a much wider range of stations. Perhaps best of all, WSJT is designed to facilitate contacts between human operators, not between computers. The internet does the computer link so easily that we don't even pause to think about it; JT65 EME contacts, on the other hand, are thrilling and fun.

Over the past year, JT65 has been used worldwide to make thousands of EME QSOs on bands from 50 to 1296 MHz. On 2 meters, the most popular EME band, 300 Watts and a good yagi pointed at the Moon can enable you to work dozens of other EME stations, anywhere in the world. Somewhat larger stations will find hundreds of workable QSO partners, and the number of active stations is increasing all the time. If you don't have elevation control, you'll be restricted to a one-hour window near moon rise and moon set, but you can still make EME QSOs.

JT65 was designed to work efficiently with the existing standards and conventions for EME contacts. It starts by ensuring that its transmitted messages are compact and efficient. On users' computer displays, the exchanges in a JT65 EME QSO

typically look something like this:

1. CQ VK7MO QE37
2. VK7MO K1JT FN20
3. K1JT VK7MO QE37 OOO
4. RO
5. RRR
6. 73

Transmissions 1–3 use the basic JT65 message format of two callsigns, a grid locator, and an optional "OOO" signal report. (CQ or QRZ can be substituted for the first callsign.) After callsigns have been exchanged, transmissions 4 and 5 complete the QSO by sending a return signal report and acknowledgments that all necessary information has been received. Transmission 6 lets VK7MO know that his "RRR" transmission was received, and further conversational chit-chat may follow. Aside from the embellishment of exchanging grid locators, this model QSO closely follows standard EME practice for CW QSOs. JT65 operates with a one-minute RX/TX sequence, so if copy is good a minimal QSO can be completed in 5 or 6 minutes.

Detailed operating instructions are provided in the WSJT User's Guide, which comes with the program. You can learn the essential operating skills by reading the manual and making a few practice QSOs, perhaps using extremely low power or a difficult tropospheric path to ensure that signals are barely audible, or even sub-audible. As you accumulate experience you will see your JT65 skills continue to improve, and your rate of successful contacts should rapidly climb.

Unlike Morse code, JT65 does not transmit messages character by character. The forward error correction (FEC) built into every encoded message makes it highly probable that JT65 messages will be received in their entirety, or not at all. The decoder does occasionally make mistakes, most commonly because a birdie or other interfering signal is present. In such cases errors in the falsely decoded messages are large, easy to recognize, and readily rejected by the operator. You will never see broken callsigns with a few missing or incorrect characters, or message fragments of any sort. There is no chance for the letter O or R in a callsign to be confused with a signal report or an acknowledgment, or for a fragment of a callsign like N8CQ or a grid locator like EM73 to be misinterpreted.

Just how does JT65 work, and where does its mysterious 10 – 15 dB of "gain" over CW originate? The answer lies in the use of coding and modulation explicitly designed to optimize exchanges of short messages at a low but acceptable throughput, around 0.3 characters per second. Standard JT65 messages are compressed or "source encoded" using a clever scheme proposed some years ago by W3IWI and KA9Q, enabling two callsigns and a grid locator to be transmitted with just 71 bits. In JT65, a 72nd bit serves as a flag to indicate that the message consists of arbitrary text (up to 13 characters) instead of callsigns and a grid locator. Special formats allow other information such as callsign prefixes (e.g., ZA/PA2CHR) or numerical signal reports (in dB) to be substituted for the grid locator. The aim of source encoding is to compress the common messages used for EME QSOs into a minimum fixed number of bits.

*Continued on page 4*

After compression, each 72-bit message is augmented with 306 error-correction bits. This process is defined by a mathematical code known as RS(63,12) — a so-called “Reed Solomon code” — which converts 72-bit user messages into sequences of 63 six-bit “channel symbols” for transmission. Every message that can be sent in JT65 differs from every other one in at least 52 of the 63 symbols — which, in a nutshell, is why the code is so powerful. By actual measurement, the full and exact transmitted message has a high probability of being received, even if the average key-down SNR is as low as 2 to 6 dB in 2.7 Hz bandwidth (roughly -28 to -24 dB in 2500 Hz, the conventional reference bandwidth used in WSJT).

Like the traditional CW procedures for EME, JT65 uses special signal formats to convey a few frequently used messages in a robust and efficient way. Three such messages are presently defined, conveying the messages “RO”, “RRR”, and “73”. Instead of keying a single-frequency carrier on and off according to a pattern like di-dah-dit, dah-dah-dah, ..., JT65 sends “RO” by transmitting two alternating tones with specified frequencies and switching rate. Such waveforms are easy to recognize and to distinguish from one another, as well as from “normal” JT65 messages. Indeed, as many users have discovered, the shorthand messages of JT65 are readily decodable by human operators using sight and sound, as well as by a computer.

JT65 requires tight synchronization of time and frequency between transmitter and receiver. Typical amateur equipment cannot accomplish this task with enough accuracy in open-loop fashion, so JT65 signals carry their own synchronizing information. A pseudo-random “sync vector” is interleaved with the encoded information symbols. It allows calibration of relative time and frequency errors with accuracies of about 0.03 s and 1.5 Hz, respectively, thereby establishing a rigorous framework within which the decoder can work. In addition, it enables the averaging of successive transmissions so that decoding can be accomplished even when signals are too weak for success in a single minute. The synchronizing signal is so important that (except in shorthand messages) half of every transmission is devoted to it.

A JT65 transmission is divided into 126 contiguous time intervals, each of length 0.372 s (4096 digitized samples at 11025 samples per second). Within each interval the waveform is a constant-amplitude sinusoid at one of 65 pre-defined frequencies, and frequency changes between intervals are accomplished in a phase-continuous manner. A transmission nominally begins at  $t = 1$  s after the start of a UTC minute and finishes at  $t = 47.8$  s. The synchronizing tone is at 1270.5 Hz, and is normally sent in each interval having a “1” in a pre-defined pseudo-random sequence of 0s and 1s known to both transmitter and receiver. This sequence has the desirable mathematical property that its normalized autocorrelation function falls from 1 to nearly 0, for all non-zero lags. As a consequence, it makes an excellent synchronizing vector. Encoded user information is transmitted during the 63 intervals not used for the sync tone. Each channel symbol generates a tone at frequency  $1270.5 + 2.6917(N+2)$  m Hz, where N is the value of the six-bit symbol,  $0 = N = 63$ , and m is 1, 2, or 4 for JT65 sub-modes A, B, or C (see the WSJT User’s Guide for further details on the sub-modes). The signal report “OOO” is conveyed by reversing sync and data positions in the transmitted sequence. Shorthand messages dispense with the sync vector

and use intervals of 1.486 s (16,384 samples) for the alternating tones. The lower frequency is always 1270.5 Hz, the same as that of the sync tone, and the frequency separation is 26.92 nm Hz with  $n = 2, 3, 4$  for the messages RO, RRR, and 73.

As a teaser, let me offer two examples of what can be done with JT65 on the 144 MHz EME path. Joop Mutter, PA0JMV, has made a special game of working the smallest stations he can contact by EME. His list now includes 39 stations at ERP levels (transmitted power times antenna gain) between 1.5 and 8 kW. More than half of the stations on his list run less than 200 Watts and use one or two yagis. Joop has an excellent EME setup, but it is hardly in the super-station category: he uses a pair of 16 element yagis mounted in his garden and positioned by hand.

Bill Davis Jr., K0AWU, joined the JT65 EME fun in February 2005, just two weeks before I write these words. It was mid-winter in Minnesota (see picture), so Bill erected a simple mast in his driveway, guyed it to some handy anchoring points, and put a 13 element yagi on top. He also uses the “armstrong” method to point it at the moon. With this temporary lash-up and running 700 Watts, Bill has worked 44 different EME stations, including 22 DXCC entities, in two weeks.

Working stations that you can’t hear (or can hardly hear) takes some getting used to. New operating procedures need to be developed that will make it easier for stations to find each other and start a QSO. At present, a majority of JT65 EME QSOs originate when someone posts a CQ notice on the JT65 EME Link, <http://www.chris.org/cgi-bin/jt65eme>, or by making a real-time schedule there. Schedules are a good way to start, and if you need coaching the internet chat pages are excellent places to get it. However, to ensure that your QSOs are legitimate, be sure to suspend any use of the reflector (and any other non-EME means of communication) for any contact-related information while the QSO is in progress. It is considered very bad form, and invalidates your QSO as a true EME contact, if you convey something like “I have copied both calls, I’m now sending my report” via some other means while your QSO is in progress.

WSJT can be freely downloaded from <http://pulsar.princeton.edu/~joe/K1JT>, and from the European mirror site <http://www.dk5ya.de/>.



# Mt. Airy VHF Radio Club, Inc.

## THE PACK RATS'

January 2005 ARRL VHF Sweepstakes Contest  
Total Logs: 53 Claimed Score: 1,459,052

### Single-Op and Rovers

Call	QSOs	Grids	Score
WA3NUF	600	94	133,292
K3TUF	495	98	97,706
WA3GFZ	423	63	73,647
W3SZ	340	69	69,759
WA3DRC	361	63	63,567
K2TXB	337	75	52,050
W2SJ	338	54	47,736
K3IPM	496	59	47,141
W3KJ	311	54	41,040
AA3GN	265	49	34,006
N3ITT	305	54	32,562
K1DS/R	315	37	29,489
W3KM	308	49	25,872
KB3XG	175	40	25,360
N1XKT/R	254	37	24,864
W3GAD	310	40	23,400
K3MFI	304	39	22,308
K3EGE	256	47	19,035
W0RSJ	269	49	18,865
WA3RLT	229	44	17,512
K3IUU	314	28	16,968
KF6AJ	177	41	10,127
KB3BBR	153	33	8,514
KA3FQS	202	25	7,200
W3ICC	209	23	6,716
NE3I	153	19	4,788
KB3HCL	181	16	4,768
WA2OMY	133	21	4,767
K3GNC	131	19	4,598
N2DEQ	122	19	2,698
K3JJZ	139	16	2,688
KB3GJT	138	14	2,534
WB2ONA	91	16	2,064
W3RZU	90	16	1,936
K3VEQ	87	17	1,802
N3FTI	50	20	1,660
W3KKN	72	11	1,617
W3GXB	87	13	1,326
WB2VLA	74	12	1,212
K3IB	58	16	928
K3DMA/R	38	10	880
WA3BZT	65	13	845
N3PLM	50	13	741
KA3WXV	?	?	531
W3FEY	18	10	370
KF3DO	29	10	330
WA3EHD	37	7	259
N3EXA	24	6	216
K3BPP	31	5	210
W3EFH	3	2	24

### Multi-Operator

Call	QSOs	Grids	Score
N3NGE	918	160	268,640
w/N3NGE N3AD N3EXA K1WHS W2PED W3FEY WU3C			
K1JT	674	128	135,808
w/K1JT KC2DLA K3DMA NOYMV			
K3EOD	424	80	61,520
w/K3EOD WA3WUL WR3P KC2JPN W2YYY			

# 902.1 MHz Vs 903.1 MHz

## De Kent Brit WA5VJ

ISM Industrial Scientific Medical

In the late 1980's hams started getting limited access to the 902-928 MHz ISM band. As we moved from 900 MHz Experimenter's Licenses to a ham band, most of the US started using 902.1 MHz as the calling frequency.

Hey, 220.1 MHz, 432.1 MHz, 1296.1 etc. 100 KHz above the bottom of the band and an even number seemed to make sense. Up in the Northeast someone had a batch of common Xtals that came out at 759 MHz, so  $144.1 + 759 = 903.1$  MHz. Not a big problem, 759 divides up much easier than 758, and during those rare band openings, those of us on 902 could tune our rigs up to 145.1 MHz and work them at 903.1 MHz.

As one of the guys designing consumer RF products, I could see a problem on the horizon and tried to get out an early warning in the late 90's. The response? I was virtually crucified by a 2 land publication for trying to make them move to 902.1 MHz. So let me explain what's happening with those commercial products.

They can run up to 1 watt output between 902.00 and 928.00 MHz, but at 901.99 and 928.01 MHz the RF energy has to be as much as 80 dB down. That's a darn good filter with 80 dB attenuation and that sharp!

These units are designed to cost less than \$4 to produce in quantity. No super filters in that parts list. The VCO's cost pennies, the mixers are current starved to increase battery life, and the power amps are rarely linear. In short, the transmitters are noisy with wide sidebands.

For you chaps who know what an FCC Grantee Code is, we have several FCC/TCB testing methods that affect the results. With a Narrow band FM signal the level difference between 902.1 ISM band signal and 901.99 MHz Out of band energy can be nearly -80 dB. With true digital Spread Spectrum this can be more like -50 dB. These number vary with the different modulations, hopping patterns, and how close to the limits they want to run the output power. So they have to be far enough from the band edge that those modulation sidebands are about 70 dB down at 902.00 and 928.00 MHz. 900 MHz Video Senders were popular some years ago, but that has all moved to 2.4 GHz these days. The few 900 MHz video links still on the market are aimed at the Professional and Security professions.

Next is the testing method. Again, depending on modulation used, the lab is probably going to be using an EMI receiver with a 120 KHz wide filter. When they are making that 901.99 MHz out of band measurement, their receiver is listening as high as 902.060 MHz. Now those sideband spurs better be down -70 dB not at 901.99 MHz, but at 902.060 MHz. (I'll let someone else do the math integrating RF power in filters with different roll offs, but you get the idea.)

I understand that stations in the Northeast are seeing as much as an 8 dB difference between the 902.1 and 903.1 MHz Noise Floors. A number I'm sure varies with location, direction, and time of day. But we are slowly being pushed out of 903.1 MHz.

**Bottom Line:** Most of the cheap products operate at 915.0 MHz, with 916, 916.5 and 917.0 as alternate popular spot frequencies. The Frequency Hoppers and Spread Spectrum covers most of 904 to 926 MHz avoiding the edges of the band. It looks like 902.010 MHz is going to be the best SSB/CW calling frequency!

**On the Horizon:** The big retailing chains are pushing hard for RFID. Most of these are using 900 MHz and the 'Smart Shelf' program wants to constantly track every product in the store. So we are talking about 1 Watt Chirping Frequency Hoppers every 50 feet mounted in the ceiling of the store. Take a good sized Target or Wal-Mart, throw in a few RFID readers for the warehouse and checkout counters, and we are talking about 50 watts of 900 MHz noise per store.

Weak signal band plans need to look at the edges of the 33 cm band where the ISM products can't operate!

*Editors note: Kent was dismayed with comments made last month and wanted us to fully understand where he stood on the 902/903 issue. Sorry our available space does not allow for his graphics.*

# HOMEBREW NIGHT—EVERY ONE IS A WINNER



Our distinguished Board of Judges listen and watch intently as each entrant tells his story and shows his wares.

WA2GFP - Geoff Krauss  
 N0YMV - Dave Willmore  
 WA3RLT - Ben Kelsall

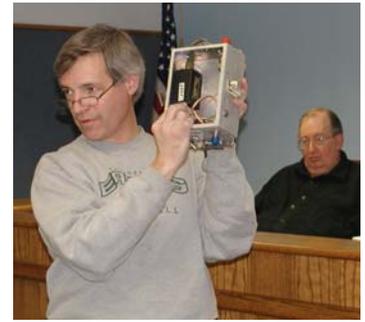
Honors for **BEST CONSTRUCTION** go to our newest member Marc, N2UO for his water cool 23 cm 120 Watt driver amp for his EME station.



Walt K3BPP show us how he built some quickie antennas from the local home store hardware and plumbing departments.



K1DS Took Honors for **MOST UNIQUE PROJECT** with his Laser Receiver using a parabolic mirror.



John KB3XG show us the latest generation of his IF switching and control system for use at home and in the rover, and his pre-amp switching box.

Paul, W2PED, earned the **BEST TECHNICAL** award for his efforts doing the *simple* project of adding an amplifier to K3EOD's 13cm station. He had to do a "little extra work" to move it from a jamming transmitter back to a transverter operating on a single frequency.



Steve, N3FTI shows us his multiple pre-amp and antennas switch box and explains how he uses it his trailer rover setup.



Jim WA3EHD explained his "FAIL SAFE" interface project to protect his transverters from the potential of up to 100 watts from his IF rig.



K1JT Explains the recent improvements to the WSJT SUITE with instructions now available in 8 languages. He also displayed a few of his QSL cards from his EME contacts. *Additional photo on page 7*

Continued on page 7

# FALL SPRINT RESULTS

I have finished compiling the results for the 2004 Fall Sprints. The top three scorers for each band are as follows:

50 MHz

- N7EPD/R - 1st place rover
- W4MYA - 1st place
- W3DOG - 2nd place
- W3SO - 3rd place

144 MHz

- W3SO - 1st place
- W4GRW - 2nd place
- WZ1V - 3rd place

There was only one rover entry for 2 meters but he or she only stayed in one grid so the score was not counted as a rover.

222 MHz

- N8KWX/R - 1st place rover
- ND2X/R - 2nd place rover
- N6DN/R - 3rd place rover
- W3SO - 1st place
- W3ZZ - 2nd place
- K3TUF - 3rd place

432 MHz

- N8KWX/R - 1st place rover
- W3IY - 1st place
- K3TUF - 2nd place
- W3SO - 3rd place

Microwave

- WB8BZK/R - 1st place rover
- N8KWX/R - 2nd place rover
- VE3OIL/R - 3rd place rover
- W4SHG - 1st place
- K3SIW - 2nd place
- K3TUF - 3rd place

Certificates will be awarded to each of these folks at the Southeastern VHF Society Conference Banquet on April 30th in Charlotte, NC. Each award winner is invited to attend the conference and banquet to receive their award in person. If they are unable to attend, their certificate will be mailed to them shortly after the end of the conference. The complete results for the 2004 Fall Sprints will be published on the Southeastern VHF Society website ([www.svhfs.org](http://www.svhfs.org)) shortly.

73

Jim W4KXY

Southeastern VHF Society Fall Sprint Chairman

**OHNOSECOND:** That minuscule fraction of time in which you realize that you've just made a BIG mistake. *Usually followed by a POP, Fizz and/or smoke.. ed FROM New words for the work place*

**Joel Knoblock W3RFC**

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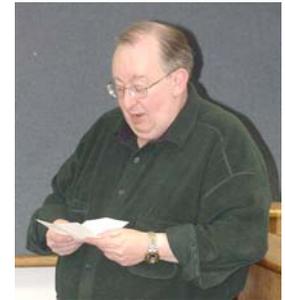
## HOME BREW NIGHT *continued*

Walter, WA3AQA gives us some neat ideas on how to brew up a gamma match from the junk box using concentric tubing and multi layered Teflon tape as an insulator.



Lenny, N3NGE made 37 clearly identifiable improvements during the reconstruction of his multi-op station for the January contest. He has positions for 4 operators using 3 towers and his concentric rotator design to give independent antenna control for 2 operators using a single tower. For his efforts Len earned the *MOST AMBITIOUS* award.

WA2GFP proudly announces the HOME BREW NIGHT results including a special *MOST ANTI-QUATED* award to Bert, K3IUW, for his 60's era 6 meter *WORKED ALL NEIGHBORS* transmitter.



Some of the QSL cards from the K1JT EME Collection.

**NE3I**

**Robert A. Griffiths**

Attorney at Law

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# WHATS HAPPENING

## A LISTING OF INTERESTING EVENTS

- 2 APRIL 2005—LUNCHEON ROAST OF W3KKN.**—Williamson Restaurant, Horsham, PA 12 noon
- 4 APRIL 2005**—144 MHz Sprint 1900 to 2300 local time —*not 2 April as listed last month*
- 12 APRIL 2005**—222 MHz Sprint 1900 to 2300 local time
- 14 APRIL 2005**—PACKRATS BOARD of DIRECTORS Meeting at the home of K3EGE
- 20 APRIL 2005**—432 Sprint 1900 to 2300 local time
- 21 APRIL 2005**—Regular meeting of the Mount Airy VHF Radio Club (PACKRATS) at the Southampton Public Library at 8 PM. AWARDS NIGHT
- 30 APRIL 2005**—SBMS 2 GHz and up WW Club Competition 0600 30 April - 2000 1 May local time
- 1 MAY 2005** —Warminster Amateur Radio Club Annual HAMFEST—Middletown Grange Fair Grounds
- 12 MAY 2005**—PACKRATS BOARD of DIRECTORS Meeting
- 14 TO 15 MAY 2005**—50MHz Sprint 2300z 14 May to 0300z on 15 May
- 14 TO 15 MAY 2005** —Mid-Atlantic QSO Party
- 19 MAY 2005**—Regular meeting of the Mount Airy VHF Radio Club (PACKRATS) at the Southampton Public Library at 8 PM.
- 20 TO 22 MAY 2005**—DAYTON HAMFEST and ARRL CONVENTION—Dayton, Ohio
- 11 TO 13 JUNE 2005**—ARRL June VHF QSO Party and PACKRATS BOD Meeting on the mountain.
- 16 JUNE 2005**—Regular meeting of the Mount Airy VHF Radio Club (PACKRATS) at the Southampton Public Library at 8 PM.
- 25 TO 26 JUNE 2005**—ARRL Field Day
- 16 TO 17 JULY 2005**—CQ VHF CONTEST 50 and 244 MHz only—*Rules next month*
- 5 SEPTEMBER 2005**—Final call for papers for MICROWAVE UPDATE 2005
- 24 SEPTEMBER 2005**—MID ATLANTIC VHF/UHF/MICROWAVE CONFERENCE Sponsored by the Mount Airy VHF Radio Club (The PACKRATS)
- 25 SEPTEMBER 2005**—PACKRATS HAMFEST—Middletown Grange Fair Grounds
- 27 TO 30 OCTOBER 2005**—MICROWAVE UP DATE 2005 sponsored by San Bernardino Microwave Society and Western States Weak Signal Society—Cerritos California (Near Los Angeles)

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### NEW BEACONS to add to your list

Two new beacons recently installed in FM28ei (Ocean City, Maryland three miles from the ocean )  
50.072 10 watts to a vertical array at 275'  
432.320 10 watts to a vertical array at 200'  
Beacon transmits every 30 seconds with a 30 second pause using the call W3DOG. Please e-mail me a report if you hear them. I am looking for a 10M, 2M and a 222 beacon for this site if you can help please let me know.

Visit the International 6 meter beacon project page at <http://www.6mbeacon.net> .

### CALL FOR PAPERS

Peter Day ,as editor of the SCATRTERPOINT Microwave Newsletter, put it very well in a recent e-mail:

In passing, may I mention that the content of the newsletter is entirely dependent on reader input? Nothing in means nothing out! If you have a pet project your on with at the moment why not share your trials and tribulations with other members of the UK Microwave Group?

Articles of all types are most welcome, from activities to technical projects. We'd love to hear more from our overseas members! **Hint! Hint! Doc, W3GAD Editor of Cheesebits**

Etc.

Rick, I just downloaded and read Cheese Bits, and I have to tell you I loved your January roving photos! The narrative was fun to read, even if the event itself wasn't fun. I also really liked the story about the Crying Towel night. That's a meeting I've wanted to attend for years, and it hasn't always been reported this thoroughly in Cheese Bits. So that was great.

I hesitate to say this, but if you'd like to see what roving was like in the southwest, scroll to the bottom of my rover page:

<http://commfaculty.fullerton.edu/woverbeck/rover.htm>

The photos will tell you how different the weather was on our route (from Alamogordo, NM north toward Albuquerque and then northeast to Dumas, TX, then south through Lubbock and Midland). We had no snow (although it was cold in Dumas), no rain, and wide-open roads. We covered about 1,000 miles and 22 grid squares during the contest, and had a great group of operators, mostly HF DXpedition veterans. W6XD, the recently retired Southwestern Division ARRL Director, roved with me in the van. Our scores (over two million apiece, 6.5 million for three stations) were the highest ever for rovers and the highest ever in any category in VHF SS. (Of course, those scores have no place in the club competition.) don't think we would have had a shot at the Crying Towel Award this year--nothing broke in any of the three stations.

We ended the contest working each other over a series of ridges up to 1,000 feet higher than our sites in DM80 and DM81/DM91 on all bands through 10 GHz. It was a little like working from, say, Morristown, NJ over all of the ridges to a site west of Camelback Mountain--slightly obstructed. No, there wasn't any water tower to use as a passive reflector!

73,

Wayne, N6NB

BEACON REPORT From: "Lefty Clement"

[lefty@exploremaine.com](mailto:lefty@exploremaine.com)

Date: March 12, 2005 2:04:31 PM EST

To: <[w3rjw@arrl.net](mailto:w3rjw@arrl.net)>

Subject: W3CCX/b 6M beacon

Hello: Just wanted you to know I can hear the Philly 6M beacon everyday, sometimes for hours on end at my QTH in Maine.

My new array---4 X 9 ele. M2 beams on 120 foot rotating tower on 600 foot ridge really hears it well too.

Lefty, KITOL - Turner, Me FN44vg



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N2UO  
Marc Franco

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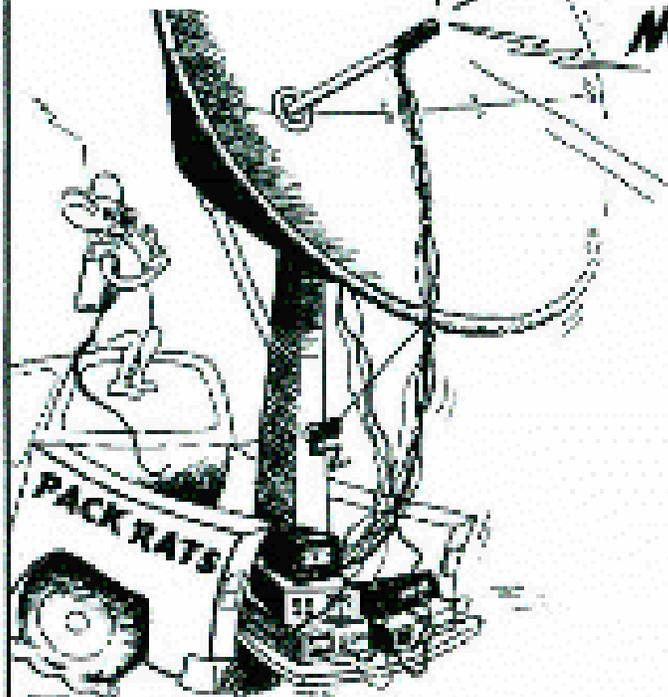
[Owormser@c3iusa.com](mailto:Owormser@c3iusa.com)

[sruffin@c3iusa.com](mailto:sruffin@c3iusa.com)



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

# MEETING NOTICE



## LOOKING AHEAD:

ROASTING W3KKN  
2 APRIL 2005

SPRINGSPRINTS FOR  
VHF/UHF/MICROWAVE  
STARTING 4 APRIL

## INSIDE:

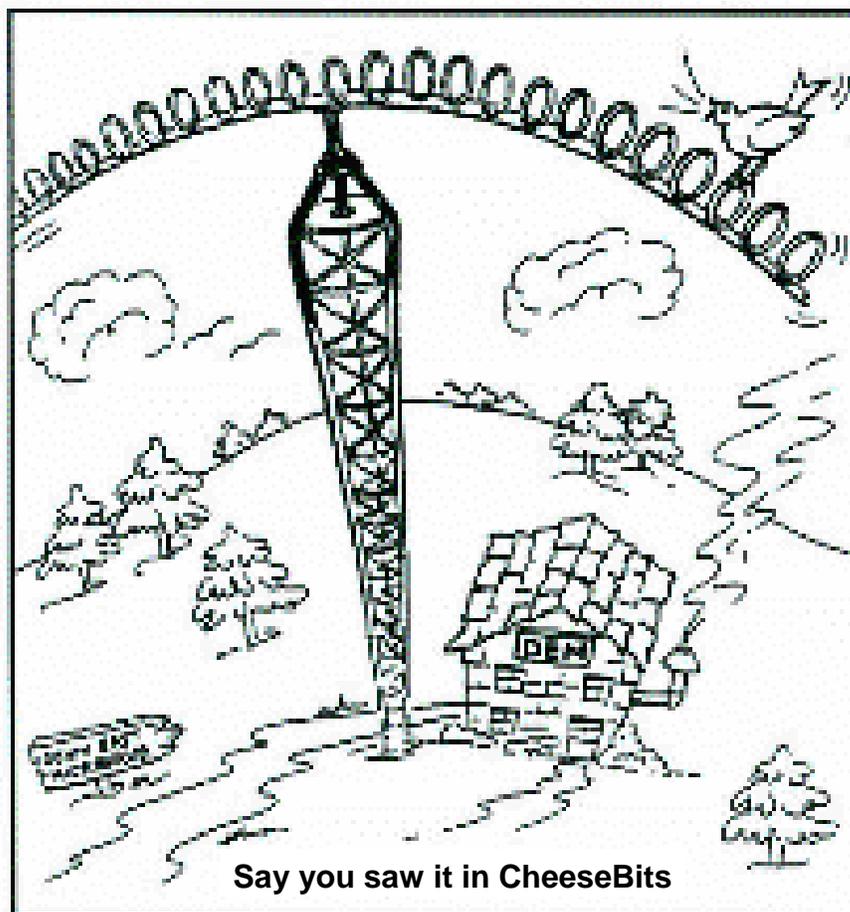
HOME BREW NIGHT

JANUARY CONTEST AND FALL SPRINT  
SCORE SUMMARIES

K1JT ON WSJT AND EME

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