



CHEESE BITS

W3CCX
CLUB MEMORIAL CALL

ARRL
Affiliated
Club



Volume LIII

January 2012

Number 1

PREZ

SEZ:

Wow! 2011 has just gone zooming past. Here we are in 2012

The January Contest is just a few weeks away and we are working diligently to have everything operational before the final hour. There is so little time when you factor in the work-a-day schedules and family obligations!

To add to the contesting challenges for 2012 I have noted that it's **2 DOWN WITH 2 MORE TO GO**. We have **received gavels** for 2011 for the January VHF Sweepstakes and the September VHF QSO party. In January we have won the award in the UNLIMITED category and in September the Gavel is for the MEDIUM category. I would like to see the **PACKRATS sweep the awards** for 2012. This will require more participation in the August UHF CONTEST and many more individuals submitting logs in support of the W3CCX Camelback Expedition during the JUNE VHF QSO PARTY.

I know many PACKRATS give their time to the club station effort but there are equally as many who are home and could not only work W3CCX in FN21 but make a reasonable effort and submit a log for their own station. With the sunspot cycle getting better the June contest should be even more

interesting as DX conditions improve.

As we explain to new members when they apply for membership – THE MOUNT AIRY VHF RADIO CLUB is not just a contest club but was originally founded as a technical club to help with the exploring of new bands and keeping up the activity on the VHF and UHF bands. The microwave bands were mainly frequencies of interest in conversation but were not affordable for most. This is no longer true. We are **still** a technical club. With the annual HOMEBREW NIGHT in March you can help make the technical part of the club shine with your latest projects. There are plenty of awards and **even a miserable failure** is worth showing. Someone may have a suggestion that could turn it into a **success**.

March also brings the main social event of the year **LADIES NIGHT**. This year it is March 31st at the Holiday Inn in Lansdale, PA, just off the PA Turnpike's Lansdale Exit. It is a very wise idea to recognize those long suffering spouses who support our contesting efforts and who tolerate those long hours in the shop while you are creating your next project or are fixing that gear that suddenly broke in the middle of a contest.

The Ladies Night committee has an excellent venue with good food . We'll also

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

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PACKRAT BEACONS - W3CCX/B

FM29jw Philadelphia, PA
50.080 144.284 222.064 432.286 903.072 1296.245 MHz
2304.043 3456.207 5763.196 10,368.062 MHz (as of 1/08)

MONDAY NIGHT NETS

<u>TIME</u>	<u>FREQUENCY</u>	<u>NET CONTROL</u>
7:30 PM	50.145 MHz	K3EOD FM29II WA3QPX FM29di
8:00 PM	144.150 MHz	N3ITT FN20KI
8:30 PM	222.125 MHz	KB1JEY FN20je
8:30 PM	224.58R MHz	W3GXB FN20jm
9:00 PM	432.110 MHz	WB2RVX FM29mt
9:30 PM	1296.100 MHz	K3TUF FN10we
10:00 PM	903.125 MHz	OPEN

Visit the Mt Airy VHF Radio Club at: www.packratvhf.com or www.w3ccx.com

have last year's superb DJ for your dancing and musical enjoyment.



April will bring us to the moment where we recognize our own efforts with the AWARDS and ARRL NIGHT. We recognize your contest and technical efforts. April will also be the meeting where we will have Sean Kutzo KX9X, ARRL Contest Branch Manager, as our special guest.

I hope I am starting 2012 off right by getting this missive into the editor's hands early in the month. The CHEESEBITS Editor Lenny, W2BVH and Ed, WA3BZT need to hear from you with stories about your station, contest efforts or a technical article about your latest creation or modification to your equipment.

CHEESEBITS needs to remain a technical journal and it needs your input.

Well I need to get back into the shop and finish my stations preparations and work a few more PACKRATS whilst I make repairs and refinements to the station.

Meanwhile...*Listen for the weak ones*
73 de Doc, W3GAD

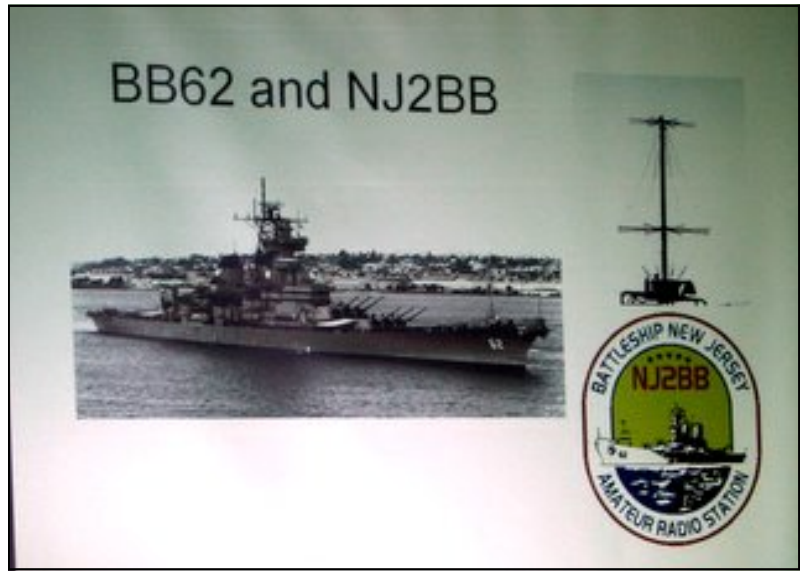
EDITORS NOTE

Welcome to 2012! Well, I've got my station half improved and half torn apart. The I.F. rig and the 6M transverter is in the basement attempting to drive my new (mostly done) 6M power amp — 2 days ago I measured 1035 watts out, but there's plenty to do on it yet. The I.F. rig also needs internal mods so I can use my new footswitch and headphone-with-boom-mic. If you're like me, you've also got things half improved with half to go. Wish us all luck and we'll be set for January 21-23!!
73, Lenny W2BVH

Some Pix from the December Meeting



Rich did a fine presentation on the hard work it takes to setup and maintain the radio room(s) on ...



...the Battleship NEW JERSEY. Including radios and antennae.



Mike and Phil did a great presentation of strategies, tactics and general ideas for increasing individual and club scores in contests . Fine material for a couple of weeks for now!

A Visit to the QTH of WA3GFZ in December

Here are a couple of photos from my visit with WA3GFZ, his wife Michelle and his four-legged satellite, Oscar, earlier today (12/18/11)..

The reason why I drove down to Glen Mills is that Paul had a problem. Not only had a sizable branch broken off and did some damage to his aluminum antlers but the remaining hanging branches interfered with the rotation of his antennas. Paul had heard that I owned a mighty "spud-zooka" and figured I



could shoot up a line that would allow us to pull the remaining hanging branches safely away from those aluminum antlers. If this problem was not corrected, some of our fellow Pack Rats looking to rack up some significant contest points next month by QSOing with Paul would be severely disappointed. A ham "emergency"!

Well, it was a good thought. However, since moving to PA, I have learned at least two things:

1. Tree branches are **always** heavier than you think (stand clear !!!)
2. Tree branches are **sometimes** more strongly attached to the remainder of the tree than you might think.

While the "spud-zooka" successfully put the rope where we thought we wanted it, the substantial weight of two hams [actually a light ham and "ham" ham] would not budge the hanging branch out of harm's way. Fortunately, I had a Plan B at the ready.

As part of my own tower adventure, I had invested in an extra-long telescoping pruning saw. I used to mooch Rick K1DS's telescoping arbor saw but it wasn't quite long enough. Worse, Rick is often running around the Blue Bell Country Club trimming trees [*you don't think he maintains his amateur radio station with his day job, do you?*] so I could never count on its availability. Paul theorizes that the pole of my arbor saw is really a re-purposed painter's pole, which tends to explain why when you extend it to its full length, it is akin to working with a piece of spaghetti with a saw at the end. The vendors sell a 6 foot extension which I have declined to purchase. I can't imagine working this saw with a longer pole.



However, with Paul and his climbing harness securely attached to the tower's safety platform, and my encouragement to be patient, we were able to clear enough of the hanging branches to restore 360 degrees of rotation to his aluminum antlers.

The remaining portion of the tree will have to await the assistance of arbor professionals with better equipment, fewer dependents, and more insurance.

As a bonus, I was able to enjoy some macaroons freshly baked by Michelle and tour Paul's very excellent ham shack and shop. All I can say is that **we have some very talented hams in our club.**

73, Michael KB1JEY

Some Practical Experiences with MAP65-IQ

Paul WA3GFZ recently asked our other Paul, WA3QPX about his experience using MAP65-IQ for moonbounce. The dialog below summarizes WA3QPX's experience.

First, here's a summary of MAP65 (and MAP65-IQ from Joe, K1JT's web site:

[MAP65](#) implements a wideband, polarization-matching receiver for JT65 signals. It works together with [Linrad](#) (by SM5BSZ) and dual-polarization RF hardware to receive and decode all detectable JT65 signals in a 90 kHz passband, matching the linear polarization angle of each one and producing a band map of decoded callsigns sorted by frequency. Its principal application is EME on the VHF and UHF bands. MAP65-IQ is a single-polarization version designed to work with the SDR-14, SDR-IQ, and Perseus receivers. It has all features of MAP65 except the polarization matching capability, and it supports the JT65A, B, and C submodes.

Hi Paul

Had some fun working the moonbounce contest on 1296. Only had 4 contacts, but had Europe blockage due to leaves. There is a rumor out there that you got MAP65 to work with the SDR-5000. Is it true?

Paul, WA3GFZ

And WA3QPS's reply:

After two years of trying I did not get MAP65 to work consistently and accurately. I think the problem is Joe uses a sample rate other than 9960. What does work is using the SDR IQ receiver from RF Space which has the sample rate that MAP65 uses. The Perseus receiver uses it as well. I am using the SDR IQ in parallel with the Flex with a "T" out of the transverter. The SDR IQ is using MAP65-IQ and the Flex is using WSJT9. Yes two programs running at the same time! I use MAP65-IQ for spotting and WSJT for operation, each on their own screen. The interesting thing is, sometimes one copies better than the other for some reason. I made a few contacts that way. I am using this same system on the 432 station as well. The SDR IQ module is about \$500 but well worth it. K2UYH uses it for his eme tests. It is also a good

addition the shack as a piece of test equipment for measuring sun noise etc. It has so much stuff I can only touch the surface. HRO stocks them. Let me know if you get one. There are a few peculiarities in the set up I can help with.

GL, Paul, WA3QPX

Michelle's Balcony Antenna Setup for The January Contest

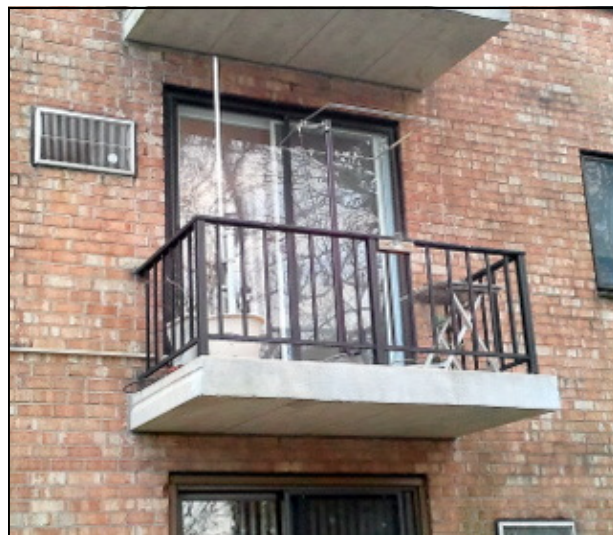
Hi Len,

Since I cannot post this picture on the List Serve, I am sending it to you. I haven't been approved yet by the Condo Association, but I'm hoping that they will allow me to keep the 6 meter squalo on my balcony.

The picture is of my 2nd story balcony with a 2m/70cm fiberglass Diamond on the left. In the middle is Ray Goley's 6 meter squalo. On the right is a table with a piece of 16x19 inch sheet metal with a 222mag mount on top of it.

This is how I will be contesting in about 3 weeks.

73, Michelle KB3MTW



Step Down Switching Regulator for Small Amplifiers

by Chuck Steer WA3IAC

For the Microwave update 2011 I introduced two, 2-watt amplifiers one for 1296/2304 and one for 3456MHz. They required +5 volts at about 1 Amp. It would be easy enough to use a 5 volt, 1.5 Amp linear regulator but I felt the efficiency would be better using a step down switching regulator. The regulator device I chose was the LM2596; Digi-Key part number: LM2596S-ADJ-ND (about \$5.00/ea.) I did two tests on this regulator, one with it set to an output of 5.1 volts and the second with an output of 8.1 volts. In the first test the input voltage is was run from 8 to about 28 volts and the output load was 1.0 amps. In the second test the input voltage ran from 12 to 29 volts with an output load of 1.6 amps.

The LM2596 is a 15 watt device. You can trade output voltage for current within its power capability. The difference between input and output voltage is at least 2.5 volts. The maximum current is 2.5 Amps for the device. Because we are stepping down, the input current is less than the output load current. Here are my test results.

Input voltage	Input current	Output voltage	Output current
8.1	822.	5.1	1.0
10.1	657.	5.1	1.0
12.1	557.	5.1	1.0
18.1	410.	5.1	1.0
24.1	311.	5.1	1.0
28.1	272.	5.1	1.0

Input voltage	Input current	Output voltage	Output current
12.1	1.269	8.1	1.6
18.1	.854	8.1	1.6
24.1	.661	8.1	1.6
28.1	.575	8.1	1.6



Data sheet for the LM2596 on the web at:
<http://www.national.com/ds/LM/LM2596.pdf>
I have one or two assembled and tested for \$6.95 + shipping
WA3IAC 10/2011

Some Comments on Solid State Power Amplifiers

The TE Systems 1410G review in Jan. 2012 QST prompted me to write this. My comments are about amplifiers in general, and a plea to ask hams to properly setup their RF amplifiers. I am not singling out the TE amplifier.

The output power was not specified during the intermodulation distortion test, but a -17dB IMD3 is poor. Whatever the power output was, you don't want to operate the amplifier at that level on SSB or any linear mode. This will cause splatter on the bands, which is also mentioned in the article as "interference".

Be very careful about driving any linear amplifier. All amplifiers should be operated with the power output in mind, not the power input. Certainly no amplifier should be operated above its specified power output level. The 1410G will put out 183W, but that is saturated power, which makes the IMD worse. Running amplifiers at the saturated power output level is OK in the CW mode, but certainly not in any linear mode.

The 1410G is rated at 4-10W of drive. The unit that Joel Hallas reviewed saturated at 5W of drive. That means if you drive that amp with your 10W radio (which might put out 12W), all orders of IMD — 3rd/5th/7th/9th — will be unacceptable. You are over-driving the amplifier, which only produces a "louder splattering signal".

The correct way to set up any linear is to adjust the input drive level until the rated output power is reached, as measured on a good power meter. Setting most amplifiers at below the rated output will normally reduce the interference on the band, since the IMD is improved. The **difference between 120W and 160W is NIL** at the other end of the QSO. If you want your signal to have a noticeable level increase at the receiving station, switch to the CW mode. BAM - that sounds like a 10dB increase.

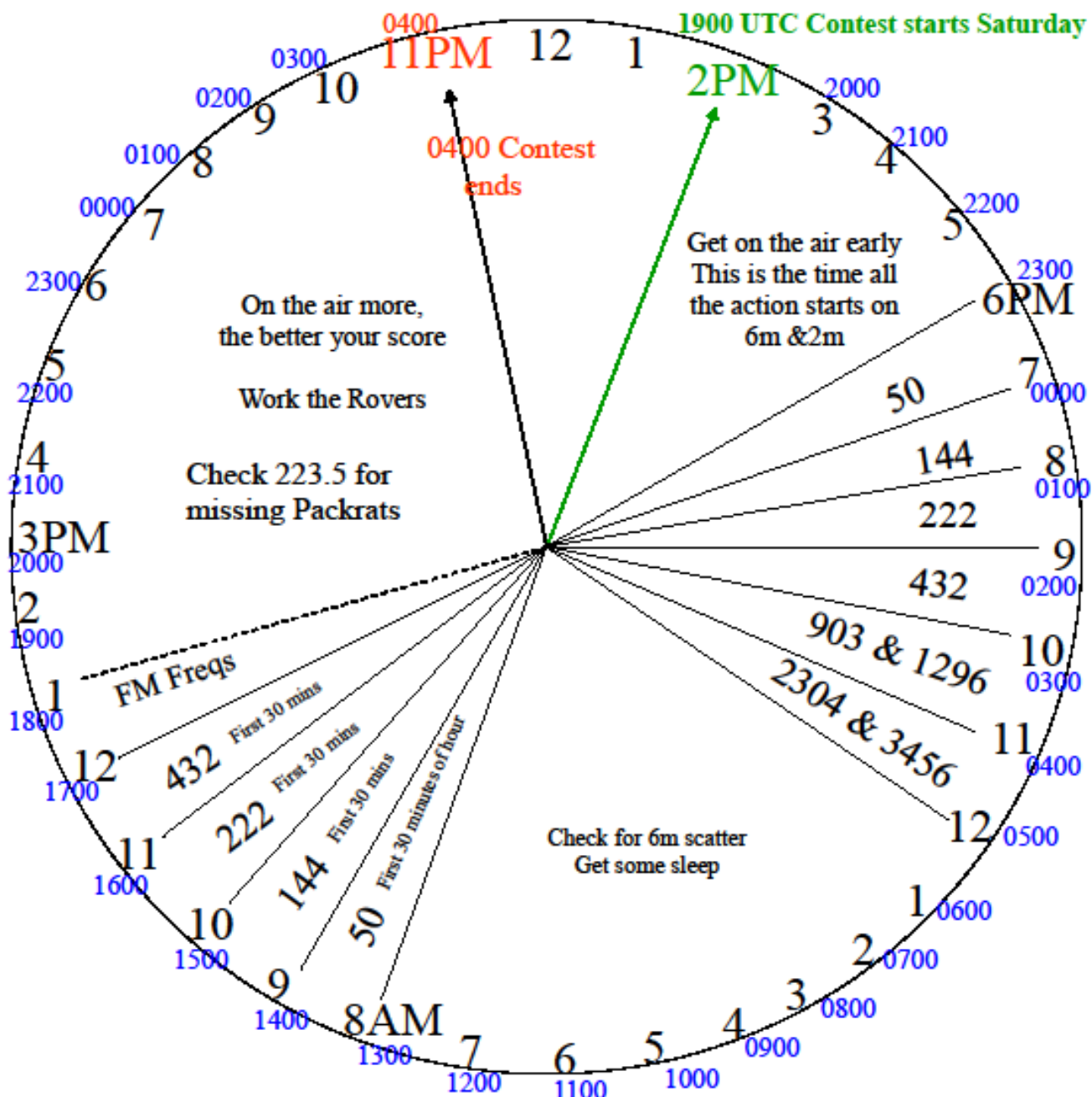
Borrow a good power meter if you don't have one and use it to do the initial setup of the amp. You can use any old power meter after setting up the amp, just mark the known output level on your power meter and use it as an indicator, then don't exceed that point.

Some rigs don't have an output control to set the amp drive level. Other than modifying the radio, you can try various lengths of RG-58 between the radio and the amplifier. The coax will act as an attenuator on the drive side. If your amplifier has a GaAsFET preamplifier, degradation to the system sensitivity should be minimal. A better solution would be to purchase a linear that matches your radio's output level, without exceeding the rated power output, i.e.: a 160W amplifier that is rated at 10-20W RF input shouldn't get more than the 20W.

If you are using a 10W transverter for example, the drive adjustment is easy. You adjust the I.F. attenuator inside the transverter to achieve the required drive power to the amplifier. Do not attenuate the output of your 10W transverter to achieve the rated amplifier output power. If you attenuate the low power signal (the I.F.), the transverter's linearity will remain optimum.

Dave W3KM

January Contest Clock Activity Hours



Work all Packrats on all possible bands

Check 6 & 2 at sunrise, sunset and noon for DX

Eat and Drink right. Get some sleep

DO NOT USE 223.5FM for coordination

FM Frequencies: 146.55 and 146.58
223.50
446.000

Work the Activity Hours Have Fun!

Every contact adds to the club aggregate score

Revised 10-28-2011

The Wayback Machine

Gleaned from the pages of
Cheese Bits, January, 1962
(Vol. IV Nr. 10)

de Bert, K3IUU

(author's comments in italics)

- Club History highlights, as reported by W3SAO, Frankie Brick.

Club formed May 15, 1956.

1st Picnic, August 12, 1956, Ft
Washington State Park.

Constitution & Bylaws adopted
September 25, 1956.

Speaker for the October 1956
meeting was W2BDS, Mike
Ercolino, of the Telrex corp. *(the
first beam for many of us)*.

Winners of the first club raffles were:
W3OZP, Bill Miller, and W3QAS,
Lyn Rowland Sr. *They each took
home a Telrex beam (donated by
W2BDS)*.

Winner of First Lapel Pin: W3NSI,
Lyn Rowland Jr.

First Ladies Night. November 14,
1956 at Chelton Hills Recreation
Center. Films of the ice-skating
party and the Picnic were shown.
Coffee and homemade cakes
were provided and served by the
XYL's.

First Contest Prep Meeting,
December 19, 1956. Chairman,
W3KKN, Ernest Kenas.

First VHF Sweepstakes Score:

27 members, 50,177 points,
Third Place Award. Highest
scoring member, W3KKN.

Official Packrat Net: Monday
nights on 144.2. Net control
stations W3SAO, Frankie Brick
and W3ZEY, Russ Widger.

- PA previously announced their intent to enforce speeding laws by using radar. Since then, there have been a lot of people buying and selling radar detectors or schematics for rolling your own. They have even been given as prizes on TV shows (!!!). In September, on a morning show on WFIL TV, a State Trooper explained Radar; how it works and how it is set up (*Wow!*). Helen comments "Stay within the speed limit and you needn't worry about Radar".
- Smel-A-Rhat reports on copying the mail on a couple of sloppy operators on six-meters. One of them had commented that "He had received a notice from the local OO (*Official Observer, do we still have any?*) to the effect that he was operating out of the band" Said operator's comment was "My **crystal** did not indicate this, and besides the OO would have needed a counter to check it out". (*I hope we don't have many of this breed of Ham in the ranks anymore*). Smel concludes with a reminder to be active in the coming VHF Sweepstakes.
- FOR SALE. 6-meter homebrew transmitter, 6146 final amp. Slight

TVI at home QTH, \$65. (*TVI was a problem to be feared in the pre-cable days*).

- W3HKZ, Ed, and K3IUUV, Bert both have TV transmitters on 432 Mc.
- Helen takes note we have five "Docs" in the club. Doc Nichols, W3JAY; Doc Sharpe, W3CLT; Doc Stewart, W3IHT; Doc Cutler, K3GAS and Doc Lauer, K3GAY. (*Now we're down to only one, Doc Whitticar, W3GAD*).
- Helen notes she "reproduced the first issue of Cheese Bits, and will mail a copy to anyone for 10 cents (*cost of postage and handling*)". (*Try that now*). She goes on to say you can send your dime to her for a copy (*Again, try that now*).
- ARRL requests reports of intercept radio reception of OSCAR (*launched Dec12, 1961*) passes can be relayed to the Project OSCAR Assn., Sunnyvale CA. Two of our members (Jack, W2AXU, and Ed, W3HKZ have recorded OSCAR signals (*"HI" on 144.983 Mc*) and played them to the Packrat net on Dec 18. "Heard" reports from members W3GXB, Bob, W3CL, Harry, W3HFY, Hal and W3LHF, Dave (*later W3ZD*). The rep rate of the HI signal is proportional to Satellite temperature.

Thirty, de K3IUUV

Transverter and Amplifier Setup

From the 1983 archives by WA3JUF (now W3KM). Compare to W3KM's article on page 9 of this issue!

The following is generally for 10 watt 50-432 MHz transverters using a 28 MHz HF radio for the I-F, but can be used as guidelines for any frequency transverter. Some transverters can be over-driven to up to 15 watts, but are linear to the 10-11 watt range. High power amplifiers made for 10 watts input will be over-driven if used with anything greater than 10-11 watts also.

The 28 MHz I-F drive level must be adjusted correctly for proper operation of any transverter. The following procedure can be used for most transverters. It is important that the HF radio be operated with the drive controls set at maximum. This will insure that the transverter will not be overdriven should the controls or power level of the I-F radio be mis-adjusted. Proper RF attenuation is then placed between the HF radio and the transverter to provide 10-11 watts output.

Place a 10 watt power meter and a dummy load on the output of the transverter. A Bird Thru-Line is the usual Amateur power meter.

- Turn the drive controls of HF radio down to minimum.
- Apply 12-14VDC to the transverter and key the unit into transmit. Hard keying of the transverter and amplifiers is suggested over RF sense switching.
- Tune the preselector for maximum on 28MHz on the HF rig (if one is available) and place the HF rig in the CW mode and depress the key (or put the rig in the tune mode).
- Slowly adjust up the I-F drive level until 10-11 watts output is seen on the transverter output meter.
- If the drive control on the HF rig is not at maximum, then attenuation must be inserted between the 2 units.
- Or - adjust the variable attenuator inside the transverter so that you have 10-11 watts output with the HF radio's drive control up all the way.

...continued

Events

For inclusion, please direct event notices to the editor.

January VHF Sweepstakes - Contest January 21-23, 2012. Finish ur upgrades. Let's go!

ARRL June VHF QSO Party - Contest June 9-10, 2012. The annual Camelback trek. Details to follow

ARRL August UHF Contest - August 4-5, 2012. Details to follow

10 GHz and Up (round 1) Contest - August 18-19, 2012. Details to follow

September VHF QSO Party - Contest September 8-10 2012. Details to follow.

10 GHz and Up (round 1) Contest - September 15-16, 2012. Details to follow

Joint Mid-Atlantic & Eastern VHF Conference Conference - October 12-14, 2012. Marriott Courtyard in Bensalem PA. Details to follow.

Microwave Update (MUD) 2012 Conference - October 18- 21, 2012. Hosted by: The 50MHz and Up Group of Northern California. Details to follow.

...Transverter and Amplifier setup cont'd

- Or – a combination of both 6 and 7.
- The drive level is set properly now and the transverter will not be over-driven into the non-linear region of output.
- For SSB, turn up the Mic gain until the output meter reads about ½ of the 10 watt full scale while speaking into the mic. Full scale voice peaks mean distortion.

If a 100 watt linear is spec'd at 10 watts input, then 10 watts is all that you should use. A few watts more output at the 100 watt level is never seen (or heard) at the other end anyway. Also note that the amplifier's output power is spec'd while being measured on a real power meter and into a good 50-ohm load, with the rated input at the input connector. —Dave

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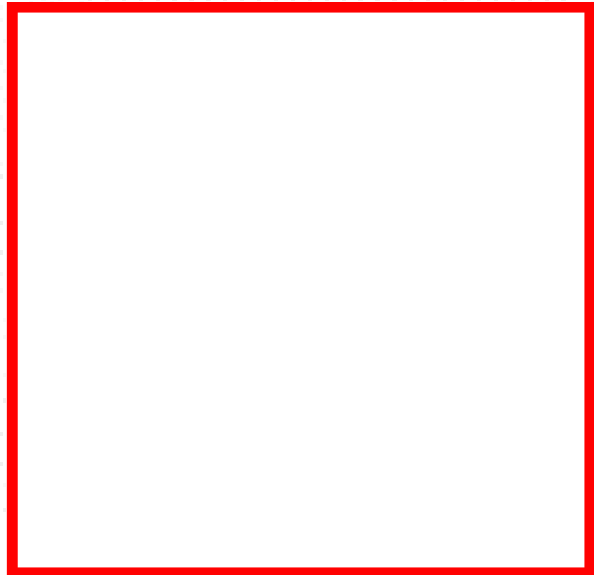
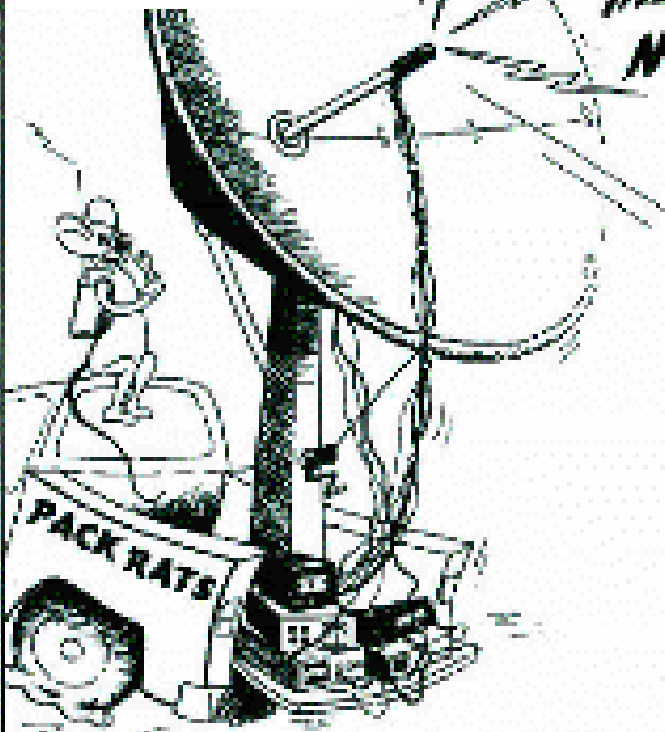
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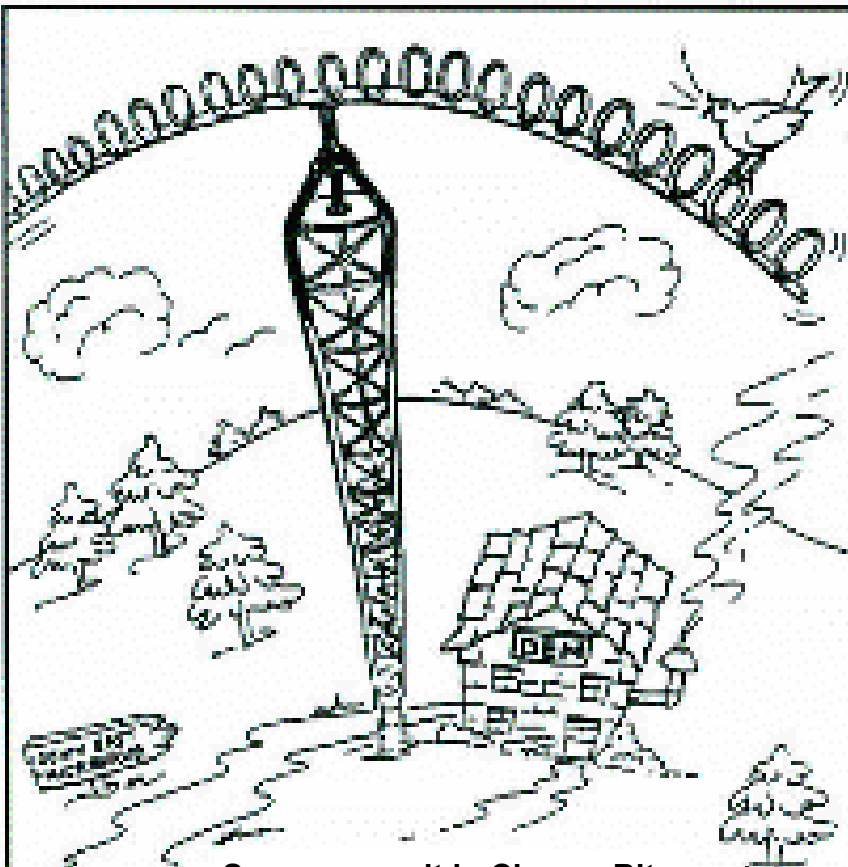
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**MEETING
NOTICE**



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