

PACK RATS'



PACK RATS

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

CHEESE BITS



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 MT. AIRY VHF RADIO CLUB., "THE PACK RATS", PHILADELPHIA, PENNSYLVANIA W3CCX
 NET FREQUENCIES: 50.125, 144.150, 220.125, 224.58/222.98, 432.110, 903.100, 1296.100 MHZ
 AFFILIATED CLUB: AMERICAN RADIO RELAY LEAGUE ARNS

Meetings: Third Thursday of each month at 8:00 PM
 Southampton Free Library, 947 E. Street Road
 Southampton, Pennsylvania 19866

VOLUME XXXIII

JANUARY 1991

NUMBER 1

THE PREZ SEZ

Well, another year has passed by and it's time to reflect back on the memories of 1990. I think the club has grown stronger over the past year with renewed enthusiasm in the membership. Members seem to be getting on new frequencies and construction projects are at an all-time high. We have picked up new members and we hope that their new ideas will enforce our ranks.

I have to say I was really upset to hear we had lost 220 MHz to the commercial money. Just when you think the tide had turned, you get sucked under by the undertow. If we don't use the frequencies, we are going to lose them!!! Turn off the tube and and turn on the rigs and make some noise on the bands.

Last meeting was a great success and it was great to see the turn-out. Keep it up! Please turn on the rigs and make sure all is checked out before the week before the contest.

I want to express my deepest sympathy to the family of Tom Williams, N3EAX. Tom passed away on December 24. He was only 42. We will miss him.

We welcome our two new members Geoff, WA2GFP and Jim, WA3EHD. New blood in the club will be the key to success in the coming years. We should all constantly be on the hunt for interested folks to recruit as Pack Rats.

Happy New Year to everyone and I hope you all have a healthy one.

73 and Listen for the weak ones!

David T. Hackford, N3CX

JANUARY MEETING PROGRAM: George Jewsevskyj, WA3NAY, employed by IBM Princeton, will present a talk on the IBM/Motorola Digital UHF System. Meeting location will again be at the Southampton Youth Center. The Library remains under construction.

CALENDAR OF COMING EVENTS

By Harry Brown, W3IIT

JANUARY

- 1 New Years Day 1991
- 4 Predicted Peak of the Quadrantids meteor shower at 0015 UTC.
- 10 Pack Rat Board of Directors meeting at the QTH of Ernie Kenas, W3KKN. All interested parties welcome. Meeting starts at 8:00 PM. Call: 215-659-3485 for directions.
- 17 Regular meeting of the Mt. Airy VHF Radio Club at the temporary site, Southampton Youth Center. Consult your map from December, check-in on the club repeater, or call a club officer for directions. George Jewsevskyj, WA3NAY, will speak on a high-tech UHF digital radio system. All VHFers, would-be VHFers, and friends welcome.
- 19-20 44th Annual ARRL January VHF Sweepstakes. "THE CONTEST". See December 1990 QST, page 101 for rules.
- 21 Martin Luther King Jr. Day

Thomas R. Williams, N3EAX, SK

Pack Rat Tom Williams, N3EAX, became a silent key on December 24, 1990. The Mt. Airy VHF Radio Club extends its deepest sympathy to the Williams family for the very sudden loss of this great club member and friend. Tom traveled far, usually with his close pal N3BBI, to attend club functions. His friendliness and efforts for the Pack Rats will be forever remembered.

VOTED TO MEMBERSHIP

Geoffrey H. Kraus, WA2GFP
1927 Audubon Drive
Dresher, Pa. 19025

James J. Antonacci, WA3EHD
1427 Airline Ave.
Roslyn, Pa. 19001

NO-CODE LICENSE IS HERE

On December 13, the FCC amended its rules to eliminate the Morse code portion of the Technician class Amateur radio examination, thereby creating a code-free class of license. The new rules will probably take effect in February '91. Current Techs will be grandfathered, so as to not lose any privileges (including those below 30 MHz). The new codeless Techs will have full amateur privileges above 30 MHz, and will, upon passing a 5 WPM code test before volunteer examiners, be issued a Certificate of Successful Completion. This "endorsement" will allow them the same HF privileges as the "old" Techs. The current Novice class license will be retained without modification as an alternate entry point. The Technician written examination will remain 55 questions; there will be no questions over and above the current Tech exam. "New" Techs will not receive distinctive callsigns.

Also on Dec. 13 the FCC amended its rules "to make the amateur service more accessible to amateur licensees who, because of severe handicaps, are incapable of passing the higher speed Morse code telegraph exams,"...the judgement of a physician will be relied upon to establish that a person is severely handicapped, cannot pass a telegraphy exam, and should be issued a code exam waiver. TNX ARRL.

PROPAGATION REPORT
By Paul Drexler, WB3JYO

The 6 meter band has been open to Europe several times during early December. Although the solar flux has remained at high values (218 - 228), conditions this year are not even close to the great propagation experienced one year ago. On the higher bands there has been little enhancement observed, attributed to a predominance of low pressure weather systems and a lull in activity.

On Saturday, December 1, WC2K worked 6W1QC (Senegal) and the CN2JP (Morocco) DXpedition on 6. On the 5th and 6th, more F2 opened the band to the UK, Denmark, and Belgium. December 7 brought an opening to Europe along with some late afternoon trans-continental F2 to the West Coast USA. N3BBI worked his first DK (Germany) on six during an F2 opening on the 8th. Since the 9th, DX propagation to our area on six has been very spotty and short-lived (e.g. 5-10 minute openings to isolated geographical locations; probably combinations of E-skip and weak F2).

Remember to watch for long lasting high pressure systems that bring good weather and tropospheric enhancement on VHF/UHF. Let's hope for some of this during the January contest. CU during the Sweepstakes!

AXE DROPPED ON 220-222MHZ HAM BAND

It's over, finally, really over. The fight by US amateurs to retain the low end of the 220 MHz band has been lost. The US appeals court judges delivered their decision sooner than anticipated. The court's explanation was simply that they rely on the FCC to manage spectrum use and they believe that the FCC acted properly in this matter. No date has been announced as to when we must evacuate the low end, however rumors indicate that we may be booted from the band in early 1991. The Pack Rat 220.125 MHz Monday evening net will move to 222.125 MHz beginning February 4, 1991. Operations before, during, and immediately following the contest will remain on the current low end. We urge out-of-area readers to spread the word of our intention and need to move and claim spectrum quickly. Hopefully, we can secure interference-free band space from 222.0 - 222.300 MHz. Due to the intense competition for band space which exists here in the Northeast, we will attempt to lead the rest of the US weak signal ops to new pasture.

TECH TIP

The XLO-1 local oscillator module from SSB Electronics has been known to have some problems with intermittent oscillation and instability. I found a fix which worked in units that I have looked at. The fix adds a diode in the ground lead of the 9volt regulator that supplies voltage to the oscillator, making the oscillator voltage 9.6 VDC. This also raises the output power a bit. TNX WA3IAC

TID-BITS

- Out of the area VHFers and Cheese Bits subscribers who are interested in working Pack Rats in the contest should refer to the "Contest Clock", found on page 5 of this issue.
- Correction: The post office box listed for the SJRA in last month's newsletter was incorrect. Applications for the VHF Challenge award should be sent to: SJRA P.O. Box 1026, Haddonfield, NJ 08033.
- Our temporary meeting location is OK; it's easy to find and not far from the Library. We should be back in the Library for the February crying towell session.
- Lots and lots of activity lately on the club 220 machine; there's tweaking and testing, and plenty of pre-contest feather-ruffling and chest pounding. All is well with the Rats!

SWAP SHOP

FOR SALE: Kenwood TS520se digital display, D104 mic, spare 6146B's, exc condx \$450.
CONTACT: K3RRK (215)887-9231

FOR SALE: Two 45el 2304 MHz loop yagis exc condx, \$30ea.
CONTACT: Dave, N3CX (215)679-7293 (H)
 (215)483-2030 (W)

FOR SALE: Icom IC701 HF xcvr, 160-10M, 200W, w/IC701PS matching supply, SM-2 desk mic. \$475 or trade for IC271 xcvr.
CONTACT: Harry, KA3B (215)468-1512

WANTED: Cushcraft A26-2P 6/2 meter "zipper" beam.
CONTACT: Harry, KA3B (215)468-1512

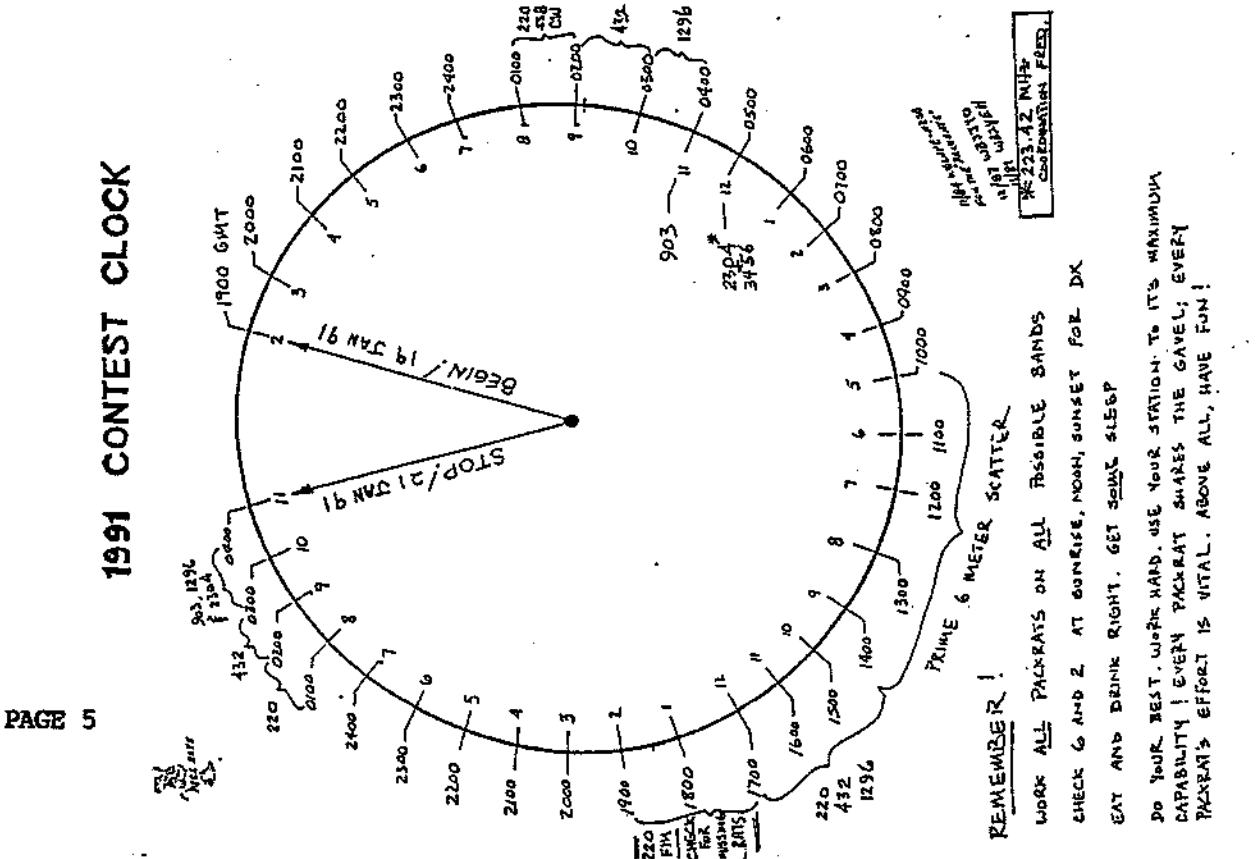
WANTED: HyGain 64B 4-el 6M yagi.
CONTACT: Rick, WC2K (609) 268-0736

WANTED: Hammarlund manual for HQ-170, HQ-170A, or HQ-180 receiver.
CONTACT: Mark, WB2JHG (609) 654-4441

THANKS: Ron, NA20, sez "thanks" to Dave, N4JGQ for his response to Ron's ad in Dec. '91 "Swap Shop". Dave supplied Ron with the needed 13-509 manual and Ron's hamfest bargain is "good as new".

COMMERCIAL AD

LOOP YAGIS: 902 MHz 33 element \$89 kit, \$109 assembled and tested. 1296 MHz 45 element \$89 kit, \$109 assembled and tested. 1296 MHz 55 element "Super Looper" \$99 kit, \$124 assembled and tested. 2304 MHz 45 element \$75 kit, \$89 assembled and tested. Also available: element and hardware kits for above. 2 and 4-way power dividers. Discount on complete arrays. Solid state linear power amps, 13 VDC: 1296 - 8W in 35W out \$315, 1W in 20W out \$265, 4W in 70W out \$695. GaAs FET preamps: 902 MHz .8dB NF \$90, 1296 MHz .8dB \$90, 2304 MHz 1 dB max NF \$140. SHF SYSTEMS no-tune transverter kits, w/144 MHz IF now available for 903 through 3456 MHz. Write or call for complete catalog. DOWN EAST MICROWAVE, Bill Olson, W3HQT, Box 2301 RR-1, Troy, Maine 04907. For information and orders telephone (207) 948-3741.



TRANSISTOR BIASING FOR LINEAR SSB AMPLIFIERS

The bias circuits presented below may be used with the Matching Network Cookbook (Cheese Bits Aug/Sep '90) to homebrew your own VHF linear power amplifier. RF power amplifiers require proper biasing for clean sounding, linear operation - a poorly biased amplifier is a sure way to make enemies on our crowded VHF bands. The circuits shown are from WA3JUF[^]. Although they have been widely used, the following "biasing hints" deserve repeating.

When using a biasing circuit with diode compensation always heatsink the diode to the transistor cap or to the heatsink close to the transistor - use thermal heatsink compound if possible. This will help the biasing network to remain a more constant operating point over temperature.

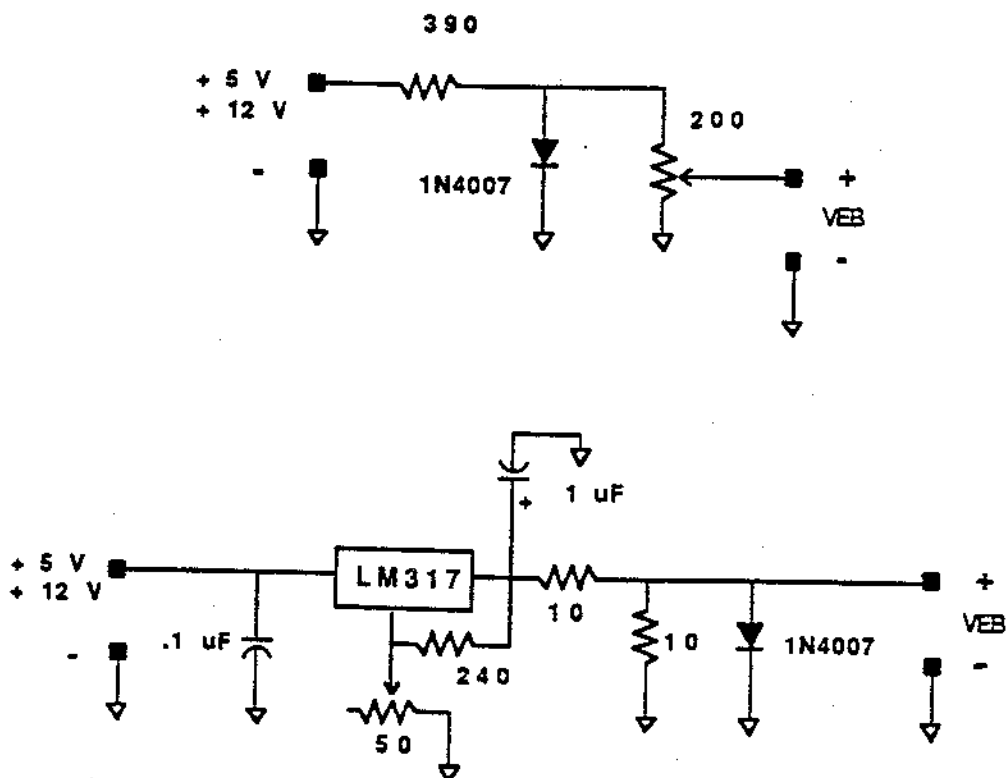
Always measure the actual collector current when checking an amplifier for proper biasing; use a separate power supply for the base and collector feeds with an ammeter in series with the collector feed. Adjust the biasing for the recommended ICQ and check the amplifier on the air. Use the table below as a starting point. Remember that transistors designed for class C operation will likely require higher ICQ for acceptable linearity.

RECOMMENDED CLASS AB BIASING

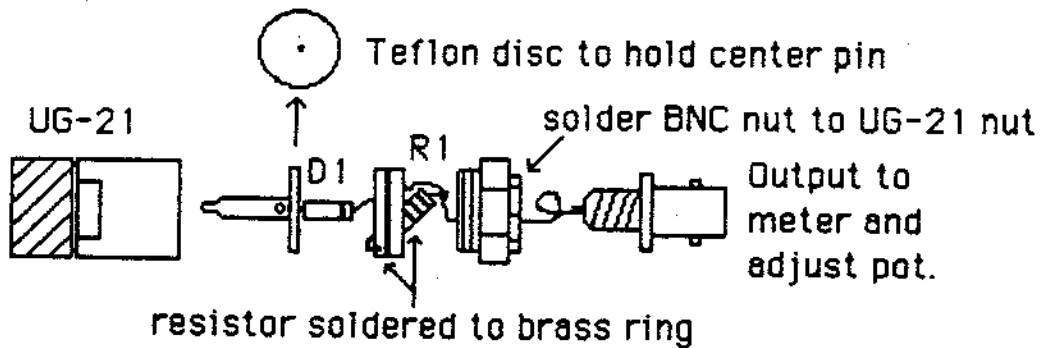
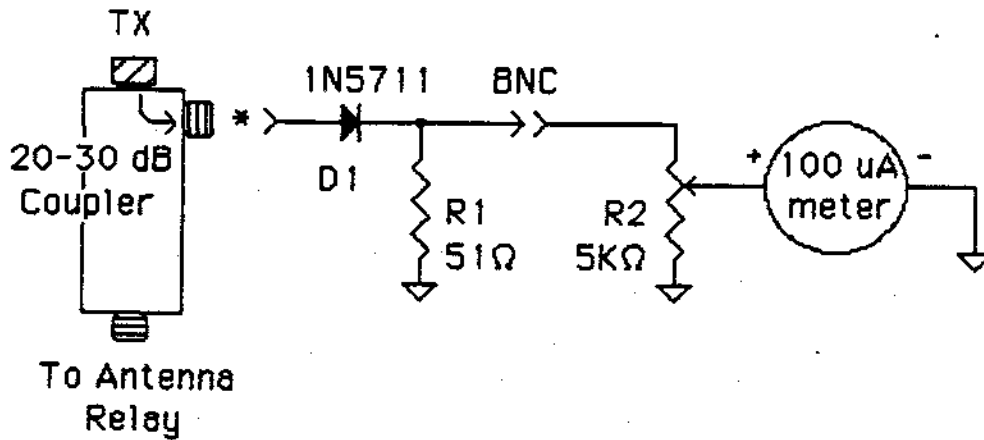
1W	50-100mA	ICQ
5W	100-200mA	ICQ
10W	200-300mA	ICQ
>25W	>300mA	ICQ

[^]Reference:

"Biasing Circuits for SSB Amplifiers" WA3JUF '85
 "Transistor Base Bias Supply" WA3IWT "CB" 10/88



Microwave RF Power Monitor



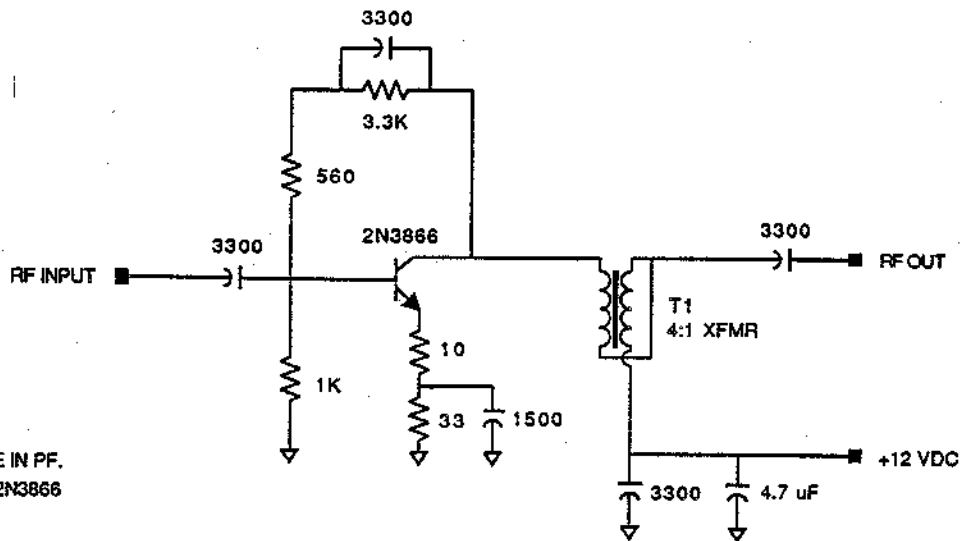
This power monitor is used as an indicator on transmit. The actual power is measured with a calibrated power meter, then the adjust potentiometer is adjusted for full scale on the meter. Couplers can be found at flea markets and surplus outlets. Since most 20-30 dB couplers have less than 0.2 dB thru loss, they can be installed in the transmitter line permanently. I use this type of detector for all bands 903 thru 3456 MHz. Power into the detector should be 40 mW or less. Add the necessary attenuation at * off the coupled port. Even 1/4 watt carbon resistor attenuators mounted inside a UG-21 will work for this application. Happy monitoring. de WA3JUF

A 50 MHz 2N3866 LINEAR AMPLIFIER

A 2N3866 amplifier stage follows the mixer in the 50 MHz transmit converter. An inexpensive 2N3866 was chosen since it is a commonly available device having excellent linearity; when driven to +7 dBm in the 50 MHz transmit chain all intermod products are more than 60 dB down. The amplifier has 15 dB gain and yet is stable into a 10:1 mismatch.

As with all of the stages, a point-to-point "dead bug" construction technique is recommended. Care must be taken to keep all lead lengths to a reasonable minimum. All resistors are 1/4 watt. Remember to keep the 2N3866 away from ground since the case is the collector. Use a small push-on type heatsink fashioned from tin or copper as shown. The transformer is wound as shown in the pictorial - wire size is not critical.

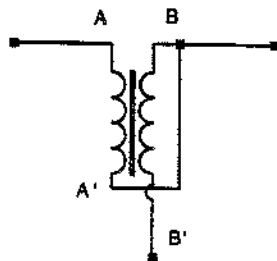
50 MHz 2N3866 LINEAR AMPLIFIER



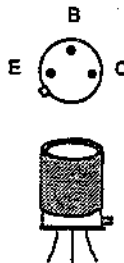
NOTE

RESISTANCE IN OHMS, CAPACITANCE IN PF.
USE PUSH-ON TYPE HEATSINK ON 2N3866

T1 8t #28 BIFILAR ON T30-8 TOROID.
CONNECT TRANSFORMER AS SHOWN.



2N3866



HEATSINK MADE FROM COPPER

ICQ = 40 mA 15 dB GAIN @ 50 MHz P1dB = +20 dBm STABLE INTO 10:1 VSWR IMD < -60 dBc @ +7dBm Pout WB3JYO 10-89

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