

# PACK RATS'



**PACK RATS**

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

# CHEESE BITS



MT. AIRY VHF RADIO CLUB., "THE PACK RATS", PHILADELPHIA, PA.

NET FREQUENCIES: 50.125, 144.150, 222.125, 224.58/222.98, 432.110, 903.100, 1296.100 MHz

AFFILIATED CLUB: AMERICAN RADIO RELAY LEAGUE

W3CCX

ARNS

Meetings: Third Thursday of each month at 8:00 PM  
Southampton Free Library, 947 E. Street Road  
Southampton, Pennsylvania 18966

SCANNED TO PDF BY BERT, K3JUV, 2013

VOLUME XXXIV

OCTOBER 1992

NUMBER 10

## THE PREZ SEZ

I want to thank all of the members who took the time to fill out the questionnaire that was mailed to you. We had a great response and now have a clear indication of the direction most club members want us to go. It appears that a lot of you want to get on a new band. The antenna building party and no tune units are the way to accomplish this. We will be determining the bands but I suspect that 1296 and 432 MHz will be what most of you want. Please see the attached results from the survey.

The first order of business this fall is Hamarama and the Mid Atlantic States VHF convention. I am sure both Al and John can use your help. Don't wait to be asked -volunteer to help. If you need a ride to the hamfest or convention let someone know. It is increasingly difficult each year to run these events. If they are to continue we require the full support of every club member.

Now to change the subject away from business. I decided to try roving in the September contest. Over the years I have operated single, multi and multi mountain top but rover will be a new experience. A ham friend has a motor home and I talked him in to trying it. We intend to be on 6, 2, 222, 432 and 1296 MHz. The grids to be operated from will depend on the weather. I found that I had a lot of old antennas that we rebuilt for the rover. More on this in my next report.

73's

William T. Murphy  
WØRSJ FN2OJR

Pack Rats CHEESE BITS is a publication of the Mt. AIRY VHF RADIO CLUB, INC. Philadelphia, PA. and is published monthly.

SUBSCRIPTION RATE: \$10.00 PER YEAR (USA)  
 \$12.00 PER YEAR (CANADA)  
 \$15.00 PER YEAR (ELSEWHERE)

We operate on an exchange basis with other publications. Anything that is printed in CHEESE BITS may be reprinted, unless otherwise stated, provided proper credit is given.

DEADLINE FOR ARTICLES AND SWAP SHOP IS THE MONTHLY MEETING DATE. NON-COMMERCIAL SWAP SHOP ITEMS-FREE OF CHARGE.

SUBSCRIPTION/ADVERTISING MANAGER:

Bob Fischer, WB2YEH  
 7258 Walnut Avenue  
 Pennsauken, NJ 08110  
 (609) 665-8488

EDITOR:

Harry Brown, W3IIT  
 3012 Potshop Road  
 Norristown, PA 19403  
 (215) 584-4846

CLUB TREASURER:

Dave Mascaro, WA3JUF  
 1603 Mink Road  
 Ottsville, PA 18492  
 (215) 795-2628

AWARDS CHAIRMAN:

Joe Kilgore, W2EIF  
 (609) 783-9478

TRUSTEE OF CLUB CALL - W3CCX

Ron Whitsel, WA3AXV  
 (215) 355-5730

PACKRAT 222 MHz REPEATER - W3CCX/RPTR

222.98/224.58 MHz, Churchville, PA

OFFICERS: 1991-1992


PRESIDENT: W0RSJ, Bill Murphy  
 VICE-PRES: WB3JYO, Paul Drexler  
 REC. SECR: WA3AQA, Walt Zumbach  
 TREASURER: WA3JUF, Dave Mascaro  
 COR. SECY: WA2GFP, Geoff Krauss  
 DIRECTORS: N3AOG, Dick Comley (1 YRS)  
 WA3NUF, Phil Miguezlez (1 YRS)  
 N3EKA, Brian Taylor (2 YRS)  
 K3ESJ, Bill Jaxheimer (2 YRS)

MONDAY NIGHT NETS

<u>TIME</u>	<u>FREQ.</u>	<u>NET CONTROL</u>
7:30 PM	50.125 MHz	K3EOD
8:00 PM	144.150 MHz	W2EIF
8:30 PM	222.125 MHz	WB2YEH
8:30 PM	224.58R MHz	K3ACR
9:00 PM	432.110 MHz	WA3AXV
9:30 PM	1296.100 MHz	WA3NUF
10:00 PM	903.100 MHz	N3AOG

COMMITTEE CHAIRMEN

LADIES' NIGHT: WA3YUE 215-666-1558  
 JUNE CONTEST: N3CX 215-679-7293  
 HAMARAMA: K3EOD 215-742-3312  
 VHF CONFERENCE: KB3XG 215-270-3158



THE AMERICAN RADIO RELAY LEAGUE

**OST**

**HUGH A. TURNBULL, W3ABC**  
 Director, Atlantic Division

6903 RHODE ISLAND AVE.  
 COLLEGE PARK, MD. 20740 (301) 927-1797

---

1-302-478-2757

**AMATEUR**  
 and  
**ADVANCED**  
**COMMUNICATIONS**

*"Gisele"*  
 K3WAJ

G. B. WALLS


3208 CONCORD PIKE (RT. 202)  
 WILMINGTON, DEL. 19803

---

Graphic Design

Illustration

Production



**Lynne D. Whitsel**

209 Frog Hollow Road  
 Churchville, PA 18966  
 215 355-5730

Calendar of Coming Events-October 1992

- 3 Mid-Atlantic VHF Conference will be held at the Sheraton Poste Inn in Cherry Hill NJ. Admission \$8 in advance or \$10 at the door (includes HAMARAMA '92). For further info, contact the Conference Chairman, John Sortor, KB3XG, 215-270-3158.
- 4 Mt. Airy VHF Radio Club "HAMARAMA 92" will be held at the Garden State Park, Rte 70 & Cornell Ave. in Cherry Hill, NJ. Note new location (same as last year). Unlimited parking (how about that). TI on 146.52 and 223.5.
- 6 Canadian Fall VHF/UHF Sprint on 222 MHz. 7 PM to 11 PM local time. Exchange is grid square. Scoring is No. of grid squares times No. of contacts. Send logs to Dana Shtun, VE3DSS, 500 Willard Ave., Toronto, Ontario M6S 3R6, Canada. More details in Oct CQ, pg. 112.
- 8 Board of directors meeting for the Mt. Airy VHF Radio Club will be held at the QTH of Dave, WA#JUF at 8:00 PM. All interested parties welcome. Call 215-795-2648 for directions.
- 9 Draconids meteor shower peak.
- 10 Bergen ARA Hamfest will be held at Fairleigh Dickenson University, 1000 River Road, Rt. 4 at the University exit. Teaneck, N.J. VE exams will be held. Talk-in on 146.19/79 and 145.62.
- 10-11 Pennsylvania QSO Party sponsored by the Nittany ARC. See Oct. QST, page 124 for rules.
- 11 Shore Area Ham and Computer Fest will be held at the Allaire Airport in Wall Township, NJ. VE exams will be held. Talk-in on 145.11/R and 146.52.
- 11 Columbia ARA Hamfest at the Howard County Fairgrounds in W. Friendship, MD. TI on 147.735/.135. VE Session.
- 12 Canadian Fall VHF/UHF Sprint on 144 MHz. Operate from 7 PM to 11 PM local time. See Oct. 6 for rules.
- 15 Regular meeting of the Mt. Airy VHF Radio Club at the Southampton Free Library on Street Rd. in Southampton, Pa. N3CX will present a program on "Construction Techniques for DL6WU VHF Yagis". All VHFers are encouraged to come and enjoy the evening with us. You need not be a member to attend.
- 16-18 Microwave Update '92 will be held at the Holiday Inn Holidome in Rochester, NY. See Sept. Cheesebits for details.
- 17-18 ARRL International EME Competition. See Sept. QST page 124.
- 18 Penn Wireless Association Tradefest-92 at the Robert Yezzi Fairgrounds, Rt. 513, 1 mile south of Rte. 132 in Bensalem, Pa. Admission: \$3 each or \$7 per carload. VE exams will be held. Talk-in on 145.52 or 146.925/325.
- 21 Predicted peak of the Orionids meteor shower at 1841 UTC.
- 24 Canadian Fall VHF/UHF Sprint on 50 MHz. Runs from 1000 UTC to 2400 UTC See Oct 6 for more details.
- 25 RF Hill ARA Hamfest at the Dublin Firehall, Rte 313, 5 miles from Doylestown. Note the new location. VE exams will be held. TI on 144.710/145.310, 134.28/88, and .52.

1993 January Sweepstakes

By Phil, WA3NUF

The end of summer is almost here signalling the start of January Contest Preparations. It's time to drain the rain water out of the feedlines and clear the bird nests from the antenna elements. The Packrats led the field last year but the Rochester VHF Group was less than 120K points behind us. This January may well be the mother of all VHF SS Contest competitions.

Start looking over your shack, a simple improvement can easily add 10K or more to your score. Above all, ask for help if you need it! You'll find there is plenty available for the asking.

The Packrat TEAMS competition will be renewed by popular demand. TEAMS lists, rules and the traditional questionnaires will be sent out in a few weeks. Remember - you must have attended at least 2 meetings to qualify for ARRL club competition.

See you at the next meeting.

HAMARAMA '92

By Al, K3EOD

As I sit down at my desk to compose this article, I look back over the last year and realize that HAMARAMA is a team effort. There is no one person who can run this event by himself. It takes a large number of dedicated club members, each doing his share to make HAMARAMA a success.

I'd like to thank all club members and their friends, who have contributed their time and talents to this mammoth undertaking.

Immediately after the end of the Mid Atlantic VHF Conference Saturday night, the sign crew and night parking crew will be at the park to set up signs and traffic controls (approx. 10 PM). Please contact Paul, WB3JYO, or myself to offer your assistance.

Gary, WB2OMY, Parking Chairman, and BOB, WB2YEH, Ticket Selling Chairman, are still looking for additional help on their committees. Why not pick up the phone now and offer your help or contact me if you would like to work on any of the committees.

The Sunday breakfast has been scheduled for 4:30 AM at the Diamond Diner, Race Track Circle, Cherry Hill.

Dress Code is the Packrat T.-shirt and Packrat hat.

See you all at the VHF Conference and Hamarama '92.

TID BITS:

Rats heard during the Sept. VHF QSO Party: K3ACR, WA3AXV, WA3AQA, N3CX, K3DMA, W2EIF, K3EOD, N3EVV/R, W3HQT @ K1WHS, WA3IAC, W3IIT, WB3JYO, WG2K, WA3NUF, WR3P, K1PXE, N2SB, WORSJ/R, W3VIR, WB3YEH,

Congratulations to Herb, W3IWU for getting DXCC on 6 meters.

Anyone needing tower or antenna work contact Paul, WB3JYO.

Congratulations to "Ex Rat", Mark Wilson, AA2Z, for becoming the new editor of QST.

New phone numbers for Chuck Benavides, W1KIR: 206-477-0296(W) and 206-854-6943(H).

Goeff, WB2GFP, is looking for riders to the Microwave Update in Rochester. Contact him at 215-643-2031 if you are looking for transportation.

Health and Welfare

Joe, W2EIF, is out of the hospital and is back on the air.

Don Hampton, W3CJU, is hospitalized in Doylestown.

Interesting Stuff from other Newsletters

The August issue of "terrestrial VHF+" includes the annual directory of ACTIVE VHF STATIONS. It is sorted by grid and includes the state, station call, operator name, telephone number and bands. It is available from John Carter, K0IFL, PO Box 554, Union, MO 63084. The cost is \$3.00 postage paid.

The Sept./Oct. 92 issue of The VHF-UHF DXer has an article on VHF/UHF Slooping Vee antennas by Richard, K1POO. The August issue included an article on 4 meter (70.000 to 70.500 MHz) operation with a list of beacons and the band plan. Dave Hardy, G8ROU, the editor of The VHF-UHF DXer is planning to attend the Mid Atlantic VHF Conference and Microwave Update.

SWAP SHOP

Send non commercial swap shop items to the editor.

For Sale: 5760 MHz 10 watt Power Amplifiers. Requires a single -24 volt power supply at approx. 3 amp. 0 dBm input for full output. \$100. Call Gary, WA2OMY at 215-539-6409.

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 "Sooper Looper" \$99 kit, \$124 assembled and tested. 2304 MHz 45 element \$75 kit, \$89 assembled and tested. Also available: element and hardware kits for the 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: 903 MHz .8dB NF \$90, 1296 MHz .8 dB, 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, W3HOT, Box 2301 RR-1, Troy, Maine. For information and orders telephone (207) 948-3741.

CHEESEBITS SUBSCRIPTIONS

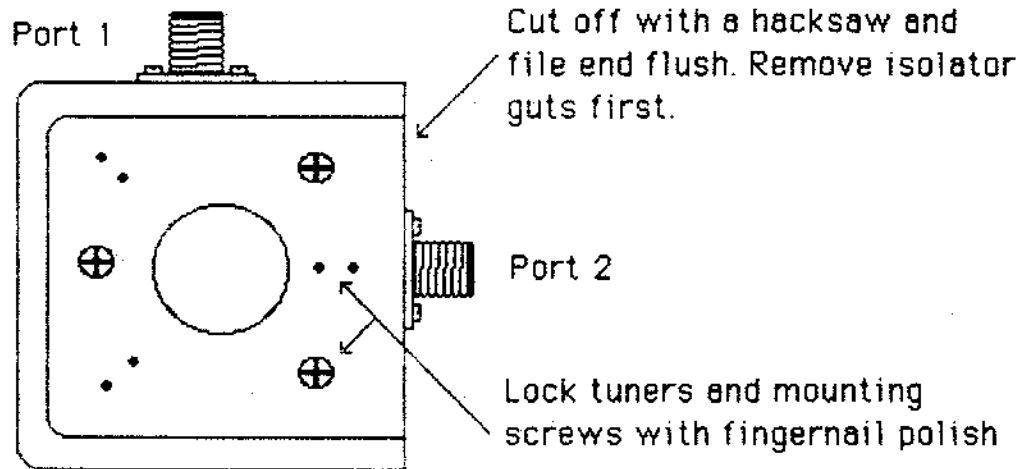
Cheesebits subscriptions are available to everyone interested in activities and information from the VHF thorough the microwave frequencies. Subscriptions are for 1 year of 12 issues. For a subscription, send the following information:

----- Name:  
Name: \_\_\_\_\_ Call: \_\_\_\_\_  
Street Address: \_\_\_\_\_  
Town: \_\_\_\_\_ State: \_\_\_\_\_ ZIP: \_\_\_\_\_  
Subscription Rate: \$10.00 per year (USA), \$12.00 (Canada), \$15.00 (Worldwide)  
Oct. 92

Send to: SUBSCRIPTION/ADVERTISING MANAGER:  
Bob Fischer, WB2YEH  
7258 Walnut Avenue  
Pennsauken, NJ 08110

## 3456 MHz Isolator/Circulator

by Dave Mascaro, WA3JUF



I.L. port 1 - 2	0.65 dB		0.5 dB
S11 w/port 2 open	11 dB		13 dB
S11 w/port 2 term.	12 dB		13.5 dB

Used C-Band TVRO LNAs can be found at flea markets for less than 20 dollars. Some that don't work can be had for \$5.00. In the past I have shown how to modify these units for Amateur use on 3.4 GHz by removing the horn and attaching an SMA connector. The unit can also be used for a transmit amplifier. Usually defective units have a blown GaAsFET in the first stage, which is easily replaced by an NE720, MGF 1302 or equiv.

For units that are to be used for parts, ie: chip caps, GaAsFETs, bipolar transistors and trimmer caps, there is another application. Remove the pc board and disassemble the isolator. Cut the cast aluminum housing in half between the isolator and the pc board with a hacksaw. Then file the end of the unit flush. Mount an SMA for the input (Port 1) and an SMA for the output (Port 2). Use 2-56 screws to mount the connectors.

I found that the insertion loss (S21) and the return loss (S11) can be improved at 3456 MHz (below the design frequency 3.7-4.2 GHz) by adding a small magnet to the existing magnet. Move the magnet(s) around to "tune" the isolator.

The existing load at Port 3 will handle 250 mW or less. To use the unit as a circulator (3 ports), add a third connector in place of the load at port 3. A high power load can now be added.



# MT. AIRY V.H.F. RADIO CLUB, INC.

PHILADELPHIA, PENNSYLVANIA  
CLUB MEMORIAL CALL

W 3 C C X



## PACK RATS FREQUENCIES

144.15 - 50.125 220 RP/TR  
432.11 - 1296.025 MHZ.  
220.125

ADDRESS CORRESPONDENCE TO:

July 1992

Dear Packrat -

In order to better serve the members of The Mt. Airy VHF Radio Club the Board of Directors has formulated the enclosed questionnaire in order to help communicate your views. Please take a moment to answer a few questions so that the board may plan its strategy to best serve the club.

We need YOUR input! Please complete the questionnaire and mail it in TODAY using the enclosed SASE.  
\*\*\*

1. What monthly meeting program(s) did you most enjoy during the last two years?

2. What type of programs do you like best?

- Technical
- Operating oriented
- Other \_\_\_\_\_

3. Do you have suggestions for future programs?

4. The Packrats pride themselves at being the #1 VHF club in the nation, yet we have many members who are only on 1 or 2 bands with modest equipment. We would like to help all our members improve their stations. Which of the following would be beneficial activities? (check all that apply)

- Organize antenna-building parties for members
- Hold tower parties for those who need antenna work
- Encourage the January Contest team captains to assist their team members year-round
- Build "No-tune" transverters for our members who would like to get on the higher bands
- Other (please be specific)

5. The Rochester club made extensive use of rovers last January, enabling them to come very close to our score. In order to be competitive this January we may benefit by doing the same -

encouraging club members to participate in the contest as rovers. Do you think we should make a concerted club effort to equip those who want to become rovers?

Strongly agree  Agree  Disagree  Strongly disagree

6. One of the major club events is the VHF conference. We will be moving to hopefully a better location this year and our conference chairman already has an excellent line-up of speakers. Do you favor expanding our Saturday evening banquet activities?

Strongly agree  Agree  Disagree  Strongly disagree

Any comments?

7. Do you think a noise figure measuring session would be worth holding?

Strongly agree  Agree  Disagree  Strongly disagree

8. Because of our new location (Cherry Hill Sheraton) it will be possible to encourage "family" participation by providing a list of suggested activities for folks from outside the local area. This will hopefully attract more hams to the conference and fleamarket. Do you think we should do more in this area?

Strongly agree  Agree  Disagree  Strongly disagree

9. One way that we could improve our "PR" among the amateur community (at least at hamfests) would be to have club jackets displaying the "RAT" logo. Would you be interested in a Packrat jacket if the price is reasonable?

Strongly agree  Agree  Disagree  Strongly disagree

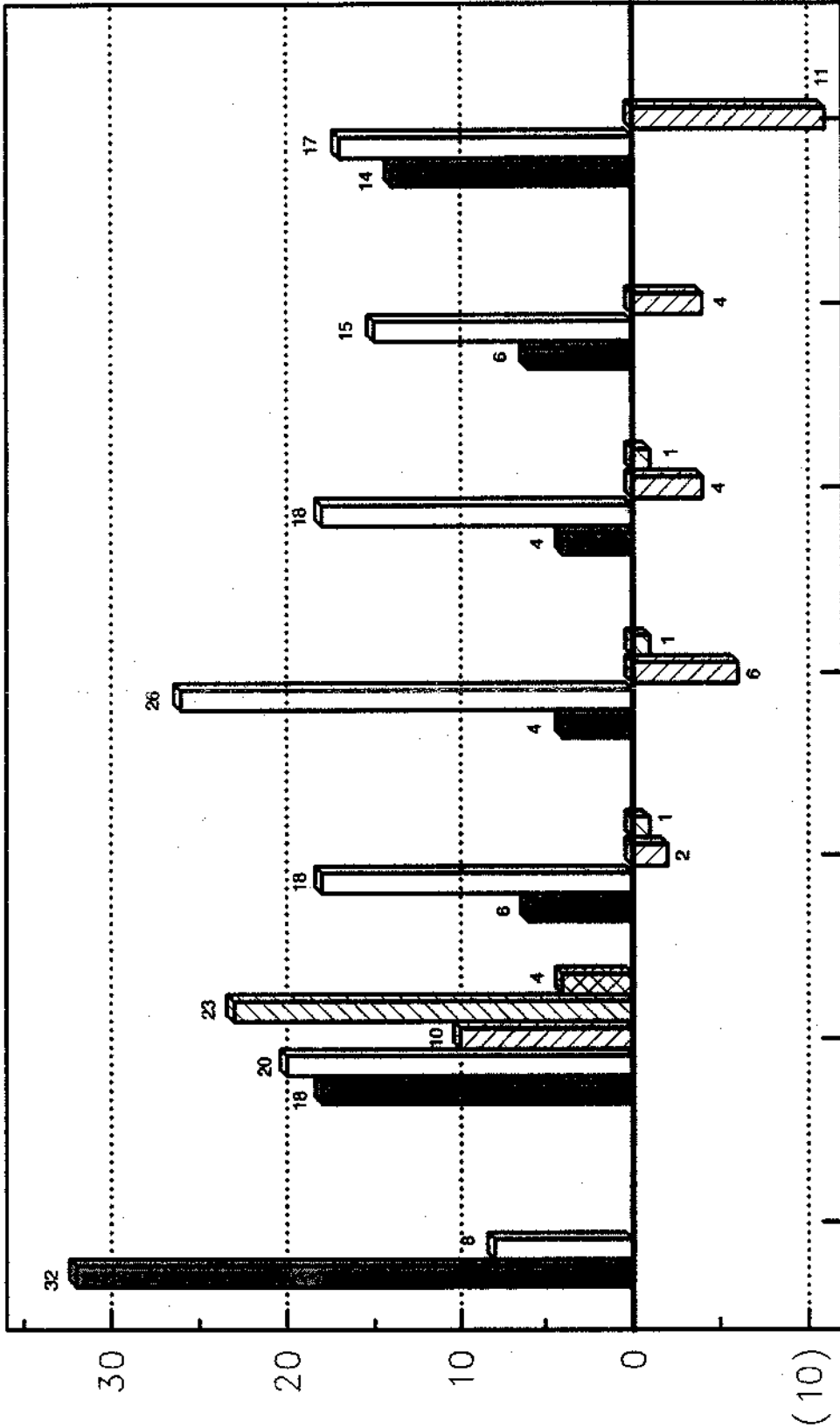
10. How do you think we can encourage some of our less active members to get involved in club activities?

Additional comments or ideas:

Thank you for responding. Let's work together to make the coming year one of the best in our club's history!

Call \_\_\_\_\_





Programs liked best  
 Tech Operating

Station Improvements  
 Antennas Towers Team Captain Notunes Home Brews

Rovers  
 Strongly Agree Agree Disagree

VHF Conf banquet activities  
 Strongly Agree Agree Disagree

Noise figure measuring session  
 Agree Disagree

Family participation to VHF conference  
 Disagree

Packrat Jackets  
 Strongly Agree Disagree

(10)



28 July 1992

Mr. Allen L. Boblitt  
Mt. Airy V.H.F. Radio Club  
8389 Langdon Street  
Philadelphia, Penna. 19152  
U.S.A.

Dear Al and Pack Rat Friends,

Last week I recieved your letter and the generous check in my father's memory. It takes about 2 weeks for mail to cross the world to us, but yours did arrive safely and I have sent the funds on to our Mission treasurer.

Now four and one half months have gone by since my Dad passed away, yet the realization sinks in only slowly. Remembrances of this man are with me often, and I continue to be helped by his spirit in much that I do. He was and always will be a Pack Rat in my mind's eye, for so many of my memories see him walking about, selling, or shooting the bull in the midst of all of you fellows. The companionship and the intellectual challenge of the club gave him immense enjoyment for many years. I like to think that he remains associated with the club to this day, even while he is in God's hands. I imagine that Mario and Frankie, Herr Stein and Doc, and perhaps even my friend Father Moran - all are within range of the repeater that Zed Dog is now keying up.

For many who remain here in this imperfect world, life is pretty rough. Nepal is a rugged land where walking is the principle means of travel and where most folks scrape out a living farming the sides of steep mountain slopes. Our mission has four hospitals here. Two of them lie 3 to 5 hours off of any motorable roads. I work in the hospital that is in the capital city of Kathmandu. In all four hospitals we see many patients who have come across the country on amazing journeys: carried in baskets, walking mountain trails while ill, embarking on day long bus journeys over the rutted, dusty roads. All of this is hard to comprehend when one is used to driving 5 minutes to visit the family doc; but it is the condition that many here find themselves in.

We see many folks who have easily treatable illness; young people whose lives are saved because simple antibiotics can be provided. But hospitals, even ones like ours which run on a shoestring budget, cost money to keep going. Sadly, many people stay home and suffer because they have heard that the hospital costs too much. 10 cents for an office visit; \$2.50 for a week of antibiotics; \$20 to be hospitalized for a week; \$50 for a major operation - and many can't afford even this. Here in Nepal you will find some of the poorest of the world's poor. We are able to care for them because people like you Pack Rats have generous hearts. Be assured that we will make that \$350 go a long way.

It is getting on to the heat of summer. This evening, as the crickets sing in the trees and the mosquitoes nip at the ankles, it is easy for me to imagine the White Elephant sale starting up outside the window. Sodas floating in tubs of ice, picking my way through the crowd, being stopped to chat by one person or another, the cloud of smoke hanging overhead, the loudspeaker baying out news of a sale. There will always be a warm place in my heart for you guys.

My Dad and I both thank you.

Your friend,



Mark D. Zimmerman M.D.  
Patan Hospital  
Box 126  
United Mission to Nepal  
Kathmandu, Nepal

9-

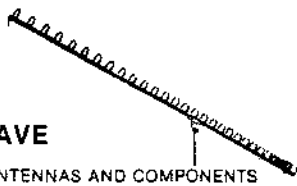
FREQUENC	GRID	CALL	REMARKS
144.052	EN24	KA0EWO	NEW FREQUENCY ??
144.060	FN84	VE1SMU	NEW FREQUENCY ??
144.063	EM40	W5VAS	NEW FREQUENCY ??
144.267	FN23	WA2UMX	30W, 2EL QUAD TO SW
144.274	EM66	W4RFR	
144.275	EL88	WB400J	25W AND BIG WHEEL
144.276	FN12	W2RTB	
144.277	EN15	KA0EWG	
144.277	FN08	VE2TWO	
144.279	EM55	N4MW	
144.280	EN58	VE3TBX	25W-2 YAGI TO S.E.
144.281	FN13	KW2T	
144.282	EL87	WD4LWG	10S SIG + ID, CHIRPS
144.282	EM12	?????	
144.287	EM27	W0VD	
144.287	EN34	W0VB	
144.287	EN64	K88JI/B	10W-3 EL YAGI S-SE
144.288	FM18	W3VD	
144.291	FM19	W3VD	10W HALO
144.292	FN24	W9IP/2	40W & 5EL TO NORTH FOR Au
144.294	EN01	WB0QIY	
144.295	EM79	WABR/B	15W TURNSTILE
144.297	FN65	VE1BTT/B	NOT CONTINUOUS DUTY
144.298	FN10	WB2CUS	NORTH FOR Au
145.298	GN03	VE1SMU	SABLE ISLAND
147.930	GN03	VE1SMU	SABLE ISLAND
147.950	GN03	VE1SMU	SABLE ISLAND
147.995	GN03	VE1SMU	SABLE ISLAND
222.017	EM12	K5BYS	
222.055	EM55	N4MW/B	0.5W, HORIZ SQUALO @ 60
431.800	GN03	VE1SMU	SABLE ISLAND
431.850	GN03	VE1SMU	SABLE ISLAND
431.900	GN03	VE1SMU	SABLE ISLAND
431.950	GN03	VE1SMU	SABLE ISLAND
432.000	EM86	K4EJO	
432.074	EN10	WB0QIY	
432.075	FM07	WA4PGI	
432.289	FM19	W3VD	
432.303	FN13	KW2T	FSK
432.308	EM75	WA4ZTK	
432.315	FN41	W1UHE	QRT IF W1UHE GRV
432.325	EM12	K5BYS	
432.340	FN20	KB3NQ	
432.365	EM99	K8AXU ???	1 W ERP, TX ALTERNATE MIN
432.395	EM55	W4HHK	
902.325	EM12	K5BYS	
902.990	EM79	K8EDE/B	DRIFTS W/ TEMP
903.073	FN20	KB3NQ	
903.075	EM86	K4EJQ	
903.080	FN20	N3CX	QRT IF N3CX GRV, SW L.WHL
1295.998	EM86	K4EJQ	
1296.000	GN03	VE1SMU	SABLE ISLAND
1296.001	EM86	K4EJQ	
1296.050	FM18	K3IVO	100mw NFSK, DRIFTS W/TEMP
1296.073	EN52	K3SIW/9	
1296.075	FN84	VE1SMH	FM???
1296.080	FN20	N3CX	QRT IF N3CX GRV, 1W ALFOR
1296.200	FM07	WA4PGI	
1296.295	EM55	W4HHK	
1296.325	EM12	K5BYS	
2304.035	FN20	N3CX	QRT IF N3CX GRV, 4W ALFOR
2304.050	EM86	K4EJQ	
2304.070	EM55	N4MW	
2304.323	EM12	K5BYS	REPORTED 2 KHz LOW
3456.040	EM55	N4MW	
3456.080	EM86	K4EJQ	
3456.140	FN20	N3CX	QRT IF N3CX GRV, 2W ALFOR

# DOWN EAST MICROWAVE

MICROWAVE ANTENNAS AND COMPONENTS

BILL OLSON  
W3HQT

BOX 2310 RRI  
TROY, ME 04987  
(207) 948-3741



CRAIG HENDERSON  
N8DJ8

Ph. (419) 352-4465  
Hrs. 10-5



C. A. T. S.  
Rotor Parts & Repair



7368 S.R. 105

Pemberville, OH 43450

215-288-0325



# W3HK

GEORGE S. VanDYKE, JR. P.E.

1737 Scattergood St.  
Phila., PA 19124

## The R.F. Connection

"Specialists in  
RF Connectors and Coax"

**KA3QPG**

Joel Knoblock  
301/840-5477  
Fax 301/869-3680

Order Line 800-783-2666  
Suite 11, 213 N. Frederick Ave.  
Gaithersburg, MD 20877

(302) 328-7728  
ORDER LINE 800-441-7008



### Delaware Amateur Supply

"AMATEUR SALES AND SERVICE"

PAUL WA3QPX  
KATHY KA3IYO

71 MEADOW ROAD  
NEW CASTLE, DELAWARE 19720

(202) 588-1068  
(215) 745-6173  
(302) 886-7630  
(609) 266-3668



### COMPU-SIMPLE, INC.

COMPUTER APPLICATIONS FOR SMALL BUSINESS

BRIAN M. WEISMAN  
Consultant

P.O. BOX 66374  
WASHINGTON, DC 20035

215-342-5982

WA3HIT

Paul and Betty Rilling

INCOME DIVERSIFICATION

5830 Weymouth Street -Phila., Pa.19120

Gerry Rodski - K3MKZ

717-868-5643  
6-10 PM

SSB ELECTRONIC U.S.A.  
Call for Catalog

124 Cherrywood Dr. Mountaintop, Pa 18707

609-541-0120

## Bob Fischer Company, Inc.

AERIAL LADDERS · UTILITY EQUIPMENT

BOB FISCHER  
PRES.

28TH & LINCOLN AVE.  
CAMDEN, N. J. 08105

## DESTINATIONS INC.

A FULL SERVICE TRAVEL AGENCY

HARRIET SOLTOFF  
TRAVEL CONSULTANT

616 SOUTH THIRD STREET  
PHILADELPHIA, PA. 19147

RES. (215) 947-4483

MOVERS - TRUCKS 7-8"  
SAT. 9-6"

Day-Nite (215) 455-2121

## FERTIK'S ELECTRONICS . . . . .

Components & Equipment

LEON FERTIK

5400 ELLA STREET  
PHILADELPHIA, PA. 19120

# ARROW

RICHARD E. COMLY

TOOL, DIE & MACHINE CO., INC.  
2065 BENNETT RD. PHILA., PA 19116

(215) 676-1300  
FAX 934-2237



(609) 266-0736

RICHARD CONNOR



## RECON Communications

- COMMUNICATIONS TOWER MAINTENANCE
- ANTENNAS, FEEDLINES, TOWERS INSTALLED
- TOWER PAINTING, RE-LAMPING, RE-GUING
- RF SYSTEM TROUBLESHOOTING
- LIGHTNING PROTECTION, GROUND SYSTEMS

Emergency Services

412 Carranza Road  
Tabernacle, NJ 08068

(302) 328-7728  
ORDER LINE 800-441-7008



### Delaware Amateur Supply

"AMATEUR SALES AND SERVICE"

ROB WA3QLS  
GAIL KA3ITH

71 MEADOW ROAD  
NEW CASTLE, DELAWARE 19720

(215) 745-6173  
(302) 886-7630  
(215) 342-8832  
(609) 266-3668



### COMPU-SIMPLE, INC.

COMPUTER APPLICATIONS FOR SMALL BUSINESS

ELLIOTT T. WEISMAN  
Consultant

P.O. BOX 7161  
WILMINGTON, DELAWARE 19803

## RUTLAND ARRAYS

For the finest VHF/UHF antennas  
1703 WARREN ST.  
NEW CUMBERLAND, PA 17070

Call or write for our new catalog!  
(717) 774-5298 7 - 10 pm EST

STEVEN N. WHITE

Attorney at Law

WA3IAO

2217 PALOMINO DRIVE  
WARRINGTON, PA 18976

TEL: (215) 343-6902  
FAX: (215) 343-6903

