

PACK RATS'



PACK RATS

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

CHEESE BITS



SCANNED TO PDF BY BERT, K3IUV

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 XXXII

MAY 1990

NUMBER 5

THE PREZ SEZ

Thanks to all of those who attended the last meeting! READ ON!! The May meeting will be our annual ARRL Night and we hope all of you turn out to hear what our League representatives have to say. I know, being in an occupation which is looking for frequencies for the future High Definition Television (HDTV) as well as Digital Audio Broadcasting, we hope the ARRL will represent us to keep our bands in tact. There is some light at the end of the tunnel, however, with Direct Broadcast Satellites. If the FCC manages things right, the DBS home entertainment phenomenon could be a big help in VHF/UHF and above frequency conservation.

Boy, during the 432 sprint, there was some real nice tropo! I was running QRP (1 watt out) and managed to work KØRI/8 in FM09. Hope everyone is having a good time with the sprints.

Please consider coming to the June Contest Expedition with the club this year. We are returning to FN01 above Clearfield, Pennsylvania and we need all the help we can get. Please get in touch with Ron, WA3AXV or me for more information.

I hope some of you can make it to New Hampshire for the VHF/UHF/SHF Conference this month. Also, I plan to see many of you and your XYL/YL's at our Ladies' Night Banquet, June 2. And, on Thursday evening, prior to ARRL Night, we are meeting for dinner with our guests. Give me a call for more information.

You should be getting your stations ready for the summer tropo season; listen on the bands a little after dark and make some noise, even if there's no activity.

73, and listen for the weak ones!
 Dave Hackford, N3CX

VISITORS AT THE MARCH 15 GENERAL MEETING

W3AJS - CHARLES "ED" KEENER, ORELAND, PA

W2LYL - LOU JOSEPH, HADDONFIELD, NJ

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 WA3NUF PHIL MIGUELEZ (2YRS)

MONDAY NIGHT NETS

7:30 PM - 50.125
8:00 PM - 144.150
8:30 PM - 220.125
8:30 PM - 224.58/R
9:00 PM - 432.110
9:30 PM - 1296.100
10:00 PM - 903.100

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-2-

CALENDAR OF COMING EVENTS

Harry Brown, W3IIT

MAY

- 4 ARRL 903 MHz Spring Sprint Contest, 7-11 PM EDT, Friday Evening. See April QST, page 80 for rules.
- 6 Eta Aquarid meteor shower peaks at 0837Z.
- 10 Pack Rat Board of Directors Meeting at the QTH of Pat Cawthorne, WB3DNI. 8:00 PM. All interested parties invited. Call 215-672-5289 for directions.
- 13 2nd annual Carroll County Computerfest and HAMBOREE will be held at the Carroll County Agricultural Center in Westminster, Md. Talk-in: 146.52, 224.68, and 224.64.
- 13 MOTHERS DAY
- 17 Pack Rat general membership meeting at the Southampton Free Library, Street Road, Southampton, Pa. at 8:00 PM. All members and VHF/UHFers invited. Nominations for club officers will be accepted followed by our ARRL Night program.
- 17 ARRL 2304 MHz Spring Sprint, 7-11 PM EDT. W3CCX will operate from the club meeting via temporary waveguide connection to the WA3AXV antenna farm. Bring along your TWT and LNA's!
- 18-20 Atlantic Division Convention and Rochester Hamfest at the Monroe County Fairgrounds near Rochester, NY. Includes VHF-UHF Microwave forum. See May QST page 73 for details. Talk-in: 146.28/88 rptr.
- 18-20 Annual Northeast VHF Conference at Rivier College, Nashua, New Hampshire. Technical Talks featuring Paul Drexler, WB3JYO, antenna gain measuring, band rap sessions, banquet, and door prizes. SASE to Lew Collins, W1GXT 10 Marshall Terrace, Wayland, Mass. 01778 for details. Tel: 508-358-2854.
- 19 Lancaster County Hamfest sponsored by the Ephrata Area Repeater Society will be held at Ephrata Senior High School. Talk-in: 144.85/145.45 rptr.
- 20 Armed Forces Day
- 20 Bergen ARA Hamfest at the Bergen Community College, 400 Paramus Rd., Paramus, NJ. Talk-in: 146.19/79 rptr.
- 20 Tomagua Transmitting Society Hamfest, 1 mile west of Tomagua... follow signs. Talk-in: 146.07/67 and 147.705/105 rptrs, 146.52.
- 26-27 ARRL 50 MHz Spring Sprint, 2300-0300Z (Saturday evening). See April QST page 80 for rules.
- 27 Maryland FM Association annual Memorial Day Hamfest at the Howard County Fairgrounds in West Friendship, Md. Talk-in: 146.16/76 rptr.
- 28 Memorial Day

PROPAGATION REPORT
Paul Drexler, WB3JYO

Propagation has been less than exciting during the past month, a far cry from what we experienced just a few short months ago when it was hard just to keep up with who worked what! The SFI has been reading fairly low, below 200 for most of April, which has closed the door on F-2 conditions for 6-meters. 6-meter E-skip should be right around the corner, though, as the thunder storm season begins across North America. Look for E-Skip on 6 and 2. There has been a little action reported as the result of an aurora and some spring enhancement.

Conditions on April 9th for the 144 MHz Sprint were about average and the activity level was normal for this event. The next day, however, brought some aurora into the area. On the 10th, WC2K worked stations in 8 and 9 land via the "buzz" mode at around 2400Z. On the 16th, the SFI was observed at 230 with a low K of 2 and although 10 meters was booming with DX, no 50 MHz openings were observed in the Philadelphia area. Conditions and activity during the 220 Sprint on the 17th were observed as flat and light. The next morning, however, brought some extra good scatter conditions to our area on 6. Although activity seemed a little low for the 432 Sprint on the 25th, tropo conditions seemed above average as N3CX reports working 8 grids with his temporary QRP station and a limited-time effort. Nice job, Dave!

Conditions should continue to rapidly improve as we move through May. Put some of those homebrew projects on the air and enjoy the fun.

Hope to work you in the rest of the Sprints!

***** W3OCX PACK RAT JUNE VHF CONTEST EXPEDITION TO WPA, FN01 *****
LEAVE: FRIDAY, JUNE 8 RETURN: MONDAY, JUNE 11
SUPPORT THE CLUB BY JOINING US ON THE TRIP, GUEST OPing
AT A VACATED STATION, OR WORKING US FROM YOUR QTH
***** THE JUNE CONTEST IS A MAJOR MT. AIRY VHF CLUB EVENT!!! *****

NEXT JUNE CONTEST PLANNING MEETING WILL BE ON SUNDAY, MAY 20, 1PM, AT WA3NUF QTH

PACK RATS ATTEND DAYTON HAMVENTION

Eight Pack Rats were counted among the 30,000 attendees of the Dayton Hamvention. K3ESJ, WA3JUF, KB3XG, W0RSJ, W3IIT, WB2ONA, W3HQT, and WC2K were beneficiaries of beautiful weather, selling and buying of lots of goodies, VHF/UHF forums, and great dining in the local restaurants. Those club T-shirts were a good idea - many VHFers spotted us sporting the club logo and stopped by at our flea market to say hi. The PR was terrific for our club.

Another fine addition to your summerwear would be the new Down East Microwave T-shirt. Featuring a graphic display of the loop yagi along with the famous company name, these cotton tops are available in various colors and sizes. Get your orders in... they were moving fast at the Down East booth.

SWAP SHOP

FOR SALE: 4', 6', and 15' dishes - were used on 8 GHz.

WANTED: Elliptical waveguide connectors for Andrew 84147 EW90 Heliac.

CONTACT: Warren Whelan, WB2ONA
(201) 257-3871 after 0001 UTC

FOR SALE: (2) Kenwood TH-31AT 220 MHz HT's in new condition w/accessories, \$225 ea.

CONTACT: "RJ", KA3VQN
(215) 266-1889

FOR SALE: Drake C-4 station console, \$300. Drake DC-3 mobile pwr supply, \$25. Heath SB-610 monitor scope (new), \$60. Heath HM-2140 dual wattmeter, \$35. Heath HD-20 xtal calibrator, \$7. Heath TC-3 tube checker, \$22.

CONTACT: Caesar Arena, W2SVV
(609) 883-6336

FOR SALE: 11el 144 MHz yagi, 12' boom.

CONTACT: Rick, WC2K
(609) 268-0736

COMMERCIAL ADS

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, W3HOT, Box 2301 RR-1, Troy, Maine 04907. For information and orders telephone (207) 948-3741.

216-220 MHz EXPERIMENTS AUTHORIZED

The FCC has granted the ARRL a license to conduct experiments on the potential for interference from amateur 220 MHz operations to TV Channel 13. In disposing of the many petitions for reconsideration of the reallocation of 220-222 MHz to land mobile use (General Docket 87-14), the FCC said that it might consider making spectrum below 220 MHz available to amateurs if it did not interfere with television. This is seen as the first step toward that end.

The experimental station, KF2XAA, will operate with up to 250W on 216.0 - 216.85 and 217.15 - 220.0 MHz, using spread-spectrum and "white noise" transmissions. The license authorizes 50 units of the Midland 13-509 transceiver, and the authorization expires January 1, 1991 although it may be renewed. We believe that the results of these experiments will be crucial to obtaining FCC acceptance of amateur operation in the 216-220 MHz region. Broadcasters are likely to oppose such operation on the basis of interference, but ARRL will be armed with experimental findings. KF2XAA is not authorized to communicate with regular amateur stations, but is a self-contained operation that will communicate with units under its own license. TNX W5YI Report.

HAVE YOU PAID YOUR 1990 PACK RAT CLUB DUES? IF NOT, PLEASE USE THE ENCLOSED RETURN ENVELOPE AND SEND YOUR PAYMENT TO TREASURER BRUCE LOSS IMMEDIATELY. TNX.

TID BITS

- N3AOG, Dick Conly, has constructed a serious microwave rover unit complete with 9 ft. dish, interchangeable feeds, and azimuth/elevation systems accurate to 1 degree. The entire system mounts in his pick-up truck and is operational in the field. With the help of Pat, WB3DNI, the system was designed for use as a rover for the June W3CCX operation. The Super Rat Rover will be tested 5/6/90.
- John Tate, K3KTY, (our Florida Pack Rat), is moving back to Pennsylvania. His house is for sale and he expects to be in W3 land by the end of the year.
- Congratulations to Paul (WA3HIT) and Betty Rilling on the birth of son Michael Paul Rilling, born March 19, 1990 and tipping the scales at 8lbs, 12oz.
- Interested in a SW solid state PA for 5.7 GHz? WA3JUF found a source in the Dayton flea market and is organizing a quantity purchase. Contact Dave if you want in on a good price.
- VHF/UHF beacons are on the move up the band. WA3NUF reports the 70cm RI WLUHE/B frequency is now 432.315 MHz. Also, the W9IP/B aurora indicator beacon has been moved to 144.296. It is anticipated that the other beacons on 2 and 432 will be moving up the band.

ARE YOU EQUIPPED ON 3456?

If you have gear running or under construction for the 3.456 GHz band, please complete the form below and mail to Dave Hackford, N3CX:

NAME _____ CALL _____ TEL _____

ADDRESS _____

GRID SQUARE _____ LAT _____ LON _____

EQUIPMENT _____

Copy this form and pass it on to those active or building at 3456. Please return completed forms to: Dave Hackford N3CX, Box 138 RD-2, Pennsburg, Pa. 19001

FEDERAL PRE-EMPTION OF RFI STANDARDS REAFFIRMED

The FCC has reaffirmed its contention that the federal government, and only the federal government has authority in matters of radio frequency interference and states and local municipalities have none! In a letter to the ARRL, the FCC's Robert L. Pettit said that congress has pre-empted any concurrent state or local regulation of radio interference pursuant to the provisions of the Communications Act of 1934 as amended. Section 302(a)(1) of the Act provides that the FCC may, consistent with public interest, convenience and necessity, make reasonable regulations governing the interference potential of devices which in their normal operation are capable of emitting radio frequency energy to a degree that might cause harm to radio communications. In rare instances, the FCC has instituted "quiet hours" in severe RFI cases. Some state and local entities have attempted to usurp the FCC in the area of RFI regulation, and each time, these attempts have been thrown out of court. According to Pettit, state and local laws that require amateurs to cease their operations on the threat of legal penalty as a consequence of radio frequency television interference are automatically unconstitutional as they have been entirely pre-empted by Congressional action.

TNX WESTLINK REPORT

MICROWAVE STATION INTEGRATION

Food for Thought

Greg McIntire, AA5C

North Texas Microwave Society

TNX "FEEDPOINT"
(WA5VJB)

I. Introduction

A. Why integrate? Consider building and operating an HF station with 6 discrete radios instead of a 6-band transceiver.

II. Physical Considerations

A. Locate your equipment so that it can be operated from one position.

B. Use a common form factor chassis for all transverters.

C. Use common controls for all transverters.

D. Allow lots of chassis space for growth and changes.

E. Rack and stack to conserve space and permit easy access to the back and inside of all transverters.

III. Controls

A. What should be controlled in a typical microwave station?

- 1) IF switching
- 2) PTT switching (T/R)
- 3) Relays-coax and antenna switching
- 4) Antenna mounted preamps
- 5) Rotors
- 6) External equipment (TWTAs, etc.)
- 7) Power supplies (local)

B. What factors should be considered on microwave station control?

- 1) Speed and ease of changing bands
- 2) Safety
- 3) Equipment protection
- 4) Lightning protection
- 5) Operator induced damage
- 6) Liaison link(s)
- 7) Availability of parts
- 8) Antenna configurations
- 9) Maintenance
- 10) Harmonically related bands

C. Recommendations

1) Use sequenced T/R switching in each transverter

2) Provide a local transmit enable switch on each transverter

3) Provide local supply power switches on each transverter.

4) Centralize IF, PTT and antenna/coax switching

5) Use fail safe relays for connecting antennas to transverters. (Open with no power applied for lightning protections.)

6) Enable TWTAs only when the selected transverter is in the transmit mode. This reduces the probability of transmitting into a receiver, no load, etc. It also is a positive means of reducing TWA noise in receive mode for weak signal work.

7) Switch termination resistors across preamps and receiver inputs when transmitting.

IV. Power Supply

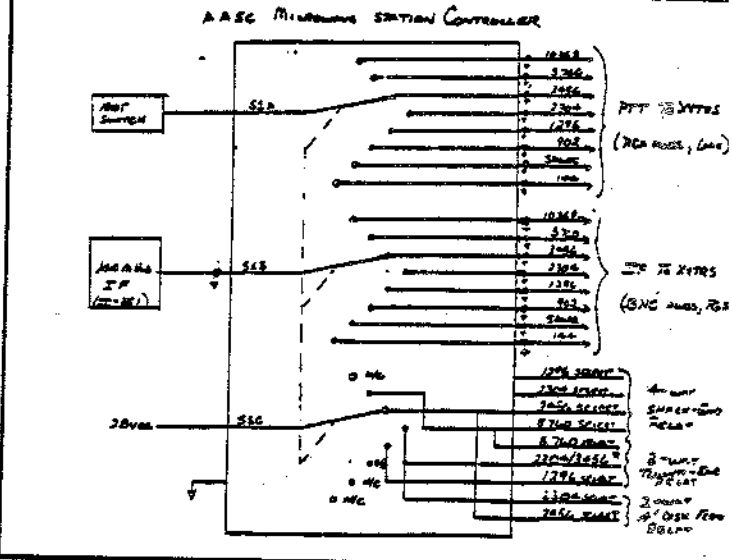
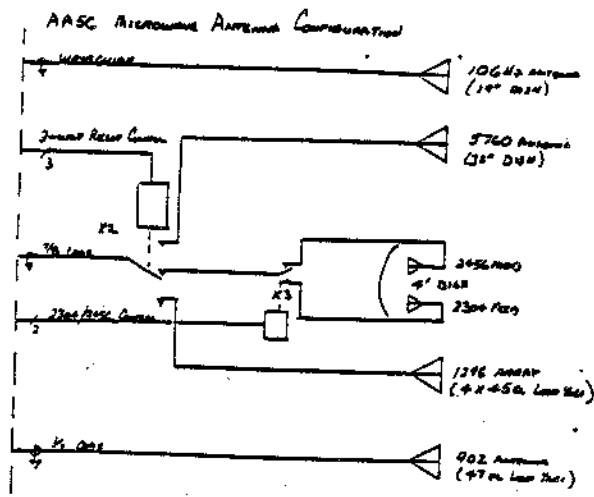
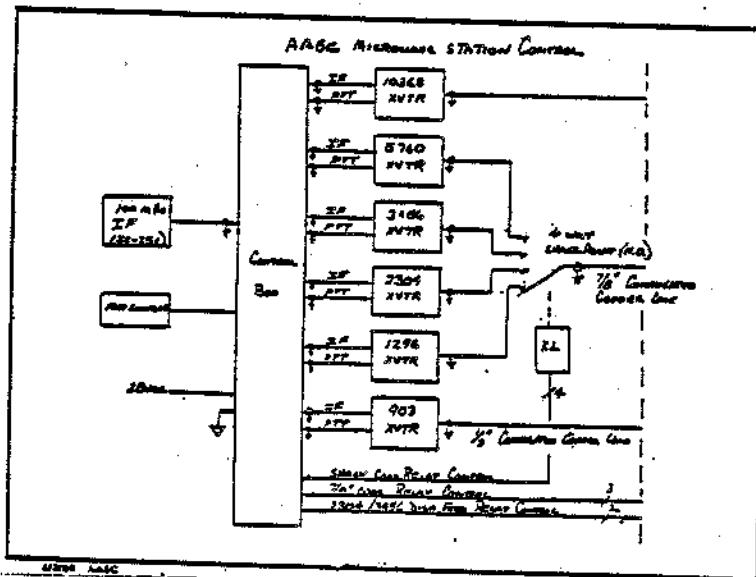
- A. Bussed or local power supplies can be used
- B. Consider building your transverter for portable or mobile operation. Operation from 12-14 volts is desirable.
- C. Local switching and fusing is handy for maintenance, transverter protection and LO warm up.
- D. Regulate locally for LOs and other voltage critical functions, especially if your operating off a bused supply.

V. Antennas

- A. Collocate all antennas on one mast, if possible, to simplify pointing.
- B. Limit antenna gain on the higher frequencies.
 - 1) Less than 5 degree beamwidth is difficult to point.
 - 2) Generally not a problem until 5760 and 10368 MHz.
 - 3) Common rotators are typically braked in 5 degree steps.
- C. A digital readout to 1 degree is desirable.

VI. Summary

- A. Make your station simple to operate to reduce/eliminate mistakes.
- B. Make band switching fast and simple
 - 1) Maximize your different band/grid contacts in openings.
 - 2) Maximize your different band/grid contacts in contests.
- C. Provide protection for you and your equipment.
- D. Make your equipment easily accessible for maintenance and modifications.
- E. Be adaptable to parts as they become available.
- F. Be flexible in liaison (generally either 144 or 432 MHz).



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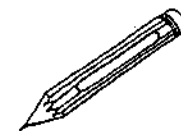
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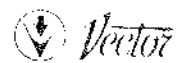
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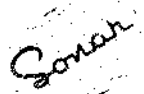
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