

PACK RATS'



PACK RATS

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

CHEESE

BITS



MT. AIRY VHF RADIO CLUB, INC., PHILADELPHIA, PENNSYLVANIA
 50.125, 144.150, 220.125, 432.110, 1296.110 Mhz, W3CCX - Repeater 222.98/224.58 Mhz
 Affiliated Club: AMERICAN RADIO RELAY LEAGUE
 Meetings: Third Thursday of each month at 8:00 P.M.
 Southampton Free Library, 847 E. Street Road
 Southampton, Pennsylvania 19866

ARNS

VOLUME XXVI

APRIL, 1985

NUMBER 4

THE EDITOR SEZ

Chet Henricksen of the Philadelphia Weather Forecast office addressed the March meeting with a comprehensive educational weather program. First a film showing violent weather conditions such as tornados and line squals. A slide show followed depicting the type of cloud formation that would result in violent "Skywarn" weather conditions in the Delaware Valley. A large turnout of members and visitors soaked in 1 1/2 hours of weather education.

Jeff Chapman, WA3RIZ of the Eastern Pennsylvania Skywarn was also present.

The Spring Sprints are coming which are a four hour bit of fun from 7 to 11 P.M. local time on the scheduled dates which appear on Page 3. Exchange of grid squares is all that is required.

Keep the May 16th meeting date open for our ARRL Nite when Hugh Turnbull, W3ABC, Atlantic Division Director and Perry Williams, W1UED of ARRL headquarters will be our guests.

The annual banquet and ladies nite is scheduled for Saturday evening June 29th at the Warrington Motor Lodge in Warrington, Pa. Join in the fun by starting early at the open bar (take it easy); followed by a delightful meal. There will be the presentation of awards for outstanding service to the Club; no boring speakers, an evening of fellowship and eyeball QSO's.

73, Harry, W3CL

* * *

NOTICE

Bill Wheeler, N8CKH, P.O. Box 204, Westland, Mich. 46185 has available for 66¢ in stamps a 20 page listing of VHF/UHF operators called the "Grid Chase". The "Grid Chase" lists stations according to grid-squares and shows what bands are operated by these stations and notes concerning their operation such as contest only, EME, meteor skeds, high power, occasional operator, etc. The listing will be up-dated periodically. Anyone having any additional information or corrections to this list let Bill know. I was very impressed with the first printing.

73, Harry, KA3B

Pack Rats CHEESE BITS is a publication of THE MT. AIRY VHF RADIO CLUB, INC. Philadelphia, Pa. and is published monthly.

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

SWAP SHOP ITEMS - NO CHARGE

DEADLINE FOR ARTICLES IS THE GENERAL MEMBERSHIP MEETING: THE THIRD THURSDAY OF THE MONTH.

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609-783-9478

CLUB HISTORIAN:

W3CL, HARRY B. STEIN

MONDAY NIGHT NETS

7:30 PM - 50.125 MHZ
8:00 PM - 144.150 MHZ
8:30 PM - 222.98/224.58 MHZ
8:45 PM - 220.125 MHZ
9:00 PM - 432.110 MHZ
9:30 PM - 1296.1 MHZ

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WB3IND, GEORGE McMAHON (2 Yrs)
WA2OMY, GARY HITCHNER (1 Yr)
WA3YUE, BRUCE LOSS (1 Yr)



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CALENDAR OF COMING EVENTS
Syllabus by Lee, K3MXX

APRIL

- 1 All Fool's Day - need we say more
- 5 Good Friday
- 6 First Day of Passover
- 7 EASTER
- 7 Start of National Cherry Blossom Festival - Washington, D.C. - a sight well worth seeing.
- 11 Board of Directors Meeting - QTH - WB2VLA, Dave Power, 25 Van Duyn Dr., Trenton, N.J. 609-882-1040. Directors and interested parties always welcome.
- 14 Mothers-In-Law-Day
- 13-14 The USS Becuna, a WWII submarine and the USS Olympia, the flagship of Admiral Dewey (1898) will be on the air to celebrate National Submarine Day. Transmissions can be heard from 1300Z Saturday to 2000Z Sunday both on CW and SSB. For QSL and info = Olympia Radio Amateur Club, P.O.B. 928, Phila., Pa. 19105
- 15 ARRL VHF/UHF Spring Sprints 7 to 11 P.M. Local Time.
Mon. April 15 - 144 Mhz Thurs. May 9 - 1296 Mhz
Tues. April 23 - 220 Mhz Sat. May 18 - 50 Mhz
Wed. May 1 - 432 Mhz
Exchange Grid Squares
- 18 General Club Meeting - Southampton Free Library, Street Road, Southampton, Pa. 8:00 P.M. Topic: Will be announced on the Monday nite nets. An open meeting to all radio amateurs and their friends. Be a true amateur; bring a friend and introduce him to the Pack Rats. The Mario Raffle, Frankie's Silent Auction, Free Refreshments.
- 15 Black Border Day - Income Taxes Due - yes, today is THE DAY!
- 17 Maple Sugar Season is over
- 20 Flemington Hamfest, Hunterdon Central High School, Flemington, N.J.
- 20/21 Trenton Computer Festival - Trenton State College, Trenton, N.J.
- 28 Mutiny took place of HMS Bounty 1789
- 29 Casey Jones had his Train Wreck 1900
- 30 Walpurgis Nite Festival in Finland and Sweden
- IMPORTANT NOTICE: The Pack-Rat Banquet will be held Saturday, June 29, 1985, at the Warrington Motor Lodge.

TIMING CYCLE OF SPORADIC E IONIZATION AT 144MHC

Sidney J. Lieberman, WA2FXB
146 Grove Ave., Woodbridge, N.J. 07095
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ABSTRACT

The relationship between Sporadic E ionization at 144 Mhz for the years 1976-1984 was superposed over the Interplanetary Magnetic Sector Boundary Crossing dates and the U.S. Lightning Index study by Lethbridge for the years of 1956-1976. A well defined timing cycle was found for the months of June and July of each year.

1. The theory of Watson (1928) and supported by the work of Holzer (1973) showed there is a clear correlation between solar influences and atmospheric electricity as described in the ionosphere-earth capacitor theory. Then within the dielectric, a thunderstorm is the most likely electrical generator. Sporadic E ionization at 144 Mhz supports communications paths at distances over 1000 miles on a frequency band that doesn't normally support long distance communications. The studies of Jim Stewart, WA4MVI, in 1976-1978, using FAA weather maps found a geographical pattern of thunderstorm activity that was located between the communicating radio stations. It is interesting to note that during this type of ionization, signal strength readings were within a few decibels even though participating stations has radiated power levels of less than 100 watts to over 50KW ERP. This ionization called by Amateur Radio Operators an "E cloud", adds credibility to the theory that there is some link between thunderstorm activity and ionization above the storm at the E layer. It may be possible in the future to calculate the geographical size and levels of ionization at the time of a thunderstorm using some type of modified radio path loss formula.

2. It was not within the scope of this study to find the physical link between thunderstorms and sporadic E vhf contacts. The intent of this historical study was to identify E Skip events and look for any repeating patterns that would enable the Radio Amateur Operator to predict with some degree of accuracy times when E Skip contacts were possible.

3. Using the MSB date and the superposed epoch study by Markson (1971) of toward/away sectors over the lightning index. Twenty seven sporadic E events for the month of June (1976-1983) were superposed over his findings. The results showed a peak of 7 E Skip events on day 1 from the MSB which corresponds with the lightning peak found at the start of a toward sector. Day 2 and 3 had 3 and 2 events. Day 4 showed 8 events matching the normalized lightning peak at day 4 1/2. Days 4 and 5 only showed 2 events each. Day 7 had five E events matching the peak in the lightning index found in the away sector. The July study gave different results and this difference may be caused by the timing of the semi-annual variation.

4. The same overlay was done for the month of July (1976-1983) using 30 Sporadic E openings and a well defined timing cycle was noted.

Day 1 2 3 4 5 6 7

E Events 3 2 4 6 8 4 3

5. When superposing both June and July (1976-1983) with a total of 57 E opening events the results showed a major peak at day 4 following a pattern similar to the one noted by Lethbridge (1982) on her study of Superbolts and cosmic rays.

Day 1 2 3 4 5 6 7

E Events 9 5 6 13 10 6 8

(Continued on page 5)

TIMING CYCLE OF SPORADIC E IONIZATION AT 144MHX
CONTINUED

6. The study was then extended to long distance tropospheric radio contacts by using the studies by Roberts and Olson (1973b) on winter troughs and Svalgaard (1973) on the variation of height differences on pressure surfaces. The study covered the full years of 1976-1983 using 87 Tropospheric radio events. A high percentage of tropo events were found at day 0-1 and 4-5 from the MSB crossing. In the away sector, 13 events were noted at crossing time and in the toward sector 20 events on days 4-5. The 13 events in the away sector may be caused by a low VAI and in the toward sector caused by a high VAI.

SUMMARY

Since Sporadic E radio communications occur less than a dozen times in a given year on 144 Mhz it may be possible to set up schedules. Set new North America distance records and supply the scientific community data on these E events since it may be a valuable element in finding the physical link between solar activity, our ionosphere and meteorological events.

FOR REPRINT IN PACK-RATS CHEESE BITS
MT. AIRY VHF RADIO CLUB, INC.

S.J. Lieberman, WA2FXB

* * *

S.T.A.R.C.
P.O. BOX 7082
ENDICOTT, N.Y. 13760

Fellow Radio Amateurs:

The Southern Tier Amateur Radio Clubs will be holding their 26th Annual Hamfest and Dinner on Sat. May 4th, 1985 at the Treadway Inn Owego, N.Y. We would appreciate it if you could make the local hams aware of this by perhaps including it in your club newsletters. I have enclosed several copies of our flyer for your convenience. If you would like more to distribute, please let me know.

Please note that we now have advance sale tickets available for general admission at the price of \$3.00 (\$1.00 off) - this info does not appear on the flyer. Dinner tickets are available by advance sale only at the price of \$15.00 - which also includes general admission. All tickets are available from committee members or through the above address.

Thank you for your help and support of our Hamfest. We hope to see you there.

73's,

Ann Helfrich, N2CFN
S.T.A.R.C.
Committee Secretary

March 13, 1985

Editor, "Cheese Bits"
2087 Parkdale Ave.
Glenside, Pa. 19038

Dear Sir:

In early 1986, the ARRL will be publishing a new book on amateur UHF/Microwave communications. A vast majority of the content has not previously been published. Projects and theoretical material for the book has been submitted by amateurs from all corners of the globe, reflecting a broad spectrum of interests. A tentative chapter outline is enclosed.*

The Pack Rats have always been active in UHF/Microwave home construction. This is a call to your members to join in our efforts to help us produce a top-rate book. We are actively soliciting both complete articles and short "Hint and Kink" type material for possible publication. As an added incentive, the ARRL is paying \$50/printed page for all work accepted

Interested Pack Rats should contact me by mail or phone at the earliest possible convenience. Thanks for your consideration.

73, Dennis J. Lusic, WLLJ
Editor, ARRL UHF/Microwave Book

* Chapter outline available from W3CL

* * *

PRESS RELEASE

11th Annual Eastern VHF/UHF Conference

The 11th Annual Eastern VHF/UHF Conference will be held May 17-19, 1985 at Rivier College, Nashua, New Hampshire. The program features a Friday nite hospitality room, technical talks by well-known VHFers on Saturday, "rap sessions" for the various VHF/UHF bands, noise figure and antenna gain measurements, and other activities. To preregister, send \$13.50 to David Knight, KALDT, 15 Oakdale Ave., Nashua, NH 03062 before May 5. Registration at the door is \$20. The Saturday night banquet is \$14.00, also payable before May 5.

Housing will be available in dormitory rooms at the college. The fee of \$16.50 per night single, \$28.00 per night double, includes a buffet breakfast. Those wishing accommodations at the dormitory must include payment at the time of preregistration. Make all checks payable to "Eastern VHF/UHF Conference." For those wishing to make their own housing arrangements, there are numerous hotels and motels nearby.

The conference chairman is Thomas Kirby, W1EJ, who is ably assisted by a staff of volunteers from the New England VHF community.

Point of Contact:
Lewis D. Collins, W1GXT
10 Marshall Terrace
Wayland, MA 01778
617-358-2854 (6 to 10 PM)

* * *

VISITORS - MARCH 21, 1985 MEETING

WA3RIZ, Jeff Chapman, Phila., Pa.	WA3GOV, Howard I. Ziserman, Phila, Pa.
KA3NKP, Edith Weinberg, Phila., Pa.	KB3WJ, Bob Rubin, Havertown, Pa.
KA2NYF, Janet, Voorhees, N.J.	KA3NDG, Ian Janssen, Churchville, Pa.
WA2VYA, Frank L. Widmann, Haddonfield, N.J.	KA2CQX, Janice Bond, Moorestown, N.J.
WB2UVB, Gene Bond, Moorestown, N.J.	WA3JGN, Charlie D'Argenio, Warrington, Pa.
Michael D'Argenio, Warrington, Pa.	Chet Henriksen, Phila. Forecast Office

SWAP SHOP

WANTED: 220 Mhz MMT Xverter (28Mhz IF)

CONTACT: Ron Allen, KB3QM
POB 73, Bethel, DE 19931
Phone: 302-875-7373

FOR SALE: 2 - Siemens 5 1/4" floppy disk drives \$75@ or \$125 pr. Heathkit H-19 terminal excel. cond. \$500; Spectrum Intr'l 50 Mhz to 28 Mhz rec. conv. \$25; Hamtronics 28 Mhz to 50 Mhz xmit conv. \$65;

CONTACT: Bruce Loss, WA3YUE
Phone: 215-542-6490 (work)
215-947-4166 (Home)

FOR SALE: Clegg Apollo 6M amp. 675W out-good cond. \$200; KLM 2M amp - 10w in 140 out - good cond. \$150; Heath SB 104A w/spkr & sply (SB604) exc. cond. \$340; 6 ft. alum. dish w/mnt & feed \$60;

WANTED: Low priced 6M SSB & CW rig or xvrtr.

CONTACT: Mike, N3BBI
Phone: 717-325-3580

FOR SALE: 6 Mtr. Swan 2KW amp. \$550

CONTACT: Dan Curran
Phone: 609-386-1540

FOR SALE: Heathkit SB102 - 80-10M xcvr w/SB600 spkr, HP32 sply, mic. manual & spare tubes \$125; Heathkit SB 301 rcvr & manual - good for external VFO for SB102 \$50.

CONTACT: Dave Mascaro, WA3JUF
Phone: 215-795-2648 (eve)
215-362-8500 x247 (work)

FOR SALE: Tubes, cassettes & 8 trk tapes, some records; Federal sig. gen. 8-330 Mhz mint \$25; small portable radios, feed thru & stand-off caps; knobs, meters, elec. caps, resistors. Lafayette HA 350 rcvr - exc. cond. \$60; Model Railroader magazines 1950's & 1960's. Attractive Seth Thomas wall clock - 110V AC \$5.; B&W coils #3001, 3002, 3004, 3007, 3009, 3015, 3021, 3023, 3024, 3037, 3040, 3043 \$.50; poly coil - #1726, 1727, 1729, 1732, 1750, 1755 - \$.50; air dux - 404T, 406T, 432T, 506T, 508T, 532T, 604T, 632T, 804T \$.50; 4 ft. rack w/2 mtr am xmtr, P.S. modulator - 5894 final amp. & VFO. 6 mtr am xmtr, VFO; P.S.

CONTACT: Doc, K3GAS
Phone: 215-635-1078

WANTED: 1 - prop-pitch rotor - A 40-50 ft. tower (crank-up, fold over or fixed)

CONTACT: Steve Simons, KF6AJ
Phone: 203-743-4416
203-746-6482

or drop a line to 7 Rodline Road, Danbury, Ct. 06811

FOR SALE: RIW model 432-19 antenna inc'l stacking kit---best offer. Ham 4 rotor & control box \$150; "Coleco" cassette tape recorder (Mfd. by GE) brand new \$15. Mirage B-108 amp./pre amp \$155; VHF swr/pwr mtr by Heathkit \$25; Robot Model 70 SSTV unit \$75; NCG xcvr - 6,15,40 mtr - 10W \$325.

CONTACT: Tony Musero, K3UKW
1609 S. Iseminger St.
Phila., Pa. 19148
Phone: 215-271-8898

FOR SALE: 1296 & 2304 antennas. 1296 45 el. 12 ft. Boom \$80; 2304-45 el. 7 ft. boom \$70; all antennas completely assembled & tested. All stainless hardware complete w/ boom to mast mounting bracket. Pwr. dividers & phasing lines are available for stacked arrays.

CONTACT: Bill, W3HQT at Down East Microwave Box 1655A, RFD 1, Burnham, ME 04922. Phone: 207-948-3741

FOR SALE: IBM typing elements: large letters (narrator) Italics and script. A box full of correcting ribbons plus a blue ribbon cartridge. Will sell each ele. for \$5. The box (plus) correcting ribbon \$5. The blue ribbon will go free with the first purchase.

CONTACT: Jay Miller, KS2T
527 Woodview Rd.
Toms River, N.J. 08753

FOR SALE: Kenwood TR9000 all mode 2 mtr. rig - BO-9 system base \$300; Lunar 2 mtr. amp. 10W to 80W, w/9DB pre-amp \$125; KLM 2 mtr. 9 el. ant. & 1-1 Balun \$35.

CONTACT: Ed Vickner, K2SNK
Phone: 609-883-5318

* * *

VOTED TO MEMBERSHIP

W3GXB, Robert G. Fox XYL Ruth
1776 Street Road
Southampton, Pa. 18966
215-357-8853

CHANGE OF ADDRESS

KB3QM, Ron Allen
P.O.B. 73
Bethel, DE 19931
302-875-7373

CHANGE OF ADDRESS

WA3TSE, WM. Letvenko
175 Meetinghouse Rd.
Doylestown, Pa.
18901
215-348-8933

NEWS RELEASE
Date: March 1, 1985

THE FOUNDATION FOR AMATEUR RADIO, INC., a non-profit organization with Headquarters in Washington, D.C. plans to award nineteen (19) scholarships for the academic year 1985-86. The Foundation composed of fifty local area amateur radio clubs, fully funds two of these scholarships from the proceeds of its annual Hamfest. It administers without cost to the donors, seven (7) scholarships for the Quarter Century Wireless Association, two (2) for the Dade (FL) Radio Club and one (1) each for the Radio Club of America, the Richard G. Chichester Memorial, the Young Ladies' Radio League, the Edmund G. Redington Memorial, the Amateur Radio News Service, the Columbia (MD) Amateur Radio Association, the Baltimore (MD) Amateur Radio Club and the Lewis W. Wilkinson Memorial.

Licensed Radio Amateurs may compete for one or more of these awards if they plan to pursue a full-time course of studies beyond high school and are enrolled or have been accepted for enrollment in an accredited university, college or technical school. Most of the scholarships require the applicant to hold at least an FCC General Class license or equivalent. The scholarship awards range from \$350 to \$900 with preference given in some cases to residents of specified geographical areas or the pursuit of certain study programs.

Additional information and an application form can be requested by a letter or QSL/postcard, postmarked prior to May 31, 1985 from:

F A R Scholarships
6903 Rhode Island Avenue
College Park, MD 20740

The Foundation is devoted exclusively to promoting the interests of Amateur Radio and to those scientific, literary and educational pursuits that advance the purposes of the Amateur Radio Service.

* * *

TID BITS

Sunspot No. for February, 1985 = 16.1. Smoothed No. for August, 1984 = 39.2.

W3HFY advises the packet radio buffs to be aware of a new Heathkit HD4040 unit.

K3IUU, Bert and Harriet are vacationing in the Carribean aboard the Nordic Prince say 73.

W3NSI, Lyn and Sally send 73 from the West Coast.

Lee, K3MXM back home from the South now on the mend after suffering a broken leg in Charlotte, North Carolina.

Jack Sterner, W2GQK a friend of the Pack-Rats became a silent key on March 22nd.

We also sadly report that Mary Keener, the wife of Ed Keener, W3AJS, passed away on March 20th.

In addition, we are saddened that Muriel the wife of Dick Boyle, K3IGX, passed away on March 23rd. Condolences to all three families.

Congratulations to Scott (the son of Jim Ward, WA3AAJ) who received his Novice ticket and his call is KA3NUH.

Congrats to Don, KA3MGB on his recent engagement - Bring the gal to Ladies Nite.

Steve, KF6AJ having a bit of RFI trouble up there in Connecticut. Wrote an outstanding treatise of explanation to the Boston FCC. Tell them Steve!!

40 Watt 432 Mhz. Linear Amplifier

by Dave Mascaro, WA3JUF

This amplifier uses microstrip circuitry on standard 1/16" G-10 double sided PC board. With the full scale artwork provided, the board can be reproduced using Exacto-etch or a ruby can be made.

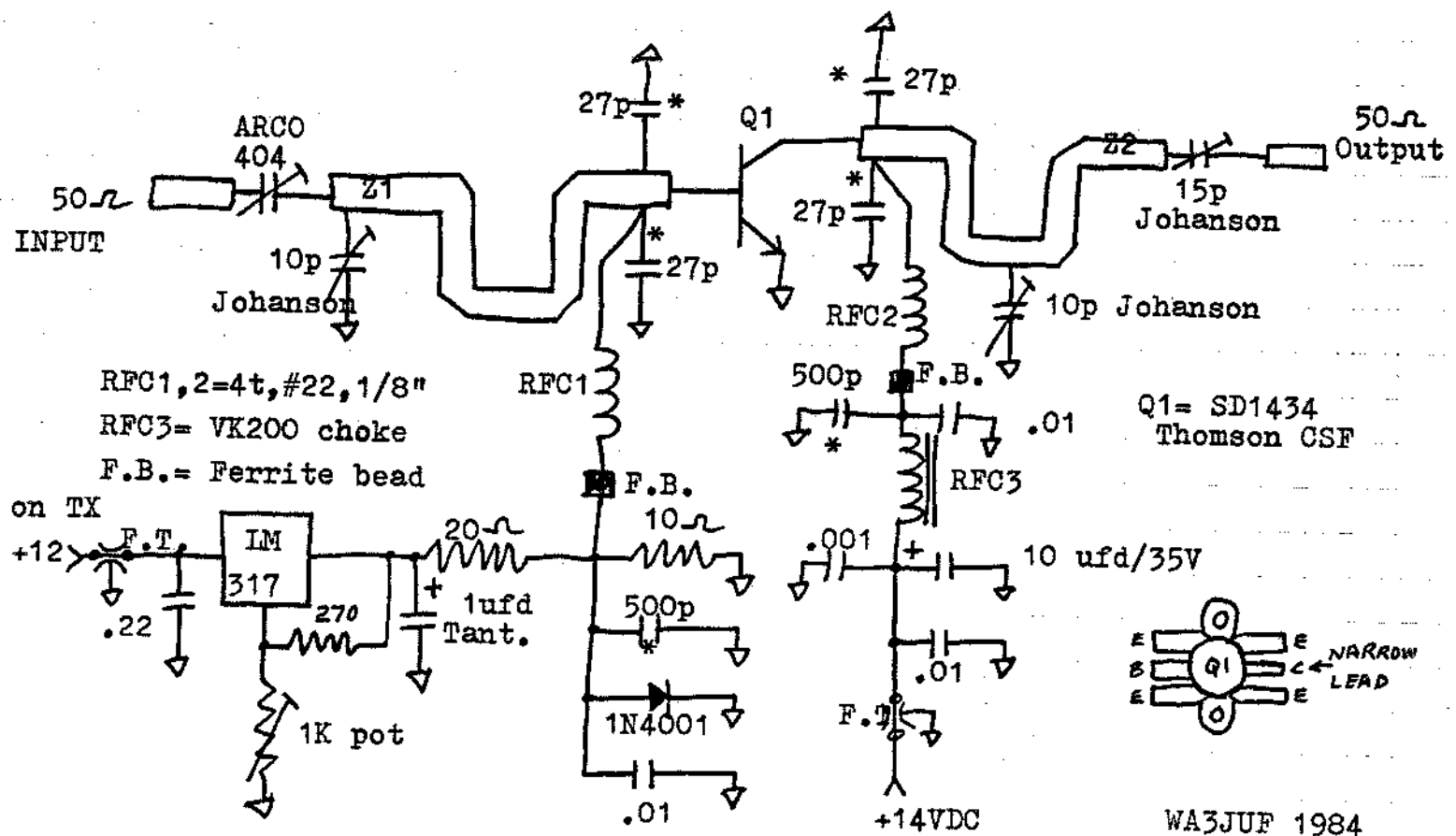
Rivets or pcs. of wire are used at all rf and dc grounds as indicated by holes in the artwork. The input and output connections must also be well grounded.

A hole is cut in the board to accept the 1/2" JØ device. The flange is screwed to a suitable heatsink with 4-40 screws with heatsink compound used between the flange and the heatsink.

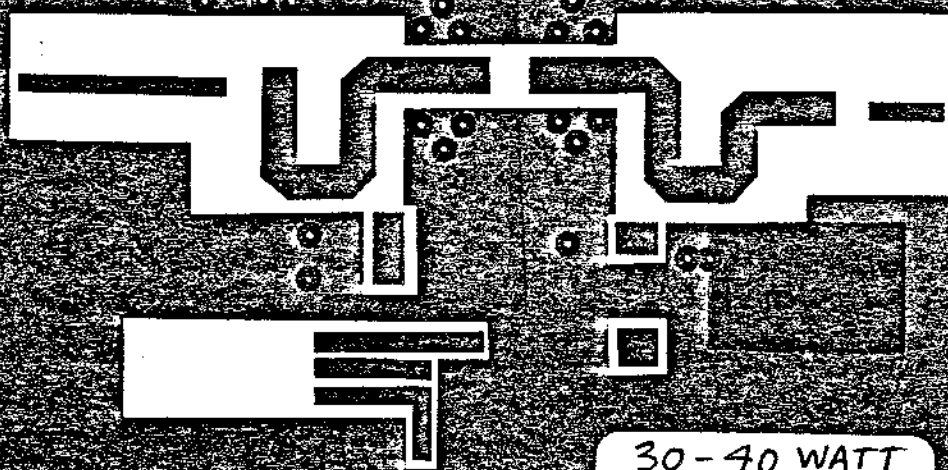
The four 27pf Unelco capacitors are soldered to the PC board under each of the four emitters of Q1. Solder the emitters close to the cap of Q1 to reduce the inductance of the emitter leads.

The bias is turned on during transmit only. I_{cQ} is set at 100-150ma. The bias diode is soldered to a solder lug and mounted under one of the screws holding Q1 to the heatsink. The heatsink is around 3-1/2 X 5" with 1" high fins.

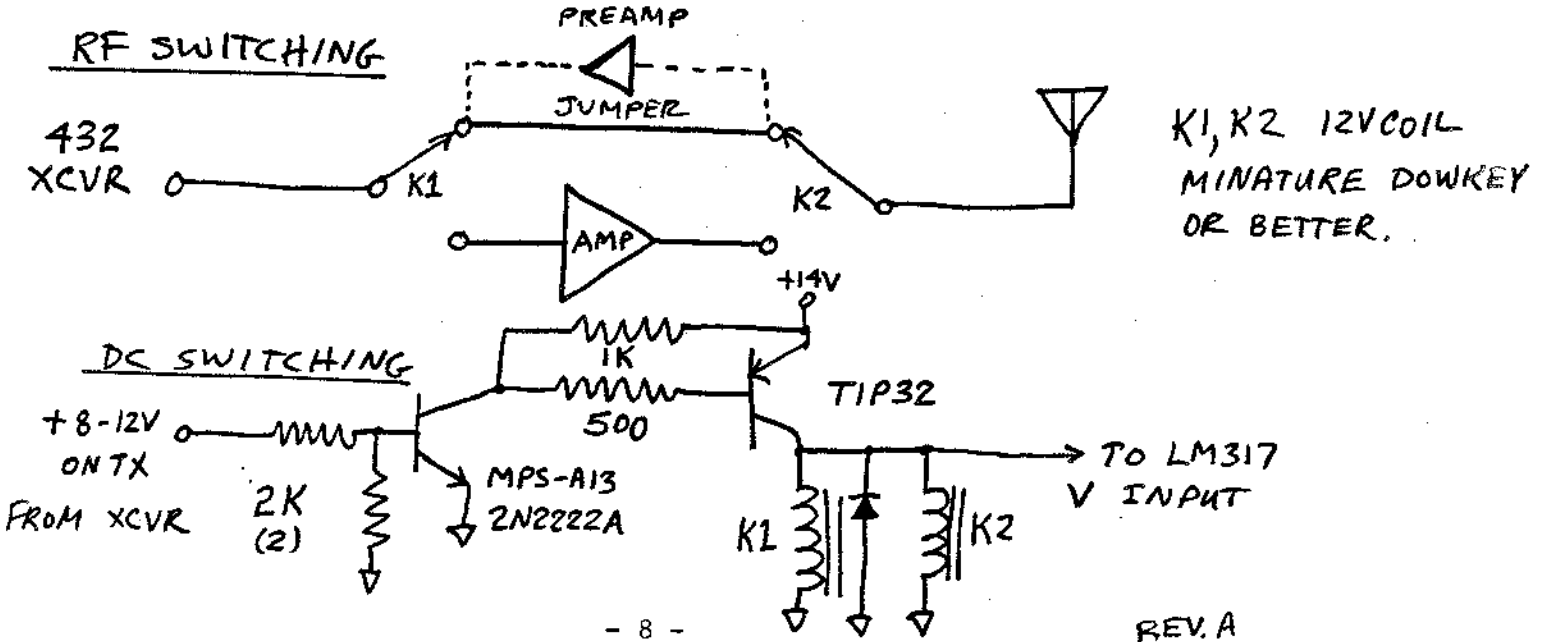
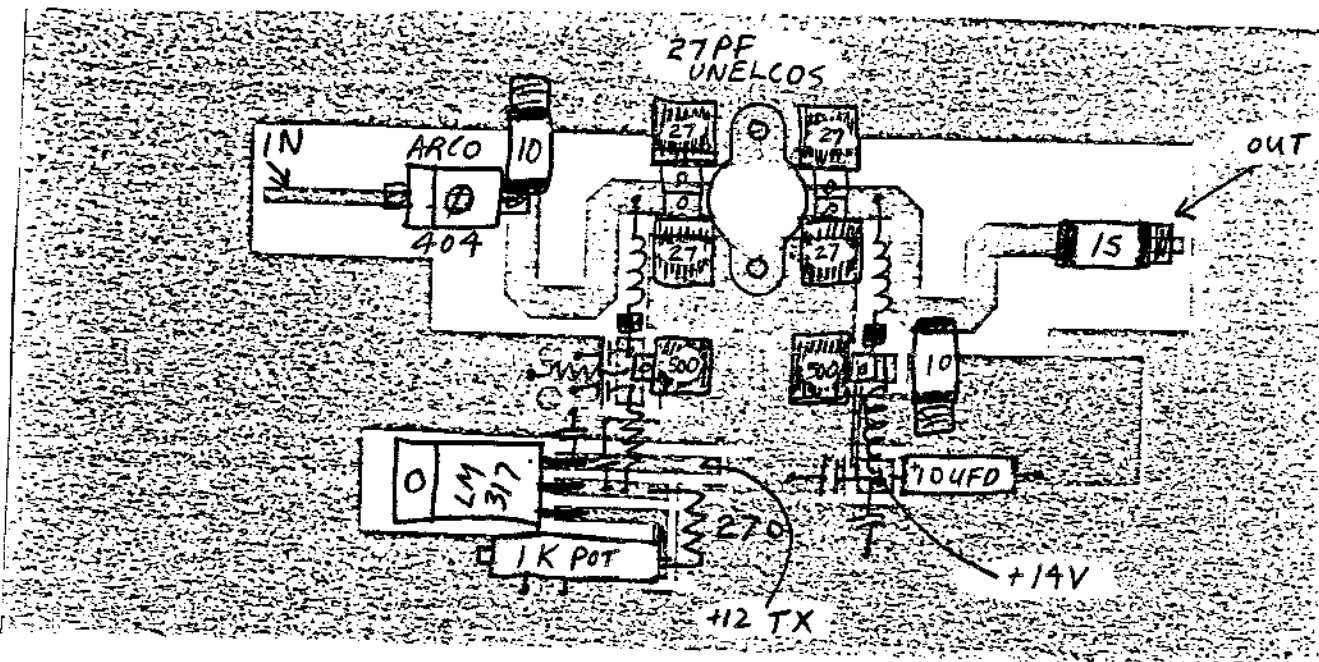
Power out is 30-40 watts with 10-15 watts input @ 14VDC. The B+ is fused @ 7-1/2 to 10 amps.



WA3JUF 1984



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SAT. 9⁰⁰ - 4⁰⁰

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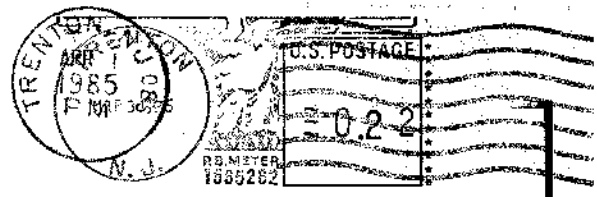
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