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CHEESE BITS



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VOLUME XX

JANUARY, 1978

NUMBER 1

THE PREZ SEZ

As this Cheese-Bits issue reaches you, a New Year is dawning. Thoughts of a New Year with its new challenges invokes memories of the past years' accomplishments. Way back in January of 1977 the Pack Rats slugged their way to their 17th January Sweepstakes club championship. At the February Home-Brew meeting, the variety of the new radio construction projects overwhelmed the Judges.

The Spring Pack Rat Banquet honored the members of the 1976 South American Moon-bounce Expedition with our leader Elliott, K3JJZ receiving the Pack Rat of the year Award. It was also the affair that lets our Ladies know they are part of the team all year.

The balmy breezes of June rippled the flags flying from the seven antenna towers at the W3CCX/3 PackRat June VHF QSO Party Contest station located at Hilltown, Pa. This all-out-effort netted the club the second consecutive top score in the nation as well as winning the Atlantic Division and Eastern Penna. honors.

Summer evenings were enhanced with the good fun of hidden transmitter hunts on the 220 Mhz band.

The 1977 HAMARAMA besides its usual successful flea market, introduced the first Mid-Atlantic VHF conference attended by 100 enthusiastic VHF afficianados.

General club meetings were graced by good technical talks and demonstrations as well as many visitors and distinguished guests.

Many choice radio components filtered down through the Pack Rat distribution systems showing up recently at this Decembers' Home Brew Nite. (Pictures on Pgs. 4 and 6)

As we organize our stations for the 1978 VHF SS Contest, we can feel the excitement of the coming New Year. Pack Rat history tells us that it will be an active, exciting year. I am confident that the challenges of the future will be overcome in stride by the application of our organized energy in Pack Rat tradition. We might even find someone to be coffee and doughnuts chairman!

73, Tony, W3HMU

* * *

NOTED TO MEMBERSHIP: WB3KES, Douglas C. Simpson, XYL, Wendy, Whitpain Hills #207
Centre Square, Pa. 19422. 215-277-4964.

APPLICATION FOR MEMBERSHIP: WB3HSL, Charles W. Craft, 506 Winding Road, Lansdale, Pa.
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VISITORS AT THE DECEMBER 15, 1977 MEETING: WB3HSL, Charlie Craft, Lansdale, Pa.
W2ZZF, Paul Wade, Somerville, N.J. WB3ETO, Ed Lee, Huntingdon Valley, Pa.
WB3HHO, Paul Randolph, Phila., Pa. Howard W. Hecht, Washington Crossing, Pa.

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DEADLINE FOR ARTICLES IS THE GENERAL MEMBERSHIP MEETING.

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K3MWV, Dick Pierce (2 years)
WB2SZK, Randy Bynum (2 years)
K3IGX, Dick Boyle (1 year)
K3JJZ, El Weisman (1 year)

<u>MONDAY NIGHT NETS:</u>		<u>NET CONTROL</u>
145.2 MHZ	7:30 PM	W2EIF
50.2 MHZ	8:30 PM	W3CL
221.4/224.58 MHZ	9:00 PM	K3GAS
432.03 MHZ	9:30 PM	K3IUU
1296.3 MHZ	10:00 PM	W2EIF


<u>FRIDAY NIGHT ATV NET:</u>	<u>NET CONTROL</u>
439.25 MHZ	7:00 PM
	WA3AXV


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CALENDAR OF COMING EVENTS
Syllabus by Lee, K3MXM

JANUARY 1978

- 1 The Best Wishes from all of us of the Cheese Bits Staff to you and yours for a Happy and Prosperous New Year.
- 12 Board of Directors Meeting, QTH, WA3AXV, Ron Whitsel, 209 Frog Hollow Road, Churchville, Pa. Directors and interested parties invited. If lost, phone 355-5730.
- 15 Raleigh, North Carolina Hamfest
- 19 Club Meeting, Southampton Free Library, CLOSED meeting. For members only. Contest Pep Talk and last minute preparations.
- 21-22 January VHF SS Contest, Good Luck!!
- 28-29 Simulated Emergency Test (SET) Details appear on pgs. 70-72 Dec. QST.
- Dues are Due and Payable. Send your check for \$8.00 to K3GAS and stay in good club standing!!

Future Club Meeting Topics: February, Crying Towel Session
March, TV in Space - Bert, K3IUU
April, ARRL Nite

* * *

TID BITS

Congratulations to the Bolmar Aguilar's (WB3AOP) on the birth of a daughter (Fabiana) on December 9th. Mother and daughter doing fine.

January VHF SS Chairman, Dan, WA3NEV wishes to thank the following contest envelope "stuffers": Doug Simpson, WB3KES & XYL Wendy, Amy Larrivee, Bill Johnson & Tony DiPiano. Bruce, WA3YUE has joined the Second Alarmers - Keep the sparks flying!

Dick Bokern, WB9FUJ says Hello from Amman, Jordan. Returning to the USA via Athens, Munchen and London.

We were happy to see Mario, W3ELX hobble in to our last meeting.

Other absentees were present also: Ron, K3ZKO (Cap. Video), Carl, WB2RXM (Ex WA3DJF) and Ric, WA3UDS.

Pete, WA3OVH, was on Ch. 3 Evening News December 13th with FB PR for Ham Radio. Explained the Xmas message program from local hospitals.

Phila. Area Repeater Assn (PARA) officers elected December 12th: Prez: N2GL, Guy; Vice-Prez - W3BSG, Nat; Rec. Secy - WB3EAO, Bobby; Cor. Secy - K3NVC - Nobe; Treas. K3GKB, Jesse.

Harry Brown, W3IIT reports his son David has obtained his Novice Ticket, call WB3FQF.

Congratulations to W3SW, Connie-Mac re-elected as Atlantic Division Director. Also, to W3KT, Jesse as Vice Director.

Rich, K2EVW available as second op at any Pack-Rat station for the VHF SS on 21 and 22 January. Phone: 609-646-7388.

Ed, K3ZCY perusing QST of Dec. 1959 notes that the club announced obtaining call W3CCX as a memorial to Deceased member Matthew Gelardi.

* * *

LIST OF HOMEBREW PROJECTS

- K3GAS - Time Base Generator & "Bird Chaser"; N3EG - Junk box 220 Mhz. Ant. and connector;
WA2ZZF - 1296 Converter; K3IUU - 1296 Transmitter; W3ELX - 2 mtr. SS 829 Amplifier;
WA3NEV - 6 mtr. 100W. Lin. Amp., 432 SS Mixer, 2 mtr. converter, 1296 slider, vacuum keyer, Nicad battery charger, 220 Mhz conversion from 50 Mhz Mobile Unit, RF Voltmeter;
K3BPP - Pwr Meter to 350 Mhz, 220 Mhz/28 Mhz Transverter, 1296/50Mhz transverter, 1296 PreA;
W3HOT - 2 mtr. Linear Amp. using 5CX 1500 A, K3DLS - "Conrail Competitor" with special P.S.

(CONTINUED ON PAGE 5)



SOME OF THE HOME-BREW PROJECTS



2nd Place - MOST UNIQUE PROJECT W3NFV



1st Place - BEST TECHNIQUES - W3NS

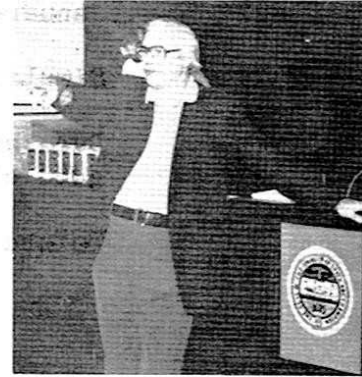


W3HMU

MOST MISERABLE FAILURE - K3JJZ



2nd Place - "HAM SPIRIT" PROJECT N3EG



AUCTIONEER - DAVE, W3

EME用432MHzパワー・アンプ

W3CCXのアンプはアイマックの真空管(三極管) 8938をグラウンデッド・グリッドで使用したものでカソード・ドライブである。8938は500MHzで1500Wのプレート損失である。

南米でのEMEペディションのときは電源事情が悪く、気温の条件も悪かったが長期間にわたる酷使に十分耐えることができた。

(出典: ham radio, June 1977 by Tony Souza, W3HMU 抄訳 JR1TRE, JE1HPT)

September 1977 CQ ham radio

W3HMU's 432 MHz MOONBOUNCE AMPLIFIER REPRINT IN JAPAN



J0,W2EIF SHOW ONE OF 14 - 220 MHz BEAMS HE BUILT FOR A CLUB PROJECT ALL WERE SOLD AT THE DEC. MEETING.



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ARRL OFFICIAL-W3CL-PRESENTS W3CCX/3 CONTEST ACHIEVEMENT AWARD TO W3HQT-CHAIRMAN 1977 JUNE VHF QSO PARTY - FIRST PLACE, MUTI-OP, E.PA SECTION, ATLANTIC DIVISION.

By Lyn - W3NSI

1. TWO METER FM 800 CHANNEL T/R # FT 227R: Yeasu now has a synthesized digital readout T/R for 144-148 Mhz. Unit runs ten or one watt out, switch selected from front panel. Memory circuit allows instant return to any frequency. A tone burst circuit is built in for use where repeaters require this function. Cost \$299.00. 15954 Downey Ave., Paramount, California 90723.
2. SYNTHESIZER - 220 MHZ: VHF Engineering is selling a 220-225 Mhz synthesizer both as a kit and also wired and tested. Frequency is adjustable in 5 KHz steps and is read on the thumbwheel switches used to set the channel. Offsets for repeater use are automatic when switch is in that position. Unit can be set to replace 6, 9, or 18 Mhz transmit crystals. Receiver section can be set to any IF in current use. Unit is 8" deep x 5 1/2" wide x 2 1/2" high. Price-Kit \$170. W&T \$240. 320 Water Street, Binghamton, N.Y. 13901.
3. VHF BEAM ANTENNAS: It appears that Finney Co. is back in the ham business. Their antenna line now includes several amateur items for 10-6-2 and 1 1/4 meters. A unit that may be of special interest is the Stinger A 2 + 2. This antenna is Two 5 element 2 meter antennas on the same boom. It is designed to be mounted either at the boom end or at the center of the boom. Two feed lines are used, one for vertical and one for horizontal beam. This could be just the antenna for Oscar users. Price \$39.00. 34 West Interstate Street, Bedford, Ohio 44146.

* * *

VHF/UHF REPORT

By Jo, W2EIF

There has been several 6 meter openings during late November and early December. These openings are sporadic "E" and are the result of the peaking up of the "E" season in the Southern Hemisphere. These openings are usually weaker and much shorter than those that occur in June and July. There have been meteor showers during November and December and I have noticed a number of stations taking advantage of the "Meteor" mode on both six and two meters. For the dates and best times to work a given direction, you may refer to the tables in the ARRL VHF Handbook. The dates and times of the showers are very predictable. There was a short opening around 6 PM on 6 meters on Monday, Dec. 19th. Mostly stations to the SW from this area.

Activity continues low on all the VHF bands and there are times when there isn't very much on the repeaters and FM simplex either. I don't really know why they need all the new repeater channels. There has been no great move toward 220 FM. It appears that spending a good chunk of money just to buy another box to use on another band holds no more attraction to the FM amateurs than it does to CB people. It also appears that CB has run its course, with a few manufacturers reportedly going bankrupt. Maybe this will lead to some more converts to amateur radio - let us hope so. Don't forget the January Contest January 21-22 and that the contacts on 220 and up count higher in points per contact than those made on six and two. The new rules are designed to make the use of 220 and up worth the effort which was not true in the past. Good luck and lots of sections in January.

* * *

LIST OF HOMEBREW PROJECTS (Cont'd)

- W3NSI - Electronic Timer Unit, Battery operated RF detector unit/Field Strength Meter, 220 Mhz Transceiver, walnut battery case and novel charger, 220 Mhz gnd. plane antenna and special extensions; WA3AXV - 220 Mhz 60W. solid state Lin. Amp.-- (construction articles in last months and this issue of Cheese-Bits), complete ATV Transceiver; WA3JUF - 1296/28 Mhz. transverter, 2300 Mhz. interdigital convtr;
- K3MWW - 6 mtr. 150W. junk box tube transverter, Solid State bias P.S. for same, 450 Mhz FM rcvr., 12 VDC, 10A. reg. P.S.; WA3WAS - Large LED digital clock display;
- W2EIF - 220 Mhz. 5 el. and 8 el. beam HB ant; K3JJZ - CQ tape and xmttr control on mod.
- W3HMU - Please read the Japanese article herein. 8 track recorder.



1st Place - BEST "HAM SPIRIT" PROJECT

W3HQT



1st Place
ORIGINAL DESIGN
WA2ZZF



K3IUUV

1st Place

K3GAS



MOST UNIQUE PROJECT
(Bird Chaser)



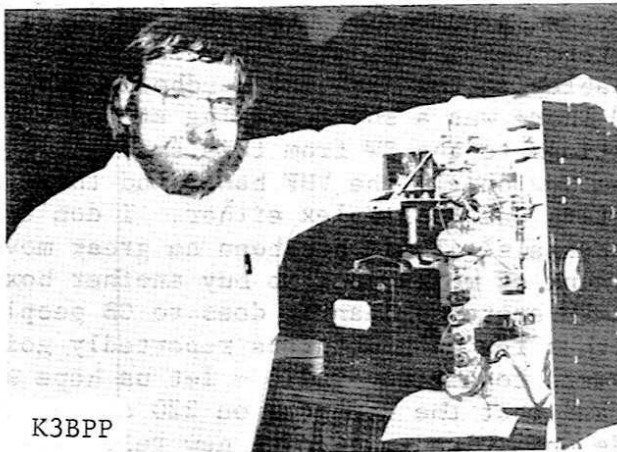
K3DLS



2nd Place - ORIGINAL DESIGN - WA3WAS



WA3AXV



K3BPP



W3ELX



2nd Place - BEST TECHNIQUES - K3MWV



WA3JUF

HOME BREW - '78

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P.S. \$500. Clegg 27B - \$200

CONTACT: WA3OQB, Charles Zeager
Phone: 215-533-9277 after 4 P.M.

FOR SALE: Viking 6N2 with Mod. & 2
P.S. \$25.

CONTACT: W3IMU, John Wolf
Phone: 215-968-4122

WANTED: 4CX250B Socket with Grid
by-pass ring and chimney - used one OK.

CONTACT: Ed Barbecow, K3ZCY,
Phone: 412-428-374

WANTED: 304TL Eimac Socket.

CONTACT: Fred Hausler, W2IPF
53 Trotter Way
Cape May, N.J. 08204

FOR SALE: Barrecrafters Ski Rack for
Porsche 914. (With lock) \$30. or best
offer.

CONTACT: M. Lissauer, WA3TEM at
TR 7-5573 after 6 P.M.

OFFICIAL BULLETIN NR 683 FROM ARRL HEADQUARTERS NEWINGTON CT DEC 8 1977 TO ALL RADIO AMATEURS BT: The ARRL Board of Directors meets twice yearly to formulate the course of ARRL affairs. The first meeting of 1978 takes place January 19. ARRL full members elect the Board which has the overall responsibility for managing the affairs of the League. This democratic process is effective only to the extent that the membership participates. Now is the time for members and affiliated clubs to communicate with their division director at the address shown on page 8 of any 1977 QST or via ARRL for newly elected directors. AR - - - OFFICIAL BULLETIN NR 684 FROM ARRL HEADQUARTERS NEWINGTON CT DEC 15 1977 TO ALL RADIO AMATEURS BT: A major justification for the Amateur Radio Service is in the public service rendered by amateurs. Hams will be afforded the opportunity to show what they can do in an organized public service program by participating in the annual ARRL Simulated Emergency Test. The exercise will center on the weekend of Jan. 28-29, 1978. At that time, hams throughout the United States and Canada will be operating within emergency scenarios. Full SET details appear on pgs. 70-72, Dec. QST. AK



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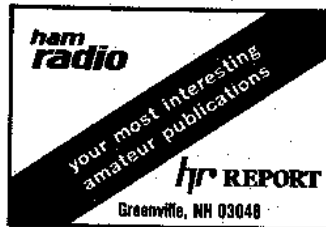
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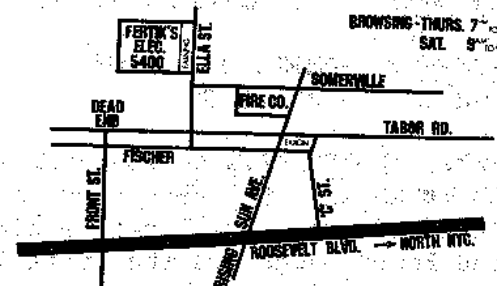


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—Guru Maharaj Ji

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220 MHZ Solid State Amplifier (PART II)

BY RON WHITSEL, WA3AXV

Part I of this article described the design and construction of a 60 watt amplifier for use on the 220 Mhz band. Part II will present a method for mounting the basic amplifier in a package suitable for mobile operation.

THE ENCLOSURE:

The enclosure chosen for this project was a Bud model CU-347 die cast aluminum utility box. This particular box has several distinct advantages; it is rugged in construction and is relatively RF tight when the cover is in place. Also, because it is a metal casting, it has substantial mass which contributes to the overall heat sink effect.

The CU-347 was chosen over some smaller versions to allow room within the enclosure for the mounting of coaxial relays and a small pre-amp which will be discussed later.

MOUNTING THE BOARD:

Assuming the basic amplifier was constructed as described in Part I, mounting the board in the enclosure is very easy and results in a neat, integrated assembly.

Start by locating the exact center of the bottom surface of the enclosure. At this point make a 1" diameter hole with a chassis punch. This hole will provide clearance for the mounting flanges on the transistor. Now locate and drill thru the five mounting holes for the P.C. Board. Use the P.C. board as a template. Place the heat sink into position on the bottom, outside surface of the box. Locate the mounting holes once again and drill and tap threads in the heat sink. Locate the transistor mounting holes and drill and tap.

Referring to figure 1 you will see that the bottom of the box, the P.C. board, and the heat sink form a "sandwich" that is held together by the five mounting screws. No spacers are required since the thickness of the Bud box exactly equals the flange thickness on the transistor. If you use an ordinary aluminum chassis for an enclosure, you will have to provide the appropriate spacers to assure alignment of all surfaces. Use thermal compound between the transistor and the heat sink.

In actual use, the entire box will be turned upsidedown so that the heat sink is on the top. Input and output connections should be chosen to match your individual requirements.

SWITCHING:

Figure 2 shows the schematic for the switching circuit finally settled on for this project. Several other methods were tried, but proved to be marginally satisfactory at 220 Mhz and 60 watts of power.

Open frame relays presented considerable mismatch to the exciter and to the amplifier output. (Don't forget the 220 Mhz transceivers have SWR sensing circuits that reduce power if they see a bad match).

Various open relay designs were tried but all had the same problems.

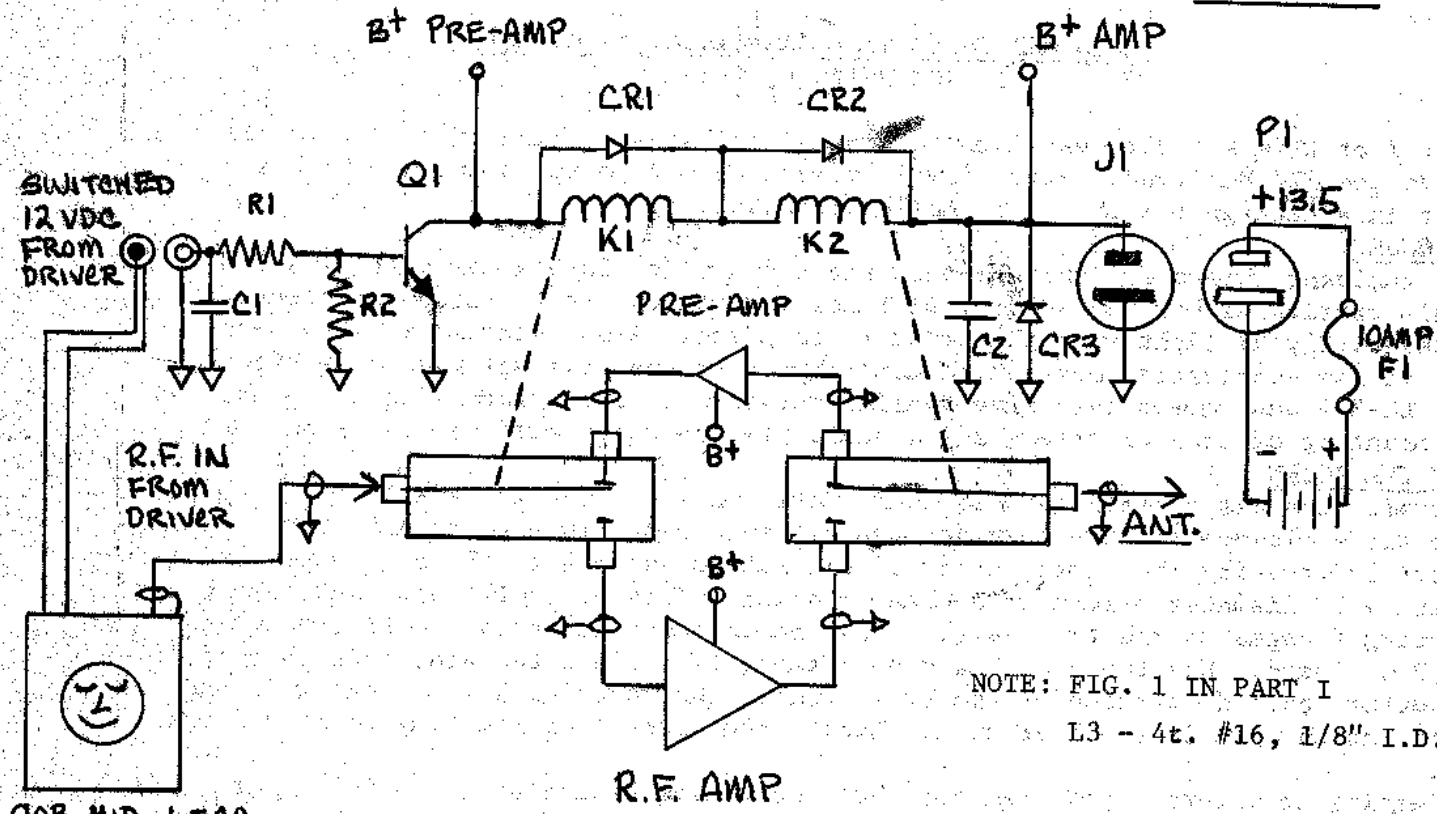
Solid state switching techniques were also tried and seemed to work reasonably well at low power levels, but at 60 watts, severe heating in the pin diodes made this method unsatisfactory. Perhaps some development work in this area could produce a workable circuit (i.e. multiple diodes, etc.).

The arrangement that worked the best proved to be two coaxial relays such as are found in many of the old (and new) commercial FM transceivers. These devices are usually 6 VDC relays and of rather high quality. The relays described in the parts list were made by or for Motorola but any unit of similar specifications could be used. If 12 VDC models are found, simply wire the coils in parallel rather than the series connection shown in the schematic. Transistor Q1 is not critical. Any general purpose NPN that will handle the current required by the particular relays used will work.

The coaxial relays are connected as shown in Figure 2 so as to switch the power amplifier into the circuit when transmitting and out of the circuit during reception. A pre-amp is shown in the schematic and may be replaced by a piece of coax if it is not used. Switched B+ for a pre-amp is also indicated on the schematic.

The "cob-mid-legg" family of transceivers (all identical) have a Jack on the back which, among other things, provides switched 12 VDC: ON when transmitting - OFF when receiving. Connection of this signal voltage to the circuit described above provides the necessary control of the amplifier. (Caution: If you use the pre-amp make sure the switching circuit is operational).

(CONTINUED ON PAGE 10)



NOTE: FIG. 1 IN PART I
L3 - 4t. #16, 1/8" I.D.

WA3AXV 12/77

COB-MID-LEGG
220 MHz XCEIVER

PARTS LIST

- | | | | |
|---------|---------------------|-------|--|
| R1,R2 | - 2.2K 1/2 W. | J1 | - "Jones" Jack, male |
| C1,C2 | - .001 mfd. | P1 | - "Jones" Plug, female |
| CR1,2,3 | - 1N4005 | Q1 | - 2N4922 |
| F1 | - 10 amp, Fast Blow | K1,K2 | - Coaxial Relay, 6VDC, 20 ohms Res.
Motorola Pt. No. 280C1017 or sim. |

DC POWER WIRING:

Since this amplifier requires about 8 amps some special consideration should be given to the 12 VDC wiring in the automobile. It is strongly recommended that connection be made directly to the battery when making the mobile installation. A relay controlled by the ignition switch can be used to turn power off and on. Power to transceiver can also be provided by this arrangement. Please use appropriate fast blow fuses when making your installation.

FINAL TUNE-UP:

Once the amplifier package is completed and tuned on the bench as described in Part I, the amplifier is ready for mobile use. If you use a rear deck mounted antenna, a good place for the amp is in the trunk. It may be left in the car all the time if the installation is made as previously described (The use of the pre-amp in the circuit, close to the antenna results in exceptional receiving sensitivity).

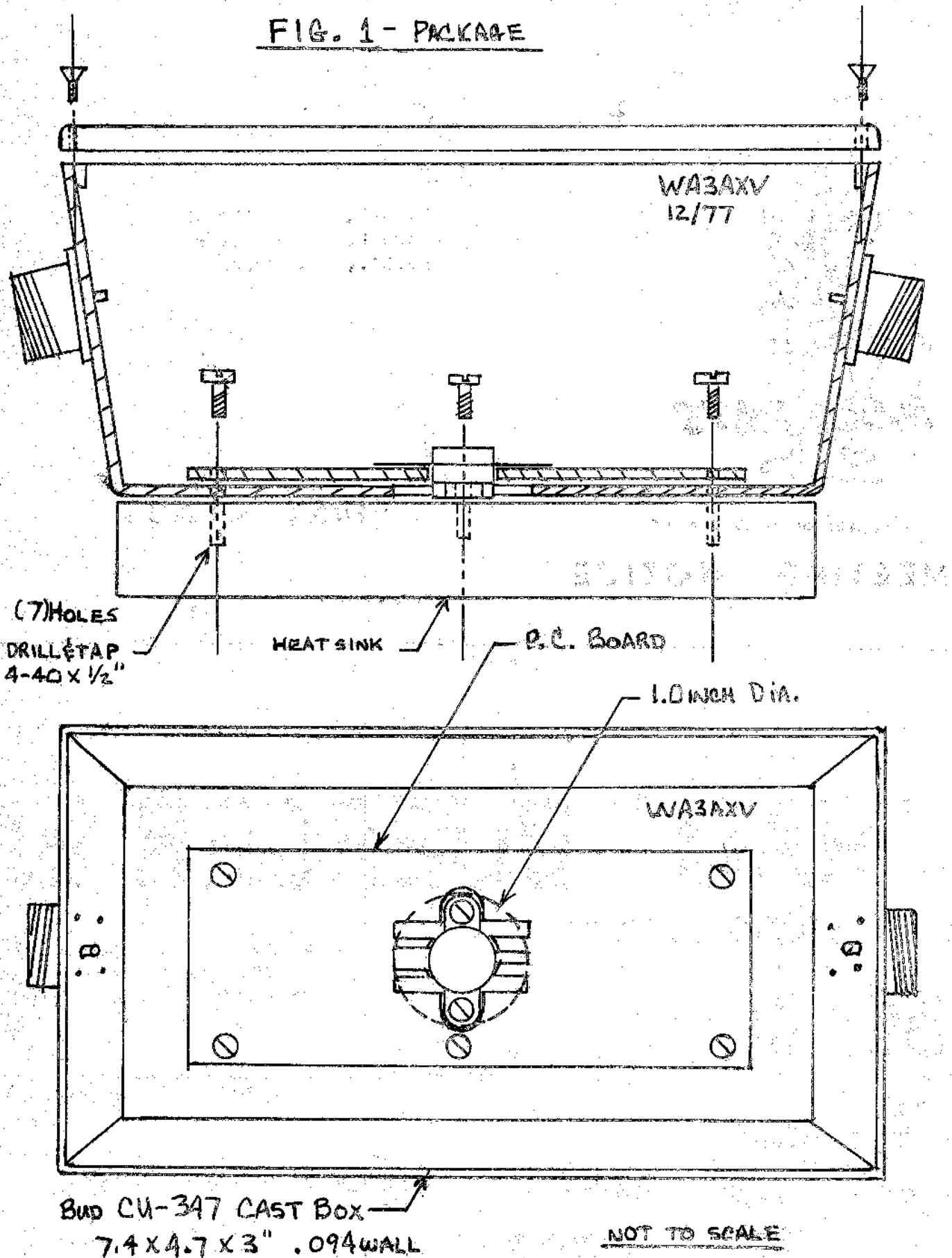
All that now remains is to touch-up the tuning, to compensate for new cable lengths and perhaps an antenna that is not quite 50 Ohms. It is not a bad idea to temporarily connect an amp meter and watt meter to check performance as described in Part I under "Tune-Up."

CONCLUSION:

This has been a most rewarding project. The additional power effectively fills in most of the "holes" when transmitting to the repeater and the pre-amp provides more consistent reception. With this system, you will double your usable range with most repeaters and make 220 MHz mobile more enjoyable.

220 MHz S.S. AMPLIFIER

FIG. 1 - PACKAGE



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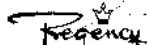
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