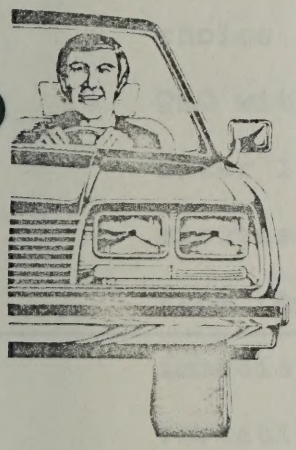
Holmesburg Amateur Radio Club Newsletter

146.685 MHZ

Special Edition — May 1981



BANANA PROBLEM's GOT YOU DOWN LATELY ??

WELL, ** DON'T MAKE A MOVE UNTIL YOU CHECK

His input freq. In this case check 146.085 MHZ, and see his signal strength from your own location. And this goes for the clowns who play with their touch tones, and try to access our dial tones. And over a period of time a pattern will appear, which will expose all the offenders.

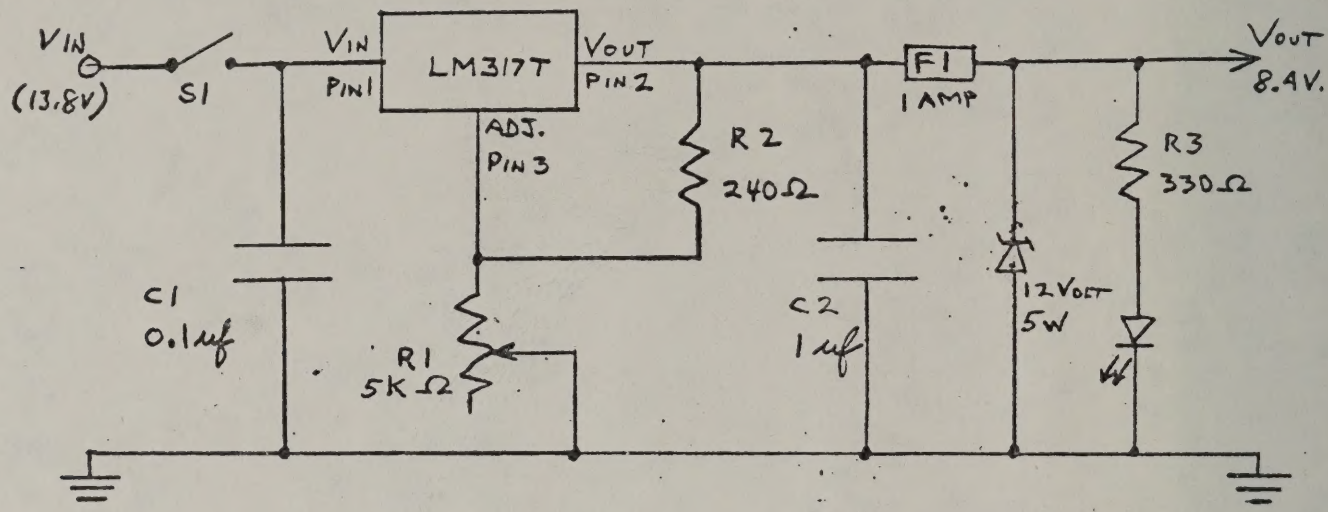
A reminder to all members, when a new ham or a passing thur (OUT OF STATE) Ham, please extend all courtesy use of the machine, and make phone patch or Autopatch calls if they need it.

Thank You For Helping!

Richie
WA3AOP.....

TWO WAY POWER FOR THE IC2AT

by GIL WEISS, WB3JJF
3004 HALLOWELL COURT
BENSALEM, PA. 19020



RADIO SHACK PART NUMBERS —

C1	272-1415	LM317T	276-1778
C2	272-996	HEAT SINK	276-1363
R1	271-217	LED	276-034

FIGURE 1

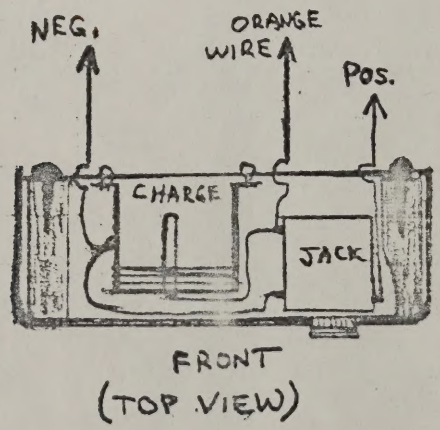


FIGURE 2

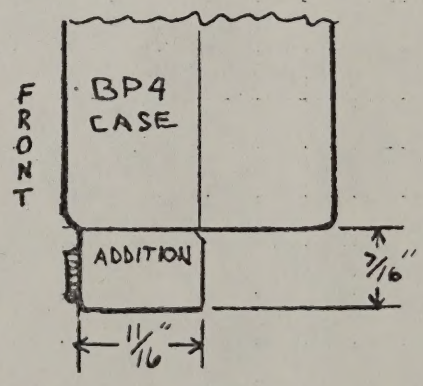


FIGURE 3

Two Way Power for the IC2AT

Have your nicads and external power too!

by Gil Weiss, WB3JJF
3004 Hallowell Court
Bensalem, Pa. 19020

I was in rush hour traffic on the interstate with one hand on the steering wheel and the other holding my new Icom 2AT handy talkie when suddenly the transmit indicator light went out indicating that my nicads ran down. What could I do? Attempt to remove the radio from its leather case and change battery packs while driving? Impossible! Pull off the road and change batteries? Too much traffic! Only one choice left - I made a quick apology to the people I was in QSO with and I went QRT. This situation occurred two days after I purchased my IC2AT and made me realize that forty minutes of rag chewing twice a day during my drive to and from the office was just too much for my nicads to take. I immediately began thinking of a better way to enjoy the versatility of this neat little two meter rig.

The IC2AT handy talkie has become an instant success with amateurs in my area. Between its compact size, high quality construction, excellent operating reports and low price it is a hard unit to beat. I bought one with the objective of having a pocket size two meter rig which I could use in my automobile while commuting to work, from my desk in my office as well as on my boat, at hamfests and on occasional business trips to other areas of the country. Because of my plans to take this radio practically everywhere I go, the thick

leather case made by Bianchi for Icom was a must for protection against bumps, bruises and the elements. A spare battery pack was also required and I decided upon the BP4 battery case which I loaded with six AA size rechargeable nicads. This spare power pack lasts much longer than the standard 250 mah battery that comes with the rig although the overall power output of the radio is slightly lower because of less voltage from the six 1.25 volt nicads. But, even armed with two batteries, my mobile power problem still existed since I could not remove the unit and change power sources while driving.

Purchasing the DC regulator offered by Icom appeared to be the solution to my problem. The regulator is built into a slide on battery case and drops the 13.8 auto voltage to the required 8.4 volts specified in the instruction manual, But - and there always seems to be a "but" or "however" as no one makes the perfect rig or accessories - the jack to plug the regulator base into your auto electrical system is located on the back of the unit directly behind one of the big metal snaps on the rear of the leather case. Even if you drill out the snap, which would not do your case much good, or used the rig out of the case laying it on your car seat or hanging it on your dashboard there still would be the problem regarding the plug and wire coming out of the rear of the radio. Additionally, when I get to work I would have to remove the unit from the leather case, take off the regulator, put on a battery pack, replace the unit in the case and repeat the entire procedure when leaving work for home. Clearly, a better

solution to powering the radio was needed.

The product of my imagination is shown in Photograph #1. I built a voltage regulator circuit using an LM317T variable regulator chip in a small 3 1/4 X 2 1/8 X 1 1/8 inch Radio Shack case (Part No. 270-230). One end of this unit plugs into your auto electrical system either through your cigarette lighter or, as in my case, through an accessory plug wired under my dashboard. The wire from the output end terminates in an 1/8" mini plug which goes to the main part of my invention - a BP4 battery case which holds six AA size nicads but which has a small addition on its base that accepts the external power plug from the regulator. When you plug in the regulator the normally closed mini plug jack disconnects the internal batteries and when you remove the mini plug the batteries are once again connected and ready to provide portable power. The leather case is included in Photo #1 to show where the hole was made for the external power plug on the lower front of the radio. For added convenience a charger jack is also built into the battery case addition which allows the use of the BCU-25 wall charger that comes with the radio or any other 10-15 volt 50 ma DC converter/ charger. You do not need to use the Icom drop-in quick charger for the BP4 pack as stated in the IC2AT manual.

Photograph #2 shows the rear view of the modified BP4 pack which includes the charger jack. The addition to the battery pack case was cut from a Radio Shack experimenters box (Part No. 270-230) just like the one used for the regulator circuit. It was cut and expoxied to one side of

the BP4 pack so you can open and close the case to install or remove batteries. This piece of the box contains an enclosed normally closed mini plug jack (Radio Shack #274-296), which does the switching from internal to external power, plus a coaxial charging jack (Radio Shack #274-1549). Photograph #3 shows the interior of the battery case with the nicads installed and the simple wiring modifications.

Those of you who complete this easy project will be rewarded by having a great little two meter rig which, after operating indefinately from your auto electrical system, can be quickly removed by disconnecting your mobile antenna and unplugging your external voltage regulator. Just put your rubber duck back on and you are instantly ready to operate portable. All of this can be done while keeping your radio safe in its leather case. Additionally, with your DC regulator you can run the rig from your home on any 12 volt power supply or an old auto battery which would provide communication capability during power outages.

Construction of the regulator is very straightforward and the schematic is shown in Figure 1. I built the entire circuit in a piece of perf board cut to fit inside the box. The regulator chip and heat sink were placed on the bottom side of the board and all other components on top. All components are available at Radio Shack stores except for the 12 volt 5 watt zener diode which was included for over-voltage protection of the rig. If a voltage spike greater than 12 volts should occur the zener will shunt to ground

and blow the one amp fuse. A subminiature slide switch and green LED were also included since the regulator should always be turned off when inserting the output plug into the rig as these plugs easily short out for an instant while being plugged in or out of their jack. The tip of the mini plug is wired for the plus 8.4 volts and upon completion of the regulator circuit adjust the 5K variable resistor for 8.4 volts output prior to putting the top of the box on.

Figure 2 shows the parts layout and wiring diagram for the battery case addition. The orange (battery positive) wire inside the BP4 case is unsoldered from the positive connection at the top of the case and re-routed down into the addition where it is connected to the enclosed jack. Wire routing is done through two holes drilled in the two square indentations on the bottom of the BP4 case. A new wire goes from the postive side of the enclosed mini plug jack up to the slide on connector at the top of the battery case where the orange lead was disconnected. Another wire connecting the negative terminal on the mini plug jack and the negative side of the charging jack is routed up to the negative connection inside the BP4 case. The charging jack is wired in parallel to the battery circuit, as shown, completing all electrical work.

The mechanical part of this job starts with cutting off a portion of the second box to the dimensions shown in Figure 3. The inside space must be just deep enough to fully enclose the mini plug jack. You cannot make the addition too deep or the whole unit will not fit properly in the

leather case. I used a fine hacksaw for the surgery and carefully sanded the piece of box to final dimension with #400 silicone paper. Some interior trimming with a knife was necessary to make room for the wires. The charging jack also required some filing to fit properly. I also slightly sanded down the entire bottom of the case to ensure a good bond with the expoxy which will hold things permanently in place. Either the quick setting (5 minutes) or regular resin/hardner expoxy may be used for this job. The metal side of the addition was carefully drilled to fit the charging jack and the edge was beveled with the silicone sand paper on a block so the case could easily be opened and closed.

A little patience and care with your saw, file and sandpaper will produce a professional result which will greatly add to the operating convenience of the IC2AT handy talkie.

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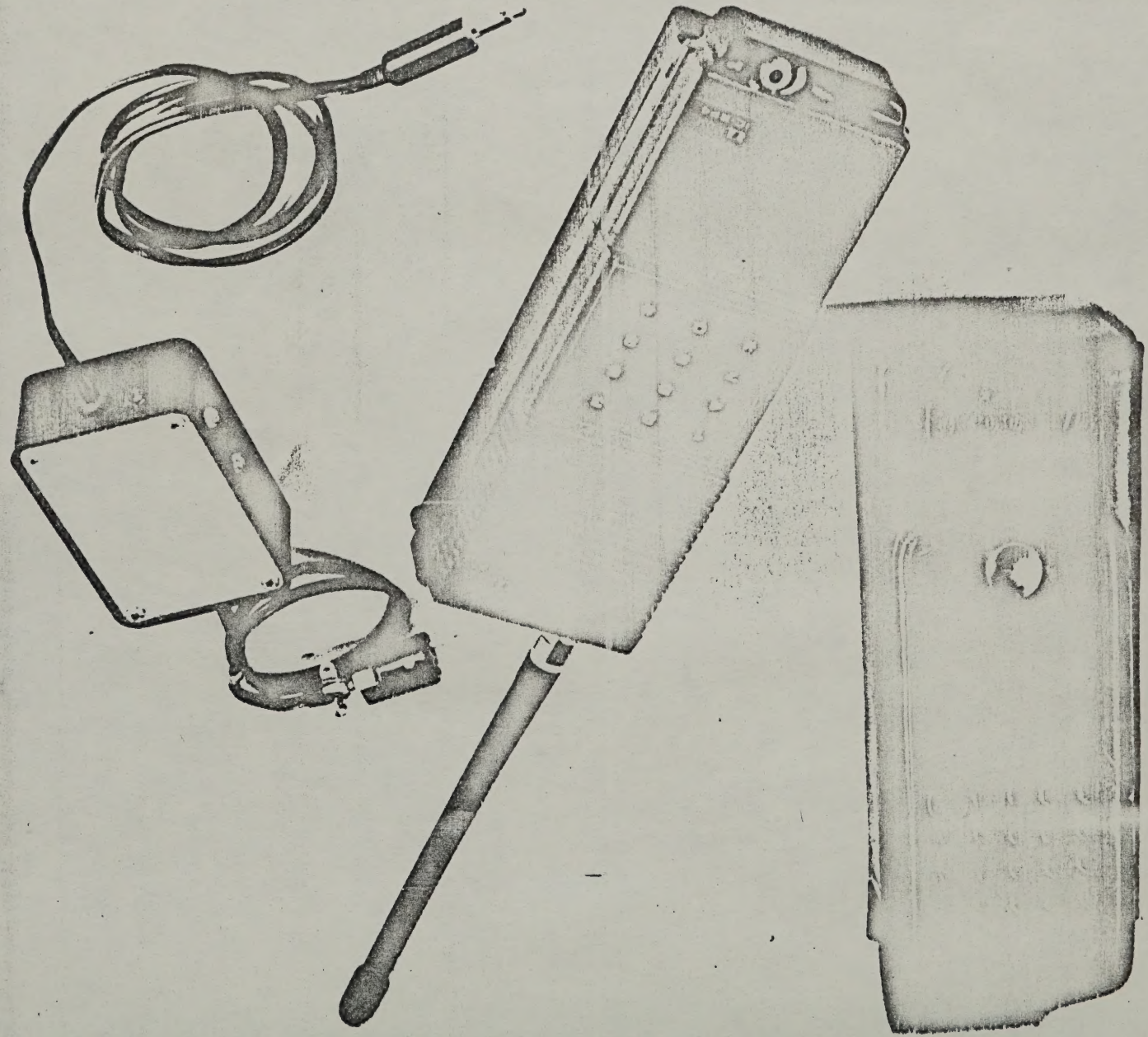

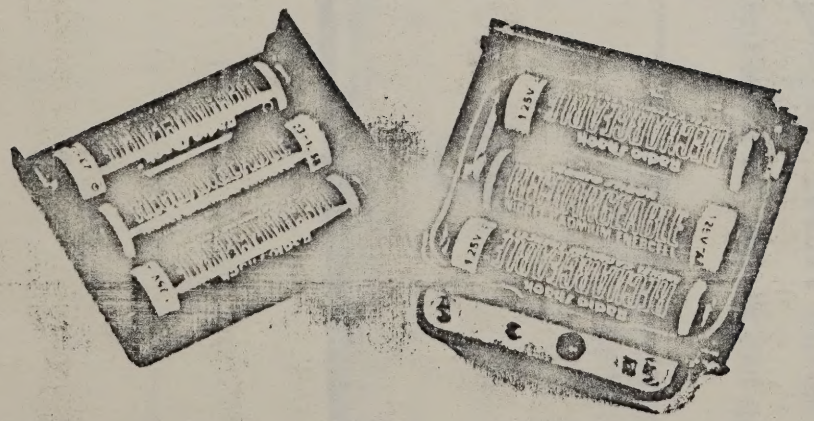

PHOTO #3

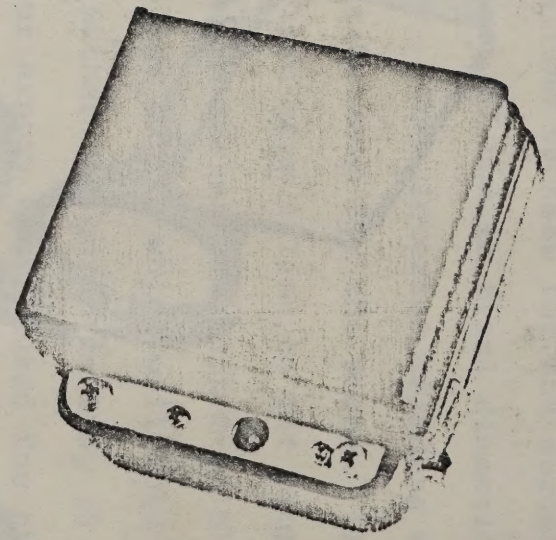

PHOTO #2