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AMATEUR RADIO CLUB

BOX 592  
OWEN SOUND, ONT.  
N4K5R1

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NEWSFRONT NEWSFRONT NEWSFRONT NEWSFRONT NEWSFRONT NEWSFRONT NEWS

AMATEUR RADIO COURSES have started in Port Elgin, Owen Sound, Kincardine and Flesherton, with a total of twenty-two people enrolled so far. On-the-air CW practice will commence as soon as enough students obtain receivers.

U. S. SEMICONDUCTOR MANUFACTURERS are in the process of spending millions of dollars to upgrade their plants. Pressure from the electronics industry and Japanese IC manufacturers has forced Signetics, Mostek, TI, Fairchild and others into this position. Apparently, Japanese-made IC's are of such high quality that the American electronics industry is refusing to purchase U. S. semiconductors. The big difference is that the Japanese firms do not have Quality Control departments!! Each and every employee is responsible for maintaining quality. Maybe it's time we had some of the Japanese style worker motivation in this country!

PACKET RADIO is now a reality. The DOC has finally revised and issued TRC-24 and a number of Amateurs will be trying for the new "Amateur Radio Digital Operator's" certificate this month.

FRED, VE3KPK is sporting a brand new rig, the Yaesu 901DM. While the rest of us sit back and drool, Fred is busy as a beaver making DX contacts. Have fun, Fred. Also, I heard that Ian, VE3HXX sent a letter to Santa and asked for the same rig. A usually reliable source added that, in the letter, Ian promised to be good for the rest of the year. Further details as they become available.

THE RSO REPEATER article that appears in this issue does not include a map of the proposed coverage area. However, the repeater association expects that coverage in this area will be quite good.

THE NEXT CLUB MEETING is Thursday, October 19<sup>th</sup>. It's also membership renewal time, so bring your cheque book, or, send five dollars to Box 592, Owen Sound, N4K5R1.

THE FLESHERTON SPLIT RAIL FESTIVAL was a huge success. The GBARC display attracted considerable attention and congratulations to the fellows responsible for setting up the display. It was our first visit to the festival and, if you haven't been there, be sure to attend next year. You'll certainly enjoy it.

POWER SUPPLIES by Don, VE3IDS

Commercially made power supplies are very expensive to buy, but they can be built easily with junkbox parts and perform as good as the "off the shelf" models. The reason I started building a power supply was that I got a Prog Line 2 metre rig and needed a supply for it. I didn't like the idea of a messy battery sitting on the floor and was shocked by the \$200 price tags of commercial supplies. That is when I started rooting through the junk box. Here are some basic facts about supplies that I came across and they may be of use to others.

If you need a low to mid power, simple, stable supply that will deliver up to about three amps, the circuit in Figure 1 (a) should do the trick. Here is the parts list:

T1--select voltage about 20% higher than the final output you want, making sure the wattage is enough.

D1-D4-- silicon diodes with sufficient PIV and forward current ratings.

C1-- 3000 uf should give proper filtering at up to three amps. Keep a safety margin of 40% over working voltage.

Z1-- select voltage of zener by adding 1.5V to the desired output (1.5V is to make up for the base-emitter drops of Q1, Q2, Q3).

R1-- to limit zener current; to calculate value see example:  
If C1 has 20V across it and Z1 has 15V, 5V is dropped across R1. 10mA zener current is safe enough for a 1/2 watt zener (150 mW dissipated); therefore, R1 has 10 mA through it and 5V across it:

$$R = \frac{E}{I} = \frac{5}{.010} = 500 \text{ ohms. A 470 ohm would work well and the regulator would produce 13.5V at up to 3 amps.}$$

Q1 & Q2-- any NPN silicon transistor- 500 mW or better.

Q3-- high current NPN silicon such as 2N3055.

This circuit uses the transistors in a common collector or emitter follower configuration. This mode gives unity voltage gain but high current gain and no phase inversion. The zener fixes a voltage drop across it and Q1 passes this level through it, less a .5V junction drop, to the base of Q2. The voltage is constant but Q1 now supplies current from collector to emitter with a greatly increased current capability than the zener alone. Q2 and Q3 cascade this effect and the end result is that the output has the stability of the zener and the current capability of Q3.

(cont'd)

POWER SUPPLIES (cont'd)

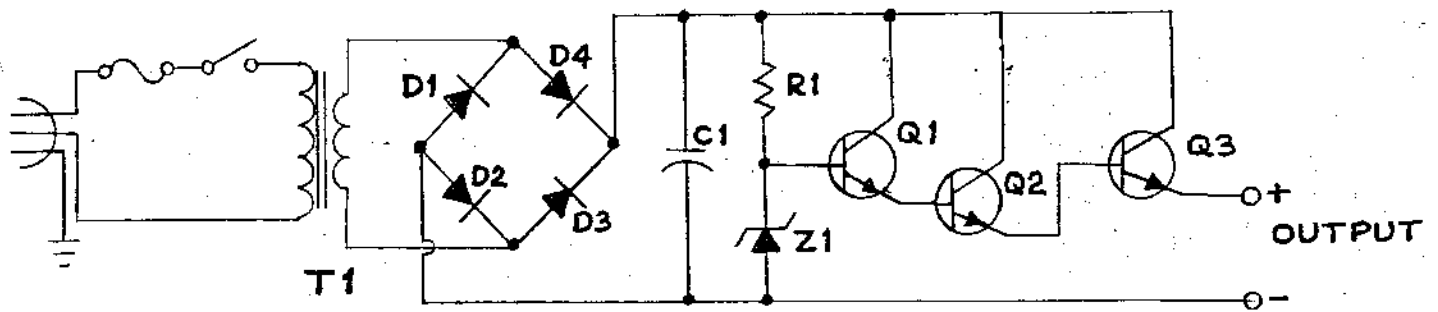


FIG. 1(a)

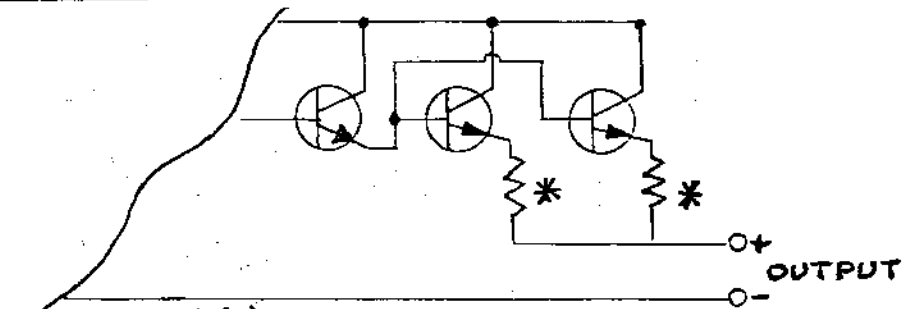


FIG. 1(b)

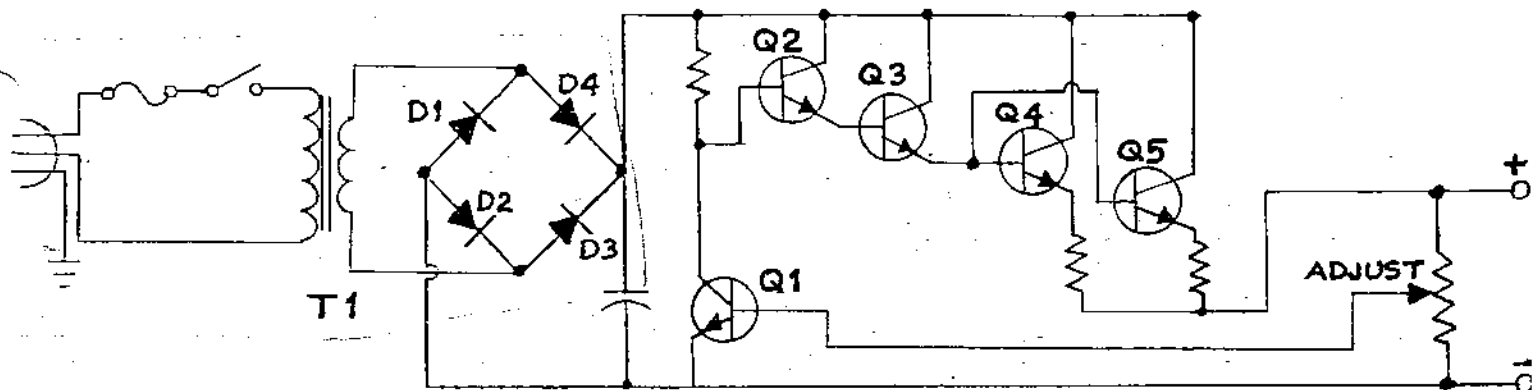


FIG. 2

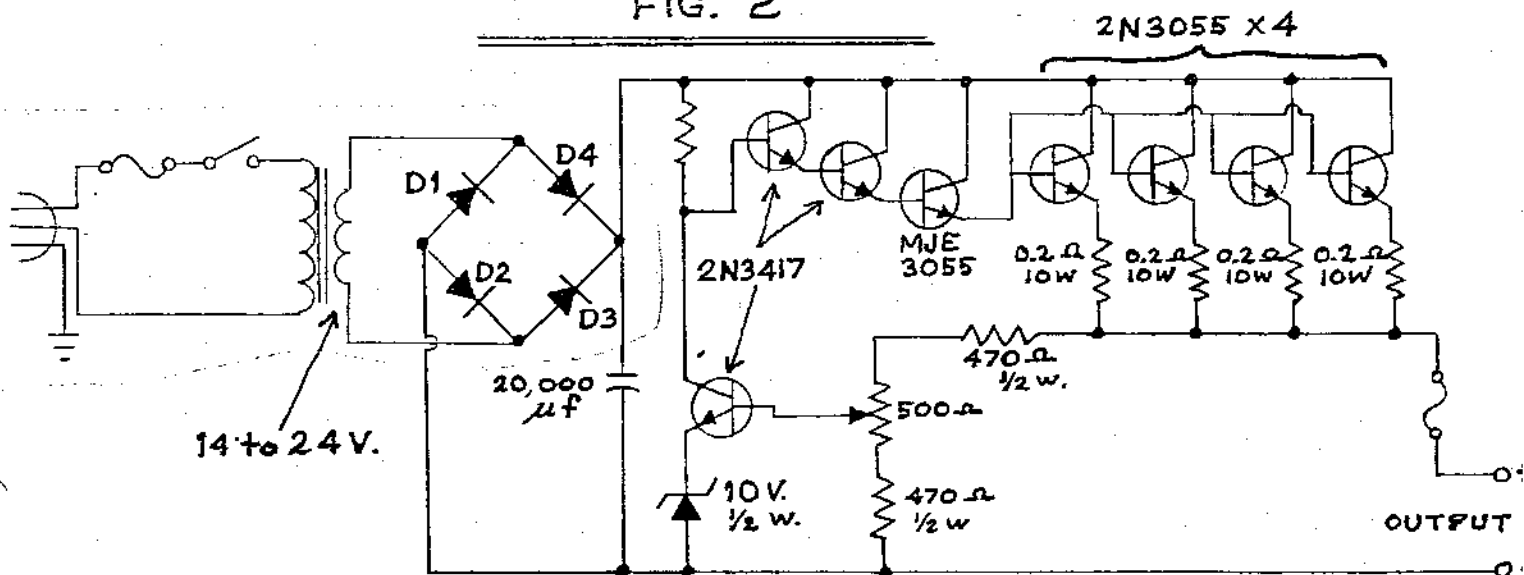


FIG. 3

## Power Supplies (cont'd)

A higher current requirement to run a rig such as a tube type model requires either larger output transistors or paralleled smaller ones. Since there is a limit to the size of transistors available, paralleling is required. Problems arise because no two transistors have exactly the same gain; therefore, one working harder than its partner and burning itself out. To equalize the gain, resistors of very low value (usually under one ohm) are added to the emitters of the output transistors, as shown in Figure 1(b). As the transistor with the higher gain passes more current, more voltage is dropped across its resistor. This voltage starts to de-bias the transistor by raising its emitter voltage and this in turn reduces the current through it. The big drawback with this circuit is the voltage across the resistors appears as a drop in output level. What is needed is a way to sample the output and automatically adjust the input level to compensate for varying load conditions. The circuit in Figure 2 will do that.

As the output is loaded down, the output voltage drops. This decreases the bias on Q1 which raises the collector voltage. This raises the voltage level through the Q2-Q5 string and the output is compensated with a voltage correction (Q1 is in a common emitter mode which has high voltage gain and a 180° phase inversion). This regulator can be adjusted to supply from almost zero to the capacitor voltage. The problem with this regulator is it is sensitive to input voltage changes. As more current is drawn, the capacitor filtering becomes less effective and the D.C. average level sags. This sag throws a monkey wrench into the sampling circuit. For this reason this supply is not suitable for higher power levels unless enormous capacitance is used. Its nice feature is its flexibility in voltage selection.

The next supply (see Figure 3) gets rid of the stability problem, but sacrifices some flexibility in voltage adjustment. The value of the zener is selected close to, but under the output desired. The voltage can be turned down to the level of the zener and up to the capacitor voltage. The closer the zener is to the output selected, the more stable it is. When the supply is operated at the value of the zener, it is as stable as the first supply. As more current is drawn, the drop across the resistors is compensated for by Q1 starting to turn off. If the supply is adjusted too high, the problem of instability crops up. Also if it is turned up to the top, any ripple on the capacitor will find its way to the output. This is the way most of the "off the shelf" supplies are made and they operate quite well if they are matched to their intended purpose.

(cont'd.)

## Power Supplies (cont'd.)

This last supply is best for a high current system that requires good voltage regulation and a fine adjustment for voltage levels. The basic zener system is ideal for a stable fixed moderate current supply (e.g; a 5V supply for IC work or a keyer supply). The second type is good for a low power bench supply that can be infinitely adjustable over a wide range. There are IC chips on the market that you can build into a regulator to get better results, but I didn't have any when I wanted a power supply so I didn't try them. HI! Also, a current limiter circuit by Jim, VE3BFV appeared in FEEDBACK a while ago, and it could be added and adapted to give a supply current limit capability. I built a 20 amp version of the last type along with two type 2 one amp regulators all on one chassis to save parts. The 20A section delivers its full output with ease and has about 0.5V variation from no load to full load. It can be adjusted from 9V to 15V. If anyone builds a supply and wants any more info, I will be happy to try and help.

73's  
Don, VE3IDS

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**BITS & PIECES:**

The London Amateur Radio Club has started a slow-speed cw net similar to our short-lived fun net. The net operates on 3.675 MHz at 23:30z every weeknight. Why not try checking in some time? It's lots of fun and needs your support.

Even though Pierre didn't call an election, the campaigning was furious in Grey-Bruce. Dick, VE3BIS was mainstreeting in Southampton, kissing babies, etc; meanwhile, in Metro Tiverton, Tess, VE3HIR, was busy putting up lawn signs and Bill, VE3EFX was sneaking out at night and knocking the signs down. It was the Radio Society of Ontario's Delegate Election. As you all know by now, all three candidates were acclaimed into office. Congratulations from the club and we know that all three of you will represent us well. (Just wondering if any other club is so well represented??)

VE3TIV, the Bruce Amateur Radio Club's repeater suffered a lightning strike a couple of weeks ago and, at time of writing, is still off the air. Rick, VE3ASH is making the necessary repairs and will hopefully have the repeater back in service by the time you read this.

## THE TWENTY-FIRST JAMBOREE ON THE AIR

The Boy Scout/Amateur Radio partnership comes of age this year. This October 20 & 21 are the dates of the 21st Scout Jamboree-on-the-air. On those days, Scouts worldwide will participate with Radio Amateurs in their countries with two main objectives in mind:

- 1) to make new friends
- 2) to open new fields of interest.

Would you be interested in helping? I'll bet that you won't have to look far to find some interested boys and scouters.

A few of my observations from taking part in past JOTA's may help you and the boys who participate with you have the most fun:

1) Remember that it is a fun event for all, not a serious contest.

2) Boys of Scout age have grown up in an "electronic era". The mystery of hearing a Scout elsewhere to talk to doesn't really affect him. (I still find it amazing that with a few watts of power it is possible to communicate with anyone, anywhere, but the boys rather expect it, having grown with TV, satellites, communications from men walking on the moon, and so on). As a result, they will be much more interested in talking to anyone, even literally a few blocks away, than they will be in straining to hear a DX station.

3) If you can't find a Jamboree Station immediately, talk to anyone, just to get things off to a good start.

4) It helps if each Scout writes down a few items he can talk about before the first contact, as he may well be mike shy at first. (I caution though--at first only!!)

5) Suggested frequencies: Phone- 3740, 3940, 7090, 14290, 21360, & 28990; CW- 3590, 7030, 14070, 21140, & 28190.

The Port Elgin Scout group has been lucky to participate in the past and we've really appreciated the help of Dick (VE3BIS), Bill (VE3BFZ--now VE1QS), Bob (VE3FCW), and Eric (VE3HSE).

This year we decided to combine JOTA with a camp at Saugeen Bluffs near Paisley. We hope that by combining the camping part of scouting with the Jamboree that we will be able to learn a bit more about antennas, and the real independence of Amateur Radio. We, and all the other scout troops around would surely appreciate a hand. Are you willing? Why not contact your local scouting people (ask some boys; they'll tell you who to talk to); or say yes (maybe?) when they call you.

Bill, VE3DGP  
(also Troop Scouter,  
1st Port Elgin, Troop 'B')



# VE3RSO REPEATER

Plans are currently under way to establish a two meter repeater, using the call sign VE3RSO, at the Orangeville QTH of Lloyd Ferns, VE3BZF, to continue and expand the code practice transmissions started by Lloyd, as well as providing the opportunity for other stations to originate code practice, from different locations within the coverage area of VE3RSO.

In addition to the regular code practice transmissions, VE3RSO with antenna 1800 feet above sea level, will provide excellent coverage over a wide area for normal repeater operation, as well as first class facilities for emergency operation.

This new repeater, with a projected ERP of 180 watts, will be owned and operated by the VE3RSO Repeater Association Incorporated, an organization created specifically for this purpose.

Today marks the beginning of the campaign for financial support. Donations from individuals and interested club groups will be accepted at the RSO Booth during the entire convention, or can be mailed to the Association's address. Your support and assistance in promoting this worthwhile project in your district will aid in ensuring its success.

## VE3RSO REPEATER ASSOCIATION INC.

### DIRECTORS

ERIC ILOTT	VE3XE	(TORONTO)
CROFT TAYLOR	VE3OR	(OTTAWA)
GEORGE DAVIS	VE3BBW	(TORONTO)
HAROLD BRAUN	VE3DWH	(WATERLOO)
DAN BERESKIN	VE3QM	(TORONTO)
JOHN RIDDELL	VE3AMZ	(WATERLOO)
LLOYD FERNS	VE3BZF	(ORANGEVILLE)

### OFFICERS

PRESIDENT	HAROLD BRAUN
VICE PRESIDENT	GEORGE DAVIS
VICE PRESIDENT	JOHN RIDDELL
SECRETARY TREASURER	JOHN SCHREITER (VE3DOS)

FOR MORE INFORMATION CONTACT:

VE3RSO REPEATER ASSOCIATION INC.  
BOX 334 STATION U  
TORONTO M8Z 5P7

VE3RSO

REPEATER

146.625 IN

146.025 OUT

### BACKGROUND

- OWNED AND OPERATED BY THE VE3RSO REPEATER ASSOCIATION ( INC. PENDING)
- ONE OF CANADA'S WIDEST COVERAGE REPEATERS
- CODE PRACTICE TO BE AVAILABLE NIGHTLY ON THIS REPEATER OCTOBER THROUGH MARCH.
- STANDBY BATTERY POWER PROVIDED
- R.S.O. BULLETINS TO BE AIRED WEEKLY
- LARGE POPULATION OF SOUTHERN ONTARIO TO BE COVERED

### REPEATER SPECIFICATIONS

#### LOCATION

- QTH OF LLOYD FERNS, VE3BZF, NEAR ORANGEVILLE

#### ANTENNA HEIGHT

- 1800 FEET ABOVE SEA LEVEL ( SAME HEIGHT AS OBSERVATION DECK OF C.N. TOWER )

#### EQUIPMENT

- TOP OF THE LINE GENERAL ELECTRIC MASTR II FULLY SOLID STATE CONTINUOUS DUTY 100 WATTS OUTPUT INCLUDING HIGH LIGHTNING IMMUNITY POWER SUPPLY
- ANTENNA IS A 224 SINCLAIR 6 DB OMNI COVERAGE
- FEEDLINE IS ½ INCH HELIAX
- STANDBY BATTERY IS OF THE LEAD CHLORIDE TYPE WITH A CAPACITY TO RUN THE REPEATER FOR 3 DAYS AT 30% DUTY CYCLE
- CHANNEL GUARD - SELECTABLE - 100 HZ
- MICROPROCESSOR CONTROLLED

### DONATION APPLICATION:

IF YOU WOULD LIKE TO CONTRIBUTE FINANCIALLY TOWARD THIS MAJOR REPEATER, PLEASE COMPLETE THE FORM BELOW AND SEND IT ALONG WITH YOUR DONATION TO:

VE3RSO REPEATER ASSOC. INC. (PENDING)  
P.O. BOX 334  
STATION U  
TORONTO M8Z 5P7

NAME: \_\_\_\_\_

CALL: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_

POSTAL CODE: \_\_\_\_\_

DONATION: \$ \_\_\_\_\_