FEEDBACK

THE OFFICIAL NEWSLETTER OF THE

GEORGIAN BAY AMATEUR RADIO CLUB INC.

Oct 1995

Sponsoring

VE3OSR FM REPEATER	146.940- Mhz	BARROW BAY
VE3OST FM REPEATER	145.290- Mhz	OWEN SOUND
VE3GBT FM REPEATER	146.895- Mhz	MARKDALE
VE3IJD PACKET BBS	145.630 Mhz	KEADY

REGULAR EVENTS

GBARC MEETINGS:
FOURTH TUESDAY OF EACH MONTH

BREAKFAST MEETINGS:
SECOND AND LAST SATURDAY OF EACH MONTH

GBARC INFORMATION:
INFORMATION REGARDING MEMBERSHIP SHOULD BE DIRECTED TO TOM VE3NEM 519-371-9499

THE MINUTES FOR SEPT 26/95 BY VE3WUD

THERE WHERE 28 MEMBERS THAT ATTENDED TO THE MEETING. THE MINUTES WAS PASSED AND ACCEPTED BY ROSS VE3BZC. KEN VA3KMS SAID WE NEED A PACKET GROUP NAME AND ALSO SAID THERE ARE 34 PAID MEMBERS FOR THE PACKET USERS GROUP.

STEVE VE3XKM SAID THAT THERE ABOUT 7-8 PEOPLE THAT ARE THINKING OF TAKING THE AMATEUR RADIO COURSE. HE ALSO ASKED THE MEMBERS IF THEY WOULD LIKE TO TAKE A TRIP TO TELESAT FOR A TOUR. IT WILL BE ON SAT,OCT,21/95 OR SAT,OCT 28/95.

OUR INSURANCE IS COMING DUE $405.00 .TOM VE3NEM IS GOING TO SHOP AROUND FOR CHEAPER INSURANCE AND REPORT BACK TO THE CLUB AT THE NEXT MEETING.

JOHN VA3JRF SAID WE NEED VOLUNTEERS FOR THE TWO METER NET AND ALSO SAID WE NEED MORE PEOPLE TO CHECK IN.HE ALSO SAID THE SANTA CLAUS PARADE IS COMING SO WE NEED VOLUNTEERS TO HELP OUT.

MIKE VE3SYT FROM THE BLUE MOUNTAIN AMATEUR RADIO CLUB WAS A GUEST WITH US. HE SPOKE ON HOW WE NEED TO DO AS AMATEURS OR CLUBS WE NEED TO START TO WORK TOGETHER AND PUT THE PASS BEHIND US AND BUILD UP A GOOD REPUTATION TO THE PUBLIC.HE ALSO LOOK FOR VOLUNTEER FOR THE SANTA CLAUS NET.

BOB VE3XOX HADS A FUND RAISING PROPOSAL FOR THE CLUB.THERE IS A 2/3 MODEL T ,A CHINA CABINET AND A CRUISE FOR TWO IN THE CARIBBEAN. A MOTION WAS PUT AT THE TABLE THAT THE CLUB SPEND $3,000.00 TOWARDS THESE PRIZES JOHN VE3TXB SECONDED IT.

THERE IS COMMITEE FORMED AND VOTED ON AND THEY ARE BOB VE3XOX,TOM VE3TSA TOM VE3NEM,JOHN VA3JRF AND RICHARD VE3WUD. TO LOOK AFTER ORGANIZING OF THE DRAW.

GENE VE3IJD BROUGHT TO THE MEETING THE NEW 19,2BPS DATA RADIOS AND DATA ENGINE.

THE 50/50 DRAW WAS WON BY RICHARD VE3WUD,

MESSAGE FROM THE PRESIDENT On Public Service and Volunteerism

I used to wonder why my neighbor never complains about my ham radio. Then, one day, my wife clued me in. It seems she had told our neighbor about my radio...about how, if a blizzard came, and the power and phone were knocked out, and the roads were snowed in, we (and they) would still have contact with the outside world. For a service I may never have to provide, I enjoy the boon of a neighbor friendly to my hobby. Such are the intangible rewards of public service. Sometimes there are more direct benefits. When the July 14th storm knocked out police and fire communications in Lindsay, local radio amateurs jumped in to fill the gap. In appreciation, the community intends to make meeting facilities available to their club free of charge. But we take for granted the greatest reward: our amateur frequencies and privileges. You may be aware that Industry Canada is trying to become a profit-making enterprise, largely by auctioning off spectrum space. An IC inspector recently commented to me what a tremendous bargain we amateurs get, in megahertz per dollar. This allocation is under constant attack by bandwidth-hungry commercial interests. And when our case is advocated in the Commons (and in the U.S. Congress, and elsewhere), what justifies our privileges? NOT the need for skilled radio operators, or for experimenters to advance the radio art -- those needs are relics of the past. NOT our personal enjoyment -- regulators could hardly care less. Our ONLY defense these days is amateur radio's long and honorable record of public service. So when you're asked to help with the Santa Claus parade, or the Santa Claus Net, or the Amateur Radio Emergency Service, or Jamboree-On-The-Air, or any of the other public service activities that we may undertake in the next year...think of it as the rent we pay for the frequencies we use and the hobby we enjoy. Say yes.

What goes for the public, goes for the club. I don't know why many of you belong to GBARC. (I'd like each and every one of you to tell me someday.) But I know why I belong. I remember my earliest days as a Technician-class amateur in the States... limited to 6 and 2 metres, with NO FM, NO repeaters, and NO other hams for 50 miles around. I enjoyed my hobby in solitary, and lived for the occasional sporadic-E opening on 6. Compared to that, Owen Sound is radio amateur heaven! I'll invest my time and money for an active radio club, a repeater, and other hams to talk to. I know the alternative, all too well. Our club does not run on dues alone. It takes a tremendous amount of volunteer labor. At our last meeting, we launched what may be the most ambitious fundraising project GBARC has ever attempted. We can't do it with "burnout" effort from a few devoted members; a little effort -- just a few hours -- from every member, will produce greater results. Think of what GBARC does for you now. Think of what GBARC could do for you, with triple the funding. (Then tell a club officer -- the executive committee is in the process of drawing up a budget proposal.) And when a club member asks for a few hours of your time, think of it as an investment you make in good fellowship, and a down payment on help when you need it someday. Say yes.

- Brad VE3RHJ

Two Meter Tracking Transmitter

Low-cost beacon.

by Carl Lyster WA4ADG

Here's a simple 2-transistor CW transmitter that can generate up to 10 milliwatts of power on the 2 meter band. I originally designed this circuit for use as an animal tracking transmitter for the Tennessee Wildlife Resources Agency.

This circuit has a wide variety of applications whenever a low-cost signal on 2 meters is required. The Indianapolis Foxhunting Club has been using it for their "Easter Egg Hunts." They take several of these transmitters on different frequencies, enclose them in plastic eggs, and scatter them about the search area. The low power allows the trackers to easily walk right up to the hidden eggs without severely overloading their HTs or scanners. The trick comes in attempting to remove the eggs from the middle of thorn bushes!

This transmitter has also been used on two high altitude balloon flights. Its low current drain makes it a good choice for this kind of experiment. It's amazing what 10 milliwatts will do from 60,000 feet, as stations over 300 miles away were able to copy the beacon at an S-5 level. *[Ed. note: The package shown on this month's front cover used one of these tracking transmitters.]*

Circuit Description

To keep this as low-cost as possible, the transmitter was designed to use inexpensive scanner crystals. Most VHF scanners use a third overtone crystal in the 48 MHz range. To find the 2 meter output frequency of a particular scanner crystal when used in this transmitter, just subtract 10.7 or 10.8 (depending on the scanner's IF scheme) from the commercial frequency. For example: a scanner crystal for 155.15 MHz would give the transmitter a 2 meter output on 144.35 MHz if the crystal was made for a scanner with a 10.8 MHz IF. Scanner crystals ranging from 154.8 to 158.7 MHz should put your tracker transmitter in the 2 meter band.

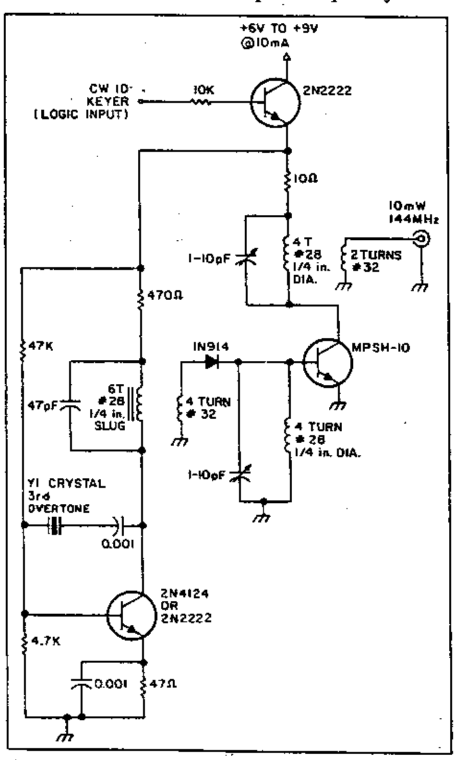

Figure 1. Schematic of the 10 mW transmitter.

The oscillator section generates between 5 to 10 milliwatts of RF in the 48 MHz range. The output of the oscillator then drives a simple diode tripler to generate a signal at 144 MHz. The MPSH-10 transistor is used as a class-C amplifier, and it also helps clean up the final RF output. The closest spurs at 96 MHz and 102 MHz are at least 40 dB down.

Supply voltage to the transmitter is controlled by a 2N2222 transistor keyed by a logic level from your favorite CW Ider circuit. *[An appropriate CW IDer was described in the June "Above and Beyond" column. Another excellent choice is the GLB ID-1.]* If too much chirp is present, you might try leaving the oscillator running continuously and just key the final amplifier.

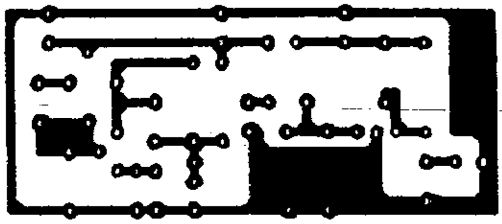

Figure 2. PC Board foil pattern.

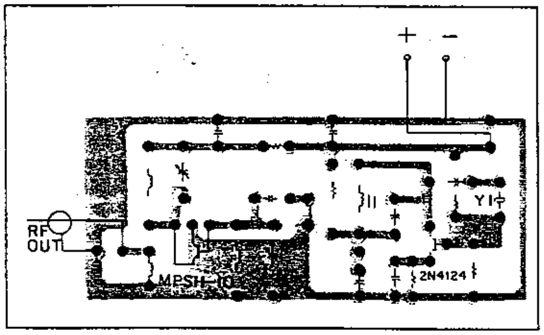

Figure 3. Parts placement.

Construction

The circuit can be built on perfboard with point-to-point wiring. However, I've included a PC board foil pattern which will make layout simpler. The 4-turn coil which couples the oscillator into the diode tripler can be wound directly over the 6-turn slug-tuned coil in the oscillator tank circuit. The 2-turn output coil is mounted in line with the collector end of the 4-turn coil in the amplifier tank circuit. Place the 2-turn coil as close as possible to the tank coil for maximum output power.

Tune Up

Build the transmitter up one stage at a time, starting with the oscillator. Apply 6 volts to the oscillator and make sure it's running. You should be able to hear its second harmonic on a stereo receiver set for 96 MHz. If the oscillator fails to start, try varying the slug-tuned coil in the tank circuit until it kicks in solidly. If this fails, you could increase the value of the 4.7k resistor or lower the 470 ohm resistor feeding the tank circuit.

Once the oscillator is functional, build up the tripler and amplifier section and place a small dummy load on the RF output. Adjust the input and output variable capacitors for maximum RF out. A grid dip meter or spectrum analyzer would be helpful at this point. However, you could simply adjust for maximum signal on your 2 meter rig's S-meter. Don't try to get more than 10 milliwatts out of this transmitter, as spectral purity will suffer. There will be some chirp with this circuit, especially if you key both the oscillator and amplifier. Chirp can be minimized through adjustment of the slug-tuned coil in the oscillator.

The transmitter works best with a supply voltage between 6 to 9 volts and draws about 10 mA. Any 9-volt battery should provide a reasonable operating life. For extended transmission times, you could use some of the newer Lithium 9-volt batteries.

The tracker transmitter can be enclosed in some extremely small packages which can be a real challenge to find during a foxhunt. Even though this is a CW transmitter, it can be easily heard with an FM receiver, so everyone can join in the fun! ■

You may reach Carl Lyster WA4ADG at 4412 Damas Rd., Knoxville TN 37921. *This article was reprinted from the July 1989 issue of ATVQ.*

Parts List

Qty.	Part Description
1	2N2222 transistor
1	2N4124 (or 2N2222) transistor
1	MPSH-10 transistor
1	1N914 diode
1	¼" slug-tuned coil
1	Scanner crystal, Y1
	#28 wire, short length
	#32 wire, short length
2	1-10 pF variable capacitor
2	0.001 µF ceramic capacitor
1	47 pF ceramic or mica capacitor
1	10 ohm ¼ watt resistor
1	47 ohm ¼ watt resistor
1	470 ohm ¼ watt resistor
1	4.7k ¼ watt resistor
1	10k ¼ watt resistor
1	47k ¼ watt resistor
1	PC Board

Note: A blank PC Board is available for $3 + $1.50 postage/handling from FAR Circuits, 18N640 Field Court, Dundee IL 60118.

Foxhunt Radio Direction Finder

Homing in by sight and sound.

by Paul Bohrer W9DUU

How often have you wished for a simple RDF which could work on just about any band and provide you with both an aural and visual means of determining the direction of a signal? You may have wanted to find an errant transmitter, QRM source, participate in a serious search and rescue mission, or just have fun finding the "fox." Now you can do it.

Many DFers in the Indianapolis area have built and used the unit described here. The circuit processes information from two quarter- or half-wave antennas, and gives right or left indications of which way to turn the antenna or vehicle so you can aim at the source. This type of DF is called "homing" because it tells you which way to go to home in on the signal. It is not affected by signal strength, and as such will allow you to take readings on the move. This helps you to average out multipath problems. You might bear in mind, however, that signal strength readings are still valuable, as they help confirm when you are almost "on top of" the fox.

How the Circuit Works

IC-1 produces a square wave signal which is used to switch between the two antennas at an audio rate. The square wave from IC-1 also feeds through Q1, 2 and 3 with the result that there are square wave signals of opposite polarity applied to each side of the 0-center meter.

When no audio signal from the receiver is present, the 5k zero pot is adjusted so that equal amplitudes of opposite polarity square wave signal are developed across the 100 μF cap and the meter, with respect to the 4 volts reference from pin 6 of IC-2. Therefore, no DC voltage develops across the cap and meter, so the meter reads 0 center.

When a signal arrives at both DF antenna dipoles at the same time (the antennas are the same distance from the transmitter), the receiver FM detector will have no output since it sees no phase difference in the signal arriving at each antenna.

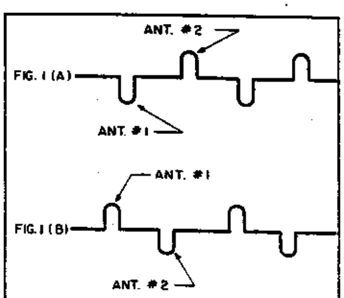

Figure 1. Pulses created by phase difference between the two antennas.

Photo A. Paul W9DUU with phase array DF unit in action.

As soon as the antenna is rotated slightly, the FM detector in the receiver will produce a tone, the frequency of which is determined by the rate at which the antennas are switched. This tone is caused by the signal arriving at one antenna slightly sooner or later than the other. Due to this difference in travel time, it arrives at each antenna with a different phase.

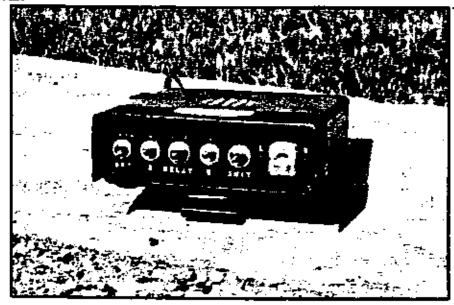

Photo B. The W9DUU DF unit. The earlier model was hand-wired. The new model uses a PCB.

This phase difference comes out of the receiver in the form of positive and negative pulses. See Figure 1(a). When these pulses are fed through the zero adjust pot to the meter, a DC voltage will develop across the 100 μF cap and meter, and the meter will deflect, say, to the left. If we rotate the antenna so that the opposite dipole is now closer to the signal source, the pulses out of the receiver reverse in polarity. See Figure 1(b). An opposite polarity DC voltage now develops across the 100 μF cap and meter, so that th meter deflects to the right.

Our circuit in effect is operating as a phase detector. This small DC voltage, developed across the meter, is used to turn on the upper left section of the 339 quad comparator when the meter swings left. When this happens, pin 2 goes low and turns on the upper right section, causing pin 13 to go low and turn on the left, or green, LED. When the antenna is rotated so that the meter swings from left to right, the upper two sections turn off and

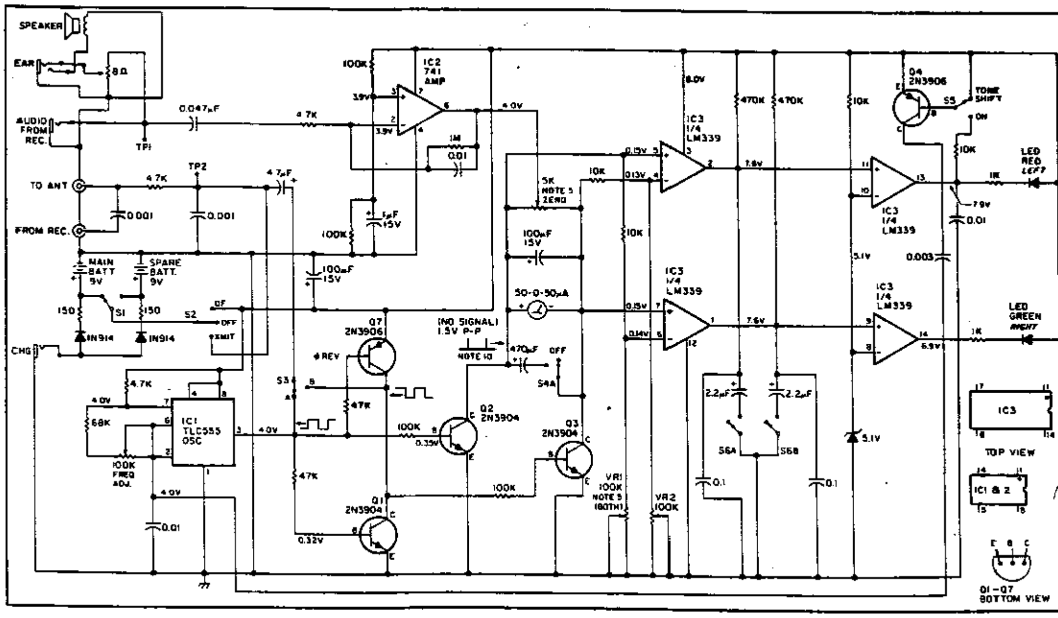

Figure 2. Schematic for the RDFing circuit.

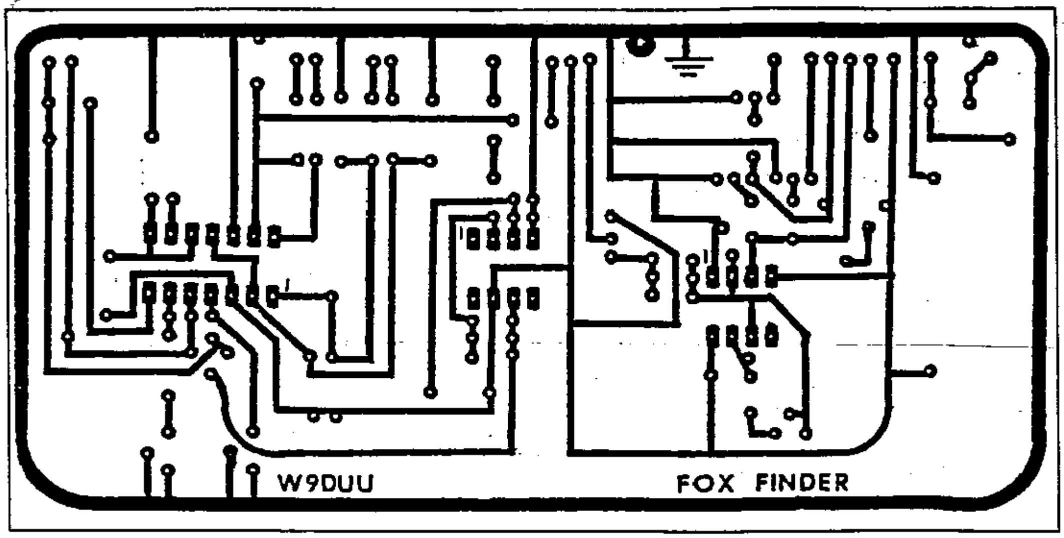

Figure 3. PC board pattern.

Table 1. Parts List

Qty.	Part	RS#	Qty.	Part	RS#
1	555 timer	276-1718	1	0.047 µF	272-134
1	741 op amp	276-007	2	0.1 µF	272-135
1	LM339	276-1712	1	1 µF 35V tantalum	272-1434
3	2N3904 or equiv.	276-2016	2	2.2 µF 35V tantalum	272-1435
2	2N3906 or equiv.	276-2023	1	4.7 µF 35V elect. axial	272-1012
2	ECG 553 pin diode		2	100 µF 35V elect. axial	272-1028
1	5.1V zener diode	267-565	1	470 µF 16V elect.	272-957
2	1N914 diode	276-1122	1	5k PC mount pot.	271-217
1	red LED	276-041	3	100k miniature pot.	271-284
1	green LED	276-022	1	8Ω stereo fader control	270-047
1	p.c. board	276-168	3	mini SPDT, S-1,S-3,S-5	275-625
1	box (user choice)	270-223	1	mini SPDT (center off), S-2	275-325
2	mini jack	274-247	1	mini SPST, S-4	275-624
1	mini plug	274-286	1	mini DPDT, S-6	275-626
1	coax power jack	274-1565	2	150Ω	271-1312
2	SO-239 jack or BNC	278-201	1	470Ω	271-019
1	2" speaker	40-245	2	1k	271-1321
2	battery snap connector	270-325	3	4.7k	271-1330
2	9V NiCd battery	23-126	4	10k	271-1335
2	9V bat. holder	270-326	2	47k	271-1342
5	0.001 µF	272-126	1	68k	
1	0.003 µF (use 3 of the 0.001 µF caps)		4	100k	271-1347
3	0.01 µF	272-131	2	470K	271-1354
			2	1MΩ	271-1356
			1	50–0–50 uA center zero panel meter	

Note: Meter Sources:

Any center zero meter can be used as long as its in the 50 to 100 microamp deflection range. The Radio Shack 0–15 volt panel meter can be used by moving the indicator to center position with the position screw. Also the following two companies have appropriate meters:

A 100–0–100 uA meter (part # MHE 5) is available from Hosfelt Electronics, Inc., 2700 Sunset Blvd., Steubenville, OH 43952. Phone: (800) 624–6464.

For a larger meter display you can use the Triplett 320-WS which is available from A.R.E. Surplus, 15272 S.R. 12 E, Findlay, OH 45840. Phone: (419) 422–1558. Blank PC boards are available from the author for $15 ppd.

Table 2. Construction Notes

1. Battery voltage = 8 when readings were taken. V on LM339 pins 1, 2, 4, 5, 6, 7, 13 and 14 depends on the setting of VR 1 and 2.
2. Battery drain = 7 mA no signal, and about 13 mA with signal applied (L or R LED lit).
3. Antenna and receiver jacks should be counted as close together as possible. Use short leads on the two 0.001 caps and the 4.7k resistor. Mount the 4.7k resistor at the antenna jack.
4. The length of the coax between the antennas and the switching diodes is not critical, however they should be exactly the SAME length.
5. Adjust the meter zero pot for zero meter reading. Adjust VR 1 and 2 so that the LEDs just extinguish. (No signal applied.)
6. With signal aplied, rotate antenna for maximum meter deflection. Adjust the receiver audio level to just produce full scale meter deflection.
7. Adjust the oscillator frequency for equal left-right meter deflection with signal applied. Use the highest frequency possible. Some radios will have more phase distortion at lower tone frequencies, and can even cause the circuit to show reverse direction reading.
8. Use S-4 in the ON position for averaging meter flutter when in high multipath areas, turn S-6 on to store LED left or right readings when DFing kerchunckers. Do not turn both S-4 and S-6 on at the same time as this will adversely affect your reading. Leave both switches in OFF position for normal DFing.
9. Circuit test: Connect a 1k resistor between TP1 and TP2. Meter and LED should produce a right reading with phase switch S-3 in the ON position and a left reading with S-3 in the OFF position.
10. The 8Ω stereo fader control potentiometer is used to control the volume to your earphone or external speaker independently of the audio level from your rig into the RDF unit.

the lower sections turn on, causing the right or green LED to light.

Returning to pin 13 of the 339 for a moment, notice transistor Q4 in the upper right corner. Its base can be connected to pin 13 via the tone shift switch. If S-5 is turned on, whenever pin 13 goes low, indicating a signal to the left, it will turn on Q4. This transistor serves as an electronic switch; when on, it switches the 0.003 µF capacitor (which is connected to the collector) to the supply bus.

This produces the same effect as connecting the 0.003 capacitor across the 0.01 cap which is hooked from pin 2 to ground of IC-1. The frequency of the 555 oscillator is lowered, causing the pitch of the tone heard from the speaker to go lower. Therefore, a LOW tone indicates LEFT, and a HIGH tone indicates RIGHT. Instead of watching the meter or LEDs, you can listen to the pitch of the tone. This will buy you points with your local police and your insurance agent (no collision forms to fill out—I'm sure they would prefer that you watch the traffic instead of your DF unit)!

Returning to the circuit, the two 2.2 µF caps connected to S-6a and S-6b are used as sample and hold capacitors. When S-6 is positioned to ground the negative side of the two caps, they provide a two-second delay indication of the LED or tone direction reading. This is helpful when DFing kerchunkers

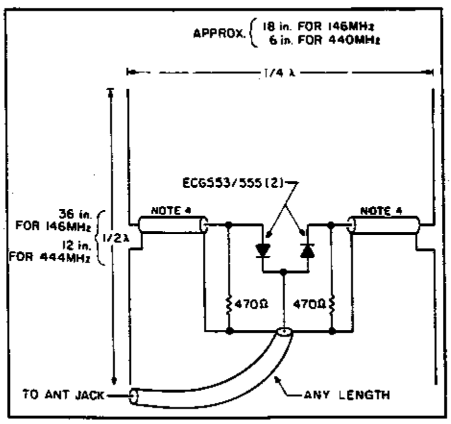

Figure 5. Antenna construction.

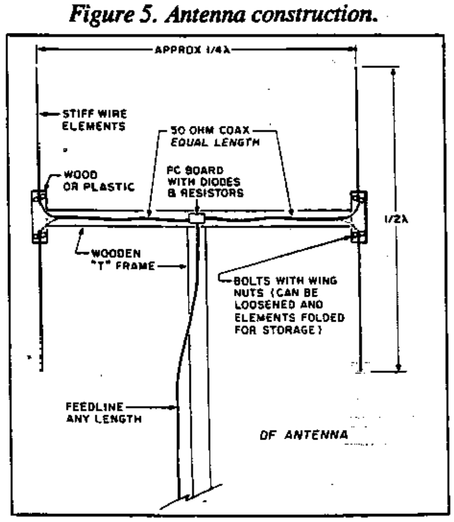

Figure 6. Mechanical mounting details.

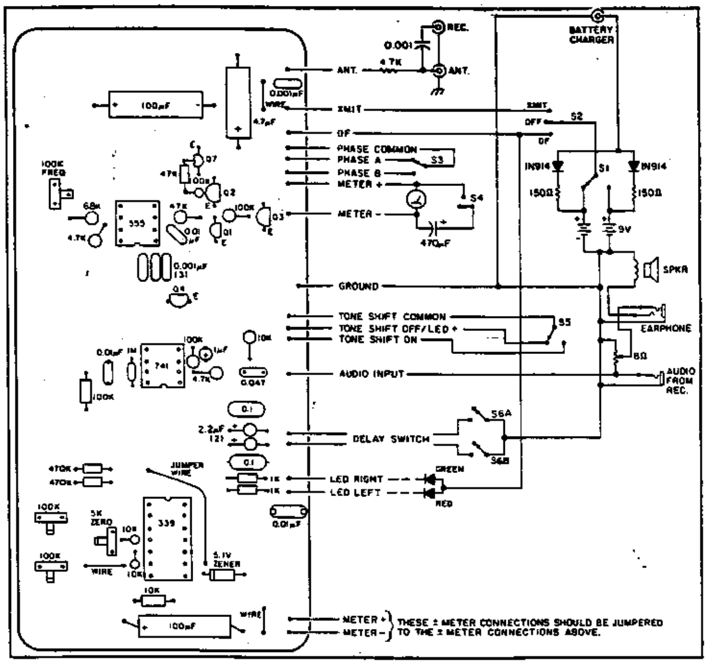

Figure 4. Parts placement.

or scanner local oscillators. See note 8 in Table 2.

Using the W9DUU DF Unit

The phase reversal switch S-3 is used in case you change receivers to a different one which may have the opposite polarity of audio output signal. This has the same effect as having your antenna backwards—your readings will also be reversed. I suggest a small label or legend on the DF unit to remind you of which position the phase switch should be in for each radio you may use. Otherwise, you may end up trying to find the fox in the wrong direction.

Like any other DF unit, you should practice with the equipment until you become familiar with its operation, and using it becomes automatic. There are always enough other things to provide distraction and confusion (multipath in particular), and you don't need to add unfamiliarity with your equipment to the list.

Construction is not critical, other than two items—see notes 3 and 4 in Table 2. You will no doubt want to build it in a rugged manner to survive the environs of mobile/portable operation and trekking through the wilds.

I hope this circuit may provide others some of the enjoyment I have had from the sport of foxhunting through the years. ■

Paul Bohrer W9DUU is an engineer for WISH-TV channel 8 in Indianapolis. You may reach him at 1813 Lilac Drive, Indianapolis IN 46227. *This article was reprinted from* ATVQ, *April 1989. Blank PC boards are available from the author for $15 ppd.*

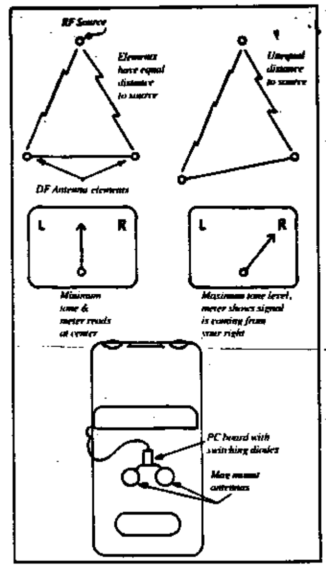

Figure 7. Operating hints: a) If tone sounds raspy and has high frequency overtones, you probably have some multipath signals. Move your position (if stationary) until tone sounds pure (no multipath signals). b) Take readings at high elevation and away from buildings, if possible. c) If in a vehicle, take readings on the move, and average out the meter fluctuations. d) Mobile antenna can be made from two quarter-wave mag mounts on roof of car. Watch for signal source direction change as you change direction of car.

From: VE4IST@VE4KV.#WPG.MB.CAN.NOAM To : VE3TSA@VE3IJD.#CON.ON.CAN.NA

Thanks Tom for copy of club newsletter.....Nice to keep in touch....BZC and I talk on a regular basis re the O.S. club, but nice to read the hard copy and follow the history of GBARC...... Too bad the flea market was cancelled, however if no support, what can u do ??....Hopefully new amateurs will pick up the ball, and realize the more they put in , more the pleasure in their hobby...... Joan and I are fine ....Its been a great summer ...No bugs, Lots of sunshine..... Lots of ham clubs here.....I have joined three of them, and hope to get to some of the business meetings this fall.....I plan to send BZC a vcr tape ,showing rigs,ant. of my own shack and coverage of VE4WSC operations downtown....Quite a set-up.....May be a fill-in for club meeting on a slow night !!! ....Joan and I had a nice 4 day visit to B.C... Its a great country !! ...Just cleaned up the Butternut vertical and ran some extra ground radials , so hope to do more on hf this winter..... On the computer end, u will not believe this , BUT , I am still running the old XT with extra memory....Put it in park , each time , and have not shut off the power since we moved !!! ....Don't know how much longer the hd bushings will last, however it sure does not owe me anything..... I will likely update . The grandchildren are 4 and 7 yrs now, so when they come over, papa will have to have some pretty good games soon..... Take care, best to family ....It will likely be next summer before Joan and I get to OS to see friends agn.....73....Ian.

calculating the inductance of toroids

Toroid inductors, with their high Q, small size and self-shielding properties, are excellent for use in modern solid-state gear – especially where space is a valuable commodity. In the past, however, there has been one drawback: It was very difficult to calculate how many turns it would take to give you a desired inductance. In a back issue of *QST,* there were instructions for doing this, provided you owned an *ARRL Lightning Calculator Type A,* or a *Coil Winding and L/C/F Calculator Type A.*[1] I did not have one of those devices, so, rather than waiting until I could get one, I sought a formula which could be used without any special apparatus.

I found the equation:

$$N = K\sqrt{L} \qquad (1)$$

Where N is the number of turns, L is the desired inductance in microhenries and K a constant dependent on the toroid being used. **Table 1** lists this constant for a number of Amidon cores in common use. In this table, K is printed to eight decimal places. It is not necessary to use all of these places, and your results will be close even if you truncate the last 6 or 7 digits. For example, suppose you need a 10-μH coil and have a T-68-2 core. Substituting the known values into the equation, you obtain

$$N = 13.71\sqrt{10} = 13.71(3.162) = 43.35102$$

Since there is no such thing as a fraction of a turn on a toroid, you should round the answer off and use 43 turns.

If you desire to use a core other than one of those in **table 1,** you can calculate K for yourself. The formula is

$$K = \frac{N1}{\sqrt{L1}} \qquad (2)$$

Where N1 is the number of turns on the particular form you are using which gives the inductance L1. To illustrate, suppose you have a toroid form of unknown properties and you need a specific inductance. The first thing to do is put on a test winding and measure it's inductance.

The easiest way to do this is by making a tuned circuit with the test coil and a capacitor and finding the resonant frequency with a grid-dip meter. I have experimented with this and have found that the best way to couple to a toroid is by using rather long leads on the capacitor and draping the tuned circuit over the gdo pickup coil. An alternate method is to make the tuned circuit with the shortest leads possible and putting a length of wire through the core and shorting the ends. Coupling to the tuned circuit is made through this pickup loop.

table 1. Toroid-core constants for use in equation 2.

type	K
T-94-2	10.87375857
T-80-2	13.09481019
T-68-2	13.71166566
T-50-2	13.49065790
T-37-2	15.09667411
T-25-2	16.76244696
T-12-2	21.17423645
T-94-6	11.64825226
T-80-6	14.54857791
T-68-6	14.61045410
T-50-6	15.31238723
T-37-6	17.48997890
T-5-6	18.97143316
T-12-6	23.75741463
T-50-10	16.71056534
T-37-10	19.07988330
T-25-10	20.87788877
T-12-10	27.84454642

In any case, once the resonant frequency is known, the inductance of the trial winding can be calculated. Now you are ready to use **eq. 2.** Simply substitute in the now known values of N1 and L1. In case you need it, the formula for inductance is

$$L = \frac{25330}{F^2 C}$$

Where F is in MHz, C is in pF and L is in μH.

One other thing you might need to know is how many turns of a given size wire you can fit on a given toroid. **Table 2** gives this information for most of the toroids in **table 1.** In general, use the largest size wire you can, since this will help to insure maximum Q. At first glance, it might seem that many of the cores on **table 1** are not listed in **table 2.** Keep in mind that the first two numbers in the type designation specify the size of the core (a T-94-2 has the same physical dimensions as a T-94-6 and will hold the same amount of wire).

These formulas should provide the correct answers to the nearest turn or two – accurate enough for most amateur work.

reference

1. "Technical Correspondence," *QST,* April, 1971, page 48.

ham radio

Michael J. Gordon Jr., WB9FHC, 203 Woodbine Avenue, Wilmette, Illinois 60091

table 2. Maximum number of turns of various gauge wires on standard Amidon toroid cores.

T-94	T-80	T-68	T-50	T-37	T-25	T-12	T-05	wire size
15	14	10	8	5	3	—	—	10
20	18	13	10	7	3	—	—	12
25	22	16	13	9	4	—	—	14
32	28	20	17	11	6	—	—	16
41	36	26	21	14	8	3	—	18
51	45	33	26	18	10	4	—	20
64	57	42	33	23	13	6	—	22
80	72	53	42	29	16	8	3	24
101	90	66	53	37	20	10	4	26
127	113	83	67	47	26	13	5	28
158	141	104	84	59	33	16	7	30
198	176	130	105	73	41	20	8	32
250	223	165	133	93	53	26	11	34
307	273	202	163	114	65	32	13	36
393	350	259	210	147	83	41	18	38
495	441	326	264	185	105	52	23	40

FOR SALE

The following items are from the estate of Cy Cole VE3CC:

Kenwood R-2000 Communications Receiver (with VC-10 VHF converter) receives 150KHz to 30MHz and 118MHz to 174 MHz AM FM USB LSB and CW Ten memories Instruction manual and schematics $470

Astron power Supply RS12A 8 amps continuous, 12 amps intermittent $95

TAYLOR LOW PASS FILTER $25

MICRONTA HF , SWR AND POWER METER 80 AND 40M , 3 POWER RANGES 10/100/1000 WATTS FULL SCALE $20

HEATHKIT RF signal generator — $20

Contact Tom VE3TSA 519-371-9805 after 6:30 pm MONDAY to FRIDAY anytime on weekends

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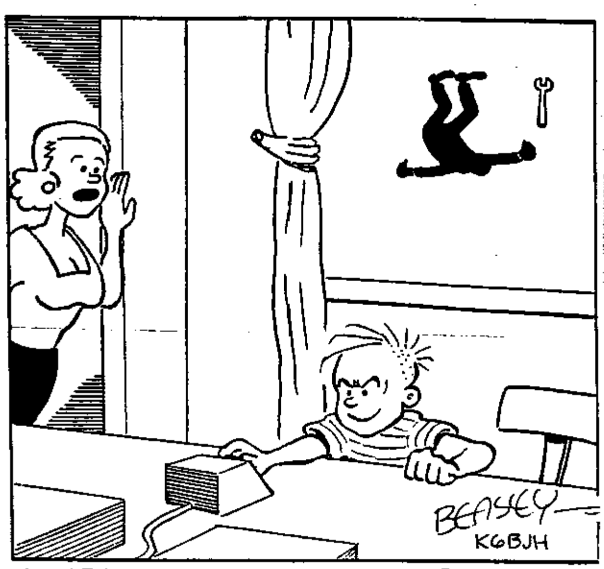
SP102p speaker/phone patch for FT102 series of HF rigs (although will work with any rig) $100 contact Tom VE3TSA



I TOLD YOU NOT TO PLAY WITH THAT ROTOR CONTROL UNTIL YOUR FATHER COMES OFF THE TOWER!

I found an article entitled

CPR

NOW IT'S EASY

while in a doctor's waiting room. What with snow shovelling, and the extra rigors of winter, I thought it timely..

It appeared originally in the NY Times, by Jane E. Brody, and when I saw it, Reader's Digest had had their way with it. Using it as research material to avoid copyright hassles, here is the gist:

It is true that about 60 percent of heart attacks occur when someone else is present, who, if they knew CPR, might be able to save the victim.

The earlier method had approximately 37 steps in the full technique. CPR has now been really simplified, as the author puts it, "It's now as easy as ABC:

A for airway: Lift the chin to open the airway.

B for breathing: With the airway open, pinch the nostrils closed and blow slowly twice into the mouth until the chest rises.

C for circulation: Press 15 times on the middle of the chest between the nipples to force blood to circulate throughout the body.

The first thing to do is to determine that the victim is unconscious. Then, check to see that the victim isn't breathing and has no pulse. The pulse is checked by feeling for one of the carotid arteries located at either side of the neck. Call, or have someone call **911** or your local emergency service or the operator.

Place the patient on his or her back. Now start the ABCs. Complete four cycles of breaths and compressions. Check for a pulse, and if one is present, check to see if the patient is breathing, I f there is a pulse but no spontaneous breathing, continue the breathing technique and continually monitor for the pulse. If both pulse and breathing are present, you may stop CPR, but both must be checked often as the victims heart may stop again.

Remember that this lifesaving technique simply buys time until professional help arrives. Even the best CPR techniques cannot provide the level of circulation provided by the heart. But it keeps the brain and other vital organs supplied with enough oxygen to keep them fit until the heart takes over with profession defibrillation techniques administered by the emergency team.

Some may argue that in order to give CPR, one must take a proper course, and be properly instructed in the exact and precise techniques. But there is evidence to suggest that precision is far less important than simply *doing* it. Dr. Richard Cummins, who is director of emergency cardiac care in King County, Washington says:

"Any CPR is better than none."

And author Brody points out that a broken rib is easier to live with than the alternative...death! When faced with such a choice, the right selection should be obvious. Dr Cummins says that there is value in just opening the person's airway by tilting the forehead back by raising the chin while the person is on his back. And doing only chest compression is valuable, too. When a cardiac arrest strikes, there's only 3 to 4 minutes of oxygen supply in the blood, and if circulation is maintained with the chest compressions, it may be enough to save the person until help arrives.

PHOTOCOPY AND SAVE THIS DIAGRAM!

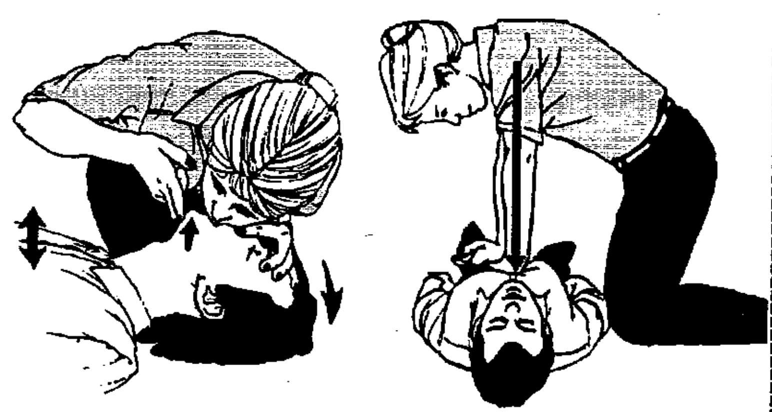
1. If the patient is unresponsive, call 911 (or emergency number). Lift chin and tilt head back to open airway. Check breathing.

2. If the patient isn't breathing, begin rescue breathing. Pinch nostrils so air can't escape, and give two slow breaths (two seconds per breath, about five seconds apart). Check neck pulse.

3. If no pulse, begin chest compressions: Place one hand on top of the other, in centre of patient's chest, between nipples. With shoulders positioned straight above hands, push down firmly (depress chest about five centimetre (2 inches)) 15 times over the space of 10 seconds. Then give two more slow breaths.

4. Continue 15:2 cycle (15 compressions, two breaths) for about one minute, then check pulse and breathing. If no pulse and no breathing, continue 15:2 cycle. Check pulse and breathing every few minutes.

-Heart and Stroke Foundation of Canada



Packet Perspective... Servers on the BBS...

A server is a program that is run by giving a special command to the BBS.This could be a callsign lookup, a prefix lookup, or an unused callsign lookup.Those who are not on "packet" use a call book to look up that rare DX station that they just worked. If your on packet , you just have to send a command like QTH and let the information kept in the BBS do the lookup for you. Another good server is the Prefix server. This neat program will look up the country belonging to a Prefix. Lets say you heard a TU call on 20 meters.If your on packet just send a command like PREFIX TU and the BBS will come back with Ivory Coast and all the other important information about the TU callsigns.It's dated 1994 so it's not too far out of date.Hope to see you at the keyboard..keeping up with the times...Gene..VE3IJD...Mr. Sysop

AMATEUR OF THE YEAR

Well it's about time we considered the next recipient of the coveted GBARC Amateur of the Year Award. At our next meeting, nominations will be sought for this prestigous honour, with a vote held at the November meeting with all due pomp and circumstance. So if you like pomp as well as circumstance, now is you chance. Included in this months FEEDBACK is a ballot which can be filled out by any sentient GBARC member, passed along to our club secretary (or delegate), who will tabulate same for the eventual and required transfer of the trophy to be held in November. See you there...... editor

GBARC DUES

Please consider this as a friendly reminder that Dues for GBARC membership will be gratefully accepted by our illustrious secretary Tom VE3NEM any time now for the upcoming 1996 year. Remember that dues for regular members are a paltry $20.00 up to and including December 31st 1995. After that you get stung for an extra five bucks. ...... editor