# FEEDBACK

The OFFICIAL Newsletter of the
**Georgian Bay Amateur Radio Club Inc.**

MARCH 1996


Sponsoring

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

**REGULAR EVENTS**

**GBARC MEETINGS:** 4th Tuesday of each month at the Billy Bishop Airport 7:30 P.M.
**BREAKFAST MEETINGS:** 2nd and last Saturday of each month at HARVEY's , 10th Street West OwenSound at 9:30 A.M.
**GBARC INFORMATION:** Information regarding membership should be directed to VE3NEM Tom Merner RR#7 Owen Sound, N4K5N6 371-0655
**FEEDBACK:** Submissions or letters to the editor should be directed to VE3TSA Tom St.Amand, 1232 3rd Ave . East, Owen Sound N4K2L5

## Minutes of February GBARC meeting

Sgt. Rick Horn of 706 Communications Squadron of CFB Borden, told the February meeting of the Grey-Bruce Amateur Radio Club about some of the equipment being presently used by the Canadian Armed Forces communication. In his presentation he showed the types of radioes used outlining their weight and the type of frequency they use. The presentation was informative and the club appreciated having Sgt. Horn travel all the way from CFB Borden to speak.

Nineteen members and six guests attended the presentation with only the executive remaining for the club meeting.

Tom, VE3TSA, opened the meeting with a joke which was enjoyed by the seven people remaining.

No new business was discussed.

Tom, VE3NEM, announced that as of February 26, 1996 the club had $1,037.59 in the bank account. Also, the club is sending out a cheque to RAC for $268.01 to pay for the study guides used in the course.

VA3DSI, Dave, said that plans for the March meeting have not yet been finalized.

VE3IJD, Gene, reported that the link at Bob's, VE3XOX, is down. But with the quick thinking of Bob he is using his own 440 and two-metre equipment to restore the link with Barrie.

The possibility of setting up a phone patch at VE3IJD, Gene's, was discussed. Nothing was decided at this time.

Bob, VE3XOX, said that the Kincardine group has annnounced a $250.00 financial contribution to the Communications Hobby Market.

Tom, VE3TSA, read a letter from the CNIB thanking the club for its $100.00 donation.

John, VA3JRF, said the club will need to get a new two-metre net co-ordinator as of June 1. Anyone wishing to take over these duties should contact John, VA3JRF.

Tom, VE3NEM, (the one on Newfie time) won the 50-50 draw.

After a lengthy discussion it was decided that some of the members go for coffee at Tim Hortons.
Minutes submitted by VE3WUD, Richard

# WHERE ARE THE EXAMINERS OF TOMORROW?

from VE3RHJ

In 10 months, my two-year term as the GBARC delegated examiner will end. The principal requirement for a delegated examiner is a Canadian amateur radio licence with the Advanced and 12 WPM qualifications. It's incumbent on me to find a suitable replacement, so I began to wonde who among our new recruits can I tap for the job?

The disturbing answer: no one. Of the 26 new hams I've examined,

15 have only a Basic licence,
9 have a Basic + 5 WPM qualification, and
2 have a Basic + Advanced qualification.

No one of this group has a 12 WPM qualification, but in fairness, I'm aware of 3 new hams -- and one "old" ham -- who are studying for it. More disturbing is that those pushing for the 12 WPM seem to have little interest in the Advanced qualification, and those pushing for the Advanced have little interest in Morse code. Who will achieve the magic combination of 12 WPM and Advanced?

Perhaps the incentives are wrong. The 12 WPM qualification lets you work all the HF bands, and I suspect this is still a popular goal... although the perceived difficulty of the exam dissuades many from trying it. (Take it from someone who flunked his 5 WPM exam twice -- all it takes is practice, practice, practice.) But the Advanced qualification only lets you a) build your own equipment, b) operate high power, and c) licence a repeater or club station -- and these seem to be vanishing interests. After all, everyone uses commercial equipment, most commercial gear is 200 watts or less...and there will always be someone else to licence the club's repeater, right?

Perhaps the opportunities are wrong. Should we offer an Advanced class? We have the talent if there's enough interest. Should we offer 12 WPM study materials? We have computer programs, and we can produce tapes. (In the dreamiest of dream worlds, we'd have a club station for our 5 WPM members to practice 80m CW...but I digress.)

Or perhaps I'm worrying needlessly, and in ten years' time the dearth of examiners will cause Industry Canada to ease their requirements. Maybe I'm embracing a dying vision, of radio amateurs who tinker with radio equipment, and chew the rag about electronics, and carry on hour-long conversations with their fingers, and suffer QRM and QRN and QSB to catch that rare DX on those unpredictable shortwave bands. Maybe the future is VHF and digital: automated, painless, and clean. Maybe my fix-it-yourself HF rigs will end up in the Hammond museum, right next to the spark transmitter. You decide. - Brad VE3RHJ

**For Sale**: HEATHKIT Model HD-1410 Electronic Keyer with Assembly Manual. $40.00.....73.....Ross VE3BZC

1 - HEATHKIT HR-10B RECEIVER ...10 THROUGH 80
1 - HEATHKIT DX-60B TRANSMITTER ...10 THROUGH 80 AM/CW
1 - HEATHKIT HG-10B VFO ...2,6,10,15,20,40, AND 80 METERS
1 - HEATHKIT HA-10 WARRIOR AMPLIFIER ...10 THROUGH 80
1 - HEATHKIT HD-16 CODE PRACTICE OSCILLATOR
1 - HEATHKIT RF SIGNAL GENERATOR 160 KC - 220 MHZ
1 - CW KEY Bob VE3XOX 376-8060 AFTER 9 PM.

2 METRE NET SCHEDULE

| | | |
|---|---|---|
| JRF | MAR 14 | MAY 23 |
| KMS | MAR 21 | MAY 30 |
| RHJ | MAR 28 | JUN 6 |
| WUD | APR 4 | JUN 13 |
| IJD | APR 11 | JUN 20 |
| TSA | APR 18 | JUN 27 |
| DSI | APR 25 | JUL |
| FFN | MAY 3 | JUL 11 |
| DXO | MAY 10 | JUL 18 |
| IOD | MAY 17 | JUL 25 |

# Poor Man's Service Monitor

## *FM experimeters take note!*

by William D. Crowl N6MWS

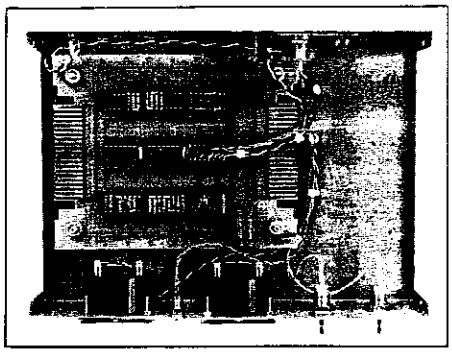


*Photo A. Inside details of the Poor Man's Service Monitor. Note the clean modular layout.*

A communications service monitor? For those of you not familiar with this device, it is the stock-in-trade test instrument for commercial radio service technicians, and I'm fortunate enough to have access to one at work. The most complete monitor includes a precision RF generator with an output attenuator, a spectrum analyzer, an oscilloscope, a well-instrumented scanning receiver, and a wattmeter, all in one portable instrument hardly larger than an ordinary oscilloscope.

A service monitor is also extremely expensive, and it's rare for the average amateur club, let alone the individual amateur, to have access to one. Even in my case, access is limited, and I never have as much time with the instrument as I would like. Therefore, I built the Poor Man's Service Monitor.

### Practical Uses

While I knew that the precision RF generator and spectrum analyzer were beyond my home-brew skills and budget, the well-instrumented scanning receiver wasn't. I already had an oscilloscope, a frequency counter, and a wide coverage scanner. Using a few op amps and a pair of analog panel meters, I decided it should be possible to build the frequency error and deviation meters the professional service technician uses to set up the transmitters he services.

This device, together with an oscilloscope and a frequency counter, will allow you to make all kinds of radio system tests that ordinarily are beyond the capabilities of most amateurs. By connecting a counter on the Demod Tone output, you can easily see if your tone encoder is on frequency. An oscilloscope connected to the Demod Audio output will allow you to view the actual recovered audio before the audio processing circuits in the scanner get in the way. If you're curious about how digital paging works or what that funny racket you hear on some obscure frequency is, this is the tool for the job. Likewise if you want to add a DTMF or subaudible tone encoder to an older radio,

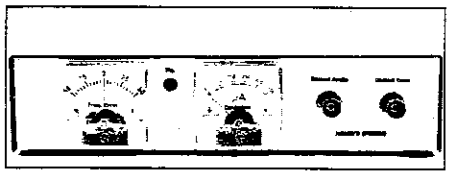


*Photo B. Front panel of the Poor Man's Service Monitor. The optimum full-scale ranges for the Frequency Error and Deviation meters are 10 kHz (5 kHz of either side of center frequency), and 0–6 kHz, respectively.*

but were afraid to try because you couldn't test it.

FM packeteers can also use this tester to optimize the audio level output from the TNC going to the transceiver, usually adjustable by a trim-pot on the TNC. If this drive is too low, the signal deviation is unnecessarily low, reducing throughput. If the TNC drive to the rig is too high, the deviation will either exceed the legal channel limits and interfere with adjacent channels, or the rig's limiter will distort the overdeviated signal, also reducing throughput. The mark and space deviation should not exceed 3½ kHz.

Repeater owners will also find this useful for similar reasons—to maximize the NBFM voice signal deviation without going out of channel, and ensure that the signal is centered right on frequency. In fact, any ham who transmits on FM, such as HT and mobile ops, can use this tester to maximize their output signal and make sure that signal is properly centered.

### Circuit Description

After considerable experimentation, I came up with the circuit shown in Figure 1. While this device is certainly no complete service monitor, it goes a long way toward giving the average amateur an idea of what is going on with his rig or any other transmitter he cares to listen to on the air.

Since 99% of the circuitry was already there, I included a remote control stop/start signal for a tape recorder. This output allows you to eliminate the dead air you would ordinarily hear during a net or preparedness drill recorded for later analysis.

In this project, I emphasize simplicity and low cost. After studying the output from the demodulator IC in my scanner, it became plain that the signals it produced weren't quite commercial test equipment quality—but are fine for the home experimenter.

This two-chip design uses the LM324 op amp IC because of its low cost and availability. In fact, I bought everything for this project, except the panel meters, at Radio Shack. (Two good construction aids are the *National*

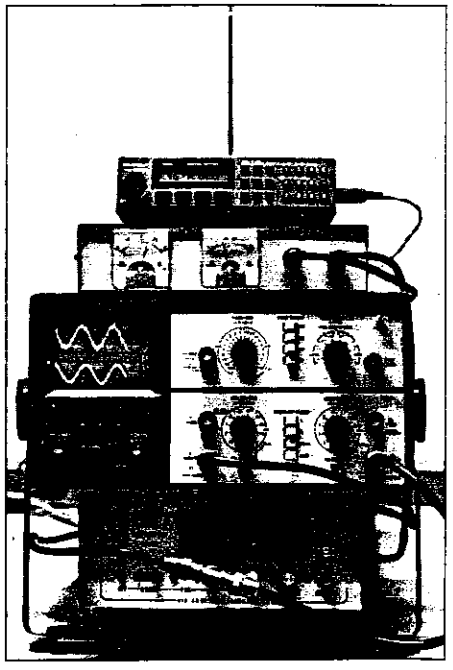


*Photo C. From top to bottom: scanner, TPMSM, oscilloscope, and frequency counter. The Poor Man's Service Monitor is testing the output of the author's handheld. Note the DTMF signal on the oscilloscope (the HT feeds a dummy load).*

*Semiconductor Linear Databook* and *Electronic Design With Off-The-Shelf Integrated Circuits*, by Meikin and Thackray.)

I found the meters at a local electronics junk shop. The best meters have a full scale deflection current of between 100 µA and 1 mA. Meters with current ratings outside of that range have high current requirements or problems with response speed.

The details of the actual circuit are pretty simple. U1A, a buffer amplifier, establishes the proper DC offset for the rest of the downstream amplifiers. It is also a first order low-pass active filter with an fc (corner frequency) of about 400 kHz. (All frequencies above the corner frequency are attenuated by the filter; all those below the fc are left unattenuated.) The gain of this stage was based on the performance of Motorola's MC3359 narrowband FM demodulator IC. (See the Motorola Data Sheet for the MC3357 and MC3359 ICs.) This chip produces a 0.3V DC output signal per kHz of signal deviation. Since I wanted to see more than 5 kHz of deviation, the maximum gain with a 12V DC supply was limited to three times the input signal.

U1B is also a low-pass active filter, but its fc is so low it might as well be DC, and that is, in fact, what its application is here. The output of U1B, a DC signal, directly tracks the average DC output of the demodulator IC. If the carrier signal goes higher (or lower) than the desired frequency, the DC output of U1B does also.

This signal is referenced to a bias signal generated by U1C. The frequency error meter will move to the left or right of center if the transmitter frequency is not centered on the selected channel. Use VR1 to zero adjust the frequency error meter and VR3 to calibrate full scale deflection.

U2C is a third order, low-pass active filter with an fc of about 350 Hz. The output of this filter is used to monitor subaudible or (CTCSS) tone signaling. This is very handy for tuning and testing subaudible tone encoders (see sidebar). You can connect either a frequency counter or an oscilloscope to this output.

U2A, a comparator, buffers the scan signal from the demodulator IC. This signal causes Q1 to shunt the audio from U1A to ground through current limiting resistor R10 when the receiver squelches. If this weren't done, the frequency deviation meter would be hammered against the stop whenever carrier was not present.

### Deviation Meter Driver Circuitry

U2B is a simplified, active full-wave rectifier. This circuit has the advantage of eliminating the 0.6V forward drop characteristic of silicon rectifiers. When a positive voltage is present at U2-6, it passes around the amplifier to U2-12. U2B amplifies and inverts a negative voltage and also passes it along to U2-12.

To keep the positive and negative peaks the same amplitude, the choice of resistor values for R10, R11, R12, and R25 are critical. Don't make any substitutions unless you know what you are doing. This change in output impedance between positive and inverted negative voltage peaks means that U2D must buffer and amplify the rectified modulation signal to a level that will drive a meter movement.

Diode D2 provides 0.6V of "quiet" offset in the modulation meter signal. If the received signal is just a little noisy, the voltage drop across this diode will prevent the meter from interpreting the noise as modulation. Calibrate the frequency deviation meter with VR2.

### Recorder Remote Circuitry

Transistor Q2, an inverter, gives Q3 the proper polarity for operating a tape recorder remote control input. When Q3 is conducting, the tape recorder will record. When it's open, the tape recorder will stop. This part of the circuit was a "gimmie"; almost all of the circuitry required to implement it was already there. If you have no use for this circuit, feel free to eliminate Q2, Q3, and associated resistors.

### Construction

First evaluate the scanner you want to use as your test receiver. Almost all currently produced low cost narrowband FM rec[illegible]s use the Motorola MC3357 or MC3359 IC for the low IF and demodulator circuit. Occasionally it's hard to identify this IC since the part number is disguised by Oriental manufacturers. Usually the 3357 or 3359 will be a portion of the part number even if the MC is not. In extreme cases you may have to either compare the pinout from the Motorola data sheet to the schematic of your scanner, or look for a 455 kHz ceramic filter near a likely IC, to find the right device. If your scanner has the Motorola IC or a foreign made clone, you don't even need a schematic of your scanner to do this project. You need only to bring three signals from the scanner, and all three are available on the demodulator chip. If you have the MC3357 (16-pin) chip, the Ground, Scan, and Audio are pins 15, 13, and 9, respectively. For the MC3359 (18-pin) IC, these pins are 17, 15, and 10.

I brought all three signals out of my scanner with a ⅛" stereo jack and built a cable to connect the test set to the scanner. This left the scanner free for other uses when not used as a test receiver. It's best to connect the receive audio to the tip, scan signal to the ring, and ground to the shank. Make the connection to the scanner only with power off, to prevent damage from the momentary[illegible]rt that will occur when you plug in the tes[illegible].

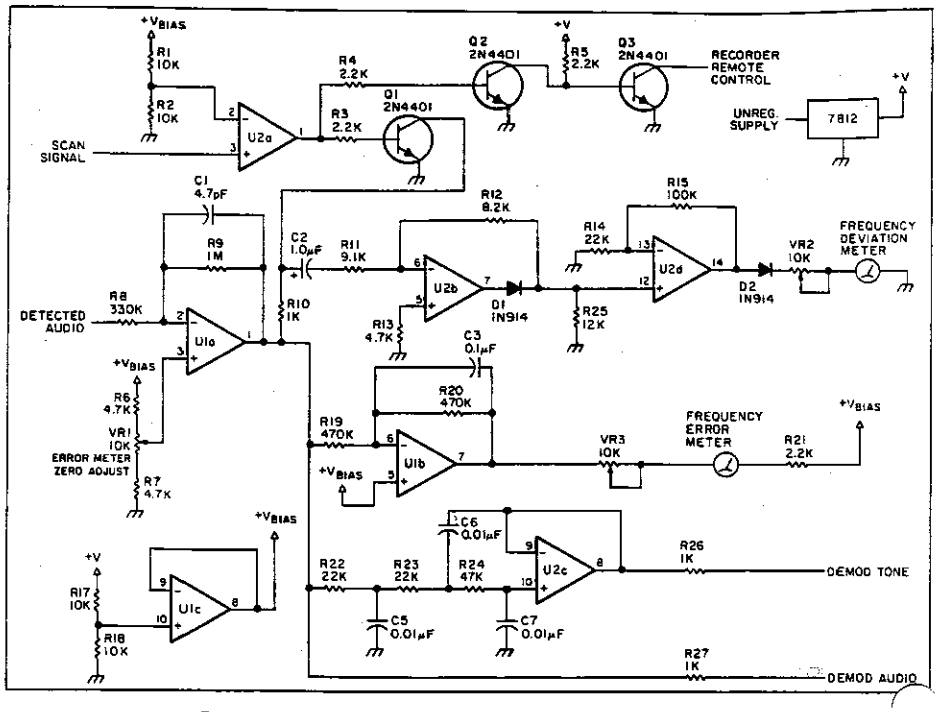



*Figure 1. Schematic of the Poor Man's Service Monitor.*

### Modular Convenience

I built my prototype on a small card for digital projects and mounted all my parts on headers. (A header is a pin platform that inserts into an IC socket to allow components to be easily mounted to that socket.) I highly recommend this approach for two reasons. First, if you use the interleaved power and ground traces that pass down the middle of each IC pin pattern, you can make solder bridges for power and ground connections. If you make all the power and ground connections before you wire the circuit, you'll have a neat, easy-to-troubleshoot device with very low impedance power and ground connections. This helps a lot with noise immunity, something to consider with a transmitter operating nearby. (Don't forget to include a couple of 0.01 µF power-to-ground bypass capacitors, too.)

Second, mounting the parts on headers makes the project modular and easier to construct over a period of time. You can build each module in an evening, after the kids go to bed, without leaving anything hanging.

Not shown on the schematic are the power and ground pins for the LM324 op amp. This chip uses pin 4 for power and pin 11 for ground. I used a wall mount 14V DC power supply regulated by a 7812 three-terminal regulator to power my device. If you do this, careful. The wall mount power supply that came with my Uniden scanner has a three-prong grounded wall plug, and the DC ground is apparently referenced to the AC ground. This caused my error meter to peg low when I attempted to connect a scope or frequency counter to the test set that used a three-wire power cord. To solve the problem, I used a three-wire to two-wire converter on the scanner power supply to eliminate the ground loop between the scanner and the test equipment.

You can order suitable milli- or microammeters from Mouser Electronics. Ideally, the frequency error meter should have a 5–0–5 unit scale and the deviation meter a 0–6 units scale. This allows you to directly display up to 5 kHz of frequency error and up to 6 kHz of deviation. I designed the driver circuit for the meters to be flexible enough for much freedom in meter selection.

### Calibration

If you have access to a service monitor, use it to tune up this device. If you invest a little time, you can generate a table of meter readings vs. actual conditions, and your test box will be a secondary standard to your service monitor.

If you're not lucky enough to have access to a service monitor, don't worry. You can use a new or recently calibrated transceiver equipped with both DTMF and subaudible tone encoders to use as a signal test standard. After you have carefully checked your construction work, turn on the power to the board. Use a voltmeter to test for power and ground in all the required locations. Ground the audio input and the frequency error meter should peg to the frequency low side. The frequency deviation meter should read zero.

If your board passes the above test, it should be safe to connect it to the scanner. After connecting the scanner, turn it on. The scanner should operate normally, as before. If it doesn't, turn the power off immediately and investigate. Once the scanner operates properly, adjust VR1 until the error meter oscillates around zero with no carrier present.

Connect your test transceiver to a dummy load, turn its RF power output down to minimum, and remove the antenna from the scanner. Set the transceiver and scanner to the same frequency and key the mike. Adjust VR1 until the error meter reads zero. With the mike still keyed, press "1" on the DTMF pad. DTMF encoders are set at ⅔ system modulation. For narrowband FM this is 3.3 kHz of deviation. Adjust VR2 until the deviation meter reads 3.3 kHz. Turn on the subaudible tone encoder and key the transceiver. Note the meter deflection, but do not make any adjustments. Subaudible tone signaling encoders are typically set to 750 Hz of deviation. For future reference, note this meter reading and the one made while setting VR2.

Set the transceiver frequency 5 kHz high. Key the mike and adjust VR3 until the error meter reads full scale high. Set the transceiver 5 kHz low and again key the mike. Ideally, the error meter should read exactly full scale low. Practically speaking, you will probably have to compromise between the frequency high and frequency low meter settings (this is where the not-quite-test-instrument-quality comes in). Your test box is calibrated. Now, what can you do with this little jewel?

### Operation

When setting up a DTMF encoder, set the modulation to 3.3 kHz on the deviation meter. If you are adjusting the output of a subaudible tone encoder, set the modulation to the meter reading you obtained during calibration.

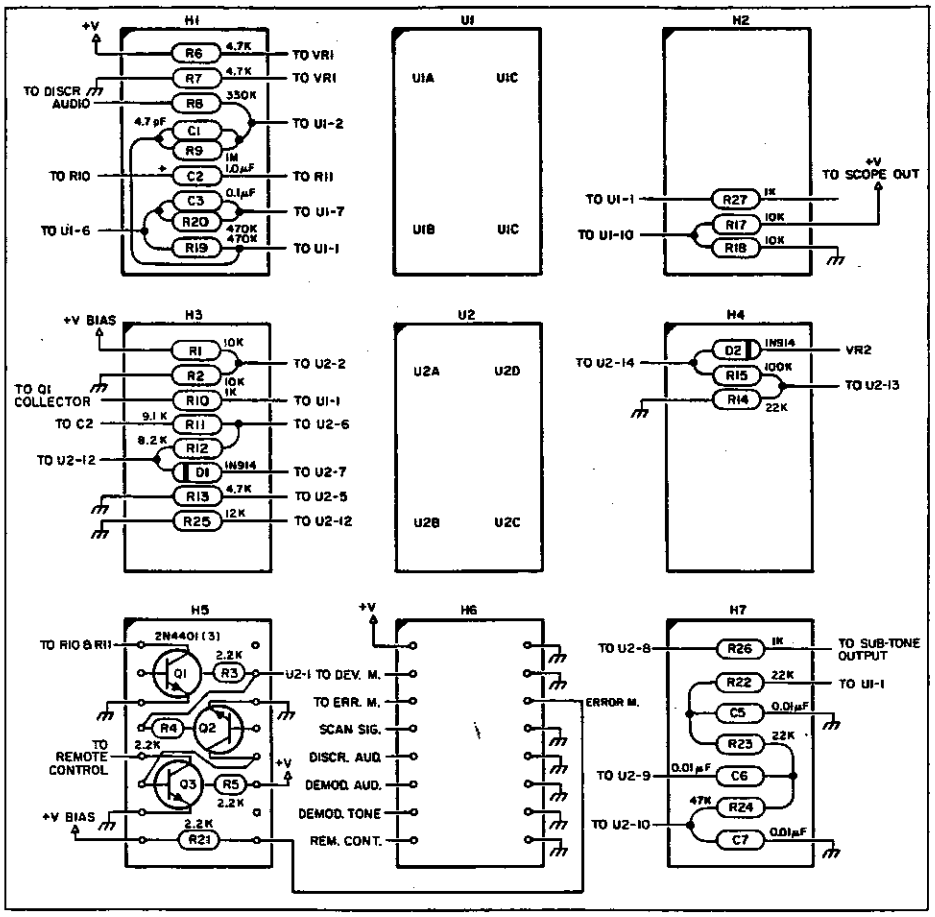



*Figure 2. Parts placement for the Monitor.*

If you are using this test set for bench work, simply connect your transceiver to a dummy load, take the antenna off the scanner, and go to work. The leakage coupling between the two units is more than enough for testing. (Don't EVER connect the transmitter output directly to the antenna input of the scanner or you will destroy your scanner!) With the antenna installed, you can analyze any signal you can hear over the air.

The tests and measurements you'll be able to make with this simple, two-chip device will amaze you. I hope you enjoy using the Poor Man's Service Monitor. 73

*Bill Crowl N6MWS, first licensed in 1985, also holds a Commercial Radiotelephone Operators license. Bill has spent the past nine years employed in the field of electronics, and is currently employed as a Sales Engineer for Selectone Corporation. He can be reached at 8157 Auberry Drive, Sacramento, CA 95828.*

## Continuous Tone Coded Squelch System

Subaudible tones range from 67–203 Hz, and are used by both transmitting and receiving stations for selective call operation. This system is called Continuous Tone Coded Squelch System (CTCSS). Hams often refer to this type of signaling as "PL," an acronym for "Private Line," Motorola's trade name for CTCSS. Subaudible tones keep a receiver quiet (even when a carrier is present) until the proper subaudible tone is received.

Tone access is often used on VHF amateur repeaters to prevent long distance skip signals from falsely activating a wide area coverage repeater. In commercial service it permits multiple groups of users to share the same RF channel without unduly disturbing each other.

### Parts List for the Poor Man's Service Monitor

| Qty. | Description | Part Number | Desig. | Price Ea. | Ext. Price |
|---|---|---|---|---|---|
| 2 | LM 324 Quad Op-Amp IC | 276-1711 | U1-U2 | 1.29 | 2.58 |
| 1 | 7812 12vdc 3 terminal reg. | 276-1771 | | 1.19 | 1.19 |
| 3 | 2N4401 NPN transistor (TO-92) | 276-2058 | Q1-Q3 | .49 | .98 |
| 2 | 1N914 small signal diode | 276-1122 | D1-D2 | .94 | .94 |
| 3 | 10kΩ 15 turn potentiometer | *271-343 | VR1-VR3 | 1.49 | 4.47 |
| 4 | 10kΩ 5% CF resistor | 271-1335 | R1-R2,R17-R18 | .39 | .39 |
| 4 | 2.2kΩ 5% CF resistor | 271-1325 | R3-R5,R21 | .39 | .39 |
| 3 | 1kΩ 5% CF resistor | 271-1321 | R10,R26,R27 | .39 | .39 |
| 1 | 330kΩ 5% CF resistor | *29SJ250val | R8 | .08 | .40 |
| 1 | 1MΩ 5% CF resistor | 271-1356 | R9 | .39 | .39 |
| 3 | 4.7kΩ 5% CF resistor | 271-1330 | R6-R7,R13 | .39 | .39 |
| 2 | 470kΩ 5% CF resistor | 271-1354 | R19,R20 | .39 | .39 |
| 3 | 22kΩ 5% CF resistor | 271-1339 | R14,R22-R23 | .39 | .39 |
| 1 | 100kΩ 5% CF resistor | 271-1347 | R15 | .39 | .39 |
| 1 | 9.1kΩ 5% CF resistor | *29SJ250val | R11 | .08 | .40 |
| 1 | 8.2kΩ 5% CF resistor | *29SJ250val | R12 | .08 | .40 |
| 1 | 12kΩ 5% CF resistor | *29SJ250val | R25 | .08 | .40 |
| 1 | 47kΩ 5% CF resistor | 271-1342 | R24 | .39 | .39 |
| 1 | 4.7 pF 50 WVDC cer. capacitor | 272-120 | C1 | .39 | .39 |
| 1 | 1.0 µF 35 WVDC tant. capacitor | 272-1434 | C2 | .49 | .49 |
| 3 | 0.01 µF 50 WVDC capacitor | 272-1065 | C5-C7, Bypass | .59 | 1.18 |
| 1 | Digital project perfboard | **JE403 | | 9.95 | 9.95 |
| 1 | Deluxe project box | 270-272B | | 8.49 | 8.49 |
| 2 | Panel mount BNC jack | 278-105 | | 1.39 | 2.78 |
| 2 | Panel mount ⅛" stereo jack | 274-250 | | 2.19 | 2.19 |
| 1 | 500–0–500 microammeter 3½" | *541-MS-DUA-5H5 | | | 17.00 |
| 1 | 0–10 milliammeter 3½" | *541-MS-DMA-010 | | | 16.00 |

Notes on parts list:

1. All part numbers refer to Radio Shack catalog part numbers unless otherwise specified.
2. * Indicates part available from Mouser Electronics, 1-800-346-6873.
3. ** Indicates part available from Jameco Electronics, 415-592-8097.

# Hams help out at Oklahoma blast site

Within minutes of the deadly April explosion at the Oklahoma City federal office building, Amateur Radio operators set up a non-stop emergency coordination network.

During the first few hours after the blast, telephone circuits were jammed or inoperative. Amateur Radio provided vital emergency communications to rescue and relief organizations until regular telephone service was restored.

Located at the Salvation Army Emergency Coordination Center, a net control station coordinated the efforts of more than 20 Amateur Radio stations in downtown Oklahoma City.

Volunteer operators were assigned to the five Salvation Army canteens, the Salvation Army Area Headquarters, the Red Cross Command Post, and the primary search and rescue command post.

Using hand-held and mobile radio equipment, hams provided relief workers with reliable, mobile emergency communication for more than 190 continuous hours.

Besides coordinating the distribution of supplies, food, water and equipment, the volunteer hams also drove vital supplies to locations in the disaster area.

During early relief efforts, the technical skills of volunteer hams were put to the test when it was determined the buildings in the downtown area were blocking radio signals. A mobile repeater station was established at a Salvation Army canteen, allowing for communications to be sent and received easily.

In addition to providing communications to rescue workers, hams operating at the Salvation Army Emergency Coordination Center continued to process health and welfare inquiries from friends and relatives outside the Oklahoma City area.

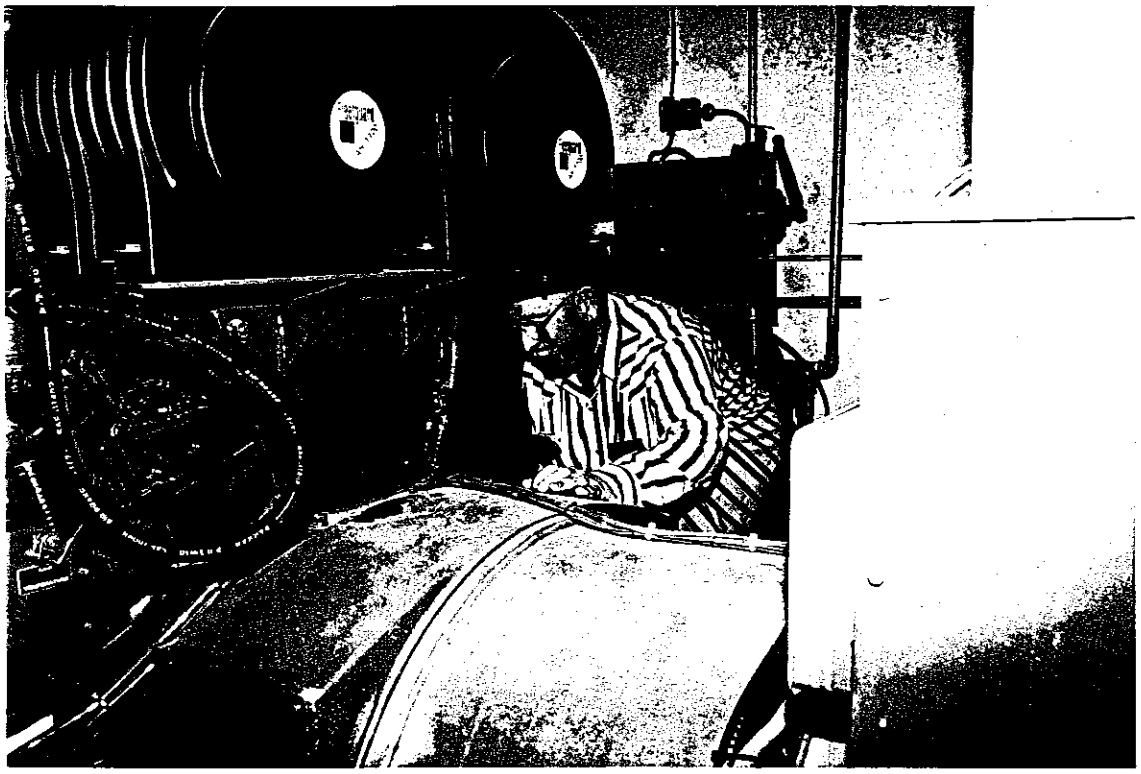
More than 100 hams participated in relief efforts, with between 60 and 80 working at any one time. Most of the ham volunteers were from the Oklahoma City area, but offers of assistance came from all over Oklahoma as well as Texas, Arkansas and Kansas.

*– ARRL Bulletin 46 de WIAW, April 27, 1995*


This is a photo submitted by Dave DXO, can you identify the others in this picture.....you know, I think Ian Trenholme still has that hat ..... editor

L-R
Harvey Smith VE3FOT, Dave Dixon VE3DXO, ?, ?, Bill Hardie VE3EFX, ?, ?, Tess Hardie VE3HIR, Ian Trenholme VE4IST, Terry Darling VE3CAB

GBARC members at the Telesat Tour.



No Aubrey... It's not a spark gap transmitter!!!

Luncheon reward after the Santa Claus Parade .. Nov 95

Brad RHJ congratulating Dave Walker after he passes his basic theory and 5wpm code test ... way to go Dave!

Photo's by John TXB

Telesat control consoles ... This is where they watch the playboy channel.

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For sale

40' HD tower (not self support), Hy-gain TH-3 HF antenna and a HAM-m 3 CDE45 rotator .. all with manuals $550 neg.

Commodore 64, colour monitor, printer, disk drive, keyboard, AEA Packratt 64 packet TNC -- with all manuals $250

contact Mike VE3FOY 376-9414 anytime

*There is nothing like the joy of parenthood, especially when all the children are in bed.*

# IBM ASCII Chart

| Ctrl | Dec | Hex | Char | Code |
|---|---|---|---|---|
| @ | 0 | 00 | (1) | NUL |
| A | 1 | 01 | ☺ | SOH |
| B | 2 | 02 | ☻ | STX |
| C | 3 | 03 | ♥ | ETX |
| D | 4 | 04 | ♦ | EOT |
| E | 5 | 05 | ♣ | ENQ |
| F | 6 | 06 | ♠ | ACK |
| G | 7 | 07 | • | BEL |
| H | 8 | 08 | ◘ | BS |
| I | 9 | 09 | ○ | HT |
| J | 10 | 0A | ◙ | LF |
| K | 11 | 0B | ♂ | VT |
| L | 12 | 0C | ♀ | FF |
| M | 13 | 0D | ♪ | CR |
| N | 14 | 0E | ♫ | SO |
| O | 15 | 0F | ☼ | SI |
| P | 16 | 10 | ► | DLE |
| Q | 17 | 11 | ◄ | DC1 |
| R | 18 | 12 | ↕ | DC2 |
| S | 19 | 13 | !! | DC3 |
| T | 20 | 14 | ¶ | DC4 |
| U | 21 | 15 | § | NAK |
| V | 22 | 16 | ▬ | SYN |
| W | 23 | 17 | ↨ | ETB |
| X | 24 | 18 | ↑ | CAN |
| Y | 25 | 19 | ↓ | EM |
| Z | 26 | 1A | → | SUB |
| [ | 27 | 1B | ← | ESC |
| / | 28 | 1C | ∟ | FS |
| ] | 29 | 1D | ↔ | GS |
| ^ | 30 | 1E | ▲ | RS |
| _ | 31 | 1F | ▼ | US |

| Dec | Hex | Char |
|---|---|---|
| 32 | 20 | (2) |
| 33 | 21 | ! |
| 34 | 22 | " |
| 35 | 23 | # |
| 36 | 24 | $ |
| 37 | 25 | % |
| 38 | 26 | & |
| 39 | 27 | ' |
| 40 | 28 | ( |
| 41 | 29 | ) |
| 42 | 2A | * |
| 43 | 2B | + |
| 44 | 2C | , |
| 45 | 2D | - |
| 46 | 2E | . |
| 47 | 2F | / |
| 48 | 30 | 0 |
| 49 | 32 | 1 |
| 50 | 32 | 2 |
| 51 | 33 | 3 |
| 52 | 34 | 4 |
| 53 | 35 | 5 |
| 54 | 36 | 6 |
| 55 | 37 | 7 |
| 56 | 38 | 8 |
| 57 | 39 | 9 |
| 58 | 3A | : |
| 59 | 3B | ; |
| 60 | 3C | < |
| 61 | 3D | = |
| 62 | 3E | > |
| 63 | 3F | ? |

| Dec | Hex | Char |
|---|---|---|
| 64 | 40 | @ |
| 65 | 41 | A |
| 66 | 42 | B |
| 67 | 43 | C |
| 68 | 44 | D |
| 69 | 45 | E |
| 70 | 46 | F |
| 71 | 47 | G |
| 72 | 48 | H |
| 73 | 49 | I |
| 74 | 4A | J |
| 75 | 4B | K |
| 76 | 4C | L |
| 77 | 4D | M |
| 78 | 4E | N |
| 79 | 4F | O |
| 80 | 50 | P |
| 81 | 51 | Q |
| 82 | 52 | R |
| 83 | 53 | S |
| 84 | 54 | T |
| 85 | 55 | U |
| 86 | 56 | V |
| 87 | 57 | W |
| 88 | 58 | X |
| 89 | 59 | Y |
| 90 | 5A | Z |
| 91 | 5B | [ |
| 92 | 5C | \ |
| 93 | 5D | ] |
| 94 | 5E | ^ |
| 95 | 5F | _ |

| Dec | Hex | Char |
|---|---|---|
| 96 | 60 | ` |
| 97 | 61 | a |
| 98 | 62 | b |
| 99 | 63 | c |
| 100 | 64 | d |
| 101 | 65 | e |
| 102 | 66 | f |
| 103 | 67 | g |
| 104 | 68 | h |
| 105 | 69 | i |
| 106 | 6A | j |
| 107 | 6B | k |
| 108 | 6C | l |
| 109 | 6D | m |
| 110 | 6E | n |
| 111 | 6F | o |
| 112 | 70 | p |
| 113 | 71 | q |
| 114 | 72 | r |
| 115 | 73 | s |
| 116 | 74 | t |
| 117 | 75 | u |
| 118 | 76 | v |
| 119 | 77 | w |
| 120 | 78 | x |
| 121 | 79 | y |
| 122 | 7A | z |
| 123 | 7B | { |
| 124 | 7C | \| |
| 125 | 7D | } |
| 126 | 7E | ~ |
| 127 | 7F | ⌂ |

| Dec | Hex | Char |
|---|---|---|
| 128 | 80 | Ç |
| 129 | 81 | ü |
| 130 | 82 | é |
| 131 | 83 | â |
| 132 | 84 | ä |
| 133 | 85 | à |
| 134 | 86 | å |
| 135 | 87 | ç |
| 136 | 88 | ê |
| 137 | 89 | ë |
| 138 | 8A | è |
| 139 | 8B | ï |
| 140 | 8C | î |
| 141 | 8D | ì |
| 142 | 8E | Ä |
| 143 | 8F | Å |
| 144 | 90 | É |
| 145 | 91 | æ |
| 146 | 92 | Æ |
| 147 | 93 | ô |
| 148 | 94 | ö |
| 149 | 95 | ò |
| 150 | 96 | û |
| 151 | 97 | ù |
| 152 | 98 | ÿ |
| 153 | 99 | Ö |
| 154 | 9A | Ü |
| 155 | 9B | ¢ |
| 156 | 9C | £ |
| 157 | 9D | ¥ |
| 158 | 9E | Pt |
| 159 | 9F | ƒ |

| Dec | Hex | Char |
|---|---|---|
| 160 | A0 | á |
| 161 | A1 | í |
| 162 | A2 | ó |
| 163 | A3 | ú |
| 164 | A4 | ñ |
| 165 | A5 | Ñ |
| 166 | A6 | ª |
| 167 | A7 | º |
| 168 | A8 | ¿ |
| 169 | A9 | ⌐ |
| 170 | AA | ¬ |
| 171 | AB | ½ |
| 172 | AC | ¼ |
| 173 | AD | ¡ |
| 174 | AE | « |
| 175 | AF | » |
| 176 | B0 | ▒ |
| 177 | B1 | ▒ |
| 178 | B2 | ▓ |
| 179 | B3 | \| |
| 180 | B4 | ┤ |
| 181 | B5 | ╡ |
| 182 | B6 | ╢ |
| 183 | B7 | ╖ |
| 184 | B8 | ╕ |
| 185 | B9 | ╣ |
| 186 | BA | ║ |
| 187 | BB | ╗ |
| 188 | BC | ╝ |
| 189 | BD | ╜ |
| 190 | BE | ╛ |
| 191 | BF | ┐ |

| Dec | Hex | Char |
|---|---|---|
| 192 | C0 | └ |
| 193 | C1 | ┴ |
| 194 | C2 | ┬ |
| 195 | C3 | ├ |
| 196 | C4 | ─ |
| 197 | C5 | ┼ |
| 198 | C6 | ╞ |
| 199 | C7 | ╟ |
| 200 | C8 | ╚ |
| 201 | C9 | ╔ |
| 202 | CA | ╩ |
| 203 | CB | ╦ |
| 204 | CC | ╠ |
| 205 | CD | ═ |
| 206 | CE | ╬ |
| 207 | CF | ╧ |
| 208 | D0 | ╨ |
| 209 | D1 | ╤ |
| 210 | D2 | ╥ |
| 211 | D3 | ╙ |
| 212 | D4 | ╘ |
| 213 | D5 | ╒ |
| 214 | D6 | ╓ |
| 215 | D7 | ╫ |
| 216 | D8 | ╪ |
| 217 | D9 | ┘ |
| 218 | DA | ┌ |
| 219 | DB | ▉ |
| 220 | DC | ▄ |
| 221 | DD | ▌ |
| 222 | DE | ▐ |
| 223 | DF | ▀ |

| Dec | Hex | Char |
|---|---|---|
| 224 | E0 | α |
| 225 | E1 | ß |
| 226 | E2 | Γ |
| 227 | E3 | π |
| 228 | E4 | Σ |
| 229 | E5 | σ |
| 230 | E6 | µ |
| 231 | E7 | τ |
| 232 | E8 | Φ |
| 233 | E9 | Θ |
| 234 | EA | Ω |
| 235 | EB | δ |
| 236 | EC | ∞ |
| 237 | ED | ∅ |
| 238 | EE | ∈ |
| 239 | EF | ∩ |
| 240 | F0 | ≡ |
| 241 | F1 | ± |
| 242 | F2 | ≥ |
| 243 | F3 | ≤ |
| 244 | F4 | ⌠ |
| 245 | F5 | ⌡ |
| 246 | F6 | ÷ |
| 247 | F7 | ≈ |
| 248 | F8 | ° |
| 249 | F9 | ∙ |
| 250 | FA | · |
| 251 | FB | √ |
| 252 | FC | n |
| 253 | FD | ² |
| 254 | FE | ■ |
| 255 | FF | (3) |

(1) Null (2) Space (3) Blank

Hello all .. a little while ago Jim BFV asked me about all those funny characters he sees on his packet screen when the BBS is forwarding. They can also be seen in some messages as a nifty looking panel with the senders call and sometimes a little ascii picture. Well these characters are standard IBM codes and are given in the table above. So to use them all you do is press and hold the ALT key and then using the numeric keypad, type in the decimal number for the character you like .. for example: a nice little character is the ohms symbol. (decimal 234) so press and hold the alt key and type 234...you get Ω ..... there you have it ... stay away from charaters below decimal 28 ... the BBS and your TNC will interpret them as control codes ..... 73 Tom

# Letters to the EDITOR

The Canadian National Institute for the Blind
L'Institut national canadien pour les aveugles

**National Office/Siège social**
1929 Bayview Avenue
Toronto, Ontario
Canada M4G 3E8
(416) 480-7580
Fax: (416) 480-7677

Patron: His Excellency
The Right Honourable
Ramon John Hnatyshyn
P.C., C.C., C.M.M., C.D., Q.C.
Governor General of Canada

Patron : Son Excellence
le très honorable
Ramon John Hnatyshyn
C.P., C.C., C.M.M., C.D., c.r.
Gouverneur général du Canada

**AMATEUR RADIO PROGRAM**

February 22, 1996

Tom St. Amand, VE3TSA,
The Georgian Bay Amateur Radio Club, Inc.,
P. O. Box 113,
Owen Sound, ON
N4K 5P1

Dear Tom,

Thanks for your generous donation of $100 to the CNIB Amateur Radio Program. I assure you it will be put to good use.

Since the 1995-96 funds appeal was launched on November 17, 24 clubs have contributed $2,221. Sixteen of these, like your Club, are new donors this year, which I think is a good sign.

I am pleased that you consider our work to be of benefit to handicapped persons. We do our best!

Please thank the members of your Club for their donation.

Sincerely,

Bill

Bill Loucks, VE3AR
Chairman, Amateur Radio Program

cc: John Macnnacky, VE3EJN
Manager

Durham Region Amateur Radio Hamfest
c/o George Burns VE3INB
1326 Lakefield Crt.
Oshawa ON
L1J 3Y6

Dear Fellow Hams,

I invite you all, to our Hamfest on Saturday, April 13, 1996 at the Metro East Trade Centre in Pickering Ontario. Alinco, Icom, Kenwood and Yeasu will be there to demonstrate all their products. I'm sure that you'll want to see the latest equipment on the market. If you are in the area at Hamfest time, be sure to drop in. You won't be disappointed.

I've enclosed a number of our Hamfest flyers for distribution to the members of your club.

See you at the Hamfest
73
George VE3INB

**The 15th Annual**

## DURHAM REGION AMATEUR RADIO HAMFEST

**Canada's Largest**
**Unlimited FREE parking**

## THE METRO EAST TRADE CENTRE

**Hwy 401 & Brock Road North 1 km, Pickering - Exit #399**

**Presented by: South Pickering A.R.C. VE3SPC**
**and North Shore A.R.C. VE3NSR**

**Saturday, April 13, 1996**
**9:00 a.m. to 2:00 p.m.**
**Admission $5.00**
**Door prizes throughout the day**

## SUPER PRIZE

**Come meet the manufacturers!!**
**KENWOOD, ALINCO, YEASU, ICOM**

**Lots of door prizes!**
**2 mobiles - 3 handhelds**
**plus many more**

**Talk-in Frequency**
**VE3SPA 147.375 (+)**
**VE3OSH 147.120 (+)**

Reservations will be taken by mail; by packet (VE3UGV@VE3DAX) or by fax to (905) 831-5556. Payment **MUST** follow within 14 days and made out to:

**DURHAM REGION AMATEUR RADIO HAMFEST**
**c/o Dave Herve VE3UGV**
**1700 Alliance Road, Suite 280**
**Pickering, Ontario L1W 3X2**

---

**Mail in Registration**

**Vendor Name:** _____

**Vendor Address:** _____

_____

**Postal Code:** _____ **Phone No.** _____

| | | | |
|---|---|---|---|
| **No. of commercial table (8')** _____ | x | $40.00 = | $ _____ |
| **No. of non-commercial tables (8')** _____ | x | $20.00 = | $ _____ |
| **If you require power (# of hookups)** _____ | x | $10.00 = | $ _____ |
| **Number of admissions** _____ | x | $ 5.00 = | $ _____ |
| **Cheque or money order enclosed for** | | | $ _____ |

**NO POST DATED CHEQUES**

**For more information contact David Herve (416) 447-0425 before March 15/96**
**(905) 837-2127 after March 15/96**

## Repeater Update

The interference problems with the 146.940 repeater are most likely due to the fact of the antenna not grounding to the tower properly. This means taking the antenna off the tower and cleaning things up. This is a big job beacause the antenna is at the top of tower and is mounted out from the tower on a boom. So hopefully this will will be done when the weather improves.

73 de Ken VA3KMS