OFFICIAL NEWSLETTER OF THE

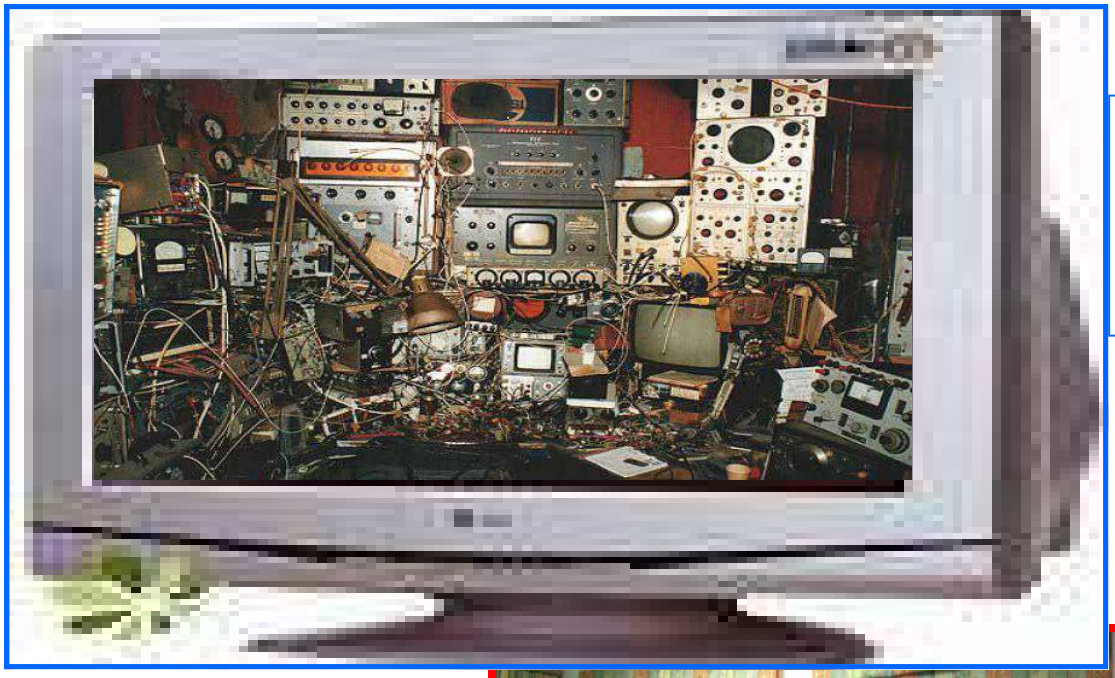
# BORDER RADIO CLUB

EAST LONDON

OCT 2009

Affiliated to the SARL

# FEEDBACK



**SHACK OF THE MONTH !!!**

**Derrick - ZR2WB**
At last Derrick gets the Cup he won at the AGM.

Derrick was working out of town and could not attend the AGM, therefore it was presented at the August monthly meeting.. Well done Derrick keep it up, we know you will soon be up-graded to a ZS call sign.

# BRC OUTDOOR ACTIVITIES


**MEMBERS of the BRC The Border Radio Club, endeavor to support the local youth organizations in what ever and when ever possible.**
**We would like to do more and so encourage our young people to join our exiting and interesting hobby.**

**You the members are encouraged to contact your schools and youth organizations in your area and encourage them to give the BRC the opportunity to visit them and demonstrate what advantages Amateur Radio can give them and develop their future..**

**Peter ZS2ABF is prepared to give a Power Point Presentation entitled, "An Introduction to Ham Radio" Your efforts and input are needed.**

**Come and join us on the 17th & 18th of October to make this years JOTA (Jamboree on the Air) a great success and enjoy the fresh air, peace and solitude out in the Bush. Sleep over if you wish.**

# INTRODUCTION TO PACKET RADIO - Part 9 - by Larry Kenney, WB9LOZ

In this part of the series we're going to look at the White Pages. No, not your local telephone directory, but the packet radio directory known as the "White Pages". You help supply the information for "WP", and you can also use it to find the home BBS, QTH and zip code of your friends on packet.
"White Pages" was initially designed by Eric Williams, WD6CMU, of Richmond, California. Hank Oredson, W0RLI, later added a WP database to his packet bulletin board software, and now most of the BBS software programs have some form of the White Pages available. It's a database of packet users showing their name, home BBS, QTH and zip code. It's updated and queried by packet message, allowing stations from all over the world to take advantage of it.
When users enter their name and other information into their BBS user file, it gets included in the WP database. The White Pages server at each BBS also scans the forwarding headers of all messages received, extracts call-sign information and adds that to the database. The software automatically assembles an update once a day containing all of the new WP information and any changes the database has received in the past 24 hours. This update is then forwarded to the regional White Pages server. The regional server, in turn, takes all of the information it has received from other BBSs and sends out updates to other BBSs in the area, as well as to the N6IYA BBS in Fulton, California, the national White Pages server. As a result, we
have a large database of information on packet users world-wide. By querying WP, you can easily find the name, home BBS, QTH and zip code of other stations on packet.
If your BBS is operating with its own WP database, you may make inquiries of it using either the "I" or "Q" command, depending on the software being used. Simply enter I or Q followed by the callsign you'd like information about. If you wanted information on WB9LOZ, for example, you would enter: I WB9LOZ or Q WB9LOZ
Check the help information on your BBS to see which command is the one used there. Some BBSs also offer commands that allow you to search the WP data-base for station lists using location or zip code information. Try ?I ?Q or ?WP for details.

If your local BBS doesn't have the information you are looking for, it can be obtained from your regional WP server or from the national WP server. Since query messages are read and answered by the WP software, not by a person, you must use the correct format: callsign ?

You address your query to WP @ the callsign of the server you want to use. The word QUERY is entered for the subject. You may then may include as many requests as you wish in the text of each message, but each must be on a separate line. Here's an example of a message sent to N6IYA, the national White Pages
server:
SP WP @ N6IYA.#CCA.CA.USA.NOAM (The same format would be used )
Enter subject of message: Query (to send a query message to your,
Enter text: (regional WP database.)
K9AT ?
WA6DDM ?
NG2P ?
W1KPL ?
(Control Z OR /EX)


Capital and lower case letters may both be used within the message.
Just like all other packet messages, messages addressed to WP are forwarded from BBS to BBS toward their destination. If a BBS operating with the W0RLI WP Server handles a query message, it will respond with any pertinent information that it has available. As a result, you might receive more than one response to your WP query.

If the information on a callsign in a WP database is not updated, it is deleted after a certain length of time specified by the sysop. This time frame is normally 90 to 180 days, although some systems retain information for up to a year.
It is important to note here that you should choose ONLY ONE BBS as your home BBS, the one where you want all of your messages delivered. You should also make sure that it is a full service BBS, not a personal mailbox, or mail will not be forwarded to you. Always enter that callsign when you are asked to enter your home BBS, even if you are using another system at the time.

When a message arrives at the destination BBS given in the "@ BBS" column, some of the BBS software will check the White Pages information to make sure that the message has been delivered to the right place. If it finds that a different BBS is listed as the addressee's home BBS, it will insert that BBS callsign in the message and send it on its way. If you enter different home BBS calls on several BBSs, your mail could easily end up being sent from BBS to BBS and never reach you. If you move or change your home BBS, you should then make sure that you update the information for your call in the White Pages database. Use the NH, NQ and NZ commands to update the information. Making sure that the information in the White Pages is correct will help to get your messages delivered to the correct BBS.

- - - ------.PART 10 follows Next month.

# Microwave Ovens



Here is the details of the circuit that is used in most Microwave Ovens, but there are some SMPSU versions available now (HF QRM?). It is deceptively simple & masks the cleaver features of the circuit.
**FEATURES SAFETY**. To stop misuse 3 sequenced door switches are used to stop the power SW1 & SW2, & to blow the fuse SW3!

**CONTROLS**. If there is a controller & clock etc, it may have separate mains transformer & fuse etc. & operate the on & & on relays. Otherwise clockwork time switches may be used.

**POWER LEVEL**. As the power can't be varied & the valve magnetron has to warm up for a few seconds to reach full power, a simple interrupted on/off ratio timer over several seconds is used to control the mean cooking power.

**RF COOKING**. The turntable motor or moving RF stirrer is needed to ensure food (containing water/fats) gets evenly cooked to about 2cm deep, otherwise the 13cm standing waves would produce very strange results,
& potentially dangerous to eat cooked/raw banded food!
Try grated cheese on a still sloping piece of toast to see the standing waves.

**MAINS VOLTS.** Mains Voltage variation is cunningly catered for by using a under saturated transformer in near resonance with the small Cap. As the voltage reduces the transformer L increases & partly resonates with the Cap to produce increased voltage to the magnetron exactly compensating for the mains reduction.

N.B. Generator users:- this effect only works at the rated mains frequency!
QRM. Energy dispersal on the 13cms band is ensured due to the raw power supply 0v to -7kV peak 50 times a second on the cathode, causing the RF oscillation to be FM & AM over a broadband. Usually 2 RF peaks cross a spot frequency per cycle e.g. @ 100Hz.

**MAGNETRON**
Electrically they are a just valve diode, but have resonant cavities in the anode & a powerful magnet (hence name) with pole pieces above & below the cathode, which makes the electrons curve passed the cavity capacity gaps. Each cavity works like a whistle & oscillates. Link wires may be used to RF couple all the cavities to the output cavity. The outer anode case is at earth potential & has finned area for the fan to cool, this waste heat is ducted through the cooking chamber.

**FAULTING** (dangerous DEADLY voltages, definitely 1 hand behind your back!) Always leave tumbler of water in the oven during test! NEVER DISABLE THE SAFETY SWITCHES! R.F. B U R N S.

Harry, M1BYT says he can run his unit for testing with mains removed from the Magnetron transformer to find lamp, motor, fan or controller faults without the danger from the Waves or lethal HT.

1/ Does the mains transformer hum? If not check fuses, door switches, & relay.

2/ Using a high voltage probe (10x 10M in series in old pen case to a scope.)
a) see if 2.5kV AC is present from transformer. If not DC check primary & secondary.
b) see if 0-7kV is present on diode/cathode. If not disconnect cathode & retest. If still no voltage, disconnect diode, if AC appears suspect the multi section diode. Do a cap test otherwise ( ÷ 1uF 3kV ).
c) if all OK except when cathode connected, replace magnetron/scrap.
d) if all OK, but no RF. Test heater circuit, no heaters replace magnetron/scrap. Heater OK, test secondary circuit & repair connectors or broken wire etc.

3/ If arcing noises or thumping are noticed, try checking in the dark, if there is light from any connections/insulation take remedial action. If from magnetron replace it. If radiator arc (RF O/P of magnetron), check the 1/4 wave cover is making good connection to valve pin if it is a separately connected type.

4/ **RF leakage**. The RF is radiated into a fully welded box with 1/4 wave overlaps door choke coupling. It should not leak much!
But you can see the 100Hz FM bands on a 13cms CCTV Rx.


**RF MICRO WAVE SURFER**

## MICROWAVE OVENS - PWR CALC. From: DAVID G4EBT

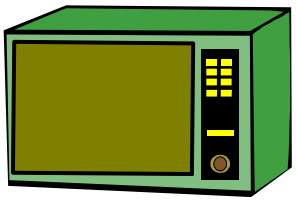
A magnetron's output power can be measured by checking the temperature rise in øC of one litre of water during an 87 second period @ full output power.
A magnetron usually reaches full power about 4 seconds after the clock button has been pressed, so the timer needs to be set for a 91 seconds test period.

If it's desired to determine the time lag from switch on to full power, use a small neon with its wires cut off close to the pinch seal & insert it into the oven cavity with the pot of water. It will glow brightly at full power & shouldn't be left in after it starts to glow, or it may shatter.

The power output is given by the temp rise in degrees C x 50. Thus if there's a 14ø rise in temp of 1 litre of water over an 87 second period after the oven has attained full power, the output power is 50 x 14 = 700W.

Another method, claimed to be more accurate, is to place two 500mL beakers of water at equal temp in the oven, run the oven at full power for thirty seconds, then check the temp rise in each beaker. Take an average of the two readings & multiply this by 70 to get the output power figure.

The formula for this is given as: P=(4.187 x V x temp rise) / t



Where: P = Power in Watts.
V = Volume of water
t = Time of full magnetron power.

This test conforms to IEC 705 (1988).
This info is given in good faith (& at your risk!), from an article in April 1998 Television magazine, copyright of which is acknowledged. - G4EBT

**HAM USE**
I have seen a design for a 13cm ATV Tx based on a magnetron. A highly dangerous project!

Many hams think the small but powerful 900W mains transformer could be useful for a valve linear. It can be done, but the trouble is one side of the 2.5kV AC is wired to the transformer's case earth & even if that end was lifted off earth, to feed a bridge rectifier to give a 3.5kV HT, the insulation to earth of that end of the winding is poor & will not readily handle the 3.5kV peak! If done a single 900W transformer should make a 800W continuous PSU or 1600W peak CW/SSB mode PSU OK provided it is fan cooled as in the oven.

Another approach is to use a half wave rectification for 3.5kV DC PSU. But this will DC saturate the transformer & reduces the rating by about a factor of 3, making a 900W transformer only safely give 300W continuous with this amount of core saturation & the much reduced inductance on the mains. So 2x identical 900W transformers wired in anti phase will be OK for QRO CW/SSB use. e.g. 600W continuous load or 1.2kW intermittent.

**OTHER DANGERS**
WATER HOTTER THAN BOILING!
Note with RF heating it is possible to get water & some drinks actually hotter than 100øC without boiling! This can occasionally happen if very clean container & water are used, so clean that there are no crevices/particles for the steam bubbles to come from. Result is a cup of scalding liquid the boils over at the slightest knock!

**EXPLODING OVENS**
If you are stupid enough to put a sealed container like an egg in the microwave, it will explode causing a mess inside the oven.
If you are as stupid as those on a certain TV programme who put a new bottle of champagne in one, it demolished the oven the table & the room, & certainly might have killed anyone nearby!

**73 De John, G8MNY**


**Let's get our Old Men to buy us a new one He He ! Good idea**


**WOMEN'S REVENGE -Ha Ha**
'Cash, check or charge?' I asked, after folding items the woman wished to purchase. As she fumbled for her wallet , I noticed a microphone in her purse.
'So, do you always carry a Microphone ?' I asked. 'No,' she replied, 'but my husband refused to come shopping with me, and this was the most evil thing I could do to him legally.'

## NASA'S FERMI TELESCOPE PROBES DOZENS OF PULSARS

WASHINGTON -- With NASA's Fermi Gamma-ray Space Telescope, astronomers now are getting their best look at those whirling stellar cinders known as pulsars. In two studies published in the July 2 edition of Science Express, international teams have analyzed gamma-rays from two dozen pulsars, including 16 discovered by Fermi. Fermi is the first spacecraft able to identify pulsars by their gamma-ray emission alone.

A pulsar is the rapidly spinning and highly magnetized core left behind when a massive star explodes. Most of the 1,800 cataloged pulsars were found through their periodic radio emissions.
Astronomers believe these pulses are caused by narrow, lighthouse-like radio beams emanating from the pulsar's magnetic poles.

"Fermi has truly unprecedented power for discovering and studying gamma-ray pulsars," said Paul Ray of the Naval Research Laboratory in Washington. "Since the demise of the Compton Gamma Ray Observatory a decade ago, we've wondered about the nature of unidentified gamma-ray sources it detected in our galaxy. These studies from Fermi lift the veil on many of them."

The Vela pulsar, which spins 11 times a second, is the brightest persistent source of gamma rays in the sky. Yet gamma rays -- the most energetic form of light -- are few and far between. Even Fermi's Large Area Telescope sees only
about one gamma-ray photon from Vela every two minutes.

"That's about one photon for every thousand Vela rotations," said Marcus Ziegler, a member of the team reporting on the new pulsars at the University of California, Santa Cruz. "From the faintest pulsar we studied, we see only two gamma-ray photons a day." Radio telescopes on Earth can detect a pulsar easily only if one of the narrow radio beams happens to swing our way. If not, the pulsar can remain hidden.

A pulsar's radio beams represent only a few parts per million of its total power, whereas its gamma rays account for 10 percent or more. Somehow, pulsars are able to accelerate particles to speeds near that of light. These particles emit a broad beam of gamma rays as they arc along curved magnetic field lines.

The new pulsars were discovered as part of a comprehensive search for periodic gamma-ray fluctuations using five months of Fermi Large Area Telescope data and new computational techniques.

"Before launch, some predicted Fermi might uncover a handful of new pulsars during its mission," Ziegler added. "To discover 16 in its first five months of operation is really beyond our wildest dreams."

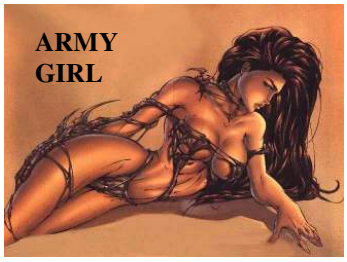
Like spinning tops, pulsars slow down as they lose energy. Eventually, they spin too slowly to power their characteristic emissions and become undetectable. But pair a slowed dormant
pulsar with a normal star, and a stream of stellar matter from the companion can spill onto the pulsar and increase its spin. At rotation periods between 100 and 1,000 times a second, ancient pulsars can resume the activity of their youth.
In the second study, Fermi scientists examined gamma rays from eight of these "born-again" pulsars, all of which were previously discovered at radio wavelengths.
"Before Fermi launched, it wasn't clear that pulsars with millisecond periods could emit gamma rays at all," said Lucas Guillemot at the Center for Nuclear Studies in Gradignan, near Bordeaux, France. "Now we know they do. It's also clear that, despite their differences, both normal and millisecond pulsars share similar mechanisms for emitting gamma rays."


## Dirty Magazines

Soon after being transferred to a new duty station, my Marine husband called home to tell me he would be late - again. He went on to say that dirty magazines had been discovered in the platoon's quarters and they had to discipline the whole squad.

That sounded suspicious, I launched into a tirade, arguing that many men had pictures hanging in their quarters at our previous post, so his new platoon should not be penalized for something trivial.

My husband calmly listened to my gripes and then explained, "Honey, dirty magazines: the clips from their rifles had not been cleaned."



## Homebrew Dummy Load Project - with tongue in cheek may be

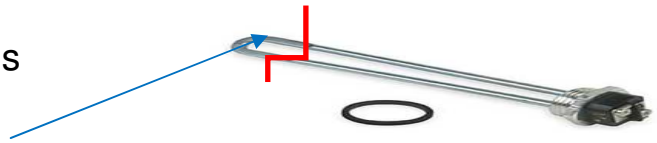
Charles (KC8VWM)

I have always enjoyed reading about homebrew projects submitted to the site so I though I would submit one of my own. This submission is a quick "how to" article describing the idea of constructing a high powered homebrew dummy load on wheels for your ham shack.

The costs associated with this project is as economical as acquiring someone else's thrown away trash. This high powered shack dummy load design uses a "dumpster special" electric oil filled room radiator like this one that no longer functions

Start by stripping off all the "show plastic" and front control panel so basically all you have left is the heater fin tubes resting on the wheels. Next you rest the oil filled heater on it's end with the heating element up so the oil remains inside while you unscrew the "hot water" heating element from the heater. Once removed, the heating element should look like this:

or this



Cut the heating element off close to the bottom but leave enough of a stub on it to install the desired dummy load resistors on it. Or leave it long and add resistors across the element to make 50Ω.

Attach the feedline of your choice where the electrical cord used to be connected to the heating element using the screws. Screw the "dummy load" back inside the oil filled heater.

I don't exactly know how much RF it will handle exactly. It's mostly dependent on the type and specifications involved with the resistors used. I suspect the oil filled heater fins are an excellent heat sink and they shouldn't have any trouble dissipating a LOT of RF generated heat for a VERY long period of time. Your home brewed high powered shack dummy load on wheels should be a very cost effective ( if you can find an old disused heater) homebrew project anyone can enjoy.

73 de Charles - KC8VWM

**Of cause if you only have 50 Watts to dissipate don't bother to waste your time.**

## The Second Story Townhouse/Flat Antenna

It also can be used effectively as a stealth antenna for those, who need to keep a low profile while operating.

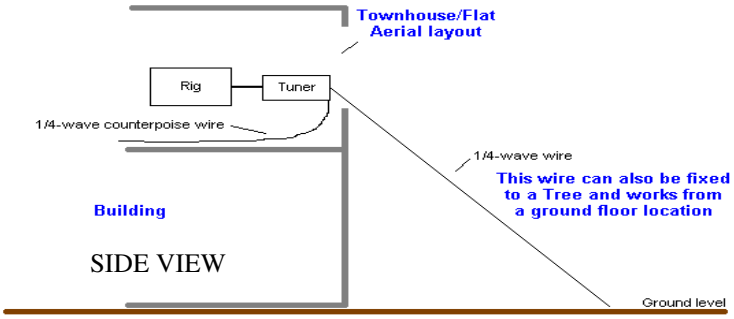
I first started using this setup several years ago whilst on holidays. I used to take along my QRP rig.

To get on the air, I simply attached a 1-ounce fishing sinker to the end of a 1/4-wave wire and lowered it out of the window of the second floor room we occupied. Another 1/4-wave wire was attached to the ground stud of a simple homebrew tuner and run along the skirting board of the room. Then, go outside and attach the first wire to some available structure, arranging it in the sloping fashion showed in the diagram or even a tree if you are living at ground level.

Lay the end of the wire over a metal garden hose hanger on the side of the house to secure it.

You should be able to reliably carry on QSOs all over the country and even sneak in a DX QSO or two now and then. All of this while running about 3 watts out of a QRP rig. Under cover of darkness, you can lower a 33-foot wire out of the window and drape the end over a picket fence in the yard or similar. The 33-foot counterpoise wire is again routed around the skirting board of the room. A quick tweak of the antenna tuner and your up and running. The antenna will perform but you won't set any records. When you think about it, there are some good reasons why this thing works so well. First, it's a full-size antenna on the band of choice. Second, like a dipole, the feed point is at a low impedance point.

There you are, now you Townhouse and flat dwellers and even hams in restricted properties can easy make this aerial and get on the air. those with restrictions about Poles/Towers can sneak this one out after dark and work HF. You can even try it, just for the fun of experimenting.

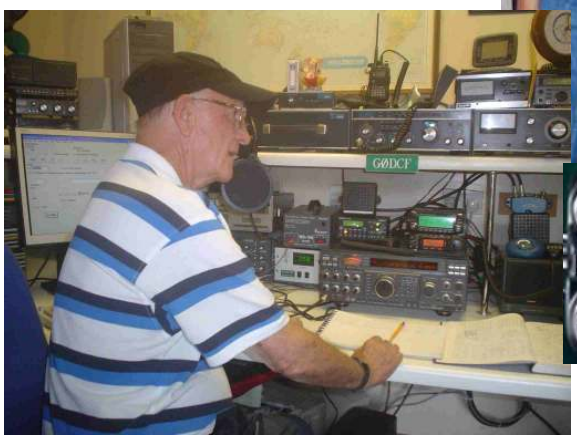



# BACK FROM G LAND

**PETER - ZS2ABF** is back in town . He arrive on the 1st of September after spending 2 1/2 weeks in UK. A great time was had and new friends made at the Sheffield Radio club in South Yorkshire England.
Below are a few photographs of the Sheffield Radio club members and there shacks.
Now you will hear the 2 Mts band come alive again in East London.
When I have recovered from the trip.

Seen at a UK Field day. Just what Fred would like for our club.

**Peter ZS2ABF**
receiving another D-Star Certificate and a DV Dongle from Steve & Trevor M1ERS - M0TWS At the Sheffield Radio Club Yorkshire, England 17th August 2009
It seems I'm the first on D-Star in SA. When will other SA. Hams, Join me on D-Star ?



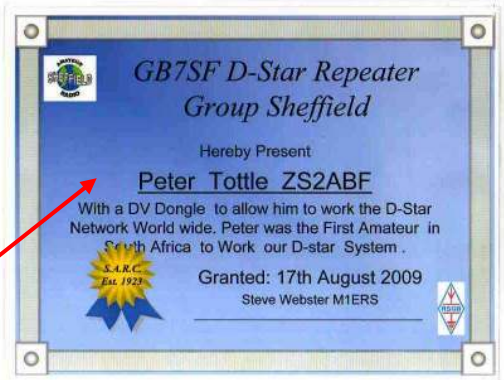
**OPERATING - Station G0DCT - as M0/ZS2ABF**


**THE ICOM IC2820 THE D-STAR RADIO SHOWN HERE TUNED TO THE GB7SF REPEATER IN MODE C ON 145. 7375 MHz CROSS BANDED TO 439.737 MHz**

**DV DONGLE** plugs into the USB port on a P.C.

**Trevor M0TWS calling CQ**

**THE FIRST D-STAR CERTIFICATE AWARDED TO ZS2ABF 03/09/08 the 2nd 17/08/09 FIRST EVER CONTACT ON D-STAR VIA GB7SN - C from Africa**




**John - M0ADS with his toys**

**Steve - M1ERS & Trevor operating in his Kitchen. Steve is the Keeper of the D-Star repeater GB7SF which is housed in his spare bedroom upstairs..**


**You may live in a very restricted area, but be innovative just like Trevor M0TWS. His long wire is fitted to a huge loading coil which extends both the frequency and the range. I goes from his shack attic window, to an adjacent building, across the enclosed backyard and eventually down to the coil and it works.**


**STEVE - M1ERS INSPECTS THE CLUBS NEW TRAILER**

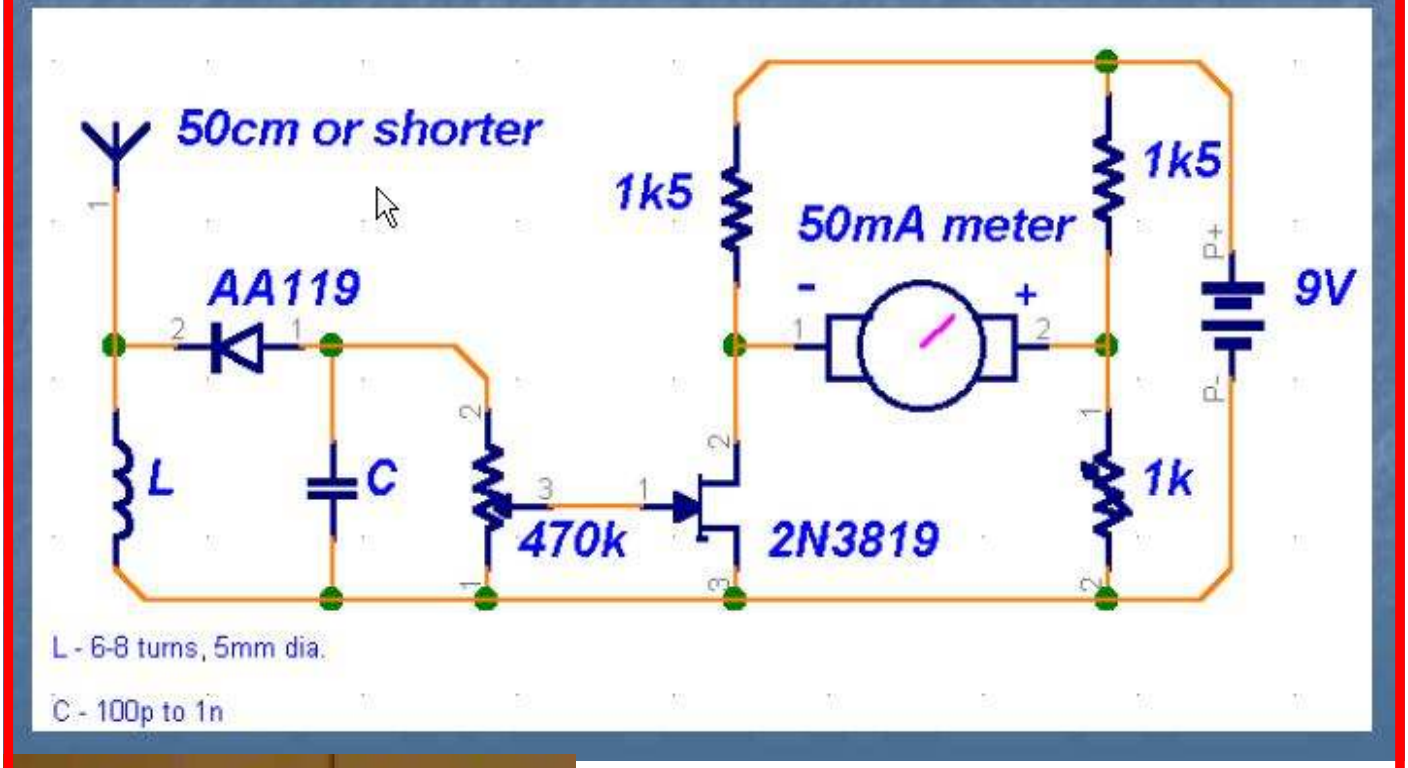
SARC members arrive at the club (Full Bar) ready for my P.P Presentation Entitled "Ham Radio and life in South Africa.

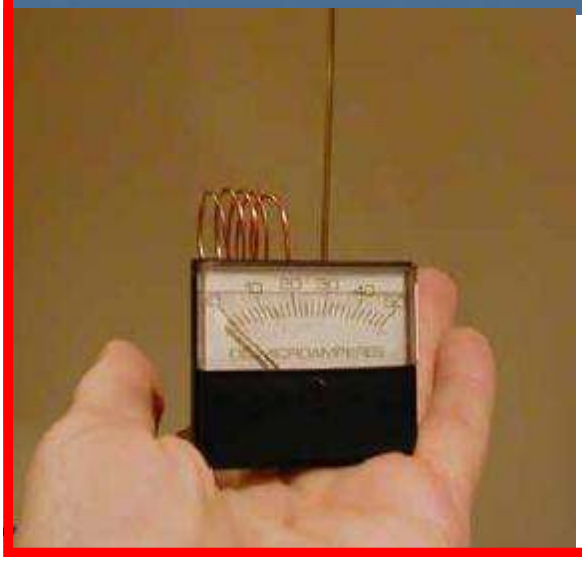
**RSGB VHF NATIONAL FIELD DAY JULY 2009**

**M3DSF - FRED**
**G3PHO - PETER**
**OPERATING**
**G2AS/P**


# SIMPLE HOME MADE TEST GEAR

## RF "sniffer" or Field Strength Meter



## DIY PROJECT

Never mind doing the housework, get a project built instead. Here is a simple RF Sniffer built with a small hand, half full of cheap components scrounged from the Junk box.

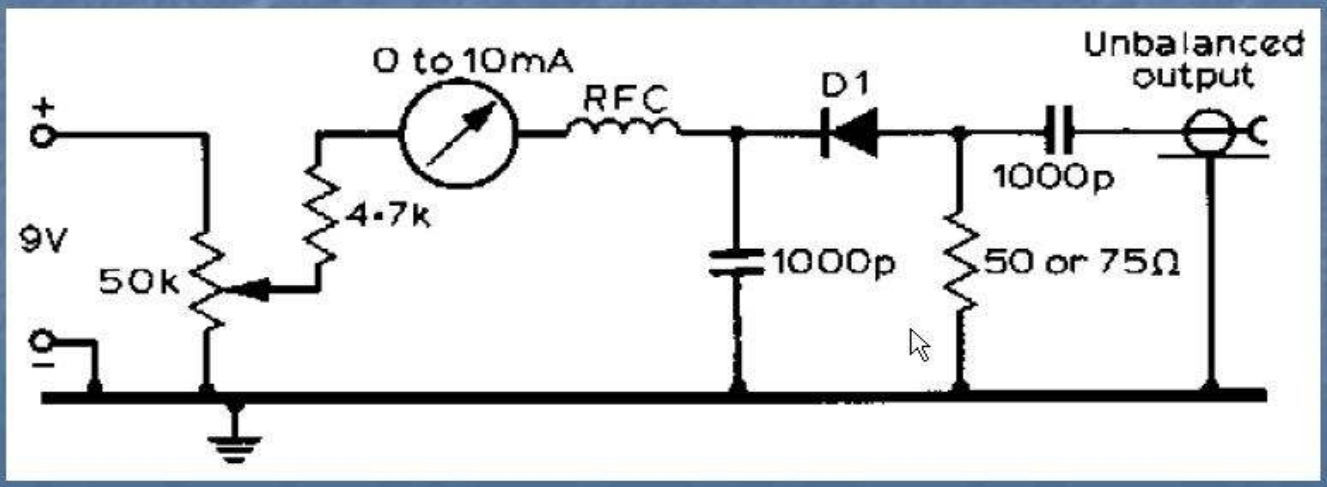
It also doubles as a Field Strength Meter as well.

When it works you can build it into a box and make it look as if it is a Professional item of Test Gear.

**You don't do it if you don't try.**

# Noise source..

## useful for aligning receiver front ends and preamplifiers




# NOW HEAR THIS


We the **Border Radio Club** are now on line.
Your Chairman and Vice Chairman have created a Web Page just for you on the internet.
To get there just type in ( on your Internet explorer Address line on the top left hand corner)
the following address:

**http://www.zs2brc.co.za/**

and that will get you straight to the BRC's web page.

As the page grows so will the amount of information available.

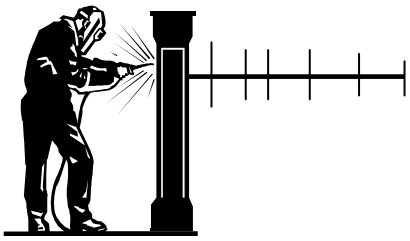
**New contact addresses are also now available,**

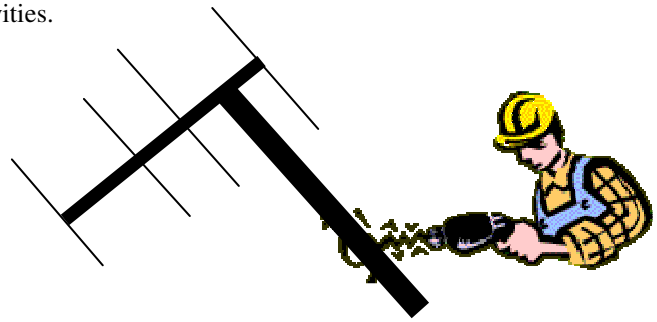
**The club can be contacted via e-mail at:**
**info@zs2brc.co.za or news@zs2brc.co.za**
**or feedbacknews@zs2brc.co.za**

Your copy of future FEEDBACK magazines are downloadable from this site.

**Www.zs2brc.co.za**

At our last AGM you the members voted in the new committee and the following posts have been filled;
**Chairman** - Anthony ZS2BC. **Vice-chairman** - Ivan ZS2ILN. **Secretary** - Clarence ZS2CDC. **Treasurer** - Phil ZS2NP.
It is a small but adequate team to direct operations, but your help and assistance will be needed from time to time, thus enabling us to take part in field events and other outdoor activities.



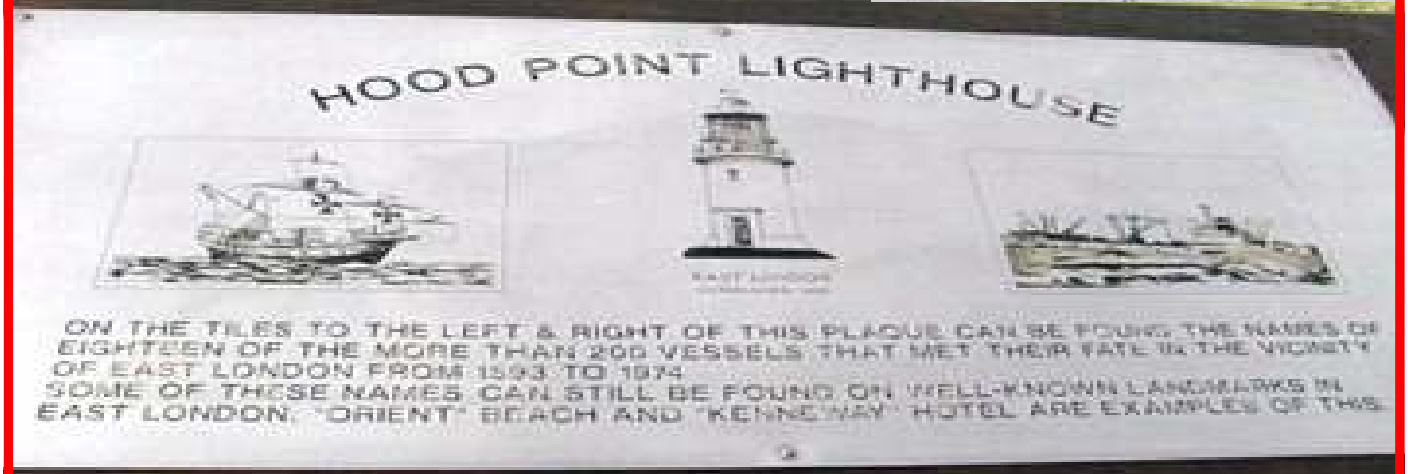


# ROOM WITH A VIEW AT HOOD POINT LIGHTHOUSE


WE GOT PLENTY OF STANDBY POWER

I DARE YOU TO POUR IT ON MY RIG

# WHAT WOULD AN OUTING BE WITHOUT A BRAAI


# BRC OCTOBER BIRTHDAYS & ANNIVERSARIES

| | | | | |
|---|---|---|---|---|
| 2 | ZS2BQ | Anthony | Forteath | |
| 4 | | Renee' | Middleton | Guy |
| 7 | ZS2NB | Nick | Basson | |
| 10 | | Anita | Lotter | Len |
| 17 | ZS2AHL | Henry | Lemke | |
| 20 | ZS2CBW | Bruce | Whiting | |
| 23 | | Pat | Lemke | Henry |
| 23 | ZS2AI | Neil | Holmes | |
| 26 | ZS2REG | Reg | Koekemoer | |

| | | | |
|---|---|---|---|
| 8 | ZS2CBW | Bruce & Marion | Whiting |
| 23 | | Derek & Lynnette | Stewart |

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**The Border Radio Club holds monthly General Meetings every third Tuesday of the month at The Gatehouse, Eskom's Sunilaws Office Park, Quenera Drive, Beacon Bay at 19:30 for 19:45.**
**The club can be contacted via e-mail at:**
**info@zs2brc.co.za or news@zs2brc.co.za or feedbacknews@zs2brc.co.za**
**Visit our Border Radio Club Website at: http://www.zs2brc.co.za/ (Do not use search engine)**

Listen **to our Sunday bulletin at 07:45 on 145. 650 Mhz. FM Local, and relays on 145. 675 Mhz. FM, 3.575 Mhz. FM, 7. 074 Mhz LSB, and 3.615 Mhz LSB.**