

ANODE



Bi-MONTHLY NEWS LETTER OF THE WEST RAND AMATEUR RADIO CLUB

NOVEMBER / DECEMBER 1996.

Editorial Comment.

Well, it's been a while in coming and it's taken a while to get off the ground within the portfolio structures of the new committee, but finally I have got to sit down in front of a keyboard and put some thoughts to paper.

First things first, I feel it my duty to say thankyou to Cedar Ryan on behalf of all the old West Rand Branch members, and the new West Rand Amateur Radio Club members, for his ongoing production of Anode over the last few years. It was Cedar's decision to withdraw from this portfolio at the first committee meeting after the AGM, that has now landed me the part for the time being.

My intentions with Anode are simple and very down to earth to begin with. I do not envisage a fancy colourful document at all. It will not have many pictures, in fact in general, there won't be any at all. It will not necessary be very big either. And, within the financial restraints we now have of establishing a new Amateur Radio Club independent of the SARL, it will hopefully not cost an arm and a leg to print and process.

What I hope it will be is on time, informative, and not too much of a bore to read!

The format and layout has changed from the past, this mainly because I do not have the facilities or the time to create a fancy complicated layout that will be read a few times and then discarded anyway. It is my hope however that a simple but informative document sent regularly will be as constructive.

Finally, as can be seen from the letterhead, Anode will now be a bi-monthly news letter for a start and progress from there. The progression in news letter size and regularity will be entirely dependant on the amount of copy I receive from fellow Committee and Club members. Although the news letter is a link between Committee and Club member, it must also be used as a alternative communications medium between Club members themselves.

Enough from me for this time, hope you enjoy it and look forward to hearing some feedback from members on the layout and content. I'll also be waiting for you submissions.

Eric

Calendar of upcoming events.

- 16th November 1996 - A family day out to the Swartskop Air Force Base has been arranged to coincide with a static air display scheduled for that day. The arrangements were made by Chris (ZR6AVA). Please contact him for any further details.
- 28th November 1996 - Committee meeting, 19h30 at the Clubhouse.

Past Happenings.

HF Field Day Weekend.

For this year's SARL HF Field Day which took place on the weekend of the 7th and 8th of September the West Rand Amateur Radio Club was well represented by a large team of members that worked very hard planning and participating in the event. The venue chosen for this year was the Four Wheel Drive Club property near Hennops in the Hartbeestpoort Dam area. Prior to the event, a few reconnaissance trips were made to the location and all the logistics planned.

On the weekend in question the teams arrived and were so efficient at setting up camp and the station that for the first time in many a year so it is told, the operating station was ready one and a half hours before the scheduled start time of 14h00 SAST. This allowed the operators and service crew to have a planned lunch, so professionally prepared by Wally and John, and return to the ops tent in time for the start of activities. Roy dived straight in on CW using the experimental antenna which had been put up for him. This was a full size 420 meter loop antenna supported on nine meter masts at the corners. Suffice is to say that it work so well that it is no longer deemed to be experimental and will no doubt be used again. Other mere mortals who operated on phone were relegated to the use of a small manually rotated beam.

With sufficient operators to make up shifts, the teams worked right through the night changing every three hours. The exception was OM Roy. He operated right through on his own until just after 06h00 on Sunday when he declared that it was now time to go home and sleep.....and quite rightly so to.

On Sunday morning, those that had got some sleep woke up ready to continue and the station hummed along until about 13h45 when everything was shut down and the big pack up started. At the end of it a weekend of great weather, bush campfires, and dusty amateur radio equipment was enjoyed by all who attended.

As yet the results of our efforts are not yet know, but look out for them in the next Anode.

Technical matters.

This months Technical item is an automatic battery charger circuit that was found by Wally Sime and is printed here courtesy of ETI magazine (ETI, April 1980).

Automatic Battery Charger

WITH ACKNOWLEDGEMENTS TO ETI, APRIL 1980

A 12-volt battery charger project that automatically switches to a 'trickle charge' mode when the battery reaches full charge. The circuit can be built as a stand-alone project or can be used to update an existing charger.

Conventional car battery chargers are simple and inexpensive devices which continuously charge the battery at a rate of a few amps for the duration of the switch-on period. The owner has to occasionally check the state of the battery with a hydrometer and switch the charger off when the battery reaches the 'fully charged' state. If the owner does not switch the charger off, the battery will overcharge and its electrolytic solution may eventually be lost through evaporation or the cell plates may buckle and destroy the battery.

Our ETI charger overcomes the deficiencies outlined above. It incorporates an electronic charge-state sensing and feedback control network which causes the battery to charge at maximum rate until full charge is attained, at which point the charger automatically switches to 'trickle charge' mode, which maintains the battery in the fully charged state indefinitely. A red LED illuminates when the battery is fully charged.

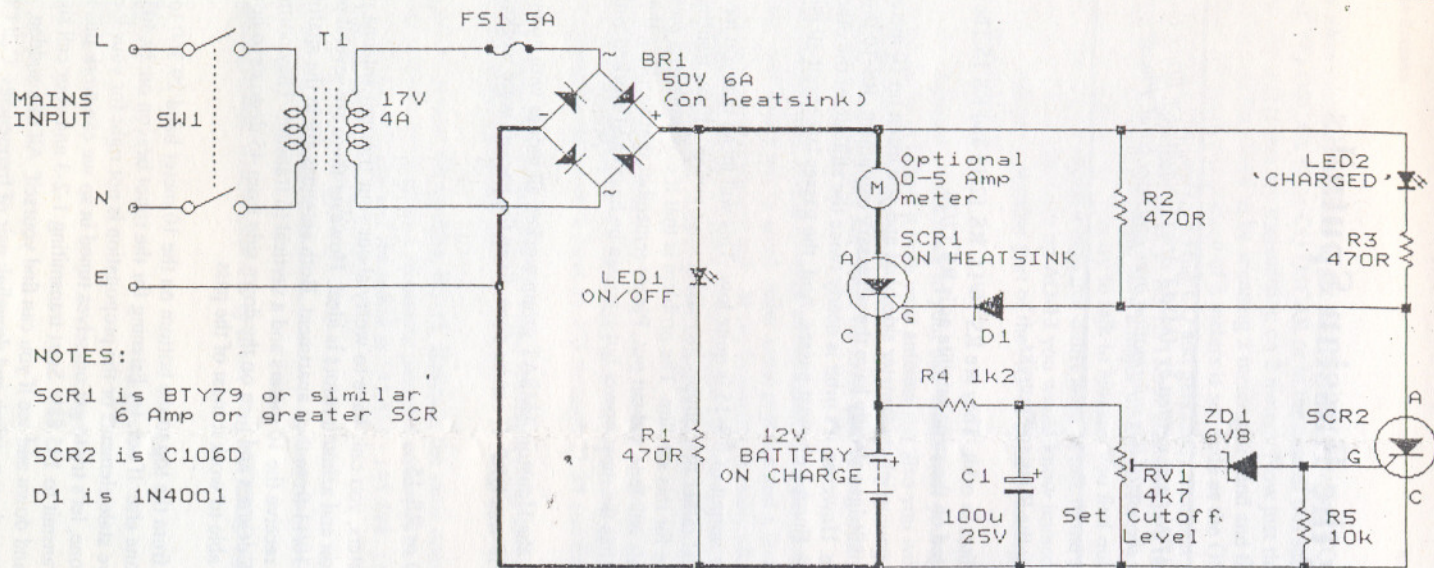
Our charger is designed to charge 12 volt batteries only. The unit can either be built as a self-contained 'stand-alone' unit, complete with transformer and case, etc. or alternatively the electronics can simply be added to an existing charger unit to update a conventional design. We have included the circuit of a typical 'conventional' charger for comparison

purposes.

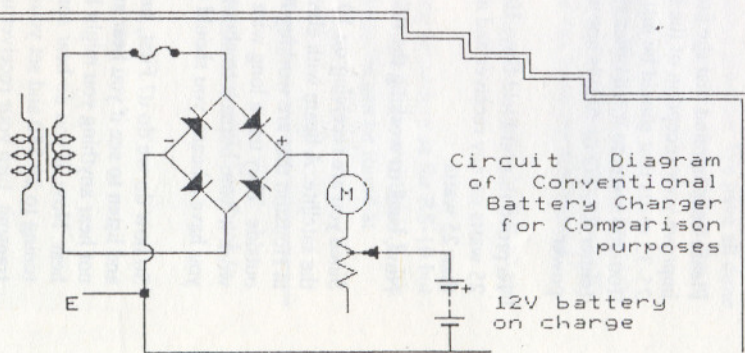
Construction and Use

Construction of the unit should present few problems. If you decide to build the complete 'stand-alone' project, assemble the PCB components as indicated on page 10, the transformer, on-off switch, fuse and rectifier bridge being mounted on the metal case of the charger. Note that the two LEDs and meter are also mounted off-board on the front panel of the charger. If you choose not to fit the optional meter, merely short out the two connections marked M1 with heavy wire.

If you decide to merely upgrade an existing battery charger, which already consists of a transformer and other items, you do not need to duplicate these in your project.



CIRCUIT DIAGRAM
of ETI AUTOMATIC
BATTERY CHARGER



Simply take the outputs of your existing charger rectifier directly to the appropriate '+' and '-' points on the PCB. Whichever version of the unit you use, be sure to use a reasonably heavy gauge of wire for the main interconnections.

Testing the Unit

When construction is complete, turn RV1 slider fully to the 'ground' position and give the unit a functional check as follows:

- 1 Check that, with no battery connected, both LEDs illuminate.
- 2 Connect a car battery into place on the charger. Check that LED No.2 turns off and that a charge current (typically 2 to 4 amps) flows to the battery.
- 3 Rotate RV1 and check that LED No.2 can be turned on and the charge current cut off via the pot.
- 4 Return RV1 slider to the 'ground' position and charge the battery up using the normal 'hydrometer' technique. When the battery reaches full charge, carefully adjust RV1 so that LED No.2 just starts to turn on and the charge current falls to a 'trickle' level of a few hundred milliamps.

If RV1 is correctly set, you'll find that on subsequent charges LED 2 will first start to flicker as the 'fully charge' level is attained. The LED will

subsequently turn on at reduced brightness or will alternatively cut on and off as the 'fully charged' state is maintained. RV1 should require no further adjustment throughout the life of the charger.

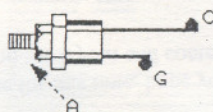
PARTS LIST

for Add-On Unit:

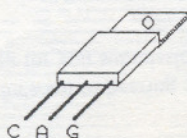
R1,2,3	470R
R4	1k2
R5	10k
RV1	4k7 preset
C1	100 μ F 25V electrolytic
SCR1	BTY79
SCR2	C106D
D1	1N4001
ZD1	6V8 400 mW
LED1,2	TIL220
BR1	200V @ 6A

Additional for Complete Unit:

Transformer 17V @ 4A
 Fuse 5A
 Switch dPdT Toggle
 Metal case H 95, W 125,
 D220mm



BTY79 connections
(SCR1)



C106D connections
(SCR2)



Working the Russian Sputniks

This script from the Houston AMSAT Net was written by AMSAT Area Coordinator Bruce Paige, KK5DO. Authorization is given for the use of this information over any ham band. Please give credit for the script where credit is due.

Now, on to tonight's topic. Working the Russian Sputniks.

There are currently 3 Russian satellites in orbit. They are RS 10/11, RS 12/13 and RS 15. The RS 10/11 is really two packages mounted on the same satellite as is RS 12/13.

The nice thing about RS-10 is that you uplink on 2 meter side band and you listen on 10 meters. That means that most Tech's with HF privileges already have the necessary equipment. RS-10 is in Mode A. RS-15 is also a Mode A satellite. However, its orbit is nearly twice the altitude of the other RS satellites making it possible to work Europe on most passes. And, the passes last about 30 minutes instead of 10-15 minutes.

Please keep in mind that the power output of RS-15 is quite low. This will mean that you have to improve your reception of the signal rather than simply increasing your power. If you transmit around 25-35 watts that should be just fine for this satellite. The problem is that if everyone gets on and sends 100-200 watts to it, all other signals will fade and cut out. Please remember that working the satellites (either RS, FO or AO) is not who has the most power but who can be heard and worked with minimal power.

To prove this, at Field Day, 1995, the Houston AMSAT group worked all modes with no more than 25 watts on any receiver and all HF was QRP. It can be done. Even the pacsats were worked with less than 25 watts.

Now, back to working the RS-10 or RS-15.

Since you are receiving on 10 meters, you only have to worry about your transmit antenna pointing at the satellite. A beam with elevation and azimuth rotors is ideal. However there are several people here in Houston that are working RS 10/11 from their apartment. Both antennas are in the apartment, not outside. They use a long wire to receive the 10 meters and a vertical to transmit. They normally can work it from horizon to about 45 degrees and then on the down side from 45 degrees to horizon. If you have a beam, you should be able to work it most of the pass.

So how do we do it? First, tune from the top to the bottom on the 10 meter band 29.360 to 29.400 and listen to see if you hear anyone else. If not, try listening for the robot beacon on 29.403. If you do not hear anything you might have stale elements or the propagation is not right for your location to hear. Now, if you do hear someone, let's try to get ourselves tuned in so we can work this station. Try tuning to 29.380 and set your transmit to 145.880. Start transmitting 1-2-3 and your call sign. As you transmit, turn your receiver up and down and see if you can find yourself. All of a sudden, you will hear your voice. You have just found your uplink and downlink pair of frequencies. Call CQ a few times.

It is best when working satellites to get into the habit of calling CQ and stating what satellite. You should call CQ OSCAR 13 or CQ OSCAR or in the case of this satellite, CQ RS10, CQ RS10. The reason for this is that you are transmitting on 2 meters. Now just think what would happen if some unsuspecting sole happened to be scanning 2 meter side band and finds you calling CQ and you are 20 over to him. Although this portion of 2 meters is set aside as the OSCAR subband he may not know it. He now starts trying to return your CQ and gets really mad that you are ignoring him. The other reason is that 145.88 is the uplink to RS 10/11 but guess what, it happens to also be the downlink to AO-13 and AO-10. Now we might have a major problem. Here you are listening on AO-13 and along comes someone calling CQ. You try to talk to him and you find out that this guy just won't talk to you. Well, I have never found a ham that didn't want to talk to me so I'd be pretty mad. If he were calling CQ RS-10 and you were on AO-13 you would know immediately that he cannot hear you and you will have to move to another part of the AO-13 band because his power will make it impossible for you to hear anything.

Now, let's say, someone comes back to your call. Great start your qso. But as you talk, the satellite is moving so you have to follow it with your antenna and also you will have to adjust your transmit frequency so that you stay with your uplink. You also have to tweak because the person you are talking with might be lazy and not tweak his radio and he will shift up or down on you.

This is truly the fun part, trying to work all the knobs, turn the antenna, log the qso all while you are talking. Now you know you're good. After some practice and a few qso's down the road, it will be very easy for you to tune up and talk. At the beginning, it really takes some practice. We have all done it and you might say it's like riding a bicycle. Once you learn, you never forget. You may forget the frequencies and have to look them up but all the principles will be there.

The other Russian sputnik is RS-12. This one transmits on 29.41 through 29.45 and receives on 21.21 through 21.25 (note, this is in the Advanced and Extra portion of 15 meters). It is known as mode K. Advanced operators can work it from 21.225 through 21.25 and Extras can work the entire band.

We did not mention RS-11 and RS-13. These are riding piggy back on the same satellite as RS-10 and RS-12 but are presently turned off.

Don't forget the newest RS satellite, RS-15. Basically the same operating procedure as for RS-10 but has a higher altitude which gives a 30 minute pass and covers parts of Europe when over the U.S. Its downlink is 29.354 - 29.394 and the uplink is 145.858 - 145.898. The beacons can be found at 29.3525 and 29.3987.

Updated 23 July 1995. Article courtesy of Bruce Paige, KK5DO (kk5do@amsat.org). Feedback to KB5MU.



Club contact information.

West Rand Amateur Radio Club
P.O. Box 562
Roodepoort
1725

Clubhouse Telephone number :
475-2368

Club meeting times.

- Monthly Meetings - 2nd Saturday of the month 14h00 until dark. Bring the family and socialise with your fellow amateurs. Braai fires will always be lit if the weather permits.
- Interest groups - QRP, construction, and satellite interest group meetings are held on the 1st Monday of the month at 19h30.
- Radio Exam Classes - Every Wednesday night.

Committee members contact numbers.

Wally Sime	ZS6WAL	Chairman	(h) 672-7958
Keith Liddle	ZS6AGF	V/Chairman	(h) 679-1156
Cedar Ryan	ZS6JQ	Treasurer	(h) 763-6929
Eric Lawrenson	ZR6ABP	Secretary / Anode	(h) 794-2188
Chris Botham	ZR6AVA		(h) 673-2726
Dave Cloete	ZR6AOC		(h) 679-3991
Steven	ZRRSJK		(h) 887-3820
Johan van Vuuren	ZS6JVV		(h) 955-2788

IMPORTANT NOTE

ANNUAL SUBSCRIPTIONS ARE NOW DUE.
IF YOU HAVE NOT YET PAID YOUR CLUB SUBSCRIPTIONS OF R50-00
WE WILL UNFORTUNATELY NOT BE ABLE TO CONTINUE TO
SEND ANODE TO YOU ON A REGULAR BASIS.

PLEASE CONTACT CEDAR ZS6JQ TO CONFIRM IF YOUR PAYMENT HAS BEEN
RECEIVED.

IN PARTICULAR, THOSE OF YOU WHO PAID BY CHEQUE PLEASE CONTACT
CEDAR TO CONFIRM THAT YOUR PAYMENT WAS IN FACT RECEIVED
AS WE SUSPECT THAT A NUMBER WERE NOT RECEIVED INTO
THE POST BOX

MANY THANKS