



MIDLANDS AMATEUR RADIO CLUB

RUMINATIONS



AFFILIATED TO
THE SARL & IN
ASSOCIATION
WITH THE
NATAL
CARBINEERS

CLUB COMMITTEE: 2008-2009

CHAIRMAN

Robin Seal (ZS5MRS)
Telephone: (033) 343-1942

VICE-CHAIRMAN & NET CONTRLLER

Mickey Esterhuysen (ZS5QB)
Telephone: (033) 386-4808

SECRETARY / TREASURER

Mike Boast (ZS5BGV)
Telephone: (033) 342-1241

REPEATERS & DIGITAL

Shaun Rudling (ZR5S)
Telephone: (033) 342-1609

WEBMASTER, PR & HHN EDITOR

Mike Lauterbach (ZS5ML)
Telephone: (082) 372 0997

CLUBHOUSE

Peter duPlessis (ZS5PJ)
Telephone: (033) 239 4426

CLUB DEVELOPMENT

Errol Wilson (ZS5 EGW)
Telephone: (031) 765 1489

CLUB EVENTS

Rob Billing (ZU5 ROB)
Telephone: 083 656 2676

Another month has come and is rapidly going. Your Committee met on Saturday 18th April, followed by a general meeting, with an attendance of three members – excluding the eight Committee stalwarts. See my comments about these fine fellows below.

Discussions were wide-ranging and interesting. I included a new item on the general meeting agenda which I called “Committee Report” (for that’s what it was): a brief summary of the Committee’s discussions and decisions – this was and is part and parcel of my wish to keep everyone informed of what is going on in our Club.

We took note that the Annual General Meeting was drawing nigh: in fact it will take place on Saturday the 18th of July at 11.00 hrs. I asked your Committee to disseminate this as widely as possible. The AGM is of great importance to us all, not only to review the Club’s performance over the year 2008/2009, but to make decisions about our future, AND, to elect a new Chairman and Committee. I would ask you all to make every effort to attend.

The Club Future Working Party (C.F.W.P.) has started its work, and will be sending out (or have already sent out) an important questionnaire to all Club members.

I have already referred to our Committee as comprising “stalwarts”. What is a stalwart? Well, it is defined in the Oxford Dictionary as “**strongly built, courageous, resolute, determined, and loyal.** (amongst other things!). My choice of this word to describe the members of our Committee is totally apposite. I have been blessed by a quite outstanding group of people to help me with my task as Chairman.

Thanks guys.

Best 73 to you all.....de Robin (ZS5MRS)

The M.A.R.C. Infrastructure

Voice Repeaters (FM)

VHF

Worlds View	145.750 MHz (Tx)	145.150 MHz (Rx)	Emcom SA256 25W
Windy Hill	145.700 MHz (Tx)	145.100 MHz (Rx)	Emcom SA256 25W
Estcourt	145.675 MHz (Tx)	145.075 MHz (Rx)	SCR200 15W
Greytown	145.775 MHz (Tx)	145.175 MHz (Rx)	Storno
Swartberg	145.725 MHz (Tx)	145.125 MHz (Rx)	
Underberg	145.7875MHz (Tx)	145.1875MHz(Rx)	YaesuFTC1525a20W

UHF

Mt Gilboa	439.225 MHz (Tx)	431.625 MHz (Rx)	General Electric MII
-----------	------------------	------------------	----------------------

Packet Digipeater

Mt Gilboa	144.800 MHz (Tx & Rx)	Kantronics KPC3 + V9.10 Alinco DJ -135 50W Diamond X-200 Omni 6db
-----------	-----------------------	---

The PBBS (mailbox) is on ZS0PMB-1. The digi is on ZS0PMB-2. The KA-node is on ZS0PMB-7. Use Winpack on 144.800MHz to connect to the PBBS and leave a message for someone. The packet digi also acts as the aprs digi (ZS0PMB) and will respond to WIDEn-n or TRACEn-n.

APRS

The national APRS frequency is 144.800 MHz (Tx & Rx). The I-Gate is at ZR5S (Polly Shortts). Fixed stations should beacon at approximately 30min intervals with a path of WIDE5-5. Mobile stations should beacon at approximately 1min intervals with a path of WIDE5-5.

ECHO-LINK "voip"

Our node number is 244279 Call Sign ZS5PMB. This Echo-link facility is available on the Midlands linked Repeater network.

E-QSO "voip"

We are in the "101ENGLISH" virtual room, on the "repeater.dns2go.com" server. This is linked to RF at Polly Shortts on 433.400 MHz simplex.

BEACONS

Hilton	50.321 MHz (Tx)	ZS5SIX FSK
--------	-----------------	------------

WEB SITE

MARC'S very own website	www.marc.org.za
SARL's website	www.sarl.org.za

Editor's Waffle

It is encouraging that there is more activity on the air again, and great to hear new voices, as well as some which have been absent for a while. Robin's presentation of old radios at the last meeting was well received, and a perfect conclusion to this meeting.

I have a request for all of you - please could you send an article about yourself, in which you can enlighten us what attracted you to Amateur Radio initially, some of your highlights and achievements etc. These accounts are part of our history and are most interesting. Alex, thanks for your article - it will be the first one in this series.

You will notice that there is a questionnaire sent with this newsletter. Please complete it and send it back, either by email or snail mail. These will be treated as confidential. They are important to determine what you, as club member (past, present or future) would like from the club. If you have any further comments, please add these as well.

On a different matter, I tagged along with Shaun, ZR5S, on Sunday, 19 April, to Greytown, where we replaced the antennas and repeater at the Sentec tower. Shaun did the strenuous work of climbing the tower and replacing the antennas, while I changed connectors for the repeater etc in the radio room. We got there just after lunch time, and managed to get the repeater on air just as the sun was setting.

Unfortunately the UHF link was not transmitting any audio. The repeater and UHF radio link were opened and Shaun chased the audio cables, but the link refused to work, even after a few phone calls with Craig, ZR5CID. We decided to leave the repeater there so that it could be used by the Hams who are going to attend the "Mighty Men Conference" in Greytown the following weekend.) this coming weekend.

We left very disappointed at 19h30 in heavy mist. Shaun then spoke to a few OM in Pmb while we travelled back. About 30 minutes later, Craig phoned him saying that the link radio is suddenly working again! At the same time, conditions improved, and Craig managed to make it into our repeater network from Underberg, and had quite a few overs with Shaun and company!

The repeater coverage is also better than expected with the new antennas - signals easily reach the high lying areas of Pmb, and will probably reach many areas of the KZN coast and Durban

All's well which ends well. A big thank you to Shaun and Craig for sorting the repeater. I'm sure that it will stand us in good stead in the future! Ed.

Ham Radio

by Alex Hansen, ZS5AH

My Ham radio interest started in Amanzimtoti, when I was a young man. I met a man of exceptional genius, named Rex, who taught me so much. Through him and a local Ham, I acquired an Edistone receiver from a widow, for 20 Pounds. Unfortunately some coils were damaged and I was forced into a DIY situation. I managed to acquire the damaged parts from the agents in the UK and Wallah it all worked, and the bug had bitten. I moved to Durban, Bluff, where I met Louis de Bruin, and Johan Van Niekerk, who became my mentors. Lessons at the Natal Technical college with Om Louis led to a ZR (1977) and a morse code test. Three attempts and finally I passed (nearly leapt out of the first story window !!). Although I never was any master at CW, I had great

fun and I managed the 200 contacts. After a contact with a US man, who was injured in the war, who sent CW by blowing down a tube, my efforts seemed meager in comparison, and another ,who's qsl- card told me I was his 18000th. contact !!. The next ordeal, the Technical Examination -- and I passed , wow, cool, now I was real Amateur Radio operator !!. (1984). ZS5AH, the coverted call-sign ex from my late Boss.



My next move was to New Germany. , exciting, I had to have an antenna up in a tree, so out with a catapult and a large 7/8th inch whitworth nut, aimed at the tree, I let go. Well the cord became trapped in the grass and the projectile came flying back and I and the bystanders had to duck for our lives !!!.

I joined the Pinetown Branch and had great fun. I did comms in Motor Rallies, Marathons, River Rafting, even a Military Tattoo. Ham Radio had opened a whole new life for me.

My next move to Pietermaritzburg and a whole bunch of new friends, one in

particular, Norman Leonard, who through his and his trusty Ellias, helped install a TH3 Antenna on a large rotating tower., no small achievement, even to acquiring permission to build the necessary concrete base for this massive structure from Petronet who run a pipeline servitude in my necessary area of installation.

Now , modern technology has moved on and for me the necessary changes. My Polio disability has in recent years curtailed my participation in Branch affairs and I have not been able to contribute as much as I would have liked. Fortunately Echo-Link will hopefully keep me in contact with the many friends that I have made in the many 22 years of living in Pietremaritzburg.

Thank you for the enjoyment that Amateur Radio has brought me in my stay here.



ZS5AH's packet contact with NASA

Alex, ZS5AH

BATTERIES - a compilation from various sources

As many shacks are starting to use batteries as their primary source of power, a basic knowledge of the operation of a battery is required to successfully maintain the apparatus in good working order.

There are many types of batteries, but let's have a look at the most commonly used ones:

Cranking batteries are made, mechanically and chemically, to discharge 5-10% of their capacity and then recharge. Discharge them deeper and you will buy batteries more often.

High cycle batteries are made for UPS/standby use where they sit on a ups charger for most of their life and get called to action every now and again, except for these days. However they are also made for cyclic applications (discharge/recharge cycles) where the discharge required is about 25%, 30% max, i.e. do not go below 70% state of charge (SOC). Deltec make 2 high cycle batteries: 1250 has the threaded studs, 1251 has the standard terminals, these have the red and blue stickers.

Deep cycle batteries are made for cyclic applications where up to 50% of the capacity can be used. These are the standard for 4x4 use, solar applications, and for home/office ups use if you intend using your ups longer than in the old days, or if you are going to buy fewer batteries. These have the black stickers with Voyage on them and are available with threaded studs 64.105, standard terminals 54.105, and twin terminals M27. If you repeatedly discharge your batteries lower than recommended, they will not last as long, no matter which type of battery you are using. The rule is that the shallower you discharge a battery, the more cycles you get out of it.

Here are some figures for a well known deep cycle 105Ah battery :

discharge to 90% = 800 cycles

discharge to 60% = 350 cycles

discharge to 20% = 50 cycles

Battery charging rates should not exceed a tenth of the amp hour (AH) rating of a battery for too long a period, ie 10.5A for a 105AH battery.

Makes you think, so always buy the right battery for the application, always buy the right number of batteries especially for all the people jumping on the ups bandwagon for home or office use, and always make sure you discharge to the right level and recharge to 100% with a suitably powerful charger.

Before we carry on, let's have a look at a basic battery and how it works:

The definition of a battery may be said to be "A collection of cells wherein chemical energy may be converted into electrical energy, and vice-versa. Batteries are usually of the lead-acid type which are made up of a number of cells consisting of two sets of lead plates, separated by wooden or porous plastic separators, and filled with a dilute Sulphuric acid solution called the electrolyte.

One set of plates are the positive plates, made of lead peroxide, and are a chocolate brown colour when the battery is fully charged. The other set are the negative plates, made of pure lead, which should be a slate or purple-grey colour when fully charged.

When discharged, both the positive and negative plates form lead sulphate. This is caused by the chemical reaction during discharge when Sulphur and Oxygen are transferred from the electrolyte to the plates, thus reducing the Specific Gravity, or density, of the electrolyte. Plates in a discharged condition are easily recognised by this formation of lead sulphate, which appears as a white deposit on the plates.

Upon recharging, providing the battery has not been left for too long in a discharged condition, the Sulphur is transferred back to the electrolyte and Hydrogen is given off to the air, thus increasing the Specific Gravity. If the battery has been left in a discharged condition for too long, the lead sulphate crystallizes and becomes hard, causing the plates to buckle and possibly touch each other, resulting in a short circuit and making the battery unserviceable. In extreme cases, the casing may be damaged, allowing the electrolyte to leak out and corrode the battery box or locker.

A Hydrometer is used to measure the Specific Gravity (SG) of the electrolyte, which will vary between 1270-1280 for a fully charged battery and 1150-1200 for a discharged battery. It is advisable not to allow the SG to fall much below 1200 to prevent the formation of lead sulphate on the plates. Ideally, the SG should be maintained around 1250 by regular charging or by keeping the battery on float charge. Try and develop the habit of checking the SG weekly, it only takes a few minutes and can save you money, or your life!

The level of the electrolyte should be approximately 5 mm above the tops of the plates and should be maintained at this level by the addition of distilled water when necessary (NEVER ADD ACID!).

The voltage of a single cell is normally 2 volts on load, i.e. when the radio apparatus is switched on and drawing power, and therefore the voltage of a complete six-cell battery is 12 volts.

Many of us are using sealed batteries, which operate under slight pressure, and very little electrolyte is lost.

Cranking batteries can achieve high cold cranking amps (CCA) by using numerous thin plates for maximum surface area. Some describe the setup as a "lead sponge", and these get easily damaged by deep cycling.

Deep Cycle batteries are not designed for huge current draws, but rather for high discharges. As a result they comprise of thick lead plates, which can buckle and short out when exposed to high current draws.

There are many more battery designs, such as the sealed gel batteries. Their characteristics with respect to charging/discharging voltages/currents, capacities and longevity, are all different.

Charging voltages and times for these different batteries also vary. Normal cranking and high cycle batteries can be charged with voltages between 13.8 and 14.1V. To fully charge most deep cycle batteries, voltages of up to 14.8V are needed. Deep cycle batteries also take a lot longer to charge than high cycle batteries.

Even though the different batteries have different characteristics, the following table can be used as a rough guide to the battery state of charge at 20 degrees C:

100 %	12.6V
90 %	12.5V
80 %	12.4V
70 %	12.3V
60 %	12.2V
50 %	12.1V
40 %	11.95V
30 %	11.78V
20 %	11.58V
10 %	11.2V
0 %	10.5V

For deep cycle batteries, you should ideally not drop below 50%, roughly 12V. If you do, you are compromising your battery life.

Generally, charging rates should not exceed a tenth of the amp hour (AH) rating of a battery for too long a period, ie 10.5A for a 105AH battery, and the float voltage should be about 13.6V to 13.8V.

Chargers are a topic for themselves, but here is a brief summary:

There are many chargers out there which use many charging phases to fully charge batteries. The most common chargers use three phases - the first two are for fast charging:

Phase one is the constant current phase, during which the maximum allowable current is fed to the battery. This is achieved by varying the voltage, ie a lower initial voltage, matched to the maximum current. This voltage is then gradually increased as the battery internal resistance increases.

This phase changes to the next when the maximum voltage is achieved (normally 14.6V to 14.8V) In this second phase, the maximum voltage is maintained, and the current then naturally drops as the internal battery resistance increases. When this current drops to a preset current, the charger changes to the third "float" stage, and typically maintains a constant 13.8V. The charger can be permanently connected to the battery at this voltage.

There are a few more "intelligent" chargers, like the Ctek chargers. They have a few more charging phases, some of which apply cyclic voltages, which condition and desulphur the batteries, and these generally prolong the battery life.

There is a general misperception that general car alternators are semi intelligent, and vary their voltages according to the battery condition. Only a few do this, and are generally only found in modern expensive cars.

The general alternator, like the basic Bosch or Lucas, found in most cars, simply have a voltage regulator, which does exactly what the name implies - it regulates the voltage to a constant voltage, irrespective of the electrical load drawn or battery condition. The voltage however is affected by load drawn, especially when nearing the capacity of the alternator, when the voltage starts to drop. Temperature also plays a role. The Bosch regulator generally does not like heat, and when hot, the voltage can drop significantly. Often these alternators are found in close proximity of the exhaust manifold. Heat shields are often used as a result to protect the regulators, but these tend to corrode and fatigue, and break off as a result.

The charging current with alternators is thus only determined by 2 factors: the voltage of the alternator, which is theoretically constant, and the battery's internal resistance, which increases with its state of charge.

Looking at the SOC table of the battery, it becomes clear how "minute" voltage drops can have dramatic effects on battery charging - 0.1V roughly represents 10% SOC of the battery. Bad cable and lug connections can result in more than 0.3V drop, and with these you will never fully charge your batteries - in fact, you will probably reduce the life of your battery. This underlines the importance of good connections.

This article is only a guide, and many factors have not been taken into consideration. There are other types of batteries, like the Yellow Top Gel batteries. They are very expensive, but they can be discharged to very low levels without damage, and can be recharged at very high currents. Their main charging limiting factor is the battery temperature.

Happy charging.....

CANNON BALLS (Sent in by Errol, ZS5EGW)

It was necessary to keep a good supply of cannon balls near the cannon on old war ships. But how to prevent them from rolling about the deck was the problem. The best storage method devised was to stack them as a square based pyramid, with one ball on top, resting on four, resting on nine, which rested on sixteen.

Thus, a supply of 30 cannon balls could be stacked in a small area right next to the cannon.. There was only one problem - how to prevent the bottom layer from sliding/rolling from under the others. The solution was a metal plate with 16 round indentations, called, for reasons unknown, a Monkey. But if this plate were made of iron, the iron balls would quickly rust to it. The solution to the rusting problem was to make them of brass - hence, Brass Monkeys.

Few landlubbers realize that brass contracts much more and much faster than iron when chilled. Consequently, when the temperature dropped too far, the brass indentations would shrink so much that the iron cannon balls would come right off the monkey.

Thus, it was quite literally, cold enough to freeze the balls off a brass monkey. And all this time, you thought that was just a vulgar expression, didn't you?

Ham Bulletin Readers

26 Apr - Errol Wilson, ZS5EGW

03 May - Mike Boast, ZS5BGV

10 May - Robin Seal, ZS5MRS

17 May - Mickey Esterhuysen, ZS5QB

24 May - Mike Lauterbach, ZS5ML

31 May - Peter du Plessis, ZS5PJ

Some upcoming events

24-26 April	SARL National Convention, Cape Town
25 April	Open Day of the Antique Wireless Association
9 May	RTA at the NARC
15 May	Closing date for SARDT award nominations
16 May	MARC Club Meeting, 11h00
24 May	Comrade Marathon. It is a down run this year, and we are looking for radio operators to assist with comms. Please contact us if you are able to assist.

~~~~~  
Please visit our club website at [www.marc.org.za](http://www.marc.org.za). All comments and input will be appreciated.