SHACKNEWS

HIGHVELD AMATEUR RADIO CLUB

PO Box 1111, Bedfordview, 2008 **AUGUST 2005**
Website www.qsl.net/zs6hvb/ **e-mail** zs6bfl@telkomsa.net
www.qsl.net/zs6ssc/

COMMITTEE

Office		Call sign	Telephone number
Chairman:	Errol De Lange	ZS6KED	011-672-4702
Secretary / Treasurer:	Berridge Emmett	ZS6BFL	011-893-1291
Repeater/Packet Radio/Technical	Ton Van Dijk	ZS6ANA	011-942-3657
Shacknews Editor:	Berridge Emmett	ZS6BFL	011-893-1291
Shacknews-Print & Posting:	Harry Lautenbach	ZS6LT	011-888-5362
Website Manager	Yvonne Van Dijk	ZR6TBL	011-942-3657
QSL Manager:	Reg Hartslief	ZS6ALH	011-902-1432

Sunday morning BULLETINS - 145.7875 MHz &  **Hz @ ±08h45.**

COMMUNICATION IS THE NAME OF THE GAME

Meeting. A discussion about propagation took place with lots of input from those present. Also a fairly animated discussion about the "Procedures for Class A1 (ZS) Licence Assessments" took place. The question – Who is assessing what? needs to be answered. I could not find any reference about assessors on the SARL website. There is a document (.pdf) which gives the various assessments available on the website. The next meeting in September is the AGM.

SSC meeting The meeting held on Saturday 13th August was held at the QTH of ZS6REX. This one took the form of a "flea market" where the contents of the shack of the late Johnny Bekker, ZS6RG was displayed. Avery large portion of the equipment is of valve vintage and did not attract many interested hams. The turn out was excellent and thanks to Rex and Ingrid for the use of their property.

Pics from the event

The next meeting of SSC will be held at the QTH of Errol & Betty. Diarise 10 – 9 – 2005
The address is :- 5 Barendine str. Florida park. From Ontdekker turn left into Golf Club Terrace at the fire station, right at Deslin Ave. 3rd right is Barendina. **Map at the end.**
If you get lost 011-672-4702 or 082-967-5335 will get Errol.

Charging nickel-based batteries

The reliability and longevity of a battery hinges, to a large extent, on the quality of the charger. Battery chargers are often given low priority, especially for consumer products. In this paper we address the charger as the quintessential provider and guardian of the battery. We look at various charge methods that will increase the performance of nickel-based batteries. Charging lithium and lead-based batteries are described on separate papers.

A battery should always remain cool during charging because high temperatures shorten battery life. Some temperature rise with nickel-based batteries cannot be avoided. The time during which the battery temperature remains elevated should be as short as possible. The temperature rise occurs in the second half of the charge cycle. The battery should cool to room temperature when on trickle charge. If the temperature remains above room temperature after a few hours in ready mode, the charger is performing incorrectly. In such as case, remove the battery when ready. The caution applies especially to nickel-metal-hydride because this chemistry cannot absorb overcharge well.

Nickel-based chargers are grouped into three categories:

Slow Charger - Also known as 'overnight charger', the slow charger applies a fixed charge of about 0.1C* (one-tenth of the rated capacity) for as long as the battery is connected. Charge time is 14-16 hours. Slow chargers are found in cord-less phones, portable CD players and other consumer goods.

Quick Charger - Also knows as rapid charger, this charger serves the middle range, both in terms of charging time and price. Charging time is 3-6 hours. The charger switches the battery to trickle charge when ready. Quick-chargers are used for cell phones, laptops and camcorders.

Fast Charger - Designed for nickel-based battery, the fast charger fills a pack in about one hour. Fast charging is preferred because of reduced crystalline formation (memory). Accurate full-charge detection is important. When full, the charger switches to topping and then trickle charge. Fast chargers are used for industrial devices such as two-way radios, medical devices and power tools.

New nickel-based batteries should be trickle-charged for 24 hours prior to use. Trickle charge brings all cells to equal charge level because each cell self-discharges at a different rate. Trickle charge also redistributes the electrolyte to remedy dry spots on the separator brought on by gravitation of the electrolyte during long storage.

* The C-rate is a unit by which charge and discharge currents are scaled. A charge current of 1000mAh, or 1C, will charge a 1000mAh battery in slightly more than one hour. A 1C discharge lasts one hour.

Some battery manufacturers do not fully form the cells before shipment. Full performance is reached after the battery has been primed through several charge/discharge cycles, either with a battery analyser or through normal use. In some cases, 50-100 discharge/charge cycles are needed to obtain full performance. Properly formed cells perform to specification after 5-7 cycles.

Most rechargeable cells are equipped with a safety vent to release excess pressure if over-charged. The safety vent on a nickel-based cell opens between 10-13 Bar (150-200 psi). (The pressure of a car tire is about 2.3 Bar or 35 psi.) With a resealable vent, no damage occurs after venting. Some electrolyte is lost and the seal may leak afterwards. A white powder accumulating at the vent opening indicates venting activities.

Charging nickel-cadmium

The overall charge efficiency of nickel-cadmium is about 90% if fast charged at 1C. On a 0.1C overnight charge, the efficiency drops to 70% and the charge time is 14 hours or longer.

In the initial 70% of charge, the charge acceptance of a healthy nickel-cadmium battery is close to 100%. The battery remains cool because all energy is absorbed. Currents of several times the C-rating can be applied without heat build-up. Ultra-fast chargers use this phenomenon to charge a battery to the 70% level within minutes. Past 70%, the battery gradually loses the ability to accept charge. The pressure and temperature increase. Figure 1 illustrates the relationship of cell voltage, pressure and temperature while nickel-cadmium is being charged.

Ultra-high capacity nickel-cadmium batteries tend to heat up more than the standard version on fast-charge. This is partly due to increased internal cell resistance. To moderate the temperature buildup and achieve short charge times, advanced chargers apply a high current at the beginning and then lower the amount to harmonize with the charge acceptance.

Interspersing discharge pulses between charge pulses improves the charge acceptance of nickel-based batteries. Commonly referred to as burp or reverse load charging, this method promotes high surface area on the electrodes to improve the recombination of gases generated during charge. The results are better performance, reduced memory and longer service life.

Full-charge detection is based on a combination of voltage drop at full charge (negative delta V), rate-of-temperature-increase (dT/dt), absolute temperature and timeout timers. The charger utilizes whatever comes first to terminate the fast-charge.

After the initial fast charge, some fast-chargers apply a timed topping charged. In an attempt to gain a few extra capacity points, some chargers apply a measured amount of overcharge. The capacity gain is about 6%. The negative is shorter cycle life. The recommended trickle charge for nickel-cadmium is between 0.05C and 0.1C. Because of memory concerns and compatibility with nickel-metal-hydride, the trickle charge is set as low as possible.

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This is a real life exam answer of a South African grade 5 (Std 3) primary school pupil's 2nd term exam.

Write an essay on the following: "What is a crocodile?" Use block letters and write legibly.

Name: Christiaan xxxxxx
Date: Maandag 22/05/2004

Answer:
The crokodile is a specially built so long because the flatter the better swimmer.
At the front of the crokodile is the head. The head exists almost only of teeth. Behind the crokodile the tail grows. Between the head and the tail is the crokodile. A crokodile without a tail is called a rotweiler.
A crokodiles body is covered with handbag material. He can throw his tail off if he gets a fright but it doesn't happen much because a crokodile is scared of nothing.

A crokodile stays under the water because if you were so ugly, you would also stay under the water. It is good that a crokodile stays under the water because a person gets such a big fright if a crocodile catches you that he first has to rinse you off before he can eat you.
A crokodile isn't hardly as dangerous as people say he is, except if he catches you. The longer he bites you, the more it hurts. Very old crokodiles only suck people and buck that they catch dead.

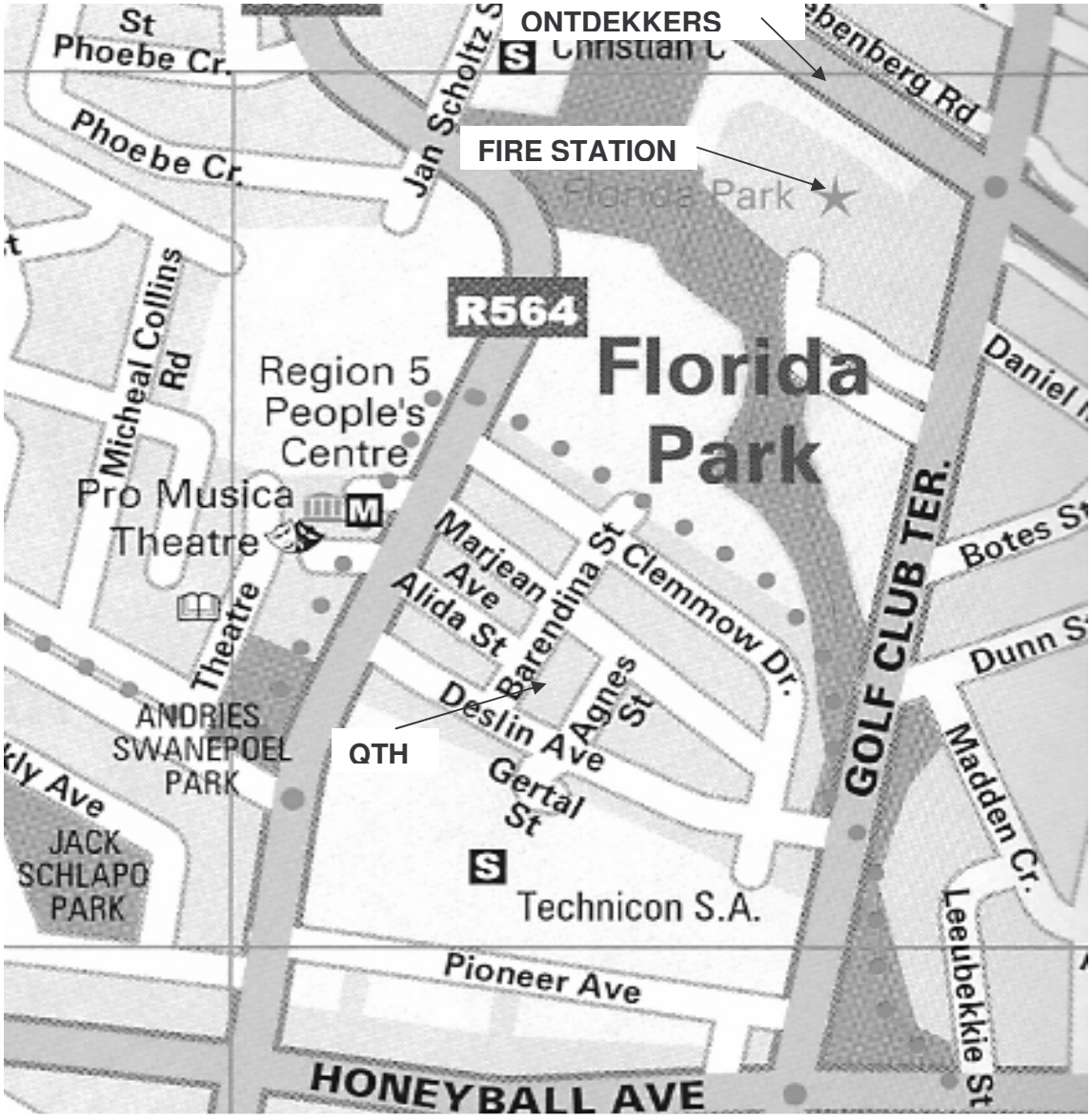
If you eat him, he is a crokosatie. A crokodile did not learn to swim with his arms so he uses his tail. The

little brother of a crocodile is a lizard. The slow sister of the crokodile is a chamelon. The gay brother of the crokodile is a dafodil. And the crokodil also has a dead brother the frikadel.

AGM NOTICE

The **Annual General Meeting** of the Highveld Amateur Radio Club will be held at the Germiston Methodist Church office, Lady Duncan St Germiston on **Saturday, 3 September 2005 at 14:30**

Nominations for the committee must be in writing and must be received by the secretary not less than **one week** before the AGM



73 Berridge

HIGHVELD AMATEUR RADIO CLUB

Balance Sheet at 30 June 2005

	2005	2004
FUNDS EMPLOYED	R	R
Balance Brought forward	2986	2254
Excess of Income over Expenditure	(144)	732
	2842	2986
EMPLOYMENT OF FUNDS		
Cash in hand	265	
Cash at Bank	2872	2986
Total funds	3137	2986

Income and Expenditure Statement for the 12 Months ended 30 June 2005

		2005	2004
INCOME		R	R
Membership Fees		1157	1753
Interest received-Current account		0	0
Total Income		1157	1753
EXPENDITURE			
Affiliation SARL		295	285
Bank Charges		554	361
Licence ZS6HVB		27	0
Repeater Licence ZU9HVB		45	0
Post Box		220	215
AGM 2003		0	0
Social Events		0	0
Donation	Note 1	160	160
Total Expenditure		1301	1021
Excess of Income over Expenditure		(144)	732
		1157	1753

Note 1 Donation made to Germiston Methodist Church for the use of their premises

Chairman _____ Treasurer _____ ########