



WATTS 06-2017 Year 87 + 06m

Monthly Newsletter of the Pretoria Amateur Radio Club
Maandelikse Nuusbrieff van die Pretoria Amateur Radio Klub

✉ PARC, PO Box 73696, Lynnwood Ridge 0040, RSA
<http://www.parc.org.za> zs6pta@zs6pta.org.za



Bulletins : 145.725 MHz on Sundays / Sondag at 08:45
 Relays: 1.840, 3.700, 7.066, 10.135, 14.235, 51.400, 438.825, 1297 MHz
 Activated frequencies are announced prior to bulletins
Swoptshop : 2m and 7.066 MHz live on-air after bulletins
 Bulletin repeats on Mondays / herhalings op Maandae : 2m 19:45



PARC Members Hans van de Groenendaal ZS6AKV, Graham Reid ZS6GJR (PARC Chairman), Vincent Harrison ZS6BTY, Etienne Naude ZS6EFN, Fritz Sutherland ZS6SF, Tjerk Lammers ZS6P, Johan du Bruyn ZS6JHB (PARC Vice Chairman) and Louis de Wet ZS6SK attending the SARL Annual General Meeting on the 6th of May 2017. More on page..

Next PARC Flea Market dates for 2017 / Volgende PARK Vlooiemark datums vir 2017

29 July / 29 Julie ; 28 October / 28 Oktober

For more information please listen to the Sunday Bulletins or contact Alméro Du Pisani ZS6LDP at 083-938-8955 or almero.dupisani@up.ac.za

In This Issue / In Hierdie Uitgawe

Verjaarsdae ; Joys and Sorrows ; Bulletins.....	P 2
PARC Committee ; Competitions & Diary of Events.....	P 3
Motor Rallies and Cross Country Calendar.....	P 3
PARC Pensioners Tea.....	P 4
Solid State Relays.....	P 5-6
SARL AGM.....	P 7
AMSAT SA Symposium.....	P 8
Irene Myburgh ZS6IEA / Tydren Nuus.....	P 9
RAE October 2017: Syllabus and Venue for Classes.....	P 10
Corrosion prevention of galvanized metal structures.....	P 11-12
Technical and other news.....	P 13

Club Meetings / Klub

Club Social Meeting :

**Saturday the 3rd of June from 14h00
at SAM**

Committee Meeting :

**Wednesday the 14th of June 2017
from 19h00 at SAM**

Birthdays / Verjaarsdae - June / Junie

22 Richard Peer ZS6UK
27 Emil Bohme ZS6EGB

26 Pieter Stronkhorst ZR6PSR

Spouse's Birthdays / Gade Verjaardae - June / Junie

01 Fiona, gade van Etienne Naude ZS6EFN
12 Louisa, gade van Jaco Cronje ZR6CMG

Anniversaries / Herdenkings - June / Junie

24 Marita and Roy Alexander ZS6MI

Lief en Leed / Joys and Sorrows

Menno Havelaar ZS6AGC het 'n toon amputasie en 'n opvolg operasie ondergaan. Ons hoor dit gaan baie goed met hom, en wens hom 'n spoedige, volkome herstel.
Cristopher Coetzee ZU6CC is in die hospitaal vir behandeling. PARC wens hom alle voorspoed toe.
Pierre Holtzhausen ZS6PJH was in die bed met brongitis.

Birthdays / Verjaarsdae - July / Julie

06 Helen Newton ZR6HN
13 Pieter Human ZS6PA
17 Pine Pienaar ZS6OB
19 Theo Bresler ZS6TVB

20 Roy Newton ZS6XN
26 Frank Schneider ZS6GE
29 Lian McAllister ZS5IE

Spouse's Birthdays / Gade Verjaarsdae - July / Julie

01 Avida, gade van Theo Bresler ZS6TVB
12 Sharmaine, gade van Louis de Wet ZS6SK
17 Lyn, gade van Andre van Tonder ZS6BRC (Erelid)
17 Judy, sw of David Botha ZS6O
22 Ria, sw of Pete Smith-Curren ZS6PJ

Anniversaries / Herdenkings - July / Julie

06 Elsa en Fritz Sutherland ZS6SF

PARC Bulletins / PARK Bulletins

PARC Bulletins are presented on Sunday mornings at approximately 08h45, after the SARL Bulletins in English and Afrikaans, from 08h15. The Bulletin Presenters for the following two months are presented below. Please do contact the applicable presenter beforehand if you wish to make a contribution to the Bulletin. PARC Bulletins are broadcast on the 2 meter repeater on 145.725 MHz, and 70 cm on 438.025 MHz. Relays are done on 7.060 MHz by Hans Kappetijn ZS6KR and on Echolink by Johan Lehman ZS6JPL.

PARK Bulletins word op Sondag oggende aangebied om 08h45, na die SARL Bulletins in Engels en Afrikaans, vanaf 08h15. The Bulletin aanbieders vir die volgende twee maande word onder aangedui. Kontak gerus die toepaslike Bulletin leser indien u 'n bydrae tot die Bulletin wil maak. PARK Bulletins word uitgesaai op die 2 meter Herhaler op 145.725 MHz, en 70cm op 438.205 MHz. Herleidings word gedoen op 7.060 MHz deur Hans Kappetijn ZS6KR, en op Echolink deur Johan Lehman ZS6JPL.

PARC Bulletin Presenters : June - July 2017

Date	Presenter	Date	Presenter
04 June 2017	Tjerk Lammers ZS6P	09 July 2017	Tjerk Lammers ZS6P
11 June 2017	Johan du Bruyn ZS6JHB	16 July 2017	Johan du Bruyn ZS6JHB
18 June 2017	Louis de Wet ZS6SK	23 July 2017	Louis de Wet ZS6SK
25 June 2017	Almero du Pisani ZS6LDP	30 July 2017	Almero du Pisani ZS6LDP
02 July 2017	Etienne Naude ZS6EFN	06 August 2017	Etienne Naude ZS6EFN

Please do contact Etienne Naude ZS6EFN or Jean de Villiers ZS6ARA for more information or any Bulletin arrangements

PARC SUBS : PARK LEDEGELD : FROM / VANAF : 30-06-2017

Bank	First National Bank	Ordinary Members / Gewone Lede : R160 Spouses / Pensioners : R60	Your call sign must appear as statement text!
Branch Code	25 20 45		
Account No	546 000 426 73		
Please remit your subs in time to our Treasurer, or pay per transfer into the PARC account Betaal asb. u ledegelde betyds aan ons Tesourier, of betaal per oorplasing in die PARC rekening			

Please Note : If your Club fees are not paid up to date, birthday details cannot be displayed in Watts

PARC Committee Members / Komiteelede : 2016 - 2017

<u>Elected Members</u>	<u>Name</u>	<u>Callsign</u>	<u>Email Adress</u>	<u>Tel No</u>	<u>Mobile No</u>
Chairman, Web co-ordination	Graham Reid	ZS6GJR	greid@wol.co.za	012-667-2720	083-701-0511
Vice Chairman, Repeater & Rallies	Johan de Bruyn	ZS6JHB	zs6jhb@gmail.com	012-803-9418	079-333-4107
Bulletins, RAE & Liason	Etienne Naude	ZS6EFN	etienne@afrigrid.com	012-661-6745	082-553-0542
Treasurer	Andre van Tonder	ZS6BRC	andrehtvtonder@absamail.co.za	012-361-3292	079-869-0753
Clubhouse Manager	Pieter Fourie	ZS6CN	pieterzs6cn@gmail.com	012-804-7417	082-573-7048
Social	Whitey Joubert	ZS6JJJ	zs6jjj@gmail.com	012-993-2267	072-120-4516
Secretary, Watts & RAE	Louis de Wet	ZS6SK	louis.zs6sk@gmail.com	012-349-1044	072-140-9893
<u>Co-Opted Members</u>	<u>Name</u>	<u>Callsign</u>	<u>Email Adress</u>	<u>Tel No</u>	<u>Mobile No</u>
Fleamarkets	Alméro Dupisani	ZS6LDP	almero.dupisani@up.ac.za	012-420-3779	083-938-8955
Auditor	Tony Crowder	ZS6CRO	tcrowder@telkomsa.net	011-672-3311	
Historian, Archives, Awards	Tjerk Lammers	ZS6P	zs6p@iafrica.com	012-809-0006	083-976-4387
Contests	Jaco Cronje	ZR6CMG	jacocronje@yahoo.com		081-474-2220
Contests	Pierre Holtzhausen	ZS6PJH	zs6pjh@telkomsa.net	012-655-0726	082-575-5799

Contests and Diary of Events - June 2017 / Kompetisies en Dagboek van Gebeure - Junie 2017 (UTC Times)

03 - 04	10-10 International Open Season PSK Contest : 00h00 - 24h00
03 - 04	IARU Region 1 Field Day, CW : 15h00 - 14h59
03 - 04	RSGB National Field Day : 15h00 - 15h00
11	Hammies Sprint
14	RSGB 80m Club Championship, CW : 19h00 - 20h30
17	World QRP Day
17 - 18	All Asian DX Contest, CW : 00h00 - 24h00
17 - 18	Ukrainian DX Classic RTTY Contest : 12h00 - 11h59
22	RSGB 80m Club Championship, SSB : 19h00 - 20h30
22 - 26	SARL Top Band QSO Party
24 - 25	His Majesty King of Spain Contest, SSB : 12h00 - 12h00
28	ARRL Field Day : 18h00 - 21h00

Contests and Diary of Events - July 2017 / Kompetisies en Dagboek van Gebeure - Julie 2017 (UTC Times)

01	RAC Canada Day Contest : 00h00 - 23h59
01	Venezuelan Independence Day Contest : 00h00 - 23h59
01	SARL Newbie Sprint
02	ZS5 Sprint
01 - 02	Marconi Memorial HF Contest : 14h00 - 14h00
01 - 02	DARC 10-Meter Digital Contest : 11h00 - 17h00
03	RSGB 80m Club Championship, CW : 19h00 - 20h30
08 - 09	IARU HF World Championship : 12h00 - 12h00
12	RSGB 80m Club Championship, SSB : 19h00 - 20h30
14 - 16	Ham Radio 2017, Friedrichshafen, Germany
15 - 16	CQ Worldwide VHF Contest : 18h00 - 21h00
22	Winter QRP Contest
23	ZS2 Sprint
27	RSGB 80m Club Championship, Data : 19h00 - 20h30
29 - 30	RSGB Islands on the Air (IOTA) Contest : 12h00 - 12h00

Rally News 2017 : Tydren Nuus 2017

2017 Rally Calendar / 2017 Tydren Kalender

*Round	Date	Province	Location
5	18/19 August	Gauteng	Bronkhorstspuit
7	21 October	Free State	Welkom

**Other rounds 4 and 6 are in Port Elizabeth and Caledon*

2017 Cross Country Championship Calendar

Round	Date	Location
3	23,24 & 25 June	Jwaneng Botswana
4	28/29 July	TBC
5	15/16 September	Sun City
6	27/28 October	TBC

Indien u sou belangstel om met radio ondersteuning betrokke te raak, kontak gerus vir Johan de Bruyn ZS6JHB by 079-333-4107 of zs6jhb@gmail.com

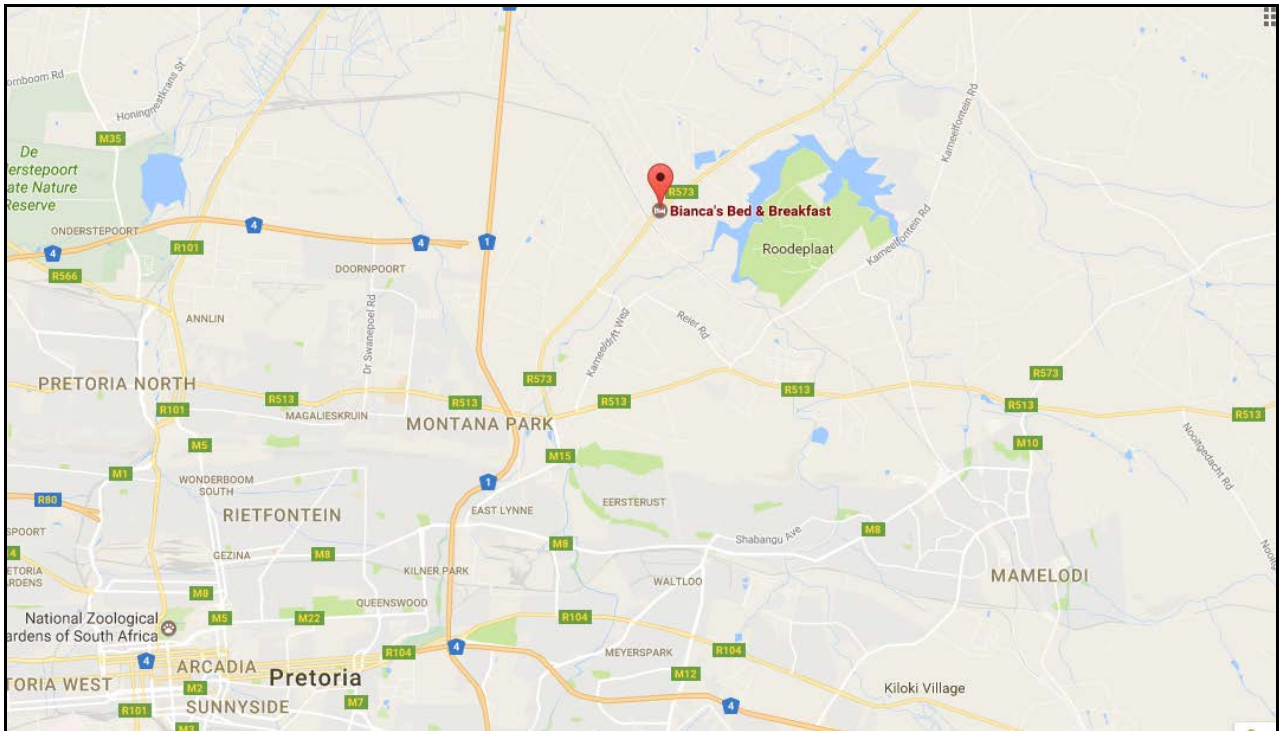
PARC Pensioner's Tea ; PARK Pensionaris Tee

Net 'n vriendelike herinnering aan die PARK Vetereane koek en tee geleentheid. U en u gade word hiermee vriendelik uitgenooi na die jaarlikse Pretoria Amateur Radio Klub se Vetereane koek en tee geleentheid op Saterdag 10 Junie 2017. Hierdie geleentheid is 'n blyk van waardering vir u bydrae tot die sukses van PARK en ook tot die amateur radio stokperdjie. Die President van die SARL, Nic ZS6QL, sal ons ook teenwoordig wees vir die oggend se doen en late.

Tyd: 9:30 vir 10:00
Plek: Bianca's Bed and Breakfast gastehuis
199, Ringduif Crescent
Kameeldrift East,
Pretoria.

Drag kode: Semi-formeel
GPS Koördinate: S 25° 38' 10" E 28° 19' 13"
RSVP: 2 Junie 2017

Neem asseblief kennis dat hierdie geleentheid niks kos vir lede nie. Verskeidenheid versnaperings, koffie, tee en ander drink goed sal beskikbaar wees vir u om te geniet. Ons sien uit om u daar te sien en hoop dat u die oggend saam met ons sal geniet. Baie dankie aan die gene wat reeds van hulle laat weet het. Ons wag om van die ander lede te hoor en sien uit na die geleentheid.



Just a friendly reminder that you and your spouse are hereby invited to attend the annual Pretoria Amateur Radio Club's veteran Tea Party on Saturday 10 June 2017. This event is a show of appreciation for your contribution to the success of PARC as well as the amateur radio hobby as a whole. The President of the SARL, Nico ZS6QL, will also be joining us for the mornings festivities.

Time: 9:30 vir 10:00
Place: Bianca's Bed and Breakfast Guest House
199, Ringduif Crescent
Kameeldrift East,
Pretoria.
Dress code: Semi-formal
GPS Coordinates: S 25° 38' 10" E 28° 19' 13"
RSVP: 2 June 2017

Please note that this is a sponsored event and will cost you nothing at all. There will be a variety of snacks, tea, coffee and other refreshments to enjoy. We are looking forward to host you and to spend the morning with you. Thanks you for those who already informed us of your attendance, we are however still waiting for more replies.

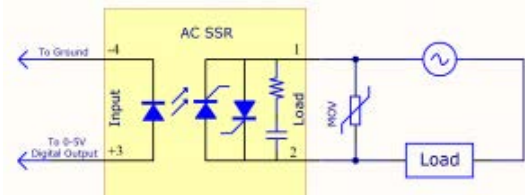
AC SSR Protection: A MOV (Metal Oxide Varistor) should be installed across the load (larger) terminals of your SSR. MOVs are the classic surge protector - an inexpensive component that absorbs high voltage spikes. High voltage spikes are caused by inductive loads when they are turned off, and also happen very often on the electrical grid, as nearby devices are operated. Even if your load is resistive, use an MOV to protect the SSR. To balance SSR protection against MOV lifetime, it is wise to use SSRs built for 480 VAC in 240 VAC applications.



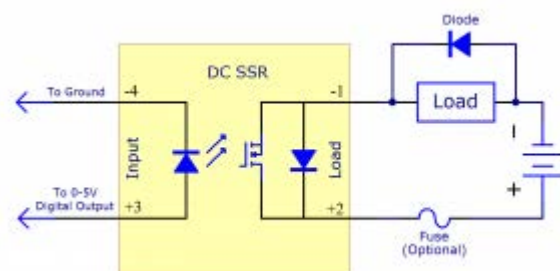
As MOVs wear out from use, they will become more sensitive to common voltage spikes, causing them to wear out quicker. When they entirely fail, they will become a short circuit, potentially creating a fire hazard. Some have a fuse built in which will disable the MOV when it becomes a hazard. To be on the safe side, avoid mounting your SSR near any flammable material.

Proportional Control SSR: Proportional Control Relays are SSRs you can use to control the amount of power to the load. Rather than reduce the voltage, or somehow limit the current - which would be very expensive solutions, the Proportional SSR reduces power by turning the load on/off quickly with a process called Pulse Width Modulation (PWM).

Example circuits with SSR: Schematic of an AC SSR switching a generic load. A metal oxide varistor is added across the load to protect the SSR.



DC SSRs: Common engineering practice would be to purchase an SSR rated for 50-100% higher voltage than the voltage you plan to be switching. For instance, if you are switching 24V, a 50V SSR is reasonable.



Choosing your DC SSR: Now that you have identified your Operating Voltage, Average and Surge Current, you can create a short list of relays in the same way as for AC relays as in Part I.

At this point, you know the SSR you need and a heatsink if necessary.

DC SSR Protection:

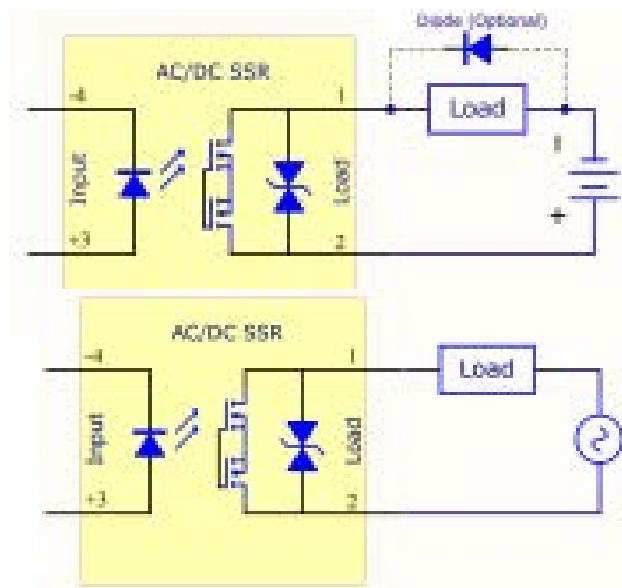
A diode should be installed across your load, with the Cathode installed towards the positive terminal of the power supply (as shown in the diagram). You can place the fuse in between the positive terminal of the power supply and the positive terminal of the load side of the SSR.

The diode protects the SSR from powerful residual currents after the SSR is turned off. While your load is being driven, inductance builds up magnetic fields around the wiring. Every load is inductive to some degree, and when the SSR turns off, the magnetic fields will ram current against the now open SSR, easily damaging it. The diode allows these currents to recirculate in the load until they have lost their energy.

The electrical isolation built into a DC SSR allows them to be placed within a circuit just like a switch. Since it is isolated, you don't have to worry about grounding or voltage offsets.

With a DC SSR, always make sure the positive load terminal (labeled +) is facing towards the positive terminal of the power supply. If the load terminals are reversed, your load will immediately turn on. There is a diode inside of the SSR that allows current to flow freely through it when the SSR is connected incorrectly. This feature is included because this sort of wiring mistake would destroy the transistor in the DC SSR otherwise.

AC/DC SSRs: Have additional back-back MOSFETS built in.



Example circuits with AC/DC SSRs

A versatile AC/DC SSR switching a DC load.

The load terminals are bidirectional, so it doesn't matter which way you hook them up. The optional diode can be added to help protect the SSR when switching DC loads.

A versatile AC/DC SSR switching an AC load.

The electrical isolation built into a AC/DC SSR allows them to be placed within a circuit just like a switch. Circuits without electrical isolation require a lot more care - proper grounding, careful consideration of

voltage offsets.

Did you know?

- Mains Voltage **AC SSRs** cannot switch DC. They will never turn the load off. AC SSRs turn off twice per AC Cycle, when the current changes direction and is momentarily zero. For AC 50 Hz, the AC SSR has 100 opportunities per second to turn off (the SSR will only **stay** off if the control signal is low). If the SSR is operating from DC, the current will flow continuously, and the load will not turn off, even when the control input is off.
- An **AC SSR** turns off automatically every time the load current reaches zero. It will turn back on almost immediately as long as the signal controlling the SSR is high. An AC SSR will actually have a low, non-zero current value that it regards as 'zero'. This specification is usually called "Minimum Load Current" in the data sheet. If your load requires less than this minimum current, your SSR will never turn on, or will not reliably turn on. The simplest solution to this problem is to connect another load in parallel with the first, increasing the Current required by the load.
- SSR Manufacturers have started adding a simple circuit inside **AC SSRs**, across the load terminals, called a snubber. (see the RC circuit in the example) The snubber absorbs very fast electrical changes that could normally cause an **AC SSR** to turn on accidentally. When the AC SSR is turned on, there is little voltage difference between the terminals, so the snubber has very little effect. When the AC SSR is turned off, the snubber is actively protecting the SSR - but at a cost, as it allows a small current through the SSR, which is wasted.

AC SSR's using bi-polar transistors are still superior for handling high voltages but have higher "on" resistance than MOSFET's and thus more heat dissipation.

Radio Amateur Examination : May 2017

The following candidates, who have done their HF assessments at PARC, have passed the RAE. We wish them hearty congratulations, and welcome them to the wonderful world of amateur radio!

Nelmarie Wilson ZS6NMW
Anna Feis ZS6ALF

Ross Wilson ZS6RW
Edward Leonard ZS6NEM

Fintan Wilson ZS6FIN
Gabriel Oosthuise ZS6OC

South African Radio League : Annual General Meeting 2017

The South African Radio league Annual general Meeting for 2017 was held on the 6th of May and hosted by the West Rand Amateur Radio Branch. The Proceedings was opened by the President of SARL, Nico van Rensburg ZS6QL, where-after the program was filled with important issues such as the new future vision of the SARL, as well as finances and budgeting for the nest financial year. Pretoria Amateur Radio Club was well represented by Club and Committee Members (see front page) and we thank each of them sincerely for their interest and involvement.



Tjerk Lammers ZS6P was the Host during the Awards Dinner



Fritz Sutherland Receiving the Willie Wilson Badge



Vincent Harrison ZS6BTY receiving a certificate of appreciation and a gold pen for his dedication and involvement in monitoring the Forum



The guest speaker was Mark Comminos who presented an excellent slideshow on rocket propulsion, engine design, fuel composition etc. More in next month's Watts

Our sincere thanks to Nick Dreyer ZS6NCK for providing the above photographs to Watts



A number of vendors displayed their ware at the AGM. We hope to see them, and many more at the next AGM!

	<p>SARL AGM 2018</p> <p>It is a great pleasure to announce that PARC will host the 2018 AGM of the South African Radio League!</p>	
---	---	---

SA AMSAT Symposium : 27 May 2017



The AMSAT SA Space Symposium 2017 took place on the 27th of May at the Innovation Hub, Pretoria.

The proceedings were opened by the President of AMSAT SA, Hans van de Groenendaal ZS6AKV, which gave a most interesting presentation on "Amateur Radio - Innovation is not passing by". In his presentation, Hans spoke on various innovators who contributed to radio, including Edwin Armstrong, inventor of the FM mode, which will be discussed in the next edition of Watts. The event was very successful, which included a number of interesting presentations:

- **Reconfigurable Medium to High data rate S-Band TT&C Communications System for OE-SAT1.** By Kgabo Mathapo: Senior Engineer Denel Space TEQ
- **Es'hailSat-2: A Look at Amateur Radio's first geostationary satellite and the equipment you are going to need to work it.** By Hannes Coetzee ZS6BZP
- **Modulation techniques and applications to Information Transfer.** By Deon Coetzee ZR1DE
- **SDR on the Raspberry Pi as an entry level system.** By Anton Janovsky ZR6AIC (see below)
- **Introducing Nayif-1 as a vehicle for STEM development.** Johan Erasmus: *ISIS-RSA Branch Manager and Systems Engineer. (*ISIS : Innovative Solutions in Space).
- **Five years of BACAR:** Christo Kriek ZR6LJK and Cor Rademeyer ZS6CR
- **Chasing the Challenges of Radar Design and Test:** Fanie Coetzer: Field Sales Engineer, National Instruments South Africa



Hannes Coetzee ZS6BZP showing some of the boards and components needed to work Es'hailSat-2



Anton Janovsky giving a most interesting presentation on combining SDR with Raspberry Pi

The last session, chaired by Hannes Coetzee, ZS6BZP, covered various technical and design aspects of KletsKous:

- Linear Transponder:** Leon Lessing ZS6LMG
- Electronic Power Systems:** Fritz Sutherland Jnr ZS6FSJ
- Controlling KletsKous:** Brian McKenzie ZS6BNM
- Modular Space Frame design and construction:** Francois Oberholzer
- Stabilization and Solar Panels:** Frik Wolff ZS6FZ
- Documentation and Outreach:** Nico van Rensburg ZS6QL
- Financing, Sponsorships and Launch Opportunities:** Hans van de Groenendaal ZS6AKV

The AMSAT SA Space Symposium 2017 was closed and concluded with an attendance prize draw, which included Pi Top Laptops with Pi 3 boards, Raspberry starter kits and Raspberry Dummy Kits, donated by RS Components, as well as a MFJ-934 Artificial Ground Tuner and MFJ World Receiver Kit, donated by Sam's hamshack. Should you be interested in Amateur Radio Satellites or membership of AMSAT SA, please contact Hans van de Groenendaal.

Irene Myburgh ZS6IEA : SARL Bulletin Aanbieder



Pretoria Amateur Radio Klub wens graag hiermee vir Irene Myburgh ZSIEA geluk en sterkte toe met haar toekomstige betrokkenheid by die Suid Afrikaanse Radioliga se bulletins. Ons sal haar elke 3de sonndag kan hoor as sy die afrikaanse bulletin voorlees. Irene en haar gade, Pieter Myburgh ZS6PAM is baie aktief by PARK se motor tydren bedrywighede.

Motortydren nuus : Irene Myburgh ZS6IEA

BATTLEFIELDS 400 DUNDEE

Ons (Johan de Bruyn ZS6JHB, Graham Reid ZS6GJR, en sy gade Joey, Pieter Myburgh ZS6PAM en Irene Myburgh ZS6IEA, Willem Weideman ZS6JNB en Tony Crowder ZS6CRO) het die 11^{de} Mei 2017 na Dundee gery en terug gekom op die 13 Mei 2017, want dit was moedersdag die 14 Mei 2017 en almal wou by hulle moeders wees.

Dit was baie koud en nat gewees die hele naweek, maar dit was baie lekker gewees. Ons het almal gekamp en ons moet tog net almal 'n groot dankie gee vir ons gasheer en gasvrou Graham en Joey Reid. Hulle het gesorg dat die vure altyd brand vir 'n vleisie. Joey het altyd vir ons warm sjokolade, koffie, en iets sterkers bedien alles natuurlik na ure. Daar was ook sulke snaakse yster goed af gelaai by elke kamp staanplek, heelwat later het Pieter Myburgh ZS6PAM ontdek as jy hout insit kan dit as verwarmer werk. Daarna het almal om die goed saam gedrom net om 'n bietjie warmte te kry.

Daar was baie kosstalletjies met hamburgers, pannekoek, en baie ander eet en drinkgoed. Daar was definitief gekyk agter die drywers, toeskouers, en andere wat die rally by gewoon het.

Die rally self het goed af geloop, kennis gemaak met die publiek se giftige tonge maar ons radio amateurs weet mos wat reg is en ons ken die reëls. Daar was baie toeskouers by die rally gewees, wat 'n goeie teken is vir die sport. Die rally het verder goed verloop sonder enige probleme, maar ek kan dit net nie genoeg benadruk dat die baie koud en baie nat was. Maar nou ja dit is mos waaroor rallies gaan.

SECUNDA RALLY 19 MEI 2017 - 20 MEI 2017

Dit was (Johan de Bruyn ZS6JHB, Graham Reid ZS6GJR, Joey Reid, Pieter Myburgh ZS6PAM, Irene Myburgh ZS6IEA, Willie van Niekerk, Annelie van Niekerk, Willem Weideman ZS6JNB, Tony Crowder ZS6???)

Dit was n baie interessante rally gewees.

Ons het almal gearriver in Secunda en is dadelik na HQ vir ons vorms, "dog tags", en ander nodige dokumentasie. Daarna het die werk begin. Nadat almal klaar gewerk het, het ons soos altyd saam gesit om n lekker braaivleis vuur maar die keer was die Willie van Niekerk wat die braaiwerk gedoen het. Jy kon sien Graham Reid het darem geglimag want dit was sy aand af van die braaiery.

Die volgende dag het ons almal weer ons poste bekleë en deur die dag gewerk.



RAE October 2017 Syllabus and Lectures

Lectures for the October 2017 Radio Amateur Examination will be presented by PARC from the 1st of July 2017. The course presented by PARC is free of charge. For more information on the lectures, please do contact Etienne Naude ZS6EFN at etienne@afgrid.co.za.

Week	Date	Material	Tutor	Chapter	Tutor
1	01-Jul-17	RAE Information Session	E/LdW/VH	1	Overview of Amateur Radio
2	08-Jul-17	Chapter 1 - 4	E	2	Operating Procedures
3	15-Jul-17	Chapter 5 - 7	E	3	Basic Electrical Concepts
4	22-Jul-17	Chapter 8 - 10	E	4	Resistance and Ohm's Law
5	29-Jul-17	Chapter 11 - 13	LdW	5	The Resistor and Potentiometer
6	05-Aug-17	Chapter 14 - 16	LdW	6	Direct Current
7	12-Aug-17	Chapters 17 - 19	LdW	7	Power in DC Circuits
8	19-Aug-17	Break		8	Alternating Current
9	26-Aug-17	Chapters 20 - 22	LdW	9	Capacitance and the Capacitor
10	02-Sep-17	Chapter 23 - 25	LdW	10	Inductance and the Inductor
11	09-Sep-17	Chapters 26 - 27	VH	11	Tuned Circuits
12	16-Sep-17	Chapters 28 - 30	E	12	Decibel Notation
13	23-Sep-17	Chapters 31 - 33	E	13	Filters
14	07-Oct-17	HF Assessment	E/LdW/VH	14	The Transformer
	21-Oct-17	RAE		15	Semiconductors and the Diode
				16	The Power Supply
				17	Bipolar Junction Transistor
				18	The Transistor Amplifier
				19	The Oscillator
				20	Frequency Translator
				21	Modulation Methods
				22	The Transmitter
				23	Receiver Fundamentals
				24	The Super Heterodyne Receiver
				25	Transceivers and Transverters
				26	Antennas
				27	Propagation
				28	Electromagnetic Compatibility
				29	Measurements
				30	Digital Systems
				31	Digital Communication Modes
				32	Safety Considerations
				33	Before You Go

Lecture notes for the RAE can be obtained from the SARL website at <http://www.sarl.org.za/public/licences/rae.asp>. The various files which can be downloaded required for study for the RAE include the following:

The following documents are available. Click on the document title to download a copy.

Reference Date	Document Title	File Type	Size
2016-06-14	SARL Inleiding tot Amateurradio - Klas A Studiegids	PDF	980 kB
2016-05-06	ICASA Regulations - Effective for Oct 2016 examination and onwards	PDF	286 kB
2016-05-05	SARL RAE Class A Study Guide - 2016 Effective for Oct 2016 exam and onwards	PDF	4.6 MB
2016-05-05	HF Assessment Preparation Guide - Effective for Oct 2016 Exam and onwards	PDF	1.3 MB

Venue and times:

Lectures will be presented in the Board Room of Waterlab (Pty) Ltd from 9h00 - 12h00 each of the dates (Saturdays) listed above. The address of the venue is 23B de Havilland Crescent, Perseuor Park, Pretoria. Please do contact Louis de Wet ZS6SK at louis.zs6sk@gmail.com if you require more information on the venue.

Corrosion Prevention of galvanized metal structures

In this last article on corrosion, the application and corrosion of galvanization and other coatings on metal structures such towers, bridges, etc. will be discussed. A typical high structure such as an antenna- or high voltage tower will consist of a number of components or steelwork members which may be vulnerable to corrosion which could result in a loss of structural integrity. The member types are separated in a hierarchical system which each their own particular requirements with regards to maintenance. The four member types are listed:



Primary members (above) are components such as main legs of a tower, or deeply embedded steel work which cannot be removed, and must subsequently be maintained in situ. Primary members include items in compression, principal members of, and around portal frames, and major platform steelwork, etc.^[3]



Secondary members (left) include components that can possibly be removed or replaced for maintenance, but which are still critical for the integrity of the structure. Items such as main braces, diagonals, cable runway supports, antenna mounting frames etc. are included.^[3]



Tertiary members (above) would include platform mesh, ladder sections, light braces, handrail angles and light antenna mounting bars.^[3]

Other components not listed as primary-, secondary- or tertiary would include tower bolts, step bolts, feeder and wave guide cable clamps, etc.^[3]

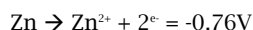


Thanks to developments in protective systems (such as galvanization) the past 50 years, protected structures in urban environments can be expected to last between 50 and 60 years or even more, depending on the circumstances^[1,2]. Unfortunately, even galvanized steel in atmospheric exposure will have a finite life, and even less so at coastal environments where exposure to moisture and salt (chloride) is significantly higher. Galvanization generally consists of the application of 3 main layers of a zinc/iron alloy; *gamma*, *delta* and *zeta* layers, plus an outer pure zinc layer (*eta*) which can provide protection and durability for years to decades, depending on the environment the steel is exposed to.

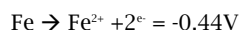
Galvanizing protects carbon steel by means of a principle called anodic protection (or galvanic corrosion), whereby the barrier properties of this method prevents ionic species, oxygen and electrolytes accessing the corrodible substrate^[1,2]. Gradually, the zinc containing galvanizing is consumed due to the concurrent mechanisms of galvanic action plus attack on the zinc itself by oxygen, water, carbon dioxide (CO₂) and corrosive compounds such as marine salt, acidic influences from urban atmospheres and other causes^[1,2].

The process of hot-dip galvanizing takes place at a temperature between 455°C and 460°C (the melting point of zinc is 419.6°C), where steel beams and components are immersed for specific periods, and withdrawn in such a way and speed that the thickness of the zinc coating is homogenous all over the component. Other components such as bolts, nuts and fasteners have to be spun centrifugally after immersion and before quenching, in order to spin off excess zinc from the threads. Subsequently, the layers of zinc inside the nuts will result in the nut and bolt not being able to turn into each other, as both the bolts and nuts have slightly oversized threads after galvanizing. The only remedy is to cut a slightly larger thread in the bolt, leaving an exposed area which could potentially result in corrosion on the insides of bolts.

Metallic zinc applied in the form of hot-dip layers are quite reactive, as it has a higher electrochemical potential than carbon steel or iron, thereby protecting steel galvanically to which it is electrically connected. The oxidation half-cell reaction potential for zinc (relative to the standard hydrogen potential) is:



While the oxidation half-cell reaction potential for iron is:



Therefore, the potential for zinc to oxidize (release electrons) is greater than for the iron, by the difference of 0.32V. Subsequently, when these metals are electrically connected, the zinc will have a potential to convert from its atomic form to its ionic form by the release of electrons (oxidation) – to a greater extent than iron can achieve. During this process zinc becomes the anode and the iron (or steel) is the cathode and is therefore protected galvanically^[1,2].

During the process of galvanic protection, zinc however reacts with oxygen, water, carbon dioxide and chloride to form a number of reaction products such as zinc chloride (ZnCl₂), zinc oxy-chloride (Zn₅(OH)₈Cl₂·H₂O) and zinc carbonate (ZnCO₃). These are collectively known as zinc corrosion products which generally have a white or light grey color. The solubility of these products is of utmost importance, as it plays a role in the rate of consumption of zinc during this process. While zinc carbonate is highly insoluble, zinc oxide is adherent (sticking fast to an object or surface) and will protect the lower zinc layer very effectively in most environments. Thus, to an extent, the low-solubility or insoluble zinc corrosion products can be strongly self-protective of a galvanizing layer, thereby shielding the zinc layer's outer surface and slow down the rate of oxidation of the zinc from its atomic form to zinc ions.

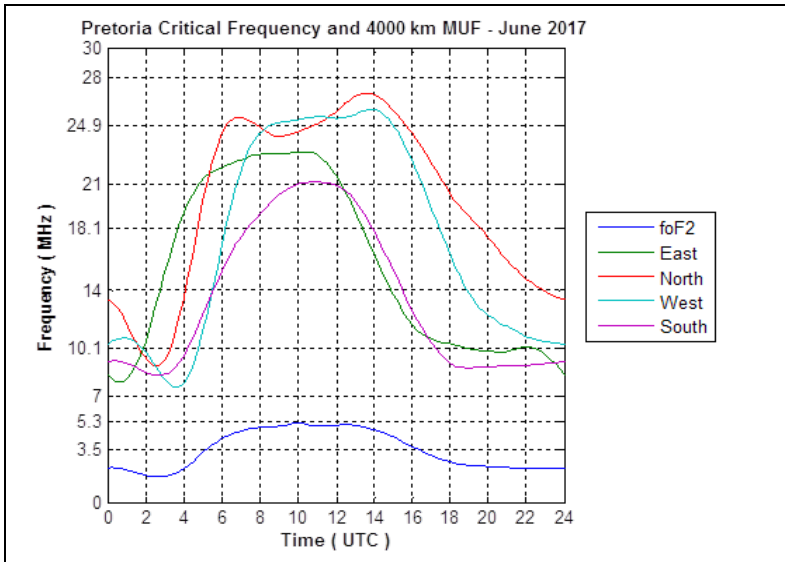
References:

^[1]DROMGOOL, M.B. 2016. Steps to ensure that failures will occur!. *Corrosion Exclusively*. Volume 2. Issue 3. September 2016.

^[2]DROMGOOL, M.B. 2016. Corrosion management of elevated lattice galvanized structures. (Part 1). *Corrosion Exclusively*. Volume 2. Issue 4. December 2016.

^[3]DROMGOOL, M.B. 2017. Corrosion management of elevated lattice galvanized structures – *Care for the aged*. (Part 2). *Corrosion Exclusively*. Volume 3. Issue 1. March 2017.

For more information on corrosion in general, courses, corrosion science and corrosion protection, please visit the website of the Corrosion Institute of South Africa : <http://www.corrosioninstitute.org.za/> .



Long Term HF Propagation for June 2017

DX Operating

The graph shows the 4000 km maximum useable frequency (MUF) to the East, North, West and South from Pretoria for the first hop using the F2 layer.

Local Operating

The F2 critical frequency (foF2) is the maximum F-layer frequency for short range communications.

For worldwide propagation see: <http://www.parc.org.za/index.php?page=propagation>

Courtesy Vincent ZS6BTY

C/O NELSPOORT & 801 MALMESBURY STR, WINGATE PARK, PRETORIA [S25.49.36 & E28.16.07]

ICOM HAMSHACK [PTA]
 Pine ZS6OB 082 4477 823
 AUTHORIZED ICOM DISTRIBUTOR

FOR ALL YOUR ICOM PRODUCTS & ACCESSORIES
 SPECIALLY MANUFACTURED VHF/UHF EX60B ANTENNA SYSTEMS FOR:
 EME, TROPO, MS, REPEATER & SATELLITE SYSTEMS

QRV Services offers the following expertise:

- General equipment and Television repairs
- Small-scale design and manufacturing
- Precise frequency and power calibration
- Technical writing
- 3rd Party scrutiny of projects and documents
- MFJ 259/69 Analyzer repairs and calibration
- Ham radio and solid state amplifier repairs
- Valuation of ham estates and their disposal.

Products:

- Legal limit 30m and 40m dipole traps
 - Linear power supply O.V. protection kits
 - 30A DC switching supplies
 - 30A DC Anderson Power Poles
 - Connectors RF and Audio
 - Plug-in triple sequential industrial timers
- Contact Hans at 012-333-2612 or 072-204-3991

