



WATTS 2019-02

Year 89 + 02m

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 : Sundays from 08h45 / Sondag vanaf 08h45

Relays: 1.840, 3.700, 7.066, 10.135, 14.235, 51.400, 438.825, 1297 MHz
and Echolink. 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 19h45



Die SARL QRP Kompetisie het op die 26ste Januarie plaasgevind. Lede van die Pretoria Amateur Radio Klub het by die Diamanté vakansie-oord naby Rayton kamp opgeslaan om deel te neem. Op die voorblad: Agter: Whitey Joubert ZS6JJJ en Fritz Sutherland ZS6SF. Voor: Gideon van der Merwe ZS6GJV en JJ Snyders ZS6JSJ. Meer op bladsy 5.

In This Issue / In Hierdie Uitgawe

PARC 2018-19 Committee- & Co-opted Members.....	P 2
Birthdays/Verjaarsdae ; Joys & Sorrows/Lief en Leed.....	P 2
PARC Bulletin Roster ; Club Fees ; Flea-Markets 2019.....	P 3
Dagboek van Gebeure / PARC Contest Participation.....	P 4
SARL QRP Kompetisie : PARK Deelname.....	P 5
Tydren nuus en voorlopige program.....	P 6
History of the Voltage Standard.....	P 7-8
PARC History.....	P 9-10
HF Propagation Prediction and Advertisements.....	P 11

Club Meetings / Klub Vergaderings

Club Committee Meeting :

The next Committee Meeting will be on Wednesday, the 13th of February 2019 from 18h30 at Pretoria Old Motor Club.

PARC Committee Members : 2018 – 2019 / PARK Komiteelede : 2018 - 2019

Name & Callsign	Portfolio/s	Email Address	Tel No	Mobile No
Louis de Wet ZS6SK	Chairman, Watts, Club History	louis.zs6sk@gmail.com	012-349-1044	072-140-9893
Graham Reid ZS6GJR	Vice Chairman, Treasurer, Website	greid@wol.co.za	012-667-2720	083-701-0511
Etienne Naude ZS6EFN	SARL Liaison, Bulletin Coordinator	etienne@afgrid.com	012-661-6745	082-553-0542
Irene Myburgh ZS6IEA	Club Secretary	irene@srsa.gov.za	012-304-5109	082-462-6001
Johan de Bruyn ZS6JHB	Rallies, Repeaters & Membership	zs6jhb@gmail.com	012-803-9418	079-333-4107
John Minter ZS6LED	Technical & RAF Training	john.minter.za@gmail.com	012-349-0019	083-291-5422

PARC Co-opted Members : 2018 – 2019 / PARK Ge-koopteerde Lede : 2018 - 2019

Name & Callsign	Portfolio/s	Email Address	Tel No	Mobile No
Alméro Du Pisani ZS6LDP	Flea-markets	almero.dupisani@up.ac.za	012-420-3779	083-938-8955
Tony Crowder ZS6CRO	Auditor	tcrowder@telkomsa.net	011-672-3311	
Nic Louw ZS6NWL	Youth Development	nic.louw@telkomsa.net		083-596-1026
Whitey Joubert ZS6JJJ	Social & Competitions	zs6jjj@gmail.com	012-993-2267	072-120-4516
Pierre Holtzhausen ZS6PJH	Competitions	zs6pjh@gmail.com		082-575-5799
Pieter Myburgh ZS6PAM	Repeaters	wooden@mweb.co.za		076-140-7562

Birthdays and Anniversaries / Verjaarsdae en Huweliks Herdenkings

Member's Birthdays February 2019 / Lede Verjaarsdae – Februarie 2019

02 John Minter ZS6LED	09 Kenny Martin ZS6KMM
03 Willie Greyling ZR6WGR	16 de Jager Burger ZS6ZO
03 Nico van Tonder (Erelid) ZS6AQ	23 Pete Smith-Curren ZS6PJ
04 James Bestbier ZS1XN	28 Basie du Plessis ZR2BA
04 Louis de Wet ZS6SK	

Spouse's February 2019 / Gades Februarie 2019

10 Paddy, gade van Kenny Martin ZS6KMM
23 Erika, gade van Pine Pienaar ZS6OB

Anniversaries February / Herdenkings – Februarie

03 Heather and Vincent Harrison ZS6BTY
07 Juanita en Ryan Gibson ZS6GGR
16 Dienkie en Pierre Britz ZR6ADZ
27 Paddy en Kenny Martin ZS6KMM
27 Zelda en Wynand Wessels ZR6WW
28 Martie en Jurgen de Beer (Erelid) ZR6YV

Member's Birthdays March 2019 / Lede Verjaarsdae – Maart 2019

11 Des van Schalkwyk ZR6JET	22 Ivan Jancuska (Hon Mem) ZS6CCW
14 Uys Classen ZS6UYS	24 Marike Roux ZS6MRX
22 Julian Bouttell ZS6AOU	27 Sarel Stapelberg ZS6EK

Spouse's March 2019 / Gades Maart 2019

05 Sue, spouse of Tony Crowder ZS6CRO
12 Rita, spouse of Vitor Gouveia ZS6VG
18 Estelle, gade van Pierre Duminy ZS6FPS
18 Joydene, gade van Albert Schreuder ZS6SE
21 Martie, gade van JB de Beer (Erelid) ZR6YV
24 Marike, gade van Andre Roux ZS6ARX
30 Madelaine, gade van George Ellis ZS6GWE
31 Annatjie, Gade van Pieter Fourie ZS6CN

Anniversaries March 2019 / Herdenkings Maart 2019

06 Pikkie en Willie Classen ZS6IAM
25 Irene ZS6IEA en Pieter Myburgh ZS6PAM
26 Sharmaine en Louis de Wet ZS6SK
27 Fiona en Etienne Naude ZS6EFN
31 Liezel en Sybrand van der Spuy (No Callsign)

Lief en Leed / Joys and Sorrows

No joys and sorrow to report
Geen lief en leed om te rapporteer

PARC Membership Fees / PARK Ledegelde

During the 2018 AGM, the decision was made that Club Fees would not be increased for the financial year. Club Fees therefore remain at R160 for Ordinary Members, and R60 for Pensioners and Spouse. Gedurende die 2018 AJV, die besluit is geneem dat Klub Ledegelde nie verhoog sal word nie. Dus bly die gelde op R160 vir Gewone Lede, en R60 vir Pensionarisse en Gade.

PARC SUBS : PARK LEDEGELD : FROM / VANAF : 30-06-2018

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 oorpasing in die PARC rekening			

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

PARC Bulletin Roster / PARK Bulletin Rooster

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. A re-broadcast of the Bulletin is done the following Monday evening at 19h45 by Hans ZS6KR.

PARK Bulletins word op Sondagoggende 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. 'n Heruitsending van die Bulletin geskied die opvolgende Maandag aand om 19h45 wat behartig word deur Hans ZS6KR.

PARC Bulletin Presenters : January - April 2019

Date	Presenter	Date	Presenter
20 January 2019	Johan de Bruyn ZS6JHB	24 March 2019	Louis de Wet ZS6SK
27 January 2019	Louis de Wet ZS6SK	31 March 2019	Etienne Naude ZS6EFN
3 February 2019	Etienne Naude ZS6EFN	7 April 2019	Alméro Du Pisani ZS6LDP
10 February 2019	Alméro Du Pisani ZS6LDP	14 April 2019	Johan de Bruyn ZS6JHB
17 February 2019	Johan de Bruyn ZS6JHB	21 April 2019	Louis de Wet ZS6SK
24 February 2019	Louis de Wet ZS6SK	28 April 2019	Etienne Naude ZS6EFN
3 March 2019	Etienne Naude ZS6EFN	5 May 2019	Alméro Du Pisani ZS6LDP
10 March 2019	Alméro Du Pisani ZS6LDP	12 May 2019	Johan de Bruyn ZS6JHB
17 March 2019	Johan de Bruyn ZS6JHB	19 May 2019	Louis de Wet ZS6SK

PARC Fleamarket Dates 2019 / PARK Snuffelmark Datums 2019

The following dates are set for PARC Flea Markets in 2019:

The volgende datums is vasgestel vir PARK Snuffelmarkte in 2019:

6 April ; 3 August / 3 Augustus ; 2 November

To book a table, please do contact: / Om 'n tafel te bespreek, kontak gerus:

[Alméro Du Pisani ZS6LDP at 083-938-8955](mailto:almero.dupisani@up.ac.za) or almero.dupisani@up.ac.za

Diary of Contests & Events / Dagboek van Kompetisies en Gebeure

Contests and Events - February 2019 / Kompetisies en Gebeure - Februarie 2019 (UTC Times)	
02 - 03	10-10 International Winter Contest, SSB: 00h01Z - 23h59Z
03	North American Sprint: 00h00Z - 04h00Z
04	RSGB 80m Club Championship: 20h00Z - 21h30Z
09	RSGB 1 st 1.8MHz Contest: 12h00Z - 12h00Z
09 - 10	CQ WW RTTY WPX Contest: 00h00Z - 23h59Z
09 - 10	SARL Field Day Contest: 10h00Z - 10h00Z
09 - 10	Dutch PACC Contest: 12h00Z - 12h00Z
13	UNESCO World Radio Day
16	SARL Youth Day Sprint: 08h00Z - 10h00Z
16 - 17	ARRL International DX Contest, CW: 00h00Z - 24h00Z
22 - 24	CQ 160m Contest, SSB: 22h00Z - 22h00Z
23 - 24	REF Contest, SSB: 06h00Z - 18h00Z
23 - 24	UBA DX Contest, CW: 13h00Z - 13h00Z
24	SARL Digital Contest: 14h00 - 17h00
28	RSGB 80m Club Championship, CW: 20h00Z - 21h30Z
Contests and Events - March 2019 / Kompetisies en Gebeure - Maart 2019 (UTC Times)	
02 - 03	ARRL International DX Contest, SSB: 00h00Z - 24h00Z
03	SARL Hamnet 40m Simulated Emergency Contest: 12h00Z - 14h00Z
09 - 10	RSGB Commonwealth Contest: 10h00Z - 10h00Z
09 - 10	SARL VHF/UHF Analogue Contest: 10h00Z - 10h00Z
13	RSGB 80m Club Championship, CW: 20h00Z - 21h30Z
16 - 17	Russian DX Contest: 12h00Z - 12h00Z
22	World Water Day
28	RSGB 80m Club Championship, SSB: 20h00Z - 21h30Z
30 - 31	CQ WW WPX Contest, SSB: 00h00Z - 23h59Z
More information can be obtained from the SARL website, as well as the WA7BNM contest calendar at the following website: http://hornucopia.com	

PARC Participation in Local Contests for 2019

The Pretoria Amateur Radio Club intends getting back with full force into the contest game during 2019. Under the leadership of Pierre Holtzhausen ZS6PJH, PARC is going to participate in all the South African Radio League contests hosted in 2019. Details of local contests are listed below:

South African Radio League QRP Contests:

Summer: 26 January 2019: 12:00 to 15:00 UTC

Autumn: 20 April 2019: 12:00 to 15:00 UTC

Winter: 20 July 2019: 12:00 to 15:00 UTC

Spring: 12 October 2019: 12:00 to 15:00 UTC

South African Radio League National Field Days:

Summer: 10:00 UTC on Saturday 9 February to 10:00 UTC on Sunday 10 February 2019

Spring: 10:00 UTC on Saturday 14 September to 10:00 UTC on Sunday 15 September 2019

South African Radio League HF Phone, Digital & CW Contests from home:

SSB: 14:00 to 17:00 UTC on Sunday, 4 August 2019

Digital: 14:00 to 17:00 UTC on Sunday 18 August 2019

CW: 14:00 to 17:00 on Sunday 25 August 2019

For more information on contest participation, please do contact Pierre Holtzhausen ZS6PJH at zs6pjh@gmail.com or 082-575-5799.

SARL QRP Kompetisie: Diamanté Vakansie-oord, Rayton

Lede van die Pretoria Amateur Radio Klub het op die 26ste Januarie 2019 deelgeneem aan die Suid Afrikaanse Radioliga se somer QRP kompetisie. Die kompetisie het plaasgevind op die 80 meter, 40 meter en 20 meter bande. Onder leiding van Pierre Holtzhausen ZS6PJH en bygestaan deur Theo Bresler ZS6TVB, Whitey Joubert ZS6JJJ, Gideon van der Merwe ZS6GJV, Fritz Sutherland ZS6SF en JJ Snyders ZS6JSJ. Die volgende kompetisie, SARL nasionale velddag vind op 9-10 Februarie (sien bladsy 4) by dieselfde oord plaas. Kontak gerus vir Pierre indien u belangstel om 'n bydrae te maak.



Whitey Joubert ZS6JJJ op 40 meter



Theo Bresler "CQ Competition ZS6PTA"



Pierre Holtzhausen ZS6PJH en Whitey



Fritz Sutherland ZS6SF en Pierre



Die Diamanté kampeerterrein bied 'n lekker bosveld atmosfeer met baie spasie vir lugrade



Tydren Nuus : Johan de Bruyn ZS6JHB



Met die 2019 tydren seisoen wat binnekort afskop, kan ons weer uitsien na 'n besige program. Die Tydren Kalender is voorsien deur Johan de Bruyn, wat tydren aktiwiteite koordineer. Indien u belangstel om deel te wees van tydren radio-diens, kontak gerus vir Johan by 079-333-4107 of zs6jhb@gmail.com. Die voorlopige datums van die Nasionale- en Streekstydrerne word onder aangedui.

With the 2019 rally season commencing soon, we can again look forward to a busy program. The Rally Calendar was provided by Johan de Bruyn, who is the coordinator of rally activities. If you are interested in becoming part of rally radio-service, feel free to contact to contact Johan at 079-333-4107 or zs6jhb@gmail.com. The preliminary dates of the National- and Regional rallies are presented below.

9 March 2019	Regional Event : to be announced
26 April 2019	York Rally Sabie
28 June 2019	PMC Rally
23 August 2019	To be announced
27 September 2019	Secunda Rally
25 October 2019	Electrothread Rally



The history of the Voltage Standard : Hans Kappetijn ZS6KR

Invented by Edward Weston in 1893, the Weston cell is a wet-chemical cell that produces a highly stable voltage, making it suitable as a laboratory standard for the calibration of voltmeters. The Weston cell was adopted as the International Standard for Electromotive Force (EMF) from 1911, until being superseded by the Josephson voltage standard in 1990^[1].

The anode is an amalgam of cadmium with mercury, while the cathode consists of pure mercury over which a paste of mercurous sulfate and mercury is placed. The electrolyte is a saturated solution of cadmium sulfate, and the depolarizer is a paste of mercurous sulfate. Each cell is set up in an H-shaped glass vessel (see below) with the cadmium amalgam in one leg and the pure mercury in the other. Electrical connections to the cadmium amalgam and the mercury are made by platinum wires fused through the lower ends of the legs.

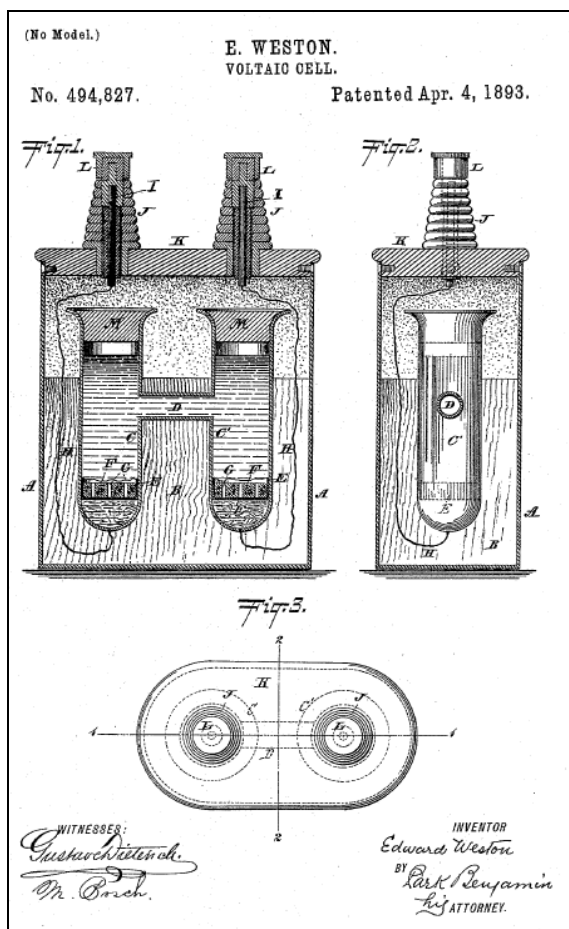
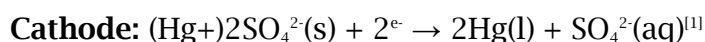
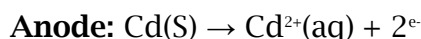


Illustration from US Patent No 494,827, 4 April 1893, showing the Voltaic Cell invented by Edward Weston^[2]

Standard Cell in possession of Hans ZS6KR

The cell reactions at the Anode and Cathode are as follows:



Characteristics

The original design was a saturated cadmium cell producing a 1.018638 Volt reference, and had the advantage of having a lower temperature coefficient than the previously used Clark cell. One of the great advantages of the Weston normal cell is its small change of electromotive force with a change in temperature. At any temperature t between 0°C and 40°C : $E_t/V = E_{20}/V - 0.0000406 (t/^\circ\text{C} - 20) - 0.00000095 (t/^\circ\text{C} - 20)^2 + 0.00000001 (t/^\circ\text{C} - 20)^3$

The temperature coefficient can be reduced by shifting to an unsaturated design, the predominant type today. However, an unsaturated cell's output decreases by approximately 80 μV per year, which is compensated for by periodic calibration against a saturated cell. The original design was a saturated cadmium cell producing a 1.018638 V reference and had the advantage of having a lower temperature coefficient than the previously used Clark cell^[1].

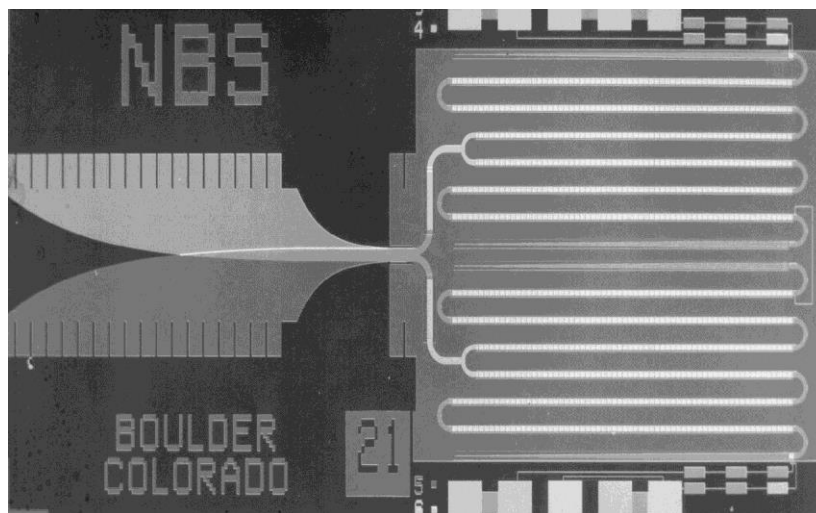
Later Standards and Definitions

The Volt is defined as the difference in electric potential between two points of a conducting wire when an electric current of one Ampere dissipates one Watt of power between those points. It is also equal to the potential difference between two parallel, infinite planes spaced 1 meter apart that create an electric field of 1 Newton per Coulomb. Additionally, it is the potential difference between two points that will impart one Joule of energy per Coulomb of charge that passes through it. It can be expressed in terms of SI the base units meter (m), kilogram (kg), second (s) and ampere (A) as:

$$V = A \cdot \Omega = WA = JC = eV e$$

The Josephson Voltage Standard

The “conventional” Volt, V_{90} , defined in 1988 by the 18th General Conference on Weights and Measures and in use from 1990, is implemented by using the Josephson effect for exact frequency-to-voltage conversion, combined with the cesium frequency standard. For the Josephson constant, $K_J = 2e/h$ (where e = elementary charge, and h = Plank's constant), the “conventional” value K_{J-90} is used: $K_{J-90} = 0.4835979\text{GHz } \mu\text{V}$. This standard is typically realized using a series-connected array of several thousands or tens of thousands of junctions, (see below) excited by microwave signals between 10 and 80GHz (depending on the array design). Empirically, several experiments have shown that the method is independent of device design, material, measurement setup, etc., and no correction terms are required in a practical implementation^[1].



The One-Volt NIST Josephson Junction Array Standard has 3020 junctions. The chip was designed by staff of the Electromagnetic Technology Division in the cryoelectronic fabrication laboratory. It operates at liquid-helium temperatures; microwave energy is fed to four chains of junctions through the fin-guide structure at the left. The thin tapered structures at the end of each chain are terminations to prevent reflection of energy back up the chain. More details on the Josephson Voltage Standard in a future issue of Watts.

References:

^[1]https://en.wikipedia.org/wiki/Weston_cell

^[2]Weston, E. 1893. *Voltaic Cell*. U.S. Patent No 494,827

^[3]<https://nvlpubs.nist.gov/nistpubs/sp958-lide/315-318.pdf>

^[4]Elmquist, R.E. *et al.* 2001. *The Ampere and Electrical Units*. J. Res. Inst. Stand. Technol. Jan-Feb.

PARC History

In the following issues of Watts we will present historical photographs of Club Members and activities. Watts has received a mountain of photographs in electronic format from Hans Kappetijn ZS6KR (Honorary Member) and we sincerely thank him for his great contribution. We would like to encourage anyone who has historical material available to contact the Editor of Watts (Louis de Wet ZS6SK : louis.zs6sk@gmail.com) as we would like to compile a Commemorative Album for the 90th celebration of PARC. Please enjoy a selection of early photographs supplied by Hans.



PARC Members during the 1980's



ZS6KO (1956)



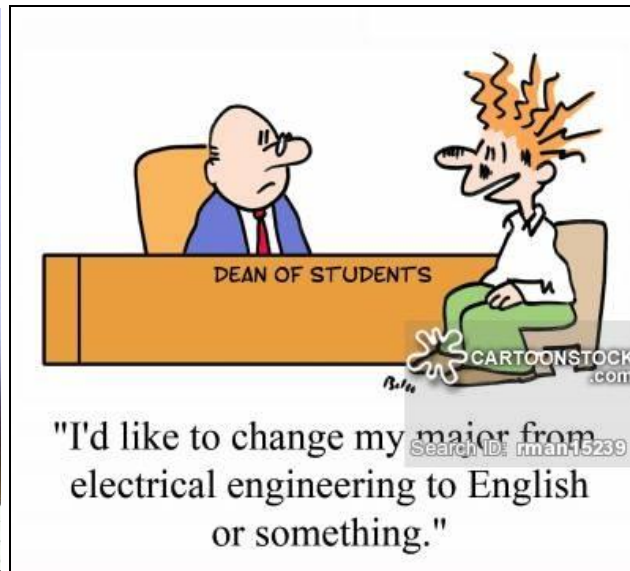
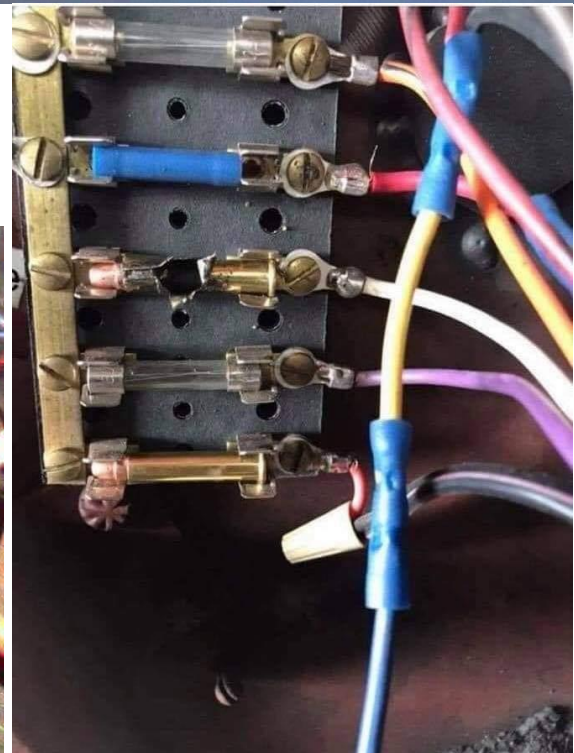
PARC Members during the late 50's with Bernie ZS6ANU, Mike Rowland ZS6AFG and sw Ray, Colin ZS6AAO, Tony ZS6CJ and sw, Ron ZS6ALF, Andre and Marlene du Toit, Andy ZS6AHL and sw, and Luther ZS6E and daughter.



Present on this photograph: Alan ZS6AGL and sw, Mike ZS6AFG and sw, and Andre ZS6AQ

If you do recognize any other Members or spouses on any of the photographs, please do contact the Editor of Watts. Next month we will continue with the series on PARC history.

DIY Slow-blow Fuses : Hans Kappetijn ZS6KR



Long Term HF Propagation for February 2019: Courtesy Vincent Harrison ZS6BTY

The graph below shows the predicted F-layer Maximum Usable Frequency (MUF) for propagation from Pretoria^[1] using monthly sunspot numbers from SILSO^[2].

Local Propagation (up to 500 km): The F or F2 critical frequency (f_oF_2) is the MUF for short range, near vertical incidence sky-wave (NVIS) propagation.

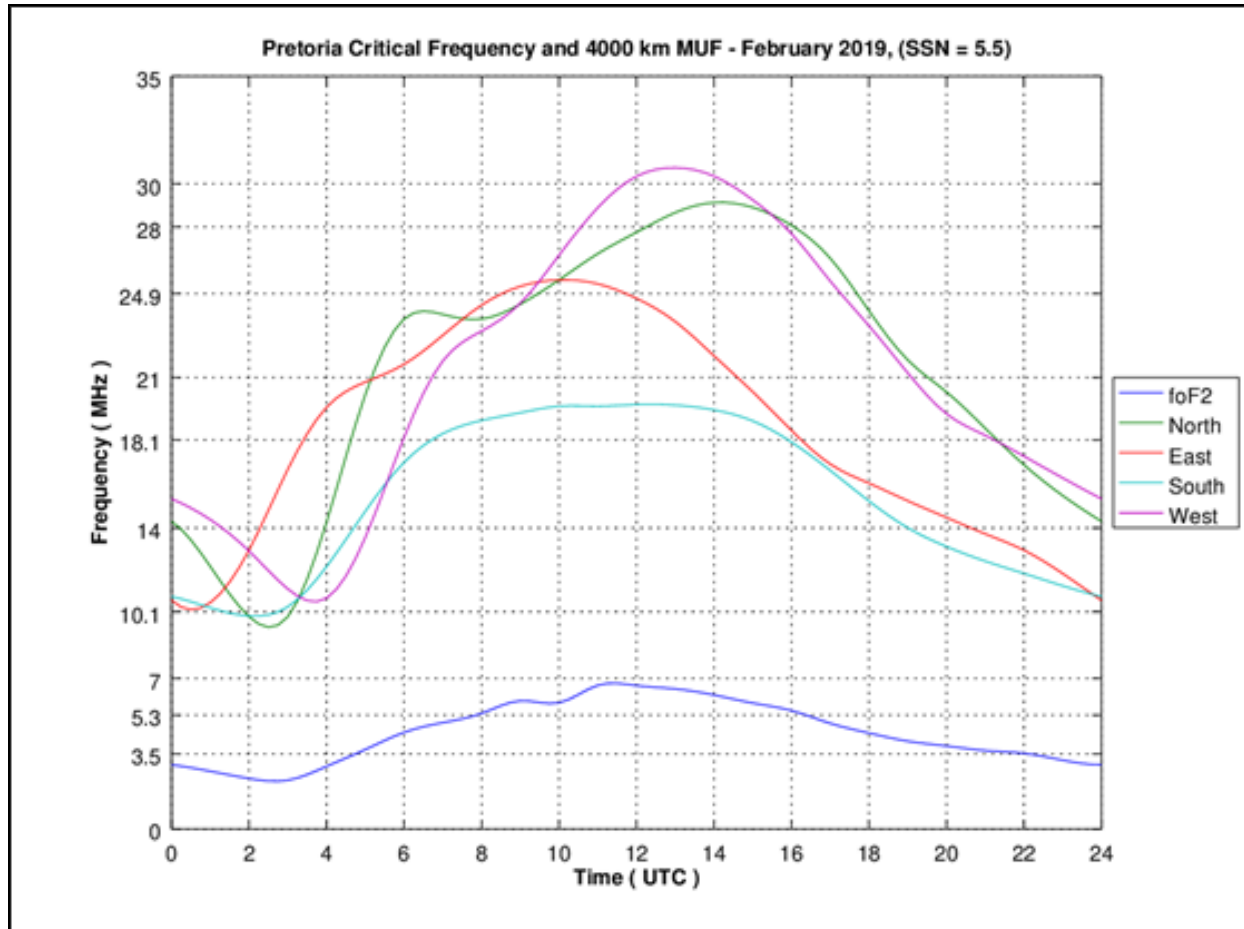
Long Distance Propagation: The MUF for a first hop of 4000 km in the cardinal directions is labeled North, East, South and West. They indicate the direction that propagation may be expected.

Worldwide Propagation Maps: <http://www.parc.org.za/index.php?page=propagation>

"Prediction is difficult, especially when dealing with the future". . . Danish Proverb. 73 Vincent, ZS6BTY

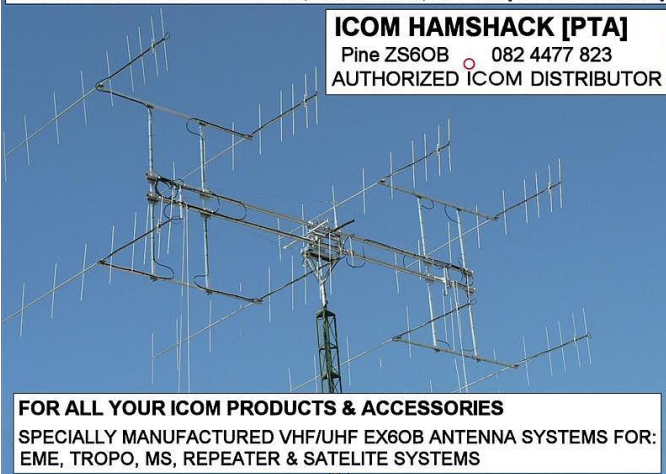
^[1]FTZMUF2: A simple method of estimating the ionospheric parameters of f_oF_2 and M(3000) with the aid of a home computer - Thomas Damboldt and Peter Süßmann, Deutsche Bundespost, December 1988.

^[2] Silso 12-month forecasts of the monthly sunspot number (<http://sidc.oma.be/silso/FORECASTS/prediML.txt>)



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

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