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# WATTS

## 07-2010

Year 80 + 7m

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> mail: [zs6pta@zs6pta.org.za](mailto:zs6pta@zs6pta.org.za)

Bulletins: 145,725 MHz 08:45 Sundays/Sondae  
Relays: 1.840, 3.700, 7.066, 10.135, 14.235, 51.400, 438.825, 1297 MHz  
Activated frequencies are announced prior to bulletins

Swapshop: 2m and 7.066 MHz Live on-air after bulletins  
Bulletin repeats Mondays | herhalings : Maandae 2m 19:45



## PARC Meeting 19 June: Craig ZS6RH receives his SARL Jack Twine Award

more awards on p6



### In this issue

- Minutes 19/06 Notules
- Member's pages Lede-bladsye
- Member news / Activities Lede-nuus en Aktiwiteite
- Hustler mod for more gain
- Technical | SteppIR antenna mechanism | Tegnies
- dBm-Volts-Watts conversion
- Page eight Bladsy agt

### In hierdie uitgawe

### Next Meeting

Date: 14 July 2010  
Time: 19:30 for 20:00  
PARC Clubhouse,  
South Campus,  
University of Pretoria.  
SE cnr University and  
Lynnwood roads.

## PARC Management team / Bestuurspan Aug. 2009 - Aug. 2010

Committee members

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## Minutes of the monthly club meeting of the Pretoria Amateur Radio Club held at the South Campus of the University of Pretoria on 19 June 2010.

**Welcome:** Pierre ZS6PJH acted as chairman and welcomed all present.

**Present:** See register, 14 members, 1 visitor.

**Apologies:** 5 as per register. The chairman has vehicle problems.

**Joys & Sorrows:** Johan ZS6JHB has recovered from influenza. Whitey ZS6JJJ has had a motor accident. Hans ZR6HVG has had a knee operation. Craig ZS6RH is welcomed back.

**Minutes:** The minutes of the previous meeting were in Watts, approved by Hans ZS6KR and seconded by Pierre ZS6PJH.

**Matters Arising:** None.

**Finances:** We have a bank balance of R3352.78.

**Membership:** There are 114 paid up members of the total of 140 for 2009/10, with 35 paid for 2010/11 alr eady..

**Flea Market:** The next PARC flea market will be on Saturday 26 June in a week at 08:00 at the PMC premises. There is also a West Rand flea market on the same day at 12:00.

**Contests:** The youth day sprint took place on Wednesday 16 June and according to the latest HF happening s, 3 logs were received.

**Projects:** Pieter ZS6PA will show us his mobile bakkie setup at the September meeting.

**Watts:** It was again queried whether we still need postal versions of Watts. Two members receiving postal versions were present. About 40 copies are sent by post. It was requested that those members receiving Watts by post to advise whether they could receive Watts by email and advise the email address.

**Awards:** Tjerk ZS6P presented the Jack Twine award to Craig ZS6RH. The recipients of the Arthur Hemsley (Pine ZS6OB) and the JJ Pienaar (Vince ZS6B TY) trophies were unfortunately not present.

**Web Site:** This is hosted in the USA and the R100 per an num cost was sponsored by a member who can no longer continue. The web master, a paraplegic at CSIR, will do the site admin for a contribution to his pet project.

**Repeater:** The repeater project has also lost its sponsorship, and currently new coaxial cable as the phasing harness at Radcliffe has been disturbed, and a cable problem also exists at Kevvykop. It was noted that repeater and the web site will require a revision to the club fees. Budgets were requested.

**Next meeting:** The next meeting will be on Wednesday 14 July 2010 at about 20:00.

## Birthdays

July  
**Verjaarsdae**



- 05 Lynnete, daughter of Bill ZS6KO
- 06 Helen ZR6HGN, daughter of Roy ZS6XN
- 11 Peter ZR6FD (80)
- 13 Pieter ZS6PA
- 17 Lynn, LV van Andre ZS6BRC
- 19 Sarina, LV van Willie ZR6WGR
- 20 Roy ZS6XN
- 21 Elmarie ZR6AXF, LV van Johan ZS6JPL

Julie

## Anniversaries Herdenkings

- 06 Julie and Paul ZS6BMF ( 47 )
- 15 Ellen and Joe ZS6AIC ( ? )
- 23 Pamela and Harry ZS6HRD ( 56 )

- 22 Rozanne, dogter van Sylvia en Tjerk ZS6P
- 25 Justin ZS6-262, son of Rika and Errol ZR6VDR
- 27 Julie, SW of Paul ZS6BMF

## Joys and Sorrows | Lief en Leed

Whitey ZS6JJJ was betrokke in 'n motorongeluk maar is na 'n kort rukkie in die Hospitaal weer tuis.  
Hans ZR6HVG sterk goed aan na sy knie operasie en is weer voetsmoel.

## New applications

ZS8M/ZS1FH Pierre Dennis Tromp  
ZS6PAL Artyom Shirin

## Diary | Dagboek (UTC times)

- July 01 RAC Canada Day Contest 00:00-23:59
- 10-12 IARU HF World championship 12:00-12:00
- 18 Intechnet VHF/UHF/uWAVE matters 17:30
- 24-25 RSGB IOTA Contest 12:00-12:00
- 14 PARC Club evening meeting at UP**
- Aug **01 SARL HF Phone contest 13:00-16:30**
- 14 PARC AGM**

### PARC SUBS / LEDEGELD 30-06-2010

**Please remit your subs in  
time to our treasurer or  
by transfer to:**

**Betaal asb. u ledegeld  
betyds aan ons tesourier  
of per oorplasing aan:**

**Bank : FNB Ordinary members/ gewone lede R70**  
**Branch : 25 20 45 Spouses, pensioners R50**  
**Account : 546 000 426 73**  
**Your call sign must appear as statement text!**

**So far 35/105 members have renewed**

### Notice – Kennisgewing

Lede kan nog steeds die sekretaris in kennis te stel van u voorkeur oor watter dae en tye vir u geskik sal wees vir klubvergaderings.  
'n Finale besluit sal by ons AJV in Augustus geneem word na gelang van insette ontvang.

Members can still notify the secretary about your preference as to which days and times club meetings should be held.  
A final decision will be made at our AGM in August according to inputs received

### SARL subs are due end of June.

R360 and R225 for over 65's to:  
South African Radio League  
ABSA 632005  
Account 407 158 8849

## Snippets | Brokkies

- **Martinho ZS6BQP** has not only antennas up in the air but also put up flags defining his loyalty to his favourite soccer teams...
- **Pieter ZS6PA** is besig om sy mobiele kompetisie stasie op te gradeer. Ons sal dalk op September se vergadering daarvan hoor.

**August is AGM month**  
**Please let us have your  
attendance and support**

**Prepare any motions you wish to submit**  
**- Only paid-up members can vote -**







## Craig ZS6RH was briefly in Mali to do a repeater installation – details unknown

After he arrived back, he also came to the rescue of the Magalies Radio Amateur Klub who had the misfortune to lose their repeater tower due to negligence of a lorry driver servicing an adjacent site with sand and cement.

Craig, in true ham spirit installed our backup repeater on our Wonderboom site slot to service the MRK club on 145,750MHz until their situation can be remedied.

**Well done, Craig.**

## How does a SteppIR antenna element length control work?

Hein ZS6Q took these pictures when assembling his new toy. He contributed the following information:

Top: Boom and control boxes for each set of elements. Elements not yet inserted.

Below: The heart of the famous SterrIR antenna.



The transformer consists of a 51mm ferrite core that operates at very little internal flux which allows for high operating power. This transformer includes a 25Ω - 50Ω unun and a balun wound from custom 25Ω coax.

The drive mechanism is nothing more than a 4-pole stepper motor located under the Teflon plate that has an extended shaft with a set of toothed gears. The whole system functions similar to a measuring tape; pre-tensioned spools - like a tape measure - roll up the perforated copper beryllium tape which is controlled by the stepper motor. The movement of the tape inside the fiberglass elements is super smooth.

The RF power is transferred by brushes that have 4 contact points on each element that results in a very low impedance connection and are kept clean by the inherent wiping action. The brush contact is .08 in thick and should last thousands of cycles. The copper beryllium tape is 14mm wide and presents a very low RF impedance that results in conductor losses of only -0.17 dB.

# Hustler modification for increased gain

received from Val ZS2VJ

Striving to improve an HF Hustler mobile antenna the following modification has been implemented. It enhances the RF field strength up to 3,5 -4,0 dB.

The modification and antenna tuning does not require the use of special equipment or special knowledge.

1. Remove original winding from a 40 m Hustler coil.

2. Re-wind the coil with 1,5 mm wires filling the space between original soldering tags.

The new coil will have about 16-18 turns less than original one. Expected inductance is about +/- 28  $\mu$ H and not critical.

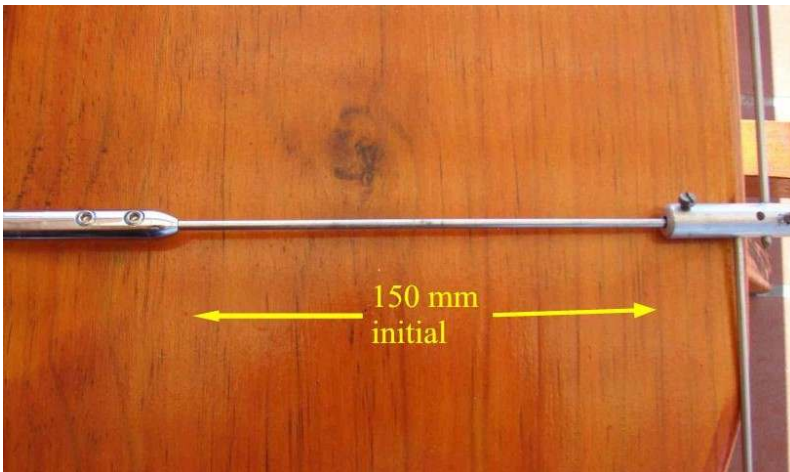
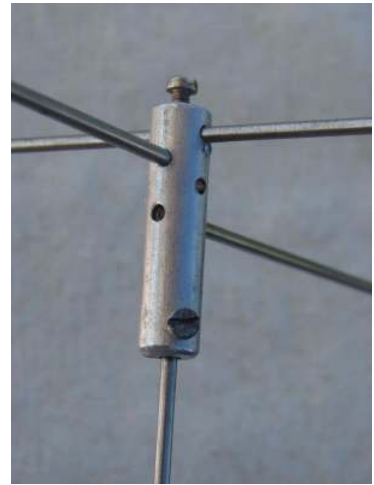
3. Put over the new coil a heat shrink tube and shrink it with a hot air gun.



4. Make a capacitive head from four  $\pm$ 490 mm whips or two  $\pm$ 900 mm whips (see pictures) - Length is not critical.

5. Fasten the capacitive head on about 250 mm whip and put the assembly into place where original Hustler top whip was.

6. Set a distance between the head and the end of the coil assembly at about 140 mm and tighten screws.



7. Install the coil with the capacitive head on a mast and screw it on the spring.

8. At the bottom of antenna solder about 330-390 pF matching mica capacitor between the central conductor of the coaxial feedline and its screen/car body. Leads must be short!

## Antenna tuning.

This operation takes 15-20 minutes if the following procedure will be followed.

Important: DO NOT USE ANY ANTENNA ANALYSERS, otherwise the process will take much longer.

### Equipment required:

- \* SWR Meter, preferably with crossneedles, but an ordinary will do as well.
- \* "Wonder Stick": 2-3 m piece of any conductive tube (even an aluminium broom handle etc).

1. Connect SWR to TRX with  $\approx$  100 mm cable.
2. Connect antenna cable to the SWR meter.
3. Set SWR meter to 15...20 W scale.
4. Set TRX output power to the same level.
5. Set TRX in RTTY mode and frequency at 7,100 kHz or a preferable frequency.





6. Press PTT and observe SWR (can be high).
7. Take the "Wonder Stick" and slowly bring it closer to the antenna mast.
8. If SWR goes up - lower the capacitive head position.
9. If SWR goes down - keep moving "WS" towards the mast until the SWR reaches a minimum (note that SWR value).
10. Extend (lift) the capacitive head position and repeating (9) until you have the lowest SWR at your frequency (10 mm  $\approx$  20 kHz)
11. Adding/removing 33 pF at a time to the matching capacitor – will soon reach SWR 1/1.

The author has SWR 1/1 with a 480 pF capacitor. This value could vary from 330 pF to 560 pF depending on the car model and antenna position. But the main factor is the length of the mast. For example, when 3,0 m is used, the value of the matching capacitor should be reduced about 30 %.

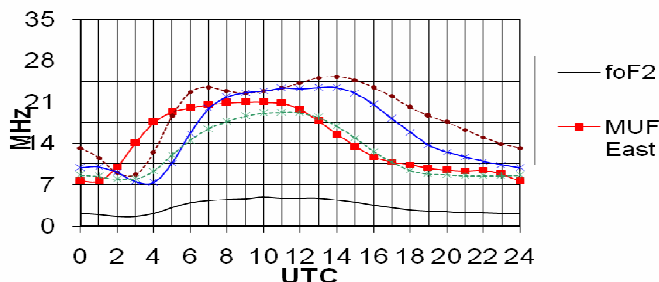
I hope that is clear enough for any HAM.

## Two SARL awards were also brought by Tjerk ZS6P (our SARL and Club awards Manager)

Recipients were (in absentia) Vincent ZS6BTY for the JJ Pienaar Trophy and Pine ZS6OB for the Arthur Hemsley 2m Trophy



### F2 Critical Frequency and 4000 km MUF Pretoria - July 2010



### Long Term HF Propagation Prediction for July 2010

courtesy ZS6BTY  
(see also our website propagation tab)

#### 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 frequency that will reflect when you transmit straight up. E-layer reflection is not shown.

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# dBm - volts - watts conversion

(50-ohm system)

dBm	V	P <sub>o</sub>	dBm	V	P <sub>o</sub>	dBm	mV	P <sub>o</sub>	dBm	μV	P <sub>o</sub>
+53	100.0	200W	0	.225	1.0 mW	-49	0.80		-98	2.9	
+50	70.7	100W	-1	.200	.80 mW	-50	0.71	.01 μW	-99	2.51	
+49	64.0	80W	-2	.180	.64 mW	-51	0.64		-100	2.25	.1 pW
+48	58.0	64W	-3	.160	.50 mW	-52	0.57		-101	2.0	
+47	50.0	50W	-4	.141	.40 mW	-53	0.50		-102	1.8	
+46	44.5	40W	-5	.125	.32 mW	-54	0.45		-103	1.6	
+45	40.0	32W	-6	.115	.25 mW	-55	0.40		-104	1.41	
+44	32.5	25W	-7	.100	.20 mW	-56	0.351		-105	1.27	
+43	32.0	20W	-8	.090	.16 mW	-57	0.32		-106	1.18	
+42	28.0	16W	-9	.080	.125 mW	-58	0.286				
+41	26.2	12.5W	-10	.071	.10 mW	-59	0.251		<b>dBm</b>	<b>nV</b>	
+40	22.5	10W	-11	.064		-60	0.225	.001 μW	-107	1000	
+39	20.0	8W	-12	.058		-61	0.200		-108	900	
+38	18.0	6.4W	-13	.050		-62	0.180		-109	800	
+37	16.0	5W	-14	.045		-63	0.160		-110	710	.01 pW
+36	14.1	4W	-13	.050		-64	0.141		-109	640	
+35	12.5	3.2W	-16	.0355					-112	580	
+34	11.5	2.5W				<b>dBm</b>	<b>μV</b>		-113	500	
+33	10.0	2W	<b>dBm</b>	<b>mV</b>		-65	128		-114	450	
+32	9.0	1.6W	-17	31.5		-66	115		-115	400	
+31	8.0	1.25W	-18	28.5		-67	100		-116	355	
+30	7.10	1.0W	-19	25.1		-68	90		-117	825	
+29	6.40	800 mW	-20	22.5	.01 mW	-69	80		-118	285	
+28	5.80	640 mW	-21	20.0		-70	71	.1nW	-119	251	
+27	5.00	500 mW	-22	17.9		-71	65		-120	225	.001 pW
+26	4.45	400 mW	-23	15.9		-72	58		-121	200	
+25	4.00	320 mW	-24	14.1		-73	50		-122	180	
+24	3.55	250 mW	-25	12.8		-74	45		-123	160	
+23	3.20	200 mW	-26	11.5		-75	40		-124	141	
+22	2.80	160 mW	-27	10.0		-76	35		-125	128	
+21	2.52	125 mW	-28	8.9		-77	32		-126	117	
+20	2.25	100 mW	-29	8.0		-78	29		-127	100	
+19	2.00	80 mW	-30	7.1	.001mW	-79	25		-128	90	
+18	1.80	64 mW	-31	6.25		-80	22.5	.01 nW	-129	80	.1fW
+17	1.60	50 mW	-32	5.8		-81	20.0		-130	71	
+16	1.41	40 mW	-33	5.0		-82	18.0		-131	61	
+15	1.25	32 mW	-34	4.5		-83	16.0		-132	58	
+14	1.15	25 mW	-35	4.0		-84	11.1		-133	50	
+13	1.00	20 mW	-36	3.5		-85	12.9		-134	45	
+12	.90	16 mW	-37	3.2		-86	11.5		-135	40	
+11	.80	12.5 mW	-38	2.85		-87	10.0		-136	35	
+10	.71	10 mW	-39	2.5		-88	9.0		-137	33	
+9	.64	8 mW	-40	2.25	.1μW	-89	8.0		-138	29	
+8	.58	6.4 mW	-41	2.0		-90	7.1	.001 nW	-139	25	
+7	.500	5 mW	-42	1.8		-91	6.1		-140	23	.01fW
+6	.445	4 mW	-43	1.6		-92	5.75				
+5	.400	3.2 mW	-44	1.4		-93	5.0				
+4	.355	2.5 mW	-45	1.25		-94	4.5				
+3	.320	2.0 mW	-46	1.18		-95	4.0				
+2	.280	1.6 mW	-47	1.00		-96	3.51				
+1	.252	1.25 mW	-48	0.90		-97	3.2				

## Witty observations



Santa Claus has the right idea. Visit people only once a year.

- Victor Borge

Be careful about reading health books. You may die of a misprint.

- Mark Twain

By all means, marry. If you get a good wife, you'll become happy; if you get a bad one, you'll become a philosopher.

- Socrates

I was married by a judge. I should have asked for a jury.

- Groucho Marx

My wife has a slight impediment in her speech. Every now and then she stops to breathe.

- Jimmy Durante

I have never hated a man enough to give his diamonds back.

- Zsa Zsa Gabor



Only Irish coffee provides in a single glass all four essential food groups: alcohol, caffeine, sugar and fat.

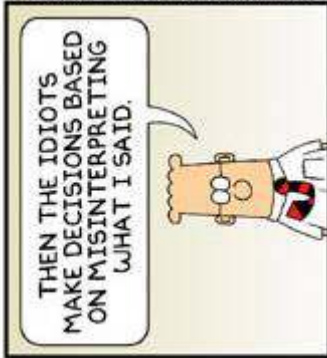
- Alex Levine

My luck is so bad that if I bought a cemetery, people would stop dying.

- Rodney Dangerfield

Money can't buy you happiness ... But it does bring you a more pleasant form of misery.

- Spike Milligan



Until I was thirteen, I thought my name was **SHUT UP**.

- Joe Namath

I don't feel old. I don't feel anything until noon. Then it's time for my nap.

- Bob Hope

I never drink water because of the disgusting things that fish do in it

- W. C. Fields



We could certainly slow the aging process down if it had to work its way through Congress.

- Will Rogers

Don't worry about avoiding temptation. As you grow older, it will avoid you.

- Winston Churchill

Maybe it's true that life begins at fifty .. But everything else starts to wear out, fall out, or spread out.

- Phyllis Diller

By the time a man is wise enough to watch his step, he's too old to go anywhere.

- Billy Crystal

