WATTS

06-2012

Year 82 + 6m

Monthly newsletter of the Pretoria Amateur Radio Club
Maandelikse nuusbrief van die Pretoria Amateur Radio Klub.

PARC, PO Box 12602, Die Hoewes, 0163, RSA

web http://www.parc.org.za mail: 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

ZR6FD logo

Drukwerk printing ZS6RH

Papier / Paper ZS6RH

ZS6JPL is gereed met 'n nuwe toring en antennas **ZS6JPL is ready with a new tower and antennas**

VHF and UHF are Cushcraft Crossed Yagi's.

23cm is a WIMO Helical

13cm is a RFS Dish with circular feed and down converter to 2m band.

In this issue

In hierdie uitgawe

Next fleamarkets and socials 2012

30 June
1 Sept
8 Dec

Venue: PMC, Silverton

PARC Management team / Bestuurspan Aug. 2011 - Aug. 2012

Committee members

Chairman	Pierre Holtzhausen	ZS6PJH	zs6pjh@telkomsa.net	012-655-0726	082-575-5799
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Training	Fritz Sutherland	ZS6ASF	fritzs@icon.co.za	012-811-3875	083-304-0028
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Your Licence Fee is Due Now

ICASA has started mailing license renewal notices.

The license fee of R120.00 was due on **1 April 2012**. You may also renew for five years at a reduced fee of R501.00.

If you do not receive a renewal notice, the SARL recommends that you pay by using the license number on last year's invoice and your call sign.

Be an early bird!

PARC SUBS / LEDEGELD 30-06-2011

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
Branch : 25 20 45
Account : 546 000 426 73

Ordinary members/ gewone lede R150
Spouses, pensioners R50

Your call sign must appear as statement text! !

Also, mail the payment notification plus your address to KMashile@icasa.org.za.
It is essential that in all payments to ICASA that you include your call sign as a payment reference.
Remember to send any postal and e-mail address changes to admin@sarl.org.za

From a discussion on the SARL Forum regarding the new license structure Peter ZS5PL (pleonard@ICASA.org.za) has access to records and can help with various enquiries besides the advertised kmashile@icasa.org.za

Something not mentioned officially until it was stated on the Forum by Peter is that there are other options as from 31/03/2012 besides the 5-year option:

1 year - R120.00
2 years - R230.00
3 years - R329.00
4 years - R419.00
5 years - R501.00

Currently it has been observed that when having paid for multiple years the paper license will reflect the expiry date still as for one year only but you will receive a new one every subsequent year.

SARL New Subscriptions Due 1 July

Ordinary member R400
Licensed senior member R230 (retired persons over 65)
Family member R130
Student member R65

Birthdays June Verjaarsdae

02 Elma sw of Chris ZS6LOG
06 Simon ZS6AST (86)
07 Chantel, dogter van Martie en 'JB' ZR6YV
08 Ronel, lv van Pieter ZR6PSR
11 Nadia, daughter of Pat ZR6AVC and Frank ZS6GE
14 Hilary ZR6HAP, daughter of Molly ZR6MOL and Richard ZS6UK
17 Lynette, ZR6LHT, dogter van Elize en Pieter ZS6PA
20 Malcolm ZR6OLM, son of Retha and Roy ZS6XN
21 Marchant ZS6-2513

Junie Anniversaries Herdenkings

24 Marieta and Roy ZS6MI (41)

22 Dylan ZS6-2511
22 Ricahard ZS6UK
26 Pieter ZR6PSR
27 Emil ZS6EGB
27 Selma, sw of Joe ZS6TB

Joys and Sorrows | Lief en Leed

Oom Bill **ZS6KO** was in hospital for about two weeks.
Jannie **ZR6PHD** het na een of ander glipsie ook in die hospital beland vir etlike weke.

Diary | Dagboek (UTC times)

June

09	Portugal Day Contest 00:00-24:00
16-17	All Asian DX contest 00:00-24:00
16	National Amateur Radio Day – Youth Day Sprint etc.
24	His Majesty King of Spain Contest SSB 12:00-12:00
23-24	Marconi Memorial HF Contest 14:00-14:00

New Members | Nuwe Lede

Louis Kruger **ZR6ABC** van Elardus Park
Robert Degosseley **ZS6PRO** of Northwood

Snippets | Brokkies

Roger ZS6RJ is close to completing his 18m tower -

- and a certificate also arrived in the mail. Well done!

Newsless space....

IARU REGION 1 HF BANDS

160 Meters	80 Meters	40 Meters	30 Meters	20 Meters	17 Meters
1.810	3.500	7.000	10.100	14.000	18.068
CW Only	CW Only	CW Only	CW Only	CW Only	CW Only
1.838	3.580	7.035	14.140	14.070	18.100
Digimodes and CW (Excluding AX25 Packet)	Digimodes and CW	Digimodes, CW, SSTV and fax (Excluding AX25 Packet)	Digimodes and CW (Excluding AX25 Packet)	Digimodes and CW	Digimodes and CW
				14.099	18.109
				Beacons only	Beacons only
				14.101	18.111
1.840	3.620	7.045		Digimodes, phone and CW	Phone and CW
Phone and CW	Phone and CW	Phone and CW			
1.850	3.800	7.200	10.150	14.350	18.168

15 Meters	12 Meters	10 Meters
21.000	24.890	28.000
CW Only	CW Only	CW Only
21.080	24.920	28.050
Digimodes and CW	Digimodes and CW	Digimodes and CW
21.140	24.929	28.150
Beacons only	Beacons only	CW Only
21.151	24.931	28.199
Phone and CW	Phone and CW	Beacons only
		28.201
		Phone and CW
21.450	24.990	29.200
		AX25 Packet, Phone and CW
		29.300
		Satelite downlinks
		29.550
		Phone and CW
21.450	24.990	29.700

Clubs are the backbone of organised Amateur Radio in any given location.

Although it's entirely possible to live a full and busy Amateur Radio life outside of a club, there are many reasons why joining and participating in a club are beneficial to you.

There is evidence that a person who has social capital will fare better in terms of their enjoyment of life and in their mental health.

What is social capital? It's pretty easy – you've probably worked it out already. It s the things you do together with other people, the clubs and groups that you participate in, and the friends and family that you engage with regularly.

So even before we look at the benefits to Amateur Radio, especially your Amateur Radio career, having social capital puts you in a good position to enjoy a socially healthy life.

Now let's look at clubs. By participating in a club, you get to share your own experiences and knowledge, and at the same time benefit from others sharing the same things.

A group of people working together in a club setting can bring about some great results that individuals would find it hard to achieve.

In these days of increasing restrictions on what we as Amateurs can do in our own backyards, we can look to Clubs to provide a shack and have a decent crop of antennas. Where your Amateur Radio activities may be restricted at home, in the club setting you're back in the good old days.

So there are lots of perfectly acceptable self-centred reasons for being a member of an Amateur Radio Club and a load of other reasons to be part of a sharing community.

So if you've not considered joining a club - or you've fallen away from club membership and wondering why your Amateur Radio life has dulled down, stop awhile and consider or reconsider your local clubs.

The Wireless Institute of Australia supports Amateur Radio Clubs by advertising them on its website, making affordable club insurance available, giving space in the Amateur Radio Magazine for club reports and activities, and the Club Grant Scheme.

I'm Bob VK6POP (from WIA news)

ZS6ARF project

(gleaned from the SARL Forum)

In the aftermath of the 2011 Lesotho DX EME expedition I had the pleasure to partake in I decided to use some of the spare time I create for Amateur Radio to improve on the audio / PTT / sequencer interface box I designed and built for that expedition.

I have now designed and constructed (bread board level) a universal controller aimed at the digital / EME operator and testing the prototype.

For the newbies; to operate EME at remote DX locations at competition level the setup consists of a computer (likely to be a laptop with only USB ports) with JT65 EME software that is interfaced with the transceiver audio TX and RX as well as PTT and sequencing (PTT on - pre-Amplifier off – Transceiver TX – Transverter (optional) TX – Amplifier TX – PTT off - Amplifier RX – Transverter (optional) RX - Transceiver RX - pre-Amplifier on).

There will also be a way to ensure clock accuracy of the computer (internet or GPS) and transmit stability.
Requirements I set for myself for the controller:

- Microprocessor control (PIC / AVR).
- Audio isolated interface between soundcard and transceiver with variable level of audio adjustment.
- PTT (RTR and RTS) isolated interface between computer and sequenced with the transceiver /transverter /amplifier /pre-amp.
- USB / serial / CIV interfacing both PTT /audio / Transceiver Control.
- Accessory port pin out (audio / PTT) selection for ICOM / Yaesu / Kenwood.
- Timing control to counter ALC /RF overshoot characteristics at PTT of most transceivers creating problematic interfacing with amplifiers that have overdrive protection.
- Control of PTT lines to include direct keying of microphone / CW while protecting the pre-amplifier.
- GPS access for accurate location plotting (coordinates and grid square) as well as stability of frequency (10MHz reference point).
- Built in 5 Volts power supply as well as battery options.
- LCD screen readout and programming.
- Rotator Tracking and Control (Azimuth /Elevation and both serial and USB). The rotator to be directly controlled from the controller by four buttons or via software.
- Lightweight and portable but sturdy enough to be used in DX expedition environments.
- Field – repairable with easily replaceable components that are locally available.
- Complimentary to other equipment with regard to labelling and finish.
- Reasonable cost.

I started off by deciding on the microprocessor environment which in my experience area is a choice between the PIC environment and that of Arduino (AVR). I decided on the Arduino as the modules to make up my controller is readily available pre-built as well as a vast range of public – domain coding which expedites the development.

For the development I used the Arduino UNO R3 (development processor) linked to:

- Relay shield which provides four photo-coupled relays (sequencer).
- MediaTek MT3329 GPS 10Hz + Adapter (coordinates and frequency).
- Serial Enabled 16x2 LCD - Black on Green 5V (LCD Readout).
- Barometric Pressure Sensor (weather).
- Digital Temperature sensor (weather).
- 8 pin accessory port as found on Icom / Yaesu / Kenwood transceivers.
- Azimuth /Elevation interfacing.

The final controller will be a programmed Arduino ProMini 328-5V/16MHz board replacing the UNO R3 linked to the different shields.

Bread boarded so far are:

- Audio interface (2 audio transformers / 2 pots / discrete components).
- PTT (opto-isolator / discrete components).
- ATMEGA8U2 Breakout board (USB to serial interface can also program the Arduino Pro Mini 328 - 5V/16MHz board).
- 5 volts power supply.

The coding (while still work in progress) is at a testing stage and successfully provides the following:
- Control (pin-out selection) over the relays with adjustable timing and order of sequencing by way of menu selection on the LCD (sequencer and ALC overshoot working).
- GPS NEMEA data capturing resulting in time (UTC / local), coordinates and grid square readout on LCD (GPS working – outstanding to do is to bread board the 10 MHz frequency control).
- Accessory port configuration by way of menu selection on the LCD for different radios (Pin out selection working).
- Computer and manual control of the Azimuth of a Yaesu G-1000DXA controller with digital readout on LCD in degrees and direction (The coding for Elevation readout is embedded but I do not have an Elevation rotator at this time at my QTH to test. Also need to improve accuracy of the sensors for EME control. ZS6OB is assisting in this development).
- LCD digital readout of barometric pressure and temperature.

The next phase now is to complete the bread boarding and then construct six controllers.

My intention is to provide each of the Lesotho EME participants which were ZS6OB (Pine), ZS6BUN (Dick), ZS6PA (Pieter), Hermann (DL2UND) and Dan (HB9CRQ) with a completed controller to be used on EME DX expeditions and in their shacks.

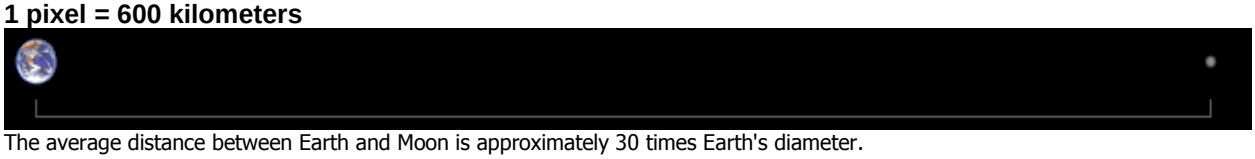
So, what are you constructing this weekend? ——————————————— 73, Wynand de ZS6ARF

Earth and Moon to Scale

by Jeff Root http://www.freemars.org/jeff/index.htm

Ed: EME contacts are becoming common with modern equipment and software. Here are some physical facts that are relevant.

1 pixel = 600 kilometers



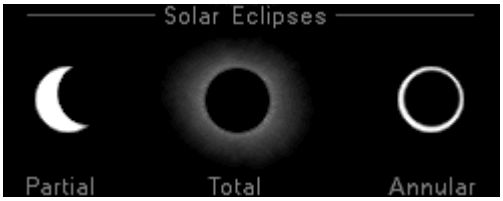
The average distance between Earth and Moon is approximately 30 times Earth's diameter.

If you could fly to the Moon at a constant speed of 1000 kilometers per hour, which is the speed of a fast passenger jet, it would take sixteen days to get there. Apollo astronauts reached the Moon in less than four days even though they coasted "uphill" almost the entire distance. They got a fast start.

The Sun happens to be 400 times the Moon's diameter, and 400 times as far away. That coincidence means the Sun and Moon appear to be the same size when viewed from Earth. A total solar eclipse, in which the Moon is between the Earth and Sun, blocks the bright light from the Sun's photosphere, allowing us to see the faint glow from the corona, the Sun's outer atmosphere.

When the Moon is at apogee, it is 11% farther from Earth than it is at perigee. This is far enough that it cannot entirely block the bright light, so eclipses which occur near apogee are not total.

Perigee	363,300 km
Mean	384,400 km
Apogee	405,500 km



Gravitational interaction (tides on the Earth caused by the Moon) transfers kinetic energy from Earth to the Moon, slowing Earth's rotation and raising the Moon's orbit, currently at a rate of 3.8 centimeters per year.

Earth and Moon Compared

The Moon has approximately 1/4 Earth's diameter, 1/50 Earth's volume, and 1/80 Earth's mass. Earth is very dense overall (it is the densest planet in the Solar System), but the Moon is light for its size. The difference is partly because Earth has a large core of iron and other heavy metallic elements, while the Moon has only a small core, if it has a core at all. The Moon's surface gravity is 1/6 of Earth's, and escape velocity from the surface is about 1/5 of Earth's.

The Moon's surface is covered with rock and grit that are mostly dark-gray minerals, so it reflects light poorly compared to Earth, which always has highly-reflective clouds. The Moon reflects visible light about 1/3 as well as Earth, and because of its smaller size, has a visual brightness less than 1/40 that of Earth, when both are fully illuminated and seen from the same distance -- a difference of four stellar magnitudes.

Based on the earth's mass and wobble, science has shown from computer simulations of the earth that the moon is a stabilizer for earth's rotation, and is essential for tides. It functions something like a *flywheel*, smoothing out the earth's rotation. Without tides from the moon's orbit our oceans would become like stagnant water. And at the very least, the oceans would not have the variety of life they have. Think about how may creatures come and go from the beach, just based on tides. Even sea turtles go by the tide when they lay their eggs on shore.

	EARTH	MOON
Mean diameter	12,742 km	3,476 km
Volume	1.08321×10^{12} km^3	2.199×10^{10} km^3
Mass	5.9736×10^{24} kg	7.349×10^{22} kg
Mean density	5.515	3.342
Surface gravity	9.78 m/s^2	1.62 m/s^2
Escape velocity	11.2 km/s	2.38 km/s
Visual albedo	0.367	0.12
Visual magnitude	-3.86	+0.21

Helpful hint

ZS6KR

Wanting to keep certain selected cables together in a clean environment away from other cables it struck me that I finally had a use for empty CD supply cases.

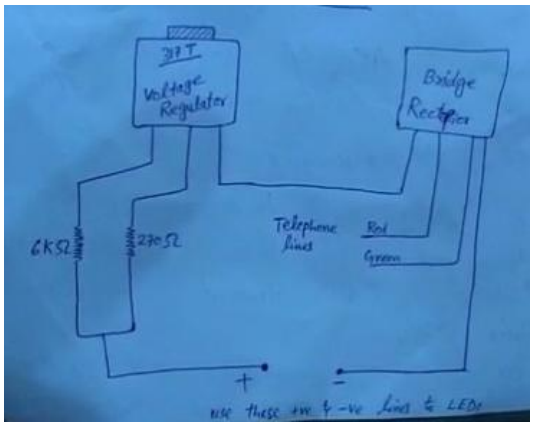
Put the transparent top on the table upside down and coil the cables inside it. Then twist on the bottom part upside down onto it and voila; you have a useful compact cable storage container taking a minimum of space.

End Of An Era: Heathkit Educational Systems Closes Up Shop:

For the second time since 1992, Heathkit Educational Services has shuttered its doors. Rumors of the legendary kit-building company's demise were posted on QRZ.com, with several readers bringing the news to the attention of the ARRL. In August 2011, Heathkit announced it was returning to the kit building business, and in September, that it would once again be manufacturing Amateur Radio kits. The ARRL tried to reach Heathkit to confirm that the company is still in business, but their phone and fax numbers have a continuous busy signal, and e-mails to the company have gone unanswered. Read more here http://www.arrl.org/news/heathkit-educational-systems-closes-up-shop.

HRD 5.11a the last free version.

Get to the web and download the debugged 5.11 as 5.11A. This one still has full function for free.
Versions 5.22 and 6.0 are also on offer but they are subscription versions.



Let Telkom supply your emergency lighting !?

Nifty idea!

Google < phone line powered led lamp> or similar and you can pick up various ideas and commercial gadgets.

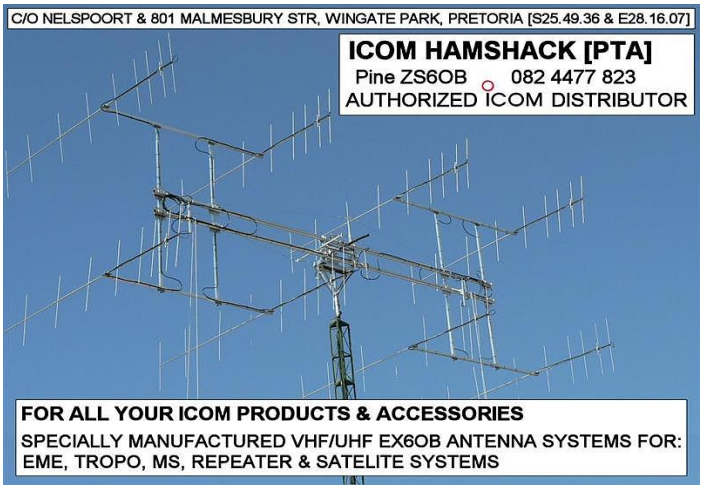
QRV Services offers the following expertise:

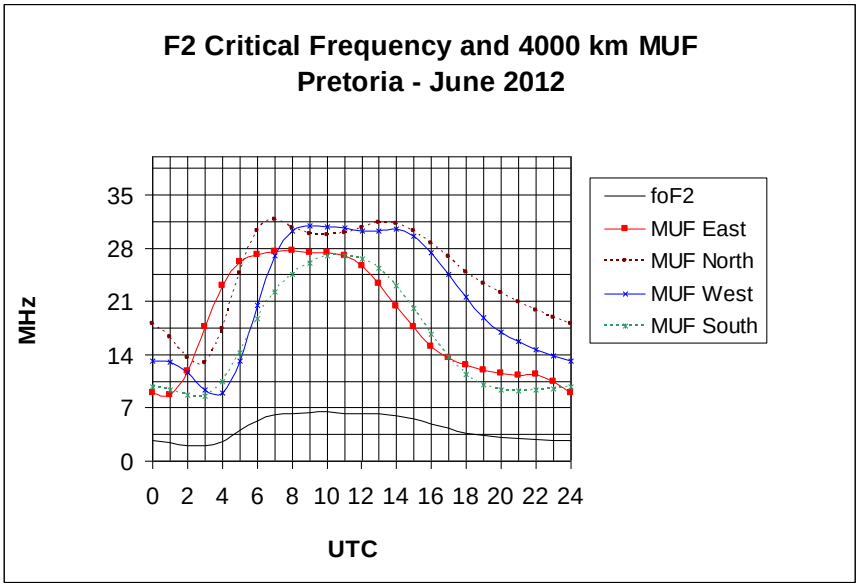
- General equipment and TV repairs
- Small-scale design and manufacturing
- Frequency and power calibration
- Technical writing
- 3rd Party scrutiny of projects and documents
- MFJ 259/69 Analyzer repairs and calibration
- Valuation of ham estates and their disposal

and products:

- Legal limit 40m dipole traps
- Linear power supply O.V. protection kits
- 30A DC switching supplies
- Nissei SWR/Power meters HF and VHF/UHF
- Connectors RF and DC
- Plug-in triple sequential industrial timer

Contact Hans at 012-333-2612 or 072-204-3991





Long Term HF Propagation Prediction for June 2012

Courtesy ZS6BTY

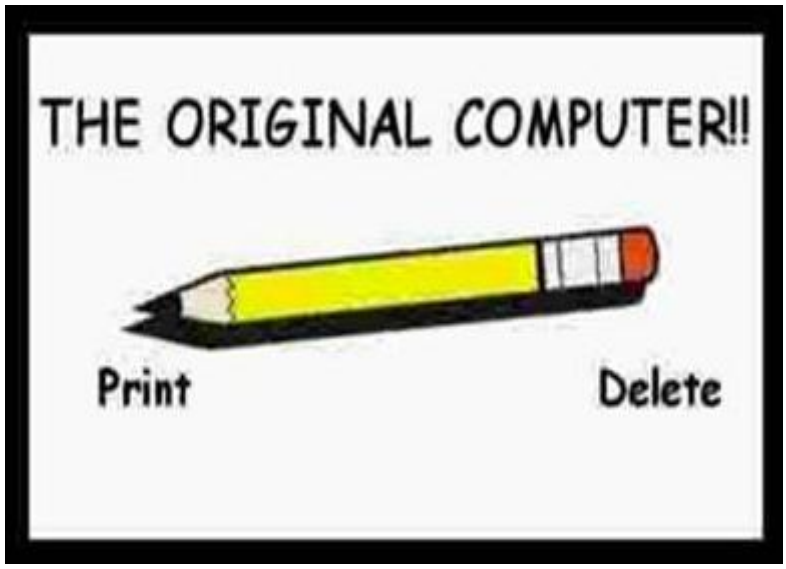
(see also our website propagation tab)

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.



Satnav

I have a little satnav
It sits there in my car
A satnav is a driver's friend
It tells you where you are.

It gives me full instructions
On exactly how to drive
"It's sixty kays an hour" it says
"You're doing seventy-five."

It tells me when to stop and start
And when to use the brake
And tells me that it's never ever
Safe to overtake

It tells me when a light is red
And when it goes to green
It seems to know instinctively
Just when to intervene

I'm sure no other driver
Has so helpful a device
For when I leave and lock the car
It still gives its advice

It fills me up with counselling
Each journey's pretty fraught
So why don't I just exchange it
For a quieter sort?

Ah, well you see, it cleans the house
Makes sure I'm properly fed
It washes all my shirts and things
And keeps me warm in bed

I have a little satnav
I've had it most my life
It does more than the normal one
My satnav is my wife.

Richard Steward, quoted by James Clarke
2012-05-16