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# WATTS

07-2012

Year 82 + 7m

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

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

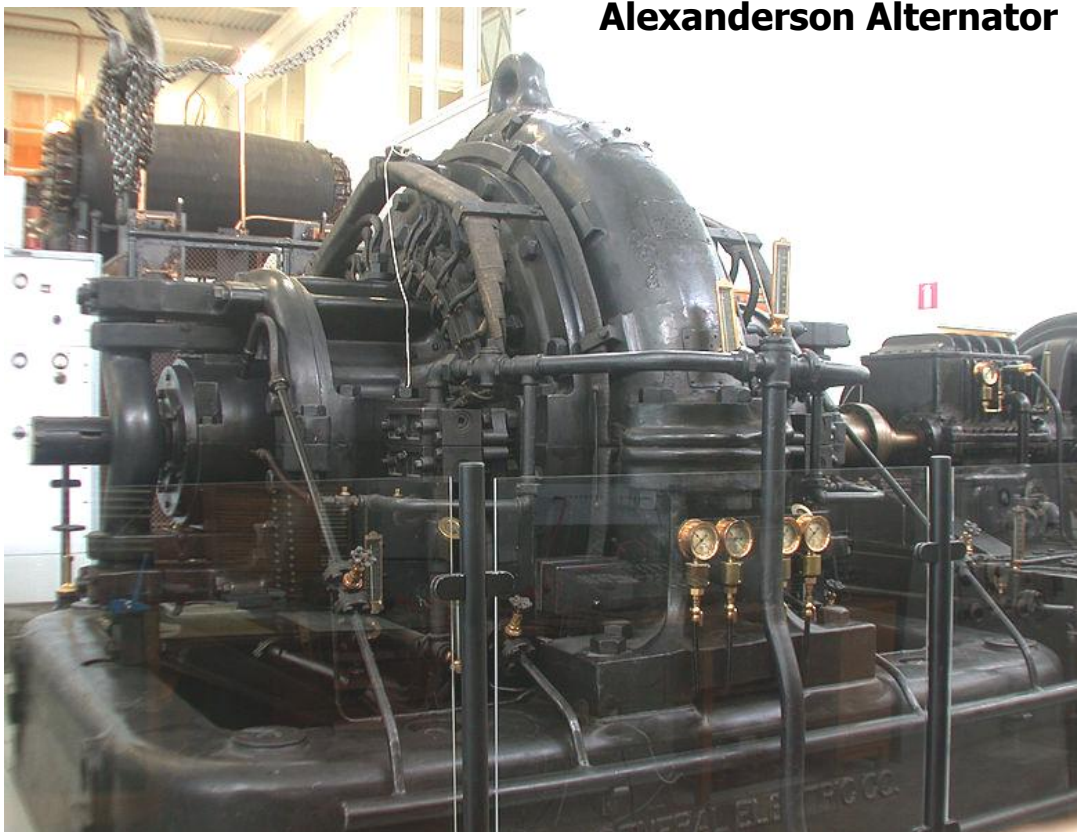
web <http://www.parc.org.za> mail: [zs6pta@zs6pta.org.za](mailto:zs6pta@zs6pta.org.za)

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



## Alexanderson Alternator



This rotating machine was invented in 1904 by Ernst Alexanderson to generate **HF alternating current up to 100 kHz**, for use as a radio transmitter. It was one of the first devices capable of generating the continuous radio waves needed for transmission of AM (sound) by radio, and was used for a short period through the 1920s in the first AM radio transmitters, until it was replaced by vacuum tube transmitters.

### In this issue

- Member news and activities | Lede-nuus en Aktiwiteite
- Subscription renewal notices
- Technical | GPS alternative | Tegnies
- Woodpecker sinister purpose? |
- Starfish Prime lesson to humanity |
- Page eight | -- | Bladsy agt

### In hierdie uitgawe

### Next fleamarkets and socials 2012

**28 July**  
**1 Sept**  
**8 Dec**

**Venue: PMC, Silverton**

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

Committee members

<b>Chairman</b>	Pierre Holtzhausen	ZS6PJH	<a href="mailto:zs6pjh@telkomsa.net">zs6pjh@telkomsa.net</a>	012-655-0726	082-575-5799
<b>Vice Chairman, Fleamarket, PR</b>	Alméro Dupisani	ZS6LDP	<a href="mailto:almero.dupisani@up.ac.za">almero.dupisani@up.ac.za</a>		083-938-8955
<b>Treasurer, repeater maint.</b>	Andre van Tonder	ZS6BRC	<a href="mailto:andre.vtonder@absamail.co.za">andre.vtonder@absamail.co.za</a>	361-3292	082-467-0287
<b>Rallies, Social</b>	Johan de Bruyn	ZS6JHB	<a href="mailto:zs6jhb@gmail.com">zs6jhb@gmail.com</a>	012-803-7385	079-333-4107
<b>Webmaster</b>	Graham Reid	ZR6GJR	<a href="mailto:greid@wol.co.za">greid@wol.co.za</a>	083-701-0511	

Co-opted/Geko-opteer:

<b>Auditor</b>	Tony Crowder	ZS6CRO	<a href="mailto:tcrowder@telkomsa.net">tcrowder@telkomsa.net</a>	011-672-3311	
<b>Secretary</b>	Jean de Villiers	ZS6ARA	<a href="mailto:zs6ara@webmail.co.za">zs6ara@webmail.co.za</a>	012-663-6554	083-627-2506
<b>SARL liason</b>	Jan Pienaar	ZS6OB	<a href="mailto:pienaarja@gmail.com">pienaarja@gmail.com</a>		082-447-7823
<b>WATTS newsletter/Kits</b>	Hans Kappetijn	ZS6KR	<a href="mailto:zs6kr@wbs.co.za">zs6kr@wbs.co.za</a>	012-333-2612	072-204-3991
<b>Repeaters, Technical</b>	Craig Symington	ZS6RH	<a href="mailto:zs6rh@hotmail.co.za">zs6rh@hotmail.co.za</a>		081-334-6817
<b>Clubhouse</b>	Pieter Fourie	ZS6-2512	<a href="mailto:pieter2@vodamail.co.za">pieter2@vodamail.co.za</a>	012-804-7417	083-573-7048
<b>Club contesting</b>	Sander Wissing	ZS6SSW	<a href="mailto:sander.wissing@gmail.com">sander.wissing@gmail.com</a>	012-	
<b>Training</b>	Fritz Sutherland	ZS6SF	<a href="mailto:fritzs@icon.co.za">fritzs@icon.co.za</a>	012-811-3875	083-304-0028
<b>Historian, Awards</b>	Tjerk Lammers	ZS6P	<a href="mailto:zs6p@iafrica.com">zs6p@iafrica.com</a>	012-809-0006	

## AGM | Sunday 8 September 2012 | AJV

**Venue: Eldo Falls 11 AM – details p3**

**There will be a presentation by Hans v/d Groenendaal ZS6AKV**

Motions are awaited

**Members must please indicate if they will attend the AGM for the purpose of budgeting and catering.  
Lede moet asb laat weet of hulle sal bywoon vir begroting- en spysenieringdoeleindes.**

Please notify the secretary Jean ZS6ARA (see above) or any committee member

**!! Only paid-up members may nominate and vote at the AGM.  
!! Slegs opbetaalde lede mag by die AJV nomineer en stem.**

### ARE YOU OVERDUE?

#### SARL Subscriptions Due 1 July

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

#### 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 Ordinary members/ gewone lede R150  
Branch : 25 20 45 Spouses, pensioners R50  
Account : 546 000 426 73

**Your call sign must appear as statement text! !**

## SUPPORT YOUR CLUB AND THE SARL

## Birthdays Verjaarsdae

Aug



- 01 Sue ZS6SUE
- 02 Marelise, lv van Pierre ZS6PJH
- 03 Paul ZS6BMF
- 04 Ceciel, lv van Flip ZS6BS0 / ZS4GE/6
- 04 Gideon ZS6BZT
- 05 Hans ZR6HVG
- 06 Estelle, lv van Simon ZS6AST
- 06 Edwin ZR6ESP, son of Molly ZR6MOL and Richard ZS6UK
- 07 "JB" ZR6YV
- 07 Whitey ZS6JJJ
- 08 Ray ZS6ALG
- 08 Marnix ZS6MCM
- 08 Tobie ZS6ZX
- 10 Anne ZR6AUL, daughter of Frances ZR6AUT
- 15 Roger ZS6RJ
- 15 Molly ZR6MOL, sw of Richard ZS6UK

## Anniversaries Herdenkings

Aug

- 07 Peggy and Ed ZS6UT ( )
- 09 Vlasta and Ivan ZS6CCW ( 41 )
- 18 Zdena and Ivo ZS6AXT ( 56 )
- 20 Bertha en Hans ZS6KR ( 46 )
- 30 Darlington and Hilary ZR6HAP ( 4 )

- 16 Marie, dogter van Poppie ZS6BCP en Hansie ZS6AIK
- 20 Brazz ZR6UV
- 20 Hal ZS6WB
- 25 Doppies ZS6BAQ
- 26 Sin,ad daughter of Heather and Vince ZS6BTY
- 28 Jean ZS6ARA
- 30 Jonathan ZR6JON, son of Sue ZS6SUE

## Joys and Sorrows | Lief en Leed

**Poppie ZS6BCP** was onlangs in die hospitaal

## Diary | Dagboek (UTC times)

Aug

- 04 European HF Championship 00:00-23:59
- 04-05 10-10 International Summer Contest 00:01-23:59
- 05 SARRL HF Phone Contest 13:00-16:00**
- 12 WAEurope DX CW Contest 00:00-23:59
- 25-26 YO DX HF Contest 12:00-12:00
- 26 SARRL HF CW Contest 14:00-16:00**

Sept

- 01-02 All Asian DX Contest phone 00:00-24:00
- 08 PARC AGM**

## RAE Course at PARC clubhouse

**Started 24 July with 4 candidates.**

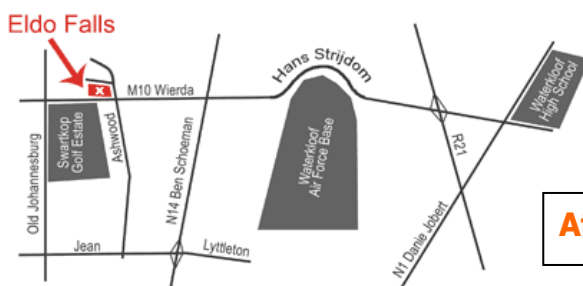
**It's not too late-  
Please inform potential candidates.**

**Contact ZS6BTY or ZS6SF**



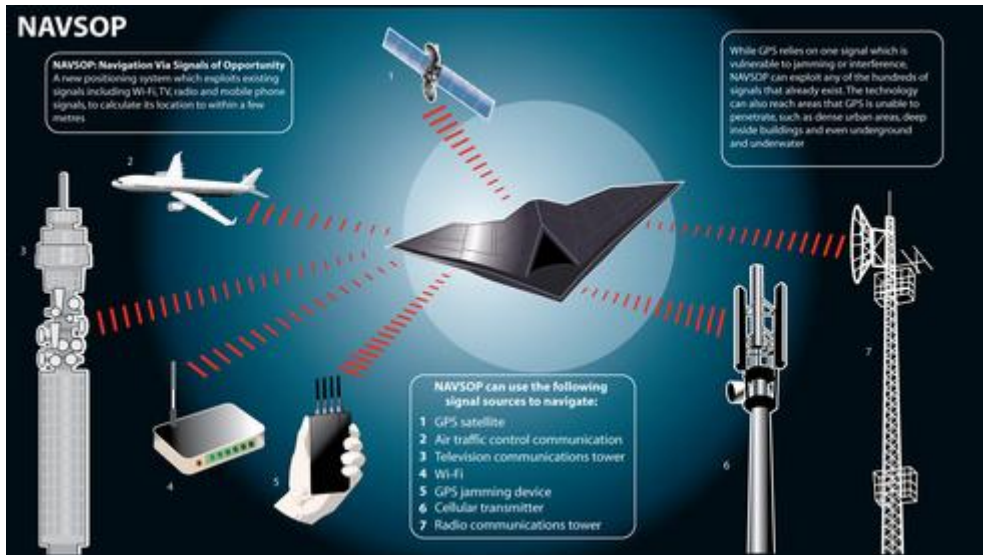
## PARC AGM 8 Sept.

Our AGM will be held at Eldo Falls (large lapa) 11 AM:  
**220 Ashwood Drive  
C/O Hans Strijdom Drive  
Clubview, Centurion**



**Attendance and braai catering only R45 !**

# BAE Systems locates opportunity to replace GPS



BAE Systems UK has unveiled its latest research on an advanced positioning system that exploits existing transmissions such as Wi-Fi, TV, radio and mobile phone signals, to calculate the user's location to within a few metres.

Military platforms commonly use Global Positioning Systems (GPS) to find their position and navigate. GPS rely upon a specific and relatively weak satellite signal that is vulnerable to disruption. Known as Navigation via Signals of Opportunity (NAVSOP), BAE Systems' new system is able to calculate its position by making use of the hundreds of different signals that are all around us.

By exploiting such a wide range of signals, NAVSOP is resistant to hostile interference such as jamming (a particular weakness of GPS) and spoofing, where a bogus signal tricks a device into misidentifying its location. The new system can learn from signals that are initially unidentified to build an ever more accurate and reliable fix on its location. Even the signals from GPS jammers can be exploited by the device to aid navigation under certain conditions.

The real beauty of NAVSOP is that the infrastructure required to make it work is already in place. There is no need to build costly networks of transmitters and the hardware behind the system is already commercially available. Another benefit is that it can be integrated into existing positioning devices to provide superior performance to GPS.

A major advantage of the system is its ability to function in places where GPS is unable to reach, such as dense urban areas and deep inside buildings. It is also able to work in the most remote parts of the world, such as the Arctic, by picking up signals that include Low-Earth-Orbit satellites and other civilian signals.

From aiding soldiers operating in remote or dense urban areas to providing improved security for Unmanned Aerial Vehicles (UAVs), which could face attempts to disrupt their guidance systems, NAVSOP has a wide range of potential military applications.

Among those pioneering this area of research is Dr Ramsey Faragher, a Principal Scientist from BAE Systems Advanced Technology Centre, who recently led a team that received a prestigious award from the Institute of Navigation for a ground-breaking paper on how aspects of the technology work indoors.

Quote: "The potential applications of this technology are already generating huge excitement in both civilian and military circles. This research is a great example of BAE Systems working closely with potential customers to not only improve the performance of existing technology, but also tackle their weaknesses head on and find innovative ways to reduce or eliminate them."

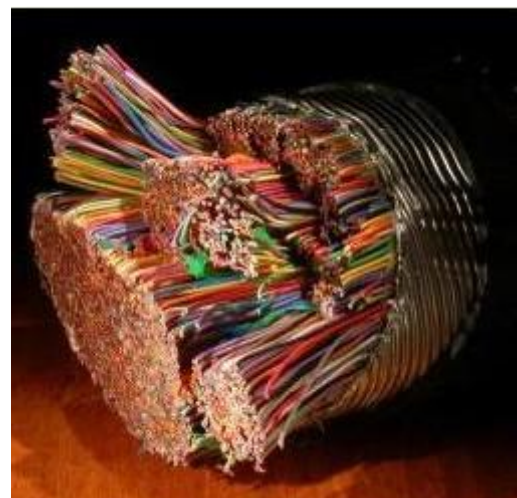
James Baker, Managing Director at BAE Systems Advanced Technology Centre, said: "At a time when the need to be innovative and resourceful is more important than ever, this capability represents truly outside-the-box thinking by providing a cost effective system with a wide variety of different applications. This technology is a real game changer when it comes to navigation, which builds upon the rich heritage that both BAE Systems and the UK have in radio engineering."

This research is generating interest in both defence and civilian domains where its uses could include helping fire and rescue services find their way through smoke filled buildings and enhancing the safety of lone workers and security staff.

<sup>1</sup> Royal Academy of Engineering Report, Global Navigation Space Systems: reliance and vulnerability, [www.raeng.org.uk/qnss](http://www.raeng.org.uk/qnss)

**1500 pair 4 inch diameter huge telephone cable** from early last century could carry 1500 simultaneous conversations.

A modern optical fibre can carry ten or more as many conversations in a diameter equal to a single pair of wires!

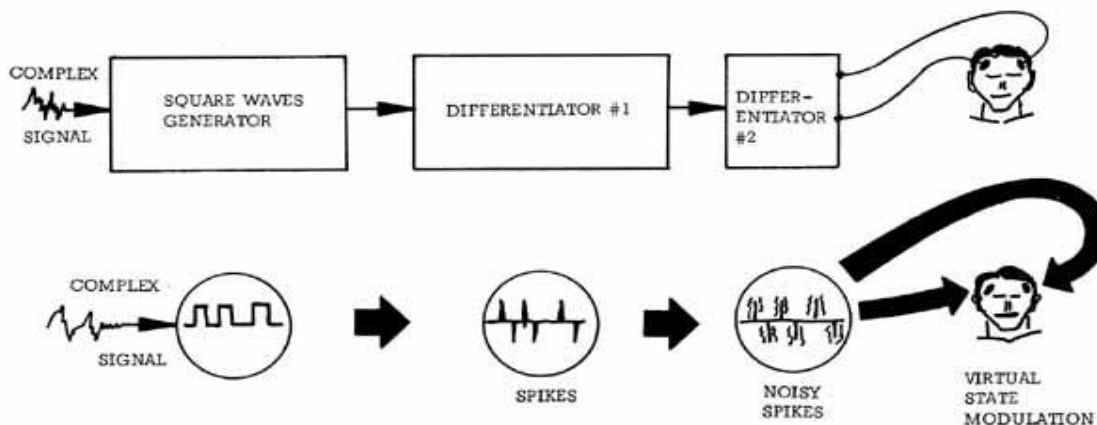


## SOVIET "WOODPECKER" SIGNALS

**Now discontinued – but had a hidden agenda of experimental global mind control?**

Ed: All of us older OM's can well remember the irritating staccato QRM on HF caused by the Soviet "Woodpecker". Was it's purpose something other than "over-the-horizon" radar? It is thought that a device known as Dr. Pat Flanagan's "Neurophone" that uses hyperspatial, virtual state, nested modulation technology was the root of it all. Was it a technology that the Soviet Union chose to weaponize its effects on a global scale?

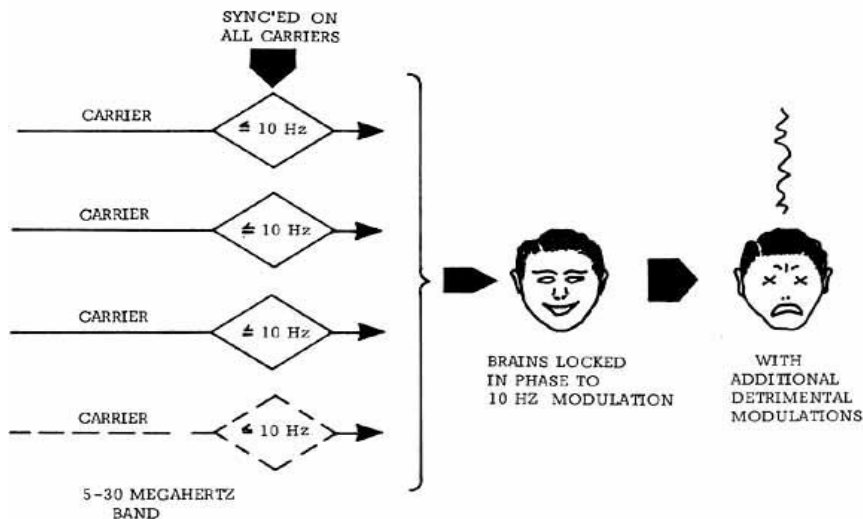
The "Neurophone" directly "pumps the brain" and reproduces sound and information directly in the brain and mind system, without going through the auditory system at all. A simplified diagram of Pat's improved "Neurophone" is shown below:



Pat Flanagan's neurophone proved that complex information can be implanted directly in the brain and mind, bypassing the normal isolating barriers. Identifying and decoding words and syllables in specific brain wave patterns and correlating these electroencephalographic patterns with both the spoken word and the silently thought word has also been proven.

### The Soviet "woodpecker"

Woodpecker signals that emanated from the USSR in the 5-30 megahertz region and interfering with communications around the earth appeared to originate from two or three dozen powerful Soviet transmitters, each with a power estimated as high as 40 megawatts.



Pioneering experimental measurements of these signals by Dr. Robert Beck and William Bise have shown just how deadly a potential may be possessed by the signals. These measurements have been performed in Eugene and Portland, Oregon; Los Angeles, California; Huntsville, Alabama; and several other locations. They have been particularly significant on the West Coast in and around Eugene, Oregon because of the presence of a direct current transmission line several hundred miles long, which has acted as a long wire antenna, picking up the signals and rebroadcasting them with appreciable gain in the vicinity.

Typically the signals were found on, say, sixteen different carriers between 10 and 20MHz. Twelve of the carriers may appear normal, with normal side-bands, and the other four may have the carrier and both sidebands suppressed but still show the biologically significant modulation (for example, 10Hz). On all sixteen channels a strong 10Hz modulation may appear, all perfectly time synchronized and in phase channel-to-channel. The received signal from one of these carriers may be twenty-five to thirty times as strong as the earth's back-ground magnetic field, which is oscillating at approximately 7.0 to 7.5Hz. Other complex modulation frequencies, many of them changing, are present on the various channels.

Normally, the brainwaves of mammals in an area are gently entrained by the normal oscillations of the earth's magnetic field and

are oscillating along at, say, 7.5Hz Under continuous radiation from the Soviet woodpecker signals, a percentage (say 30 percent) of the mammalian brains may be captured by the 10Hz modulation on the overpowering Soviet signals. These captured brains are now in forced oscillation and are riding along in phase with the 10Hz Soviet modulation. In other words, a certain percentage of the human brains in an area will phase lock to the 10Hz modulation, and that will effectively lock into those brains the sixteen carrier frequencies with their concomitant frequency mixes and complex signal modulations. If the signals are made much more powerful (for example, by focusing them onto one particular area or increasing the power of the transmitters), then a much higher percentage of brainwave entrainment can be accomplished in the targeted area.

By simply adding on the desired modulation patterns, material can be pumped directly into the mind-brain-consciousness-life loops of the entrained brains. The weapon implications are enormous: raw emotion such as sheer terror or panic can be transmitted; death or disease patterns of all kinds can be transmitted; informational content (thoughts and ideas) can be impressed directly into the captured brains and minds and processed as if originating inside each brain itself. Indeed, as long as the effects are kept rather gentle, an entire population can be subtly influenced without governmental notice. Certain specific ELF frequencies can rapidly disable or even kill, and for wartime use those frequencies can be directly implanted in the captured brains themselves by the woodpecker signals.

Now one can perhaps understand Brezhnev's strange 1975 proposal to the SALT negotiations that we should also consider outlawing the development of new weapons more frightful than the mind of man has ever conceived....

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## Starfish Prime – A frightening man-made event with many lessons

(not recommended to create better HF skip)

[http://en.wikipedia.org/wiki/Starfish\\_Prime](http://en.wikipedia.org/wiki/Starfish_Prime)

"50 years ago today, the US detonated a nuclear weapon 240 miles above the Pacific Ocean.

Called Starfish Prime, it was supposed to help US scientists and the military understand how the Soviets might try to stop incoming nuclear missiles.

Apart of all sorts of visual phenomenae described in the above link, Starfish Prime caused an [electromagnetic pulse](#) (EMP) which was far larger than expected, so much larger that it drove much of the instrumentation off scale, causing great difficulty in getting accurate measurements.

The Starfish Prime electromagnetic pulse also made those effects known to the public by causing electrical damage in Hawaii, about 1,445 kilometres (898 mi) away from the detonation point, knocking out about 300 streetlights, setting off numerous burglar alarms and damaging a telephone company [microwave link](#).

The EMP damage to the microwave link shut down telephone calls from [Kauai](#) to the other [Hawaiian islands](#).<sup>[5]</sup>

The Starfish Prime explosion

**Picture; View of Starfish Prime through thin cloud, as seen from [Honolulu](#)**

On July 9, 1962, at 09:00:09 [Coordinated Universal Time](#), (which was July 8, [Honolulu](#) time, at nine seconds after 11 p.m.), the Starfish Prime test was successfully detonated at an altitude of 400 km (250 mi).

The coordinates of the detonation were 16 degrees, 28 minutes North latitude, 169 degrees, 38 minutes West longitude.<sup>[5]</sup> The actual weapon yield was very close to the design yield, which has been described by various sources at different values in the range of 1.4 to 1.45 [megatons](#) (6.0 PJ).

The Thor missile carrying the Starfish Prime warhead reached a maximum height of about 1100 km (just over 680 miles), and the warhead was detonated on its downward trajectory when it had fallen to the programmed altitude of 400 km (250 mi).

The nuclear warhead detonated at 13 minutes and 41 seconds after liftoff of the Thor missile from Johnston Island.<sup>[6]</sup>

### Aftereffects

While some of the energetic [beta particles](#) followed the Earth's magnetic field and illuminated the sky, other high-energy electrons became trapped and formed [radiation belts](#) around the earth. There was much uncertainty and debate about the composition, magnitude and potential adverse effects from this trapped radiation after the detonation.

The weaponeers became quite worried when three satellites in [low earth orbit](#) were disabled. These man-made radiation belts eventually crippled one-third of all satellites in low earth orbit.

Seven satellites failed over the months following the test as radiation [damaged](#) their [solar arrays](#) or electronics, including the first commercial relay [communication satellite](#), [Telstar](#).<sup>[12][13][14]</sup> Detectors on Telstar, [TRAAC](#), [Injun](#), and [Ariel 1](#) were used to measure distribution of the radiation produced by the tests.<sup>[15]</sup>

In 1963, Brown et al. reported in the *Journal of Geophysical Research* that Starfish Prime had created a belt of MeV electrons,<sup>[16]</sup> and [Wilmot Hess](#) reported in 1968 that some Starfish electrons remained for five years.<sup>[17]</sup>



## Battery technologies

	NiCd	NiMH	Lead Acid	Li-ion	Li-ion polymer	Reusable Alkaline
<b>Gravimetric Energy Density</b> (Wh/kg)	45-80	60-120	30-50	110-160	100-130	80 (initial)
<b>Internal Resistance</b> (includes peripheral circuits) in mW	100 to 200 <sup>1</sup> 6V pack	200 to 300 <sup>1</sup> 6V pack	<100 <sup>1</sup> 12V pack	150 to 250 <sup>1</sup> 7.2V pack	200 to 300 <sup>1</sup> 7.2V pack	200 to 2000 <sup>1</sup> 6V pack
<b>Cycle Life</b> (to 80% of initial capacity)	1500 <sup>2</sup>	300 to 500 <sup>2,3</sup>	200 to 300 <sup>2</sup>	500 to 1000 <sup>3</sup>	300 to 500	50 <sup>3</sup> (to 50%)
<b>Fast Charge Time</b>	1h typical	2-4h	8-16h	2-4h	2-4h	2-3h
<b>Overcharge Tolerance</b>	moderate	low	high	very low	low	moderate
<b>Self-discharge / Month</b> (room temperature)	20% <sup>4</sup>	30% <sup>4</sup>	5%	10% <sup>5</sup>	~10% <sup>5</sup>	0.3%
<b>Cell Voltage</b> (nominal)	1.25V <sup>6</sup>	1.25V <sup>6</sup>	2V	3.6V	3.6V	1.5V
<b>Load Current</b>						
- peak	20C	5C	5C <sup>7</sup>	>2C	>2C	0.5C
- best result	1C	0.5C or lower	0.2C	1C or lower	1C or lower	0.2C or lower
<b>Operating Temperature</b> (discharge only)	-40 to 60°C	-20 to 60°C	-20 to 60°C	-20 to 60°C	0 to 60°C	0 to 65°C
<b>Maintenance Requirement</b>	30 to 60 days	60 to 90 days	3 to 6 months <sup>9</sup>	not req.	not req.	not req.
<b>Typical Battery Cost</b> (US\$, reference only)	\$50 (7.2V)	\$60 (7.2V)	\$25 (6V)	\$100 (7.2V)	\$100 (7.2V)	\$5 (9V)
<b>Cost per Cycle</b> (US\$) <sup>11</sup>	\$0.04	\$0.12	\$0.10	\$0.14	\$0.29	\$0.10-0.50
<b>Commercial use since</b>	1950	1990	1970	1991	1999	1992

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



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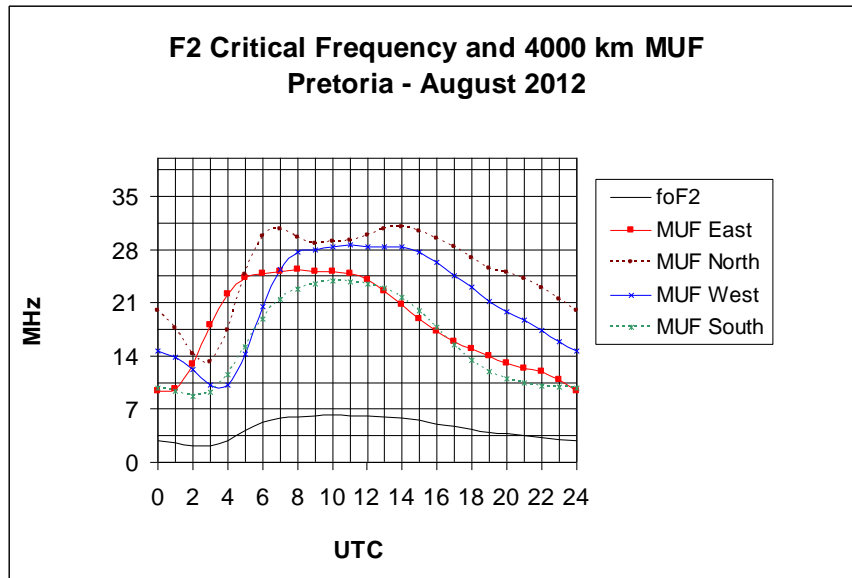
### QRV Services offers the following expertise:

- General equipment and TV repairs
- Small-scale design and manufacturing
- Frequency and power calibration
- Technical writing
- 3<sup>rd</sup> 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 August 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.

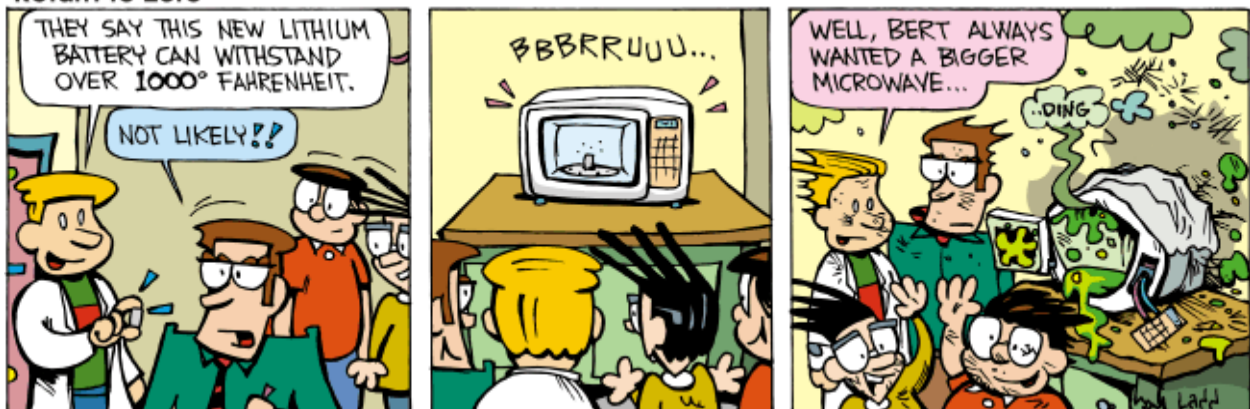
### Local Operating

The F2 critical frequency (foF2) is the maximum frequency that will reflect when you transmit straight up. E-layer reflection is not shown.

## Notable quotes

- "The wireless telegraph is not difficult to understand. The ordinary telegraph is like a very long cat. You pull the tail in New York and it meows in Los Angeles. The wireless is the same, only without the cat." - Albert Einstein
- "Forty is the old age of youth, Fifty is the youth of old age." - Victor Hugo
- "Why yes - a bulletproof vest." - James Rodges, murderer, on his final request before the firing squad
- "Where a calculator on the ENIAC is equipped with 18,000 vacuum tubes and weighs 30 tons, computers of the future may have only 1,000 vacuum tubes and perhaps weigh 1½ tons." - Popular Mechanics, March 1949
- "In the future, airplanes will be flown by a dog and a pilot. And the dog's job will be to make sure that if the pilot tries to touch any of the buttons, the dog bites him." - Scott Adams
- "There is no reason anyone would want a computer in their home." - Ken Olson, president/founder of Digital Equipment Corp., 1977
- "Heavier-than-air flying machines are impossible." - Lord Kelvin
- "Counting in octal is just like counting in decimal, if you don't use your thumbs." - Tom Lehrer
- "Politics is the conduct of public affairs for private advantage." Ambrose Bierce
- "I've heard that the government wants to put a tax on the mathematically ignorant. Funny, I thought that's what the lottery was!," - Gallagher

### Return to Zero



EEWeb.com