# WATTS

04-2013
Year 83 + 4m

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

PARC, PO Box 73696, Lynnwood Ridge 0040, 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

Papier / Paper ZS6RH
Drukwerk ZS6RH

## Another glimpse of the extensive facility operated by Iain-ZS5IE (more photos on QRZ.com)

## In this issue / In hierdie uitgawe



## Next club events

**Fleamarkets at PMC**
**Wed 1 May (public holiday)**
**Sat 10 Aug Sat 7 Dec**

**Club social at U.P.**
**Thursday 4 Apr 7pm**
**Club committee meeting**
**Thursday 18 Apr 7pm**

# PARC Management team / Bestuurspan Aug. 2012 – Aug. 2013

Committee members

| | | | | | |
|---|---|---|---|---|---|
| **Chairman, Contests** | Pierre Holtzhausen | ZS6PJH | zs6pjh@telkomsa.net | 012-655-0726 | 082-575-5799 |
| **Vice Chairman, SARL liason** | Fritz Sutherland | ZS6SF | fritzs@icon.co.za | 012-811-3875 | 083-304-0028 |
| **Secretary, Clubs, Strategy** | Jean de Villiers | ZS6ARA | zs6ara@webmail.co.za | 012-663-6554 | 083-627-2506 |
| **Treasurer, SARS** | Andre van Tonder | ZS6BRC | andreh.vtonder@absamail.co.za | 361-3292 | 082-467-0287 |
| **Rallies, Social** | Johan de Bruyn | ZS6JHB | zs6jhb@gmail.com | 012-803-7385 | 079-333-4107 |
| **Webmaster** | Graham Reid | ZR6GJR | greid@wol.co.za | | 083-701-0511 |
| **RAE, Bulletin co-ordinator** | Vincent Harrison | ZS6BTY | zs6bty@telkomsa.net | 012-998-8165 | 083-754-0115 |
| **Repeaters, Technical** | Craig Symington | ZS6RH | zs6rh@hotmail.co.za | | 081-334-6817 |
| **Technical, Kits. PR, youth** | Rudi van Dyk | ZS6RVD | vdykr@telkomsa.net | | 082-962-4141 |

Co-opted/Geko-opteer:

| | | | | | |
|---|---|---|---|---|---|
| **Auditor** | Tony Crowder | ZS6CRO | tcrowder@telkomsa.net | 011-672-3311 | |
| **WATTS newsletter/Kits** | Hans Kappetijn | ZS6KR | zs6kr@wbs.co.za | 012-333-2612 | 072-204-3991 |
| **Clubhouse** | Pieter Fourie | ZS6CN | pieter2@vodamail.co.za | 012-804-7417 | 083-573-7048 |
| **Fleamarket** | Alméro Dupisani | ZS6LDP | almero.dupisani@up.ac.za | | 083-938-8955 |
| **Historian, Archives, Awards** | Tjerk Lammers | ZS6P | zs6p@iafrica.com | 012-809-0006 | |

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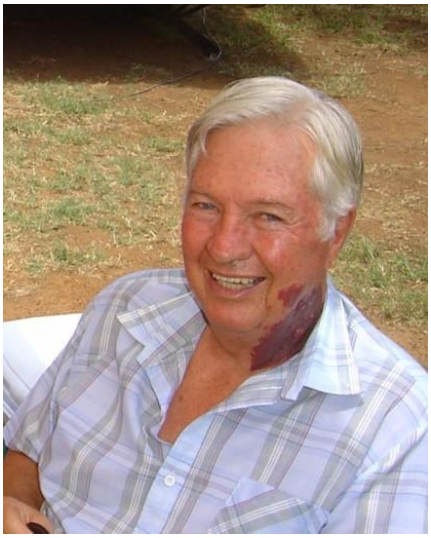
# † OM Bill Ingleson ZS6KO SK



OM Bill passed away in the morning of 15 March after a long illness of several months. He was 85 years and a PARC member for 65 years in 2012 .

It is difficult to describe his enormous contribution to the amateur radio hobby and was the perpetual tinkerer and home-brewer with a great love for Morse Code communication for which he built many a QRP rig.
He will be missed by many regulars on the CW bands.

Bill was always game for field days and fox hunting and set many an example to motivate others in these persuits. He also was club chairman in 1976,1977 and 1993 as well as a committee member at various times.

Numerous awards came his way and he will always be remembered for his Desert Island Awards where some really imaginative stories came forth to amuse the audience.

R.I.P. old friend. We will miss you.

# IMPORTANT INFORMATION TO ALL LICENCEES

ICASA now has three people dealing with amateur licensing, divided by section of the alphabet as shown at the end of this item. The details, email addresses and telephone number are:

**A-B-C-D-E-R-S-T**
Khutso Mashile
011 566 3313
011 566 3314
Kmashile@icasa.org.za

**F-G-H-I-J-K-U-W-X-Y-Z**
Petunia Mashile
011 566 3657
011 566 3658
PMMashile@icasa.org.za

**L-M-N-O-P-Q-V**
Delmar de Witt
011 566 3339
011 566 3340
DdeWitt@icasa.org.za

## License fees coming up 1 April

The license fee of R120.00 is due on **1 April 2013**. You may also renew for up to five years at a reduced fee. See below.

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

Always include your call sign as a payment reference.

## Birthdays Apr. Verjaarsdae

01 Melanie, daughter of Peggy and Ed ZS6UT
04 Joe ZS6AIC
04 Dino ZS6DNO
08 Bertha, lv van Hans ZS6KR
08 Klasie, seun van Sylvia en Tjerk ZS6P
09 Tanya, daughter of Pat ZR6AVC and Frank ZS6GE
10 Joey, sw of Graham ZS6GJR
10 Callan, son of Phil ZS6PHL and Craig ZS6RH
12 Jan ZS6LJ
13 Liam ZR6RAF, son of Heather and Vincent ZS6BTY
16 Tobie, seun van Margriet en Tobie
18 Eric ZS6ME
21 Wynand ZS6ARF
22 Marieta, sw of Roy ZS6MI
25 Gerhard, son of Sander ZS6SSW
28 Tracey, daughter of Rita and victor ZS6VG
29 Heather, sw of Vincent ZS6BTY
30 Robert ZS6PRO

## Anniversaries Apr. Herdenkings

06 Lynn and Andre ZS6BRC
12 Rika and Errol ZR6VDR ( 44 )
30 Joey and Graham ZS6GJR ( 30 )

## Lief en Leed | Joys and Sorrows

**Andre ZS6GCA** was in hospital for an operation

## Diary | Dagboek (UTC times)

**Apr**
**04 SARL 80m QSO Party 17:00-20:00**
06-07 SP DX Contest 15:00-15:00
13-14 JIDX CW Contest 07:00-13:00
19-20 Holyland DX Contest 21:00-21:00
20-21 YU DX Contest 21:00-17:00
27-28 10-10 Int. Digital Contest 00:01-23:59
27-28 SP DX RTTY Contest 12:00-12:00
27-28 Helvetia Contest 13:00-12:59

## Snippets | Brokkies

### Pat Hawker MBE G3VA, SK

Radio amateurs around the world will be saddened to learn of the death of Pat Hawker MBE, G3VA, on 21 February 2013.
He was 90 years old.
Pat was an amazing person, working with clandestine radio supporting WWII resistance units, but best known for his work with the RSGB conducting the Technical Topics column in Radcom magazine.
That column typically covered a new or interesting tidbit in a few paragraphs, and sometimes a diagram.
Others would have milked it out into a long article, but G3VA was able to distill the necessary information and tell the reader just what he needed to know.

(Ed: If my memory serves me right, he wote numerous articles for Practical Wireless as well)

## Well done PARC participants!

**Results of the 2012 CQ WW RTTY DX Contest**

**Number groups after callsigns denote the following: Band, Final Score, QSOs, Countries, Zones, US/VE. An asterisk (*) indicates low power.**

**South Africa**

| | | | | | | |
|---|---|---|---|---|---|---|
| ZS6RJ | A | 284,672 | 415 | 121 | 60 | 75 |
| *ZS1JY | A | 53,340 | 146 | 56 | 34 | 37 |
| *ZS6AKU | 28 | 55,990 | 187 | 58 | 23 | 29 |

**104 • CQ • March 2013**


CQ
The Radio Amateur's Journal
Takes pleasure in awarding this Certificate of Merit to
ZS1LL
In Recognition of the achievement of winning the 2012
World Wide WPX Contest
for the AFRICA division for
1ST PLACE TRIBANDER/SINGLE ELEMENT - LOW POWER SSB 10 METERS
A Total score of 45 points was computed on the basis of the number of stations worked and call sign prefixes contacted. In witness of this achievement, we hereby affix our signatures on this day.
CQ WPX Contest Director
Editor, CQ

**Schalk ZS1LL our distant member**


CQ
The Radio Amateur's Journal
Takes pleasure in awarding this Certificate of Merit to
ZS1LL
In Recognition of the achievement of winning the 2012
World Wide WPX Contest
for the AFRICA division for
1ST PLACE QRP POWER SSB SINGLE OPERATOR 10 METERS
A Total score of 45 points was computed on the basis of the number of stations worked and call sign prefixes contacted. In witness of this achievement, we hereby affix our signatures on this day.

QST Magazine Product Reviews - Key Measurements Summary - HF-Transceivers or Receivers

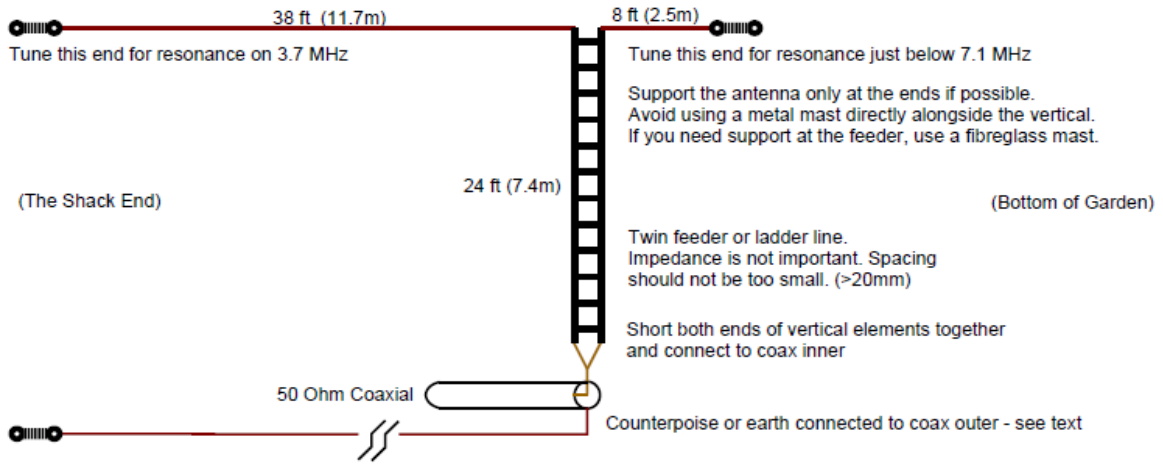
| | Receiver | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Subject of measurement, band: 14 MHz | NEW: 20 kHz reciprocal mixing dynamic range | NEW: 2 kHz reciprocal mixing dynamic range | 20 kHz blocking gain compression | 2 kHz blocking gain compression | 20 kHz 3rd-order dynamic range | 2 kHz 3rd-order dynamic range | 20 kHz 3rd-order intercept | 2 kHz 3rd-order intercept | Transmit 3rd-order IMD | Transmit 9th-order IMD | Rx-Tx turnaround time (SSB tx delay) | Price in USD (2011/2012) | Company's site |
| Min/max of scale | 80/140 dB | 60/140 dB | 70/140 dB | 70/140 dB | 50/110 dB | 50/110 dB | -40/+35 dB | -40/+35 dB | -20/-35 dB | -20/-70 dB | 50/10 ms | | |
| Transceivers/receivers sorted by 2 kHz 3rd-order dynamic range. Please take into account that there might be a difference in the numbers when comparing the older product reviews (before February 2007) compared to the later product reviews, due to changes in the testing methodology, measurements filters, etcetera. | | | | | | | | | | | | | |
| 1 Yaesu FTdx5000D, December 2010 | N/M | N/M | 136 dB * | 136 dB * | 114 dB ! | 114 dB ! | +41 dBm ! | +40 dBm ! | -43 dB #! | -72 dB #! | 37 ms | $ 5.529 | www.yaesu.com |
| 2 WINRADIO WR-G31DDC, January 2012 | N/M | N/M | 128 dB | 128 dB | 107 dB | 107 Db | +32 dBm | +32dBm | N/A | N/A | N/A | $ 899 | www.winradio.com |
| 3 Elecraft K3, January 2009 | N/M | N/M | 142 dB ! | 140 dB | 106 dB | 103 dB | +29 dBm | +28 dBm | -29 dB | -51 dB | 12 ms | $ 2.200 | www.elecraft.com |
| 4 Elecraft K3, April 2008 | N/M | N/M | 139 dB | 139 dB | 103 dB | 102 dB | +26 dBm | +26 dBm | -27 dB | -53 dB | 22 ms | $ 2.200 | www.elecraft.com |
| 5 Elecraft KX3, november 2012 | 120 dB | 114 dB | 130 dB | 128 dB | 103 dB | 100 dB | +34 dBm | +34 dBm | -30 dB | -55 dB | 30 ms | $ 999 | www.elecraft.com |
| 6 FlexRadio FLEX-5000A, July 2008 | N/M | N/M | 123 dB | 123 dB | 99 dB | 99 dB | +35 dBm | +30 dBm | -34 dB | -54 dB | 29 ms | $ 2.799 | www.flexradio.com |
| 7 TenTec 599AT Eagle, August 2011 | N/M | N/M | 136 dB | 121 dB | 98 dB | 98 dB | +22 dBm | +22 dBm | -28 dB | -48 dB | 16 ms | $ 1.795 | www.tentec.com |
| 8 Kenwood TS-590S, May 2011 | N/M | N/M | 141 dB ! | 126 dB | 106 dB | 97 dB | +26 dBm | +22 dBm | -29 dB | -52 dB | 14 ms | $ 1.649 | www.kenwood.com |
| 9 Perseus SDR, December 2008 | N/M | N/M | 129 dB | 129 dB | 100 dB | 97 dB | +35 dBm | +35 dBm | N/A | N/A | N/A | $ 999 | www.microtelecom.it |
| 10 Icom IC-7700, October 2008 | N/M | N/M | 125 dB | 102 dB | 106 dB | 95 dB | +35 dBm | +24 dBm | -28 dB | -53 dB | 15 ms | $ 7.179 | www.icomamerica.com |
| 11 TenTec Orion-II, September 2006 | N/M | N/M | 136 dB | 136 dB | 92 dB | 95 dB | +20 dBm | +21 dBm | -28 dB | -52 dB | 30 ms | $ 4.295 | www.tentec.com |
| 12 Flex-3000, Oct/Nov 2009 | N/M | N/M | 113 dB | 113 dB | 99 dB | 95 dB | +28 dBm | +26 dBm | -30 dB | -45 dB | 48 ms | $ 1.699 | www.flexradio.com |
| 13 Icom IC-7410, October 2011 | N/M | N/M | 143 dB ! | 111 dB | 106 dB | 88 dB | +29 dBm | +5 dBm | -30 dB | -61 dB | 45 ms | $ 1.949 | www.icomamerica.com |
| 14 Icom IC-7600, November 2009 | N/M | N/M | 122 dB | 102 dB | 106 dB | 88 dB | +31 dBm | +13 dBm | -31 dB | -48 dB | 13 ms | $ 4.976 | www.icomamerica.com |
| 15 Icom IC-9100, April 2012 | 101 dB | 77 dB | 142 dB ! | 111 dB | 108 dB | 87 dB | +29 dBm | +2 dBm | -29 dB | -64 dB | 61 ms | $ 3.650 | www.icomamerica.com |
| 16 Icom IC-7800 V2, March 2007 | N/M | N/M | 144 dB ! | 117 dB | 108 dB | 86 dB | +38 dBm ! | +22 dBm | -32 dB | -52 dB | 15 ms | $ 12.499 | www.icomamerica.com |
| 17 FlexRadio FLEX-1500, December 2011 | N/M | N/M | 107 dB | 107 dB | 100 dB | 86 dB | +31 dBm | +13 dBm | -22 dB | -48 dB | 200 ms | $ 649 | www.flexradio.com |
| 18 Yaesu FTdx9000MP, July 2010 | N/M | N/M | 137 dB | 102 dB | 99 dB | 85 dB | +28 dBm | +7 dBm | -37 dB #! | >-75 dB #! | 32 ms | $ 11.629 | www.yaesu.com |
| 19 TenTec R4020 QRP, February 2011 | N/M | N/M | N/M | N/M | 84 dB | 84 dB | -10 dB | -10 dB | N/M | N/M | N/M | $ 249 | www.tentec.com |
| 20 TenTec Omni-VII, July 2007 | N/M | N/M | 137 dB | 134 dB | 91 dB | 82 dB | +11 dBm | +6,5 dBm | -27 dB | -55 dB | 20 ms | $ 2.695 | www.tentec.com |
| 21 Icom IC-R9500, January 2008 | N/M | N/M | 144 dB ! | 109 dB | 5kHz/92 dB | 81 dB | +32 dBm | -4dBm | N/A | N/A | N/A | $ 17.000 | www.icomamerica.com |
| 22 Yaesu FTdx9000C, March 2006 | N/M | N/M | 128 dB | 97 dB | 101 dB | 78 dB | +35 dBm | +1 dBm | -34 dB # | -80 dB #! | 35 ms | $ 5.779 | www.yaesu.com |
| 23 Yaesu FT-450D, November 2011 | N/M | N/M | 134 dB | 88 dB | 97 dB | 76 dB | +16 dBm | -21 dBm | -25 dB | -50 dB | 17 ms | $ 999 | www.yaesu.com |
| 24 Yaesu FT-950, March 2008 | N/M | N/M | 128 dB | 98 dB | 95 dB | 71 dB | +21 dBm | -4 dBm | -35 dB | -56 dB | 25 ms | $ 1.449 | www.yaesu.com |
| 25 Alinco DX-SR8T, June 2011 | N/M | N/M | 100 dB | 83 dB | 94 dB | 70 dB | +1 dB | -30 dB | -25dB | -53 dB | 50 ms | $ 519 | www.alinco.com |
| 26 Yaesu FT-2000D, October 2007 | N/M | N/M | 136 dB | 87 dB | 98 dB | 69 dB | +26 dBm | -16 dBm | -41 dB #! | -63 dB # | 37 ms | $ 3.549 | www.yaesu.com |
| 27 Icom IC-7200, June 2009 | N/M | N/M | 140 dB | 83 dB | 99 dB | 67 dB | +23 dBm | -11 dBm | -32 dB | -58 dB | 30 ms | $ 1.396 | www.icomamerica.com |
| 28 Yaesu FT-450, December 2007 | N/M | N/M | 134 dB | 90 dB | 97 dB | 67 dB | +13 dBm | -31 dBm | -30 dB | -48 dB | 40 ms | N/A | www.yaesu.com |
| 29 Yaesu FT-2000, February 2007 | N/M | N/M | 126 dB | 92 dB | 95 dB | 64 dB | +16 dBm | -22 dBm | -32 dB | -60 dB | 27 ms | $ 2.819 | www.yaesu.com |
| 30 Icom IC-7000, May 2006 | N/M | N/M | 112 dB | 86 dB | 89 dB | 63 dB | +6 dBm | -27 dBm | -33 dB | -58 dB | 12 ms | $ 1.299 | www.icomamerica.com |

Transceivers/receivers sorted by 2 kHz 3rd-order dynamic range. Please take into account that there might be a difference in the numbers when comparing the older product reviews (before February 2007) compared to the later product reviews, due to changes in the testing methodology, measurements filters, etcetera.

# G7FEK Limited Space Antenna

G7FEK Multi-band "Nested Marconi" Antenna (rev 5). **(Abridged version – Get the full .pdf off the net)**

This antenna was first conceived as a simple dual band antenna in 1988, in an attempt to achieve sensible dual band operation in a small garden of 14m (46 ft) length. Evolving from a simple end-fed Marconi for 80m, the idea was to use the opposing harmonic relationships of two ¼ wave elements so that they could be fed on odd harmonics without mutual coupling. This principle has been used with nested dipole antennas and other specialist multi-band antennas such as the Cobweb, but because of interaction and coupling issues, it's rarely implemented on end fed wire antennas. With this version of the antenna, interaction between elements and top resonance have been turned to our advantage allowing for excellent multi-band working, while maintaining a useful radiation pattern and efficiency on almost all Amateur Radio bands.

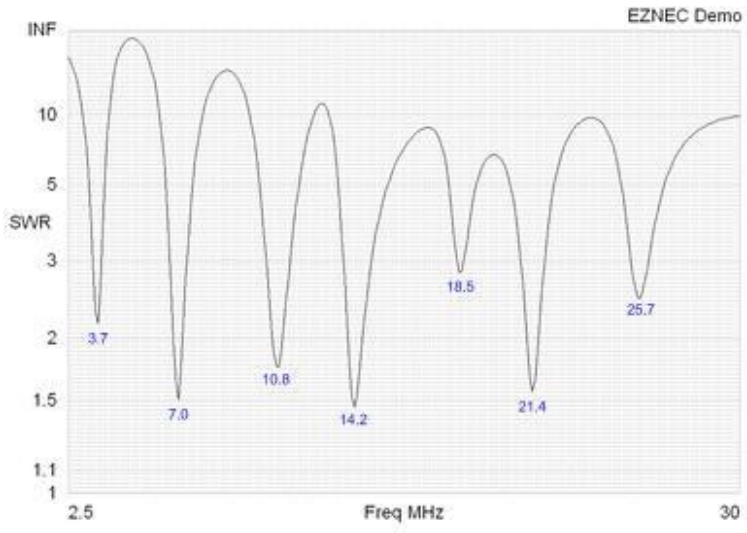



The suggested dimensions provide for low radiation angle (30 to 40 degrees) on all bands except 30m where the antenna acts as a full size horizontal dipole. Low VSWR is achievable on most bands and, with careful construction, up to four bands can be used without ATU. Radiation resistance is in the range 25 to 200 ohms on all bands, ensuring high radiation efficiency, even with moderate earthing arrangements. Unlike the Windom or G5RV, the fundamental bands can be resonated independently.

The G7FEK antenna looks a little like a small, off centre, G5RV. If anyone has tried a G5RV in 46ft of garden you will know that performance is not that great, and the "½ size" G5RV is completely useless on 80 meters.
During sunspot minimum, putting out a good signal on 80m can mean the difference between operating HF radio or not, as most other bands are not in good shape. This antenna allows anyone to achieve an effective full size 80m antenna in a small garden with excellent low angle DX performance, closely matching a full size dipole installed at the same height.

### So what is it?

The original "Nested Marconi Antenna" was first designed in 1988 and in 2007 the antenna was optimized and tested at sunspot minimum to improve performance and multi-band operation. The difference in feed impedance between elements determines which element is coupled to the feeder and which element floats, thus automatic band switching occurs without the need for traps. For the higher bands this antenna utilises the odd harmonic resonance of these elements which are also at low impedance. In each case some radiation is coupled from the driven element into the main antenna, producing a useful radiation pattern and omni- directional low angle performance. On 30m, the top horizontal section works as an end fed dipole with ¼ wave transformer feed, as in the Zeppelin antenna, giving a dipole radiation pattern while assuring a low impedance feed.




The dimensions have been carefully optimized for best multi band performance and to maintain a low angle radiation pattern on all bands for best DX working, while taking up only a small physical space.
This design is very easy and cheap to build and unlike many limited space antennas, it works very well on 80 meters, a band that many Radio Amateurs with restricted space have previously been denied.

# Aluminium alloys

**abridged from Wikipedia, the free encyclopedia – and local input by pine ZS6OB**

**Aluminium alloys** are alloys in which aluminium (Al) is the predominant metal. The typical alloying elements are copper, magnesium, manganese, silicon and zinc. There are two principal classifications, namely casting alloys and wrought alloys, both of which are further subdivided into the categories heat-treatable and non-heat-treatable. About 85% of aluminium is used for wrought products, for example rolled plate, foils and extrusions. Cast aluminium alloys yield cost effective products due to the low melting point, although they generally have lower tensile strengths than wrought alloys.

The most important cast aluminium alloy system is Al-Si, where the high levels of silicon (4.0% to 13%) contribute to give good casting characteristics. Aluminium alloys are widely used in engineering structures and components where light weight or corrosion resistance is required.

Alloys composed mostly of aluminium have been very important in aerospace manufacturing since the introduction of metal skinned aircraft. Aluminium-magnesium alloys are both lighter than other aluminium alloys and much less flammable than alloys that contain a very high percentage of magnesium.

Aluminium alloy surfaces will keep their apparent shine in a dry environment due to the formation of a clear, protective layer of aluminium oxide. In a wet environment, galvanic corrosion can occur when an aluminium alloy is placed in electrical contact with other metals with more negative corrosion potentials than aluminium.

Aluminium alloy compositions are registered with The Aluminum Association. Many organizations publish more specific standards for the manufacture of aluminium alloy, including the Society of Automotive Engineers standards organization, specifically its aerospace standards subgroups, and ASTM International.

Aluminium alloys with a wide range of properties are used in engineering structures. Alloy systems are classified by a number system (ANSI) or by names indicating their main alloying constituents (DIN and ISO). Selecting the right alloy for a given application entails considerations of its tensile strength, density, ductility, formability, workability, weldability, and corrosion resistance, to name a few.

Aluminium alloys typically have an elastic modulus of about 70 GPa, which is about one-third of the elastic modulus of most kinds of steel and steel alloys. Therefore, for a given load, a component or unit made of an aluminium alloy will experience a greater elastic deformation than a steel part of the identical size and shape. Though there are aluminium alloys with somewhat-higher tensile strengths than the commonly used kinds of steel, simply replacing a steel part with an aluminium alloy might lead to problems. An important structural limitation of aluminium alloys is their lower fatigue strength compared to steel. In controlled laboratory conditions, steels display a fatigue limit, which is the stress amplitude below which no failures occur - the metal does not continue to weaken with extended stress cycles. Aluminum alloys do not have this lower fatigue limit and will continue to weaken with continued stress cycles.

**Alloy designations**

Wrought and cast aluminium alloys use different identification systems. Wrought aluminium is identified with a four digit number which identifies the alloying elements. Cast aluminium alloys use a four to five digit number with a decimal point. The digit in the hundreds place indicates the alloying elements, while the digit after the decimal point indicates the form (cast shape or ingot).

**Temper designation**

The temper designation follows the cast or wrought designation number with a dash, a letter, and potentially a one to three digit number, e.g. 6061-T6. The definitions for the tempers are:

**-F** As fabricated
**-H** Strain hardened (cold worked) with or without thermal treatment
- **-H1** Strain hardened without thermal treatment
- **-H2** Strain hardened and partially annealed
- **-H3** Strain hardened and stabilized by low temperature heating

Second digit

A second digit denotes the degree of hardness
- **-HX2** = 1/4 hard
- **-HX4** = 1/2 hard
- **-HX6** = 3/4 hard
- **-HX8** = full hard
- **-HX9** = extra hard

**-O** Full soft (annealed)
**-T** Heat treated to produce stable tempers
- **-T1** Cooled from hot working and naturally aged
- **-T2** Cooled from hot working, cold-worked, and naturally aged
- **-T3** Solution heat treated and cold worked
- **-T4** Solution heat treated and naturally aged
- **-T5** Cooled from hot working and artificially aged
- **-T51** Stress relieved by stretching
- **-T510** No further straightening after stretching
- **-T511** Minor straightening after stretching
- **-T52** Stress relieved by thermal treatment

- **-T6** Solution heat treated and artificially aged
- **-T7** Solution heat treated and stabilized
- **-T8** Solution heat treated, cold worked, and artificially aged
- **-T9** Solution heat treated, artificially aged, and cold worked
- **-T10** Cooled from hot working, cold-worked, and artificially aged

**-W** Solution heat treated only.

**Wrought alloys**

The International Alloy Designation System is the most widely accepted naming scheme for wrought alloys. Each alloy is given a four-digit number, where the first digit indicates the major alloying elements.

- 1000 series are essentially *pure aluminium* with a minimum 99% aluminium content by weight and can be work hardened.

- 2000 series are alloyed with *copper*, can be precipitation hardened to strengths comparable to steel. Formerly referred to as duralumin, they were once the most common aerospace alloys, but were susceptible to stress corrosion cracking and are increasingly replaced by 7000 series in new designs.
- 3000 series are alloyed with *manganese*, and can be work hardened.
- 4000 series are alloyed with *silicon*. They are also known as silumin.
- 5000 series are alloyed with *magnesium*.
- 6000 series are alloyed with *magnesium* and *silicon*, are easy to machine, and can be precipitation hardened, but not to the high strengths that 2000 and 7000 can reach.
- 7000 series are alloyed with *zinc*, and can be precipitation hardened to the highest strengths of any aluminium alloy.
- 8000 series is a category mainly used for *lithium* alloys.[citation needed]

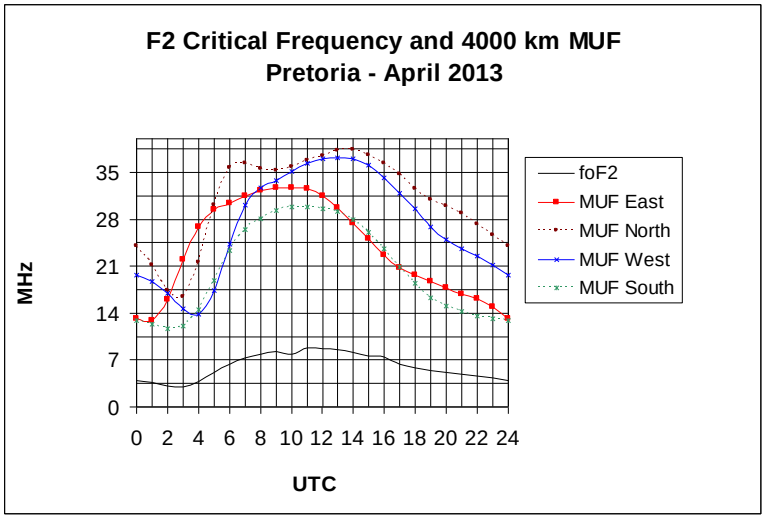
**Named alloys**

- Alclad Aluminium sheet formed from high-purity surface layers bonded to high strength aluminium alloy core material
- Birmabright (aluminium, magnesium) a product of The Birmetals Company, basically equivalent to 5251
- Duralumin (copper, aluminium)
- Pandalloy Pratt&Whitney proprietary alloy, supposedly having high strength and superior high temperature performance.
- Magnalium
- Magnox (magnesium, aluminium)
- Silumin (aluminium, silicon)
- Titanal (aluminium, zinc, magnesium, copper, zirconium) a product of Austria Metall AG. Commonly used in high performance sports products, particularly snowboards and skis.
- Y alloy, Hiduminium, R.R. alloys: pre-war nickel-aluminium alloys, used in aerospace and engine pistons, for their ability to retain strength at elevated temperature.

From the above listings there are specific alloys for aerospace and aircraft (typically 7075), marine, cycling and automotive use.

Amateur radio DIY constructors in the US can source 6063-T832 drawn aluminum or 6061-T8 heavy-wall drawn aluminum—both highly resistant to corrosion and stress cracking - as a most reliable alloy. Locally we have less choice.
**Pine ZS6OB advises as follows:**
**All tubular material - 6063 - T6** (the 6063-T832 used for "booms" overseas are a little lighter and harder)
**All solid material for antennas - 6082 - T6** (solid 6081 normally used overseas is not any more locally available)

Lots of tech info in these websites: http://eng.sut.ac.th/metal/images/stories/pdf/02_Aluminium%20and%20aluminium%20alloy.pdf and http://en.wikipedia.org/wiki/Aluminium_alloy




# Long Term HF Propagation Prediction for April 2013

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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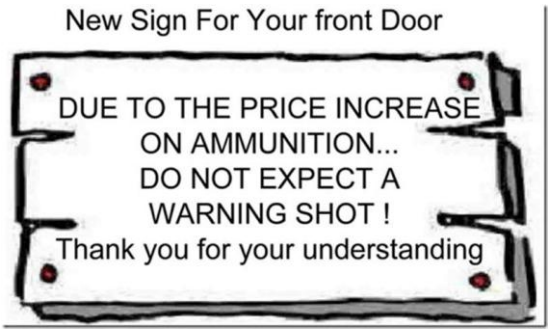
# What you get told at a fleamarket

**with translation.** Thanks to http://highfields-arc.co.uk/fun/amrad.htm




**This rig puts out a BIG signal** - It's 50 kHz wide.
**This is a really good CW rig** - It doesn't work on SSB.
**This is a really good SSB rig** - It doesn't work on CW.
**This is a really good rig** - It doesn't work on CW or SSB.
**The transmitter is outstanding** - It doesn't receive.
**The receiver is really hot** - It doesn't transmit.
**This rig is really hot** - It's stolen.
**It seems to be a vintage regenerative type** - It oscillates.
**I just re-valved it** - Got 'em from questionable used valve stock.
**I just aligned it** - The slugs on the transformers are jammed and broken.
**I don't know if it works** - It doesn't work, probably never has.
**It doesn't chirp** - Because it doesn't transmit.
**The audio sounds great** - The mains hum is faithfully reproduced.
**I just had it serviced** - I sprayed WD-40 over all the wiring.
**It comes with the original box** - Just brush out the cat litter.
**Better buy it now, cause it won't last** - Exactly!
**Sure, it works at full power** - It sucks all it can from the wall outlet.
**This rig has wide frequency coverage** - It drifts up and down by 2 MHz.
**Frequency stability is great** - The VFO doesn't work - you'll have to use crystals.
**Real popular rig in its day** - There were whole HF nets on the repair and maintenance problems.
**RadCom gave this one a really great review** - The language broke new ground for profanity.
**It might need a bit of tweaking** - Marconi himself couldn't fix it, much less align it.
**It was used in government service** - It was stored outdoors on a wooden pallet.
**The dial drive may need lubricating** - The gears are stripped and the setscrew's frozen.
**I plugged it in to check that it lights up** - The light came from the two foot high flames.
**I'm selling it because I have two of them** - The working one I'm keeping.
**You won't find one at a 'better' price** - 'Better' defined as solely from the point of view of the seller.
**This is a collector's item** - The manufacturer just went belly up and won't honour the warranty.
**It came from an SK sale** - If you have any problem take it up with the original owner.
**It worked last time I used it** - If it still worked, I'd still be using it.
**The only lightning damage was a fuse** - The only lightning damage I recognised was a fuse.
**I have the [missing part] somewhere, I'll send it to you, trust me** - You'll never see the [missing part].
**I'll help you carry it to the car** - I'll do anything to unload this pile of ****.
**It works O.K. on 80 meters** - It had some parasitics but I got in and really screwed it up and now I want to unload it.
**The valves used by this rig are worth the asking price** - The rig uses a rare 7360 beam deflection tube for a balanced modulator, but it's blown and you'll spend at least $80+ to get a new one.
**This is the rig of my dreams I really wanted one of these as a kid, but now I've got to let it go** - As I've gotten older, I've learned what a pile of **** it is.
**The signal quality of this rig was easily recognisable in its day** - The high distortion and bad audio quickly identified this rig.
**This rig will bring back the feelings and atmosphere of vintage ham gear** - The bypass capacitors to the AC line put enough voltage on the chassis to give you a shock in the lips through the microphone, and it smokes so bad when you turn it on that you'll probably start coughing and wheezing.
**I'd keep this baby, but my wife is making me clean everything out of the shack** - I finally got around to giving this thing the proverbial heave-ho.
**There are a couple of other people interested in it** - Someone looked at it and laughed.
**You'd better buy it now, because I'm leaving soon** - A previous customer and his BIG brother are heading back toward the table and they aren't smiling.

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