Radio ZS

Volume 63 No./Nr 2

March - April 2010
Maart - April 2010

The PW MEON 70 MHz Transverter Revisited
New antenna on the ISS
The G3EJS 2-Tuner

SARL 1925 - 2010
85 Years of Service to Amateur Radio

South African Radio League
Suid-Afrikaanse Radioliga

Founded in 1925 / Gestig in 1925
The National Body for Amateur Radio In South Africa
Die Nasionale Liggaam vir Amateurradio in Suid-Afrika
Member Society of the International Amateur Radio Union, Region 1
Ledevereniging van die Internasionale Amateur Radio-unie, Streek 1

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SARL News Bulletins/ Nuusbulletins
Sundays / Sondae
08:15 CAT Afrikaans
08:30 CAT English
HF 20 m, 40 m, 80 m HF
VHF 2 m and 70 cm BHF

www.sarl.org.za/newsinbox.asp

Amateur Radio Mirror International
Sundays 10:00 CAT Sondae
16 and 40 metres AM; 7,082 MHz SSB
2 m and 70 cm FM; Echolink by ZS6FCS
http://www.sarl.org.za, click on ARMI and follow the links

Mondays / Maandae
21:00 CAT - 3,215 MHz

South African Radio League
Suid-Afrikaanse Radioliga

Radio ZS

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Front Cover / Voorblad

Dirk Lotz, ZS1X, a member of the Cape Town ARC, operating a field station next to the dam at Silvermine Nature Reserve during the SARL National Field Day on 13 and 14 February 2010. Photo by Russell Mycroft, ZS1VK. See page 14.

Dirk Lotz, ZS1X, 'n lid van die Kaapstad ARS, bedien 'n velddag stasie langs die dam by die Silvermine Natuurresevaat tydens die SARL Nasionale Velddag op 13 en 14 Februarie 2010. Die foto is deur Russell Mycroft, ZS1VK, geneem. Lees ook bladsy 14.

Contributions to Radio ZS. Radio ZS is a forum for SARL members to share their amateur radio experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or e-mail are especially welcome. Material may be submitted in rtf format. Material may be mailed to The Editor, Radio ZS, PO Box 12104, Brandhof, 9324 or by e-mail to radiozs@sarl.org.za. The SARL cannot be responsible for loss or damage to any material.

CQ de ZS1YT

It feels only like yesterday when we had our last AGM in Cape Town and here we are yet again at the end of another administrative year for the SARL. I would like to thank each and every member who joined the SARL this last year. During the month of March, we reached our projected goal of 1 400+ members. This enables the SARL to function as a truly representative National Body for Amateur Radio in South Africa. A great word of praise goes to the current SARL council for their enormous input into amateur radio during this past year. Also a great round of applause for Mariska Faasen, our very competent office administrator, for her valuable contribution with the running of the SARL office.

During March, the current council as well as council nominees for next year attended a very successful planning session at NARC. I can unequivocally confirm that we can look forward to a very interesting year ahead. Amateur Radio, without a doubt, is still very much alive and active!

Na bykans 11 jaar op die SARL Raad, waarvan 2 jaar as President, het ek besluit om so 'n jaar uit die kalklig te beweeg en sal my nie hierdie jaar weer verkiesbaar stel nie. Ek glo egter sterk daaraan dat jy slegs iets uit jou stokperdjie kan put, as jy ook bereid is om iets weer daarin terug te ploeg. Ek sal om voorvermelde rede seker steeds, agter die skerms betrokke wil bly by die SARL en amateurradio. Ek bedank graag ieder en elk wat gedurende my termyne as president my getrou ondersteun het en 'n positiewe bydrae tot amateurradio in Suid Afrika gemaak het.

Die nuwe Raad van die SARL gaan bestaan uit ouer garde wat hulle self weer herverkiesbaar gestel het, maar terselfdertyd verwelkom ons ook nuwe bloed met entoesiasme op die Raad. Ek dink dit is 'n wenresep vir die SARL en ek sien baie uit na die toekoms van amateurradio in die volgende dekade.

Groete van hok tot hok.

Marion Island, ZS8M

In 2008, Marion Island was the 5th most wanted DXCC entity, in 2009, it moved to 3rd most wanted. But it will start moving down the list.

Pierre, ZS1HF, is the radio technician for the new Marion team, they depart on 8 April and Pierre hopes to be come active as ZS8M from May onwards. His equipment is an IC-7000, an IC-7200 with a Transworld Linear, as well as a FT-817 when he is walking around the island and operating from the huts.

QSL information as per SARL website and QRZ.com.

Amateur Radio – the most versatile hobby on earth

Proudly Amateur Radio

By Victor P du Preez, ZS6EA *

The statement ***"Amateur Radio – the most versatile hobby on earth,"*** makes you think that the person saying it is proud to make such a statement – could this be true? This is only a hobby, why be proud of amateur radio?

Did you know that people from all walks of life can be found practicing this wonderful hobby? From the most humble to the most important you will encounter - all willing to have a conversation with you. Without reservation, you may call a king by his name and he will expect you to do just that. You don't believe me? You should, it happens all the time. I am not going to give you an example, just take my word for it (or Google it) and you will be astonished.

You will find professors, doctors, architects, engineers, plumbers, electricians, taxi drivers, chimneysweepers, governors, kings, astronauts ... ah you name it, you will find them to be amateurs. No, I do not know about Santa. Could be, who knows for sure! I do know about all these different people, all over the world, acting as if they belong to one family, which they do. It does not matter from which country you are, amateurs from all over the world talk the same code language, they think alike, they do the same. They do this proudly, and most will overcome all obstacles for the sake of Amateur Radio.

I do know that I am not alone in this: that, as a youngster, I had this obsession to try and understand the Morse code that I was hearing on my parents' SW radio. I would sit for hours and listen to these - what my Dad called *"Hams"*- talking to each other. It was only in my teen years that I, per chance through a friend, was fortunate enough to meet a real amateur - OM Fred Pentz, ZS6AWE, sadly now a silent key. No fuss! OM Fred would demonstrate, talk and explain for hours, invite us back time and again, and in the end: yes, you bet! We wrote the exams and became real Radio Amateurs. That is not the end of the story, the OM Fred (bless him) type of chap, will, once you are *"assimilated"* into the family, do his utmost to see that you get your own radio; he will come over and see to it that you install your antenna correctly; he will tutor you on the correct procedures to follow. These are the people that make amateur radio proud. We should salute these guys whilst alive; do it now, there may not be a later. Honour them now.

You tell me: where will you find another hobby where guys and girls - lots of them - will contribute of their own time and often financially towards their hobby and its members, for years on end, without ever complain-

(Continued on page 6)

(Proudly Amateur Radio from page 5)

ing? Do not dare me! Off the top of my head, I could make you a very long list of these people, locally and all over the world; you will find them in "amateur radio." They are the people who will, when nobody else are prepared too, submit to be democratically elected into the club managements, into the running of the Radio League that you find in most every country. You will find them delivering lectures, giving Morse code classes, preparing and reading bulletins and other great stuff that we amateurs enjoy hearing on the radio, and even readying your clubhouse for your comfort. You know what? They do all this while you and I are busy enjoying our radios and chatting away. These are the people who proudly stand up for the ordinary amateur like you and me, through the Clubs, Radio League and the Amateur Radio Union, really clever people who take on governments to protect us amateurs and our great hobby. I kid you not! Think about this and believe me! Let it be known that this is a proud hobby, proudly run by proud people! Do not withhold this truth! Shout it out to the world at every opportunity. #

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The PW MEON 70 MHz Transverter Revisited

by André Botes, ZS2ACP *

Winner of the 2010 Tinus Lange Technical Excellence Award

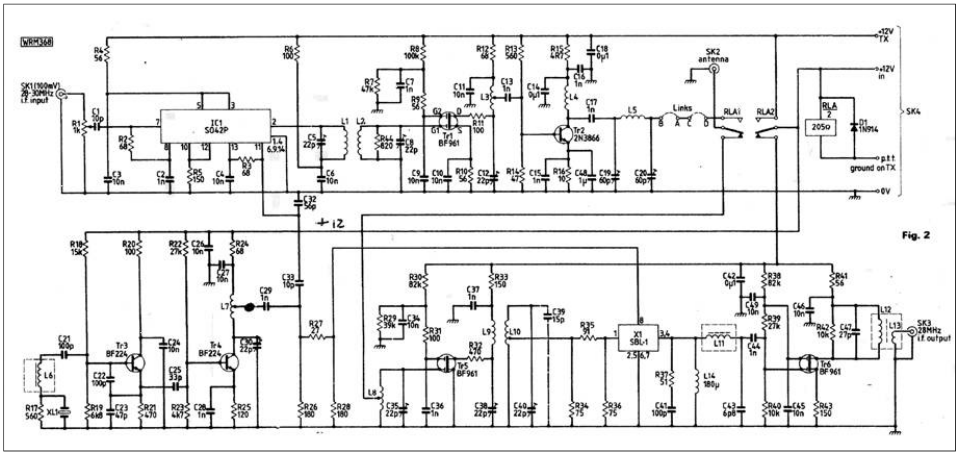
The design of the Meon transverter appeared in the October 1985 edition of Practical Wireless, and an abridged version has been compiled with kind permission of Dave Powis, G4HUP, and Sam Jewell, G4DDK. The original article covered the *50 MHz* version.

Construction of the 70 MHz Transverter

The printed circuit board is double-sided with one side left almost intact to act as a ground plane. The board layout is shown in Fig. 4. Plated through holes are not used in the interests of cost reduction but several links are needed to ground certain of the components. Where this is the case, these holes are marked on the PCB layout. If you are making your own PCB's from the layout given in the article, please remember that clearance is required on the ground plane side around the leads of most of the components where they pass through the board. This is most easily accomplished by countersinking the ground plane side of the board with a 3 mm drill bit.

The component layout is shown in Fig 4. Begin construction by soldering all the resistors into place, checking carefully that you are putting them into

(Continued on page 7)



(PW Meon 70 MHz Transverter from page 6)

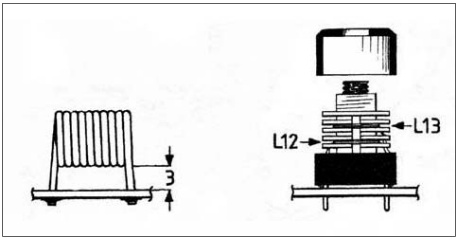
the right holes. Next, fit the fixed capacitors. When you have soldered all the fixed capacitors into place, the trimmer capacitors can be fitted. These should be treated with care, especially while soldering, since excess flux from the solder can easily damage them. The side of the trimmer that is connected to ground needs to be soldered on both sides of the board. Trimmers C19 and C20 have a larger diameter than the other trimmers and require that the side, which is connected to ground, does NOT go through the board but instead the leads should be bent flat against the ground plane and soldered as shown. Potentiometer R1, D1 and L14 can then all be fitted.

Coil winding details are shown in Fig 3. Inductors L6 and L11, together with the IF transformer L12/13 are wound on the formers of old Toko 10K, 10,7 MHz IF transformers such as the KALS 4520. The old windings will need to be carefully removed, as will the built in resonating capacitor (if fitted). The former can then be rewound with either the recovered wire or some new 34 SWG enamelled copper wire. Exact gauge is not too critical. It is wise to mark which can contains which coil. When they have been rewound and checked for DC continuity they can be soldered into place. Note the can of L12/13 provides a ground link for the IF output.

The semiconductors can now be fitted, being careful to observe the correct polarity of the connecting leads as shown in Fig 4. note that the MOSFETS are all mounted with the writing towards the track side of the board and showing through the mounting hole when viewed from the component (ground plane) side. The SO42P and SBL1 mixers can now be soldered into place, taking great care that they are connected the correct way round. Pin 2 of the SBL1 mixer is directly below the letter M printed on the top surface of the device. The relay is fitted last only because it is so tall that it can make the fitting of other

(Continued on page 8)

(PW Meon 70 MHz Transverter from page 7)
components very awkward, unless you have small fingers. Links A-B and C-D can be connected according to your requirements for the final unit. Pin E provides 12 V on transmit.



Alignment - Receiver

Connect the multimeter, switched to its highest current range, in series with the supply lead to the transverter. Switch the transverter to receive and connect a 12 - 13,5 volt DC supply to the unit. The current taken by the board will depend upon the initial condition of the tuning but should in any case be no more than approximately 40 to 50 mA. If the current taken is appreciably more than this, then disconnect the supply and carefully examine the board for signs of damaged components or unwanted short circuits. When you are satisfied that nothing is disastrously wrong, the local oscillator alignment can begin.

Connect your frequency counter to the junction of C25 and R23 and adjust the core in L6 until the counter reads 42,000 MHz. This type of oscillator circuit often exhibits hysteresis. This will be noticed as a tendency to stop oscillating, or a reluctance to restart once it is switched off. It can easily be overcome by resetting the frequency with the core of L6. To achieve exact frequency it may be necessary to adjust by one or two the number of turns on L6 or change the values of C22/C23. In most cases, the circuit will work perfectly and no fiddling will be necessary.

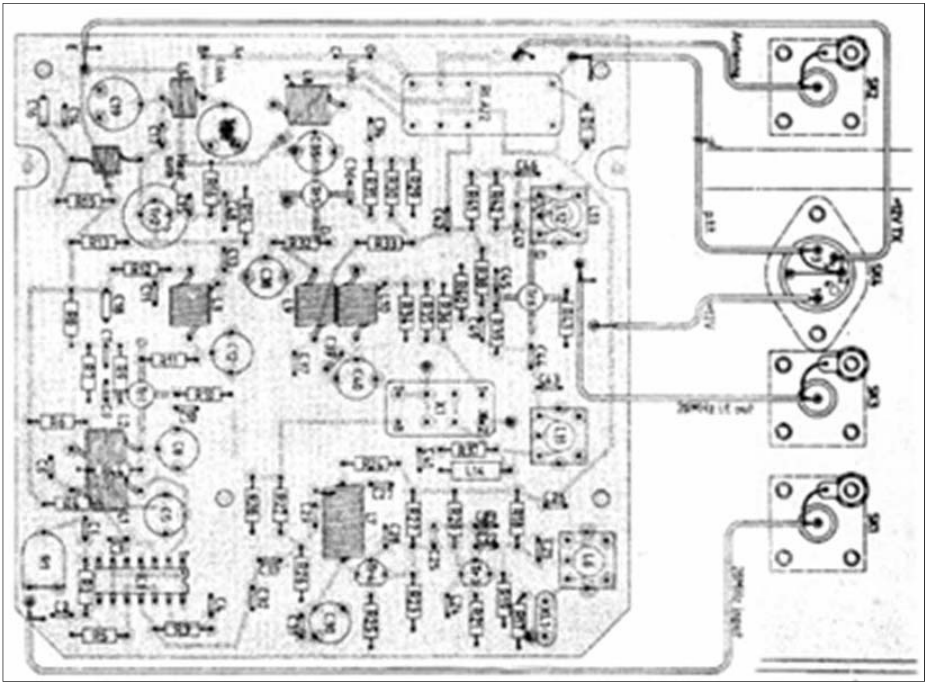
Alignment of the receive converter is best accomplished with the use of a signal generator, but its use is not essential since nature has conveniently provided us with one – noise! Connect a receiver turned to 28 MHz to the IF output of the converter and with the supply on, tune L12/13 for maximum noise output from the receiver. Now tune L11 for a further increase in the noise output. Trimmers C38 and C40 are now adjusted for a peak in the noise output. Connect a resonant antenna to the antenna socket of the converter and adjust C35 for a further small increase in noise output. It may be necessary to go back to C30 in the local oscillator and readjust it for maximum noise from the receiver.

Alignment - Transmitter

It should now be possible, given a reasonable location, to hear one of the 70 MHz beacons. Final "tweaking" can be performed as necessary, using one of these signals.

It is wise to check the current consumption in the transmit condition before alignment. The multimeter should again be connected in the supply lead to the transverter and the current drawn noted when the supply is switched on. Again, it will depend on the initial state of tune, but should not be greater than about 100 mA. If the current being drawn is within this

(Continued on page 9)



(PW Meon 70 MHz Transverter from page 8)

limit then you may proceed to the alignment, otherwise repeat the exercise of looking for a possible fault condition.

Turn R1 fully counter-clockwise to give maximum IF drive to the mixer. Connect a power meter and 50 ohm dummy load to the output of the transverter, switch to transmit and apply up to 1 mW of IF drive to the TX input socket. Place a sensitive absorption wavemeter close to L1. Adjust C5 for a maximum reading on the wavemeter at 70 MHz and C12 for maximum output from Tr1. By now, the power meter connected to the transverter output should be indicating some output signal present. Trimmer capacitors C19 and C20 should be adjusted to maximize the power out, which will be between 0,25 and 0,5 watt.

The next stage is to reset R1 so that you do not overdrive the transmit mixer. This can prove difficult to do without the use of a spectrum analyser but satisfactory results can be achieved by a system of trial and error on the air.

First set R1 fully clockwise and apply an IF drive signal at the intended level. Now slowly rotate R1 counter-clockwise until a reading is obtained on the power meter at the output. Continue rotating R1 until the output starts to show signs of giving very little more output for increasing drive level. You are now driving the transverter into saturation and the output will probably sound awful to

(Continued on page 10)

(PW Meon 70 MHz Transverter from page 9)
anyone listening. At this point, reduce the drive level by rotating R1 clockwise until the output power starts to fall sharply. The setting of R1 will be close to optimum and can be finally set by obtaining reports on the air. The typical IF drive level at the mixer input should be 100 mV and will be compatible with the majority of transceivers fitted with low-level transverter ports.

With a supply of 12 volt, and an output of 0,5 watt, a 2N3866 with a V_{ce} of 1 volt produces an output impedance of approximately 40 ohm. The *pi* network between the transistor and the output allows easy matching to 50 Ω and provides some low pass filtering prior to the output amplifier.

A relay is often used to provide both antenna changeover and power supply switching between transmit and receive. Links are used to select whether the integral output stage or an external output amplifier is connected to the relay. In this way the board can be used self-contained for low power operation, or any other amplifier stage can easily be added.

I coupled the transverter output to an old Midland midband final that I had biased for SSB operation, resulting in 12 – 15 watt output. A few local contacts on FM were made and during February 2010, a digital contact on FSK441 was made with ZS6NK in Polokwane. A Yaesu FT-817 was used for the 28 MHz exciter and proved a perfect match for the transverter.

Most of the components were obtained from old scrap commercial radios and the SO42 mixer from a CB set. The Cobra 140, Philips and SBE SSB sets all used the SO42P.

Inductor Windings for 70 MHz
L1, 2, 9 - 10T
L8 - 10T Tap 2T
L10 - 10T Tap 1½T
L5 - 5T
L6 - 7T
L7 - 18T
L4 - 12T
L11 - 15T
L12 - 9T
L13 - 2T

L6, 11, 12, 13 are wound on Toko coil formers. (Old IF cans are fine but remove the existing wiring!)
L1, 2, 9, 8, 10, 5, 7 - 0,7 mm enamel copper wire, 6,4 mm inside diameter, self-supporting.
L4 - 0,4 mm enamel copper wire, 4 mm inside diameter, self-supporting.

Components 70 MHz Transverter
Resistors
¼ watt 5% Carbon Film

4,7 Ω	1	R15
10 Ω	1	R16
27 Ω	1	R27
47 Ω	1	R14
51 Ω	1	R37
56 Ω	4	R4, 9, 10, 41
68 Ω	4	R2, 3, 12, 24
75 Ω	2	R34, 36,
91 Ω	1	R35
100 Ω	4	R6, 11, 20, 31
120 Ω	1	R25

(Continued on page 11)

(PW Meon 70 MHz Transverter from page 10)

150 Ω 3 R5, 33, 43
180 Ω 2 R26, 28
470 Ω 2 R21, 32
560 Ω 2 R13, 17
820 Ω 1 R44
4,7 kΩ 1 R23
6,8 kΩ 1 R19
10 kΩ 2 R40, 42
15 kΩ 1 R18
27 kΩ 2 R22, 39
39 kΩ 1 R29
47 kΩ 1 R7
82 kΩ 2 R30, 38
100 kΩ 1 R8
Horizontal skeleton preset
1 kΩ 1 R1

Capacitors
Miniature plate ceramic
6,8 pF 1 C43
10 pF 2 C1, 33
15 pF 1 C39
27 pF 1 C47
33 pF 1 C25
47 pF 1 C23
56 pF 2 C22, 32
100 pF 2 C21, 41
1 nF 11 C2, 7, 13, 15, 17, 28, 29, 36, 37, 44
10 nF 13 C3, 4, 6, 9, 11, 24, 26, 27, 34, 45, 46, 49

Multilayer ceramic, 63V
0,1 µF 3 C14, 18, 42
1 µF 1 C48

Miniature film trimmers
22 pF 7 C5, 8, 12, 30, 35, 38, 40
60 pF 2 C19, 20

Semiconductors

Transistors

BF224 2 Tr3, 4
BF961 3 Tr1, 5, 6
2N38661 Tr2

Diodes
1N914 1 D1

Integrated circuits
SO42P 1 IC1 (Siemens)

Miscellaneous

SBL1 Schottky balanced mixer, X1; 42 MHz HC18/U, third overtone crystal, XL1; 2-Pole c/o relay, 12 V coil (RS349-658), RLA/2; clip-on heat sink for Tr2; Eddystone 6827p (187 x 118 x 56 mm) diecast aluminium box; 50 Ω BNC square sockets (3); 5-pin DIN socket; PCB; Veropins; 50 Ω miniature coaxial cable; 0,7 mm en. Cu. wire; Toko 10 k coil former (Cirkit stock no. 35-33330) (3); Moulded cable 180 µH (L14)

PC boards are available from Basie Du Plessis, ZR2BA, tel no 082 888 2118.

* Andre Botes, ZS2ACP, Marisastraat 3, Kraggakammapark, Port Elizabeth, 6070.
E-mail: zs2acp@telkomsa.net

WIA Centenary Award

A limited issue amateur radio operating award is available to celebrate the 100th year of the Wireless Institute of Australia (WIA), the world's oldest national radio society.

To qualify for an award certificate, contact is required with the Centenary of Organised Amateur Radio in Australia special event station, VK100WIA, which has a distinctive QSL card.

The WIA, through its affiliated radio clubs, will operate this unique call sign from 1 May to 31 October 2010. The call sign will also be used in Australia's capital city, Canberra, where the WIA Annual General Meeting and associated events will be held 28 - 30 May.

It will be on all amateur bands available to VK radio amateurs including the popular HF bands and the WIA Centenary Award is expected to be well sought after.

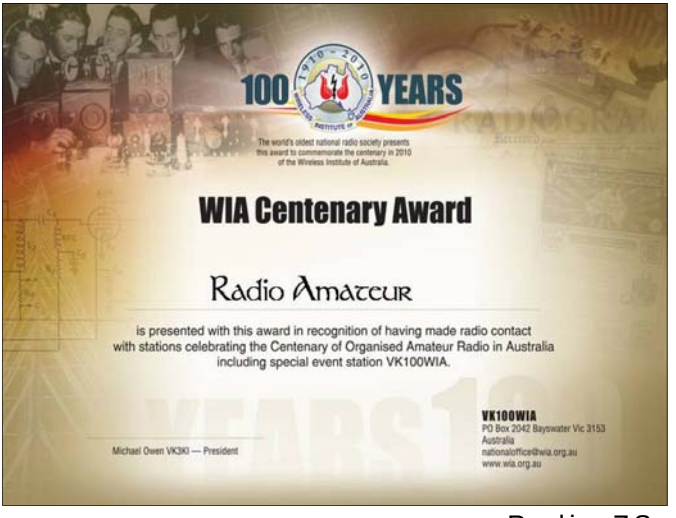
The award rules are - those radio amateurs outside Australia need to achieve 50 points while VK radio amateurs require 100 points.

A contact with VK100WIA operated by the WIA or operated by a Club is worth 10 points (only one contact with VK100WIA operated by the WIA and only one contact with each Club) and there must be a minimum of 2 contacts with VK100WIA.

Contacting any WIA Member between 1st May 2010 and 31st October 2010 is worth 5 points. (Example: working VK100WIA at 10 different Clubs would be eligible for the award. Working 16 WIA members gives 80 points but then two contacts must be made with VK100WIA).

Any mode may be used; cross-mode and cross-band contacts are permitted. Satellite may be used but contacts via terrestrial repeaters are not eligible for the award. Send $AUD5 or 3 IRC and a list of contacts (QSLs not required), to the Awards Manager WIA Centenary Award, PO Box 2042, Bayswater VIC 3153 Australia.

Listen around the bands or visit the WIA website www.wia.org.au for frequent updates of the operator club's roster.



New antenna on ISS to boost amateur radio operation

Hans van de Groenendaal, ZS6AKV *

Amateur radio has been in space almost as long as the first man-made earth satellite. In 1971, four short years after the Russians stunned the world with Sputnik, amateur radio went into space with OSCAR 1 (orbiting satellite carrying amateur radio). When man went into space, amateur radio followed shortly afterwards as astronauts and cosmonauts soon experienced the value and opportunities amateur radio offered them from space. Amateur radio aboard many shuttle missions became a permanent feature on the Russian space station MIR and on the International Space Station (ISS).

Today astronauts entrance many youngsters as they to speak to schools groups from space. Radio amateurs sharing the experience of watching the earth float by as they orbit. The amateur operation is organised through an international group, Amateur Radio on the International Space Station (ARISS).

In February 2008, the new Columbus module built by the European Space Agency (ESA) was attached to the ISS. When ESA first announced intentions for the module a number of years ago, the ARISS international team began planning how to involve amateur radio enthusiasts (hams). While ESA's blueprints were being drawn up, radio amateur made serious inquiries and gave presentations, and eventually won approval to have antenna feed through connectors added to the module for an antenna to be installed later.

The antenna project began on November 2002 when ARISS Europe extended a request to ESA's directorate for Manned Space Flight and Microgravity for amateur radio facilities on the European Space Laboratory. In 2003, ESA's Columbus division agreed in principle.

The Columbus module is designed to undertake experiments but may also be used as temporary sleeping accommodation for the European astronauts. It is anticipated that most, if not all of them, will be licensed amateurs.

In early September 2009, the amateur radio antennas were packaged for shipment from Europe to the US after having passed their space certification tests. Lou McFadin, W5DID, a member of AMSAT NA, was on hand to show the astronauts the best ways for them to safely unpack and assemble the antennas and associated cables once they and the hardware reached the ISS. They reviewed how to manoeuvre and install the antenna during their spacewalk. The hardware headed to the ISS on space shuttle mission STS-129.

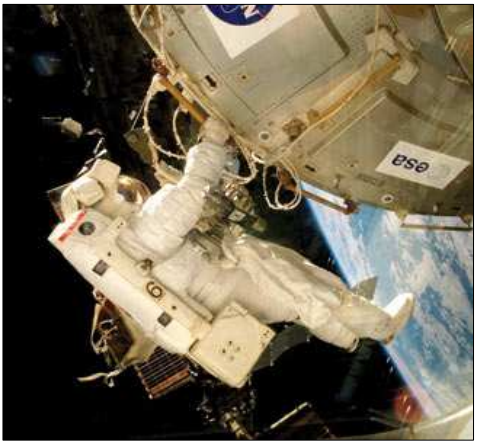
The new antennas will increase

(Continued on page 14)

(New Antenna on ISS from page 13)
opportunities for the many hams who yearn to make contact with astronauts and cosmonauts. Frequencies available for transmission to and from Columbus will be 2 m, 70 cm, L-band and S-band. To start, the two Ericcson radios (2 m and 70 cm) that are already on the ISS (but seldom used) will be moved and installed in Columbus.

Space shuttle Atlantis mission STS-129 started with a spectacular and on time lift off on 16 November from NASA's Kennedy Space Centre in Florida. Once in range of the station on 18 November 2009, the shuttle was delicately manoeuvred into the rendezvous pitch and docked with the ISS.

Astronauts Michael Foreman and Randolph Bresnik installed the new antenna during the second space walk during a six-hour operation. They started by installing a GATOR assembly on the Columbus module. GATOR is part of a project to demonstrate two different types of automatic identification system receivers, which is an existing system that is currently used by ships and United States Coast Guard's vessel traffic services to exchange data such as identification of the ships, their purpose, course and speed. The assembly includes the amateur radio antenna.



The GATOR assembly has two antennas, a cable harness and two clamps. To install it, Foreman and Bresnik retrieved the assembly from a tool box in the shuttle's cargo bay and carried it to Columbus. Foreman connected the assembly to its power source and wire tied its cables into place, while Bresnik extended the antennas and installed them on the appropriate handrails. The antennas were secured with two bolts apiece.

With the Columbus module being located at some considerable distance from the other two ARISS stations, this will permit parallel operations on the new bands at the same time as the existing operations.

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E-mail: hans@intekom.co.za

The story behind the Front Cover

Russell Mycroft, ZS1VK

I became a radio amateur in May 2008 after many years of thinking about it and not really doing anything about it. After receiving my licence, I quickly realised how fanatical I was about this hobby. At one of our club meetings some time back I

(Continued on page 15)

(The front cover from page 14)

mentioned to Dirk, ZS1X, that maybe we should go out somewhere and just set up a station. This last weekend upon hearing that we were unable to go to our "regular field station" for the SARL contest, we decided to go to Silvermine Nature Reserve, which overlooks most of the Cape Flats. Dirk packed his radio, an Icom 703 and some antennas and I packed my Yaesu FT-857 and 2 18 Ah batteries. Once at the Silvermine car park, we unloaded all the equipment and set out for the hike to the dam. This took us 5 minutes. We set up station, made some contacts and just had fun. The setting was absolutely superb. One sits there thinking to oneself "can this get any better?" This outing has certainly taken me to another level of amateur radio. We left the spot after about 2 hours when some dark clouds looked as if they would burst.

Am I keen? Well, I have not unpacked the radio, its still in the cooler box waiting for the next trip (maybe even next weekend).

Amateur Radio in Space [ARiS]

By Eddie Leighton, ZS6BNE *

While looking for an abbreviation for this column, the letters ARiS looked quite appealing! It reminds me of the Amateur Radio and International Space Station's (ISS) abbreviation, ARISS. Not much is heard about the ISS lately. An up to date ARISS Website can be accessed on http://www.rac.ca/ariss/oindex.htm. From what I read there, most amateur radio activities are prearranged contacts with schools.

FO-29 is operational again after an absence of a few months! Some exciting DX contacts were made recently. For the record, the following South African maximum distances were achieved.

ZS6BNE <> PY5LF = 7 417 km
ZS2BK <> PY5LF = 7 120 km
ZS2BK <> PY1UNU = 6 726 km
ZS1LS <> PY4ZBZ = 6 341 km

Eddie, ZS6BNE, received a confirmation QSL via the post from Luciano, PY5LF, on the 1st of April 2010. This is no April fool's joke it is most likely a confirmation of a world record satellite contact via FO-29! Eddie and Luciano tried a few times at first without success. Andre, ZS2BK, was very instrumental in setting up a sked between the two stations.

Because FO-29 has an elliptical orbit, it is sometimes at a higher altitude than other passes allowing a bigger but limited footprint. Like AO-7, this satellite can be worked down to zero degrees running only 10 Watt into a standard yagi.

It is really comforting to see the support generally found amongst satellite operators, always helping each other to achieve greater heights. The radio amateur's code is certainly practiced to the full amongst these gentlemen.

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I was browsing previous publications of this column. It is amazing to see how AO-7's distance records have been constantly improved over the past year! There appears to be more activity in the south of Europe lately which will give good DX opportunities to South African satellite operators especially towards the south where they are normally just outside the footprint of AO-7 as it moves towards (or away) from Southern Europe. The latest station to look out for is Iain McKeracher, 5B4AGY, in Cyprus. Eddie, ZS6BNE, and Pierre, ZS6BB, have been fortunate to work Iain so far.

Evan, SV1EEK, in Athens is more than willing to assist our satellite operators to reach further into Southern Europe, to the very limits of AO-7's footprint, guiding us to the downlink frequency normally monitored by active satellite stations there. It is always difficult to judge which frequency to use due to the effects of Doppler.

Radio amateurs in South Africa have quite a few spacecraft to experiment with. AO-7, FO-29, VO-52, SO-50, AO-51, SO-67 and HW-68. The last two are still under commissioning.

The last short "QSO" that took place on SO-67 (SumbandilaSat) was between Gerald, ZS6BTD, and Eddie, ZS6BNE, (while operating as a RaDAR station at Kwasisabantu mission station near Greytown) on the morning of Monday 22 February 2010. The pass was to be a demonstration of SumbandilaSat to the media. Apparently, there was no time in a very limited pass time to do an amateur radio demonstration. Signals were good at times…

According to the SumbandilaSat mission blog at http://sumbandilamission.blogspot.com/ , the spacecraft was 6 months old on 17 march 2010. The high-resolution camera is working but many losses have been incurred. Please refer to the blog for further information. To date no amateur radio schedules have been received and the Sumbandila Google group is rather quiet!

CU on the Sats! 73

FUNcube at UKSC 2010

Trevor, M5AKA

The United Kingdom Space Conference was held from 24 - 28 March in Godalming, Surrey. This premier event always attracts a stellar cast of speakers and this year was no exception. The launch of the UK Space Agency in same week added to the excitement. Many of the presentations are available for view from the Ustream server.

AMSAT-UK attended to explain their exciting plans for the FUNcube satellite. As well as the Amateur Radio SSB/CW transponder FUNcube will provide an in-orbit tool for science education outreach and hands-on

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(FUNcube from page 16)

training in space and all the STEM subjects (Science Technology Engineering & Mathematics). The telemetry system is designed for easy reception by school pupils using extremely simple hand held VHF receive equipment connected to a PC soundcard or USB port.

The satellite contains a materials science experiment and pupils will be able to receive the results direct from space and compare them with similar reference experiments in the classroom.

The FUNcube stand at the conference included a mock-up of the new satellite and a demonstration of the telemetry. FUNcube is expected to be launched in early 2011.

Michael Castle, G1ZVN, gave a short introduction on FUNcube during one of the education sessions and FUNcube was also featured in a presentation on the UK National Cubesat project.

During the 5 days over 1 000 people attended the event and the concept behind FUNcube was well received.

There will be more demonstrations of FUNcube at the AMSAT-UK International Space Colloquium to be held in Guildford from 31 July to 1 August.

AMSAT-UK publishes a colour A4 newsletter, OSCAR News, which is full of Amateur Satellite information.

(Continued on page 20)

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(FUNcube from page 17)

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Radio Amateurs Are Setting Their Sights On The 500 kHz Band

Hans van de Groenendaal, ZS6AKV

On 3 November 1906, the second Berlin International Radiotelegraphic Convention, designated 500 kHz, as one of the standard frequencies to be employed by shore stations and it soon became an international distress signal for shipping. Now over a hundred years later radio amateurs are seeking a secondary allocation in the region of 500 kHz. Currently a proposal is on the ITU World Radio Conference 2012 (WRC12) agenda as item 1.23 "to consider an allocation of 15 kHz in parts of the band 415 - 526.5 kHz to the amateur service on a secondary basis, taking into account to protect existing services."

Morse code was the main mode of operation but has been discontinued. In South Africa, the Morse code era for shipping ended on 31 March 1999 when Telkom's three sister stations in Durban, Port Elizabeth and Cape Town sent a solitary dot, the letter "E".

The first South African ship to shore radio stations, a 3 kW spark gap transmitter with a range of 400 km opened in Durban in 1910.

The last major Morse signal intercepted by Durban Maritime Radio was received from the bulk carrier Askania Nova at 03:18 on 27 July 1997 when flooding of the engine room was reported. The stricken vessel was reported drifting off Port St Johns and required towing assistance. The salvage tug John Ross took 48 hours to reach the vessel and towed it to Port Elizabeth.

As a universal language for radio distress traffic, the advantage of Morse code was it versatility in transcending language barriers. SOS became in 1908 the standard distress signal. Interestingly at the time the Berlin International Telegraphic Convention ruled that when sending SOS (dit dah dit) that the dah (the dash) should be longer than in conventional Morse code sending to emphasise the importance of the distress signals. While the march of progress cannot be halted, many mourned the passing of an era in telecommunications.

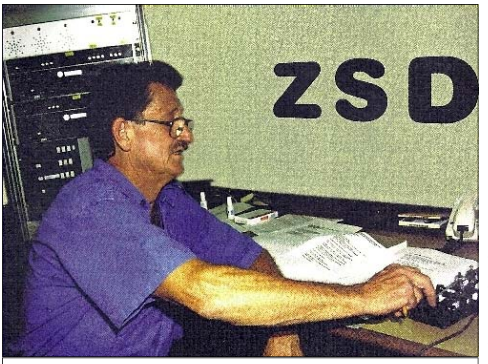
The final message from Durban Maritime Radio, station ZSD was:
"Goodbye to Morse our trusted friend, we've been together to the very end. Together we covered heavy seas, learned to love your A B C's, what remains is only 73's. As W/

(Continued on page 21)

(500 kHz band from page 20)

T goes silent key with the very final QRT, it will be remembered by many a soul, as it played its vital role, for those in peril at sea. + VA."

After that the stations went permanently off the air.



Telkom operator at the Durban station sending the final message.

Since those early days of shipping, aircraft also made their presence known on 500 kHz. Today non-directional beacons (NDB's) operate in part of the band and whilst the long term goal may be to remove NDB's from use, this according to the International Air Transport Association (IATA) is unlikely to be achieved in the near future. The IATA says it is therefore essential to ensure that whatever action is taken the agenda item does not adversely affect the NDB operations.

Since the beginning of ITU spectrum allocations, the frequency 500 kHz (495 - 505 kHz) had been allocated to the maritime mobile service for distress and safety. Technological advances such as the Global Maritime Distress and Safety System (GMDSS) have rendered the 500 kHz channel obsolete. Accordingly, WRC-07 suppressed the radio regulation that states that the frequency 500 kHz is an international distress and calling frequency for Morse radiotelegraphy.

However, the radio amateur's quest for a 15 kHz allocation will not be plain sailing.

In an unclassified document, NATO states that the band 415 – 526,5 kHz is identified a military requirement for tactical non-directional beacons and a military requirement for naval communications. They too insist that existing military systems be protected.

Why do radio amateurs want an allocation around 500 kHz?

This part of the spectrum is interesting to radio amateurs because of its unique propagation properties, which include both ground wave and sky-wave modes. Its properties are sufficiently different from those of LF and the 160-metre band.

As far as sharing the frequency is concerned, to date two studies have been carried out on the compatibility with the NDB system. In the worst-case scenario of an aircraft in the immediate vicinity of an amateur radio station located at the edge of an NDB service area, a co-frequency amateur transmitter with an output level exceeding a few milliwatts would result in unacceptable interfering field strength at the aircraft-receiving antenna. It would be possible to protect the NDB service by geographical and

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(500 kHz band from page 21)

frequency separation along with restricting the power of the amateur radio transmissions.

The studies and debates are continuing. Currently there are NDB stations in South Africa so the outlook for radio amateurs is bleak. In some countries experimental licenses have been issued notably in Australia, Canada, New Zealand, the USA and the Nordic countries. However, WRC12 is still some years away and a lot can happen!

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The G3EJS 2-Tuner

Steve Warwick-Oliver, G3EJS / ZS5WO *

Having recently bought an FT-817, and immediately missing the internal tuner my IC-703 has, I started looking for an answer.

There are tuners around, but everything I saw was just about as big as the 817 itself. Seemed a bit pointless then to have a very small rig, and have to double its volume to be able to use it on different antennas.

I have my portable antenna for the 703, which is pretty close to having a low SWR on most bands, so my first thought was to build something to match that. But what about using my dipole at home, or throwing a wire over a tree?

It seems the biggest occupier of space in a tuner is the capacitor. Use an L network and you only have to have one. Then I thought that making the inductor more finely adjustable would mean that less variation in capacitance would be needed to obtain a match.

I considered having two banks of switches, one for the capacitor and one for the inductor, eight of each would give a huge range, but discarded that idea (for now) as not being intuitive to use.

I had an old die-cast box about 1 X 2½ X 4½ [2,54 X 6,35 X 11,43] and decided, that it would fit into that.

In order to be able to adjust the

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(G3EJS 2-Tuner from page 22)

inductance reasonably closely to what was required I used two switched inductors.

The capacitor had to be small, I had the choice of two, one of 140 pF and one of 100 pF, I chose the latter, as neither the rotor nor stator were grounded. I can switch either a 100 pF or a 200 pF fixed capacitor across the variable capacitor giving an effective range of about 10 – 300 pF.

I did not want either part of the capacitor grounded, as I wanted to be able to switch the capacitor in series with the inductor to add flexibility.

The resulting circuit

L1 and L2 are wound as one long coil of 96 turns of 24 SWG (0,56 mm) wire on ¾" [1,905 cm] electrical conduit, divided in half by a centre tap where the common pole of SW2 connects.

Each half of the coil is tapped as follows from the connection points of SW1 and SW2 common poles: 32t – 24t – 16t – 12t – 8t – 4t – 2t – 1t

The ten positions of SW1 and SW2 are therefore connected to the

(Continued on page 24)

1	2	3	4	5	6	7	8	9	10
Not connected, i.e. full coil	32t	24t	16t	12t	8t	4t	2t	1t	end i.e. coil by-passed

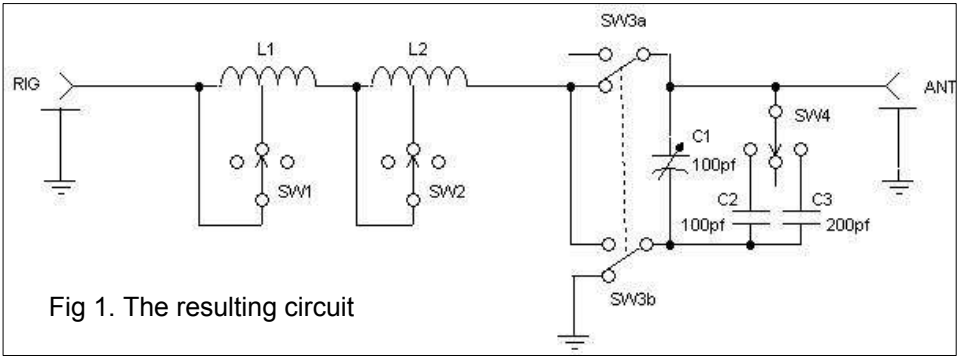
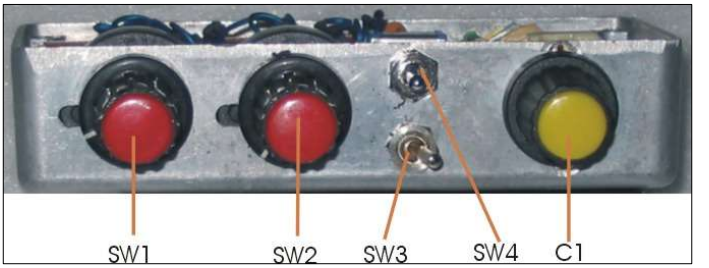


Fig 1. The resulting circuit

(The G3EJS 2-Tuner from page 23)



following coil points:

As you can see, the fit is fairly tight; in fact, all the controls are touching each other, so there is no room for error when measuring before drilling. Under the coil, you can see the packing material I use to insulate and secure the coil to prevent it moving around, another piece fits between the lid and coil, positioning it securely.

The end view shows clearly how the components are above the level of the bottom of the box, filling the space of the raised lid. The switches have a total of less than 1/32" [0,793 75 mm] total clearance between the top and bottom of the case.

Operation is quite simple

Set SW4 to the centre position, to isolate the fixed capacitors, set SW3 to the right (in my tuner) to configure as an L match.

Set SW1, SW2 and C1 to the centre positions, adjust SW1 and SW2 for maximum receive noise (try to keep them as close as possible to the same position on each, i.e. not one at maximum and the other at minimum) and then peak with C1. You should get a definite peak, noise dropping off on each side.

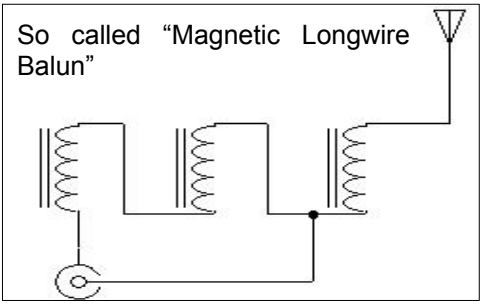
Then check the SWR on low power, and fine tune (it is usually within limits after the receive tuning). On the 817, switch the meter to PO and peak, BEING VERY CAREFUL TO MAKE ONLY VERY SMALL ADJUSTMENTS WHILST PEAKING POWER. If you then set the meter back to SWR, it may show two segments on the SWR meter; it seems that the minimum SWR reading does not always correspond to the maximum power out.

The tuner worked better than all expectations on the dipole in the house, and for tuning my portable antenna.

To connect it to a random wire, I tried a toroidal transformer with a primary of 10 turns connected to a short length of coax and a 30 turn secondary to the antenna.

I tried an ordinary 4:1 balun, and finally I tried the reputed circuit for the 'magnetic long wire balun'. This was interesting, as it seemed to increase the range of wire lengths I could tune, and could tune a 33' [10,058 4 m]

So called "Magnetic Longwire Balun"



(Continued on page 25)

(The G3EJS 2-Tuner from page 24)

length of wire from 160 to 6 m.

I found that about 10' [3,048 m] of coax between the "balun" and the rig reduced the need for a counterpoise, but this is also influenced by DC power cables (or not if on internal batteries).

Tuneable Counterpoise

A counterpoise is most needed when running off internal batteries and using a "walkabout" antenna.

As soon as you add anything to the ground of the rig, DC power cord or coax, it seems to become less of a necessity.

Again I wanted something small, and I did not want to trail a tail if pedestrian portable.

The answer is quite simple; it is simply a ¼ wave wire on 10 m, with a switched loading coil for other bands.

I have a 68-turn coil with taps at the following points: 48t -32t – 24t – 16t – 12t – 8t – 4t – 2t – 1t.

The first switch position is open putting the whole 68 turns in series with the wire, and the last position goes to the end of the coil bypassing it.

All that has left to do now is to build them with some decent front panels and some black crackle paint!

* Steve Warwick-Oliver G3EJS, 103 Lyndale Road, Coventry, CV5 8AR, UK. E-mail g3ejs@teneesha.co.uk

Mobile whip for 40 metres

*Ron Holmes, VK5VH **

I have built whip antennas using several different designs, for both 40 and 20 metres. This article provides the construction details of one model that has proved very successful, to assist anyone keen to make their own.

The antenna comprises a helical-wound lower section with a telescopic whip mounted on top to provide length adjustment. The helical section is wound on a plastic pipe and this is enclosed in an outer pipe to provide weather protection, as well as mechanical strength.

The construction materials are readily available from hardware stores.

Helical section

I used PVC pipe with an outside diameter of 22 mm. Its total length is 50 cm and the helical winding occupies the central 45 cm.

The winding was made using bare copper wire, about 0,5 mm diameter. I have also used plain tie-wire for this but the important point is that the wire diameter must be small enough to allow the assembly to fit inside the outer tube. The winding pitch is not critical at about 5 turns per cm. The wire was anchored at each end using a small hole drilled through the pipe. Add a coat or two of clear varnish to hold the windings in place.

A piece of wooden dowel, about 5 cm long was glued inside one end of the pipe. A hole was bored along the axis of the dowel, of the correct diameter to fit and support the telescopic whip. A similar method was used at the other end to fix in place an axial mounting screw. This should have the correct diameter and thread to suit your antenna base.

Using two flexible insulated jumpers, I connected the helical winding to the telescopic whip at the top end and to the mounting screw at the bottom. These soldered connections should be made with care, watching out for dry joints.

Final assembly

My outer tube was made from similar PVC piping with an outside diameter of 27 mm. The length was 50 cm, the same as the inner pipe. Also required are two end caps to fit the larger pipe.

A hole was drilled through the centre of each end cap, one to suit the diameter of the telescopic whip, and one to suit the mounting screw.

The final assembly was completed by sliding the smaller pipe inside the larger one, and adding the two end caps. The latter were fixed in place with a couple of short self-tappers. The antenna is shown in Figure 1, using a cut-away presentation to expose the inner pipe and helix.

Options

(Continued on page 27)

(Mobile Whip from page 26)

I have added a modification to this design, which allows it to be used on 20 and 30 metres, as well as 40 metres, thus covering the most commonly used mobile bands. All this requires is a tapping on the helix about 18 cm up from the bottom and an external flexible lead connected to the tap. With a sturdy clip, connect the other end of this lead to the base of the telescopic whip for operation on 20 metres, or to the mounting screw for 30 metres operation.

A similar mobile whip can be made specifically for 20 metres by following the same design, but making the pipe length 35 cm instead of 50 cm.

* Used with acknowledgment to Amateur Radio, November 2007, the Journal of the Wireless Institute of Australia.

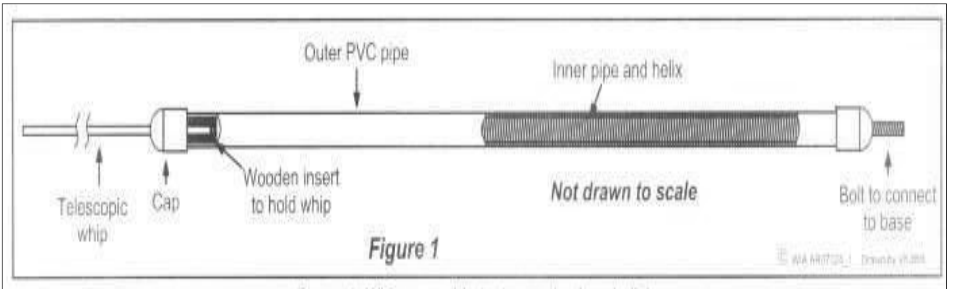


Figure 1: Whip assembly (cut-away to show helix).

The Museum Piece

Dave Gemmell, ZS6AAW, and the Old Timers

SA Air Force turns 90 - ZS90SAAF. On 1 February 2010, the South African Air Force celebrated its 90 anniversary! The SAAF is also one of the oldest Air Forces in the World! Second only to the RAF, this was founded on 1 April 1918.

To celebrate this event, the Museum Wireless Section has obtained the special event call sign ZS90SAAF. Many thanks to Friends Chairman, Wally Moll jnr, ZS6BCI, who, with the aid of Mariska Faasen, the SARL Administrator, arranged for the call sign very efficiently and speedily.

Operations will take place mainly from the new Wireless Hut in the south west corner of Hangar 3. It is so named because it actually looks like a garden hut or shed. Nevertheless, it serves the purpose very well and we hope to have many QSO's

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(The Museum Piece from page 27)
from here as it is planned to keep this position a permanent feature.

At the moment we are using a trap dipole for 20, 40 and 80 metres because it 'fits in' with the 'ambience' of the Hangars. What is more, the wire antenna looks neat! Erecting a beam has been considered but finding the best position is quite challenging! Placing it on the hangar roof might well be an answer but will definitely be frowned upon by the local heritage committee. Access to the beam for the necessary maintenance from time to time would also be a bit problematic.

We hope to have on-the-air activity every Saturday from about 08:30 to 15:00 using the following band segments 14 180 – 14 190 kHz, 7 060 – 7 080 kHz and 3 600 – 3 800 kHz.

There is a possibility of manning the station on other 'special days' but we have to adhere to the official Museum times of Monday to Saturday 09:00 to 15:00 CAT.

Many thanks to Frans van Nieuwkerk, a member of the Friends of the SAAF Museum who has done the major portion of the restoration of the Wireless Hut.

Many thanks as well to Francois, ZR6IIF, Cliff, ZS6BOX, Theo, ZS6CAT, and Richard, ZS6TF, for their efforts in getting the Hut to its present position and for help in the Wireless Room.

Not forgetting the gentlemen, collectively known as SA Antique Wireless Association who have given ZS6MUS much encouragement during the past few years. Many thanks chaps, especially to net controller Andy on Saturday mornings running the ZS0AWA net.

We are slowly but surely getting closer to the 'ideal' museum station. Agreed, the time taken has been a bit excessive but the wait has been worth it!.

Francois, ZR6IIF, at the operating desk in the Wireless Hut

SA Armour Museum. Dennis, ZS4BS, informs me that the SA Armour Museum will be participating in the Bloem Show from 22 April to 1 May. Apart from the static displays, the Museum radio station, ZS4AFV, will be on the air.

In June, the Armour Museum and the Bloemfontein RAC will be involved with the Barbarossa commemoration at the Leeuberg Museum south of the city.

During September, the Museum celebrates its 13th birthday and a Museum Open Day is being planned at the School of Armour in the Tempe Base in Bloemfontein. They are also planning a night firing event on the training area, more detail from Dennis.

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(The Museum Piece from page 28)

In closing, when you send something for this Column, remember, you are actually helping Dennis, ZS4BS, to produce the magazine! Every little thing helps!

Radio Scouting and CQ Hou Koers

Dave Gemmell, ZS6AAW, and the Broomstick Warriors

Message from the World JOTA Co-ordinator. The WjaC, Richard Middelkoop, PA3BAR, sent the following message from World Scout HQ - "The World JOTA Report of the 52nd JOTA is available on-line for you to download and enjoy. Surf to www.jota.sub.cc and click on the radio-scouting library.

Please note that the JOTI part has been delayed unfortunately and is still being processed, so that is not yet there, but will follow shortly.

Thank you all for your contributions and your enthusiastic support of the JOTA event."

JOTA and CQ Hou Koers Activities!

I had great hopes of getting individual youngsters to build and use their own QRP station using Dave Ingram's "One Transistor Marvel" [Radio-ZS, Sept-Oct 2008, Vol 61 No 5]. Please note this includes using a domestic portable radio with the transmitter doubling as the BFO. This oscillator can be used in other experiments as a marker oscillator, a test oscillator or a 'remote' CW oscillator.

It would be great to have completely 'miniature station', single transistor transmitter and receiver as well as a miniature operator! Now that is real QRP!

Have you ever thought of having your home QRP transmitter and a homebrew receiver set up next to your 'official' amateur rig ? Then, after making contact with another station switching over to the low power home brew rig? This would be quite an eye-opener to the boys and girls.

Just remember what you do at JOTA and CQ Hou Koers can be redone at a High School Science week or vice versa.

Not Forgetting the Legalities!

Remember to renew your special call sign license and to re-register it as an educational station at SARL HQ as well. This applies to your own call sign if you're do not have a special one. The registration actually needs to be done in June but you might as well do it now!

(Continued on page 30)

(Radio Scouting from page 29)

A New Look For JOTA/CQ Hou Koers (in SA)!

JOTA/CQ Hou Koers in South Africa definitely needs a bit of attention! The number of Scout and Voortrekker stations taking part has dropped significantly over the past few years. Especially in South Africa! As radio amateurs, it is in our best interests to get as many stations on the air as possible.

The average radio amateur can help immensely and not just supplying the apparatus and operating it, but making suggestions about other activities such as antenna and mast building!!

AM Nets or Experimental Stations?

Perhaps we can get all the 'museum chaps' in the various cities around the country to form AM Nets and to transmit items of interest especially for special events such as CQ-Hou Koers, JOTA, and even those high school science fairs. The idea being to show that although certain modes and equipment may be old and little used, it can still be effective!

Be assured that a few extra stations on the air during JOTA will certainly not cause any QRM, especially if they can help out with CW, SSB or any other mode.

Well fellows, the plinth of the Column again. I make no apologies for repeating myself. Something has to be done, so please try to help out on 15 to 17 October 2010 and coming up for an hour or so to demonstrate your favourite modes. In other words get on the air and do what you like best but do it when you contact the Guides and Scouts. Do not forget the Voortrekkers' CQ Hou Koers event takes place on the same weekend as JOTA.

The address information for the Museum Pièce and Radio Scouting is PO Box 77, Irene, 0062 and telephone 012 667 2153. E-mail to dave@zs6mus.org.za and /or davegemmell@bmknet.co.za

My introduction to amateur radio

Roger Davies, ZS1J

Way back in the early 1950's, I inherited a radio receiver by Eddystone called a Kilodyne 4, which was manufactured by Stratton and Co. England, in the 1930's. This set was built with a diecast aluminium chassis and the front panel was bakelite. As the name implies it was a 4 valve receiver utilising 4 volt filament valves, one as a radio frequency amplifier, one as a regenerative detector and two stages of audio amplification.

The radio frequency amplifier was in fact untuned using an aperiodic RF choke in its control grid, apart from giving amplification; this RF amplifier valve gave isolation between the regenerative detector and the aerial. This was desired as a re-

(Continued on page 31)

(Introduction to Amateur Radio from page 30)

generative detector can be made to oscillate on the tuned frequency and this could give rise to radiation via the aerial should it not have the isolating amplifier valve. Another advantage was that changes on the antenna would not change the point of reaction and it would also remove the antenna loading the primary tuned circuit in any way.

This arrangement also meant that only one plug in coil was required for band changing although the coil had three windings, one for the tuned radio frequency, one for the anode of the RF amplifier and the other for the regenerative feedback. Coils were provided for 12 to 25 metres, 21 to 44 metres, 40 to 85 metres and medium wave 211 – 468 metres. The tuning dial was a 100 degree semicircle with a pointer and the dial was graduated from 0 to 100. The main tuning knob was a slow motion type to give accurate tuning, as was the reaction control. This knob was advanced for RF gain and if advanced to much the detector would break into oscillation, which could then be used for reception of Morse code. The only other control was an audio gain control although the set did not have an internal loudspeaker but had terminals on the rear for an external unit. The power for this set was supplied by an external power pack that gave 4 volt for the filaments and 250 volt HT.

What I found amazing was that the set was so lively with stations found on all bands at virtually any time of the day or night. One day, whilst I was tuning around I found some people talking to one another about transmitters and aerials and I asked my father what I had found. When he explained to me that they were “Radio Amateurs,” I was hooked and made a note on all the bands where I could listen to these doyens of the airwaves. There was never a doubt that one day, when I was old enough, I would join their ranks.

Eddystone Kilodyne 4

A Sensitive and Stable Short-wave Receiver

Wireless World, April 20th 1934

Features. Type - Four-valve "straight" short-wave receiver for battery operation. Circuit - Screen-grid HF amplifier, grid detector with reaction, LF amplifier, pentode output valve. Controls - (1) Tuning, with 100-degree slow-motion dial. (2) Reaction with slow-motion dial. (3) On-off switch. Price - Set of parts (including valves}

(Continued on page 32)

(Eddystone from page 31)

£9 1s. Makers – Stratton & Co., Ltd., Eddystone Works, Bromsgrove Street, Birmingham.

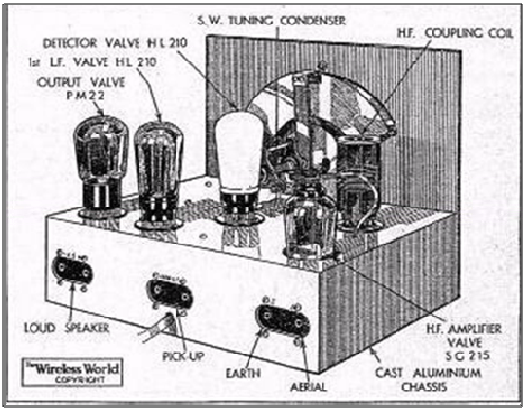
The design of receivers for short waves is an art requiring a good deal of experience, and there are few firms who can claim as long an association with short-wave work as Messrs. Stratton & Co., Ltd.

Their latest model covers wavelengths from 12½ to 2 000 metres, and although quite good results are obtained on the ordinary broadcast wavebands, it is on its performance on short waves that the set must be primarily judged.

The model tested was designed for battery operation, and the measured HT and LT currents under working conditions were 15,5 mA at 148 volt and 0,65 amp at 2 volt respectively. From the first moment of switching on there could be no doubts as to the sensitivity and range of the set. All three short-wave ranges appear to be equally efficient in this respect, though the apparent sensitivity will vary according to the time of day or night. After sunset, the middle and higher ranges gave better results than the lower range, but in the afternoon, the 12 – 26 metre band produced some very lively signals. Conditions were not too good 'for really long-range reception at the time of the teat, but Schenectady W2XAF on 31,48 metres and Pittsburgh W8XK on 48,86 metres were definitely identified. European broadcasts, on the other hand, were exceptionally free from fading, and Rome 2RO, on 25,4 metres, was quite as reliable and gave as good quality of reproduction as the local BBC station.

We were very favourably impressed with the low level of background noise and the stability of the set in general. Hand capacity effects are entirely negligible provided a reasonably short earth lead is employed, and there is no tendency for the tuning to drift. Reaction is beautifully smooth on all wave ranges, and nowhere was there any trace of blind spots or threshold howl.

The set is not calibrated as sent out, but the constructor should have no difficulty in preparing his own charts from the settings of a few known stations. Our own curves gave the following ranges for the three short-wave coils in the set tested: Coil LP, 12,2 – 24,9 metres; Coil Y, 20,9 - 43,7 metres; Coil R, 40,1 – 85,6 metres. The medium wave broadcast coil (6G) covered 211 - 468 metres. Calibration is considerably simplified by the fact that stations appear at



(Continued on page 33)

(Eddystone from page 32)

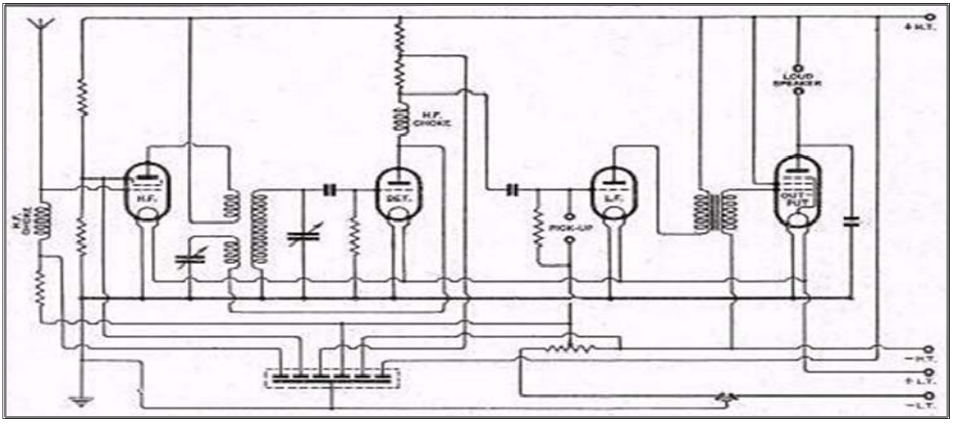
only one setting and there is no second channel duplication as in some superheterodyne short-wave receivers.

There are four valves in the circuit, the first of which is a screen-grid amplifier with an aperiodic choke in its input circuit. This valve, besides giving considerable amplification, acts as a buffer, which renders the tuned circuits independent of aerial capacities. Transformer coupling is employed between the screen-grid valve and the grid detector, and reaction is applied to the HF transformer. Between the detector valve and the pentode output valve there is a high magnification LF stage, which is resistance-coupled to the detector and transformer-coupled to the output valve. Grid bias is obtained automatically from a resistance included between HT and LT.

The chassis is an aluminium casting finished in grey cellulose. In addition to giving great mechanical rigidity, the possibility of parasitic noises due to loose joints is obviated. The tuning condenser has also been chosen to overcome the possibility of contact noises and the flexible pigtail connection is carried through a hollow spindle. Substantial bearings at each end of the condenser are mounted in moulded "Keremot" end plates. A 22:1 slow-motion dial gives easy control of tuning and a very open 100-degree scale has been provided. The reaction condenser itself is also fitted with a slow-motion movement and a small divided scale. Tuning coils are of the plug-in type and are fitted will six-pin non-reversible bases. The phenol fibre front panel provided is only about 1/16-in thick, and care should be exercised to avoid damage before the chassis is fitted to a cabinet.

The set is supplied, as a kit of parts together with coils covering wavelengths from 12½ to 92 and 230 to 400 metres. The long-wave coil is an extra. There is also an AC mains kit costing £15 3s., including valves.

* Roger Davies, ZS1J, 7 Raven Place, Plettenberg Bay, 6600. E-mail: rwdavis@telkomsa.net



Czech VHF Club honours Ivo, ZS6AXT

The OK VHF Club in the Czech Republic has honoured Ivo Chladek, ZS6AXT, with a special plaque. The award was made to Ivo for his many years of development and popularisation of amateur radio, his OK call and the development of EME in the world. Ivo's ZS and OK call signs have been taken up in the Hall of Fame of the OK VHF Club.

Well done to Ivo, he is setting a fine example for all the VHF, UHF and Microwave enthusiasts.

Silent Keys Stil Sleutels

They shall grow not old as we that are left grow old
Age shall not weary them nor the years condemn
At the going down of the sun and in the morning
We will remember them."

Hulle word nie oud soos ons wat bly vergrys,
Die jare sal hulle nie raak nog die tyd se eis
En, soos die son sak of die more ontvou,
Eer hul herinnering – ons sal onthou."

Neville Swanepoel, ZS6AQX
Graeme Gathercole, ZS2OD
John Bastiaans, ZS4ABQ
Dave Abraham, ZS5DTA
John Andrew Friend, ZS6FJ

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