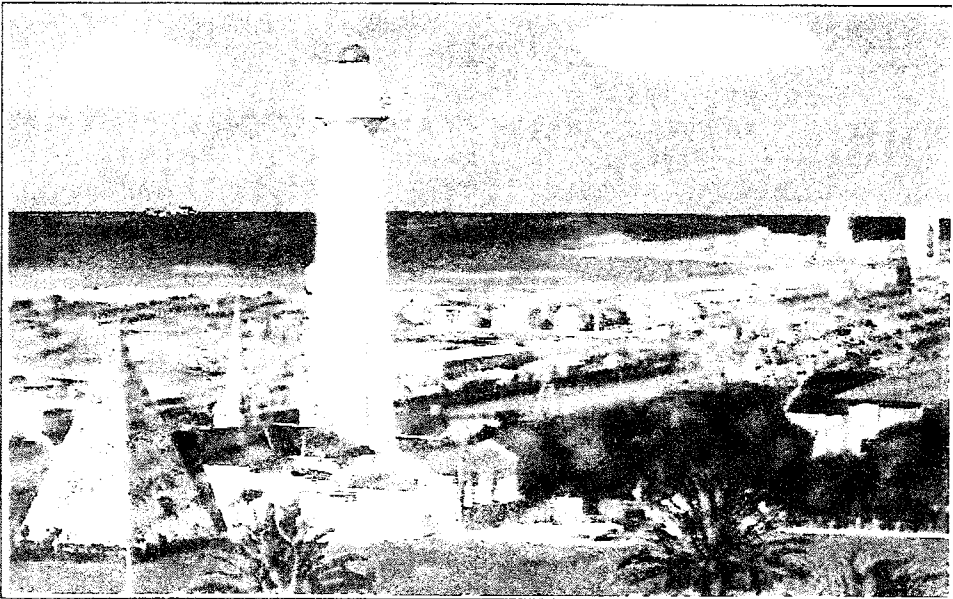


**QSA
PE**



**THIS NEWSLETTER IS PUBLISHED BY THE
PORT ELIZABETH AMATEUR RADIO SOCIETY**

Web site: pears.8m.com

PO BOX 10402
LINTON GRANGE
6015

April 2002

NOTICE OF MEETING

The monthly general meeting of the PORT ELIZABETH AMATEUR RADIO SOCIETY will be held on **Friday 19 April 2002** commencing at 20:00 (8pm) in the Municipal Disaster Management Centre, Westview Drive, Mill Park, Port Elizabeth (Civil Defence Centre).

Nobody has been found to talk to us yet, but we're pretty good at talking ourselves, so come and add your voice to the rest of the rubbish.

Tea, coffee and munchies will be available for a small donation.

Wrinkly Ravers

The next rave will be held on **Thursday, 2 May 2002**. It was agreed to again enjoy the cuisine at The Hedges, in Walmer.

Some 12 Ravers attended the March get-together there. Sitting at the outside tables because of a misunderstanding regarding the booking,

we enjoyed the fresh air so much that we decided to do it again in April, before the weather starts to turn too nippy for eating outdoors.

The Hedges is behind Pick Fruit on the corner of 10th Ave and Main Road. A parking area exists, or you can park across the road in Main Road.

ANNUAL GENERAL MEETING JAARVERGADERING

The Annual General Meeting of the Port Elizabeth Amateur Radio Society will be held on **Saturday, 18 May 2002**, starting at 16:00 (4pm) at the Walmer Scout Hall, Fordyce Road, Walmer (near the eastern end).

The Agenda is as follows:

1. Welcome
2. Minutes of 2001 Annual General Meeting
3. Chairman's report
4. Treasurer's report
5. Club awards
6. Election of Chairman
7. Election of Committee
8. Discussion of motions
9. General
10. Close of Meeting

Please note that any motions that you would like to have discussed at the AGM must be in the hands of the Secretary by not later than the April 2002 general meeting of the Society.

Die Jaarvergadering van die Port Elizabeth Amateurradio Vereniging sal op **Saterdag 18 Mei 2002** om 16:00 (4nm) in die Walmer Verkennerssaal, Fordyceweg, Walmer (naby die oostelike punt) plaasvind.

Die Sakelys is soos volg:

1. Verwelkoming
2. Notules van 2001 Alg. Jaarvergadering
3. Voorsitter se verslag
4. Tesourier se verslag
5. Klubtoekenning
6. Verkiesing van Voorsitter/voorsitster
7. Verkiesing van Komitee
8. Bespreking van mosie's
9. Algemeen
10. Sluiting

Neem asb. kennis dat enige mosies wat u graag op die sakelys vir die AJV wil plaas, die Sekretaris nie later nie as die April 2002 algemene vergadering van die Vereniging moet bereik.

Remember the get-togethers for technical discussions that take place on the 2-metre repeater link from 20:30 on Monday and Thursday evenings.



The
Chairman's Chat

This seems to be the month for saying "thank you". Firstly, to Neil ZR2NT for the excellent job he did of organising our stand at the SciFest. And not to forget all those who helped in many different ways, from constructing displays, manning the stand or even just dropping in to lend moral support.

Somebody said that, whether or not we attract newcomers to our hobby as a result of our display is almost beside the point; just look at the camaraderie and interest it generated amongst existing members. The QRP project being driven by AI ZS2U is an example of this.

Then we have to say a big 'thank you' to our father-'n-son repeater team – Trevor ZS2AE and Chris ZS2AAW – for our first class repeater network, and in particular for the work done in refurbishing the set-up atop Lady's Slipper. It was heartening to see how many members arrived on site to help, many of whom really put in some stout effort, especially in the demolition department! Thank you all. It makes one proud to be a member of PEARS.

Those of you who are members of the SARL, please make a point of giving Garth ZS2HB your proxy vote. There is always the chance that it might help to tip the scales for the better.

73 & 88,

Beavan ZS2RL

HAMNET / ECARES NEWS

Mount Road Police Station

Bill ZS2ABZ and myself are planning a visit by the Club to this station in the near future. We will be visiting the control station where incoming calls are received and where communications with police vehicles take place. ECARES members especially should be interested to see this. Watch QSX for the date and time of the visit.

S.A. Radio League Website

Richard ZS2CLI has taken over the organising of this website and is apparently giving some prominence to Hamnet.

Social

We are sorry to lose Johan ZS2OT from ECARES and PEARS. Apparently he has lost interest in ham radio. We do however welcome another Johan, that is Johan Terblanche ZS1I from Heiderand, as well as Nico Oelofse ZS2N of Aliwal North, who have joined ECARES. Jim ZR2JRD is still making good progress after his operation and seems to be getting around quite a bit now.

73.

AI ZS2U
Provincial Director,
Hamnet East Cape/ECARES

SUBS ARE DUE !!

The Society's financial year runs from 1 April to 31 March. This means that subscriptions fell due on 1 April.

If you have not yet renewed yours, kindly let Clive have the appropriate amount as soon as possible. A convenient opportunity would be the general meeting on 19 April.

Remember, you *must* be a paid-up member if you wish to speak or vote at our AGM in May. (Even if you have *not* renewed, we would like to see you and your family at the event.)

If you prefer to pay by bank draft, you can deposit funds to the PEARS bank account: Nedbank Main Port Elizabeth branch, account number 2212527594. A branch code number is not necessary if "Main" is specified. *Please enter your name in the reference blocks on the deposit slip so that Clive knows who it is from.*




AWARDS – YOUR NOMINATIONS PLEASE

In the February issue of QSX we published a list of PEARS awards. Some are consciously striven for, i.e. they can be worked for and applied for by the member, while others are presented in recognition of achievements or outstanding services rendered to Ham Radio. The recipients of the latter awards are nominated by other members or the Committee.

Obviously the Committee cannot be aware of all the goings on among

members and it is thus important for those who *are* to bring worthy achievements or services to our attention so that the person concerned can be considered for an appropriate certificate.

At the April general meeting, nomination slips will be available. If you know of any deserving cause, please do not hesitate to complete a slip and hand it to the Secretary.

But don't wait until then to think about it. 

SASOL SCIENCE FESTIVAL

This event has come and gone and, although there were a few enquiries about ham radio, we do not appear to have gained any new members. However, our participation must be seen as an investment. For example:

- Neil ZR2NT has pointed out that *he* only became a ham several years after his first encounter with ham radio at a hobbies display, where his interest was kindled. However, he was not able to immediately get involved in the hobby. Perhaps we will yet acquire new adherents.

- The mere involvement of so many Society members with the erection and manning of the stand served to renew the spirit of camaraderie and enthusiasm in the Society.

The usual facets including Slow Scan Television, VHF and HF operation and also frequency measurement were displayed, but the emphasis was on inexpensive entry into the hobby. This included a QRP one-transistor transmitter "bread-board" kit that youngsters were invited to wire up and test out.

A fully constructed version was used on 40 metres and worked Cape Town and other places, to the delight of the operators and onlookers alike.

Full marks go to Neil and his team for the neat breadboard design, with the circuit diagram displayed below the pins to show the connection points.

From previous experience we were not sur-

prised that the thing that grabbed most of the attention was the *morse code equipment!* The kids could not resist trying their hands with the morse key and sending their names etc. to the screen of the Telereader.

What *did* surprise us was the ability of some of the youngsters, sitting at a key for the first time, to send their names in good morse that the machine was fully able to decipher.

Another spin-off from the show is the fact that a number of members have had a revival of interest in QRP and CW operation! Several have ordered crystals to construct one-transistor rigs, the circuit for which appears elsewhere in this issue, and we will be chatting regularly on 7030 in the near future. Even one or two ZRs have been prompted to renew their attacks on the morse code.

The idea is that the rigs can be adapted in time, if desired, to cater for AM and even DSB. Al ZS2U is organizing the crystals on our behalf. He will also publish a circuit diagram for an easy-to-construct super-regenerative receiver to complement the QRP TX.

Will you join us on 7030?



VHF DXING & YOUR LOCATION

Al Akers ZS2U

There has been much discussion among the keener VHF dxers in Port Elizabeth about their locations, how good or poor they are, etc. As a result I decided to do a bit of research into this and here are my findings.

Do not judge the angle of a slope by eye. You are bound to get a higher angle than the true value. Be wary of GPS instruments when measuring heights above sea level. There seems to be a tendency to give values which are on the high side. I have largely used topographical maps for my research.

Table 1 gives information on some of the keener local VHF dxers' locations in four directions. The table shows the height above the dxer's QTH, distance away and the angle of rise for the nearest spot higher than the dxer's QTH. Where no values are given, the ground slopes down from the QTH.

From the table, it would appear that Mike ZS2FM stays in the worst location. However, these values are ground level values.

Table 2 shows the heights above sea level of these amateurs and the heights above ground of their antennas. It also shows the rise angles when taken from their antennas and this presents a much healthier picture.

There is another factor to consider though, and that is buildings and trees in line with the paths from the QTHs. Mike claims that this is a serious problem for him. Maybe he should contact Bin Laden and enlist his aid to solve this problem. ☹

CALLSIGN	JOHANNESBURG			DURBAN			EAST LON DON			CAPE TOWN		
	Rise metre	Dist km	Angle deg	Rise metre	Dist km	Angle deg	Rise metre	Dist km	Angle deg	Rise metre	Dist km	Angle deg
ZS2ABU	-	-	-	-	-	-	-	-	-	8	0,5	0,9
ZS2ABZ	-	-	-	-	-	-	-	-	-	8	3,0	0,2
ZS2ACP	-	-	-	-	-	-	-	-	-	15	1,0	0,8
ZS2BL	-	-	-	-	-	-	-	-	-	15	0,8	1,1
ZS2BWB	40	6,5	0,4	-	-	-	-	-	-	-	-	-
ZS2FM	6,4	0,5	0,7	6,4	0,5	0,7	6,4	0,5	0,7	17	3,0	0,3
ZS2HB	-	-	-	-	-	-	-	-	-	18	0,5	2,2
ZS2JF	18	0,7	1,5	-	-	-	-	-	-	20	1,8	0,6
ZS2U	20	2,5	0,5	-	-	-	-	-	-	20	1,8	0,6

TABLE 1

CALLSIGN	Height above sea level	Antenna ht above ground	JOH'BURG	DURBAN	EAST LONDON	CAPE TOWN
ZS2ABU	112m	4m	-	-	-	0,5
ZS2ABZ	72m	9m	-	-	-	-
ZS2ACP	145m	10m	-	-	-	0,3
ZS2BL	65m	6m	-	-	-	0,6
ZS2BWB	10m	7,5m	0,3	-	-	-
ZS2FM	63m	11m	-	-	-	0,1
ZS2HB	162m	8m	-	-	-	1,2
ZS2JF	122m	10m	0,7	-	-	0,8
ZS2U	140m	10,5m	0,2	-	-	0,3

TABLE 2

Meteoriet Sein Propagasië

Pieter Jacobs (Jnr) ZR1AEE, JF961A, Tel. 083-227 7099

MSDSP, WSJT

Dit klink soos iemand wat vir sy Morse kode eksamen leer. Amper reg. Dit is sagteware wat ontwikkel is vir baie swak sein kommunikasie. Die sagteware word spesifiek gebruik vir kommunikasie via die uitgebrande ge-ioniseerde spoor van partikels wat die aarde se atmosfeer vanuit die buitenste ruimte tref. Omdat party partikels mikroskopies klein is en dus 'n baie klein ge-ioniseerde spoor laat is dit baie moeilik om 'n spraak kontak te bewerkstellig met die meteoriet voortplantings metode.

Omdat die meeste partikels die atmosfeer met sonsopkom tref is dit dus ook die tyd wat die meeste benut word om kontak te maak met iemand binne 'n radius van 2600km. Hierdie modus word genoem "meteor scatter propagation".

Vor die ZR's en ZS'e wat aktief op 6m, 2m en 70cm is of wil wees, maar nie heelyd wil wag vir 'n band wat moet opmaak nie, is hierdie sagteware die antwoord.

Die sagteware is gratis op die internet beskikbaar. Die woord *gratis* word beklemtoon sodat meer mense betrokke kan raak. Gaan net na google.com en tik in wsjt. Die res is vanselfsprekend.

Die sagteware word eenvoudig geïnstalleer op die rekenaar. Die minimum vereiste is dat die rekenaar oor 'n klank kaart beskik wat werk.

Die klank kaart word deur middel van 'n eenvoudige impedansie aanpassings-eenheid aan die radio gekoppel. Die PTT word weer gekoppel aan die rekenaar se serie poort.

Ek het twee 220v na 12v transformators (50VA) rug aan rug gekoppel. Dus die sekondêre windings word aan mekaar gekoppel en die primêre windings is aan die een kant aan die klank kaart gekoppel en aan die ander kant aan die radio se eksterne mikrofoon inset gekoppel. Dieselfde metode is gebruik om die radio se eksterne audio uitset deur

nog twee rug aan rug gekoppelde transformators aan die rekenaar te koppel.

Die volgende stap is om die stelsel lewendig te kry. Dit is baie eenvoudig want die rekenaar doen alles.

WinMSDSP 2000 is die een sagteware pakket, maar dit verg redelik baie motivering om dit te gebruik. Die rede is dat die dekodering van die ontvangde sein redelik baie veranderlikes het. Eerstens moet jy weet watter frekwensie die persoon aan die ander kant gebruik, daarna moet jy maar self sukkel om die regte verstellings te doen om die sein wat ontvang is te dekodeer.

WSJT is die nuutste toevoeging tot die Meteoriet voortplantings kommunikasie metode. Hierdie pakket is baie maklik om te installeer. Jy hoef nie 'n rekenaar kenner te wees nie. Dieselfde koppelings metode word gebruik.

Jy tik eenvoudig jou roepsein in asook jou "grid locator". Jy besluit of jy enkel toon of multi toon gaan gebruik. Dit sal natuurlik afhang van wat ooreengekom word as die tyd bespreek word. Die program se dekodering werk uitstekend en jy word gewaarborg om 'n QSO binne 15 minute te bewerkstellig op 6m.

Die programme vat die morse kode sein en vermeerder die spoed. Hierdie metode word steeds deur die Amerikaanse Geheime diens gebruik vir kommunikasie oor lang afstande.

Omdat die meteoriet spoor so klein is, is die sein wat ontvang word aan die ander kant baie kort van duur. Dus met die opjaag van die spoed word die boodskap etlike kere herhaal in 'n baie kort bestek van tyd. Sommige spore se lewensduurte is kleiner as 5ms. Dus moet die vermeerdering in die spoed van 'n QSO gedoen word met 'n "ping" van soveel as 5ms.

Vir dié van u wat dink dat 6m net 'n medium is waar statiese geraas gemonitor word en waar bandopening

net een keer elke 11 jaar gebeur, wag daar vir u 'n groot verrassing. Die band is baie aktief en die toevoeging van die WSJT sagteware pakket maak dit baie meer lewendig.

Baie amateurs wil ook nie "meteor scatter" werk nie, want hulle sê dat hulle nie so vroeg wil opstaan nie. Met die WSJT sagteware kan jy enige tyd van die dag of nag met iemand op 6m kommunikeer. Dus selfs as die band dood is is daar nog lewe.

Wat 2m en 70cm betref is dieselfde sagteware ook werkend. U moet net die regte antenna en die nodige uitset krag beskikbaar hê. Minimum vereistes is 'n 7-element Yagi op 2m en 100W krag uitset. Werk die ERP self uit en maak die aanpassing aan jou kant. Lae verlies kabel en 'n voorversterker is 'n definitief.

Indien jy en die persoon ver van mekaar is is dit makliker om te kommunikeer maar indien julle naby mekaar is moet elkeen na dieselfde 'warm kol' ('hot spot') gerig wees. Die WSJT sagteware werk ook dadelik die warm kol uit. Elkeen rig dan die rigstraler na die warm kol.

Onthou, dié voortplantings metode geskied met refleksies vanaf die meteor of partikel se uitgerande spoor.

Jy kom ook ooreen wie stuur eerste. Die standaard is dat noord eerste uitsaai en suid tweede. Dit is dus baie belangrik om te weet wie wanneer gaan uitsaai. As jy oos wes werk reël ook maar eers die kontak vooraf anders saai almal oor mekaar uit. Nog 'n vereiste is dat die rekenaar se klok baie goed op tyd moet wees. Ek bel gewoonlik 1026 voor ek met

'n uitsending begin.


Die nuwe JT43 modus maak kontakte op lae krag oor afstande van tot 800km ook moontlik. Daar word nog ge-eksperimenteer met die modus en ek sal in die toekoms verslag daaroor lewer. Dit is spesifiek gebaseer op die UAT43 sagteware wat vir EME gebruik word.

PSK31, RTTY, SSTV, Hellschreiber en enige sagteware wat u op die HF bande gebruik, werk net so goed met die 6m, 2m en 70cm bande.

Ek het met WSJT op 2m met Paul ZS6NK (ex ZS6PJS) oor 'n afstand van 1530km gekommunikeer. Dit was nie die regte propagasie wat van toepassing was nie maar slegs deur middel van die meteoriet weerkaatsings. Dit word elke naweek op 6m en op 2m herhaal ongeag van of daar 'n meteor storm is of nie.

Ek sal eersdaags begin om te eksperimenteer met 70cm. Met die pas afgelepe Hamfest in Bloemfontein het ons met ZS4TX op 6m kontak gemaak met sy antenna 3m van die grond af. Die "pings" was tussen S6 en S9 sterk en dit om 14h30. Hulle was selfs verbaas oor die moontlikhede.

Stof daardie 6m en 2m stelle af en kry jou rigstraler reg. Ek het persone in Divisie 6 op 2m gewerk wat net 50w het met 'n goeie stel rigstralers en lae verlies kables.

Kom wees saam met ons 6m en 2m fanatikusse aktief op BHF. Die frekwensies wat gebruik word is 50.260 en 144.260 MHz. Jy kan jou eie kontak reël en dus jou eie frekwensie gebruik wat dalk stiller by jou is. 

FOR SALE ★ WANTED ★ SWOP

FOR SALE

* FRV7700 VHF converter for the Yaesu FRG7700 general coverage receiver — Phil ZS2NP, tel 082-5775249 all hours.

* 70cm Kenwood TK805 FM mobile transceiver, 16 user programmable channels. with DTMF microphone. mint condition. R1000 ONCO. Buyer to fetch — Garth ZS2HB, tel. 041 368 1101.

OPERATIONAL AMPLIFIERS Part 1

by Allan Whitehead ZS2R

An operational amplifier – or *op amp* – is a high gain dc coupled amplifier with two inputs. It is usually used with negative feedback, so its properties are largely independent of variables such as temperature, supply voltage and so on.

The name "operational amplifier" originally meant an amplifier that could be made to perform various mathematical operations, such as addition, multiplication, differentiation and so on.

These operational amplifiers were widely used in analogue computers, where an analogue input voltage represented a mathematical variable and the output of the operational amplifier represented a function of the variable.

Analogue computers have largely been replaced by digital computers, but the name "operational amplifier" remains because the op amp is such an extremely useful electronic building block.

A modern op amp is usually made as an integrated circuit, which means the transistors, resistors, diodes and other components making up the op amp are all formed on a single silicon chip.

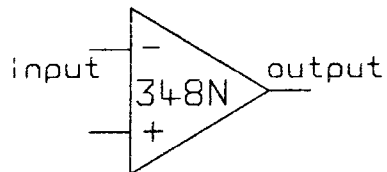
Modern electronic manufacturing techniques can produce thousands of transistors, resistors, and diodes on a chip 1 mm² area or less. The resulting op amp is not only inexpensive but also has far better electrical characteristics than an op amp made from discrete components soldered together.

Because of the close spacing of the components on the chip, most op amps (but not all) cannot handle powers in excess of hundreds of milliwatts or

voltages above 50V. Special high power and high voltage op amps are available. However, following the general rule that "you never get anything for nothing" op amps that operate at high power or high voltage generally sacrifice some other property, usually high frequency response.

Monolithic microwave integrated circuit (MMIC) amplifiers are now available with gains of 25 to 30dB at frequencies up to 2 GHz. The MAR amps are examples of these integrated circuits.

The standard circuit symbol for an op amp is given below.



The minus sign on the input side means that an input at that pin will result in an output of opposite phase. An input at the pin marked plus will result in an output that is in phase with the input. Many op amps require a +5V and -5V supply, and ground will be at 0V. This information has not been shown as some work off a single supply.

Op amp parameters that will be discussed on the two metre link on Monday evenings at 8.30pm include:– Gain and bandwidth, Op amp compensation, Slew rate, Input bias current, Common mode rejection ratio, Power supply rejection ratio and noise in op amps.

Part 2 will include two examples of op amps and related design calculations.

Al Akers ZS2U

I was pleasantly surprised at the amount of interest shown at the Grahamstown Science Festival in our single stage crystal oscillator and the morse code. I was even more pleasantly surprised at the interest generated among club members in these projects, so much so that I have been prompted to write about QRP.

As far as I know, the internationally accepted definition of QRP is a transmitter final stage input power of not more than ten watts and, for QRPP, a final stage input power of not more than one watt, so some of these transmitters could be QRPP.

Now QRP may seem child's play to some, but bear in mind Murphy's Law that states: "Nothing is ever as simple as it seems." The simplest transmitter using a single transistor oscillator is almost certain to mean the use of morse code and this in itself requires a skill that needs to be developed, and not many members have achieved this.

QRP transmitters can also be quite sophisticated, such as full frequency coverage on several bands with SSB capability.

Let us start with a simple transmitter and at the same time develop our skill with morse code. Also experience the thrill of making distant contacts with such low power.

Incidentally, with QRP, it is even more important to ensure that we have efficient antennas to derive maximum benefit from these little transmitters.

I have been studying several different oscillator circuits and did a certain amount of experimenting to get one that is simple, giving a reasonable output power (50 to 200 mW) while still functioning properly and which is not too finicky to get to work.

I ended up with the circuit as used at the Science Fest., as shown in Figure 1. If you wish to experiment with other oscillator circuits, perhaps hoping to improve on this circuit's performance, you are welcome. Let me know how you fare.

Some experimentation with the coil inductance and taps could result in improved performance and I intend experimenting with this myself.

Note that if you use a negative earth power supply, the 50 ohm output will have 12 volt DC on it.

If there is any chance of the connection to this output going to earth or is earthed, then you need to use a positive earth power supply. Alternatively, substitute a PNP transistor for Q and change the polarity of the supply to the oscillator.

This circuit can be used on a multiple of the crystal frequency by resonating the tuned circuit to this frequency. It means too that, when you tune the oscillator, you must tune to the correct frequency.

Perhaps it would be a good idea to first build an absorption frequency meter as shown in Figure 2. This unit should have a dial that is calibrated in frequency and, to cover a wide frequency range without making the tuning too sharp, plug-in coils should be used.

Recommended value for C is 50 to 75 picofarads. Coil L inductance will need to be determined experimentally,

but ballpark figures can be calculated. For example, using a 75 picofarad variable capacitor for C, three coils with inductances of 84 microhenries, 13,5 microhenries and 0,6 microhenries will provide a frequency coverage of about 2 MHz to 80 MHz.

Coil inductance can be calculated from:

$$L = A^2 \times N^2 / 38(A + B) \text{ microhenries,}$$

where:

A = coil diameter in cm

B = coil length in cm

N = number of turns

When using the absorption frequency meter, hold its coil near the transmitter coil, tune across the dial and watch the meter for an indication, then read off the frequency after peaking for maximum indication.

To cover these projects fully would make this article far too long, so if you do have any problems, do contact me.

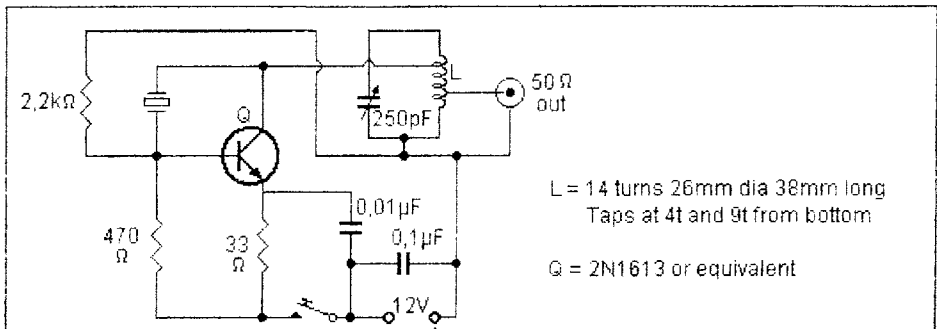


Fig. 1 – 40 Metre Crystal Oscillator

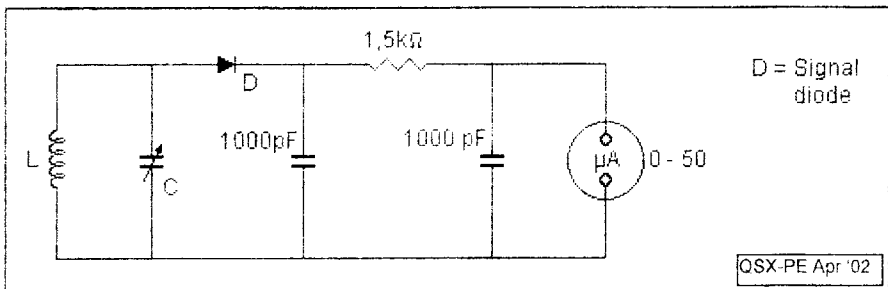


Fig. 2 – Absorption Frequency Meter

SLOW MORSE PRACTICE

Jim France ZS2JF has offered to give slow morse practice sessions two or three evenings a week on VHF. To reach a wider audience than can be achieved on simplex, members will be asked at the April meeting for their views on using the 145,650 repeater.

PSK441, JT44

Pieter Jacobs ZR1AEE – JF96ia

It sounds interesting. This is the latest digital mode that is freely available on the Internet (visit <http://pulsar.princeton.edu/~joe/K1JT>). The software package is called WSJT. Some of you might remember it from ZR6DXB's visit last time in December / January 2001/2002. Barry did some gridchasing on his last visit to your Division. He worked a lot of Division 1, 6 and 4 hams using this new digital mode while in Div 2.

Let us explain the two modes in this software package.

PSK441

This mode is specifically developed for using the Meteor Scatter propagation that was discovered in 1950. It takes your information and combines it in a digital packet, which is speeded up and then generated via the soundcard of your PC into your radio. When it receives this code again from the other ham it decodes the signal and you can see the other person's call sign and grid square or signal report. No more worries trying CW, which will not work.

JT44

This is the interesting mode of the WSJT software. This mode is specifically developed for making use of Tropo propagation. Why is this interesting? Well, tests done in South Africa between me ZR1AEE in Cape Town, ZS6WB Hal Lund Pretoria and ZS6NK Paul Pietersburg on 6m have proved that the mode definitely works. We made contacts on as low as 15w on 6m. ZS6NK and ZS6WB also did 2-way communication using only 1½ W. So if you don't have a linear you don't have to worry any more or keep on using the VHF repeater to communicate to somebody. Get active on 6m, 2m or 70cm.

This mode has the ability to decode signals that are not audible at all for CW. With signals below -23dB at my shack in the noise it still gives a clear copy. Even a person with hearing problems can now work a station using Tropo propagation.

Why do I write this article?

It is to get people willing to get active on VHF. ZS2FM writes a regular article in Radio ZS but if you don't participate we can't make new discoveries.

Everybody is aware of the Tropo openings on 6m and backscatter that sometimes appear from nowhere. In 1980 we called it rare backscatter and we got very excited. These days we don't even get excited any more

because we have found that it is there every day. because we notice it every day.

Working V51/ZS4NS at JG77 Hentiesbay with backscatter on 6m is a standard and not a phenomenon any more. When we wanted to do a test on 2m the conditions failed us. But we know it is there.

A QSO has already been done between Cape Town and Oranjemund on a 2m portable with a flat battery. I have done various with a mobile between Cape Town and Bitterfontein on 2m with ZS1UH. So what I want to say is that the conditions are there, we must just discover them.

When you read the write up on various modes such as PSK31 they say it is meant for HF use. Well, a surprise for you all. I have used it with great success with ZS6WB and ZS6DDX during the recent PEARS competition. Perfect copies were received both sides. Regular contacts are made between ZS6WB and ZS4NS during weekends.

When we look at SSTV people will say only for HF. We tested it with G0KZG/MM over a distance of more than 470km working wetsquares on 6m. A wetsquare is a square that is in the sea. You need somebody on a boat in the sea to get a wet square. We have also tested PSK31 with him over a distance of 510 km.

JT44 will definitely work over a distance of 800 km because I have tested it over 1530 km with no problem with only 50w on 6m. This puts Division 2 in the perfect spot to all the other divisions.

Just a matter of interest is that PEARS has a certificate waiting for somebody that has worked all divisions on 2m. Pretoria club has a certificate for somebody that works 15 stations on 6m in South Africa.

If you can't get a soundcard to radio interface then contact me for one. I will build it for you or provide you with a circuit diagram.

If anyone is interesting to have a 2m antenna that does work a distance of 1530km plus please also feel free to contact me. I am bringing in 6m 100W, 2m 100W and 70cm 50W linears. If anyone is interested please feel free to contact me.

Let us look at what equipment I am using in my shack. My system is a Yaesu FT-757GX combined with a Yaesu FTV-107R transverter. My linears are all ex equipment. My 2m linear is an old Motorola repeater linear. My 70cm is also an old UHF repeater final and my 6m is a homebrew transistor linear of 70w and a 4CX250B linear which is under repair at this stage. My pre-amps are modified TV masthead amplifiers, UHF 28dB, VHF 22dB and for 6m a homebuilt 20dB preamp. All antennas are made in my backyard.

If we look at the placement of the repeaters in your division you would find that some of you also have difficulty or actually no way of getting into the repeater network. Your only solution is to do your CW and become a ZS. Now you become like all the other guys and only get on the air at predefined times on either HF or on the repeater and only speak to the same people every day. Meantime you do have available at least 100w on 6m and a minimum of 20w on 2m. You don't use your equipment.

For those that have difficulty or no coverage at all just the following. Please get the software and get active. It is no fun triggering a repeater with 100w, because it only transmits maybe 30w back. It is something to communicate with someone else on 2m somewhere else in South Africa That is something to achieve.

If your financial status is like mine then this is the way to go. With low power and the right antenna you can really get out and achieve something that can only propagate amateur radio. Your participation will also add to the growing numbers of members or listeners.

Just a basic indication of antenna elevation as well as antenna azimuth offset when you want to work Meteor scatter. This is for all frequencies. The WSJT software does provide you with the right offset and elevation if you type in the grid square of the person you want to work. The rest is easy. Remember always to use the direction towards the sun. It will definitely help.

Let us look at some propagation news.

Remember, all communication is on USB and with horizontal antennas. There is much less man-made noise on horizontal than on vertical. If you have USB do your own test and prove it to yourself.

On 6m the band is opening towards the other continents. Conditions can change

Distance	Elevation	Azimuth Offset
500	18	21
600	15	18
700	13	16
800	11	15
900	09	14
1000	08	13
1200	06	11
1800	02	10
2000	01	10
2500	00	08

drastically so keep your ears and dials between 50.100 and 50.200 from 0900 in the mornings until about 2300 in the night. There are various times that the band can open but the best times for possibly JA is 0900-1100, LU and PY around 1400-1500 as well as the 9A, VU and various other stations. At evenings around 1800 till 2300 it is Europe.

Indications of activity are to monitor the TV carriers in Europe and Eastern Europe 48,250, 49,745, 49,750, 49,7488, 49,7499. You will hear a signal with your set on CW and of course on USB. As the signals get stronger with your own experience it will give you a good indication of what is to be expected.

At this stage the signals are a bit skew which means that signals are coming in 30 degrees east of north. It means that to listen for Europe you must turn your beam 30 degrees away. This phenomenon will of course vary between gridsquares.

Saturday and Sunday mornings we operate from 0600 till 0800 on 50.260 and 50.250 on WSJT. Here we experiment with PSK441, JT44 and whatever software you want to test.

Look out for V51/ZS4NS at JG77 every morning on 50.260 using PSK441 with 15 second transmission rates. He is active every morning between 0600-0700. JG77 is at Hentiesbay. He is going to activate two more grids around Hentiesbay in this period.

Look out for the following meteor storms coming up. This will definitely help you starting. Remember all tests done so far

between the other active hams and me were done when meteor storm activity is very low or none at all. Some of our QSOs took more than two hours but with the latest software release a 2m contact will not take longer than 20 minutes.

Pavorids	6 April
Puppids	23 April
a-Aguarids	4 May (expected to be big this year.)

News from the States was that some people worked 11 stations within 30 minutes over more than 1000km during a modest meteor storm. An EME QSO was done within ten minutes with no elevation control across the Atlantic with JT44.

On 2m activity is very low. We operate every Saturday and Sunday morning between 0600 and 0800 on 144.260 USB using PSK441. Active Hams on 2m are ZS6WB, ZS6NK, ZR6DXB, ZS4NS and myself ZR1AEE. We also want to do tests on JT44 between Division 1 and Division 2 as the winter month conditions are starting. The past SARL competition showed you what could be expected.

Won't it be nice to be able to say you have worked all divisions on 2m on a weekend or a Saturday or Sunday? Your horizontal yagi will still trigger the repeater if you want to communicate with your fellow hams.

On 70cm I am not giving any comments. I am ready to work anyone interested using JT44 or WSJT. The people say you must have 1kW to be able to work Meteor scatter. It is because they *have* 1kW. We don't have that kind of equipment. How can we prove them wrong? By testing it!

On 23GHz regular contacts are made between Pietersburg and Johannesburg over a distance of more than 300km using only 15W. The signals are there; we must just receive them.

Turn your beam in either Div 1 or Div 6 direction and start listening if you can hear the "pings". Div 6 will of course be more favourable as we have to swing our beams in your direction. If you made arrangements for a sked I see no problem at all because we all want to work you. If you have an e-mail address you can also receive our regular bulletin and WSJT upgrade via e-mail with lots of interesting news and Dxpediton grid-squares.

I also run a JT44 signal every Saturday and Sunday morning from JF96IA in your direction on 144.400 USB. I normally start once I have finished with my WSJT skeds because I only have one RS232 port on my PC. Up till now we don't even know if anybody is listening. My budget is as tight as yours is, and sending a signal in mid-air for a maybe is also making my electricity meter turn.

Please feel free to contact me either via the landline or cellphone 021-9041747 or 083-2277099. I can also be reached via e-mail pieter@motorolasa.co.za to have a sked arranged. I have only worked 1 Division 2 guy, ZS2CR, in my active years on 6m but I hear lots of you on the repeater network.

I want to work your gridsquare and you will not be disappointed with the results. A contact on 2m gives you more adrenaline rush than a bungi jump from the Stormsriver Bridge and at no charge at all. I know.

Once you start to get active we can share designs of linears, antennas pre-amps and whatever again. The articles will become more technical as well as the bulletins, etc.

A competition is planned for June / July 2002 using all modes. This will be like the PEARS competition but just more fun. There will be a lot of gridrunners on the air and also mini Dxpeditons. Last time we had a gridrunner using a helicopter which crashed during a gridrun.

Come lets get active and become real Radio Amateurs and not just old fellows. As you can see from the activity call list the division between ZSs and ZRs is almost 50 percent. It means that it is not only for certain hams but for anybody interested to experience radio amateur in its new shoes. This is like in the start of radio communications at the beginning of the 20th century. We are experiencing new ways and are discovering new propagation phenomena. We are also experimenting with communication methods of the future.

Be an explorer and if they could discover a new island this year how much more are there to be discovered on the ham bands. JT44 might be the mode for Australia but if nobody is active things will go past and somebody else will discover it or nobody will ever know.

I am listening out for your call sign on 2m and 6m and if possible 70cm. I do not have 23cm equipment available but am interested. ☺

MINUTES OF THE MONTHLY MEETING OF THE PORT ELIZABETH AMATEUR RADIO SOCIETY HELD AT THE MUNICIPAL DISASTER MANAGEMENT CENTRE, MILL PARK, PORT ELIZABETH ON FRIDAY 15 MARCH 2002

1. PRESENT AND APOLOGIES:

As noted in the attendance register.

2. WELCOME:

Beavan welcomed all, especially those rare visitors, and Colin ZS6LP and XYL Elmien ZS6LMN.

3. ACCEPTANCE OF PREVIOUS MINUTES:

Proposed: ZS2MC, Seconded: ZS2U.

4. ARISING FROM PREVIOUS MINUTES:

Lionel queried the 0,1 member.

5. FINANCE:

All is sound financially. Clive has paid all the licences.

6. CORRESPONDENCE:

In –

- Formal reply from SARL regarding the fees issue. In confirmation of their e-mail.
- From Johan, ZS2OT, cancelling membership of PEARS and ECARES.
- E-mail from Dennis Green, ZS4BS reminder of SARL VHF Contest, and a Belgian contest.
- E-mail from Richard, ZS2CLI in connection with a proposed R200 SARL membership fee. Beavan canvassed response to this – 26 attendees, 8 prepared to join/rejoin at R200, 2 not prepared... Promote this on the Sunday bulletins

Out –

- Beavan apologised for not sending the letter to ICASA w.r.t new

regulated fees.

7. GENERAL:

- ZS2PJP applying for the call ZS2PAT, after approaching the family and gaining their approval.
- Proposal for constitution to amend the definition of a member will be processed.
- Ou toppie award - please check up on people you know. Raphie must qualify.
- Scifest has gone well, and aroused interest in QRP CW. Al addressed the meeting icw a project and QSX articles based on the crystal transmitter kit. Meeting agreed, and suggested that it be extended to an AM voice kit. 5 takers at the meeting. Place an order for 10 items, with a deposit of R50 ea.
- Visit to the harbour police boat – Bill asked for a visit date.
- Chris gave a run down of the proposed Lady's Slipper work.
- Awards – Beavan mentioned the nomination slips for PEARS awards. He also thanked Al for the donation of the miniature trophies.
- Garth gave feedback on the SciFest from the day's trip.
- Neil thanked all the volunteers, and Garth passed a motion of thanks to Neil for the organisation.

The meeting closed at 20h30, whereafter Mike Poulter gave a talk on digital cameras. 📷



Pearstalk

MONITORING FOR TWO METRE DX

Several Division 2 VHF amateurs in East London and Port Elizabeth have volunteered to monitor the frequency of 144.400 MHz over weekends for any long distance signals. They include ZS2AH, ZR2NB, ZR2REG, ZS2BL, ZS2IV, ZS2JF, ZS2U and ZS2FM.

When at home they will leave their receivers running throughout the day, i.e. Saturday and Sunday, with their beams pointing in different directions, e.g. West, North-West, North and North-East.

Distant stations are requested to make calls at various times during the day when convenient, but especially when they can hear the ZS2VHF beacon on 144.415 MHz FSK, which is horizontally polarized. They may use any mode to make some noise on the channel to attract attention.

A lot of daytime openings, both on Tropo and Sporadic-E, have been missed in the past just because no one was on frequency.

Sarlnews expressed its appreciation to PEARS for the research being done by our members in connection with VHF/UHF propagation. "We urge all amateurs to support them in this praiseworthy undertaking and to share in any successes achieved", the bulletin said.

VOLUNTEERS NEEDED FOR BULLETIN TRANSLATIONS

The weekly SARL bulletins are compiled by volunteers. This is done by combining a variety of items obtained from different sources into bulletins made available in Afrikaans and English. At present there are only two volunteers and this makes compiling, translating and reading the bulletins a heavy workload.

SARL news needs volunteers for translating the bulletins. If you can translate

from English into Afrikaans OR from Afrikaans into English or both, have an e-mail address and can be available to do this translation on Fridays, then SARLNEWS would like to hear from you.

If you can help with this, or are willing to try, contact Fritz ZS6ASF on 012 997 1114 or on 083 304 0028 or by e-mail zs6asf@icon.co.za.

Please note: The deadline for items to be included in the Sunday SARL bulletin is 18:00 on the Thursday.

SARL WEBSITE HAS A NEW HOME

The SARL website has a new home. Along with the move has come a change of webmaster.

Peter Hers ZS6PHD started the SARL web in 1997. Since then it has gone through two facelifts, and has become an important tool for use by amateurs in South Africa and overseas.

Members of the SARL have access to additional services, as well as the formal minutes and other documents of the SARL. Many overseas amateurs make use of the online callbook, which is updated on a weekly basis from the SARL database.

PEARS joins the SARL in thanking Peter for his dedication to the time-consuming task of setting up and maintaining the site at a high standard of professionalism.

The new custodian of the SARL web site will be Richard Seddon ZS2CLI of the Border Amateur Radio Club. Richard is looking forward to the challenge of maintaining the SARL website. He can be contacted by e-mail at zs2cli@qwest.co.za for all enquiries and ideas concerning the SARL web site. He would value comments on anything that needs changing or improving.

The change of service provider does

not affect the way one accesses the SARL website, which can still be found at www.sarl.org.za.

A new set of e-mail addresses has also been set up to make the optimum use of the SARL.ORG.ZA domain. These provide direct access to portfolios with a e-mail address that will not change irrespective of who holds the portfolio.

Please make a note of these new e-mail addresses:

admin@sarl.org.za this replaces

sarl@intekom.co.za;

president@sarl.org.za = SARL president;

armi@sarl.org.za = ARMI compilers and readers;

radiozs@sarl.org.za = RadioZS Editor;

news@sarl.org.za = Bulletins;

secretary@sarl.org.za = SARL secretary;

qsl@sarl.org.za = QSL Bureau.

NEXT RAE

The next RAE takes place on Thursday 23 May at 19:00 SAT. The closing date for entries is 16 April 2002 and no late entries will be accepted.

Entries received after 16 April will automatically stand over till the next RAE.

The entrance fee for the examination is R250,00, which includes the ICASA certificate and the licence fee for the present year. Entry forms are available on the SARL webpage at www.sarl.org.za or from the National Amateur Radio Centre at telephone 011-675 2393.

ELECTRONIC QSL FACILITY IN THE OFFING

The ARRL is working on "Logbook of the World" (LOTW), an electronic contact-verification program that they predict will spark "a culture change" when it is introduced later this year. Once LOTW is operational, participants will be able to qualify for awards such as DXCC or WAS without having to first secure verification in the form of hard-copy QSL cards.

LOTW will not replace but will complement the whole paper QSL scheme. It will also not provide a means to get QSLs – electronic or otherwise. It is really a

system to offer credits for awards. They hope to enlist the participation of other organizations that grant operating awards, such as CQ and RSGB. The system will be open to all – ARRL members and non-members.

Registering and uploading electronic log data to LOTW will be free. The only time users will incur charges is when they wish to apply contact credits toward a particular award, such as DXCC, WAS or VUCC.

Security will be built into the system and every effort will be made to ensure the integrity of LOTW log data.

CORRECTION: BRC CHAIRMAN

Last month we reported that the Chairman of the BRC had resigned his post for health reasons. However, due to confusion with e-mails we gave his name as Brian Prior ZS2AU. In fact, it was Neil Holmes ZS2AI who stepped down.

Sorry Brian. Sorry Neil. We hope that the change has led to an improvement in your condition.

PIRATES!

From Dennis Green ZS4BS, HF manager of the SARL: The Amateur Radio Society of India's QSL Bureau has been receiving numerous cards for pirated stations using Indian call sign series. They warn that only the following callsigns are being authorized by the Indian Administration:

- * Only callsigns beginning with VU2 followed by 2 or 3 letters, and VU3, followed by 3 letters are valid.
- * Contest callsigns are AT0, AT2 and AT3, followed by 1 or 2 or 3 letters.
- * Since there is a blanket ban on operations from Andaman, Nicobar and Lakshdeep Islands, prefixes VU4 and VU7 have not been assigned to anyone since 1992.
- * Callsigns with prefixes like AU to AW, VT, VV to VW and 8T to 8Y are not authorized callsigns.

Please be informed also that the following big time DXers do not accept Bureau cards: VU2AU, VU2DX, VU2FOT, VU2TMP, VU2TRI, VU2WAP and VU2XX.



Congratulations..

on your birthdays:

April

- 20 Trevor Scarr ZS2AE
- 22 Marge van Loggerenberg XYL of ZS2LR
- 22 Allan Bowles ZS2BO
- 22 Colin Whitehead ZR2CU
- 23 George Bowes ZS2QN
- 23 Colin Robertson ZS2CR
- 28 Chris Scarr ZS2AAW
- 29 John Hugo ZS2J
- 30 Louis Jordaan ZR2J

May

- 1 Marge Weller ZS2OB
- 4 Chum Rhodes ZS2VU
- 6 Joan Browne XYL of ZS2BY
- 7 Rouhe Danielson XYL of ZR2HPD
- 10 Attie Barnard ZS2Q
- 15 Merle Jordaan XYL of ZR2J
- 16 Charmaine Whitebooi XYL of ZR2KAT
- 16 Dot Plumridge XYL of ZS2VP
- 16 Lynne Thomas

on your anniversaries:

April

- 21 Elizabeth ZR2EJ & Joe Jasson ZS2JLJ

May

- 2 Shirley & Gus Winter ZS2MC

on your daughter: Carin and Mark Hugo ZS2MA. The little lass.

Celeste, was born on 5 March.

on your promotion: Chris Scarr ZS2AAW, now ESCOM's Regional Senior Engineer, Eastern Cape, a post that he has held down in an acting capacity for quite a time. In addition, Chris has been accepted by the IEEE as a professional engineer and may now add PR Eng to his name.

on your new call sign Colin Whitehead, formerly ZR2CU, now ZS2CU



Sick list: After battling a while, Jim Duck ZR2JRD made a good recovery from his bypass op and went back home to the Gamtoos. Unfortunately another problem arose which necessitated treatment but he seems to be getting on top of it now.

Dick Schönborn ZS2RS is also back in circulation again after his op. and sounding like his old self again.

Bryan ZS1NQ had a knee joint rejuvenated on 2 April. We wish you a speedy and successful recovery, Bryan. Remember, grovelling is hard on the knees, so stand up and face Bernice like a man!

Welcome New Members

Colin Porter ZS6RP and XYL Elmien ZS2LMN, who have moved to Civiization from Gauteng.

THANKS – Thanks go to Al Akers ZS2U for his donation of a number of cups, which will be provided as miniatures for PEARS floating trophies and accompany certificates of achievement, as may be appropriate.

Your Society's Committee

Chairman, Awards.....	Beavan Gwilt ZS2RI	360-6968
Vice Chairman, repeaters, packet, VW Rally.....	Chris Scarr ZS2AAW	368-1344
Secretary	Chris Scarr ZS2AAW	368-1344
Treasurer; Assets Control.....	Clive Fife ZS2RI	367-3203
Social, Refreshments.....	Bill Hodges ZS2ABZ	581-2580
QSO Editor	Garth Laaks ZS2HB	368-1101
e-mail the Editor at.....	glaaks@iafrica.com	
QSO distribution (ex committee).....	Trevor Scarr ZS2AE	367-1746
Technical Classes, RAE.....	Neil Thomas ZR2NT	372-1969
Special Events.....	Ewalt Bouwer ZS2EHB	933-3482
Science Festival co-ordinator.....	Neil Thomas ZR2NT	372-1969

PEARS' VHF/UHF & Other Services

REPEATERS

Town VHF.....	# 145,050/650	
Town UHF.....	# 431,050/438,650	
Cockscomb.....	145,000/600	
Colesberg.....	* 431,075/438,675	
Craddock.....	* 145,050/650	
Grahamstown.....	* 145,150/750	
	Knysna.....	* 145,075/675
	Lady's Slipper.....	* 145,100/700
	Noupoort.....	* 431,150/438,750
	Uitenhage.....	# 145,075/675

* These form the PEARS long-range 2-metre repeater system, also linked to which are East London 145,775 MHz, George 145,700, Danabai 145,600, Stilbaai 145,750, Butterworth 145,725, King Williams Town 145,625 and Umata (438,725 duplex). It is further extendable to Cape Town via the WCRWG system. # These can also be linked as required.

OTHER SERVICES

Packet Bulletin Board (ZSONTP).....	144,625
Packet Rose Switch (ZSOGII-3,046,101 (144,675 in/out) or 046102 (UHF out to BBS).....	144,675
2m Beacon (ZS2VHF CW ID, FSK) (horizontally polarized, 160W ERP,).....	144,415
6m Beacon (ZS2SIX CW ID) (horizontally polarized, 25W ERP).....	50,005
6m Simplex Link with Lady's Slipper 2m Repeater (vertically polarized).....	51,400
Wefax Relay (Meteosat).....	145,350

Sunday Bulletins

PEARS bulletins are transmitted on Sundays immediately after the SARL English transmission, i.e. at about 08:45, on 7098 kHz as well as the 2 metre linked network that provides coverage from East London to George as well as Craddock and environs. PEARS' 7098 or 3640 kHz transceive facilities are also remotely linked as needed. In addition, the SARL's 40m operations on 7082 or 7066 kHz or Hammet's 7070 kHz can be remotely patched into the 2m network, in receive only mode or with full transceive capability for interactive events.

Date	Prepare and Read on-2m Repeater link
14 Apr	ZR2NT
21	ZS2HB
28	ZS2RI
5 May	ZS2EHB
12	ZS2ABZ
19	Chairman
26	Vice Chair

<u>DIARY DATES</u>
<u>APRIL</u>
19 MONTHLY MEETING
19 Last day for motions for AGM & nominations for awards
20 SARL AGM
<u>MAY</u>
2 Wrinkly Rave
18 PEARS AGM, braai & boot sale

* We Like Being Your Society! *