

April 2018 – May 2018



Dave ZS2SD and Glen ZS2GV back down from the Cockscomb Inn.
Find the full story on page 9.

This Newsletter is published by the Port Elizabeth Amateur Radio Society
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QSX-PE - Newsletter for the discerning Radio Ham

Download QSX-PE from www.zs2pe.co.za/Newsletter/Newsletter.htm
or www.commco.co.za/pears.htm

PEARS Monthly Meeting

7:30 pm at the Italian Sporting Club, 17 Harold Road, Charlo.

Tuesday 17th of April 2018

Marine Radios and operations, by Gert ZS2GS

Saturday 19th of May 2018

AGM, 3 pm (2 pm boot sale)

DIARY OF EVENTS

5 April	SARL 80 m QSO Party
7 April	Cockscomb Classic
7 April	RaDAR Challenge
7 - 8 April	SARL VHF/UHF Digital Contest
15 April	Ironman - Full
17 April	PEARS monthly meeting at the Italian Club
18 April	World Amateur Radio Day
21 April	SARL Autumn QRP Contest
22 April	Nanaga MTB
22 April	ZS4 Sprint
28 - 29 April	Blackout Weekend
5 - 6 May	AWA Valve QSO Party
12 May	Rally
19 May	RAE
19 May	PEARS AGM at the Italian Club
20 May	ZS3 Sprint
24 - 27 May	Great Zuurberg Trek
26 May	CQ WW WPX Contest, CW
26 - 27 May	CQ WPX CW
2 June	PEARS Bingo evening
10 June	Hammies Sprint
17 June	World QRP Day
21 - 25 June	Top Band
6 - 7 July	VW Rally

Congratulations to the following members of PEARS who have recently received awards

Andre Botes ZS2ACP : SARL 4M Floating Trophy

Andrew Gray ZS2G : Jack Twine Merit Award

Dave Higgs ZS2DH : Jack Twine Merit Award

Gert Schoeman ZS2GS : Jack Twine Merit Award

Mike Bosch ZS2FM : Willy Wilson Gold Badge

Theunis Potgieter ZS2EC : Fred Mills Trophy

Tony Allen ZR2TX : Jack Twine Merit Award



RESULTS OF THE PEARS NATIONAL VHF & UHF CONTEST 2018

DIGITAL CONTEST

The Grand Overall Digital Winner

Pieter Jacobs, V51PJ, scored 212 904 points as a base station on 50, 70 and 144 MHz

1st Runner-Up

Christo Greyling, ZR6AUI, scored 71 940 points as a base station,

2nd Runner-Up

Andre Botes, ZS2ACP, scored 44 345 points in a four hour per session Limited Category.

Longest distance achieved on Digital.

Willem Badenhorst, ZS6WAB, and Pieter Jacobs, V51PJ, established a new distance record of 1348 km on 50, 70 and 144 MHz.

We would like to welcome new participants in our digital contest. They are: Alan Saul, ZS1LS, of Cape Town, Michael Steenkamp, ZS2MIC from Despatch, and Andrew Prideauw, ZS2PA at Uitenhage.

ANALOGUE CONTEST

Grand Overall Analogue Winner

Carl Minne, ZS6CBQ, scored 171 220 points from a base station in Krugersdorp.

1st Runner-Up

Pierre Lindeque, ZS4PF, scored 45 240 points from a base station in Welkom.

2nd Runner-Up

Rickus de Lange, ZS4A, scored 22 170 points as a base station in Bethlehem.

Longest worked on Analogue

Carl Minne, ZS6CBQ, in Krugersdorp and Servaas Wahl, ZS6SER, at Louis Trichardt recorded a distance of 402 km on 144 MHz.

Winner of Limited Category

ZS1CRG as a multi-operator station scored 4176 points during a four period each session, and was run by ZS1DUP and ZS1DWH.

Runner-Up

Al Akers, ZS2U, scored 700 points as a base station from Port Elizabeth during the Limited Category

Winner of the FM category

Max Bouckley, ZS6MAX, scored 300 points on 145,500 MHz FM from his base station in Lyndhurst, JHB.

Divisional Analogue Winners

Division 1: ZS1CRG, multi-operator station – 4178 points.

Division 2: Al Akers, ZS2U – 700 points.

Division 3: Poor propagation conditions.

Division 4: Pierre Lindeque, ZS4PF – 45 240 points.

Division 5: Dave Jones, ZS5DJ – 650 points.

Division 6: Carl Minne, ZS6CBQ – 171 220 points.

It appeared that there were many amateurs active during the analogue contest, but only a few bothered to send in log sheets.

Results of the Hamnet Simulated Emergency Contest March 2018

Single operator Stationary Mobile

ZS6ADY 195 points

ZS1ZV 90 points

ZS6AVI 40 points

Single operator Portable

ZS6BV 1296 points

ZS2U 876 points

ZS5DCC 700 points

ZS4VP 390 points

ZS4DZ 192 points

ZS6BNE 153 points

Single operator Base station

ZS4JAN 1568 points

ZS2PE 1078 points

ZS2HR 996 points

ZS4PR 702 points

ZS2G 576 points

ZS3RW 520 points

ZS1DWH 300 points

ZS2AAR 260 points

ZS4BGV 232 points

ZR4EM 200 points

ZS1BOK 78 points

Thank you to everyone who participated and to those who submitted log sheets.

73

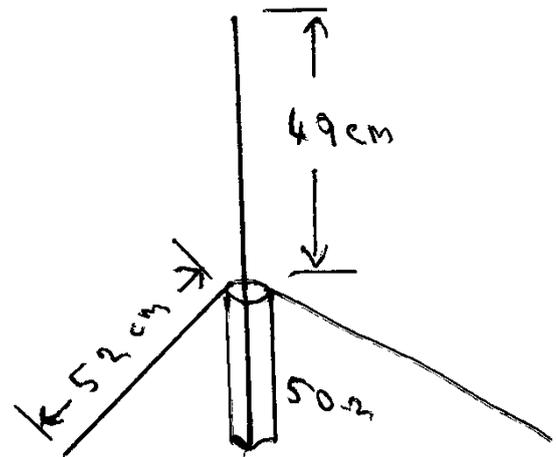
Andrew, ZS2G.

Hamnet Eastern Cape.

SHORT RANGE VHF ANTENNAS - PART 1

BY AL AKERS – ZS2U

Two meters is the most convenient and popular band for short range communications. A simple and effective antenna to make is the ground-plane, as shown in the diagram with horizontal radials. The feed-point impedance is about 37 OHMS. Sloping the radials will increase the feed-point impedance and at a 45 degree slope, it will be 50 OHMS. The more radials the better but more cumbersome. A good compromise is four radials. The antenna will provide a good low angle, omnidirectional radiation pattern, which is what is required.



For mobile operation, the car body can be used for a ground-plane. The best position would be the centre of the vehicle roof. This does spoil the vehicle bodywork a bit. An alternative is a magnet mount antenna. To obtain effective capacitive coupling to the vehicle body, use a copper or brass shim fastened under the magnet and connected to the feed-line screen. To prevent this from scratching the paint, cover it with a piece of adhesive plastic sheet. This antenna will present an impedance of about 37 OHMS. Lengthening the antenna about 12 percent will increase this to 50 OHMS resistive impedance, but will introduce some inductive reactance. Placing a trimmer capacitor between the antenna and the feed line centre conductor will enable you to tune out this inductive reactance.

The Luxembourg Effect

By Paul Litwinovich

Copied from: <http://wshu.org/post/luxembourg-effect#stream/0>

In this article I'll look at two things that, unless you are a serious ham operator or an absolute radio geek, you probably are unfamiliar with.

First, we will take a look at a very rare phenomenon first noted by radio listeners back in 1933. It generated several theories, but the correct one was only verified experimentally in recent times.

Second, we will look at a government-funded project that, while built for other purposes, was used to confirm the phenomenon 75 years later.

The Luxembourg Effect was first documented by electrical engineer and Professor Bernard Tellegen. The professor is also credited with the invention of the tetrode vacuum tube. My past article, [A Radio for the Roaring Twenties](#), features one of the first radios to use the tube.

One night, Mr. Tellegen was in the Netherlands, listening to a station transmitting from Beromunster, Switzerland, on 652 kHz. In the background of the Swiss signal, he could hear the audio of Radio Luxembourg, which normally broadcast on 252 kHz. He was far enough away from each station that neither station's signal would have been strong enough to overload his receiver. The two signals seemed to be mixing somehow, but by what means?

It is well known that two radio signals can be mixed in a circuit designed to do so, and produce a signal that is the sum or difference of the two. This is the basis of [Edwin Armstrong's heterodyne receiver](#). They can also mix unintentionally, such as in the situation where two transmitters are very close to each other, typically less than a mile or so, and the signal from one gets into the other's transmitter, causing the transmitter to broadcast the sum or difference of the two frequencies. This problem is called intermodulation, and modern FCC rules require the unwanted signal to be filtered out so that it is not broadcast. This was not the case though. The two stations were nearly 200 miles apart. Professor Tellegen also noted that the interference was directly on the Swiss radio station's frequency, not on a third frequency as would normally occur from a mix. The phenomenon was reported by other listeners on the same night.

Pondering the problem further, he noticed that the two stations and his receiving location were nearly in a straight line, with the Swiss station's signal passing almost directly over Radio Luxembourg on its way to the Netherlands. He correctly theorized that somehow, the Swiss station's carrier (the part of the radio signal without audio added to it) was being modulated by Radio Luxembourg's signal. What the professor could not understand was how this was happening.

The upper layer of the atmosphere known as the ionosphere was a new concept in 1934, largely theoretical, with strong indications that it existed based on the observation and study of how radio waves seemed to be reflected by something up there. Originally it was thought to exist only at night when it reflected lower frequency radio waves back to earth. No airplane at the time could fly that high, and only when studies were done at higher frequencies did scientists understand that the ionosphere consisted of multiple layers. Low frequencies are absorbed by a lower layer that normally forms only during the day in sunlight, and never reach the reflective layer. More on how it works can be found in my [Marconi article](#).

At the time, it was assumed that the ionosphere was consistent and stable. Rare gases in the upper atmosphere are ionized by particles radiated by the sun. Although scientists and astronomers had long since observed an 11-year solar cycle of sun spots and solar flares, radio had not yet existed through enough 11-year solar cycles to develop an observed relationship between these cycles and radio wave propagation. During heavy sunspot activity, long distance communication using lower frequencies will get worse during the day and better at night. The exception being a severe solar flare, whose particles can have the same effect at night as daylight does, activating the lower absorptive layer and killing long distance propagation at night.

Professor Tellegen began to wonder if the powerful 150-kilowatt signal of Radio Luxembourg itself might excite the ionosphere. This only raised more questions, the big one being that if it did, why did the phenomenon not occur every night, or at least more often. The same phenomenon was noted by Russian radio listeners who heard the audio of Radio Gorky superimposed on other stations, so it is sometimes referred to as the Luxembourg-Gorky Effect. There are reports of the effect being noticed again in the 1950s, but even then, there was no way to reproduce or scientifically prove what was going on.

Fast forward to 2007. Here is a case where most likely, you did not know that your tax dollars were hard at work. Construction on HAARP, which stands for High-frequency Active Auroral Research Program, began in 1993 with its final version becoming active in 2007, at a cost of \$250 million. The system, built in Alaska, consisted of a massive directional antenna system, pointed straight up, with multiple combined transmitters capable of beaming a 3.6 million-watt radio signal into the ionosphere above it. It could operate between 2 and 10 MHz, the low end of the short wave band. HAARP was built for multiple reasons centering on both military and non-military research. All of the research, experiments and results are far beyond the scope of this article, save for one, but a good summary of them are [available on Wikipedia](#). Google HAARP for numerous interesting articles about the project. The array could hit the ionosphere with enough energy to create man made aurora.

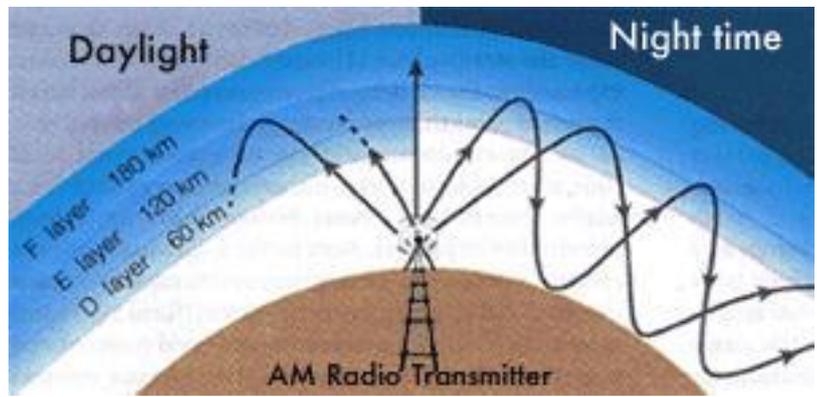
For the first time a repeatable recreation of the Luxembourg Effect could be accomplished. Beaming two signals into the ionosphere, each on a different frequency, one, amplitude modulated (AM), the other with no audio, resulted in the audio from the modulated signal being superimposed on the other.

So what was happening? The reflectivity of the ionosphere was changing proportionately to the powerful AM signal as its intensity changed in relation to the audio program, thus changing its reflectivity.

Therefore, the amount of signal of the unmodulated radio wave reflected back to earth, changed proportionally as well. Since AM receivers detect changes in the signal level of a radio wave, they reproduced these changes as an audio signal. Seventy-five years later, Bernard Tellegen's theory was proven.



So why is the effect so rare? Let's look at the diagram I used back in my article about Marconi and consider two possibilities. Keep in mind that normally, a man made radio signal pales in comparison to the amount of energy reaching earth's atmosphere from the sun. One possibility is that on the night that the professor and



others first noticed the Luxembourg Effect, it may have been a rare occasion of very little solar activity. Perhaps almost enough but not quite enough solar particles were reaching the reflective F layer of the ionosphere. Reflectivity would have been reduced, and reception of distant stations would have been marginal. The addition of Radio Luxembourg's powerful signal may have been just enough to tip the scale, so to speak. Since the strength of an AM signal varies with audio content, the amount of this additional ionization and consequential reflectivity would also vary with the audio, causing the strength of the weaker, reflected Swiss signal to change proportionally.

The other and more likely case would have been a solar flare or other solar activity causing the lower absorptive D layer to become partially ionized at night. This effect is well documented by ham operators and others, as it can make night-time reception of distant, low frequency stations go away altogether. Again, in this case it would require a marginal level, just enough to begin to ionize the D layer, weakening but not eliminating distant reception. Under this case, the Radio Luxembourg signal would have the same effect as described above causing just enough additional ionization to tip the scales.

Either way, the important thing to remember is that the two signals were not mixing at all, the modulation (audio) of the stronger one was being superimposed on the weaker one.

I am surprised that I could not find any recorded observations of the Luxembourg Effect in relation to the [five years that WLW operated at 500kW](#). Perhaps that is an indication of how rare the phenomenon truly is.

For various radio enthusiasts such as ham operators and DXers (those who make a hobby of trying to receive distant stations), the chances that you will encounter the Luxembourg Effect in your lifetime are slim. You may often hear two or more stations on the same frequency, but that is because they are operating on the same frequency. To qualify as the Luxembourg effect, all of the following must be met:

- The stations must be operating on different frequencies, and the superimposed audio heard on one or both of them.
- You must not be hearing it on a third frequency such as the sum, difference, or other mathematical relationship of the two frequencies.

- You should be a good distance from both stations, 20 miles or more to be safe, so as not to create overload artifacts in your receiver.
- The two stations should be a good distance from each other, so as not to create intermod mixing artifacts in their own transmitters.
- You should be able to draw nearly a straight line on a map or globe between yourself and the two stations. In general, the signal from the more distant station must pass over the other one at the point where its signal would be reflected back down to you.
- The stations must be amplitude modulated (AM) or one of its variations such as single sideband or double side band, or CW (Morse code). FM will not cause varying levels of ionization.

If you want a shot at hearing the effect, you can improve your chances with a lot of hard work. Line up possible candidate station combinations on a map. The station in the middle should be at least 50 kW, a 100-500 kW short wave station would be better. Wait until you hear a news report of a major solar flare, then spend many hours late at night through the wee hours of the morning listening.

The HAARP project was slated to close and the system dismantled, but after much lobbying effort by the University of Alaska, the U.S. government transferred the facility to the school and research continues.

The Cockscomb Inn

By Dave Higgs ZS2DH

So, really, how long does it take to deploy a repeater?

Well, that is a bit like “How long is a piece of string?”. You see, I have deployed the Hamnet portable repeater in about 10 minutes – including a 5 minute chopper ride, but sometimes it takes a bit longer!

PEARS and Hamnet Eastern Cape do a lot of Mountain Bike races and we have a new one this year – the Cockscomb Challenge and for that we needed to reinstall the repeater at Cockscomb.

Now Cockscomb is a popular climb for hikers and members of the Mountain Club. There are two caves – both quite famous near the bottom of the final ascent. The mountain club one is basic with limited water supply, but the other is rather like the Ritz!

The touristy peak is not, however, the peak on which this story plays out. The radio repeaters are on a peak to the South West of the famous peak – and a lot less hospitable.

The repeater guys in the club are Chris ZS2AAW, Andrew Gray ZS2G and Glen ZS2GV. GV and Chris were going to go up on Monday 12 February to do the installation. Unfortunately, Chris had to withdraw and I volunteered to go.



GV picked me up Monday morning and we made our way to the PE Airport where our Squirrel helicopter was waiting for us. Not long after that we were airborne and routing for Cockscomb. Our pilot, James, had seen the peak earlier on his flight into PE and said it all looked good.

Bevan, ZS2RL, was going to take out the mast and coax rack for us and the landlord (owner of the site) wanted to do some maintenance, so a lift club was organized. James would take GV and I to the peak, then go down to the cell tower at the southern side of the Cockscomb range and meet up with Bevan and the landlord team and bring them to the peak – along with our mast and rack. Once all was done, James would take me down to the cell tower and Bevan would take me home.

Well that was the plan.

The landlord wanted to do some serious maintenance – replacing the floor and the batteries for a start – and then we would be able to put our repeater in some available spot. Well they were running a little late and then asked us to disconnect 8 of the 12 batteries and to remove the duplexer for their midband repeater and move them to the LZ (helicopter Landing Zone) – a mere 20m away from the container!

It took quite a while to get that done. At this stage the repeaters were all sharing the remaining 4 batteries and the batteries were about to be replaced...

Bevan at the bottom noticed some bad weather coming in and told us to hurry. We were still waiting for the landlord and then they bailed – asking us to simply put the stuff back! Oh, and hurry 'cos the clouds are moving in fast!

Let's do what we can and get outta here!

Without our mast and rack (which was still with Bevan at the bottom). Looking around at the skeleton remains of some other commercial repeaters we found a 6 foot aluminium pole and a 4 foot aluminium pole and that would do nicely. We put the 4 foot one across from the mast to the rail track upright and the 6 foot went up from



there. We put up a small dipole (UHF) and ran the coax down the mast, through the 4 foot pole to the mast and then onto the pre-existing rack and down to the container. The lightning arrestor was put in and the fly-lead made by Chris fitted on the inside.



It's coming together quickly now!

Ok, GV, you install the repeater into the rack and I'll fetch the batteries and that GD duplexer!

Bevan on the radio – reminding us of the inbound weather – something to keep us motivated 😊

We got the batteries back into the container and all connected up – a quick call for a signal check and it's perfect! James had moved the chopper from the southern slopes to a saddle on the northern side in an attempt to give us more time, but our luck had run out. James took off to the north and said he'd be back in the morning.

Ok, so we on the mountain for the night. Time to take stock.

I had packed some extra food, had dry/warm clothing and water. GV was a little shy. We needed to get water. Shelter was there – there was standing/sitting room in the container – but not enough space for even a shorty like me to get horizontal!

The weather was basically misty with very strong/gale force winds. Visibility was about 10m and getting worse all the time. Walking out was not the smart move – we had shelter and known coordinates and with a little bit of thought we solved the water issue.

We took the door off of the rack in the container and tied it to the mast at an angle. Water condensed and ran off the door to the lowest point – which ended up in GV's bottle. This then solved the water issue so we really had no need to venture out.

Except boredom!

Our cellphones were draining their batteries steadily and our handhelds had no chargers either. I am fortunate in that I can reschedule my business life with a simple phone call to my very organized XYL. GV does not have that luxury and had to continue taking calls from clients and his employer. I let him use my power bank to float his battery for a while but with the inundation of



WhatsApp messages we were both fighting a losing battle. Why did neither of us have a wrist watch? We're both techie geeks who use our cell phones – that's why!

The boredom abated for a short while while we enjoyed our supper of tuna and provita. While it does not sound like much, it really was plenty of food. I had a Bar-One for pudding, but something told me I had no idea how cold we were going to get – and GV was still in damp clothing. I decided to keep the chocolate – in case I needed it later. I was well aware of the fact that if either of us started to get hypothermic there was nothing we could do and chocolate might come in handy.



And the evening's entertainment?

Monday evening is the PEARS news bulletin and we turned on when we thought it was time – only to find we had basically missed it. I did manage to hear my son call in and mention that they were looking for us.

Sitting in the container we were in a veritable Faraday cage. We could get a signal from the LZ, but that was out in the dark/cold/wet/wind outside. Bev was aware of our situation – I'd called her and told her the facts – we were safe, warm, dry, had food and water and were in no danger – and she understood.

The rest of the night was spent in alternating periods of sleep, chatter, and boredom. It is amazing just how numb your bum can get sitting for hours at a time! Let's be clear – this had nothing to do with the various topics of conversation or my "cell mate". Long dark hours with no real indication of time was boring.

Tuesday morning

Tuesday morning was a gloomy start. Pushing the door open a few degrees revealed the hostile weather we had all night! No sign of the sun coming out – not even for that poor orphan girl Annie!

It began to sink in that at least an early morning lift off the mountain was not going to happen. Realising there was no rush we tucked ourselves back into bed and told room service not to disturb us. Ok, you got me – we just sat on our ammo boxes a while longer. 😊



Bevan and Gert arrived again – to keep an eye on the southern slopes of our holiday resort. It is quite amazing what a comfort that was. Although we understood they could not reach us – or really do anything to assist, they were there and it meant a lot.



I had a few brief walks outside (because I could) and the time passed surprisingly quickly. It was now raining and collecting further water was a simple task and did not really justify the hours we devoted to it (or perhaps that was just the boredom).

Our hearts were lifted with a cheerful ZS2RL (Bevan) telling us there was a possible lifting in the weather toward the late afternoon. James told us he could hold out until about 6:30 pm and if there was a gap in the clouds he would come and get us. We made very sure we were ready to roll at a moment's notice, but our rapid deployment was not needed.

Donovan (ZS2DL) a friend of Glen and his family, with the assistance of Chris (ZS2AAW) and a few other hams tried to get Nicole (ZU2NX – GV's daughter) on the air. Glen has an interesting shack and it took a while – and a few trips to get the shack on the air. Donovan then allowed the rest of the family to chat (under his supervision) and that was great. Unfortunately, the courtesy was not extended to Bev, but that is OK as she is used to me getting into these sort of situations. Vanessa and the girls benefited from the airtime with dad.

I must just brag for a minute here – so please forgive me the indulgence☺. My sons are both Hammies (like Nicole) and have ZU licenses. Graydon (ZU2GH) had attempted to make contact Monday evening, and my youngest Michael, made contact with me while I was at the LZ (waiting for Nicole to come online). My Hammies got on the air without the need for half a dozen hams to run around all afternoon! A quick chat to Mike (ZU2MOO) and then we handed over to the Cummings crew – but I was very proud!

18:30 ticked by with a gong louder than that from Big Ben! It came right down to it – another night at the resort!

As if to taunt us, the air cleared – almost completely at about 8 pm. Too late for James as it was getting dark, but by 8:30 pm it was back to the misty mountain top that was our home.

As the evening crept over us, we began to take stock again. Battery levels were very low, morale however, was still surprisingly high. I had taken to



turning my phone off most of the time and just turning it on for a few minutes every few hours. The problem was that by now our story was wide spread and WhatsApps were in the several hundreds each time I turned on. When your battery is at a few percent of capacity, receiving messages is only a part of the problem – you then need to scroll through these messages to find any that are important.

You should have seen some of the messages! Everything ranging from “I could walk them out in two hours” to “I’ve got a 4x4 I’ll go fetch them!” from people who did not even know which peak we were on, or the type of terrain! There were, of course, the “leave them up there” jokes which, while we took no offense to them, did serve as QRM on our cell phones and cost us valuable battery life.

Supper consisted of the much talked about, Bar-One! You divide and I’ll decide – its child’s play really.

Now before you think we were starving – let me reassure you we were not. We were in no way active and a half a Bar-One was enough to see us through. I have been asked by many people if I ever thought of eating Glen – and my answer was always the same – Have you smelt him? It would take me weeks to get THAT hungry!

Can’t get worse? Is that a challenge?

We were bored and the long dark hours passed very slowly. We were nodding off every now and then – followed by standing up to “let more o2 get to the brain”. Somewhere around 1 am I opened the door to see a large flash of lightning!

Thunderstorms were raging south, east, and north of us. I can only assume they were on the western side too – but I was not going to go outside to confirm.

Great!

Accepting there was nothing I could do, I went back to my ammo case and was soon nodding off again.

The plan was to get a chopper lift off early in the morning, failing which would have the Mountain rescue guys climbing up to bring us additional gear and food and to walk us out.

Dawn broke to the sound of gusting winds outside. We naturally assumed we would be spending several more hours on the summit, eagerly awaiting the MCSA group – many of whom are personal friends and people with whom we work on MCSA / Hamnet exercises.



Eventually I ventured out only to be greeted by a stunning (but windy) morning. ZS2RL and ZS2GS, already back at their post at the foot of the mountain were keen to tell us the chopper was already airborne and on its way!

We were at the LZ with no need for a further invitation! GV directed James in – indicating the wind direction and James landed that Squirrel as if it had sore feet! I certainly could not have done a better job!

James indicated we could approach and we did – quickly. GV opened the door while I started lifting the ammo cases. Now I am not sure, but I am pretty convinced that the ammo cases themselves wanted to leave and were jumping into the chopper themselves. It did make me realize that while we had spent way too many hours sitting on the ammo cases, they could not have enjoyed it as much!



A few brief moments later we were in the chopper, airborne and talking to James who was amazed at how chirpy we were.

The familiar glow of orange from the MCSA crowd at the bottom LZ showed us the wind direction and James once again landed the chopper like a pro – having done a very low pass over Bevan and Gert.

The reception at the bottom was on a par with a hero's welcome! It was awesome! James had breakfast for us, my son Graydon had travelled out with my good friend Andrew Gray (Hamnet director EC) and everything very quickly returned to normal.

I would like to express my sincere thanks to Gert (ZS2GS) and to Bevan (ZS2RL) who drove out to the mountain daily – for three days straight. I really appreciate your support. And to GV who put up with me in a confined space and did not kill me – Thank you.

For more photos visit Dave's page at: <http://zs2dh.co.za/the-cockscomb-inn/>

Repeater Tone Access – the In’s and Out’s

Chris ZS2AAW

The PE Amateur Radio Society has undertaken to convert selected repeaters in the PE-Uitenhage-Despatch area to include CTCSS tone access. But what does this mean?

CTCSS

Continuous Tone Coded Squelch System (sometimes called “Private Line” or “Sub audible tones”) is a method of encoding a carrier with a continuously present specific low frequency and low level sub audible tone, with the intent that any equipped receiver will only respond to a carrier with the same tone present. The tone frequency used is below the standard audio frequency response of a mobile radio which is specified as being 300 Hz – 3.4 kHz according to ETSI international standards. Thus the CTCSS tones occupy the 67 – 250 Hz space “below” the audio response of the microphone and speaker circuitry within the radio. Because we are using FM, this low frequency is well carried across a radio path, and as a result the tone decoding is reliable and easy. The tones are filtered out of the loudspeaker circuit and are thus not easily detected by the user.

This is an old analogue repeater trick used by commercial community repeater (COMREP) owners to subdivide their users and give each user a “private” channel, inasmuch that the other users on the repeater would not be able to hear them talk, unless they are configured with the same tone. This then means that whoever captures the commercial community repeater (or COMREP) first, will have use of the repeater for a specified limited time, and other users not in that group would be prevented from listening because their tone is different, and from transmitting because their radio is blocked from transmitting when the channel is busy.

A standard set of 38 tones are defined, and they will appear on any programmable rig that has CTCSS built-in.

1	67.0	14	107.2	27	167.9
2	71.9	15	110.9	28	173.8
3	74.4	16	114.8	29	179.9
4	77.0	17	118.8	30	186.2
5	79.7	18	123	31	192.8
6	82.5	19	127.3	32	203.5
7	85.4	20	131.8	33	210.7
8	88.5	21	136.5	34	218.1
9	91.5	22	141.3	35	225.7
10	94.8	23	146.2	36	233.6
11	97.4	24	151.4	37	241.8
12	100.0	25	156.7	38	250.3
13	103.5	26	162.2		

The Amateur Radio application promotes the use of CTCSS for another reason – that of interference rejection. There is little more annoying than a monitored repeater being “kerchunked” by interference all day. South African hams have chosen 88.5Hz as the repeater standard.

A repeater normally has a standard noise squelch circuit that is used to key its own transmitter, with a tail timer to provide the squelch tail on VHF repeaters. The receiver squelch can be opened by any strong ADJACENT signals emitted near the repeater site, or even by distant ON-CHANNEL signals from other towns, under good propagation conditions. The addition of CTCSS decoding on the repeater receiver means that only signals with the correct tone will open the receiver, and thus the interference will be ignored. It will not be removed however, and should someone with the correct tone key the repeater, any adjacent or on channel interference will still compete with the wanted signal, while the receiver is open. It does not magically filter out the unwanted RF signals at the repeater site – it merely prevents the repeater from responding to them.

Adding tone decoding has a slight disadvantage in that the decoder takes a few cycles to lock onto the tone and thus there is a slight delay in repeater opening. However the tone decoding is more sensitive than the ordinary noise squelch and if the repeater is designed for tone squelch, the squelch can remain open under low signal conditions (like chopping thru trees) better than the normal squelch would have done.

Note that the only requirement in our application will be to TRANSMIT an 88.5Hz tone. The repeater will retransmit another 88.5Hz tone on its output for compatibility, but your rig can be set to be normal receive without tone.

THE PEARS VHF repeater systems accessible in and around the greater PE area the following sites:

145.625	Longmore
145.650	Town VHF
145.675 *	Uitenhage
145.700	Lady’s Slipper
145.725 *	Kareedouw
145.750 *	Grahamstown
145.775	Lovemore Heights – DSTAR or DMR so not affected

The normal configuration is for two linked systems, namely

- 145.625 – 145.650 and 145.675 to be linked via the UHF town repeater 438.650, and
- 145.700 – 145.725 and 145.750 linked along the coastal network.

To allow at least ONE repeater to be accessible by older rigs that do not have tone, there will be at least one repeater left as-is on each network, after the move to tones. This is determined by the equipment in use at the various sites, with the older Storno repeaters

not being easily modified to work with tones. These are indicated with an asterisk above. So if your rig cannot do tones, to be able to use the repeaters after the implementation date, make sure you can hit either Uitenhage or Grahamstown/Kareedouw repeaters.

Tones will only be added to VHF repeater receivers.

WIDE vs NARROW

Ham VHF frequencies were 25 kHz channel spacing, with an equivalent maximum permitted deviation on transmit of 5 kHz. The maximum deviation setting is the limited deviation setting under all conditions of loud modulation (like whistling or screaming into the mic) and is limited by a compression circuit in all FM transmitters. A more acceptable “nominal” deviation means the average deviation which is normally set to 60% of maximum, which is 3 kHz for wide spaced equipment.

Commercial VHF has moved to 12.5 kHz (and even 6.25 kHz) on new equipment. This means the permitted max deviation is halved to 2.5 kHz for narrowband equipment, and nominal is now only 1.5 kHz. It can be seen then that an old wide transmitter of 5 kHz deviation is way too wide for a 2.5 kHz max receiver that expects 1.5 kHz nominal incoming deviation. This will result in the receiver squelch closing, or severe distortion on the recovered repeater receiver audio. It is possible to just turn down the mobile rig’s transmitter deviation on older rigs for use on the new repeaters. The mobile receive audio will be a lot less than before, so the volume setting will run much higher to compensate.

The newer tone repeaters are also narrowband so the network update will move to the narrow deviation required for 12.5 kHz channel spacing, and that will free up additional channels in between the commonly used ones listed above. In the longer term even the Storno equipment can be narrow banded because they originally WERE narrow and had to be modified to wide for use on the ham networks. Double work to undo all those mods!!!

Note that the tone deviation is very low, at around 350 Hz for narrow equipment. This means the permitted max deviation is actually limited to 2.2 kHz for narrow speech, leaving space for the tone to be added to the speech deviation and still be within 2.5 kHz max.

Narrow channel spacing will only be applied to VHF repeaters. UHF links and repeaters remain 25 kHz for now.

WHAT DO I HAVE TO DO?

- If you have a newer programmable rig, set all the memory channels that have VHF repeater frequencies in them, to transmit 88.5 Hz tone, since adding the tone will not harm other un-toned repeaters.
- Ensure you set the channel spacing to “narrow” on VHF.
- If this is not programmable, ask a technician to adjust your transmitter deviation down to below 2.5 kHz max, 1.5 kHz nominal on VHF.

- Older VHF sets can have a CTCSS tone board added to the transmitter to inject 88.5Hz into the modulation circuitry. This will need professional alignment using a comms monitor or deviation meter. No change needed to the receiver. Many older sets have accessory connectors inside the rigs for these tone boards.

The implementation date is set for the first weekend in May – be prepared!!

73
Chris

MEMBERSHIP FEE RENEWAL

PEARS membership fees are now due:

Ordinary members: R150 p.a.

Couples: R200 p.a.

Pensioners: R 100 p.a.

Pensioners couples: R150 p.a.

Scholars & students: R50 p.a.

WIFI fees: R150 p.m.

Please note that all payments for membership fees or wifi fees that are made direct into the clubs bank account require a reference. This is usually your callsign, or if you do not have one, your name should be used. This helps me to identify who is making the payment.

Banking details (for subs & donations):

NEDBANK SAVINGS ACCOUNT No. 221 252 7594

Bank code 121217

A/C name: Port Elizabeth Amateur Radio Society.

Please use call signs (or name) as a reference.

Minutes of PEARS Monthly Meeting

Held at the Italian Sporting Club on the 20th February 2018 at 19h30

Welcome

Chairman Gert (ZS2GS) welcomed all present, especially Uli (DM5EE) from Germany.

SILENT KEY

Chairman request a moment of silence for Trevor (ZS2AE) who passed away last week.

Attendance:

As per the attendance register.

Apologies:

Ted (ZS2TED), Les (ZS2VA), Juanita (ZS2JBK)

Acceptance of the Minutes of the Previous Meeting:

These were circulated in the QSX, proposed by Clive (ZS2RT) and seconded by Colin (ZR2CRS) .

Matters Arising:

Container – Copy of minutes by Scout group regarding the responsibility of the container, not yet received.

Tones – 6 May change over date. However certain repeaters (Uitenhage 145,675 and Longmore 145,625) will not be tone codes, therefore those members who have radios that cannot do tone will still have access to those repeaters.

Social at Noordhoek was well by attended about 30 people.

Bingo evening in March or April, date to be set. Colin (ZS2CRS) will organize.

Correspondence:

Out None *In* None

Finance:

The treasurer Clive ZS2RT gave a report on the club's finances.

General:

Colin gave out name badges to those who ordered.

As we have a guest speaker for the evening, Dave and Glen will give a talk on their expedition to Cockscomb at the March meeting. Gert will give talk on VHF marine radios at the April meeting.

EVENTS:

Upcoming: Herald road race 25th February
Addo Trail Run 4 to 6 March
Tony has circulated an events date list for the year.

AGM Saturday 19 May at 14:00 for 15:00 followed by a bring and braai.

GUEST SPEAKER:

Ulrich (MD5EE) from Germany gave a very interesting talk and power point presentation on their Montserrat Island DX expedition in 2014. Montserrat Island is roughly south east of Cuba, towards the West Indian Islands.

Meeting closed at 20h45.

Chairman: GJ Schoeman

Secretary JG Keating

Minutes of PEARS Monthly Meeting

Held at the Italian Sporting Club on the 20th March 2018 at 19h30

Welcome

Chairman Gert (ZS2GS) welcomed all present, especially Marais Schoeman (ZS1NOS) from Langebaan

Attendance:

As per the attendance register.

Apologies:

Ted (ZS2TED), Les (ZS2VA), Johannes (ZS2JO)

Acceptance of the Minutes of the Previous Meeting:

These were circulated in the QSX, proposed by Clive (ZS2RT) and seconded by Eric (ZS2ECH).

Matters Arising:

Container – Copy of minutes by Scout group regarding the responsibility of the container, not yet received.

Tones – 6 May change over date. However certain repeaters (Uitenhage 145,675 and Longmore 145,625) will not be tone codes, therefore those members who have radios that cannot do tone will still have access to those repeaters.

Bingo evening will be on 2nd of June 2018, Colin (ZS2CRS) will organize.

Correspondence:

Out None *In* None

Finance:

The treasurer Clive ZS2RT gave a report on the club's finances.

General:

Chairman request members not to place items on the PEARS social Whatsup group that could be offensive to some members.

SARL trophies / awards:

The following PEARS members have been awarded:

The **Jack Twine** merit award:-

Tony (ZR2TX) Andrew (ZS2G) Dave (ZS2DH) Gert (ZS2GS)

The **Fred Mills Trophy** :- Theunis (ZS2EC)

The **Radio ZS 4 meter floating trophy**:- Andre (ZS2ACP)

Willy Wilson Gold Badge:- Mike Bosch (ZS2FM)

Congratulations to all the recipients. It has been a long time since so many PEARS members have received awards in the same year.

UPCOMING EVENTS:

24 March Rally

25 March MBT race

7 April Cockscomb MMT (new event and will be making use of Cockscomb UHF repeater)

15 April Ironman

22 April Nanaga MBT

AGM Saturday 19 May at 14:00 for 15:00 followed by a bring and braai.

Bingo (social) Saturday 2 June 2018.

GUEST SPEAKERS:

Glen and Dave gave a presentation on their ordeal on Cockscomb.

Next month Gert will give a talk on marine radios.

Meeting closed at 21h15.

Chairman: GJ Schoeman

Secretary JG Keating

Cockscomb Classic: 7 April 2018

Isolda Hosten ZS2IW

This is a new cycle race in our wonderful Eastern Cape Mountains and being the adventurers that we are we immediately put our names down to be positioned as deep into the mountains as possible. Race consisted of 3 routes – 103km, only 12 entrants – hopefully there will be more next year...the other two are 26 and 46 km.

Tony duly “dumped” us as requested (to our delight) at Hadley’s Drift... still remember swimming right there in the road with beesmis drifting past our heads years ago in searing sunshine.... Water Point 5.

Left PE very excitedly quite late on Friday evening. I think I can safely say Eric had packed every conceivable mast, antenna and radio that he could possibly squeeze into our trusty steed – hardly space for the XYL and her meagre belongings....We spent the Friday evening wild camping somewhere next to the road... the wind was slightly chilly but we were warm and cosy and had no complaints.



But before the lekker camping happened - we saw some – 3 to be exact, bakkies - high up on a side ridge of the Comb – we could NOT understand this – there is no road up there so how on earth did they get there and more importantly what were they doing there??. Poachers immediately sprang to mind.. what a society we live in... we were now nearing our planned camping spot and thought if they still come down tonight they will pass right by our peacefully sleeping unprotected bods – We stopped to take some photos of the most magnificent sunset over Cockscomb - really stunning.. we also had very very good comms by the way... we were now of course stationery so we took out the binocs to take a closer look at the 3 poaching bakkies and nearly died laughing... it was 3 – very large - cows browsing peacefully in the long grasses... felt mighty foolish I can tell you...

After breakfast the next morning we continued onto our designated spot...the road is terrible – worse than terrible – shocking in fact but we have done it many times before - even in our old Isuzu - so we knew the ins and outs... crossed the drift at Hadley’s and set up shop under the watchful eyes of several very inquisitive sheep. Must say I kept thinking of the 12 cyclists who has to do that road on bicycles – eek... But first things first – the mast had to go up – comms was great but the mast came with so it had to work!.. Fastened the pole to a huge old fallen over thorn tree...The sun was starting to bite so out came the tarp and the rest of the things we are always so sure we need. Anybody who knows me will know that the kitchen zinc indeed goes with... 😊

Helein, the water lady from Steytlerville arrived – she set up her table and goodies in the shade and we were ready for our contestants... the medic, Lloyd, also arrived on a quad – we previously met him at the 100 miler. Then Grant – no 004 arrived at 11.15 on the dot – what a pleasant young chap... and so the rest of the day progressed with all 12 riders eventually passing our point. One guy arrived in the ambulance which doubled as the sweep – bicycle and all. He then got a lift with Helein to the finish. The pink guest house team dawdled for a while – making up their minds if they were going to continue or not as the lady had a lot of wrist pains, but in the end they continued only to pull out at water point 6 with another rider – forgotten his number now.

We left the Drift at about 13.30. Tried to eat lunch but a nasty wind had sprung up and dumped one of the tarp's poles on my cheek. Ouch!.. Took a leisurely drive to Bucklands Farm. It is heartbreakingly dry – even if the clouds over Cockscomb were so lovely that we stopped 3 times to take photos.

Found Beavan, Mel and John at the farm. Mike and Mike were on their way out as they had a function to go to. The riders were being welcomed by a small crowd at the finish line and a lot of happy cheering and announcements were going on all the time. We sat for a while just admiring the scenery around us and chatting to the others. We were lucky to secure a free tent for the night which meant we did not have to pitch our tent in the wind and 1 foot deep sand and dubbeltjies.. true!. We were still wondering about making a fire in that cold wind and braaing when they came around selling tickets for a warthog spit, of course we were all in... had a lovely supper inside the big barn, huge fires outside...lots of people and laughter going on. Very festive. Coffee, muffins and chocolate shortbread for pudding, very nice.

Met Hannes Horn, owner and organizer – gave him all my photos on a stick – have not even seen them myself so hope they came out ok...he then organized for the 5 of us to have breakfast on the house on Sunday morning. Bonus !!

Packed up and took a slow scenic route home. It was a really great weekend.

Will definitely do it again next year and hopefully it will be better supported.

Footnote: Hopefully more PEARS members will volunteer next year as the water points are far apart and some riders ran out of water long before they got to us. One guy got really sick...I know it is up to the organizers to maybe organize more water points but still if there were more of us to go round they will. Dehydration is dangerous in that heat.



CONGRATULATIONS

BIRTHDAYS – April

- 01 Joan XYL of Barry ZS2H Jackson
- 01 Rosalee ZS2DN XYL of Donovan ZS2DL van Loggerenberg
- 03 Theunis Potgieter ZS2EC
- 05 Bernice XYL of Mike ZS2MDL De Lange
- 05 Hugo Ras ZS2HR
- 05 Rey XYL of Saney ZR1S Martin
- 07 Christel XYL of Michael ZS2MD Opperman
- 11 Adele XYL of Shaun ZS2L Baumeister
- 12 Andre Potgieter ZS2ZA
- 13 Graham Butcher ZS2GIB
- 13 Lizette XYL of Nico ZS4N Oelofse
- 16 Danie Steyn ZS2DRS
- 18 Annelize XYL of Aldrin Baker
- 22 Allan Bowles ZS2BO
- 24 Deidre XYL of Tony ZR2TX Allen
- 28 Chantelle XYL of Richard ZS2RA Ashworth
- 28 Christopher Scarr ZS2AAW
- 30 Louis Jordaan ZS2EN

ANNIVERSARIES – April

- 03 Hugo ZS2HR and Juan Ras
- 04 Glen ZS2GV and Vanessa Cummings
- 06 Wolf ZS2WG and Cathy Gerstle
- 08 Mitch ZS2DK and Colette ZS2CR Rundle
- 11 Aldrin and Annelize Baker
- 20 Mike ZS2MDL and Bernice De Lange
- 23 Patsy ZS2PTY and Neels Kruger
- 28 Louis ZS2EN and Elsabe Jordaan

BIRTHDAYS – May

- 01 Sanet Swart ZR2SDL
- 05 Anneke XYL of George ZS2GO Whitehead
- 06 Anne ZR2XT XYL of Alex ZR2T Gogos
- 07 Garreth Holmes ZS4GH
- 07 Rouhe XYL of Henry ZS2HD Danielson
- 13 Charmaine XYL of Charl ZR2CHL Lotter
- 14 Rory Norton ZS2BL
- 17 Lyn XYL of Les ZS2VA Barker
- 17 Matthew Saayman ZS2SA
- 18 Mark OM of Llise ZS2LLD Dodd
- 22 Bill Hodges ZS2ABZ
- 22 Saney Martin ZR1S
- 24 Les Barker ZS2VA
- 27 Lilian XYL of Andre ZS2AL Le Roux
- 31 Charl Lotter ZR2CHL
- 31 Shirley XYL of Stoffel ZS2C Carr

ANNIVERSARIES – May

- 02 Johannes ZS2JO and Daschell Geldenhuys
- 16 Peter ZS2PR and Jacqui Ryder
- 23 Henry ZS2HD and Rouhe Danielson
- 25 Neil ZR2NT and Merle ZR2MP Thomas
- 28 Richard ZS2RA and Chantelle Ashworth

If you are a member and your birthday or anniversary details are omitted or incorrect, please notify Clive ZS2RT (or any committee member) to update our records.

We regret that we have to announce the passing of Trevor Scarr ZS2AE in February. To all family and friends we extend our sincerest condolences.

Sunday SARL and Monday Club Bulletins

PEARS provides a local reading of the SARL national bulletins on Sundays in Afrikaans at 08h15 and English at 08h30.

The club bulletins are transmitted on a Monday at 20h00.

All transmissions are on 7098 kHz as well as the 2m linked network that provides coverage from Butterworth to George and up to the Free State and their environs.

Please consult the PEARS webpage for any changes.

Bulletin Roster

<http://www.zs2pe.co.za/bulletins.htm>

2 April	Glen	ZS2GV
9 April	Chris	ZS2AAW
16 April	Andrew	ZS2G
23 April	Eric	ZS2ECH
30 April	Johannes	ZS2JO
7 May	Dave	ZS2DH
14 May	Dave	ZS2DH
21 May	Gert	ZS2GS
28 May	New Vice-chairman	
4 June	New Secretary	

The bulletin readers are always looking for something to announce. If you have something to contribute, please forward it to the next reader.



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Your Society's Committee for 2017-2018

Chairman	Gert Schoeman ZS2GS	082 721 4010	gert1schoeman[at]gmail.com
Vice Chairman, Events & Rally organising	Tony Allen ZR2TX	082 956 2920	tony.zr2tx[at]gmail.com
Secretary	Juanita Keating ZS2JBK	079 229 4156	juanitakeating[at]gmail.com
Treasurer	Clive Fife ZS2RT	041 367 3203	clive[at]peham.co.za
Repeaters, Wifi	Chris Scarr ZS2AAW	082 925 6367	christopher[at]peham.co.za
Technical/repeaters/SAR comms	Glen Cummings ZS2GV	082 411 2743	glenvanessa[at]gmail.com
Meetings & Refreshments, Socials	Johannes Geldenhuys ZS2JO	082 320 3032	johannes[at]s4.co.za
Hammies, PR, Hamnet contest	Dave Higgs ZS2DH	082 387 5657	om[at]zs2dh.co.za
Hamnet, Metro Emergency	Andrew Gray ZS2G	079 490 0292	agray[at]mandelametro.gov.za
QSX	Eric Hosten ZS2ECH	072 841 4693	eric.hosten[at]mandela.ac.za
CO-OPTED POSTS			
RAE Examination Admin.	Donovan van Loggerenberg ZS2DL	082 852 4885	zs2dl[at]hamradio.co.za
HF Assessors	Bill Hodges ZS2ABZ	041 581 2580	zs2abz[at]jsat.co.za
Contest Committee	Theunis Potgieter ZS2EC	064 901 8079	contest[at]peham.co.za
PEARS VHF/UHF Contest	Mike Bosch ZS2FM	084 612 9600	mikebosch[at]gmail.com

Replace [at] with @ when you want to send an email (this is done to try to prevent spamming).

PEARS' VHF/UHF, Packet & Other Services

Local Repeaters: These repeaters form a separate sub-net in the PE - Uitenhage - Despatch area.

Town VHF 145,050/650	Town UHF 431,050/438,650	Uitenhage 145,075/675	Longmore 145,025/625	IRLP available on this subnet
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Cape Linked System Repeaters:

These form the PEARS long-range 2-metre repeater system, in conjunction with the Border, Southern Cape and WCRWG systems. See www.zs2pe.co.za/Repeaters/repeaters.htm for more details.

Lady's Slipper 145,100/700	Grahamstown 145,150/750	Cradock 145,050/650	Noupoort (link only) 438,750 / 438,675
Colesberg 431,075/438,675	Kareedouw 145,125/725	Plett 145,175/775	Brenton 145,075/675

Packet network:

ZS0NTP-2 Packet Node Lady's Slipper 144,800 1200bd 439,850 9600bd 434,800 1200bd APRS	ZS0NTP BBS Lady's Slipper On all node frequencies	ZS0GHT-2 Packet Node Grahamstown 144,800 1200bd 434,800 1200bd 439,850 9600bd (to LS)	ZS0CDK-2 Digi Cradock 144,800 1200bd
	ZS0KDJ APRS Digi Mount Road 434,800 1200bd	ZS0KDB APRS Digi Longmore 434,800 1200bd	ZS2ABZ-4 WMR918 WX Station 144,625 1200bd

VHF Beacon: 50,007 MHz FSK – ZS2X, 25 Watts into 2 element Yagi beaming north.

Banking details (for subs & donations): NEDBANK SAVINGS ACCOUNT No. 221 252 7594, Bank code 121217, A/C name: Port Elizabeth Amateur Radio Society. **Please use call signs as a reference.**

Disclaimer.

Note: The Editor, nor any PEARS club member, shall not be held liable for errors and/or omissions in any article and/or drawing contained in this newsletter. Furthermore, any view expressed is not necessarily that of the Editor, any committee member or other members of the Club. The material contained in this newsletter is not meant to defame, purge, humiliate and/or hurt someone's person or feelings.

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TO:

**IF NOT DELIVERED
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Port Elizabeth Amateur Radio Society
PO Box 10402
LINTON GRANGE
6015

AMATEUR RADIO is the hobby for RADIO EXPERIMENTERS
and those who like to fiddle with ELECTRONICS,
COMMUNICATIONS or COMPUTERS