BREAKOUT

The Newsletter of the Hastings and Napier Amateur Radio Clubs

Hastings Branch 13 NZART – Napier Branch 25 NZART

Volume 16, Issue 9 September 2016

Hastings Br 13 Club Calls
ZL2AS
ZL2QS

Napier Br 25 Club Calls
ZL2GT
ZL2G

IRLP
Node 6793
147.250

Branch Nets
9.00 AM Sunday Morning
3615 kHz
439.175 MHz

Editor
John Newson ZL2VAF

Taraponui in Winter – more pics inside

http://www.zl2gt.nz/

http://groups.yahoo.com/group/zl2as/

Emergency Call-in Frequencies: 3615khz and 670 repeater

Inside This Issue

President:	Rob Leicester ZL2US	Ph 8786381	
Secretary:	David Walker ZL2DW	Ph 8760518,	email david@apexradiocoms.co.nz
Treasurer:	Peter Keong ZL2PW	Ph 8774529	email: pkeong@xtra.co.nz
AREC/CD	John Newson ZL2VAF	Ph 876 0370	email: zl2vaf@gmail.com
AREC Deputy:	Robert Wallace ZL2SG	Ph 878 4993	email ffonzrjw@xnet.co.nz
Committee:	- Jan Suldovsky ZL2CZE	Ph 021 833 487	email jan.s@eastek.co.nz
	- David Sullivan ZL2OK	Ph 06 8578853 wk	email: bfr@xtra.co.nz
	- Ray Barlow ZL2RB	Ph 06 878 6068	email: r.w.barlow@xtra.co.nz

Hastings QSL Distribution: Wally Shuker ZL2MO Ph 8435497 email ZL2MO@hotmail.co.nz
Magazine Editor: John Newson ZL2VAF Ph. 027 230 3642 email john@thecomputerman.co.nz
NZART License Examiners: Peter – ZL2LF, Dave – ZL2MQ, Ray – ZL2RB
Club Call: ZL2AS and ZL2QS

Club Nights: Fourth Wednesday each month at 7.30 pm Pakowhai Hall, Pakowhai Road, Pakowhai

FROM THE BUSY RETIREE

Talk about not being active.... but I've certainly been busy.....HF radio has taken a back seat (though I have made contact with Mike N7TLL and Wayne WH60R on occasions) recently while I've been doing lots of other things. In late August Sue and I spent some time in the Sky Tower accommodation complex, courtesy of my old product supplier...and very nice it was too, not a bad thank you present at all. Naturally we wandered into the Casino, what an eye opener that was and I'm sad to say that no we didn't come home with a million dollars hi hi.
At out last Branch 13 meeting occasion (an afternoon one) we were addressed by Diane Story, a retired "Registered Radio Serviceman" !!!!!!! they couldn't accommodate females in Diane's day, as she explained to us along with many of her other work experiences. One item Diane did talk about was the famous "Avo 8" multimeter, I'm sure many of you can remember those and indeed may still use one. Thank you Diane, you did a great "turn". It was interesting to note that in the room there were another seven "Registered Radio Servicemen", a bit of a demonstration of a by-gone industry, in part.
The upcoming November A.O.C. "Boot Camp" weekend has already received several firm registrations for the weekend and a few more in the wings.
The course will be held at Pakowhai on 12 and 13 of November, contact me or David ZL2DW for the details and fee schedule.
Over the last few months we have had our fair share of site sourced interference to our 670 repeater. It's been a matter of allowing the commercial people to work through the process of cause and remedy.....and hopefully the problem has been fixed, fingers crossed.
We have our CHB "Meeting and Meal" arranged for the 26 October at Waipawa. This is in lieu of our normal meeting at Pakowhai Hall and a time to visit the patch of our CHB members. Talking of meals we have made a booking at the Taradale RSA on the 25 November at 6-30pm for our Branch 13/25 Xmas tea, we'll remind you nearer the time about this but at least now you have a date to put in your diary. Historically this has been a great night for members and partners to get together and for some to learn what their OM has been up to hi hi.
Sometimes you just need to do "business" and have a "meeting meeting", the next Branch 13/HBARC meeting will be one of these. It's a time for us to look at our Branch net and MED/RSM licences and make up our mind what we want to do about them, if anything. Some consideration needs to be also given to resource (repeaters etc) support and trustees.....it's decision time folks, do come along and give us you two pence worth.
The next Branch 13/HBARC meeting is on Wednesday 28 September 7-30pm, Pakowhai Hall.
73 for now, Rob Leicester (ZL2US, President Branch 13/HBARC, Hastings)

Branch13/HBARC Officers (left to right) David Walker (ZL2DW, Secretary), Rob Leicester (ZL2US, President), Peter Keong (ZL2PW, Treasurer)

NAPIER BRANCH 25

President: Wally Shuker ZL2MO	843 5497	email ssplat@xtra.co.nz
Secretary: Karl Matthys ZL1TJ	8454372	email karl@waspnet.co.nz
Treasurer: Stan White ZL2ST	845 2422	email stan.white@clear.net.nz
AREC: Mike Bull ZL2VM	843 6052	email rlb.mbb@xtra.co.nz

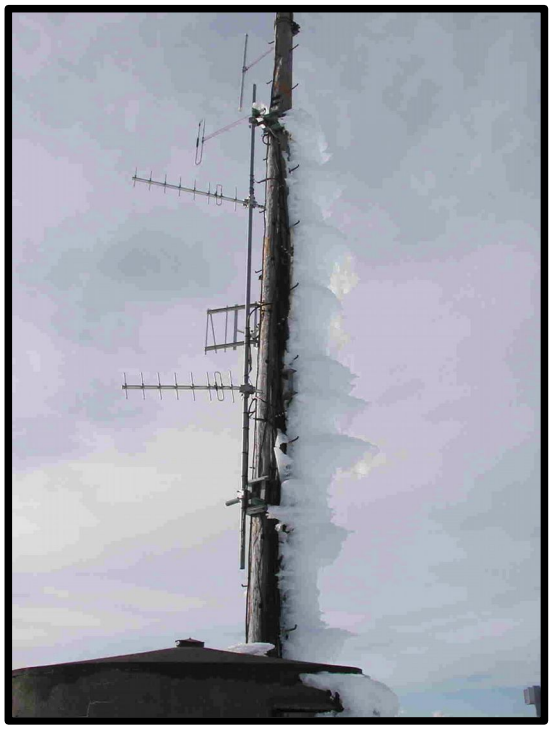
Committee:

Michael Mullins ZL2MY	843 4210	email michaelmullins@xtra.co.nz
Dave ZL2MQ,	0212428959	email dave.crook@maisonblanche.nz
Revell Troy ZL2SS	0210742837	email revelltroy@hotmail.com
Peter Breen ZL2CD	0274721527	email peterbreen@clear.net.nz

Committee Meetings: 7:30 pm, 3rd Tuesday of January, March, May, July, September, November
Club Calls: ZL2GT, ZL2G
Club Web Site: http://www.zl2gt.nz/

Club Nights: First Wednesday each month (except January) 7.30pm at the Club Rooms: 123 Latham Street Napier

Taraponui in Winter



AREC Assistance to Hastings C/D

With the Havelock North water emergency, the Red Cross assisted with getting support, bottled water and supplies to residents who could not get out. To support Red Cross, Hastings C/D supplied a portable repeater and portable R/Ts on the ESBand. John, ZL2VAF was asked if the Club would place the Repeater up on Te Mata Peak. John and Ray, ZL2RB went up and placed the unit and aerial at a suitable secluded location below the Restaurant. We removed it a couple of times over night to charge the battery. It did the job satisfactorily for the Red Cross and was dismantled on the 23rd. C/D assisted with some of the trips to the site as well as our own vehicles.

Ray ZL2RB with the CD supplied repeater in an orange Pelican case

The Holiday

The Proposal

Sometimes you get an offer you really can't refuse; I mean a genuine offer, not the Don Corleone type. So when my sister, invited me to accompany her and her husband on a road trip, encompassing many of the western states of the USA, I was not about to pass up the opportunity. What made the proposal additionally attractive was that we would be doing the entire trip all electric in their Tesla Model S.

The Car

Did you ever have one of those electric slot car sets when you were a kid, Scalextric I think was the name? I can vividly remember the amazing acceleration when the controller was squeezed, which more often than not sent the miniature Ferrari or Mercedes hurtling off into space at the first corner.

Driving the Tesla feels a little like that, except there is no guiding slot to keep you on the road. Instead you have a well designed suspension and a very low centre of gravity combining to produce very stable and predictable handling. Only the acceleration is comparable. First impressions of an electric car are often a bit spooky. I think it's the total lack of noise. There is no rattle of a starter motor, no gears being engaged, no exhaust noise, just the car gliding silently out of the garage. Out on the highway there is the inevitable tyre noise but very little wind noise. Minimising wind resistance is an essential component of the design and the model S has a very low drag coefficient.

Loading the two trunks. Park rangers would think we had engine trouble and hasten to assist only to find no engine! The electric motor is about the size of a water melon and sits where the differential is on a conventional car.

The most critical component, and one where Tesla has done a immense amount of research and development, is the battery pack. This consists of thousand of lithium ion cells, each one slightly larger than the familiar AA cell. The 85KWH battery consists of 7104 cells carefully packaged to form the floor of the vehicle, hence the low centre of gravity and structural rigidity. Battery development is ongoing and the latest 100KWH option has 18,650 cells. Tesla, in conjunction with Panasonic, have developed their own battery chemistry and cell connection technology.

For the driver the heart of the car is the 17 inch touch screen. Almost everything in or on the car is controlled from here. It also functions as a hi definition reversing camera. The only mechanical controls are on the steering column and comprise; the Forward / Reverse select lever on the right and the cruise control on the left.

One guess as to what Tesla owners talk about when they meet at a super charger. The silver car on the right is a later model without the phony grille. The wooden slats on the right are part of the structure containing the 400 volt dc power equipment.

The Trip

With a full charge range of around 250 miles the first thing to do when planning a trip is to establish the location of the chargers. As part of their commitment to electric transport Tesla have undertaken to provide a network of free super chargers around America. This is still a work in progress so it is necessary to ensure that there are always enough electrons in the tank to make it to the next charging point. This link shows the current map of Supercharger locations in the US. http://supercharge.info/ A super charger produces 400 volts dc and can charge at over 300 amps depending on the state of charge of the vehicle battery. This translates to approximately 90% of a full charge delivered in around 20 minutes. Just time enough for a restroom stop and bite of lunch ready for the next 2 hour leg of the journey. The chargers are generally located on the premises of better quality motels and lodges. This is a win / win situation for the hospitality industry as Tesla owners

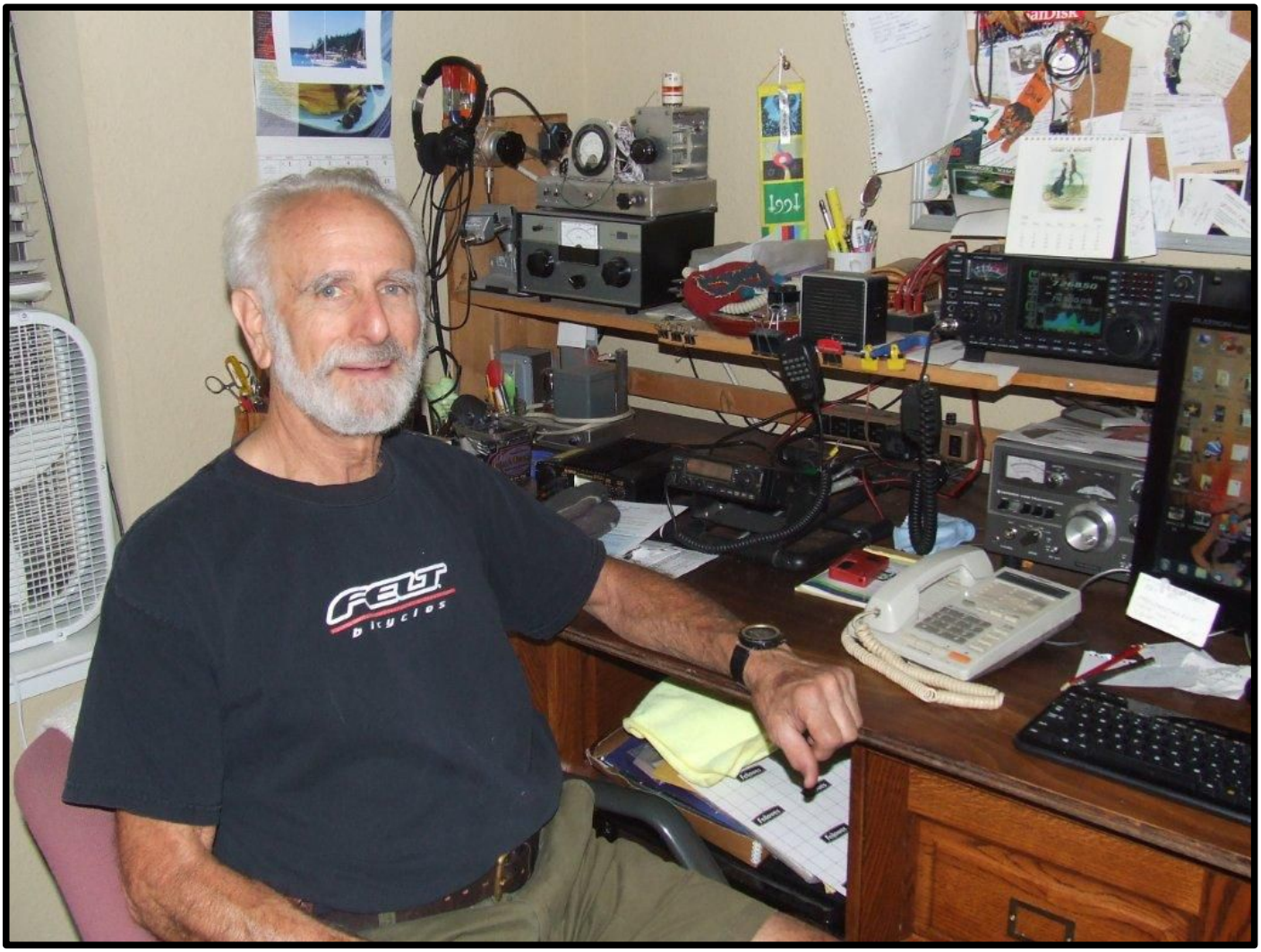
would naturally want to stay in an establishment which also provide charging facilities.

Our primary reason for making this trip was to visit a number of National Parks and hike a few of the excellent trails which they offered. The plan was to see as much of the country as possible by keeping out of the cities. I have found that the small towns are more interesting than the metropolis, especially if you are with someone who knows the territory. The route took us north from California, through Oregon, Washington, Idaho, Montana, Wyoming, South Dakota, Colorado and eventually back home to California. All up we covered around 3,000 miles. Total fuel cost was $5.00 for one charge at a nice hotel, which would have been free if their accommodation had not been fully booked for several months in advance.

On the interstate in Montana where they have a higher speed limit than most other states. Here we are cruising at 83 mph (134 kph) with plenty of performance in reserve.

The Ham

Those of you who have suffered to read this far might be wondering what an article about electric cars is doing in an online magazine dedicated to amateur radio. Besides the fact that electric cars and radios both involve the manipulation of electrons, there is a connection, tenuous I admit, but nevertheless a connection. Sometime ago my sister, upon learning of my renewed interest in ham radio informed me that one of their cycling and walking companions also "played with radios". This turned out to be an amateur by the name of Marshall Jacoby KC7HKU. Marshall and I have connected via email and tried several times to make contact on the air but poor propagation conditions and our 100 watts each on 15 metres proved inadequate at the time. I was keen to try 17 metres but Marshall didn't have any antennae for that band.
Once we completed our road trip we had a few days relaxing before my flight home so I asked if we could visit Marshall. I don't believe there is anything in the amateur radio code which discourages actually meeting a DXer prior to working them. So it came about that I met Marshall and his wife and got to spend some time in his shack. He is very much a retired gentleman and I suspect he has many tales to tell. I look forward to eventually having a "proper" conversation with him on air. In the meantime I offer a chocolate fish to the first reader who works KC7HKU on any band.



KC7HKU at the control desk. Looking forward to talking to him on air some day. Thanks for the brief meeting Marshall.

The Book

I found The Tesla technology fascinating but little did I realise the back story to the project. Journalist Ashlee Vance has covered the history of the company in a book simply entitled Elon Musk. Musk is the CEO of Tesla Motors, Space X, SolarCity and several other companies. The book reveals him as a visionary genius prepared to take huge risks to see his dreams become reality. His ability to inspire hundreds of employees to achieve his objectives has made him one of the most significant entrepreneurs of our time. The book also covers the story of SpaceX, which Musk created to fulfil his space travel ambitions. Undeterred by setbacks and rocket failures he has developed the company so that it now launches satellites for customers all over the globe and runs regular supply missions to the International Space Station, all for a fraction of the cost of the Russian Soyuz rocket. Musk states that his next goal in space is to create a self supporting colony on Mars. His ambition seems to know no bounds. He already has engineers working on that project. Altogether this book is a fascinating account, not just about electric cars and rockets but of what one person can do if they refuse to accept "can't be done" for an answer.

Peter ZL2CD

SK ESTATE ITEMS AVAILABLE

for offer (at the Br 13/HBARC meeting on Wed 28/9, see David ZL2DW)

- Netset SWR meter (Cat No 21-523) 1 -1000w, SWR 3:1, 3 - 30mhz (with manual).

http://radioworld.co.uk/second-hand-netset-21-523-swr-meter-3---30-mhz

- 1 in, 2 out coax switch (with SO239 sockets) with spec sheet.

- S.E.M. TranZmatch, 160 - 10m (with instruction sheet)

- HF receiver (Lowe, model HF-150), 30khz - 30mhz, SSB/AM (with manual)

http://www.eham.net/reviews/detail/647

- Daiwa, All Mode Active Filter, model AF606, with booklet

http://forums.qrz.com/index.php?threads/daiwa-af-606k-all-mode-active-filter.293863/

- Lowe Electronics, aerial preselector, model PR 150, 100khz - 30mhz, with manual

http://www.universal-radio.com/catalog/commrxvr/pr150.html

- a selection of short coax/PL259 leads.

"BOOT CAMP" Weekend

Branch 13 is hosting an Amateur Operators Certificate "Boot Camp" weekend on 12 and 13 of November 2016 at Pakowhai, Hastings.

Do some prior home work, come along for the two days of tuition, sit the AOC examination and if you pass go home Sunday afternoon with your "ticket".

There are costs and fees involved and pre registration is required.

Contact Rob ZL2US, ph 06 8786381 for details and registration.

AREC Inventory, Training and Have a Look Day

On the 2nd of October we are having another day to inventory, deploy and check all of the AREC gear. If you want to pop along and have a look now is your chance. We will be at the Pakowhai Hall by 10am and expect to be there till at least 2pm. All welcome.

Any queries contact John ZL2VAF 027 230 3642/876 0370 zl2vaf@gmail.com

Branch 20 TABLE SALE

8th Oct 2016, Longburn Hall, Palmerston North. All information is on the web site www.zl2ko.org.nz.

Antennas 101, The full wave loop antennas

Following on from last months dipole antenna design, we will now look at loop antennas. (Yes it is antennas, look in your dictionary. Antennae refer to insects). In simple terms, full wave loop antennas can be thought of as two half wave dipoles whose ends are drooped down and joined. The performance of loop antennas is usually considered related to the enclosed area and the feed point orientation. They come in two basic shapes and have different properties as follows; the delta loop and the square or quad loop.

Delta loop

The most common loop is the 'delta' loop and this comes in two shapes with two feed points, giving four different antennas.
1/ Triangle with the apex at the top and fed either at the top or bottom
2/ Triangle with the 'apex' at the bottom and fed either at the bottom or one top corner.

Looking at number one, a loop with the apex at the top and fed at the top, this is a simple loop to put up as it only requires one support mast. Feeding at the top of the apex puts the high current at the highest point above ground. To get closer to vertical polarisation with a triangular full wave loop, feed 1/4 wave down from the apex, i.e. part way down one side.

Number two, a loop with the apex at the bottom requires two supports but many hams say the antenna will be vertically polarised and give better DX results when fed either at the bottom or one top corner. Again part way down one side seems to be better.

Quad or square loop

The quad is a popular form of loop antenna for hams. A quad loop is most often seen as the multi-element 'quad' antenna for the higher bands and again coming in two different forms.
1/ Square shape fed on the bottom or top side
2/ Square shape fed on one side.

A square antenna fed at the bottom or top will produce a predominately horizontal polarisation.

A square loop fed half way up one side will produce predominately vertical polarisation.

A loop antenna is fairly independent of ground, but in all cases proximity to the ground will affect the resonant frequency quite drastically. No vertical loop antenna for HF should be mounted higher than a half wavelength above ground; otherwise the performance will be compromised.

Sky Wire

There is one other full wave loop antenna worth mentioning here and that is the Horizontal Loop or "Sky Wire". A sky wire is simply a full wave loop mounted horizontally at about 12m above ground level. While many publications say that this antenna is only capable of high angle radiation, this seems not to be true in practice above normal real life ground. It will favour one direction or another but is a good omni-directional antenna suitable for DXing on the fundamental frequency

and any multiple. A horizontal loop about 12m high will give low angle radiation on the higher bands plus considerable gain. Ask ZL2USB or ZL2RVW if you don't believe me.

Balun

A balun (Balanced to un-balanced) device is something often forgotten when building and experimenting with antennas. They will make a big difference to the radiation pattern and help reduce unwanted RF in the shack.

There are many sources of information for building baluns and a search on the web is well worth while.

Matching

The impedance of a full wave loop will be anywhere from 30 ohms to over 100 ohms depending on many factors. This is where an antenna analyser is useful. To find the impedance, cut a quarter wave length of coax and measure the impedance of the antenna and its resonant frequency.

Cut the antenna to have the lowest SWR at the required frequency and note the impedance. If it is not 50 ohms and the SWR is higher than you are prepared to accept, try installing a quarter wave "stub' section to the antenna feed point of 75 ohm cable in line with the feeder coax. RG6 is acceptable. (See below for cutting 'stubs'). This "stub' will transform the antenna incorrect impedance to something nearer the 50 ohms you require.

NB The theory of matching antennas is very complex and is here very much simplified and presented in practical terms.

Cutting Quarter Wave Stubs

75 ohm RG6 cable has a velocity factor of 0.82 so for a quarter wave stub at 7.1 MHz it will need to be;
7.1 MHz quarter wave is 10.56 metres.
Length of stub will be 10.56 x 0.82 = 8.662 metres

50 ohm 213 cable velocity factor is approximately 0.66
Length of stub will be 10.56 x 0.66 = 6.969 metres.

Both of the above measurements are approximate and can be rounded without any noticeable effect.

Give it a go guy's. It's easy and fun and you will be amazed at the performance of a loop antenna on the lower bands.

40m loop at ZL2CC

The photographs show the 40m loop antenna at ZL2CC. You can see that the lower wire is only about 3.5m off the ground. The loop is approximately 9m x 11m, is fed half way up one side, with a quarter wave stub in series with the feeder.

This antenna works well. It has pronounced lobes at right angles (for me this is NNW/SSE) but is generally omni-directional due to the close ground proximity. This loop and my Windom is all I have used to win the Oceania contest 40m single band/single operator many times.

Mike ZL2CC

DX Beam Headings and Times

These are for the period October to April.

80m

Open pre-dusk to dawn
Europe from half hour before sun set. West coast USA around 10pm in summer.

40m

Open all day and night best from 4pm afternoon until 8 or 9pm
Europe starts around 6pm and may be open all night. Our evenings give best EU paths. Remember to work USA you need to be above 7.225 MHz

20m

Open 24/7
South America and LP EU. That is SE in the mornings
Caribbean and USA, E or NE all morning and sometimes LP mid morning.
EU sometimes LP mid morning.
JA, NNW early afternoon
Middle East W late afternoon/early evening
EU SP (NW) early evening
Africa SW could be anytime look around mid day SP or LP

17m

Open mornings and possibly all day and into the evenings
South Africa LP (NE) over America mid morning and maybe into the afternoon
Caribbean, USA all mornings
JA early afternoon and early evening
EU SP evenings

15m

Open mornings and possibly all day
South Africa LP (NE) over America mid morning
Caribbean, USA all morning
JA early afternoon and into the evening
EU SP evenings

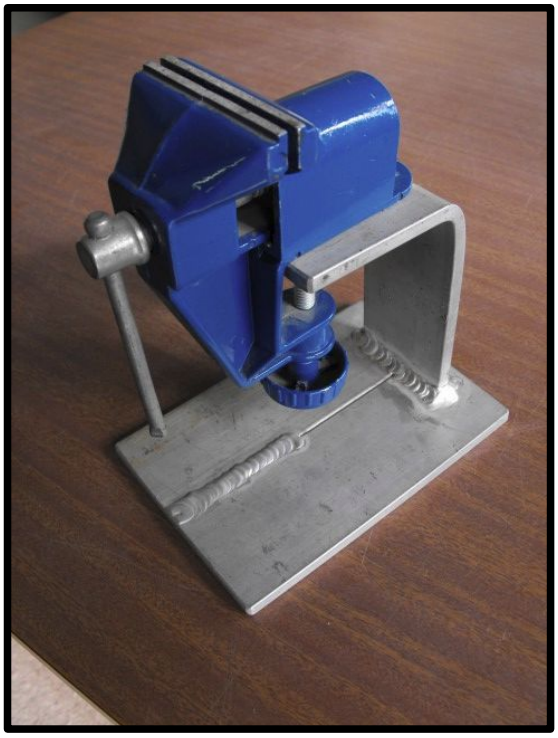
10m

Open all daylight
Listen for beacons on 28.200 and 28.250

The frequencies above 20m may not follow this list due to the declining sun spots.
These notes have been built up over many years with ZM2M/ZM4T contest team.
I use them at home for DXing and contesting. Nothing is guaranteed and as Lee used to say "mileage may vary and batteries not included".

Have fun DXing Mike S Mather ZL2CC

Retired "Radio Serviceman" !!!!!!!!, Diane Story being presented with a thank you bunch of flowers by David ZL2DW. Branch 13 President Rob ZL2US watching on, having just given Diane a thank you speech



Have you ever needed a third hand in your workshop, perhaps to hold a plug or something you need to solder, this may provide you with an idea. David ZL2DW

Equipment test video

https://www.youtube.com/watch?v=kZCDBsBuhmg
Fergus ZL2VF