

# BREAKOUT

The Newsletter of the Hastings and  
Napier Amateur Radio Clubs

Hastings Branch 13 NZART – Napier Branch 25 NZART

Volume 17, Issue 2 February 2017



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



*A rare shot indeed, Tony ZL2WPW caught in action sitting his AOC exam paper.....which he passed*

<http://www.zl2gt.nz/>

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

**Emergency Call-in Frequencies: 3615khz and 670 repeater**



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

## WORD FROM THE TOP TABLE (Branch13)

Well our Branch meetings are off to a great start with 30 + people attending our January meeting, it's good to see that our Club is in good heart. Sub's are coming in nicely and that's good to see also (see a note elsewhere about this) .

Since our last meeting Tony has sat and passed his Amateur Operators Certificate. No "Boot Camp" required for him and he's out there racking up his 50 contacts nicely. Listen out for him as ZL2WPW and give him a call. Well done Tony.

We also note that Xenia ZL4YL is doing exceptionally well in the "ZL Summer Sprint" on both phone and CW.....twelve months ago she sat her AOC and shortly after had 5000 contacts so I guess we can say that number has now been well and truly left behind.

We have made noises (and are waiting for confirmation) about making a day trip to the Hutt Valley to visit the RCC and Maritime Radio Service facilities, this visit is scheduled for 25 March. Put this in your diary and and make your bookings with me (we have 12 van seats available at \$35 per head, depart my house at Pakowhai at 5am).

Historically these day trips have been a great day out and fun. The Maritime Radio Service at the Hutt Valley is the "other end" of the Matea Rd transmitting site that we visited a couple of years ago.

Our next Branch 13 meeting is at the Pakowhai Hall on 22 February 7-30pm. Due to several people not seeing Errol's presentation at the last Branch 25 meeting and regretting it, Errol (ZL2IT) has agreed to repeat it after our meeting. "Experimental Projects of the Last Twelve Months".

At our March meeting Blue ZL3TT has set up a visit for us to his work place, Weldwell NZ, Thames St, Napier. From time to time Blue has brought along some interesting items for "show and tell" at our meetings so this is our chance to see some of the items he can't get through the door. More details will be provided in the March issue of Break Out.

73, Rob ZL2US (President Branch13/HBARC, Hastings)



*BR13/HBARC, Hastings, office bearers, Peter Keong ZL2PW (Treasurer), Rob Leicester ZL2US (President), David Walker ZL2DW (Secretary).*

## **NAPIER BRANCH 25**

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**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

## **Napier Amateur Radio Club**

Rain seems to be dogging all the Summer fun in Hawkes Bay. First the cricket cancellation, including a second game against the ZS's, now continuing into the Art Deco activities, although the weather isn't really affecting anything looking at the crowds in Napier Town at the moment. The no go of the airshow being the biggest disappointment to me personally.

6 metre activity has slowed, with only a few VK contacts for February so far. My EME activities on 2M are also curtailed temporarily due to a bright blue / green flash that completely vapourised one of the output tabs of my high power FET. I'm waiting for parts from Jim W6PQL, which although only took 2 days from USA to NZ have taken a further 10 days (so far) to get to me, I'm hopeful for tomorrow. I wonder if this is in part the problem with NZ POST?

I got a bit of a wind up about not appearing on the VHF bands for the 11/12th of February field day, and wonder if anyone else was there. My own fault of course, and now have joined the yahoo group "zlvhfgroup" to try and keep up with the news of these events. The dates are also available on the NZART site.

A date has been set for the final coat of paint on the club rooms and that is Thursday 23rd February at 9am, hopefully a large turn out can get this done in a few hours. Bring a brush and a paint container and join the fun. Hopefully the weather will be kind.

The Branch Project for this year is an ARDUINO based SWR bridge, and we would like an indication as to numbers and price expectation, as well as preferred frequency range and power levels, let me know about this (and any other Napier Club enquires) on [davey.crook@gmail.com](mailto:davey.crook@gmail.com).

Our March meeting will include a general discussion on "where to from here" especially for new and fairly new hams, who are all welcome, the expected discussion will centre around operating procedures, how to learn CW, how to set up a station and anything else pertaining to Amateur Radio. If you know a new or prospective new ham, please invite them.

See you on the 23rd and again on March 1st.

73 de ZL2MQ

# Antenna things

by ZL2CC Mike S Mather

## Yagi antennas

When you read the data about that antenna you have just bought, how much of it can you believe?

An HF Yagi antenna usually quoted as giving 7 or 8 dB gain is meaningless unless it is qualified. Firstly the gain must be quoted against a known reference source. This is usually a dipole but is sometimes an 'Isotropic' source. (Just a big word for a point source.) Now a dipole has a gain of nearly 3dB over an isotropic source, so take off 3 dB to start with. Let's look at an example.

A 'Supadanga 3' has an advert stating an 8.5 dB gain. OK, first there is no mention of the reference. We can safely assume that it means they don't want to say that the reference is an isotropic source. Which means that the actual gain is more likely to be in the order of 5.5 dB over a dipole. This is more like it. Although the theoretical gain of a three element mono band Yagi is in the order of 7.5 to 8.5 dBd (the d means referenced to a dipole) in practice, 6dBd is the best you would get in actual home ideal conditions. Remember we are talking full size MONO band antennas, not tri-banders or other physically shortened compromise antennas. These will be much lower.

Adding extra elements to the 3 element will only give an extra 1dB of gain. To get more gain it is better to 'stack' one antenna above another of similar construction. This will give in the order of an extra 2 to 3 dB gain, totalling up to about 8 dBd. Yagi antennas should be tuned for maximum forward gain rather than best front to back ratio. Especially so in New Zealand where we have no near neighbours like the UK do, to bother us.

## Gains

So what is gain? A power gain of 3 dB is like doubling your power output. A 6dB-power gain is like increasing your power output by four times. Think about that. This means either 100watts into a 3 element mono-band Yagi or 400watts into a dipole gets the same result. Your choice. An increase in power from 100 watts to 400 watts gives an increase of only one S point at the receiving station but the extra gain on receive will give you an edge of about an S point over a dipole.

## Yagi versa Quad

A two-element Quad antenna will have a practical gain of 6 dBd, similar to a three element Yagi. The quad works as two phased two element antennas. This is where the gain comes from.

The parasitic element should be tuned as a reflector, and set to give maximum forward gain.

## Wire Antennas

Wire antennas come in different shapes and sizes with accompanying gains. A properly terminated V beam or rhombic of many wavelengths can have a gain of 10 dBd at the expense of real estate. A full wavelength horizontal loop will have a gain of 3 dBd or more depending upon height. Long wire antennas like my 160m Windom operated on 40m and therefore 2 wavelengths long can have a gain of 3-4dBd

## Vertical Antennas

A full size vertical antenna with a good earth system and radials will have a gain approaching a dipole but the radiation angle will be a lot lower than the dipole. Ideal for DX working. This will give a perceived gain. A 5/8th wave vertical will have a gain of 3dBd over a dipole and with a lower radiation angle.

## Height of wire antennas

There is no optimum height for a horizontally polarized antenna. The more height the better. However, for optimum local working, use can be made of NVIS (near vertical incident sky) radiation. This can be used to good effect during 'local' contests like the NZ field day Jock White contest, where on 80 metres particularly, it is hoped to work the whole of ZL from Auckland to Invercargill, without a 'skip zone'. Similarly, for AREC and rally radio working.

By mounting an 80m dipole at under an eighth wavelength, 10m (30 feet) the radiation pattern changes from the usual, to a vertical/ 30 degree angle of radiation. The SWR will rise due to the feed point impedance rising. This gives a good NVIS radiator and good local coverage without gaps. The mismatch is tuned out with an ATU. The radiation pattern will be Omni-directional. (All directions)

Unless an 80 metres wire dipole is above 20 metres (60 feet) in height, it will behave along the lines of the above NVIS radiator, to some degree or other. That being the case, there seems little point in attempting to get the ends up at the same height as the centre. Consequently, the ends may be dropped down to form what is commonly known as an 'inverted V', although that name refers to something else.

NVIS only works for frequencies below the vertical incident critical frequency. IE the lowest frequency that will not pass through the ionosphere but will be reflected back. The best ones are 80 and 160 metres, but it can work on 40m during the day sometimes.

## Feed point impedance

For Yagi antennas, the feed point of the driven element changes from a dipole at 75 ohms downwards as additional elements are added. This is why often VHF beams of more than 4 elements use a folded driven element. A folded dipole impedance is 300 ohms, and the addition of the other elements brings this down closer to 50-75 ohms.

For wire dipoles, the theoretical impedance of the feed point is 75 ohms. However, if the angle at the centre is changed from a straight 180 degrees, as happens in practice, the impedance falls. At about 120 degrees the impedance is close to 50 ohms. This assumes a correct height of course. So by drooping the dipole ends down in an inverted V configuration, a better match can be made to the rig.

## Multiple band wire dipoles

An 80 metre wire dipole can have a 40 metre dipole connected to the same feed point without affecting the 80 metre antenna. This is because at 40 metres the 80 antenna impedance is so high compared with the proper 40 metre feed point that almost all the power will go into the correct antenna. The antennas can be set at 90 degrees to one another or hung off each other with spacers of about 300 mm. Have a look at the pictures of the multi-band antenna built by Roger ZL2RC for three bands. When building these types of antennas and setting them up, the longest antenna should be trimmed first.

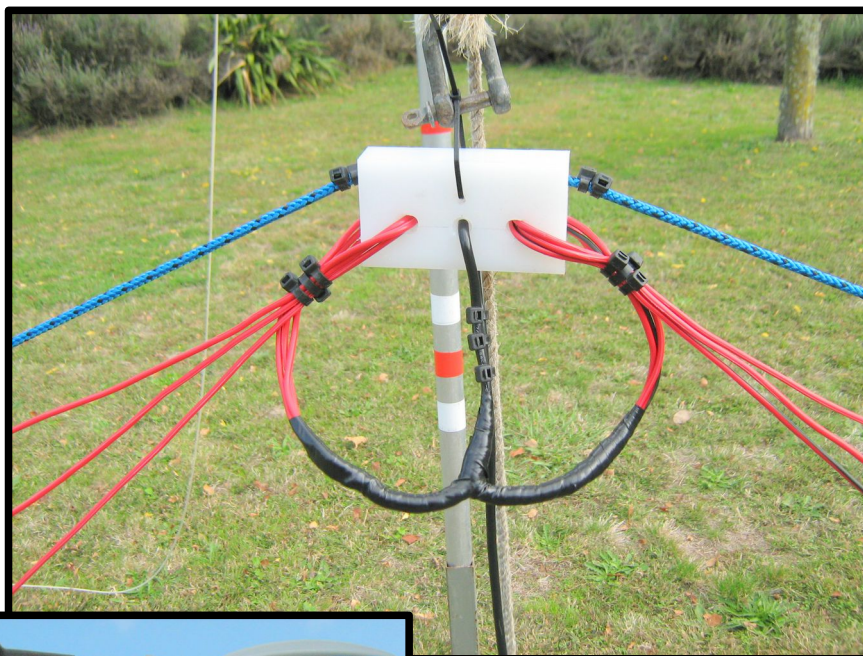
## Finally

Your antenna is the single most important part of your HF station. The time you spend in planning and installing a good antenna system will result in better signal reports and more contacts. This is especially true on the low bands where rotary beams are less common and in most situations impractical

Think about these things.

Mike ZL2CC

*Multi band  
antenna feed  
point*



*multi band dipole  
close up ends*

*Typical multi  
dipole set up*



## FOR OFFERS

Ex SK estate, a Yaesu FT2700RH dual band (2m/70cm) transceiver, with usual fist mic, DC lead and manual. This model has separate 2m/70cm input/output aerial leads.

It has with it separate quarter wave mag. mounts for 2m and 70cm. I will bringing it to the next Br 13 meeting on 22 Feb.

Offers to David Walker (ZL2DW wk 8765014 hm 8760518 or email [david@apexradiocoms.co.nz](mailto:david@apexradiocoms.co.nz) )



## Korin ZL2PGJ

Recently both Branches were given a donation by Korin (ZL2PGJ) who used to live in Hastings. Below is a small note from him.....it looks like he is about to become active again so we may hear him around.

David ZL2DW

Dear OMs

I missed to read your email.

I am happy to support the club of my 2nd home town ;)

I will rise my ANT after 2 years bland. but the cycle.....

Best 73

Korin Tsuruta

ZL2PGJ, 7L2PGJ, JQ2WTV

ex DL/W6/OZ/7L2PGJ ex JM7WRB

<http://www.zl2pgj.com/> <https://www.facebook.com/korin.tsuruta>

<http://sky.ap.teacup.com/zl2pgj/>



## ***Branch 13/HBARC, Hastings sub's due***

\$20 or \$30 for a couple. Can be paid to:

- treasurer Peter ZL2PW
- Sec. David ZL2DW
- posted to Br 13, c/o Box 2403 Stortford Lodge, Hastings (4153) (put your call sign on the back of the cheque) \*.
- banked on line, account number 03 0642 0733310 00, use your call sign as the reference \*.

\* please do this.....some have been known to not do so and we've had trouble tracking who the the payment came from.

## AREC Civil Defence callout for Hastings fires

On Monday 13 February shortly after 0700 I received a call from the Hastings Rural Fire Officer for assistance on radio. I rang Ray ZL2RB and he was able to go into the Civil Defence HQ within 30 minutes. I responded immediately and was on site at 0725. Ray arrived at 0755 and took over as I had work to do that day. Once I was free at around 1530 I headed home to get some gear to go into the CD HQ and see how Ray was holding up. I had a text from Ray asking to be relieved around that time. I headed in the HQ and got a briefing from Ray. He was covering three radios, two major fires, Red Bridge and Ripia, with a frequency each and a control frequency that was being used by other units. There were four fires at that stage with one at the end of Colin White Road and one at Endsleigh Road in addition to the two above. The National Emergency Fire Team from Wellington were on site as were other Fire and Rural Fire personnel from afar afield as Whangarei. Once I realised the extent of the operation I decided that we would have two operators on whenever possible to enable smooth operation of the radio room. I organised John ZL2MB to come in at 0700 in the morning and Ray ZL2RB to relieve him at 1500. I called in my son in law Richie Byard as an operator, he was British ex military and had had comms experience under pressure. He arrived at 1900 and at 2200 the CD HQ was closed up for the night.

On Tuesday 14th February the HQ was manned by the four of us in shifts from 0700 to 1830 when things quietened down for the night after a further two fires were reported and required units from the main fire to sort them out. There were six active fires at this time. The Armed Forces Fire Fighters had arrived that day and they took over control of the fire at Red Bridge overnight. We had put a stp Fire repeater on the side of Te Mata peak to improve comms into Red Bridge.

Wednesday 15th Ray ZL2RB had prior commitments and we lost him at 1100. Three of us were covering the rest of the period. At times there was only one operator on at quiet periods for a short time with another operator ready to come in if required to allow reasonable operating periods.

Thursday things were quietening down, a little bit of rain had started to fall and they were looking to stand down the out of town crews so they could get home.

Friday it was raining heavy steady rain and they decided to hold off putting crews on the ground as it was very slippery and the rain was finishing off the worst of what remained in the fire ground. I went up and pulled the repeater off Te Mata peak and we were stood down at 1100.

We also had a man on the ground in Rob ZL2SG as he was the linesman who took the power off for Waimarama and reinstated it again as soon as it was viable.

I would like to thank the guys who were there in HQ. The job was done professionally and to a high standard. It is amazing you were able to drop whatever you had going on and spend the time you did operating.

Good learning curve and some problem areas were identified that are quite simple to remedy and we should have a new ham shortly as well.

John Newson ZL2VAF  
Branch 13 AREC Section Leader