



## ZL2VH Newsletter – November 2019

### President's Report

November already and Santa is getting his summer uniform dry-cleaned for his annual outing.

Our annual fund-raising event was held last weekend in great weather and we had a good turnout. With 8 volunteers and the caravan we gained over \$400, this amount plus what we gained from a small scrap run - \$200 (thanks Mark ZL2UFI) and a donation from the Cross Country Vehicle Club (CCVC) will finance our annual repeater licences.

Our STSP repeater continues to perform well and provides good coverage. Next expected outing will be for Jock White (location to be confirmed).

Tx Factor – Episode 24 (TXF024) well worth watching.

<https://www.youtube.com/watch?v=3-wX2hkwiqc>

Summer DX is starting appear so don't be surprised when we get some 6meter DX on 395.

<https://www.vkspotter.com/>

73 and Good DX  
Mike ZL2NSA

## Branch 63 Repeater Update

### *Status Updates*

**3cm Beacon**                      On Air

In the last month the Beacon was re-instated in October. Reception reports have been received from Christchurch

**1292 23cm**                      On Air

**DSTAR 5425**                      On Air  
**860**                                      On Air

In the coming weeks the 860 Dstar repeater will be disconnected from the ZL2VH gateway in preparation to be converted to a slave IRCDDDB repeater

**730**                                      On Air

Over October a number of working bees were done to move the 730 Repeater system has received a considerable upgrade thanks to ZL2TWS, ZL2NSA ,ZL4VV,ZL2UGL and ZL2BRG. The refurbished 4 dipole stack was installed and the Repeater itself was moved to the North Hutt. Also the 12v Standby batteries were installed in the bottom of the rack. Reports have been excellent. Thanks to all those Involved in the Work.

**395 6M**                              On Air.....

.....but with a deaf receiver. Repeater will be swapped out with the spare in the coming month or two.

## **Wainui Coast Road Car Event**

Once more, Branch 63 was asked to provide communications for the Triumph Car Club sprint event

This was held on Sunday the 3rd of November at Coast Road, Wainuiomata.

The day started out fine and sunny, but when it came to install the repeater, a stiff Northerly made things a little uncomfortable.

Nevertheless, the repeater was deployed, and we all took up our various positions along the course.

The STSP repeater provided good coverage to most of the course, except for Mike, who was manning the road closure spot at the end of the course. I provided a relay for Mike, because I couldn't remember how to cross-band repeat my 2820. (Something to remember for next time).

The day went pretty much as expected, one competitor decided that the fence was more interesting than the road, and rolled his car into it. I don't have any photos of that. Fortunately, no one was injured.

As usual, the Car Club made its customary donation to us, and we all went home about mid afternoon, pleased to have had an interesting day, and no huge problems.

Many thanks to Mike ZL2NSA, Mark ZL2UFI, Justin ZL2UGL, Bruce ZL2ABC, Ben ZL4BDG, Fraser ZL4VV, Simon ZL2BRG, and Gavin ZL2ACT

regards      Gavin ZL2ACT  
                 Deputy AREC Leader



Local wildlife installing the STSP Repeater.

An input from John ZL2TWS is attached to the end of this document.

We are always looking for articles to fill the pages of newsletter. Please forward anything, no matter how large or small, to the editor - Eric ZL2SET – [ericwilby@gmail.com](mailto:ericwilby@gmail.com).

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NZART Branch 63 Incorporated  
Council Depot  
Park Street  
Upper Hutt

President: Mike ZL2NSA  
Secretary: Justin: ZL2UGL  
Treasurer: Gavin: ZL2ACT

## **Mount Climie 730 antenna pole RF Earth install and testing** *by John M . Wysocki ZL2TWS*

An independent RF earth has been commissioned for the 730 north antenna aluminium pole.

Two sets of commercially manufactured 4 dipole stacks have all failed resulting in crackle and noise on 730.

The manufacturer of the antenna is SkyMast UK. The model is an SM-4. When these dipoles were removed from site and taken to a professional antenna supplier for assessment, the answer to our problems were not what we expected.

It was caused by what is similar to lightning damage by way of voltage discharges. This was seen as spark pitting on the dipoles (Picture-1).



Picture-1: Spark discharge damage.

Electrolysis corrosion is also seen at dipole joints. This indicates current flowing at the RF neutral potential connection to the horizontal mounting boom seen in Picture-2.



Picture-2: Dipole to boom corrosion pitting.

The antenna was then stripped down to find that the epoxy filled balun connection used a mounting through bolt to earth the coax braid to the antenna horizontal boom. The method is used commercially to ensure a good ground for unbalanced feeder cables.

Unfortunately in our case discharge current used this path as a better earth all the way back to the south hut main AC earth.

When a low impedance RF station earth is used any static build up is discharged locally.

### **Antenna rebuild**

The dipoles have been stripped and cleaned.

New traditional 4:1 coaxial baluns have been made and epoxy filled connections boxes without braid grounding were made as seen in Picture-3.



Picture-3: Rebuilt dipole set.

Braid grounding is now done via a lightning arrestor and individual earth stake. (Picture-5).

The idea now is to use a new RF Station earth connected to the aluminium dipole mast pole and have the coax cable braids isolated from carrying the discharge current via the coax and duplexer to south hut AC station earth. The earth leakage tester used is the Aegis CZ20500.

An earth current is sent via the Phase “Live” connection to the main switchboard and star connected supply transformer earth connection. Testing between the new station earth stakes across the earth to the switchboard is known as a “IT System Loop back Impedance test”

### **IT earthing system**

In an IT earthing arrangement, there is either no earthing at the supply, or it is done via a high impedance connection. This type of earthing is not used for distribution networks but is frequently used in substations and for independent generator-supplied systems. These systems are able to offer good continuity of supply during operation. In our case an RF station earth consisting of two parallel connected earth stakes seen in Picture-4.

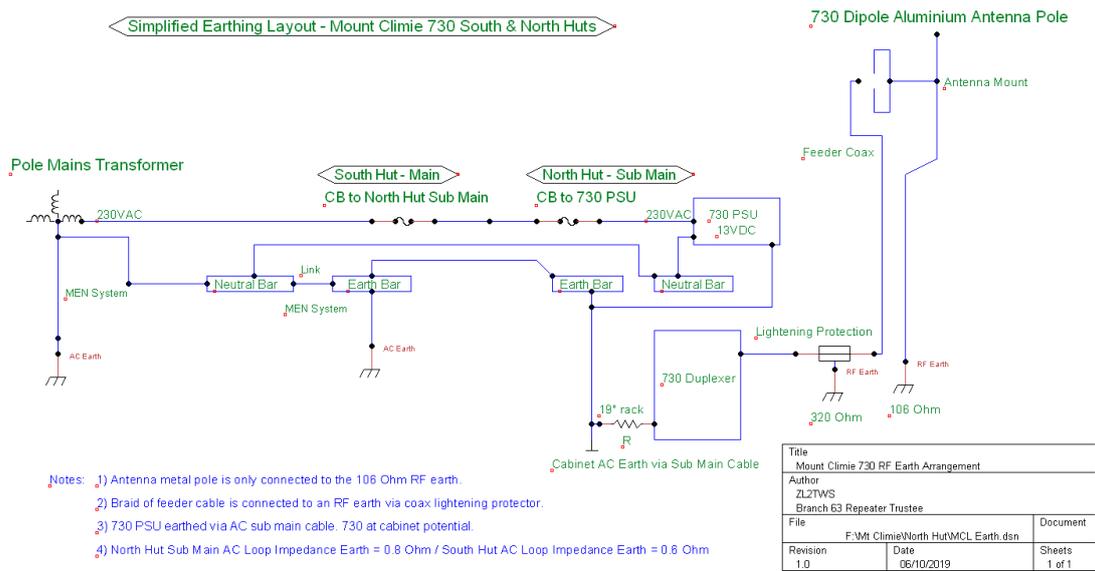


Picture-4: Earth stakes in parallel 29th September 2019.

The earth loop impedance should read better than 200 ohms as an internationally accepted value.

Our test is 106 ohms when the stakes were driven. This is expected to go lower in wet conditions and be high during the summer.

The south hut AC earth is 0.6 ohms and North hut sub main is 0.8 ohms.



Picture-5: Shows the test arrangement at Climie.

New dipoles are now in service with an omni directional pattern of 5.7dbD and gaining increases of up to 8.7dbD resulting in the reflector effect from the mounting pole. (SkyMast Specifications).



Picture-6: New 730 antenna stack 6th October 2019.

A gain increase was measured in Lower Hutt between the single folded dipole and the four di-pole stack of 8db.

Branch 63 NZART has spent many years maintaining the 730 antenna. Mount Climie repeater site is at 867 metres altitude and experiences extremes of weather including, lightning, cloud static and snow cover during winter months.

RF coverage is around 160 kms with many DX contacts being made within NZ and across to Australia at times. 730 repeater also has IRLP node 6713 available.