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Newsletter of The New Zealand Association of Radio Transmitters, Upper Hutt Branch 63, Inc.

President's Report

Hi everyone hope that you are all well and that you are prepared for winter with plenty of wood for the long nights still yet to come!

As you will all be aware, we have missed the window of opportunity to get the new dipole antennas up on Mt Climie, before 1 May. In the meantime Gerry ZL2TDN and John ZL2TWS have been able to take advantage of some of the better days to get up Mt Climie and get some of the other jobs progressed.

1292 has a new antenna, the refurbished old 730 dipoles are in place of the 5425 pole and more recently a quick visit to test out some issues with the 6m antenna/repeater.

I wish we could have some faith in the weather forecasting and get the new 730 dipoles on site. So listen out and see if this occurs soon?

Some radio gear lying around the clubrooms was recently sold at Bruce ZL2ABC's sale on the 19 May at Titahi Bay. It appeared to

be a well run event and well supported, so I hope it becomes an annual event and the support continues.

The club made \$55.00 from the sale. Other items will be advertised shortly for members to bid on by way of tender, so watch your inboxes for details.

Peter ZL2HM has left the district for points north, so I wish to thank Peter for his kind donation to the club and wish him well at his new house. The funds will go a long way to support the club and will be used wisely, so again thanks Peter.

Conference is almost upon us so I hope if you are able to go and support Branch 46 and its members as they did for us in 2011 that you will.

Well that's the news from me...
73's and good DX....
Mark ZL2UFI
President

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Upcoming Events

NZART Conference 2013
Masterton
31 May - 3 June 2013

**International Lighthouse
Lightship Weekend**
17th-18th August 2013

AREC Report

On the weekend of the 27th/28th of April we were asked by the Kapi Mana Motorcycle Club to assist with the running of an enduro event from their clubrooms in Bulls Run Road. An enduro is different from their normal track-days. On enduros, they cover vast distances over logging tracks.

Saturday was not a busy day operationally, and I covered the

day with the help of Motorcycle Club members, however, one site could not be covered by PRS radio, and I was obliged to lend one of my hand-helds to a "civilian" to cover a tricky safety related situation.

On Sunday Graham ZL2ABN, and Olly ZL2OLY assisted. Olly manned the base in the caravan, Graham and I "went bush" in our 4wds. I was fortunate to end up at a site that had 3G coverage,

so I was able to complete a certain amount of work related stuff. Graham took the opportunity to try some VHF/UHF DX.

Gavin ZL2ACT
AREC Officer

Visit to Warkworth Satellite Earth Station

I recently had the pleasure of visiting Warkworth for the purpose of researching material for writing and delivering Telecommunications courses at Weltec. The trip was very interesting and informative.

I was shown around by Allen Harper of Kordia, who run the place. Kordia perform the day to day operation and maintenance of the Earth Station on behalf of NZ Telecom, who are responsible for the overall administration and planning.

The usual racks of grey equipment abounded inside the building, transmitting, receiving and processing the broadcast content for the various client companies. I won't get into the technical details for this newsletter, but quite a lot goes on inside the equipment there. It just shows how 'out of touch' we are, tucked away in the polytech.

One of the first questions that I asked when I got a glimpse of the system block diagram was "where is the cryogenic cooling system for the receiving low noise amplifiers (LNAs)?" This was met with some amusement as no cooling is necessary these days, with LNAs having an equivalent noise temperature of 70K or even 30K (Kelvin). Just one example of how far behind the times I am!

The external equipment is just as impressive, with several parabolic dishes being present.

Samples of the antennas are included at the bottom of this page, with a close-up on the next page. (The Editor won't be too happy if I include too many photos!).

These track geostationary satellites (yes, it is necessary from time to time), and I was told that typical tracking rates would be between 0.03 and 0.3 degrees per minute. A bit of precision needed there, especially as the largest dish is 16.4 metres in diameter.

There were only two people on site while I was there, but a third member of the team is Ralph Sanson ZL1TBG / ZL2TV, the technical assistant at Warkworth. (Apologies if I got your job description wrong Ralph). Ralph knows a few Branch 63 members, so I'm reproducing his e-mail reply below. (I mentioned that Peter was a mutual acquaintance – hence the reference to him).

Anyway, Ralph had used one of the dishes to do some E-M-E-work, so I have printed the description of his exploits as referred to in his account. Not the equipment that the average Amateur has in his back yard! Also of interest to you 23 cm fanatics, there are some interesting videos (including

Ralph's)

http://www.youtube.com/user/SkyJeeP/Aviation#p/a/u/0/Ce_USOzrW4I

Anyway, here's the e-mail followed by the description, which you may have seen somewhere in the Branch 74 information. I'm sure nobody will object to me reproducing it here as it is in the public domain.

(Editor's note: the email and description have been put on the next two pages)



Incidentally, there is an interesting display of valves (tubes) in the building, although the TWT (Travelling Wave Tube) was missing on the day I visited. Also shown here are a couple of spare fuses kept handy – and yes, they are 800 Amp varieties, not 800 mA!

Eric ZL2SET



Email from Ralph ZL2TV

(As mentioned in the previous article)

Hi Eric,

Yes Peter Moore was stationed at one or more of the NZPO establishments I've worked at, not at the same time though, I think.

I transferred to Warkworth in 1981, there was only the original 30m NEC. I would have tried to use that one for EME, but there was no opportunity from when it was turned off to the demolition crew arriving was around a week.....and it was the best dish to repurpose due to the fast tracking DC motor drives (it was built to operate either geostationary or 3 - constellation handover birds) it had a direct

horn feed to the subreflector (via the 1 mirror).

When the 2nd dish was due for replacement I sought permission to use it for the Echoes of Apollo event using a team of ex-employees, we had limited notice and had to not alter anything (needed to be restored after the event).

I think our team did pretty well under the circumstances. I also got some measurements off the sun, moon Tau-A so can claim first light on that instrument on 1296 MHz, 6 GHz (where no receivers were ever connected before) and also on 4 GHz (I did the original G/T testing on Tau-

A back in 1984)

I wrote up the expedition and it appeared in the Europe Microwave newsletter and the British one, and my Branch 74 blog has it <http://www.vhf.org.nz/blog/20> . Scroll down the members blog ZL2TV to the bottom.

As a lad in the Wairarapa I used to work the Br 63 guys on 2 metres, Fred 2AMJ, Jim 2BHF and others, the place was a buzz with the transceiver and repeater projects, I did some visits to Climie when it was established. So say hi from me!

Ralph ZL1TBG ZL2TV



Close-up of parabolic antenna at Warkworth

Heavy fuses on display
"...and yes, they are 800 Amp varieties, not 800 mA!"



Echoes of Apollo - Ralph ZL2TV

(As mentioned in the previous article)

In 2009, when the inaugural EofA project to activate as many large Apollo-era dishes for a day of Moon talk on 23cm was announced, I had good reason to be interested. My workplace had one remaining 30.5 metre, fully steerable antenna that had been replaced with a smaller model and the site decommissioned, a fate already dealt to five similar size dishes and countless 10-metre class TVRO setups around the country.

Permissions were obtained and I had 3 weeks to plan the technical aspects of making it work on 23cm. Planning included the possibility of a ZL6 special event call and involvement of Scouting groups etc. to fully participate in EofA and the other big dishes that would be QRO on this weekend event. The best way would have been to do a prime focus feed or attach another dish across the throat of some 2.7m diameter, as done by hams at Ibaraki, Japan a few years back. Within the timeframe and logistics to meet, there were options of fitting sub-optimal gain antennas around the rim of the throat, or a small dish across the throat, or removing the existing C band feed launchers and substituting one of our own. This is a beam waveguide-fed Cassegrain dish and the feed comprises of a corrugated horn of 0.85m diameter. I constructed a dual probe, cylindrical feed with 90 degree hybrid coupler, whilst Steve ZL1TPH constructed a round septum feed. The plan was to try both and go with one that worked, as the exact size of the hole in the horn could not be determined till the day.

Then a problem occurred requiring the old dish for service and we had to sit that one out for a year. Constructed equipment was quarantined and plans were kept till the day

came, about 2 days before the 2010 EofA event, that word came "go for launch".

Again there was no opportunity to pre-test any systems. Harry ZL1BK arrived to help with the final installation and keep the moon in our sights for the duration. The moon was already up but, our Saturday being early for most other stations (12 hrs ahead of UTC), we weren't in a hurry. Sun noise was checked and less than anticipated final calibration suggests 12db ENR at the RX port was received. None of the 4 receivers used had AGC disable, so attempting a valid noise was problematic but did help to calibrate our headings to keep ahead of the moon. After connecting a Spectran monitor laptop to the audio, echoes were identified and then heard on the speaker, once tuning and tracking were established. Opportunity was taken to measure the sun -3dB beam width when slewing the elevation. This occurred at 0.6 degrees, suggesting 0.2 degrees beam width in the antenna, something I expected as a consequence of illuminating the sub reflector from the same area of horn aperture designed for 4GHz. In effect, we were lowering the gain by limiting the field of view on 23cm to that provided on 3.7GHz, spilling the rest of the beam out to cold sky and/or the walls of the beam waveguide system and its 4 periscope mirrors and tube.

As far as possible, in keeping with EofA, 1970s equipment was used ... MMT1296 transverter, an IC202s modified with Quindar tones and 100mW transmit IF feed, one IC202 for Xpol RX, one more for co-pol RX (to see if anyone, or indeed us, had managed the wrong polarisation - don't laugh, these dishes are complicated beasts) and an

IC245 to drive the Spectran laptop so that Doppler settings could be easily dialled in. The LNA and SSPA were somewhat more modern Mini-Kits from VK and a 60 watts output combined pair of Aprisa TX boards from 4RF.

EofA 2010 included the Arecibo dish on 70cm and activity seemed to have moved from the original theme of "talk via the moon" on 23cm, so the challenge was to upscale to a band we could talk via the moon, such as the 5cm Dubus activity session the following weekend. A homebrew transverter as normally used for local DX, Icom IC706 exciter (to accomodate the large doppler shifts) and modified feed launcher were fitted up to the corrugated horn and testing showed cw echoes were possible down to 50 mW transmit power. Tests were also carried out , ssb & FM, and to TED ZL2IP in Inglewood direct. Own echoes on ssb at the highest power of 275 watts returned an ethereal clarity which was quite unexpected both to ourselves and participating stations.

This size dish is not optimal for EME and was a two - person operation keeping it on track while making QSOs, an unforgettable experience especially for us EME rookies at 3am on a misty night! The VK3UM EME software deserves special mention it provides a lot of pre-planning, necessary as the Moon waits for no-one. It was pleasing to be able to put the antenna, which I was involved in building and testing during 1984, through some new paces - or should I say frontiers, before it wanders into the twilight zone.

Treasurer's Report

Another busy Financial Year for Branch 63 is now over. For those of you who missed the AGM, the Financial Report is posted to the Registrar of Incorporated Societies website. It is now available for public viewing. The Registrar's web site can be very interesting to see who is doing what anywhere in the country. Broadly speaking, the year closed with the Branch down in cash, but up in assets.

Thank you to the members who attended the AGM, and returned me to the Treasurer's

position.

I recently upgraded the software which I use for tracking Branch finances. As a result of this, producing e-invoices and e-receipts is very easy. After the AGM, all financial members should have received an invoice, a receipt, (or both), by email. If you did not receive yours, please let me know so that I can keep your information up to date.

I was pleased with the response to the email billing. Almost two thirds of the Branch subscriptions were received in

the first week.

The Branch has almost completed a very comprehensive maintenance/antenna upgrade program on Mt. Climie. A lot of time and labour is contributed gratis by Branch Members. However, there are items which must be bought and paid for. It is your Branch subscription which helps keep your assets working.

73

Gavin ZL2ACT
Branch Treasurer

Repeater Update

An extremely busy month with three visits to Climie culminating in a working bee on the 25th with the installation of a new four dipole stack for 730.

3cm, 10m Beacon

Nothing to report this month

1292 23cm Repeater

On the 9th the 1292 Antenna was upgraded to a new coaxial co-linear array. The new antenna's performance is at least as good as the original. The radiation pattern will have changed slightly. Reports appreciated.

Many Thanks to John ZL2TWS and Gerry ZL2TDN for their work on constructing, testing and installing the new antenna.

860 D-star Repeater

Nothing to report. Performing excellently.

5425 D-star Repeater

5425 is back on air following the installation of the refurbished four dipole stack. The stack was installed on the 15th by John ZL2TWS and Gerry ZL2TDN and was initially tested on 730 prior to the 730 upgrade. Thanks go to Neil for refurbishing the antenna array and to John and Gerry for the installation. Again Reception reports appreciated.

730 2m FM Repeater

A Working Bee is was held on the 25th May to install the new 730 pole and four dipole an antenna array, along with a set of replacement stand by batteries. This was a major undertaking for the club and the work was done under very arduous weather conditions. Reports have indicated a number of S Points improvement from many amateurs, maybe as high as a 10 db increase in signal strength.

Many thanks to all those involved in the planning and preparation including those who

endured the wind on the day: ZL2ACT, ZL2ABC, ZL2HF, ZL2UP, ZL2TWS, ZL2BRG, ZL2TKY and ZL2UFI.

6m FM Repeater

The 6m Repeater has been suffering from intermittent noise on the receiver but seems to have calmed down recently. Work is progressing on preparing the spare repeater hardware.

Simon ZL2BRG
Repeater Trustee

ZL1HV Award for John Wysocki ZL2TWS

At a recent meeting of Upper Hutt Branch 63 and having reviewed the criteria for the above award, the branch wishes to nominate John Wysocki ZL2TWS.

Services rendered:

1. John has been a member of Branch 63 for a number of years offering his knowledge and service to the club. This service has been displayed especially over the last ten years as the branch has implemented a number of projects especially around those of new technologies.

2. In 2003, John along with another branch member installed the branch's new VOIP (Voice Over Internet Protocol) VHF link transceiver and PC to introduce IRLP to the greater Wellington area. This service will celebrate its tenth year of operation in December 2013. As proof of his engineering skill the original link VHF transceiver continues to operate as it did on day one without any issues that have required any maintenance at all!

3. Since the success of the IRLP installation John turned his attention to the Branch's Repeater installation on Mt Climie, above the city of Upper Hutt. Through his knowledge and passion for this site he has improved the service to all amateurs in the greater Wellington area. Although he holds no official officer position in the club his drive and energy has proved valuable in driving others within the club to get the jobs done, so that the repeater site and its hardware are now the best they can be, and is regarded by many operators as the premier repeater site in Wellington.

4. Always a keen experimenter John was the project manager and lead designer to build a 23CM FM Repeater. From an idea, to installation this project took two years to complete. With assistance of other club

members this repeater has now been operating for two years providing yet another outlet for local amateurs to experiment in the higher UHF bands.

5. Two years ago, the branch was approached to take on yet another project that of a D-STAR UHF Digital Repeater. Once the club had made the decision to accept the donation of hardware, John quickly moved to join the project to explore this new technology. With the help of others the UHF repeater was installed on site within two months of donation, just missing the Upper Hutt NZART Conference weekend in 2011 as had been planned.

As with all projects this spurred John on to resolve many teething issues the club had with this new repeater. Within the first month all issues were resolved and the repeater has operated to a very high standard since.

Later using a third party product, John wrote an article on how to diagnose various problems experience by users when using this digital mode. This article was acknowledged by the developer of the third party product as an outstanding use of his product that even he had not thought of.

6. Later the same year, based upon the success of the D-STAR UHF Repeater the club decided to purchase a D-STAR VHF Repeater. Again John assisted with advice learned from the previous install, and in particular the tuning of the VHF cavity filters to bring the repeater installation up a standard that is now equal to any professional installation.

7. More recently, John with another branch member successfully installed yet another repeater, that of a 6 Metre FM Repeater on 53.950 MHz This repeater proved to a problem child but he was able to turn it around within a week to a fully functional repeater complete

with remote access DTMF control. This repeater has been operating for about six months and although working well, John has stated, that I can do better. This drive has proved infectious to other members within and outside the club who all want to be a part of doing amateur radio projects.

8. As John is frequently away from the Hutt Valley as his job takes him off shore, he is always available upon his return to roll up his sleeves and get on with projects to advance them as far as possible while on his home leave. The branch is very fortunate to have such a committed member.

Finally although is unable to hold an official position within the club as he is frequently away this has not stopped his drive and enthusiasm for amateur radio to assist the branch to be so active. By being an active member this has made the branch more active that it has ever been. This activity has drawn in membership from the greater Wellington area from those amateurs who all want to be a part of this most active club.

Therefore Upper Hutt Branch 63 supports this nomination of John for the award.

John is a current member of NZART, and continues to be a current member of Upper Hutt Branch 63.

Gavin Smith
Treasurer
Upper Hutt Branch 63, NZART

Mark Gooding
President
Upper Hutt Branch 63, NZART

Changes to Club Website

Over the past two months, I have been making a handful of changes to the club website, mainly in making the way pages are prepared on the server more efficient, which makes my job a whole lot easier.

However, there have been subtle changes that are visible to visitors. I have changed the main menu bar to appear as tabs (pictured on the right), with the current page's tab being the front-most one. As you hover your mouse over each tab, it highlights and slides its position upwards.

I've tested these tabs on web browsers as old as Internet Explorer 6 (first released in August 2001) with success. However I don't have access to every single browser that's being used today, so if you happen to be on the website and notice

something not quite right, please contact me, remembering to include details such as your browser and its version.

Another issue which I am going to have to tackle in the near future is the organisation of the many PDFs which we have on the website. Currently, they aren't organised as well as they could be and it can sometimes be difficult to find the PDF you had in mind.

To help solve this problem, I am looking into creating a page for the website which provides the functionality to search through the PDFs based on specific keywords in their title and categories that they fit into. If I do go ahead with this plan,

the links to PDFs from each page which we currently have (e.g. D-Star PDFs on the D-Star page) will remain as they are. If you have any thoughts or ideas, please let me know.

Cheers
David ZL2DBP
Webmaster



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