THE MUSE

----------September 2024----------

The newsletter of the MUSICK POINT RADIO GROUP (INC.) NZART BRANCH 86
***Incorporating* The Society for the Preservation of Amplitude Modulation (SPAM)**
***and* Green Radios On The Air (GROTA) News.**

Musick Point Memorial Radio Station, Bucklands Beach, Auckland. Call Sign-ZL1ZLD.
BRANCH 86 *NZART* NET- TUESDAYS, 7.30PM, 145.775 MHz, Musick Point Repeater. All welcome!
SPAM Remote Receiver - http://spamnz.zapto.org:8901/
Website- https://musickpointradio.org Webmaster-Neil ZL1NZ.
SPAM A.M. (ZL6AM or ZL1ZLD) Nets- Fridays 8.30PM, on 3.850MHz, and
Wednesdays at 11.30Hrs, 7.125MHz. Now on 40 METERS only.
Editor- Martyn, ZL3CK.
Meeting- Second Sunday of the Month (Except May-Third Sunday, to avoid Mothers' Day)
NEXT MEETING- Sunday September 8th at 1pm. Coffee and tea provided!
Talk next meeting- Graham ZL1TOF will present on Interference.

ROB ZL4ROB checking out the full height of ZL3CK's newly- completed ZC1 Aerial at Musick Point.

From the Chair

It has been a strange month for me. I am now officially semi-retired, having been working three day per week for the last few months. This was arranged by agreement so that I could use up so much accumulated leave, it was embarrassing. I now have it at a more manageable level but the three day weeks continue as a permanent thing.

This does not make my life any easier, for a while at least, as we are renovating our kitchen, or are trying to. At the same time, seeing that the kitchen floor has to be re-covered with something, we made the extremely bright decision to re-carpet at the same time. So now, there I am in my spare time sanding and painting the skirting boards around the whole house before we get the carpet layers in. It doesn't end there, of course.

HER: "Oh that is much better. Now, when you finish all that, you will need to do all the window sills, architraves, etc., and then the doors and doorframes as well." ME: "Yes Dear."

They say that, when driving at 100km per hour, you need to stay six car lengths behind the car in front. In my experience, if you do then six cars will pull in between you, and a seventh will try.

With a lot of the focus being on John, ZL1OJ and his 'something or other' antenna, lately, I was having a hunt around the interweb to see if there was anything that might help. In the end, I did find heaps of information, but very little that seemed to be nearly as scientific as I think it needs to be. Most seem to be just repeating some overheard hearsay and do not even seem to have tried their own recommendations.

I did, however, find an interesting article about End Fed Random Wire antennas, which I thought I would throw out here. At last, someone who has put a little bit of research and science into his article about an antenna. I am not sure exactly how much is applicable to John's antenna but I am sure that there are a few good things in there to light up someone's reading. The link is: https://f5npv.wordpress.com/endfed-random-wire-efrw-antenna/

Did you know? There is a species of antelope capable of jumping higher than the average house. This is due to its powerful hind legs – and the fact that the average house cannot jump.

Turnouts at Musick Point have been very good on the last few Sundays, and there are usually several different things happening. With a variety of activities, there are opportunities for people to gravitate towards the activities that interest them the most.

In an effort to increase our resilience in the case of some sort of emergency, Graham, ZL1TOF has been painstakingly working his way through the operating consoles, installing LED lightstrips in the overhead lamp fittings. These strips are fitted in addition to the tube light which runs on mains electricity. If there were to be a power cut, a flick of a switch will light up the whole operating desk; in fact there is a choice of low or high intensity, or even both together (NO! they will not cancel one another out.).

There are also many little maintenance type tasks that need doing, as well as projects to get on with. In fact, I started reassembling the Collins receiver a while ago and got to a point where I was unsure what the next step should be. A few months down the line, and I am no nearer discovering that, but I will reassess the situation and see if I can make some progress.

There's a fine line between a numerator and a denominator. Only a fraction of people will find this funny.

Have a think about this, especially given the power situation in this country:

Electric vehicle owners should ONLY be allowed to recharge their vehicles using wind or solar power, otherwise it's just pretend.

Until next month:
73, and call CQ
David, ZL1DRV

MPRG News-

Our Wednesdays and Sundays continue to be well attended, and many different projects are in progress. **John ZL1OJ**, one of our newer members, has been valiantly trying to get on HF with an end-fed at his home, but despite much trial and error (mainly error!) John has had little success. **Rob ZL4ROB, Dave ZL1DL** and **Harry ZL1BK** among others have been helping out with trial runs of various lengths of aerials and counterpoises on the VNA in front of the station. Much has been learnt!

Harry ZL1BK, Dave ZL1DL and **John ZL1OJ**, trying to trip each other up with the counterpoise on a recent Wednesday morning. (They succeded!). **Rob ZL4ROB** observing the antics from above.

SPAM News-

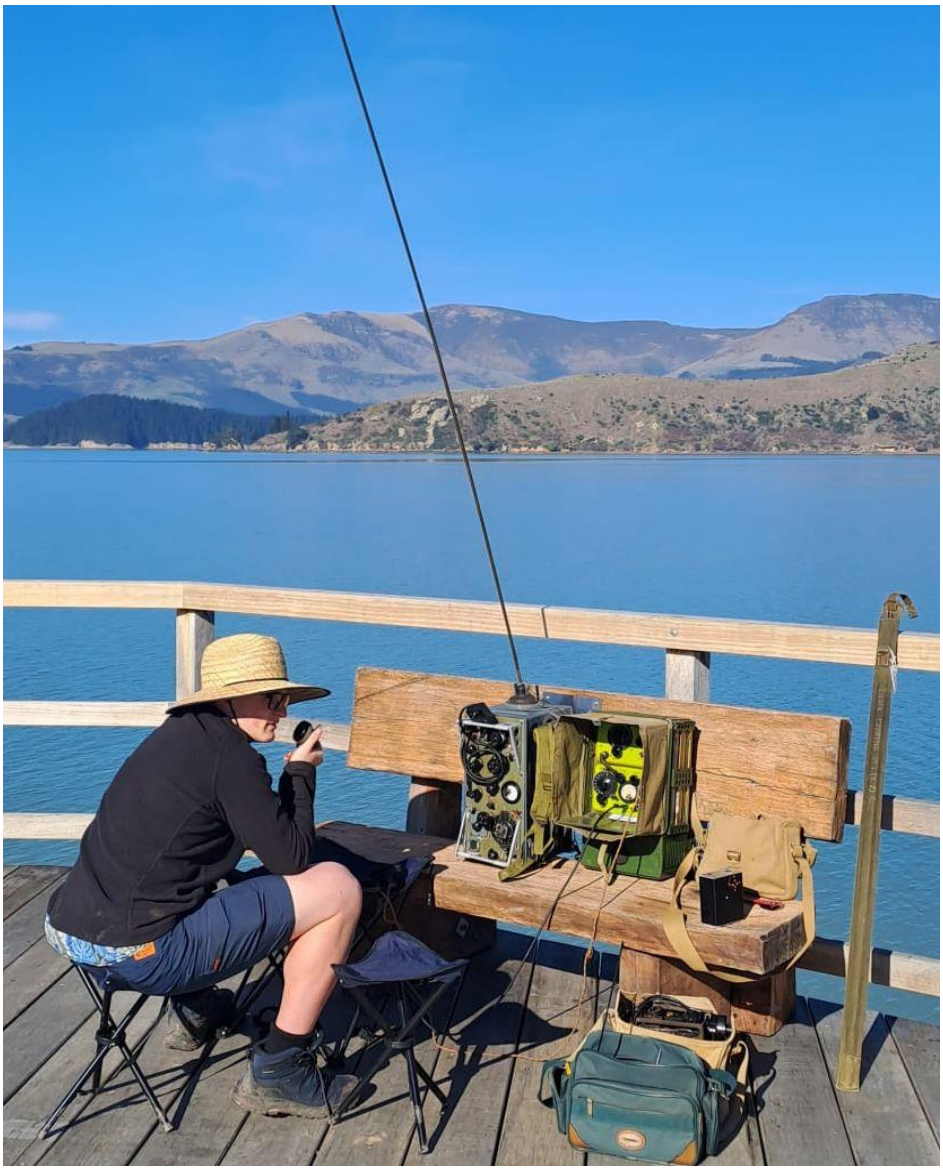
Good news and bad news! First the good-the SPAM Kiwi SDR has been installed at Musick Point.
The URL is- musickpoint.ddns.net:8073/
Unfortunately, shortly after installation it suffered a similar fate to our long-serving Web SDR a few years ago- RF overload from one of the nearby transmitters. It has been sent to "Kiwi Hospital" in Palmerston North. Latest info is that it's been repaired and on the way back to MP. Thanks to Dave and Harry for dealing wuth this. Trials have shown the 80-40 dipole "harvests" about 6 watts of energy when the IC7700 and linear are at full power (1KW) on the 40 mt folded dipole so no wonder there was a problem. A much more resiliant attenuator is planned before reinstallation. Details next month! This may even involve a light bulb! The long serving WebSDR has double, back-to-back silicon diodes across the aerial input, so far so good. The 80mt dipole to which it is attached, only produced 2 watts of power when tested. Why its so much less is a mystery!

GROTA News from Kelvin ZL3KB-

The August Green Radio trial was a low-key affair, with a few hardy souls venturing up to the Christchurch Port hills. The plan was to make it a “dual bander trial” using first 40m then 80m to compare propagation. An amazing sea mist came in so those of us at high altitude could look down on the clouds whilst still enjoying sunshine. I setup with the Larkspur A13 set at Godley Head (now open again!), Aidan ZL3APB with ZL3LEO at Governors Bay wharf with WS48, WS62 & WS38 sets, the latter toppling off and nearly becoming a TRUE boat anchor. Ray ZL3RAM setup at Allendale with ZC1 & WS48, Des ZL3AK with C12 set was on Mt Pleasant and Mike ZL3MWD with ZC1 down at South Brighton, which was unfortunately plagued with QRM. Bruce at Lancaster Park was hampered by surrounding concrete and a dodgy WS48 set.

So, a good turnout, and a great debrief in the pub afterwards. The 80/40m propagation comparisons were hampered by too many variables, not lease of all the QRM at some sites, and a dead WS62 set (Aidan, the RED plug is +ve!). Some strange non reciprocal propagation occurred, especially between Mt pleasant and South Brighton.

The great thing about GROTA trials is it attracts the general public, and this day was no exception, we introduced many people to Ham Radio and the local NZART branch. We have gained quite a few Hamcram victims this way.



ZL3FO on the Governor’s Bay wharf.

ZL3KB with the A13 at Godley Head

From the GROTA work Bench

I've been helping Des ZL3AK design an "all singing, all dancing: vibrator test jig, for restoring the ubiquitous ZC1 buzzy things. It should make the job a lot easier when finished.
There has been a couple of radios restored/repaired this month, a ZC1 Mk2 and a WS48 for Bruce's grandson Mason. The WS48 set was relatively easy, some dodgy LOCTAL socket connections in the receiver, and what I thought was an intermittent TX oscillator valve. Its "non oscillation" state was cured by changing the valve, but the original tested good on a valve tester!? I don't understand.
For myself, I have been working on some throat microphones. These mics were used with British WWII WS38 sets, allowing the soldier to operate "hands free" while on patrol. The mic is dynamic type, has two 'pods' each containing a pair of coils wounds on a magnetic pole piece, and the diaphragm is a heavy steel strip because this relies on physical contact of the throat, as opposed to picking up air vibrations.
I have some that work well, but others no so well. On closer inspection, a few had open circuit coils, but some just had low output, which turned out to be depleted magnetism. Only 80 years old and failing already? I tried a few attempts to remagnetise them, but with no luck, and it seems getting a new magnet into them would result in too much physical damage. They are going to remain "a project in the queue".

Until next time, Kelvin ZL3KB

What is inside a (rusty) WS38 Throat Microphone.

The Smith Chart By **Graham ZL1TOF**

I gave a presentation about the Smith chart to the MPRG following the general meeting in August.

The Smith chart was developed in the 1930's as a graphical calculator for engineers involved with RF engineering. The Smith chart is often used with transmission lines, so, I then discussed transmission lines and just what they are electrically. Characteristic impedance is complex at low frequencies, but, at high frequencies the resistance components are so small relative to the reactive components that the reactance cancels and we are left with pure resistance. That's why we have 300 ohm TV ribbon or 50 ohm coax (other impedances are available).

Complex numbers were conceived in about 1545 by an Italian mathematician to help solve polynomial equations. Complex numbers have real and imaginary components (resistance and reactance). It is Imaginary because $i^2 = -1$. Try that on your calculator. It is an operator to tell you it is the imaginary part of a complex number. In electronics we use "j" in place of "i" used in mathematics, so it is not confused with current. Graphically the complex number or impedance can be shown on the complex plane. Real numbers (resistance) on the horizontal axis and the imaginary numbers (positive for inductance and negative for capacitance) on the vertical axis.

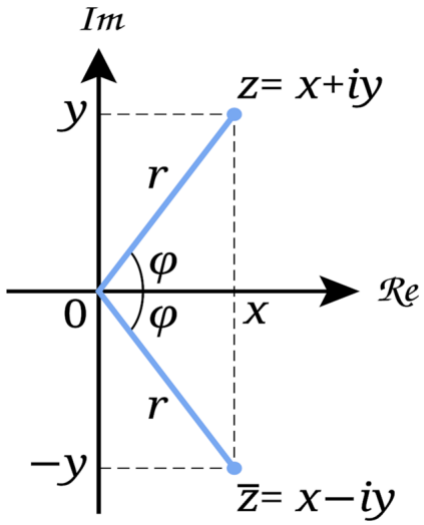


Figure 1 The Complex plane.

What happens when a signal is sent along an open and shorted transmission line? The signal reflects off the end. This is used in Time-Domain Reflectometry (TDR) to find faults on transmission lines. A pulse is sent into the line and reflections from defects are viewed on a scope. The time for the reflection from the defect can be calibrated as distance to the defect.

If a continuous wave is sent into a transmission line standing waves may be formed depending on the terminating impedance. The standing waves are easily measured with an RF probe in a slotted coaxial line. The magnitude and position of the voltage peaks and dips give information on the mismatch between the line impedance and the load.

An open or shorted line has the largest peaks and dips in the standing waves and is completely reactive. When plotted on the smith chart it is at the outer edge, open at the right and short at the left. The position from load to generator is clockwise. The reactance is capacitive within a quarter wave of the open end of the line. The shorted line is inductive within the first quarter wave of the short.

The Smith chart is a distorted Complex plane, the real = zero line is bent into a circle. That's why all the lines are curves except the real axis. Figure 2 has a lot of useful notes about the Smith Chart. A practical demonstration of the smith chart presentated on the nanoVNA was shown with different loads.

Voltage Standing Wave Ratio (VSWR) is the peak voltage divided by the dip voltage. The range of VSWR is 1 to infinity, 1 being best. Radio amateurs are obsessed with standing wave ratio (SWR). SWR is a shortened form of the original VSWR. The other common measure is the return loss (RL) in dB. This is ten times the log of forward power divided by the return power. The range of RL is 0 to infinity, bigger is better. Constant SWR or RL are circles on the Smith chart about the normalised characteristic impedance.

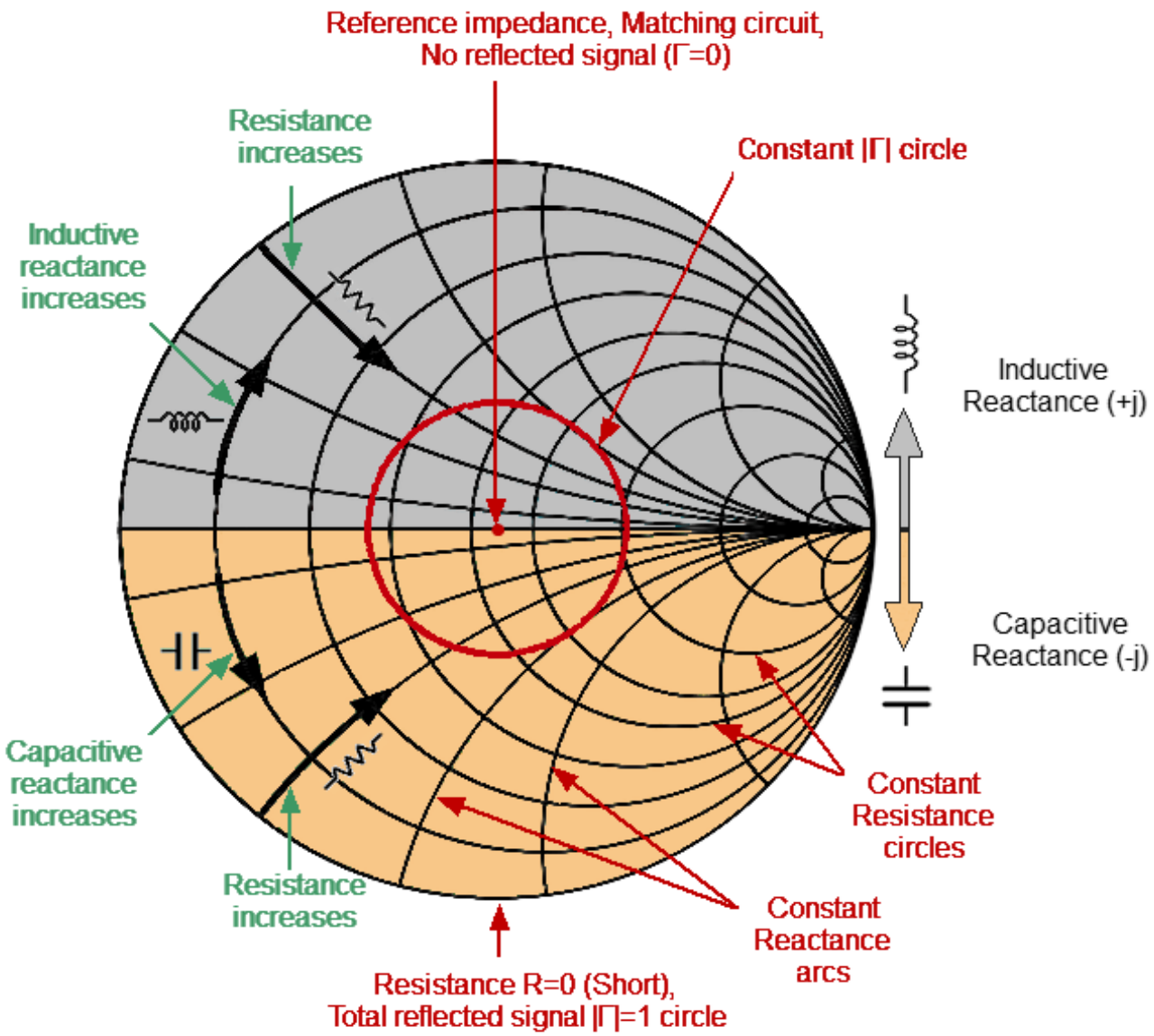
When the SWR or RL are between the extremes the load is probably complex. There is a formula for this. Evaluation of the formula is more than a simple task, a Smith chart can help here. Computer software is available now. A stub could be used to make a complex conjugate match between the load and the line.

Transmission lines are used to make impedance transformers, power combiners and spliters, directional couplers and stub matching. Oh, they are used to get the signal from one place to another, the original purpose.

Smith charts appear in data sheets for RF transistors to show how the input (s_{11}) and output (s_{22}) impedance change with frequency. And in the same way the nanoVNA displays the Smith chart plot of the load impedance with frequency. If the load is at the other end of a transmission line then the display will be rotated on the smith display.

If you want to explore more, the ARRL handbook and ARRL Antenna Book are a good start. Then on the internet, Wikipedia has some very good pages.

Figure 2. The Smith Chart explanation.

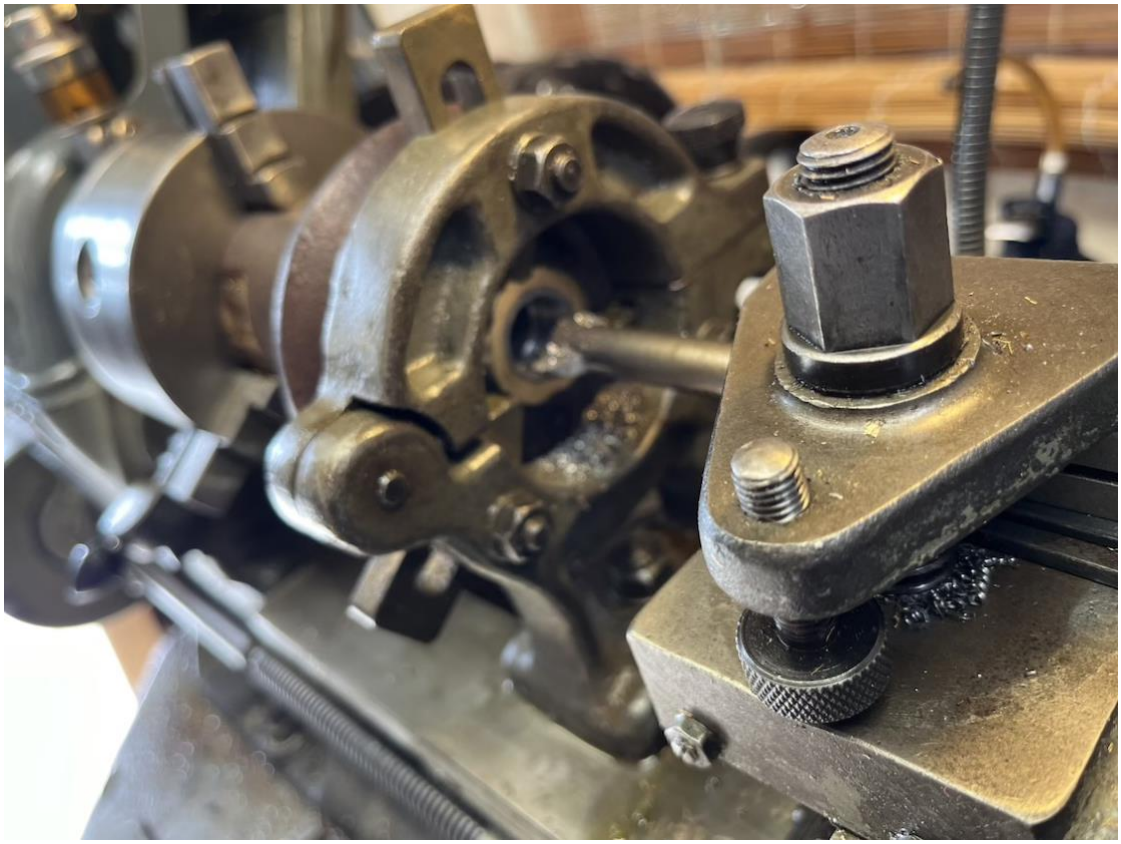


ZC1 Aerial Restoration-

Some years ago a ZC1 aerial was purchased via on-line. It came with four, small-diameter tapered upper whip sections (18' long) with the base insulator as seen below. Thanks to the GROTA activities it became clear (some years later!) half the aerial was missing! Asking around on the AM net, 3x 6 feet long bottom "F" sections were kindly offered by **Bruce ZL3BN** (New Plymouth). It was not clear how it was supposed to fit together. **Kelvin ZL3KB** sent the drawing and a photo of what the adaptor actually looks like. Having never seen one before it was now obvious that the adaptor was solidly rusted into the base brass socket/clamp. Unfortunately, the base is made of rubber! So it can't be heated or abused too much to get the adaptor out. All the usual efforts with WD40, vicegrips etc failed, so a more drastic approach was required…

Adaptor as it is supposed to look…

At least one now knew what it was supposed to look like, and how it fitted together. Desperation now set in! The brass clamp and adaptor was ‘amputated’ at the rubber base with a hack saw…



Aerial base in lathe, using boring bar to turn out the steel remains from the brass socket.This was tricky! There was just enough of the brass sticking out of the rubber to hold it in the lathe ‘steady’ and the rubber was gripped with the 3-jaw chuck with sandpaper around it for grip. The base was left with a clean brass socket (but no longer an attached clamp)..

“F” section sitting in the base, with the now-separate brass clamp on it for the aerial wire to attach to. Electrically speaking there should be no difference from when the clamp was attached to the base.

New whip adaptor now sitting in the top “F” section as it is designed to do.

Many thanks to **Kelvin ZL3KB** for the adaptor and the information, and to **Bruce ZL3BN** for the “F” sections. We just need to wait until the field has dried out enough to support a ZC1!

Stop Press!- **Gordonton Hamilton Radio Club** Radio Sale- Saturday 31 August was a highly successful gathering. A wide variety of radio and other related items was on offer and much was sold on the day. ICOM's **RWB Communications** once again supported the sale with a tasty selection of ICOM radios on sale too.

Some of the SPAM group who gathered on the day.

David ZL1BOA and **Bruce ZL1BLB**

Dave ZL1DL, Simon SL1SWW, Jim ZL1TGS, Harry ZL1BK having a good time!

FOR SALE- New Book- The History of the Radio Corporation of New Zealand, by Steve Dunford.

This already famous work is the result of his research over many years, and has been keenly awaited by the members of the Vintage Radio Society. Only 150 copies have been printed and when they are all gone that will be it!

The cost is $125 plus postage. Email Steve at- steve@essentialtech.co.nz

WANTED by Steve Dunford - Information about the Radio Corp and its 'descendants'

I'd love to talk to any ex staff members that are still around - volume two is in the works, so any more information I can get would be valuable. I thought I'd tracked down most of the remaining ex-staff members, but I always knew I'd miss a few - I'd also like to talk to staff who worked in the 80 Courtenay Place factory for either **Pye** (1960 onwards), or later **Philips** (in the 80's).

Contact Steve on- steve@essentialtech.co.nz

Free Amateur Radio Buy, Sell and Wanted- ZL Ham Ads on https://zlham.net.nz

MPRG Blog- https://MPRG.zlham.net.nz

Musick Point Radio Group (Inc.) Branch 86, NZART.

Minutes of General Meeting held at the Musick Memorial Radio Station on 11th Aug 2024.

Meeting started at 1300.

Present-9 members as per attendance book.

Apologies- Rosscoe ZL1AFF

Minutes for July- Accept with correction to Ira's new callsign ZL3INM- Moved ZL1DL Seconded ZL1FTH Carried unanimously.

Finance-
Z**L1DL**- Total funds $12,908.63. Noted that Repeater fees ($200) and Liability Insurance now quoted at $821.10 and will be paid this month.
$429.88 income from sale of goods (mostly scrap reclaimed)
Moved – To pay insurance premium- ZL1DL Seconded ZL1TOF. Carried unanimously.
Accept financial report- Moved ZL3CK, seconded ZL1OJ- carried unanimously

Correspondence-
ZL1DL- rest home visit- **ZL1DRV** has replied, declining the request.
Wedding photo requests- "not our brief" inquirer referred to Spark contact email address on the MP website for permission.
MOTAT day next Sunday 18th Aug will have an amateur presence from Franklin branch. ZL1MRT and ZL3CK may attend.

40 Meter Band plan proposed changes- **ZL1DRV requests feedback** so we may present our opinion as a club.

Break-In- latest has article in it written by Luke ZL1LNB. Well done Luke!

AREC- Rob ZL1ROB- progressing on-line presence.

New Constitution-

1. ZL3CK- error noted in that our club name does not include "The". Draft new constitution to be amended accordingly.
2. Discussion- re. wording of clause regarding changes to the constitution- "…Majority of members with amateur licence" to put out to members for their opinion if this is what they want, or alternatively (as in the Papakura Br. new constitution) "Majority of Members *present at the meeting* with amateur licence voting"
3. Proxy voting- suitable wording to be found for this to be enabled.

LED emergency lighting progress- ZL1TOF.

Equipment sales- Gordonton Saturday Aug 31.

5775 Repeater- Original repeater 'voice' back in use.

Meeting finished at 1335 Hrs. Minutes taken by ZL3CK.