SHEPPARTON & DISTRICT AMATEUR RADIO CLUB

**Founded 1979 Incorporation No A6677 P.O. Box 692, Shepparton 3632**

# April 2024 Newsletter
# Next Meeting Saturday May 4th.

## SADARC committee

President:- Peter Rentsch – VK3AXI Vice-President:- Barrie Halliday - VK3KBY
Secretary:- Rob Hose - VK3BLD Treasurer:- Ian Saunders – VK3YYY
Membership Sec:- Ian Saunders - VK3YYY Assistant Secretary:- Peter Rentsch - VK3AXI
Webmaster Graeme Martin - VK3VSM and Ray Gardiner – VK3YNV
Hamfest Co-ordinator:- Peter Rentsch - VK3AXI
Newsletter (editor):- Peter Simpson – VK3ASK
Technical Committee: Geoff VK3ZNA, Ray VK3YNV, Denys VK3ZYZ, Josh Gardiner & Robert VK2RK – power to co-opt.

To contact any member of the committee above, email committee@sadarc.org and specify who you wish to communicate with and the subject. Items for the newsletter newsletter@sadarc.org

Communications Manager (External Events): Darren Glasson (VK3HEN) – subject to confirmation.

Meetings the first Saturday of the month from 10 am for Arduino training, plus informal chats and technical talks. A BBQ follows (a gold coin donation). Main meeting 1 pm (except January when no meeting occurs) at 360 Health Centre, 18 Channel Road (250 metres from Archer Street), Shepparton.
Variations in these times, days and location are normally notified in the preceding newsletter.
**DISCLAIMER**: - No guarantee is given as to the accuracy of information in this newsletter. E. & O.E.
**WARNING: -** There is a danger of electrocution or injury when working on electrical/radio gear or working **at** heights doing antenna work. You do so at your own risk. 25/08/2022

## VK3RGV repeaters and transmitter operating frequencies Mt Wombat

**53.725MHz (-1 MHz), In Service** **146.65MHz (-600 kHz), In Service**
**438.2MHz (-7 MHz -D-Star), In Service** **438.650MHz (-7 MHz 91.5 Hz tone), In Service**
**438.9MHz (-7 MHz - DMR), In Service** **439.775MHz (-5 MHz), Now back in service, IRLP (node #6990)**
**476.475 MHz (+750 kHz) CB Repeater WBT03 Channels 3- 33, In Service**
**VK3RDS, 438.7625 MHz (-7 MHz DMR) Shepparton on test @ VK3YNV QTH**
**The three following repeaters are not the clubs but are allied to the club in one way or another.**
**Mt Major VK3RDU, 146.850 MHz, 439.875MHz. Mt Bruno VK3RWC 147.325 MHz (-1.6 MHz 123Hz)**

**Access to most analogue repeaters is by sub-audible 123 Hz tone or noise/carrier mute (less sensitive). Your TX offset is shown in brackets**

Club informal on air get togethers, all welcome. Club call sign VK3SOL: -
Wednesday- 2mx repeater 146.65 MHz 8.00pm, 3.63 MHz SSB ± interference 8.30pm,
Sunday – 2 mx repeater 146.65 MHz 2 pm & 8 pm & The Vintage Radio Club – 2 mx repeater 11 am
A number of semi-private HF skeds take place either daily or weekly, locally or further afield.
Website – www.sadarc.org or www.sadarc.org.au Face book Page – Shepparton and District Amateur Radio Club Direct Link: https://www.facebook.com/groups/481867453084459
Note: Want to get your licence? SADARC has examination assessors, contact the secretary for details.

# In this Issue



The next SADARC meeting will be held on Saturday May 4th, at our regular clubrooms, 18-22 Channel Road. Note this is no longer Flexible Learning, the property is now 360 Health.

The format for the next meeting is as follows;

- 10am Arduino course with Denys VK3ZYZ, Ray VK3YNV and Josh.
- 12.00 BBQ Lunch as door is now repaired.
- 1pm Club meeting plus talk on current projects with displays.

## Diary Dates

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|---|---|
| May 4th | Star Wars Day -Doors open at 10.00am for the Arduino Course followed by a BBQ Lunch and Meeting (may the forth be with you) |
| June 1st | Meeting to be held at the home of Geoff, VK3GSR, this includes a roast for lunch, all the details in the next newsletter. |

## Presidents Report – April 2024.

A good roll up at the meeting again. It is very heartening to see such good attendance at our meetings. As well a good attendance we are slowly but surely attracting new members. Thanks to all those who attended and we look forward to seeing you all on May 4th. One other thing I noticed was the mentoring that is occurring with in the Club.

Those with more knowledge are very happy to share in a non-derogatory way and that goes a long way to building a good solid Club. Thank you to those who do that.

In my last Presidents report I touched on the fact that we have no Assessors in the Club. One of our members who wants to upgrade contacted me during the month asking for the contact details of Assessors who can do the job. I gave him the email address of a couple of people I know who can do the carry out the exam. He contacted them and received no reply from either. Eventually through his own contacts someone from South Australia contacted him and said he was happy to do the exam at any time suitable.

Now, I understand that we are all volunteers in Amateur Radio but I find this a little disappointing that they did not at least respond to the enquiry.

This then really illustrates the need for our own Assessor/s within our Club. Can those with Advanced qualifications please consider.

Over the next four reports I want to expand on four keys points that we as a Club need to embrace. The four points are:

1. Our image
2. Expanding our Reach
3. Embracing Participant Engagement
4. Increasing our Ability to Adapt

If you have any comments to make on these four points, please let me know as I would be interested to hear your thoughts.

HF DX is really firing up at the moment. The cycle is heading towards its peak and there are lots of DXepiditions occurring. In the last week I have had contacts with Austral Islands, Easter Islands, Bhutan and Ghana, all new countries for me, so give it a go.
Cheers,

Peter Rentsch
VK3AXI
President

## SARDAC Club Minutes April 6th 2024

**In Attendance:** VK3AXI Peter, VK3BLD Rob, VK3YYY Ian, Vk3UU Adam, SWL Josh, VK3AFD Arthur, VK3MFE Mark, Andrew McClusky SWL, VK3ASK Peter, VK2RK Rob, VK3ELV Phil, VK3JSD Stevo, VK2 JKN Jim, VK3GSR Geoff, VK3AXI Peter, VK3ZYZ Denys, VK3TJS Jacek, VK3ZNA Geoff, SWL Bill, VK3PKL Pail, SWL Nathan, VK3BPH Kevin, VK3BF Allan, VK3EB Dallas, VK3YNV Ray,
**Apologies:** VK3TEX Les, SWL Adrian, VK3FALN Alen, VK3KBY Barrie.

President Peter opened the meeting at 13:05.
New member Nathan was welcomed to the club.
The minutes of the previous meeting were included in the newsletter.
Ian VK3YYY Moved the minutes be accepted as read. Seconded Kevin VK3BPH. All in favour.

**Correspondence:**

**Outward:** Get-Well card sent to Lyn Champness. Letter to Mike VK3FMAA thanking him for the BBQ and accepting his resignation.

**Inwards:** Letter from Lyn Champness thanking the club for the Get-Well card. Insurance confirmation. Several emails from Geoff VK3ZNA regarding a rigger for Mt. Wombat.

Moved Geoff VK3GSR Seconded VK3ASK Peter.

**Treasurers Report**:

Tabled by Ian VK3YYY. Some discussion was held regarding the holding of Petty Cash.
Rob VK2RK moved that petty cash should be held at $100. Seconded Geoff VK3ZNA
Ian VK3YYY moved that the treasurers' report be accepted. Seconded Adam VK3UU. All in favour.

**Technical Report:**

Ray VK3YNV update on the Power Management unit on Mt. Wombat.
Geoff VK3ZNA spoke about the rigger needed for the antenna replacement on Mt. Wombat.
He also suggested that the antenna may not be under warranty.
Ray suggested that the type of antenna being used is not suitable for the environment. A decision is needed to select a different type of antenna to replace the existing faulty antenna.
Ray Moved that the Technical Report be accepted. Seconded by Mark VK3MFE. All in favour.

**General Business:**

Peter VK3ASK asked members to submit articles for the newsletter.
Bill mentioned that the club tower is still at his place and is available for anyone who could install it and make use of it.
Ray brought 4 tubs of equipment which is the remainder of gear from Rod VK3UG collection. He said anything that is not taken will end up in landfill.
Josh suggested about producing next year's membership cards. He suggested the card could be made from a PCB which could be made into a working project.
Stevo mentioned that Jaycar are planning to move into the old Anaconda building, which will provide more area for them.
Ray suggested the club hold an open day at the site on their opening.
Ray moved that Stevo be liaison for the club with Jaycar. Seconded Peter VK3ASK.
Josh spoke about the new signs directing visitors to the club meeting place.
Josh moved that we approve the printing costs. Seconded Kevin VK3BPH.
The Fun Run in Bendigo needs volunteers

Nathan offered the club a spot on his radio program to publicise the activities of the club and maybe attract new members.
Peter VK3AXI moved that we accept in principle the radio suggestion. Seconded Peter VK3ASK.
The meeting to be held on 1st June will be at Geoff VK3GSR's home.
Jack spoke about the projects he is working on.
Bill spoke about his new motor project.
Geoff Talked about his new tower installation.
The next meeting will be on 4th May.
Meeting closed at 14:15

## Editor's Comments

April was another great meeting for our club, with plenty of lively discussion about the antenna issues at Mount Wombat, the repair of the power monitoring system at the Mount, plus discussions on a possible 2nd Jaycar day, given that they plan to move their store to new premises in the old Anaconda building.

Ray Gardiner VK3YNV gave us a talk on the possibility of the club building their own replacement antenna for the faulty 2 metre receive antenna.
Below, Ray has come up with some ideas on a possible design, which has many merits for such a project.
For my part, I plan to write a few short articles over the next few months, revealing how my love of radio started and my many attempts to build home brew rigs and erect cheap antenna's

73's Peter VK3ASK

## Construction of a possible 2 metre antenna for Mount Wombat.

Ray, VK3YNV has forwarded the details of a possible 2 metre antenna, which the club may experiment with over the next few months.

## "Sinclair" Style Wide Band Folded Dipole Antennas

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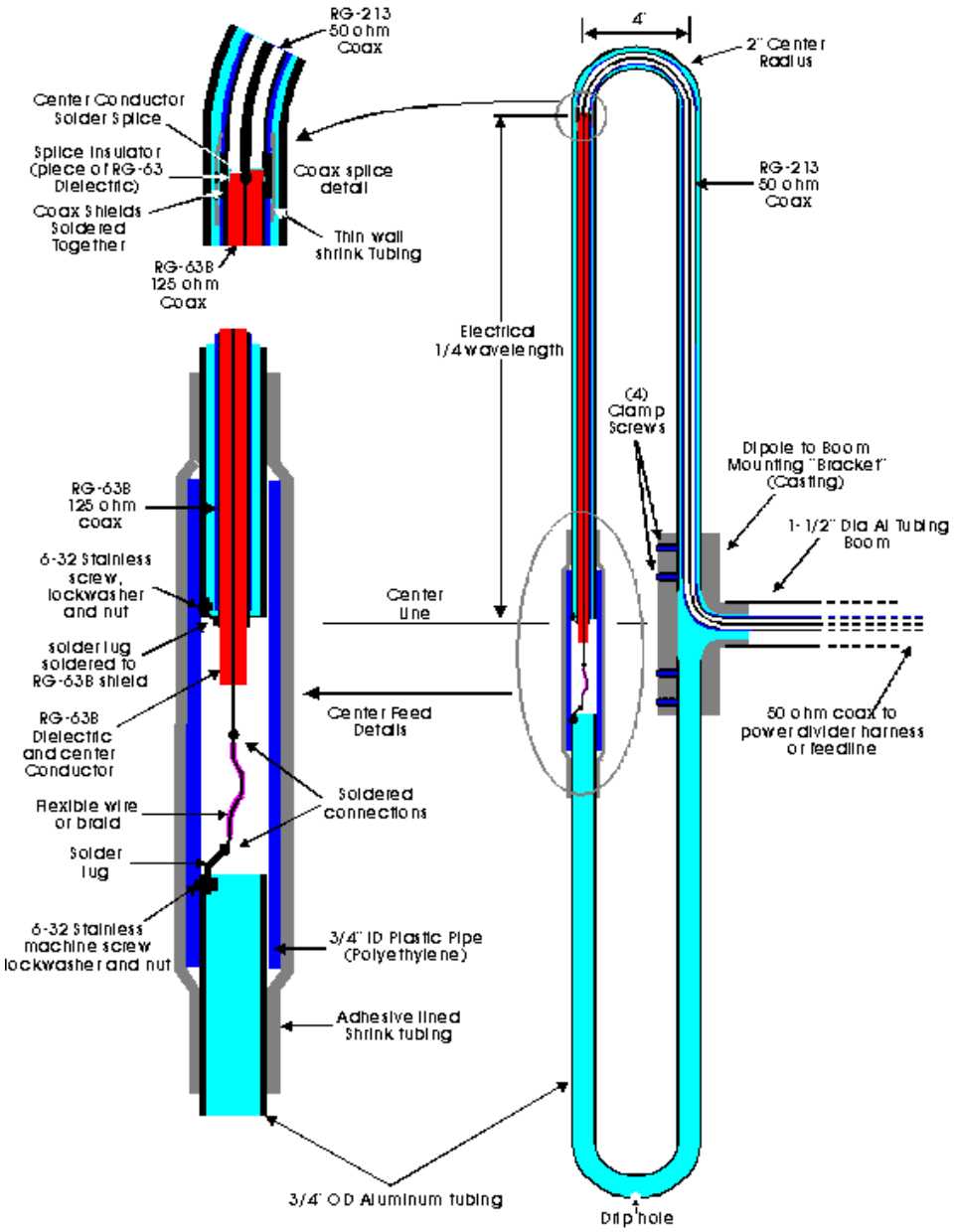
Here are the intimate details on the construction of wideband folded dipole VHF and UHF antenna arrays of a style popularized in Canada by Sinclair Radio Labs. The design first originated in England in the late 40's and was first used by Sinclair in the 50's for their x10 series antenna arrays. They are still being manufactured by Sinclair and are the commercial antenna of choice in Canada. At least one (Comprod in Quebec) and possibly more competing manufacturers have copied the design.

This antenna style features:

- Wide Band coverage. The match is typlically better than 1.5:1 SWR over a 20% bandwidth (eg 138-174 MHz or 406-512 MHz). This allows many radio systems to be multicoupled on the same antenna.
- Totally enclosed feedline cable within the dipole. This makes the antenna more resistant to environmental stresses.
- Totally grounded design. This eliminates static built up on the elements and greatly reduces potential lightning damage.

# VHF High Band Folded Dipole Design Details



# My love of Radio

By Peter VK3ASK

My journey into radio started when I was 10 Years old, my father had worked in the radio industry wiring mantle radio's until he joined the RAAF in 1943.
My uncle worked as a radio operator with the Department of Civil Aviation, plus had a keen interest in all things electronic.
For my 10th birthday, my parents bought me a germanium diode, a pair of high impedance headphones, a small roll of copper wire, plus some wire for an aerial.
My uncle bought me a book called "The Boys Book of Crystal Sets
So, with some help from my father, I had my 1st crystal set up and running.
The design was a piece of wood, nails to provide connection points for the components and of course a cardboard tube, for the all-important coil former.
I was amazed that such a simple circuit could work and pick up all the Melbourne stations and no battery required, this seemed too good to be true.
The crystal set book contained many different circuits for the design, but at the end of the day, they all performed much the same.

Then one day, my father was browsing through a store in Melbourne called Waltham Trading, and came across a device called a slug tuning coil.
This was a small coil, with plastic former, a geared slug to perform the tuning and all encased in ferrite.
This made crystal set design so much easier, much smaller than the previous coils, no tuning capacitor required and had a much higher Q factor, which made the xtal set far more selective.
The heavy earphones were also replaced with a Xtal earpiece, far more comfortable.

Next came the purchase of an OC71 transistor, which meant I could amplify the output of the crystal set, but also meant that a battery was required.
The OC71 is encased in a glass tube, which is painted black. What I soon learnt was that if the paint wears off and exposes the germanium transistor inside, it is subject to light. In daylight, it worked fine, but if incandescent light causes severe hum in the output, another lesson learnt through trial and error.

I had the aerial wire coming through the bedroom window, but my mother was not keen to have any other wires, such as an earth, necessary for good performance for a crystal set.
I had this wonderful idea of getting a 30cm length of copper pipe, filling it with soil and then sealing the ends, putting it under the bed with wire attached, seemed like the perfect solution for an earth. How wrong I was, it certainly didn't work and, in the end, I finally was allowed to run an extra wire outside connected to a proper earth stake.

My parents had a 1940's radiogram, which had 5 valves and was dual band and covered the 6mhz to 18mhz shortwave frequencies. With a decent aerial, this radio performed very well and I could listen in to all these amateur radio operators talking tech, on the 40 and 20 metre amateur bands, all using AM transmission in those days. Then by the early 60's things changed, there were now some amateurs sounding like Donald Duck, and I couldn't understand why I could no longer understand what they were saying. My uncle informed me that this was the new single sideband transmission and more and more amateurs would use this in the future.
By sheer accident I discovered that if I put my transistor radio near the old radiogram and tuned to a frequency 455KHZ above the station frequency, I could resolve this Donald Duck talk and understand what they were saying. This turned out to be a very simple, but effective way of generating a BFO signal to resolve sideband.
Unfortunately, one day the radiogram stopped working and it turned out that the power transformer had burnt out. No worries say dad "I will find a replacement at the Waltham trading op shop.
Sure, enough he did find a replacement, physically fine, 6.3-volt filament winding fine, 5 Volts for the rectifier, only thing we didn't check was the HT winding.
With new transformer installed, the radio was fired up and the performance was amazing, far better than before and incredibly sensitive.
Only trouble was that after about 10 minutes, the IF valve went into oscillation. No worries a new 6U7 fixed that problem and the radio was amazing for another 10 minutes, until once again oscillation.
Checking the DC volts to the anode of the RF and IF valves measured close to 350 volts and I found out from my uncle that such a high voltage would have probably stripped the coating from the cathode of the valves causing them to fail.

By the time I reached 16, I decided to move on from crystal sets, 1 valve radio's and the old 5 valve radiogram.
I pooled all my birthday and Xmas money together and bought a 2nd hand Halicrafters receiver. This receiver was originally designed as a portable with batteries, but the previous owner had changed the valves over to 6.3-volt filament valves, installed a power transformer and even a BFO.
It was a general coverage receiver with 7 valves, very sensitive and even had a 2nd tuning gang for band spread on the ham bands.
This enabled me to listen to the 80,40 and 20 metre bands, easily resolve single sideband transmissions and certainly increased my desire to study and get an amateur licence.
So, I enrolled in a correspondence course through the WIA for training to sit for the amateur license, which at that time was managed through the PMG's department.
There were some parts of the course, which I found quite difficult, but I had a few hams in our area who were able to give me some much-needed guidance.
Next came the issue of a decent aerial, but that is a story for next time.

## Arduino Nano Test Signal Generator

Denys VK3ZYZ has recently put on the forum his latest project, which is a design for a test signal generator using Arduino. Over to you Denys.

Recently, I picked up a couple of hand-held radios. These are PCM Hawk II sets on 162Mhz.
These radios have 10 channels, each with one crystal. This crystal is at (Freq – 21.4Mhz)/16. For the first channel, the frequency is 162.400 so the crystal is (162.400-21.400)/16 = 8.8125Mhz.
On TX, there is an oscillator at 21.4Mhz that is mixed with the multiplied crystal to produce the signal frequency.
So, I thought a test unit to help me convert them may be in order.
This is based on my Arduino Nano VFO, and has one output from the Si5351 board at the crystal frequency and the second output, enabled by a "PTT"switch on the front of the test unit, at the signal frequency divided by 16. This produces enough harmonics to give a good strong RX signal for the set.

The code is easily modified to suit other radios, and could even by set from a menu if I (or someone else) gets around to writing that part of the code.
The decade that is adjusted is selected by a push of the encoder button so the signal frequency is settable in 1Khz to 1Mhz steps. When on TX, the signal from the second output is switched +- 3.5Khz the signal frequency to produce a tone from the receiver.

As with the original Arduino Nano synths, the frequency display is inverted, dark numbers on light background, when the TX signal is running. This all seems to work quite well so I'm pretty pleased with it so far.

To change for other radio configurations, all that is needed is to edit the following lines...

```
// synthesiser default settings on start up.

unsigned long frequency = 162400000;    // 4 bytes required for frequency
unsigned long IFoffset  =  21400000;    // IF offset for clockgen
unsigned long multiplier=        16;    // crystal multiplier

int32_t cal_factor = 33100;              // found from Si5351 calibrator sketch.
```

All the code will be on the forum so feel free to have a play to make it better.

The original post about the radios is here...

http://www.sadarc.org/xenforo/upload/index.php?threads/info-on-pcm-hawk-ii-pvh-1-hand-held-radio-wanted.540/

and the continuing post, in a new thread for “Homemade test gear.A handy sig gen.” is here...

http://www.sadarc.org/xenforo/upload/index.php?threads/home-made-test-gear-a-handy-sig-gen.541/

Have fun with it.

Denys VK3ZYZ