

Founded 1979 Incorporation No A6677 P.O. Box 692, Shepparton 3632 August 2020

VK3RGV repeaters and transmitter operating frequencies 53.725MHz (-1 MHz offset), In Service 146.65MHz (-600 kHz offset), In Service 438.2MHz (-7 MHz - offset -D-Star), In Service 438.650MHz (-7 MHz offset and 91.5 Hz tone access only), In Service 438.900MHz (-7 MHz offset- DMR repeater), In Service 439.775MHz (-5 MHz offset), In Service, IRLP (node #6990) VK3RDS, 438.7625 MHz (-7 MHz offset DMR repeater) Shepparton on test @ VK3YNV QTH

Access to most analogue repeaters is by sub-audible 123 Hz tone or noise/carrier mute (less sensitive). Club informal on air get togethers - Wednesday evenings. All welcome. Club call sign VK3SOL:-2mx repeater 8.00pm 146.650 MHz, The vintage radio club have a sked at 11.00am Sunday on the 2 mx repeater.

Meetings occur on the first Saturday of the month at 1pm. Due to the pandemic they will temporarily be conducted on air via our 2 metre repeater and Peter VK3FPSR will officiate as President.

Variations in these times, days and location are normally notified in the preceding newsletter. Website – <u>www.sadarc.org</u> or <u>www.sadarc.org.au</u> Face book - <u>www.facebook.com/sadarc.org</u> Info for the page contact - Denny French on <u>denny3782@gmail.com</u>

Note: Want to get your licence? SADARC has examination assessors, contact the secretary for details. The following repeaters do not belong to our club but provide good signals for many members. <u>Mount Major VK3RDU repeaters, TX operating frequencies, 146.850 MHz and 439.875 MHz</u> <u>UHF CB Repeater WBT03 Mt Wombat Channels 3- 33, 476.475 MHz, Off air</u> * 25/8/2020

DISCLAIMER:- No guarantee is given as to the accuracy of information in this newsletter.

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.

President: - Peter Rentsch	VK3FPSR	<u>peter@rentsch.com.au</u>
Secretary: - Andy Ashley	VK3AJA	<u>secretary@sadarc.org</u>
Assistant Secretary:- Geoff Angus	VK3ZNA	
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Membership Sec: - Andy Ashley	VK3AJA	11
Webmaster: - Ray Gardner ray@etheira.net	VK3YNV	Publicity Officer: - Vacant

Communications Managers (External Events):- Bruce (VK3PNG) 0427 715 663 & Darren (VK3HEN) Glasson Tech. Committee: Geoff VK3ZNA, Ray VK3YNV, Josh Gardner & Rodney VK3UG – with power to co-opt. Newsletter: - Rodney VK3UG (Editor) rodlynn6@bigpond.com Peter & Andy (Printing/ Distribution)

Presidents Report August 2020

Thanks to all those who called into our last meeting. It is very heart warming under the circumstances that we have a membership of people who are committed enough to get on air for our meetings. As much as we can't meet face to face there is still a positive attitude coming from our members and that is very gratifying to all concerned. I hope all members are well and have had no issues with health or COVID either personally or in your circle of relatives and friends.

As most of you will know I have retired and enjoying it (don't worry Andy- your turn will come) but with retirement comes some changes in life. You do not have access to facilities that you used to have like purchasing printer cartridges at cost price. So, in some ways your income goes down and your expenses also go down but perhaps not as much as the income.

I am still mailing out about 10 Newsletters each month. Some of these that go to other Clubs could be emailed and I will change that in the next week or so. This leaves about 6 that I am still mailing out. In these times of limited funds, both mine and the Clubs I am suggesting that we do not mail any Newsletters at all. Those that do not have Email can view and download the Newsletter from the SADARC Website that Ray keeps right up to date. I put this option up for discussion at the next meeting and would value some feedback.

Please remember that Subs were due on the 1st July and as per normal you have until the Hamfest to be a financial member. There is no Hamfest this year so we will make the 13th September the closing date for sub payments which was when the Hamfest was to be held.

As mentioned at our last on-air meeting October is traditionally our AGM. I would like to continue this routine and I see no reason why we cannot have the meeting on air. Again, I will ask for some feedback on this at our on-air meeting on the 5th September. Please, also if you wish to contribute to the future and continued success of our Club by all means please do not be backward in coming forward.

That is it for this month and I look forward to hearing you all on the 5th September for our "on air" meetings

Cheers for now.

Peter Rentsch President

CLUB CALLANDER

5th September -. Regular meeting – 2m Repeater Mt Wombat 1.00pm 4th October - Regular Meeting and AGM – format to be advised

SADARC MEETING MINUTES

Aug. 1st 2020

Held via VK3RGV 2 m repeater due to Covid-19

Apologies: VK3ZE Huntly. VK3NQS Colin.

In attendance: VK3FPSR Peter, VK3FTRK Geoff, VK3AJA Andy, VK3UI John, VK3YNV Ray, Josh, VK3ZYZ Denys, VK3OV Pat, VK3ASK Peter, VK3FALN Alan, VK3PNG Bruce, VK3PGK Graeme, VK3AFD Arthur, VK3BPH Kevin, VK3FNQS Jason, VK3ECH Rob, VK3EB Dallas, VK3UG Rodney.

Minutes Last meeting: ready by Peter, moved by VK3FTRK Geoff, second by VK3BPH Kevin All in favour.

In: membership Out: WIA for special even Moved by VK3ASK Peter, Second by VK3ZYZ Denys. All in favour.

Financial: Nothing out, a few memberships in. Moved by VK3PNG Bruce, second VK3PGK Graeme. All in favour.

Technical:

Ray has mentioned QSL cards have arrived for VI3RA event. Ray is thinking of a way to print them from database! Or perhaps a pen!

Peter will find out about the QSL sending system (WIA) and work out best way to do it. Moved by Ray second by VK3FNQS Jason. All in favour.

A few trips to Mt Wombat have been made to reset LoRa WAN gateway and the antenna (2m) is confirmed as faulty if windy.

UHF CB repeater has now been fixed and is running on Rays bench is under test. May have an issue at site. Perhaps antenna? Rodney has agreed.

5 Meg split repeater required a reset.

Ray noted remote power management would be helpful!

Also Ray has mentioned installing remote power management device next trip to mountain and will be tested on only half the system for interim.

The cost of equipment has already been approved by SADARC. Rodney has also suggested this is a great idea!

Repeater link (IRLP VICLINK) is down, owner is getting advice from WIA on legality.

Jason mentioned it should be back soon, link owner has verbal approval from WIA. Rodney has requested info for newsletter re power management.

Report moved by VK3YNV Ray, second by VK3UG Rodney All in favour.

Rodney has nothing to report re repeaters but did request info. On 6-meter band for newsletter.

Peter mentioned \$20 voucher for competition, check last newsletter!!!

VK3FPSR Peter has confirmed HAMFEST cancellation. With VK3UI John.

VK3PNG Bruce has mentioned Murray Quad has been cancelled this year. Tim has thanked SADARC for support.

Payment had not been received from last Quad, Peter will chase up. (they may not have new bank details)

General Business:

VK3FPSR Peter has asked if any articles for VI3RA has been received by Rodney, he has mentioned only pictures so far. Please send Him if you have anything. He aims to work on this soon.

VK3FPSR Peter has asked about thank you letters for involved parties at VI3RA event. VK3ZNA Geoff will follow up with Andy.

VK3FPSR Peter has asked Ray about funding for IP address mentioned at last meeting, Ray as not yet applied for these yet. Ray will investigate it next year after we know what is happening at RA site.

VK3FPSR Peter has mentioned SUBs! Please pay please!!!

AGM is in October and we may have to have it "on Air" Peter VK3FPSR has asked for ideas on this. He has also mentioned the new callsign regs form ACMA.

VK3YNV Ray has mentioned on our website there is a link to Denys's VFO project, check it out! Denys has mentioned that he is working on a PCB and suggests it is very slick! Check it out.

VK3FNQS Jason has mentioned the process of applying for callsigns and reminded all about Remembrance Day comp. coming soon. He also mentioned perhaps we should talk to WICEN about perhaps a SADARC member could be a coordinator? VK3FPSR Peter suggested something in our newsletter. This will give members info. On what WICEN does. Jason said he will wait till restriction ease perhaps we could organise a visit from WICEN.

VK3FAMD has asked can the "F" be removed from his callsign, Peter advised NO it must be re applied for.

VK3FTRK Geoff mentioned club stickers are still being worked on! Watch this space.

VK3UI John mentioned Virtual ARRL HAMFEST, check it out. And callsigns are now "for life"

VK3ASK Peter mentioned clubroom are now under Education Dept. control and all is ok. And perhaps we should approach them about antenna installations, this was approved last meeting. VK3ZNA Geoff has said yes let's get it rolling. VK3ASK Peter will draft proposal for same. Moved by VK3ZNA Geoff, second by VK3PGK Graeme.

All in favour. VK3FTRK Geoff is happy to donate a mast and time if required Meeting ended 2:22 pm

The 6 metre Band

The 6 metre band which covers 50 – 52 MHz Advanced license holders and 52-54 MHz Advanced and Standard licensees would have to be one of the most under utilised bands available to us in Australia which is unfortunate as most HF radios and most all band radios have the 6 metre band available. There are 6 metre repeaters in all major cities and regional centres as well. But the best can be obtained in the SSB mode, long distant contacts can be made on the international calling frequency 50.110 SSB/CW Advanced licensees only or 52.100 SSB/CW international calling frequency for Advanced and Standard licensees. AM and FM long distance are obtainable as well with a little patience but I tend to use SSB which I have had some luck with in the past. A yagi type antenna with multiple elements are of course the best option for long distance communication but a vertical at height will give you access to 6 metres repeaters in your area. Being in Echuca I have access to to our 6 metre repeater 53.725 MHz minus 1 meg offset with a good strong signal, I only wish I could get someone to return my call, I have had only one response and that was over 12 months ago. I had quite a few contacts on the Melbourne 6 metre repeater while visiting relatives at Christmas time so guys and girls try 6 metres it is a great band. I will list a few radios that have 6 metres available with differing price ranges. But will not include any prices as they fluctuate.

Yaesu FT 891 Mobile SSB, AM,CW,FM 100watt 25watt AM. P.S Awesome radio.



Yaesu FT-818ND mobile/portable SSB, AM, CW, FM 7 watt more for potable carry radio.



Yaesu FT-991A All mode HF, VHF, UHF 100 Watt VARUE VARUE 14.195000 14.20000 UNITED INCOMENTATION OF THE INCOMENTA



Yaesu FT-450D All mode HF, 50MHz 100 Watt

Icom IC 7300 All mode HF, 50MHz 100watt



Icom IC-7100 All mode HF,VHF,UHF 50MHz 100 watt





HF / 50 / 144 / 440 / 1200* MHz All-mode Meltibander *With optional UT-20 1200MHz all-mode unit

TS-2000/X

C Zoom

I have included the Yaesu VX 8 hand held as I think it is the only One that has 6 metres included as well as 2 metres and 70 cent. But unfortunately it is no longer in production but occasionally can be found second hand. I have one of these and they work great into 6 metre repeaters.



There are many other transceivers that carry 6 metres but to list them all would take a lot more space, the ones I have listed are the most popular at the moment but there are many good second hand radios out there that have 6 metres included and some of the Chinese HF all mode produced radios now have 6 metres as standard like the TYT TH-9800 50 watt mobile with dual watch frequency ,quad band 2 metre, 70 centimetre, 6 metres and 10 metres, Ailunce HS1 15 watt portable SDR covering all HF and 6 metre bands and the Xiegu G1 portable SDR QRP Hf and 6 metre radio, maximum power is 20 watts so not really QRP, I have had one of these for over 18 months and works great but only run it on 5 watts to extend battery life.

I hope this gives you some thought on giving 6 metres a go whether it would be SSB, AM or FM and lets use our 6 metre repeater on Mt Wombat a bit more, it is a good repeater and should be used more often.

Graeme Koch VK3PGK.

The 6 mx repeater antenna saga.

We have had our 6 metre repeater running now for several years with firstly 25 watts then around 50 watts with increases in receiver sensitivity from $0.25\mu V$ to $0.12\mu V$ and changes of antenna systems and cavity tuning.

The first antenna when set up with spacing to achieve good SWR and frequency bandwidth but proved to have a very nochy pattern which meant many operators received poor signals requiring them to use 25 watts, whilst others got good signals.

This antenna was replaced with a second hand antenna tuned for the frequencies of our repeater. The performance of this antenna was extremely good and many who used to have to use 25 watts for good

communications could use 1 watt with equal success. My tests travelling almost directly west showed that the signal was still useable around 150 km (as the crow flies) away at Calivil (a tiny township). 2 metres had disappeared around 30 km before that. I could work the repeater in patches driving on the highway through Albury.

We were very satisfied with this performance and believed that if we obtained a pair of folded dipoles and mounted them in phase on the new free standing tower that we would obtain improved performance. Maybe the range would not become much greater but many weaker signal areas would be much improved and Melbourne stations could get in regularly. We initially ordered one antenna and the matching harness thinking that we could just mount it with the older unit and all would be well. After obtaining the antenna and thinking about it we weren't 100% sure that the antennas would be identical so we then ordered a second antenna from the same manufacturer after a delay of around two years. Remember this was the time when things were in flux with the new tower and a number of legal items that needed resolution. With the benefit of hind sight, not obtaining them at the same time may have been a mistake.

When the new self supporting tower was installed on Mt Wombat the 2 new antennas were put onto the tower and the older single antenna was mounted on the repeater hut as a standby antenna We expected much improved results. However, we have been very disappointed with the results.

Many who could use 1 watt to get into the repeater now have to use 25 watts again. Melbourne contacts are history. On a trip to Charlton (to the west) around 12 months ago I found that I could not get the 150 km range I used to get in fact it was down to around 120 km, but why was this happening as we have an improved antenna system? (The 2 mx repeater was/is working better than the 6 mx repeater – the best I've seen it perform and has greater range than the 6 mx repeater.) On the same trip, on the hill to the west of Borung I could work the repeater and a bit further along on the rise into Buckrabanyule I could still work the repeater which is 200 km away. This is 50 km further than I used to get the repeater, but why the hole in the performance? Two metres was not accessible at Borung or Buckrabanyule.

Why isn't the repeater working better than it did with the single antenna? We wish we knew for sure and because climbing the tower is something few of us are qualified to do, are available to do or young and fit enough to do. Hence we have largely to rely on professional operators to do any work on the main tower. However, we can do things easily on the hut masts.

I am putting forward this idea for why the antenna system is not performing as expected. Many years ago I was involved in assembling TV antennas of the phase array type. Usually it went well, but one installation did not work well when pointed to the transmitting stations, but did work passably pointing off to either side of where it should. In other words it had a null in the direction that it should have had best performance. This was a horizontally polarised antenna. The two sections of the antenna were accidently wired anti-phase to one another so rejected signals coming from the designed direction.

If that antenna had been vertically polarised it would have best performance looking towards the earth or towards the sky but not along the horizon. This is what I believe has happened with our repeater antenna system. The folded dipoles have an up and down side to them, such that the bottom side has a small hole drilled into it to allow any water that may get into the antenna to drain out and the top of the antenna is sealed. As we obtained the two new antennas about two years apart I believe that it is quite likely that the two antennas inside their aluminium tubing have been built slightly differently so that installed together they are anti-phase. It would not matter with a single folded dipole. Geoff VK3ZNA, when I spoke of this to him remembers that once he had such a problem in a commercial UHF multi-element antenna. Phil VK3ELV ran my assumptions through the **EZNEC Antenna Modelling** software and found that is what would happen.

If we were to turn one of the antennas through 180 degrees (with the hole to the top) we would likely find that the performance of the antenna system was good as we had originally expected. If that was proved to be so the hole at the top of the antenna would need to be sealed and a hole drilled in the bottom of the folded dipole aluminium tubing. Going back to my observations on my trip to Charlton and others experience on 6 mx it would seem that we do have a null in the direction that we require most performance and enhanced

performance perhaps a little higher radiation angle than normal to provide a workable signal into Buckrabanyule.

Before we decide to do such a test we do need to check the performance of a number of the antennas on Mt. Wombat. We do have the known good single 6 mx antenna on the hut which we can test against the tower antenna just be connecting the repeater to either antenna and observing the performance and taking real signal strength readings. The S-meters on most rigs are highly inaccurate so receivers such as I have with good switchable attenuators would be needed to give accurate results. We would need several amateurs to take part in these tests at varying distances from the repeaters. Not all would need really accurate S-meters.

These same tests should also be done on the various 2 mx antennas and also the UHF antennas at the same time.

These initial tests would have to be done **before** the 2 mx antenna on top of the tower is replaced. This is so that when the 2 mx antenna is replaced that the inverting of the one 6 mx antennas can be done to prove or disprove our antenna phasing experiment. This to me is a two part operation on all the antenna systems (1) test all the antennas on site to prove how each works with amateurs spaced around the service area of the repeaters, then (2) arrange a suitable time for the replacement of the 2 mx antenna and test my thoughts and anyone else's thoughts on how we can improve any antenna system. After all we want the best performance form our repeaters we can get. We were hoping that our 6 mx repeater would be at least the best in Victoria and maybe it will be sometime later this year.

Attached is my rough drawing of how I suspect our 6 metre antenna is performing. The extent of the red (original antenna)diagram to the right gives an approximate strength of the radiated signal from the antenna. The blue (2 antennas in anti-phase) diagram shows where the signal would go – not where we want it but with increased performance down towards Euroa and more skywards which is likely enhanced the signal to Buckrabanyule. Notch in the middle of the panel is the decreased signal in the direction that we want it. The green diagram is an approximate radiation of the two 6 mx antennas if they are in phase. The red signal is compressed top and bottom and the area within it is squashed out so that the green and red patterns have approximately the same area. The green pattern shows the anticipated signal strength improvement in the favoured direction.



A combined 6 metre, 2 metre and 70 cm antenna. Info supplied by Geoff VK3ZNA (This was published in the newsletter November 2016 - Ed)

1 & 5 = 19.5" x 4.0" mesh rolled into cylinder 2,3 & 4 = 38.25" x 4.0" mesk rolled into cylinder Spacing between elements id 0.5" Balun consists of 7 of No 43 ferrite beads Gain Claims = 3.07 dBi VSWR 1.7 to 1.9:1 6M 2M 8.56 dBi VSWR 144.1 - 147.9Better than 1.2:1 70cM 12.02 dBi VSWR 1.4:1 across band

Option, (to be tested) is to add 19" spike at top of antenna and check tuning on all bands especially 6 Metres. Geoff VK3ZNA

W7LPN 6 Meter/ 2 Meter / 440 Collinear



A Six Metre J-Pole Antenna VK3ZYZ.

A few years ago I made a 6M J-Pole. This was constructed from junk bits of Aluminium that was kicking around.

For those who do not know what a J-Pole antenna is, it consists of a $\frac{3}{4}$ wave length vertical with a $\frac{1}{4}$ wavelength vertical spaced about $1/10^{\text{th}}$ the height of the $\frac{1}{4}$ wavelength element apart, and the feed point is a similar space up from the base.

The long element is made from a length of tube longer than the ³/₄ wavelength required as it is also used as the antenna mount, extending below the antenna base.

The bottom of the long element is 20mm OD tube, while the short element and the top half of the long element is 15mm OD tube. The mounts on the bottom were some odd flat Aluminium extrusion, and pop riveted together.



Coax has been fed up the inside of the short element and exits out a hole at about the feed point. This feed point needs to be adjusted to suit and a good way would be to use stainless Steel hose clips as they will aid the adjustment process. Mine is screwed to the tube.

I note there are some designs that feed the long element and some have the feed point connected to the short one. Mine feeds the short element and has the coax braid connected to the long element. It may be interesting to try both ways to see if there is any difference.

And a lot of the designs have the coax running up the outside of the tubes, and wind the coax into a coil as an RF choke, but I like it on the inside to help decouple the RF from the braid.

The top of the short element is attached to the long element for stability, with a length of plastic pipe.



Note the line of holes as I was trying to set the feed point. The VSWR would not come down, and when I attached it to my NanoVNA, it is cut quite a bit high in frequency. It turns out I made the antenna to the wrong size somehow, (this was made years ago and I cannot remember the sizes used) but I have not actually measured the full height as I do not want to pull it down again. Adding a couple of CM to the driven element brought the VSWR into a reasonable range at the repeater frequency, according to the Nano VNA, so that is a mod I still have to get onto the roof to do.

Some folks make their J-poles with copper plumbing pipe and elbows, soldered together. That looks like a good way to go too.

One design I found on line has the following dimensions for 52.525Mhz.

6	U		
Long element:	4090mm.		
Short element:	1360mm.		
Space between elements:	128mm.		
Feed point:	134mm.		

There are many designs around, so have a go if you want to build an antenna.

Just an extra note, the same long vertical element can be used for multiple antennas. Start with a 6M one, then add a 2M feed and stub further up, and even a 70cm version up further.

Denys VK3ZYZ

Getting on 6mx without spending a fortune and have fun along the way.

Do you want a rig? Geoff VK3ZNA has some FM828 and FM900 series 25 watt (can be run at lower output power) transceivers that can be made to work on 6 metres. Geoff is prepared to offer some sets at a \$20 donation to the club. Conversion info is available on the DX Zone website.

The FM828 sets require crystals (which can be very expensive) but Denys VK3ZYZ's little frequency synthesising board can provide the frequencies required and also the sub audible tone 123 Hz that can be used on the repeater. The FM900 series are a synthesised transceiver so Denys's

synthesiser would not be required on them. Geoff has some information on converting PRM80 series transceivers too.

There has been available and hopefully still is, a small CTCSS sub audible board available from the Hunter Valley Amateur Radio club and it provides either 91.5 Hz or 123 Hz. The price I believe is around \$25. This can be fitted to sets that don't have this facility built in. Mine works well on my FT680R.

Simple antennas such as a ground plane using very little material could easily be made. Ideally the transceivers could be made to work on all the 6 mx repeater frequencies and 52.525 MHz simplex and have switchable 91.5 Hz and 123 Hz sub audible tones. This would mean that the sets could be used on virtually all 6 metre repeaters in Australia. Assistance with conversion could be provided as a donation towards the club. I expect to have more on 6 metres next month with more general information on sets etc from both Geoff and Denys.

Editor's Ramblings

- Even if you cannot transmit either because you don't yet have a licence or the transmitter in your rig is faulty you are always invited to listen to the monthly meeting on air.
- The 439.775 Mhz repeater locked on recently which has necessitated a trip to Mt Wombat. The locking on is apparently to do with a quirk of the IRLP. Turn it off and on again and all is good again. The new power controller that Josh has been working on will overcome this problem and give us more flexibility remotely to control equipment and to gain an idea how each service is operating.
- The UHF CB repeater has been taken out of service and overhauled. The antenna and the cavities are suspect and need attention too.
- Have a look on our website and look up Denys VK3ZYZ information on his VFO which should be applicable to use in many crystallised rigs to give them a new life. He hopes to have the VFO laid out on a board sometime soon. Look it up and keep on waiting for the finalised design. Great Denys.
- We have been reminded at the meeting on 1/8/2020 that subs are due or maybe overdue. There is no income from the Hamfest (cancelled) which gives us good working capital, hence please renew your membership if you haven't already done so.. Look on the website for a renewal slip.
- Josh has been working on a power management system for our repeaters which when fully tested will mean some trips to Mt Wombat will not be necessary as many features of the site will be able to be observed and also corrected remotely. A trip to the Mt Wombat incurs at least half a day's time plus fuel and wear and tear on vehicles.
- The Covid 19 restrictions are really causing some problems but take this as a time to complete projects do some research, curl up with a good book either fiction on one of the many books that I believe Peter VK3FPSR still has.
- Ray VK3YNV has established a Forum section on the club website. Have a look. You can register by typing in your callsign in capital letters. Those in the club with no callsign can register by using their name. At this stage the forum will only be open to club members. Let's make this a good forum as some are atrocious.

In order to assist people who are not familiar with the game of Cricket, we offer this explanation. Cricket is a game in which there are 2 sides - one out on the field, and the other in. Each man in the side that is in goes out, and when he is out he comes in, then the next man goes out until he's out and then he comes in. When the side that is in is all out, the side that has been out goes in, and the side that was in goes out and tries to get out the side that went in. Sometimes there are men still in and not out when the side that is in is finally out. When both sides have been in and out, including those not out and no longer in - that is the end of the game