SHEPPARTON & DISTRICT AMATEUR RADIO CLUB

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

March 2024 Newsletter
Next Meeting Saturday April 6th.

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

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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 6th, 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

April 6th	Regular club meeting
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, more details in the next Newsletter.

Presidents Report – March 2024.

Thanks to all those who attended our last meeting, as normal there was a lot of chatter, some projects, and some good ideas.

In my last report I asked if anybody had a specific area or interest that they wanted discussed, worked on, or developed further. To date I have had no response although my suggestion at the meeting of special interest groups led to some interesting debate.

One of the issues that our Club faces like many other rural Clubs is the wide geographic spread of our members. It makes it difficult to have such things as Coffee Mornings or additional meetings. One suggestion that was forthcoming was the idea of Zoom meetings for those interested in specific topics. In many ways we have been forced in a number of situations, mainly the pandemic to acquaint ourselves with Zoom. Perhaps we can discuss this at our next meeting.
We have had an offer from one member to train us on the use of Zoom for those unfamiliar with it.

Talking of training. We currently have no ACMA qualified examiners in the Club. The changes brought about by the ACMA in Licencing have now settled down, so we know where we are going with procedures and exams. If any Advanced call is happy to take on the role of Examiner, please chat to me about it and we will get the ball rolling.

A welcome to our two new members who have signed up recently. Aziz and Nathan have joined our ranks recently and we welcome new members to our group. We hope to see both of you on the April 6th and we hope you enjoy the friendship and fellowship that this group has to offer.

Keep on the Radio and keep the bands alive, the DX is happening, 15 and 10 are firing up, particularly 10.
Cheers,

Peter Rentsch
VK3AXI
President

SARDAC Club Minutes March 2nd 2024

In Attendance: VK3AXI Peter, VK3BLD Rob, VK3YYY Ian, VK3AFD Arthur, VK3ZYZ Denys, VK3YNV Ray, SWL Josh, VK3MFE Mark, VK3VSM Graeme, VK3ZNA Geoff, VK3ASK Peter, VK2RK Rob, VK3FALN Alan, VK3JSD Stevo, VK3FBEN Peter, VK3TJS Jacek, VK3EB Dallas, SWL Bill, VK3FUG Ray, VK3BPH Kevin, VK3GSR Geoff.
Apologies: VK3TEX Les, VK2JKN Jack, VK3KBY Barrie.

President Peter opened the meeting at 13:05.
Peter VK3AXI explained the reason for his absence from the AGM for personal reasons.

Geoff VK3GSR was quizzed about his cruise.
The minutes of the previous meeting were included in the newsletter.
Ian VK3YYY Moved the minutes be accepted as read. Seconded Peter VK3ASK. All in favour.

Correspondence: Inwards: Letter from Lyn Champness advising of medical problems, letter of resignation from Mike VK3FMAA. Automated response from Consumer Affairs acknowledging receipt of the change of rules application.
No outward correspondence.

Business arising from Correspondence.

Kevin VK3BPH moved that we should send a Get-Well card to Lyn, Seconded Alan VK3FALN. All in favour.
Rob VK2RK moved that a letter should be sent to Mike VK3FMAA accepting his resignation and thanking him for his kind donation of the BBQ. Seconded Denys VK3ZYZ. All in Favour.

Treasurers Report was tabled by Ian VK3YYY.
Income of $585.11 from Membership payments, donations, and interest.
Expenditure of $866.10. Payment to CAV rules change, Payment of CB Repeater license.
Ian VK3YYY moved that the treasurers' report be accepted. Seconded Rob VK2RK. All in favour.

Technical Report: Ray VK3YNV spoke about the fault in the power Management unit on Mt. Wombat. New Power Supply and Mains Filters are to be installed.
The CB Repeater on Mt. Wombat has now been transferred to the Club.
Ray spoke about the DMR repeaters.
Ray Moved that the Technical Report be accepted. Seconded by Peter VK3ASK. All in favour.

General Business

Josh SWL spoke about the printing of signage to be displayed on meetings days. The signs are to be printed on polyester sheets.
Peter VK3AXI has kindly donated 2 A Frames to be used for the signs.
Graeme VK3VSM spoke about the works being undertaken on the club website
Geoff VK3GSR has offered his home for the June meeting. Lunch will be provided on the day.
Jacek VK3TJS showed the advertisement that will appear in the Shepparton News each week.
There is a page on the Club Forum where members can make suggestions for worthwhile projects for the club.
Peter VK3AXI suggested the Executive needs to have a meeting to decide what projects need to be funded, and what funding we should apply for.

Josh suggested we setup an online storage where all Club documents can be stored securely and be available for the committee to access. It was suggested that Google Drive would be a good choice. Josh will set the page up and advise the committee.
Peter VK3AXI suggested establishing Special Interest groups within the club. Suggestions such as a Fox Hunt group were mentioned. General discussion suggested this could fragment the club and should not be considered.
Ray VK3YNV suggested that we need a permanent venue where we will be able to set up projects and leave them between meetings. The Men's Shed are rumoured to be moving and their building could be an ideal choice for the club.
Meeting closed at 14:29

Editor's Comments

Not much from me this Month, I think it is all pretty well covered by the report given by our president Peter.
I can report some good news, I understand that the door in the club room leading out to the court yard has now been repaired, so hopefully we can get back to regular BBQ's and spending some time outside.

A big thanks to Robert Campiciano VK2RK, for his contributions to the newsletter, it is always great to receive technical articles and Rob has come up with some interesting topics for this month.

If you have any articles, you would like printed in this newsletter, please let me know and I will certainly make sure they are included.

See you all at our next meeting
73's Peter VK3ASK

Terminator for Travelling Wave Antenna.

Robert VK2RK has come up with an ingenious way to create a terminator capable of handling up to 400 watts on AM.
This is very similar to an idea I used years ago to build a high power dummy load, using an oil filled container.
Over to you Rob.

The terminator has now been in service for several weeks and used of AM sessions with a power of 400 Watts, no failures so far, dismantled the assembly to inspect for any heat stress, none was found.
The oil used is Paraffin oil (Food grade)

3 Wire Folded Travelling wave antenna terminator

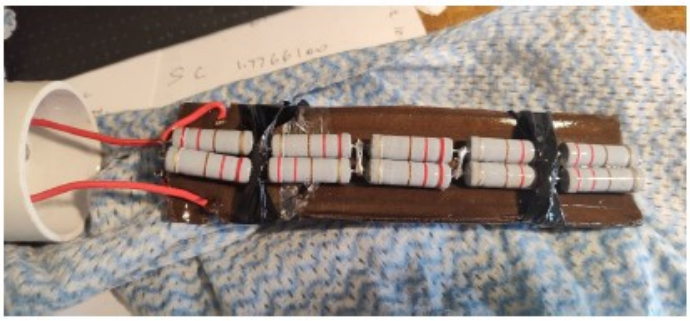
The original solution of using non inductive parallel resistors suffered failures due to ingress of moisture in the resistors, several configuration had been adopted in the end those resistors with the ends encapsulated with polyurethane solved the failure problem but not the observed reactive components.

Wire wound resistors and thin film resistors

The originally used resistors, are a non-inductive wire wound type but did exhibit some inductance when used in series parallel to achieve the target power handling capacity the resulting inductance made the antenna system slightly reactive. In a travelling wave antenna this stray reactance must be kept at a minimum.

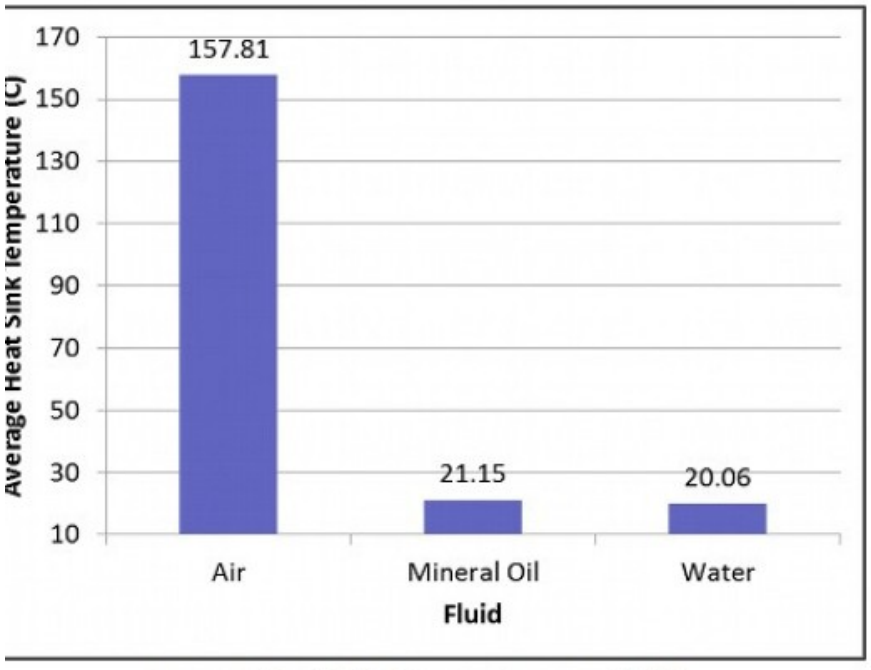
The best solution was to use a singular pure carbon resistor with the required power handling capacity, such a resistor is difficult to source and very expensive to purchase. The only option was to use readily available resistors and wire them in such a way to keep reactive components to a minimum.
Thin film carbon resistors are a good solution, but the maximum power handling is 5Watts in air,
The other option was to use flange resistors but they require a metal heatsink to disperse the heat.

As the required power handling target of the termination resistor had to be 300 to 400 Watts, the only other solution was to use 5 Watt thin film resistors with some method to dissipate the heat besides air.



option was to use mineral oil, this presents containment issues, I decided to use a
:, built in such a manner to allow for oil expansion and contraction.
at the end cap is a grove on the inside of the cap and tube forming a breather
his allows pressure to equalise as the oil expands or contracts.

f oil considerably increases the heat dissipation of the resistors, the chart below
what extent over 7 times that of air



Average Heat Sink Temperature per Fluid

Replacing the good old 6146, by Rob VK2RK

Below is an article sent to me by Rob, VK2RK.
As many people are still using the 6146 valves in rigs such as the Kenwood TS520, and TS820 series, this article will no doubt be of interest to many members.

6146A/B/W

What Valves to use when replacing the finals in a Kenwood Hybrid radio
When the TS520S was first released they came with 6146B valves driven by a 12BY7 in later evolution of this radio they came fitted with the Matsushita S2001A, essentially the Japanese version of the 6146B.
This morning an interesting discussion took place on 40 mtrs about neutralization and what tubes to use for replacement. The argument (That I am to blame for) is that of using the 6146W variant instead of the "B"
The argument as to the suitability of the 6146W as a replacement got very interesting indicating that some old wife tales exist persisting for over 30 years.
In the 60's 70's valve manufactures would produce devices that referred with the same type number but would be slightly different in the specifications, so not all are equal but in practice there would be very little difference in performance.
Having said this the 6146W was originally designed to replace the 6146A having a heavier plate construction meeting military requirements, in later times manufacturers constructed the one tube 6146B and labelled it as a 6146W using a specification selection test grading the production, essentially the same tube as the 6146B.
I know there is lots of comments on the web stating that the 6146W is not the same or suitable as a replacement but some are not aware that if they had an early manufactured tube indeed it would not work as well, later production tubes would have worked equally as well.

"Essential information regarding 6146 tubes by K9STH
The 6146 family of tubes has been used in many home-brew commercial and transmitters over the years. The following information explains important points to look out for when replacing these tubes or home-brewing your own 6146 based transmitter. Normally I don't just copy and paste an entire article but this information should be included in every 6146 based rig's instruction manual, in bold type, at the start. KF5CZO 6146/6146A/6146B/6146W 8298/8298A/6293

**6883/*6883A/*6883B *8032/*8032A/*8552*
The 6146 and the 6146A differ in the type of heater (filament) and can be "mixed" in use (i.e. one 6146 and one 6146A in a DX-100). There are no other differences. The heater in the 6146A was developed by RCA and is called a "dark heater". The type 8298 is the same tube as the 6146A.
The 6146B is the same tube as the 8298A. The 6146B is a different tube from the 6146/6146A/8298. Sometimes they will work in place of the 6146/6146A, but often they will NOT. This is due to the different bias requirements of the 6146B, different inter-electrode capacitances, among other things. Often it is impossible to either neutralize the final in a rig designed for the 6146/6146A or the neutralization does not "hold" for very long (often less than an hour).
The 6146B/8298A have a very bad habit of producing VHF and UHF parasitic oscillations which can cause all sorts of problems including TVI as well as the tube literally "burning" itself up. This is when they are used in circuits that were designed for the 6146/6146A.
Collins Radio had to modify production of the later S-Line units to allow the military to use 6146B type tubes. This required a redesign of the neutralization circuit which is in place in the later 32S3, 32S3A, KWM-2, and KWM-2A units. The earlier versions of these models must use the 6146/6146A tubes. The later version can use all three types.
There is a "pulse" tube that is a very heavy duty version of the 6146 and can be substituted without any problems. This is the 6293. A 6293 will outlast a "plain" 6146 by at least 5 times the life (over 10 times is not that unusual!). We would "kill" back in the late 1950s and early 1960s to get our hands on a pair of 6293 tubes for our DX-100s, etc.
The 12 volt equivalent of the 6146 is the 6883. The 12 volt equivalent of the 6146A is the 6883A/8032 and the 12 volt equivalent of the 6146B is the 6883B/8032A/8552. The same thing is true of these tubes, do not replace the 6883/6883A with the 6883B series of tubes.
Back in the late 1970s Motorola tried to replace all of their 6883A/8032 tube stock with 6883B/8032A/8552 type tubes. A very large number of Motrac units used the 8032 and only the very "latest" versions used the 8552 tubes. At the time I owned the Motorola reconditioned equipment center for the south-central US and we used, on average, over 100 8032 tubes a week. Just as soon as Motorola replaced the 8032 with the 8552, we started having virtually all of the Motrac units that were shipped to the customer arrive with the tube envelopes "shattered" by "normal" shipping. We had never had this happen before. The construction of the Motrac is such that the tubes cannot be seen when the unit is assembled. What was happening is that in the 2 to 5 minutes that the radio was being tuned and final QC'd, that they were oscillating at UHF (parasitics) and the tubes were getting so hot that the glass envelope was destroyed!
We told Motorola what the problem was. However, they refused to believe us until they had well over 1000 warranty complaints from their service stations. It cost them

quite a lot of money in warranty repair bills before they again started placing 8032 tubes in the boxes marked 8032!
I have quite a number of "boat anchor" rigs that use the 6146/6146A type of tubes including Collins 32S1, 32S3; Heath SB-110A, SB-401, DX-100, DX-35, Apache. I have owned rigs like the Knight T-150 and T-150A and others that were designed for the older tube. Frankly, all of them are much "happier" with the 6146/6146A instead of the 6146B.
Now, for the 6146W: Unfortunately, some of these are "ruggedized" 6146A tubes and the later ones are 6146B equivalents. The only way to tell is by the manufacture date on tubes by a particular manufacturer. Unfortunately, to my knowledge, there is no master list giving this information. Each manufacturer changed from the 6146A to 6146B construction in their 6146W at different times.
I haven't seen a notice from Heath about using the 6146B tube. However, several manufacturers, including Collins Radio, originally said that it was fine to use the newer tubes. But, after a very short period of time they found out different!
Thus, I would be very careful about using the 6146B and the 6146W tubes in place of the 6146/6146A. You might "get away" with it. However, you might also do some damage to your final amplifier section. If you decide to try the 6146W, then be sure and neutralize the final and check it after operating for an hour or two. If the neutralization remains OK for several days, then you should be "home free". But, if the neutralization changes, then you need to replace the 6146W tubes with the 6146/6146A types.
Glen, K9STH"

I have used 6146W in TS520S with no problems at all giving a full 120Watts at 10 Mtrs. I don't think many early 6146W exists thus all that are on the market now are the late production units, equivalent to the 6146B