Illawarra Amateur Radio Society

Propagator June 2022

Upcoming Meeting on the 14th June 2022

The next meeting will be at the Blue Scope Steel visitors centre 7.30pm.

Blue Scope Northgate entrance off Springhill road

THE IARS FOLLOWS A COVID19 SAFE PLAN

Our last meeting 10th May 2022

Excellent presentation from Paul VK2PAD/VK0PD

Thanks to Paul VK0PD, the IARS members were treated to a fantastic insight into the world down under, literally the “World Down Under”. The place on earth where if you don’t take your antennas down in time, they disappear completely, destroyed under a few meters of snow within a few seconds. If you have the courage, strength, and heated gloves, you could spend a few hours digging for the remains of your antenna after the storm. 😊

However, once mastering the adverse weather and ensuring his antenna system was safe, Paul managed to get a huge following of amateurs from around the world, some looking for that elusive VK0 call sign, others wanting to have a bit more than just a contact. In the end many lifelong friendships were made.

Paul shared his challenging experiences working in the harsh conditions but also the easy side, yes there was an easy side.

A very big thank you to Paul for travelling a couple of hours up to Wollongong from the South coast to share his experience with us.

Unfortunately this Propagator is not big enough to share all of Paul's experiences and if you missed the presentation at the Blue Scope visitors centre and would like to meet Paul, we have some good news……..

Paul will be presenting at the Mid South Coast Amateur Radio Society on Saturday 28/05/2022

If you would like more information to visit MSCARC, please contact the secretary of MSCARC David Wolff VK2LDW at email address wolffdh@gmail.com

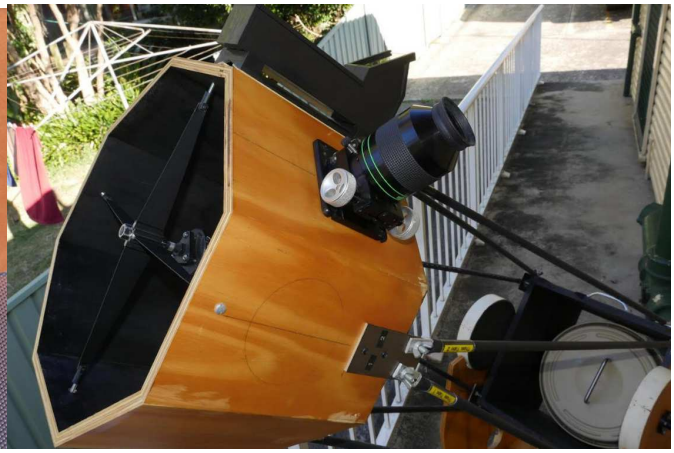
(Paul's QRZ page, VK0PD - Callsign Lookup by QRZ Ham Radio)

Paul VK0PD/VK2PAD keeping us entertained and Wazza VK2MWK ready for some brew made by Vinnie VK2VIN (yes we have the privilege of our very own barista made coffee 😊)

Diets are normally overrated meeting nights 😊

A very big thank you to Paul for a most enjoyable evening

Next Meeting



Ned VK2AGV and the Home brew telescope

Ned is a very keen astronomer and after hearing about his setup with a home built telescope, I asked Ned if he wouldn't mind sharing this with us. Come along to our next meeting and ask the resident IARS astronomer how its done.

As always there will be a nice cuppa and cakes to have while you catchup with your good mates.

LOOK FORWARD TO SEEING YOU THERE!!!!!

Is back 😊, for $5 you can earn some good cash and all monies go to your society, win-win.

As usual see Simon VK2KU, the fella with the coloured balls and big smile

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Don't forget the two weekly IARS nets as below

TUNE IN **to the IARS NETS** Echolink

IARS Tuesday evening weekly 80m NET on 3.666MHz at 8.30pm hosted by Mal VK2DXM and Rob VK2MT

Don't forget to join us every Tuesday evening, *expect the second Tuesday of the month* for a great get together on 80m. Signal reports, news and general discussions are the agenda.
There have been some really good conversations so if you are bored on Tuesday evenings, pop in for a chat.

Saturday Morning EAST COAST NET hosted by Steve VK2BGL

You are invited to join Steve every **Saturday at 9.30am** on our **146.850MHz** repeater (linked to 146.675MHz) or **VK2BGL-R** on Echo-link for a very enjoyable morning of general discussions from amateurs who log in from all over the world.
This NET is linked to multiple repeater systems including VK2RFS south coast. Join Steve and everyone for a very enjoyable 2 hours on Saturday morning

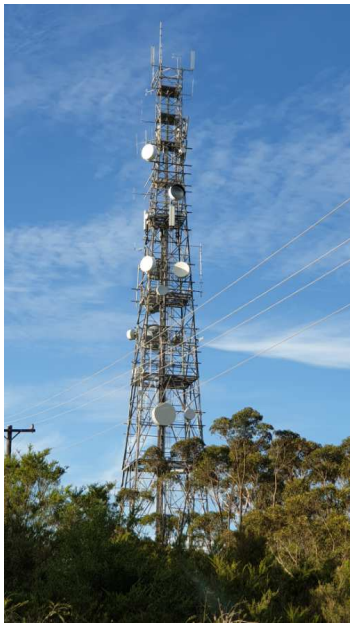
IARS

RES RADIO & ELECTRONICS SCHOOL

Looking to Upgrade to Standard or advanced and even obtaining your Foundation license during Covid lockdowns we have remote assessing available.

The IARS **can help** with obtaining your Foundation, upgrading to Standard or Advanced from *the comfort of your own home.* We have approved AMC accessors that can offer remote assessments for the AMC. Please contact Keith VK2KQB at iars.keithb@gamil.com for further information. Your society supports further learning, please find out more on how we can help you. AMC website is Australian Maritime College - Australian Maritime College | University of Tasmania (amc.edu.au)

REPEATERS



VK2RUW (Knights Hill) **VK2RMP (Maddens Plains)**

STATUS

- 438.225 with a - 5MHz offset. **OK**
- 146.975 with a -600kHz offset NO CTCSS, C4FM enabled **OK**
- 146.850 with a – 600kHz offset (linked to 146.675) NO CTCSS **OK**
- 146.675 with a – 600kHz offset (linked to 146.850) NO CTCSS **Currently off air for repairs**
- 53.650Mhz with a – 1Mhz offset **OK**
- 438.725Mhz with a -5mHZ offset DMR only, **BACK ONLINE**
- 1296.850Mhz Beacon with simplex repeater function – **OK**

The IARS welcomes any feedback on our repeater systems.

Please send all your feedback to iars.keithb@gmail.com and it will be passed on to our repeater team.

Any donations to help us maintain our great repeater system will be greatly appreciated. Please check our banking details on our website at www.iars.org.au under the Contact details page.

As reference of the donation please add your Call sign and the words “Repeater Donation”

438.725Mhz with a -5mHZ offset

YES!! The IARS DMR is back at Maddens Plains

Thanks to Matt VK2FLY (ARNSW), Simon VK2KU, Rob VK2MT, Keith VK2KQB the long awaited DMR unit has returned.

The NEW DMR is based on the Motorola DMR repeater system which will have none of the bugs and connection drop out problems we had with the previous DMR system.

The unit is fed from 240Volts AC and has a 60Ah backup battery installed. The unit has its own battery charger and alarm management system. The DMR unit is connected to the outside world with a special purpose programmed router (thanks to Matt) which is connected to a 4G modem. This 4G modem is a new addition to the site and with extra ports allows us to add internet connectivity to the site.

Nice, only 1U with all the bells and whistles, 50Watts continuous thrown in for good measure 😊

The Motorola unit installed at Maddens with the ARNSW RadNET router shown on top

Diplexer cavities for the DMR in panel below (shown above the Philips)

The ARNSW Radnet is a linked network of DMR repeaters with coverage on the east coast and some regional areas of NSW.
The network currently provides Hand Held coverage to area of approximately 134,000 Sq Kilometres.

The networks latest addition is a DMR repeater at VK2RMP which transmits on 438.725 MHz and receives on 433.725 MHz with 50 Watt and colour code 1.

The repeater carry the talk groups of the VKDMR network as well as the ARNSW talk group 1910

More information can be found on the ARNSW Radnet Microsite https://arnsw.net/site-loop.php/505076 or the vkdmr website http://vkdmr.com

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LOOKING FOR SOMETHING to SWAP, BUY, SELL, an OLD PART

Parts you may need for repairs or some radio gear you no longer need that could go to a new home…….?

Email iars.keithb@gmail.com

Unfortunately no giveaways this month

Disposables Donation Table

Each meeting we have the disposables table with items donated to the club.

Please keep the support for this going and bring oddities in and take some home for a small donation to the IARS. With the next meeting please bring along an donate those old items that you no longer use and may even have thought about throwing it in the bin, someone else may be looking for that very part. Wire, pieces of coax, old parts, plug packs, power supplies, capacitors, resistors, coils, tubes, knobs, anything that someone can use.

This months meeting saw a GREAT disposable collection thanks to Rob VK2MT, items went from FREE to anything you wanted to give to the IARS, even 50c per item was the order of the day 😊

Thank you Rob, for donating your trash*** which became treasure to many of us.

If you have some trash*, please bring it along to the next meeting and give it new life**

*** Trash , just in case the wrong impression is given, it is not literlley trash 😊 no rubbish please*

got an idea

Tech corner

Share it with us, this could be suggestions, technical ideas, circuit diagrams, IARS community projects, pictures of your latest shack project, in fact ANYTHING of interest

Let us know by return email iars.keithb@gmail.com

Also, if you have some IARS related pictures or information that we can put on the IARS website, please let us know and we can get that happening.

This month Tech-corner looks at "Double fuses, do we really need them?".

The pro's and cons of having a fused negative lead

Working in the electrical engineering field my whole life, I have never seen this practice applied to any other equipment besides amateur radio and some other radio gear. Putting two fuses effectively in series made little sense to me until someone told me that it was to protect against incorrect polarity. Then it even made less sense, LOL. Only if you were in a system where the radio or antenna was grounded common to the DC supply earth would it be feasible, lets for arguments sake say it is for polarity protection.
This would mean if that was true, the engineering world has added another point of failure to a supply lead to cover incompetence of radio people? I don't think we are that bad, are we?
Let's look past that and see what the implications would be having a double fused power lead on a radio system.

Once we have finished connecting our radio safely, without incorrect polarity 😊, this fuse pretty much becomes redundant in most installations where the DC source is part of the overall system earth. In fact if it was connected to a system that was already fused it would even be more useless. Most DC systems would either have a fuse or some kind of protection, unless you were connecting directly to a battery without a fuse, NOT GOOD PRACTICE!

In DC power supplies that are floating and not connected to other radios, all that will happen during a short, overload or incorrect polarity is, which fuse "pops first". Perhaps both, if the timing of melting is perfect. This would mean that all we needed was the positive fuse in a floating system, why have both? There is no where for current to flow other than the power leads. Both fuses would be effectively in series and we all know how current flows in a series circuit.

If one of them did not melt completely, that fuse may be left degraded only to fail on you out in the field when you don't have a spare. 😊
These situations can only happen if the radio was isolated, frame and antenna from the DC supply, and if the radio has been connected directly to a battery positive that had no fuse in line with it, not common practice note, again!

However, most installations do not have the radio completely isolated from the Dc power source and the positive already has some form of fuse already installed. (Example Car fuse box for AUX power)

Back to the double fused power cable ……

Unlike a point of failure on the positive fuse where if it goes open circuit, your radio goes dead, this negative line point of failure could cause you headaches, why? , because you may not know its failed until some smoke pops out unexpectedly OR your radio starts to operate very strangely OR your coax starts to warm up at 100Watts OR even sparks from the rusty screw on the mounting bracket causing voltage spikes and surges …… the list goes on.

All rigs have the Antenna Earth connected to the radio Chassis, this is inevitable due to the ANT socket at the back. Also, most radios have their NEGATIVE also connected to the Radio chassis, I have never found one that has this isolated from the chassis.

If the radio is bolted to the earthed chassis of the vehicle (or any structure) and is supplied with the double fused lead…. Then …….

- If you have a fault in the negative fuse/holder, current will be flowing through the bracket attached to your car chassis and no current will be flowing through the negative lead OR …..

- If your rig was floating and not connected to the car chassis via the bracket, current could flow from the radio chassis to the vehicle chassis VIA your coax, if your antenna is bolted with a bracket to the car, in most cases this is certain.

This would mean there are **<u>three paths</u>** for the current to flow in the negative path, with only one return via the positive lead and positive fuse.
The exact amount of split will be dependent on the resistance of the other paths. This also means that the negative fuse would be pretty much useless to protect against overcurrent in this environment, it becomes redundant.

Now we know that the negative fuse does not play a part in improving overload or short circuit protection other than our poor judgement of polarity if connected to a common earthed system*, should we just leave it? ……..
*(also useless if we already have a fuse in the battery positive circuit in the system)

Well that I have to leave up to you, but In my opinion the pros outweigh the cons. (unless you are a perpetual incorrect polarity offender 😊), but then shouldn't the fuse in your fuse box melt anyways?

In most installations, where the radio chassis and antenna connections become part of the DC source, this negative fuse just becomes **another point of failure**. If it came loose or failed for some reason, it may cause your radio to fail.

This has happened to a good friend of mine who had an ICOM rig mounted in his car which I had to repair. The Coax Connections burned completely off the PCB because the negative fuse went open circuit. The radio ground was fed via the coax, 100Watt rig drawing current through paths that were not meant to carry high currents. He did not know this fuse was open circuit. Only the High SWR, a puff of smoke and dead rig informed him there was a problem.

This point of failure, *(fuse holder with two spade clips with a fuse)*, has been inserted into a perfectly good copper conductor lead only to cause more problems than what it could fix.

Problems come into play when unbeknown to the user, this fuse/holder fails due to age or bad connection, the current flow will now rely on the coax and the **excellent** electrical properties of your painted bracket. In one repair case I had, the rig lost its microcontroller due to high voltages presented to the rig internals because of a broken negative fuse holder, the negative was supplied via an already dodgy coax connection. Arcing caused high voltage spikes destroying the rig, but at least it was protected against incorrect polarity, right? 😊

Will station rigs share the same problem as vehicle/battery installs?

With station installations that **share the same DC power supply**, you could have huge DC currents flowing around the shack from one radio to the other if this negative lead fuse goes open circuit.

Currents will travel through conductors not meant for that purpose, example the coax feeders.
As all antennas share the same earth, the DC current will create a path through the outer sheath of the coax back to the power supply negatives, creating loops of current flow via other radios connected in the system.

If the point of contact was via a smaller conductor, you cold heat this wire up to a point that could melt the insulation and start a FIRE!.

This is not an ideal situation in my opinion.

In my radios, all DC leads that had the dual fuse system have had the negative fuse removed and a soldered bridge put in its place, however this was my choice after seeing the damage caused by broken negatives in the past and I make sure RED = THE POSITIVE TERMINAL 😉

This article was only meant to assist in the understanding of possible implications during a negative fuse failure in multiple earth point systems, it does not imply anything else.
If there is another reason they have this extra fuse, please let me know and I will publish it in the next propagator, should be interesting.

Take care of your expensive rigs 😊

73
Keith VK2KQB

Please send your ideas and tech stories to iars.keithb@gmail.com so that we can publish them in upcoming editions.

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ICOM goes SHF in one nice package.

Courtesy of AR magazine Vol 90 no.3 2022

WIA news

Beyond 1296 MHz – Icom moving up the bands

In a long-speculated move, Icom has announced that it will be using the US hamvention at Dayton over 20th to 22nd May to show-off a prototype model of it's SHF Project, a high performance multi-mode transceiver for the 2.4 GHz and 5.7 GHz bands.

The company has often led the way over the past decade with top-line multi-mode transceiver formats that included coverage of bands above the VHF amateur allocations. The IC-910H and IC-9700, come to mind. Both include

But, going beyond the 1296 MHz band presents a number of technological challenges, as many VHF-UHF enthusiasts well know. Frequency accuracy and stability are at the forefront, along with phase noise in local oscillators. Then there's the issue of transmission line loss between the rig and the antenna.

Aside from power loss when transmitting, transmission line loss impacts receiver noise figure and thus ultimate weak signal performance. And there's nothing that digital modes like JT65 and do to combat receiver noise figure issues.

Savvy operators on the higher bands – those who assemble their own systems or build their own rigs – put their receiver front ends and their transmitter final stages as close as physically possible to the antenna feedpoint. It's good engineering practice.

So it comes as no surprise that Icom's SHF Project follows this lead. It separates the general transceiver operations, putting it all into a compact IC-705-style box they're calling the "Controller". This connects via a LAN (local area network) cable to the "RF module" that goes up at the antenna, close to the feedpoint.

There's a double advantage to this. Firstly, a coaxial feedline to an antenna only needs to be very short – 10s of cm. Secondly, to achieve the necessary stability and accuracy, the transceiver's frequency management system relies on deriving a high-precision one-pulse/second (1 pps) 'clock' signal from a built-in Global Navigation Satellite System (GNSS) receiver. The GNSS antenna connector is on the RF module.

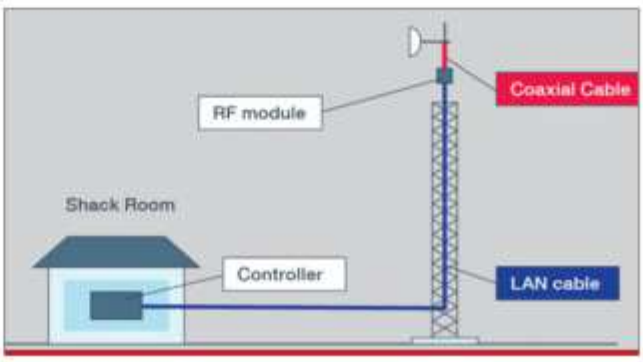
This is the style of technology that amateurs have long pioneered to explore the use of narrowband modes – CW, voice and digital – on the higher bands, well into the microwave spectrum.

The LAN cable carries DC power from the shack to the RF module. Power over Ethernet (PoE) is a well-proven technology, so Icom's not going out on a limb, here.

It seems that Icom is introducing these long-adopted and well-proven technologies into a plug-and-play rig, hoping to encourage wider use of the bands where amateurs are the secondary service in the allocations between 23cm and 3cm (10 GHz). One can but wish them the best of luck.

Roger Harrison VK2ZRH

The RF Module that mounts with the antenna.



The general system envisages the RF Module at the antenna links to the controller via a LAN cable; a separate antenna for GNSS frequency management input connects to a socket on the RF Module.

Silent Key

HANK VK2BHL

Unfortunately we have to announce the passing of past Illawarra Amateur Radio Society committee member, Henri Hans Laauw, known as Hank VK2BHL.

In the past Hank was on the IARS committee and served as the secretary.

Hank passed away at the age of 81 on Tuesday the 3rd of May 2022.

Hank was currently a member of the CCARC and had joined Steve VK2BGL with the East Coast Net on 146.850MHz Saturday morning s for a chat.

Originally form Holland Hank lived in Wollongong before moving to Heathcote in Sydney.

He recently moved up to Mackay QLD to be with his sister after many years living in Sydney.to Mackay in Queensland, with his sister.

Hank was admitted to the Mackay base hospital on April 10 with respiratory issues.

There will be no funeral with only a couple of family members attending his service

He will be sadly missed by all,

Vale Hank VK2 "Big Hairy Legs."

Recent IARS club events

IARS goes to MAYHEM with 5 tables of goodies 😊

Lots of stuff with 4 handsome dudes, VK2KQB, VK2VIN, VK2XQX, VK2MT

Setting up the stuff while the bludging dept takes pictures, Simon phoning home with a banana

That's the way to do it MT and XQX

And who said 5 tables of stuff + tables for the stuff would not fit in the back of the Ute ?

A great day out with most of the equipment and parts sold.

Looking forward to next years event

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Harry Angel Sprint Contest 80m

We hope all who participated this year in the Harry Angel Sprint contest enjoyed themselves. I hope that everyone also remembered to submit their logs before the cut-off (14days after contest)

This year saw a small bug in the software in which participants either had to email their log or submit the log with some lines deleted to allow submission.

We await the results

Upcoming events .....

VK Shires contest

START TIME 00:00 UTC 24 Hours Saturday 11th June 2022, Ends: 23.59 UTC Saturday 11th June 2022

https://www.wia.org.au/members/contests/wavks/

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Trans-Tasman Low-Band Contest

Trans Tasman Low Band Contest

Contest Manager

Alan Shannon VK4SN

Next contest - 16 JUL 2022

The Trans-Tasman contest, held on the 3rd weekend in July, aims to encourage Low Band activity between VK and ZL Only contest bands 160 80 and 40M are allowed with SSB, CW and Digital (RTTY OR PSK)

From 2018 this contest is an official WIA Contest and will count towards the Peter Brown Contest Champion Awards.

MORE INFO BELOW

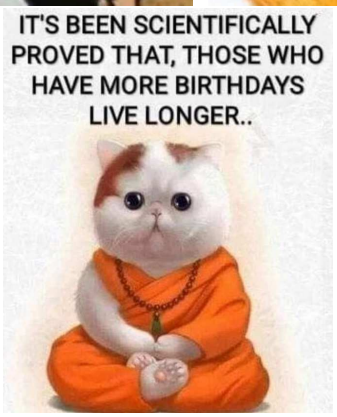
https://www.wia.org.au/members/contests/transtasman/

Upcoming meeting presentations ……

- July 2022 : Microcontrollers for amateur radio projects, Simon VK2KU and Keith VK2KQB. How to select, configure and program those micros that can make your next project easy.
- August 2022 : IARS AGM , Show and Tell, everyone ☺
- September 2022 : DMR, ALLSTAR and other modes with Simon VK2KU
- October 2022 : Trivia IARS with great prizes, Keith VK2KQB
- November 2022 : IARS annual auction with auctioneer Simon VK2XQX
- December 2022 : Christmas dinner with show and tell

Fun Corner

Please send in your funnies to iars.keithb@gmail.com



That's all for now, hopefully catch you all at the **Blue Scope visitors centre on the 14th of June 2022**

Stay Safe

73's
Keith VK2KQB
IARS Secretary

IARS, Amateur Radio in the Illawarra since 1948