Illawarra Amateur Radio Society

Propagator February 2025

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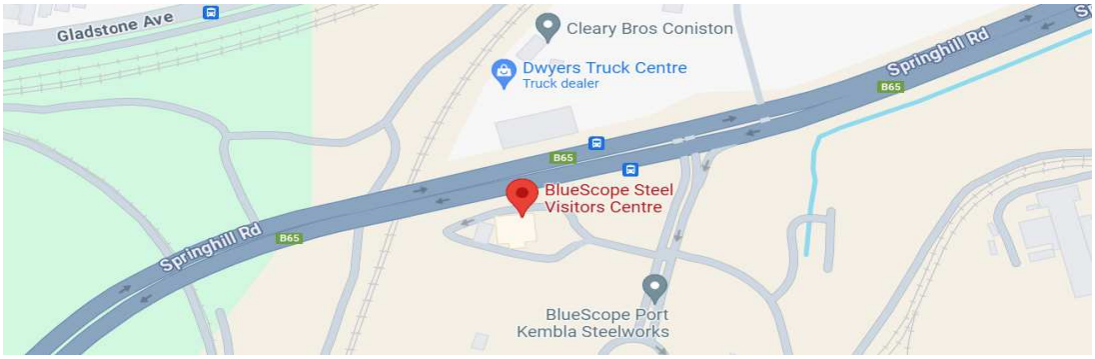
Upcoming Meeting on the 11th February 2025

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

Blue Scope Northgate entrance off Springhill Road (See website for detailed map)



AMATEUR RADIO IN THE ILLAWARRA SINCE 1948

VK2RUW (Knights Hill)
34.6231° S, 150.6942° E
QF55IJ

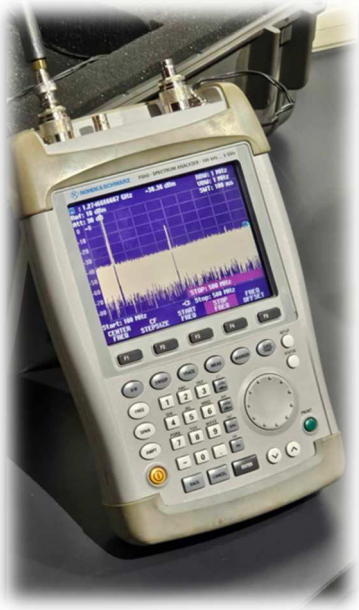
VK2RMP (Maddens Plains)
34°15'30.6"S 150°56'47.4"E
QF55LR

VK2AMW 2025!

Our last meeting 10th December 2024

What a good-looking happy bunch 😊

The IARS end of year Christmas meeting



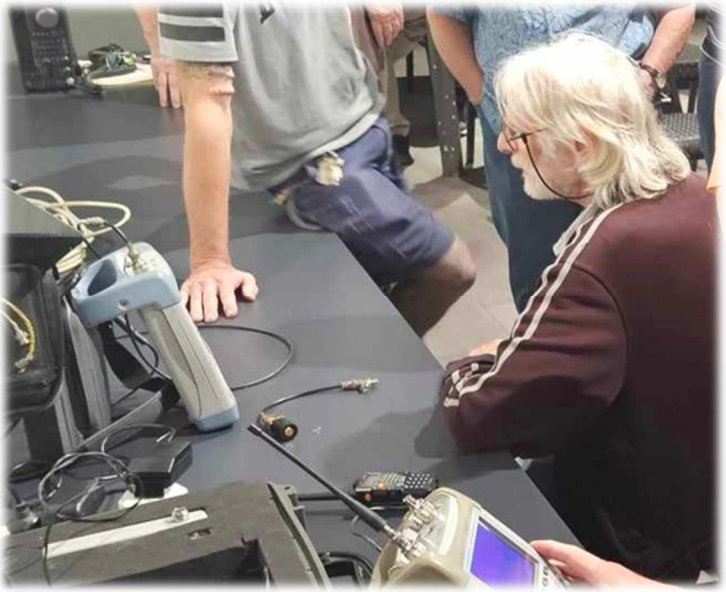
Besides having a great evening with good friends, delicious pizza and drinks, we also had to throw in some technical fun, testing the harmonics of common everyday handheld transceivers.

There were a few surprises and yes, we had “clean” & “not so clean” winners 😊


ROHDE&SCHWARZ
RADIOCOMMUNICATION SERVICE MONITOR
TX-TEST
CLEAR
ENTER


ROHDE&SCHWARZ
RADIOCOMMUNICATION SERVICE MONITOR
RX-TEST
465.92500


ROHDE&SCHWARZ
RX-TEST
146.78000 MHz
-92.6 dBm
0.0 mV



And then of course, the MAIN course 😊

What an awesome evening to end 2024.

Thanks to all those that attended, and if you couldn't make it, there is always the next one. It will be here before you know it.

NEXT MEETING !!!

No, it's not Valentines Day, **no excuses** needed for the XYL, be there or be square 😊

and of course, you don't want to miss out on ……

Projects 101 **with Simon VK2KU**

What has the IARS project wizard Simon come up with this time?

We have promised to keep it a secret.

It is something very interesting for the shack, to find out more about this new project you will have to come along to the next meeting.

I am allowed to give a hint, it has something to do with these 😊

Looking forward to catching up with everyone for our first meeting of 2025.

As usual there will be a nice cuppa with biscuits, and a good excuse to catch-up with your mates.

Disposables Table

Will be back at the next meeting, please bring along the stuff you forgot to take to the auction, someone will give it a new home 😊 Apparently a little bird informed us that Roger VK2VRK has some power supplies he is donating to the table, come along and grab one.

SNOWBALL

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

The Snowball winner drawn was super lucky Dennis Fielding VK2VCC, why super lucky?

This was Dennis's first Snowball. Congratulations Dennis you have some extra cash to buy some more Radios.

Licensing and upgrades?

IARS

RES
RADIO & ELECTRONICS SCHOOL

The IARS **can help** with obtaining your Foundation, upgrading to Standard or Advanced from *the comfort of your own home,* and its FREE!!! *

We have approved **ACMA** accessors that can offer remote or face to face assessments for the **ACMA**

Please contact Keith VK2KQB at iars.keithb@gmail.com for further information on training and assessments.

Your society supports further learning, please find out more on how we can help you.

The IARS assisted 5 members in getting *on air in 2024*, so why wait?

IARS NETS

1. Saturday Morning, the EAST COAST NET hosted by Steve VK2BGL at 9.30am

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.

The IARS would also like to thank Doug VK2XLJ and Angelo, VK2NWT who are is always willing to assist whilst Steve is away.

2. **IARS Tuesday evening weekly 80m NET on 3.666MHz at 8.30pm hosted by Mal VK2DXM using VK2AMW.**
   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. Normally runs for around 60minutes.

3. **IARS Wednesday evening weekly 6m NET, 8PM on 53.650Mhz with a – 1Mhz offset Hosted by Geri VK2UTE or Simon VK2XQX, (123Hz CTCS tone enabled due to interference) Maddens plains 6m Repeater**
   General discussions about building antennas for 6m, transceivers and what else comes to mind, this net is normally between 30 and 60minutes.

4. **IARS Thursday evening weekly 10m NET, 8PM on 28.466Mhz +/- for QRM/QRN Hosted by Tony VK2TS**
   General discussions about building antennas for 10m, transceivers and what else comes to mind, this net is normally between 30 and 60minutes.

5. **NEW !!!! >>>>>> IARS Friday evening weekly 70cm NET , 8PM on 438.225 with – 5MHz offset (No CTCSS required) Hosted by Rob VK2XIC**
   General discussions keeping the repeaters in work, ***"If we don't use it, we may lose it "***

IARS REPEATERS

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

146.675 MHZ >>>>> *linked* <<<<< 146.850 MHZ

Current Repeater 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 OK**
- **53.650Mhz with a – 1Mhz offset (123Hz CTCSS tone enabled due to interference) -OK**
- **438.725Mhz with a -5mHZ offset DMR only, OK**
- **1296.850Mhz Experimental Beacon with simplex repeater function, located Maddens Plains – OK**
- **Echo-link VK2MT-R via 146.850MHz also linked to 146.675MHz and VK2BGL-L – OK**
- **APRS DIGI-PEATER on 145.175MHz - OK**
- **PACKET 2M on 147.575Mhz - 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"

If the repeaters are silent, why not just give out a call, who knows who may be on the other end of the tower.

xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Repeater Report February 2025:

We have successfully installed and commissioned our shiny new Tri-Banders at the Maddens site. Signal Reports have been very promising and indicate a great improvement to the signals.
On Sunday the 22nd of December, Simon VK2KU, Rob VK2MT and Keith VK2KQB went up to Maddens to replace our aging Tri-bander antennas for 6m, 2m and 70cm. One at 40meters and the other at 67meters, straight up.

The antennas were Comet GP15's, purchased at a good price from Les VK2MPZ at ATR Amateur Transreceiver Radio Supplies. Les was great to deal with and we highly recommend him for your AR bits and bobs.

Check out the website at this link >>>> https://amateurradiosupplies.com.au

ATR
Amateur Transreceiver Radio Supplies

Of course, we still needed two strong fellas to scale the majestic structure, fear of heights was not an option 😊.

Maybe the harnesses made it less scary? nah it's still scary. Thanks Simon and Rob.

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

Electronic component and service suppliers

Need a quick PCB in a hurry to put that latest project on, JLCPCB

https://jlcpcb.com

https://au.element14.com

https://au.rs-online.com/web/

https://au.mouser.com

https://www.digikey.com.au

https://www.minikits.com.au

https://core-electronics.com.au

https://www.wagneronline.com.au

https://littlebirdelectronics.com.au

ATR
Amateur Transreceiver Radio Supplies

https://amateurradiosupplies.com.au

https://www.elitecommunications.com.au/mobile-communications-category/communication-equipment/amateur-radio/amateur-radio-accessories/

YAESU Sales and repairs https://www.vkradio.com.au

https://dxing.com.au

https://www.telcoantennas.com.au

https://www.altronics.com.au

https://www.jaycar.com.au

If you know of a good supplier of electronic stuff or services 😊, please share it with us so we can all benefit.

Send information to iars.keithb@gmail.com and we will publish it in the next propagator.

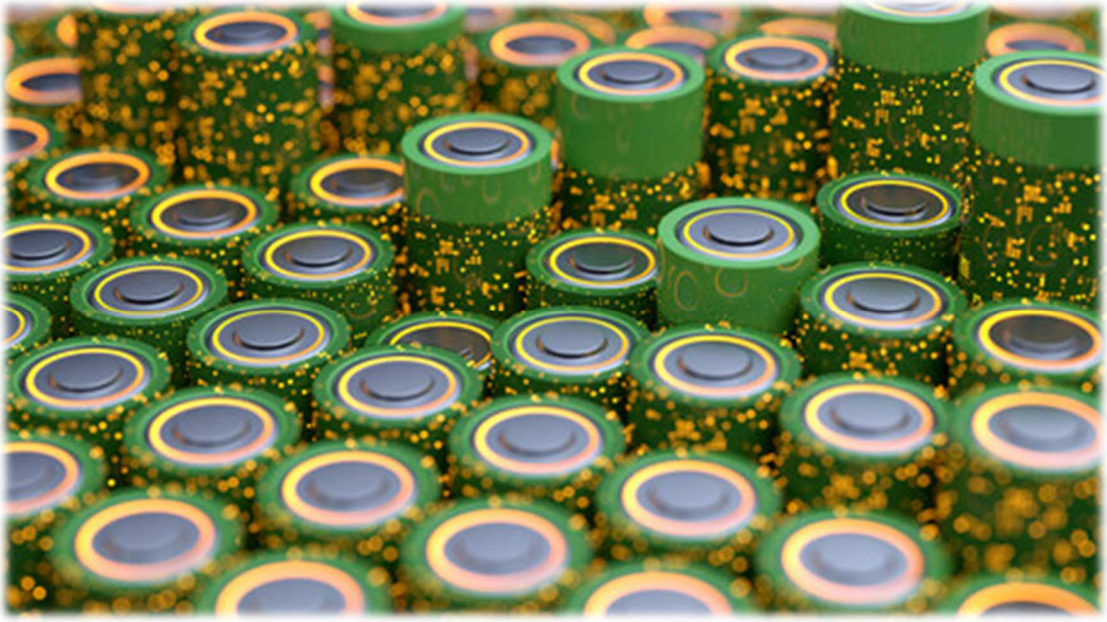
got an idea

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

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.*



Proton batteries — the future of energy storage?

An eco-friendly, high-performance organic battery is being developed by scientists at UNSW Sydney.

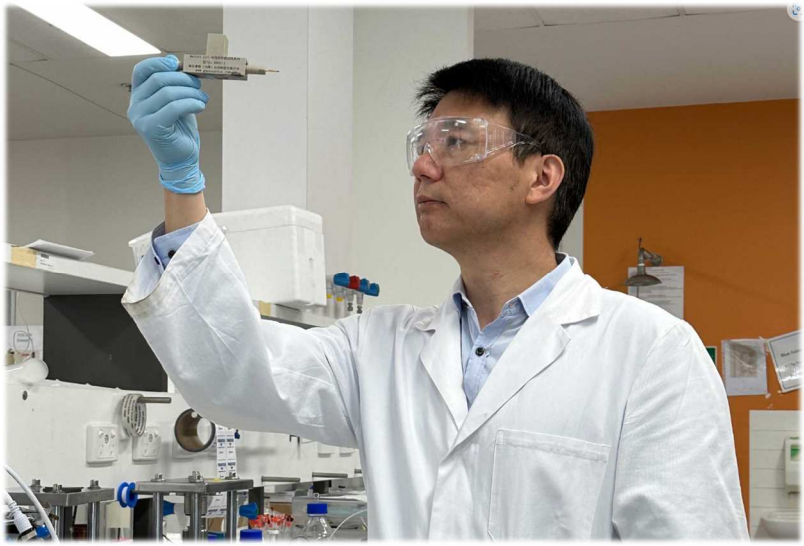
A team of scientists at UNSW Chemistry have successfully developed an organic material that is able to store protons — and they have used it to create a rechargeable proton battery in the lab.

By leveraging hydrogen ions — protons — instead of traditional lithium, these batteries hold promise for addressing some of the critical challenges in modern energy storage, including resource scarcity, environmental impact, safety and cost.

The latest findings, recently published in the journal Angewandte Chemie, highlight the battery's ability to store energy quickly, last longer and perform well under sub-zero conditions.

The material — tetraamino-benzoquinone (TABQ) — developed by PhD candidate Sicheng Wu and Professor Chuan Zhao, in collaboration with **UNSW** Engineering and **ANSTO**, has been shown to support rapid proton movement using hydrogen-bond networks.

"We have developed a novel, high-capacity small-molecule material for proton storage," Zhao said. "Using this material, we successfully built an all-organic proton battery that is effective at both room temperature and sub-zero freezing temperatures."



Professor Chuan Zhao holds up a prototype of a proton battery in the lab, made in collaboration with **UNSW Engineering and ANSTO**

Batteries store chemical energy and convert it to electrical energy through reactions between two electrodes — the anode and cathode. Charge-carrying particles, known as ions, are transferred via the middle component of the battery, known as an electrolyte.

The most common type of batteries used in household products are lithium-ion batteries. These batteries, which create an electric charge by transferring lithium ions between the anode and cathode, are the most widespread portable energy storage solutions.

Lithium-ion batteries power everyday products such as mobile phones, laptops and smart wearables, as well as newer e-mobility products such as electric cars, e-bikes and e-scooters. However, they are very difficult to recycle and require huge amounts of water and energy to produce.

"Lithium-ion batteries are already becoming a dominant product in energy storage applications, but they have a lot of limitations," said Sicheng Wu, a PhD candidate from the School of Chemistry.

"Lithium is a finite resource that is not evenly distributed on earth, so some countries may not have access to low-cost lithium sources. Lithium batteries also have very big challenge regarding fast-charging applications, safety, and they have low efficiency in cold temperature."

Alternatives to lithium-ion batteries

Although we currently rely very heavily on lithium-ion batteries, a growing number of alternatives are emerging.

Proton batteries are gaining attention as an innovative and sustainable alternative in the energy field, and have been hailed as one of the potential solutions to next-generation energy storage devices. Protons have the smallest ionic radius and mass of all elements, which allows them to diffuse quickly. Using protons results in batteries with high energy and power density, plus, protons are relatively inexpensive, produce zero carbon emissions and are fast charging.

“There are many benefits to proton batteries,” Wu said. “But the current electrode materials used for proton batteries, some of which are made from organic materials, and others from metals, are heavy and still very high cost.”

While a few organic electrode materials already exist, they also suffer from limited voltage range, and further research is required to make them viable batteries.

“At the moment, we don’t have any suitable solutions to grid-scale energy storage, because we can’t use tons of lithium batteries to do that job, due to the price and lack of safety,” Wu said.

Given the low cost, high safety and the fast charging performance of the proton battery designed through this collaboration, it has the potential to be used in a variety of situations, including grid-scale energy storage.

“To enhance the usage of renewable energies, we have to develop some more efficient energy integration technologies and our proton battery design is a promising trial,” Wu said.

While the potential applications are vast, the researchers are determined to refine and perfect their proton battery.

“We have designed a very good anode material, and future work will move to the cathode side. We will continue designing new organic materials that have higher redox potential range to increase the battery output voltage,” Wu said. Zhao also noted that what he was most excited about was the unique mechanism of proton transport they had identified. “Proton transport is one of the most fundamental processes in nature, from the human body, to plants,” he said. “We can actually study how this type of organic molecule can be used for a broad range of applications, such as for hydrogen storage.

“Molecular hydrogen (H2) is very reactive and therefore difficult to store and transport. This is currently a bottleneck for the hydrogen industry. However, hydrogen also exits in a stable form: proton (H+).”

The development of materials to store protons, means hydrogen can easily be shipped around the world, and then extracted when and where it is needed. “Our discovery has made this concept a possible reality,” he added.

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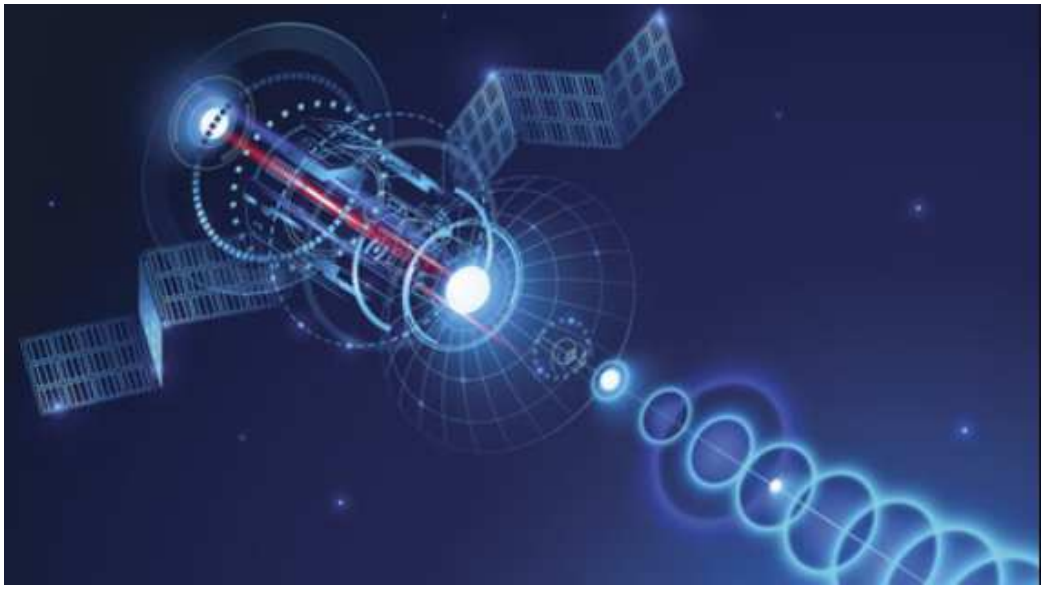


3D-printed, shape-shifting antenna inspired by sci-fi

Johns Hopkins Applied Physics Laboratory

By leveraging cutting-edge additive manufacturing techniques and shape memory alloys, researchers at the Johns Hopkins Applied Physics Laboratory (APL) in Laurel, Maryland, have created an antenna that can change its shape based on its temperature.

This technology — described in an online publication in ACS Applied Engineering Materials — has transformative potential in a wide range of military, scientific and commercial applications.

The shape of an antenna's front-end dictates many of its operating parameters. Once it's manufactured, those characteristics are locked in. A shape-changing antenna would enable communications across a wider array of radio-frequency (RF) bands, opening up new realms of operational agility. Among the possibilities, a single shape-shifting antenna could do the work of multiple fixed-shape antennas, adapt dynamically to spectrum availability and change beamwidth to switch between short- and long-range communications.

Inspired by science fiction technology, the novel antenna is the result of creative cross-disciplinary collaboration across APL.

Electrical engineer Jennifer Hollenbeck said she got the idea from The Expanse series, where alien technology is organic and shape-changing. "I have spent my career working with antennas and wrestling with the constraints imposed by their fixed shape," she said. "I knew APL had the expertise to create something different."

In 2019, Hollenbeck reached out to Steven Storck, now chief scientist for additive manufacturing in the Lab's Research and Exploratory Development Department, who at the time led an Independent Research and Development project to create a promising methodology to additively manufacture shape memory alloys. These unique materials deform at lower temperatures but return to a 'remembered' shape when heated and are used in a wide variety of applications, ranging from medical uses such as orthodontic wires, vascular stents and bone implants to actuators for control surfaces in spacecraft.

Mechanical engineer and materials scientist Andy Lennon had used nitinol — a shape memory alloy of nickel and titanium — to create coils that would extend down through a person's oesophagus to assist with heart imaging. As Lennon and others worked on applications for nitinol, a desire arose to 3D-print complex shapes with it. But that presented a problem: Nitinol and other shape memory alloys conventionally require extensive mechanical processing — known as cold work — to achieve the shape memory effect, and as a result they are typically only available as wire or in thin sheets.

"Doing an extreme amount of cold work would defeat the whole point," Lennon said. "If you take that complex shape and pass it through a die to stretch it out, you're back to a wire."

The APL team initially conducted research to tackle the fundamental challenges associated with scalable additive manufacturing of nitinol components, later applying these techniques to create shape-changing structures that could be deployed in space applications. After extensive experimentation towards the antenna application, the team altered the ratio of nickel and titanium, but the first attempt to create a shape-shifting horn antenna using 3D-printed nitinol fell short. While the antenna did technically expand and contract and change its frequency, it was also rigid and difficult to expand.

"It turned out to be a really complicated design, and it didn't work as well as I would have liked," Hollenbeck said.

Undeterred, Hollenbeck and the team submitted a proposal for a Propulsion Grant, one of APL's internal funding opportunities designed to support the development of revolutionary solutions to critical challenges.

This time, Hollenbeck had a new antenna design in mind. Lennon's team had been able to 3D-print nitinol with what's known as two-way shape memory, in which the alloy can be heated and cooled to alternate between two remembered shapes. With critical design and prototyping support from Kyle Sibert, an electrical engineer in APL's Force Projection Sector, Hollenbeck's team developed an antenna that was shaped like a flat spiral disk when cool but became a cone spiral when heated.

Heating the spiral proved to be a challenge. The team had to determine how to heat the metal of the antenna enough for it to change shape, but without interfering with the RF properties or burning out the structure. To solve the problem, the team, led by RF and microwave design engineer Michael Sherburne, had to invent a new form of power line.

“For peak heating, the power line has to handle a lot of current,” Sherburne said. “We had to go back to fundamentals to make this work.”

The final piece of the puzzle was working out how to 3D-print the antenna in a consistent, repeatable fashion. Lennon’s modified nitinol, with its higher concentration of nickel, made it challenging to print at scale.

“We have a lot of experience optimising processing parameters and designs for alloys, but this was a step beyond,” explained additive manufacturing engineer Samuel Gonzalez. “There aren’t many people out there, if anyone, printing this material, so there’s no recipe for how to process it.”

“We made shrapnel in the printer a few times because the antenna is trying to change shape as you’re printing it, due to the heat,” added colleague Mary Daffron. “It wants to peel apart.”

Typically, the team can process an alloy in less than four days, but Daffron and Gonzalez said this particular material took two to four weeks of build time.

Now that they have optimised the processing parameters, they’re already looking for ways to build on their initial success.

“We want to optimise the parameters to work on multiple different machines, to make this more widely applicable, and we know we’ll need to optimise for different variations of the material that might actuate at different temperatures,” Daffron said.

The hard work put in by teams across APL has yielded a radically innovative technology that could have wide-ranging applications, supporting special operators in the field, mobile network telecommunications and even space missions to distant celestial bodies.

APL is pursuing a full patent on behalf of the team for the shape-adaptive antenna technology. The Lab has also provisionally decided to pursue patents for the novel power line for heating the spiral, a method for controlling the antenna, and a method and process for using shape memory alloys to create a phased array antenna.

“The shape-shifting antenna capability that has been demonstrated by this APL team will be a game-changing enabler for many applications and missions requiring RF adaptability in a low-size and -weight configuration,” said APL Chief Engineer Conrad Grant. “This is yet another powerful example of the innovation that occurs at the Laboratory through motivated, highly capable, multidisciplinary teams.”

Link to youtube video >>> https://www.youtube.com/watch?v=dKp6IOSKD9I

Other links >>>> https://www.jhuapl.edu/news/news-releases/241126-shapeshifting-antenna

VOLTS, AMPS, OHMS and POWER

Some interesting power points:

- **Average TX efficiencies will require 16Amps min at 13.8Volts for RF transmitter output of 100WATT**
- **With most conventional transmitters, if you drop the supply voltage, the RF output will drop exponentially. RF Power relies on voltage and current, reduce them you reduce the power.**
- **Long supply cables can drop 1 to 2Volts at 10Amps, use larger and shorter copper cables to maintain power ratings. Hot cables increase the problem.**
- **Most transceivers are manufacturer rated 100Watts at *13.8Volts* DC supply voltage**
- **The peak voltage developed on a 50 Ohm system at 100Watt is 99Volts, watch out for high impedances, higher impedances – higher voltages.**
- **Ensure insulating materials can operate with high voltages, particularly in baluns.**
- **The ends of a dipole antenna can exceed 1kV even with low power, keep it clear of people.**
- **Peak envelope power (PEP) is the average power over a single radio frequency cycle at the crest of the modulation**
- **AM PEP, Assuming linear, perfectly symmetrical, 100% modulation of a carrier, PEP output of an AM transmitter is four times its carrier PEP; in other words, a typical modern 100-watt amateur transceiver is usually rated for no more than, and often less than, 25 watts carrier output when operating in AM**
- **PEP vs. average power , PEP is equal to steady carrier power, or radiotelegraph dot or dash average power, in a properly-formed CW transmission. PEP is also equal to average power in a steady FM, FSK, or RTTY transmission.**
- **Although average power is the same as PEP for complex modulation forms, such as FSK, the peak envelope power bears no particular ratio or mathematical relationship to longer-term average power in distorted envelopes, such as a CW waveform with power overshoot, or with amplitude modulated waveforms, such as SSB or AM voice transmissions. Typical average power of a SSB voice transmission, for example, is 10-20% of PEP. The percentage of longer term average power to PEP increases with processing, and commonly reaches ~50% with extreme speech processing.**

IS YOUR SHACK SAFE and EMC Compliant ??????????

Amateur Radio And Electromagnetic Radiation Issues

What is EMR ?

Electromagnetic radiation is familiar to us all as sunlight, heat, X-rays and radio waves. Electromagnetic radiation (EMR) conveys energy from a source to distant places. For example, the Sun radiates light, heat and other varieties of electromagnetic energy, which is received here on Earth. Your amateur transmitter conveys radiofrequency (RF) energy via your antenna to other amateurs' antennas and their receivers detect that energy and convert it to sound.

Whenever you go on the air, your station antenna generates an electromagnetic field that radiates in all directions, with the antenna often designed or arranged to radiate more energy in particular directions and less in others.

Whenever you go on the air, your station antenna generates an electromagnetic field that radiates in all directions, with the antenna often designed or arranged to radiate more energy in particular directions and less in others.

Because there is some public concern about possible health effects on humans of radiofrequency (RF) electromagnetic energy (EME) emissions, generally focused on mobile phones and their base stations, the Australian Government's Australian Radiation Protection and Nuclear Safety Agency available via this Link – ARPANSA – has developed standards for protecting the health and safety of people, and the environment, from the harmful effects of ionizing radiation (eg. X-rays) and non-ionising radiation (eg. RF electromagnetic energy emissions).

Terms commonly used to describe the power of a transmitter in the Amateur LCD and other information.

Px - the average power delivered by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions. This is commonly referred to in amateur circles as peak envelope power (PEP).

Py - the average power delivered by a transmitter over a time period sufficiently long compared with the lowest frequency encountered in the modulation taken under normal operating conditions.

Pz - the average power delivered by a transmitter during one radio frequency cycle under the condition of no modulation, more commonly referred to in amateur circles as Carrier Power.

Check out more information here >>>>> https://www.wia.org.au/members/technical/emr/

This link will give you access to the files below >>>>>>>>>>>>>>.

Files For Download

Radiocommunications (Amateur Stations) Class Licence 2023
Radiocommunications (Amateur Stations) Class Licence 2023.pdf

RSGB EMF (EMR,EME) Guide
RSGB-EMF-Guidance-EMF-2-v2-.pdf

About the International Amateur Radio Union

The International Amateur Radio Union

Since 1925, the Federation of National Amateur Radio Societies
Representing the Interests of Two-Way Amateur Radio Communication

Who is the IARU

Created in Paris, France, the International Amateur Radio Union (IARU) has been the watchdog and spokesman for Amateur Radio community since 1925. The IARU Constitution has the body in three regions that correspond to those of the International Telecommunication Union (ITU). The Constitution also provides for an IARU Member Society to serve as the International Secretariat (IS) which is the ARRL. Each region also has a secretariat.

All Member Societies work through their region, with the IARU IS responsible for some coordination, administration and manages some activities. The IARU regions look after their regional matters including attendances at preparatory meetings leading up to the ITU World Radiocommunications Conference (WRC), held about every three years. Each region takes turns with their triennial meeting where Member Societies gather to discuss mutual interests, and receive the latest IARU report.

More information here >>>>>>> https://www.wia.org.au/members/iaru/about/

Handy On Line Calculators

Send us your favourite handy calculator link so we can post it here!

HANDY COAX LOSS Calculator **https://kv5r.com/ham-radio/coax-loss-calculator/**

Impedance ….. https://www.omnicalculator.com/physics/rlc-impedance

Wavelength …. https://www.omnicalculator.com/physics/wavelength

PI attenuator values …… https://www.omnicalculator.com/other/pi-attenuator

Xc …… https://www.omnicalculator.com/physics/capacitive-reactance

XL …… https://www.omnicalculator.com/physics/inductive-reactance

Cut Off ….. https://www.omnicalculator.com/physics/cutoff-frequency

VSWR ……. https://www.omnicalculator.com/physics/vswr-voltage-standing-wave-ratio

LM317 Regulator resistor selector ….. https://www.omnicalculator.com/other/lm317

Resistor Colour code calculator….. https://www.digikey.com.au/en/resources/conversion-calculators/conversion-calculator-resistor-color-code

Resistor Heat rise ……. https://calculator.academy/resistor-heat-calculator/

Volt Drop Calculator AC and DC …….. https://www.rapidtables.com/calc/wire/voltage-drop-calculator.html

Helix antenna calculator ……. https://sgcderek.github.io/tools/helix-calc.html

Parabolic dish calculator ……. https://www.everythingrf.com/rf-calculators/parabolic-reflector-antenna-gain

How many of these can you still answer correctly?

Question1. Schottky diodes are also called "hot carrier" diodes (HCDS) because:

a) they require great energy expenditure to carry electrons across the junction
b) they require little energy expenditure to carry electrons across the junction
c) they become hot during operation
d) they are slow acting

Question 2. A half wavelength of transmission line in terminated in an impedance comprising of 60 ohms of resistance and 20 ohms of capacitive reactance. The input impedance of the line, neglecting losses, will be: -

a) the same as the load impedance
b) 80 ohms
c) 60 ohms
d) 20 ohms

Question 3. The three electrodes of the Silicon Controlled Rectifier (SCR) are:

a) source, emitter and base
b) anode, cathode and grid
c) anode, cathode and gate
d) source, drain and gate

Question 4. Critical frequency is defined as:

a) the highest frequency on which it is possible to communicate with another station.
b) the highest frequency at which waves sent vertically are returned to earth.
c) the frequency of the greatest skip distance.
d) the highest frequency with which a station may be contacted by ground wave.

Question 5. The AGC system in an AM receiver works by sampling the level of the:

a) carrier
b) modulation
c) frequency
d) deviation

Question 34. A five-eighth wave length antenna is made with a loading coil at its base to make the antenna electrically three-quarters of a wavelength long. The reason for the antenna being electrically three-quarters of a wavelength long is to:

a) allow for easy matching to a 50 ohm transmission line
b) increase the radiation angle
c) decrease the radiation angle
d) increase the bandwidth of the antenna

Answers next propagator ☺

Answers to the last propagator questions … Q1 = B ; Q2 = A ; Q3 = A ; Q4 = C ; Q5 = C ; Q6 = D

How well did you do, will you still pass the Amateur Radio test?

BLAST FROM THE Past

OLD PROPAGATOR MEMORIES

THE PROPAGATOR

MONTHLY NEWSLETTER OF THE ILLAWARRA AMATEUR RADIO SOCIETY.

P.O. Box 1838, WOLLONGONG. N.S.W. 2500.

IARS is a Member Club of the Wireless Institute of Australia.

PRESIDENT	Secretary	Editor
Jim Potts, VK2BBG, 14 John St, WOONONA 2517	John Doherty, VK2NHA, 7 Risley Road FIGTREE 2525	Ian Bowmaker, VK2ASN, 15 Akuna St, KEIRAVILLE 2500

MONTHLY MEETING. Held on the Second Monday of each Month, at 7.30pm, at the Wollongong Town Hall Meeting Room.

CLUB STATION - VK2AMW. CLUB REPEATER - VK2RAW, 2m, Channel 5.

IARS MONTHLY BROADCAST

The Monthly Broadcast takes place on the Sunday preceeding the Meeting Night each month, at 1900 Hours EAST.

Frequency used by VK2AMW for the broadcast is -
Repeater Channel 5, or Simplex Channel 40.
Relay on 28.460 MHz.

IARS CLUB NETS

6 Metre.	9.30am Sunday,	52.525 MHz	FM.
10 Metre.	8.00pm Sunday,	28.460 MHz	USB.

~~JANUARY~~ February 1979

Members are advised that the Monthly Meeting of the Illawarra Amateur Radio Society will be held at the Wollongong Town Hall Meeting Room at 7.30pm on Monday, 12 February 1979.

Visitors are most welcome to attend.

ANNUAL GENERAL MEETING

Members are advised that the Annual General Meeting of the Illawarra Amateur Radio Society will be held at the Wollongong Town Hall Meeting Room at 7.30pm on Monday 12 March 1979.

The Agenda includes the Election of Committee for 1979-80 and the presentation of the Financial Statement for the year 1978-79.

FEES FOR 1979

As most of you may be aware the facility that we have been using to produce this newsletter for the past number of years is about to be lost. We have been looking at three alternatives over the past couple of months and these are:-

A Find another site for printing at the same cost!!
B Employ a commercial printing enterprise.
C Purchase our own printing equipment, new or used.

We still have a couple of avenues to consider in "A", but there is a strong possibility of having our newsletter printed at a cost of between $15 and $20 per issue.

It has therefore been suggested by your committee that the membership fees be increased to $5 to cover this added cost.

It should also be noted that Ian 2ASN our current Editor-in-Chief has had to relinquish this position so we are now looking for a person (or group) who would consider taking on this most rewarding job for the next year. If you are interested please talk to Ian 2ASN or Geoff 2ZHU for further information.

DECEMBER AUCTION SALE

As all those present saw the auction sale was a most enjoyable evening with lots of goodies etc charging hands at a rapid rate (thanks to the Auctioneer and the Secretary for keeping records). However unfortunately the records are not complete and there are still a large number of lots sold for which we do not have the name of the original owner.

Would all those who were good enough to supply items for sale and have not yet been paid please see John and Geoff (Secretary and Treasurer) AFTER the meeting (during coffee time) and we will settle up.

MACELEC

You will note that MACELEC does not have an "ADD" in this issue. - This is a result of the robbery and fire and Barry is still getting back to normal. He has a lot of new stock in (some at the old price). Barry will have some fire damaged TRANIES for sale at the next meeting.

FOR SALE

KENWOOD 520 DC/AC Approximately 2 years old $550 Contact DENNIS GOODLAND VK2NRQ Phone 044-22701 or PO Box 158, Nowra.

GET YOUR AMATEUR RADIO LICENCE IN 1979 :

Get your licence, and start making friends throughout Australia every evening on 80 metres - talk to other amateurs all over the world on 20 and 15 metres - operate through amateur satellites - run radioteletype - try slow-scan television - use VHF repeaters for reliable mobile communication.

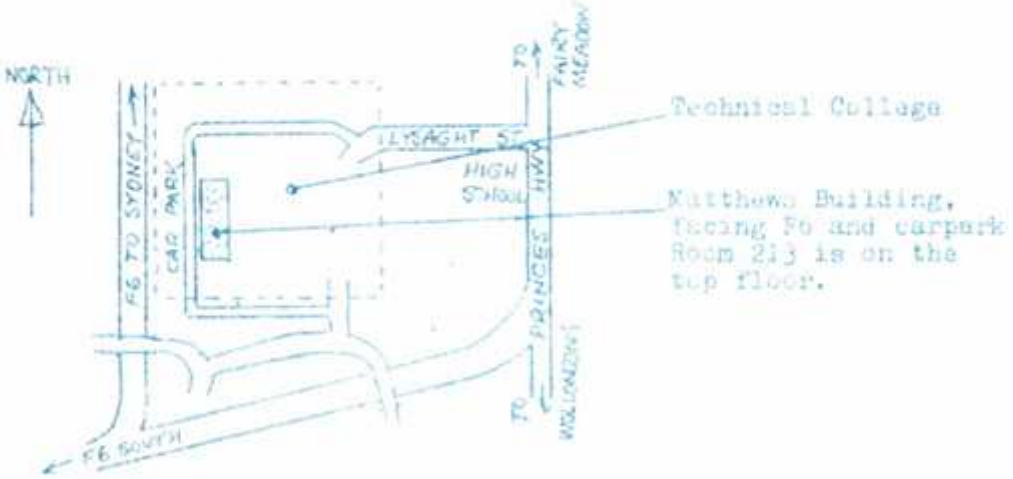
The School of General Studies at Wollongong Technical College is running an approved course in Electronics, which includes all the information and training you need to get your Novice, Limited, or Full Amateur Licence.

If you have NO knowledge of electronics - but are prepared to study hard, you should be able to pass the Novice Examinations in May or November of 1979.

If you have a Novice Licence, OR electronics background - you should be able to pass the Full or Limited Examination in August of 1979.

So - enrol in the course - and become an amateur operator next year! As dozens of new (and old) amateurs in Wollongong will tell you - it's well worth the effort.

ENROLMENT DETAILS



ENROLMENT: Be sure to enrol on the first night of the course, Friday 16th February, at Room 213, Matthews Building, at 6 p.m. The class is certain to fill quickly.

CLASS TIMES: 6 - 9 p.m. every Friday night, starting on Friday 16th February.

CLASS LOCATION: Wollongong Technical College, Matthews Building, Room 213 (see map above).

FURTHER INFORMATION: Contact Brian Wade, VK2AXI. Phone (after hours) 84-1381.

Will share more oldies next month.

To read more information about this old propagator and others, use the link below

https://www.iars.org.au/wp-content/uploads/2020/09/1979-02-February.pdf

Upcoming Contests ……………………………

Ross Hull Memorial VHF/UHF Contest

Ross A. Hull 1902 - 1938

Ross Hull Memorial VHF/UHF DX Contest (Marathon)

Contest Manager

TED THRIFT VK2ARA

We look forward to a successful and rewarding Ross Hull Memorial VHF/UHF+ Contest (Marathon).
Logs email to: rosshull@wia.org.au

Contest Introduction

The Ross Hull Contest is a VHF/UHF++ DX contest, with points awarded for distances worked. There are also band multipliers to encourage activity on the higher bands.

See link for more information https://www.wia.org.au/members/contests/rosshull/

Australia Day Contest

AUSTRALIA DAY CONTEST

Contest Manager

Diane Main VK4DI

Contest Introduction

New distance based rules and FT8/4 for 2023+

This contest is to encourage Amateur Radio promotional Activity around the world and is designed to encourage friendly participation and help improve the operating skills of participants. It is held on the Australia Day Public Holiday that being the 26th of January.

Australia Day January 26th. 2200 UTC 25th January to 1000 UTC 26th January.

More info link >>>>> https://www.wia.org.au/members/contests/australiaday/

Commonwealth Contest

Commonwealth Contest

Contest Manager

Details go here

Contest Introduction

The Commonwealth Contest (CC) is the oldest DX contest in Amateur Radio. Since 1931, the Radio Society of Great Britain (RSGB) has been the organiser and adjudicator of this annual 24-hour event. The CC includes Amateurs in all 56 countries and the numerous territories that make up the Commonwealth of Nations.
It promotes contacts between stations in the Commonwealth Countries and Territories. Click here Link for background information.
If you have any queries about these rules, please email hf.query@rsgbcc.org

National society logos used with permission

More information >>>>> https://www.wia.org.au/members/contests/commonwealthcontest/

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23cm Fun day on the 23rd of EVERY MONTH !!

If you are interested in 23cm or higher communications, the local IARS members are getting together with the MSCARC members on the 23rd of every month to have a fun day around the Illawarra area.

The SHF team are even looking at 13cm fun day on the 13th of every month, for more information please contact the SHF organiser Rob Heyer VK2XIC at **vk2xic@gmail.com**

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AR NEWS

Declaration of Election

Date : 07 / 01 / 2024
Author : WIA Returning Officer - John Marshall

DECLARATION of ELECTION OF DIRECTORS

Clause 14 of the Constitution of the WIRELESS INSTITUTE OF AUSTRALIA (WIA) specifies the way in which Directors of the WIA are to be elected to that position.

Three (3) directors will retire at the conclusion of the next Annual General Meeting which will be held in May 2024, namely Lee Moyle VK3GK, Steven Green VK2TSG and Chris Dimitrijevic VK3FY. Each retiring director was eligible for re-nomination.

A call for nominations for the position of Directors of the WIA was made in the WIA National News Broadcast and in Amateur Radio Magazine in accordance with the Election Regulations.

More information see link >>> https://www.wia.org.au/newsevents/news/2024/20240107-1/index.php

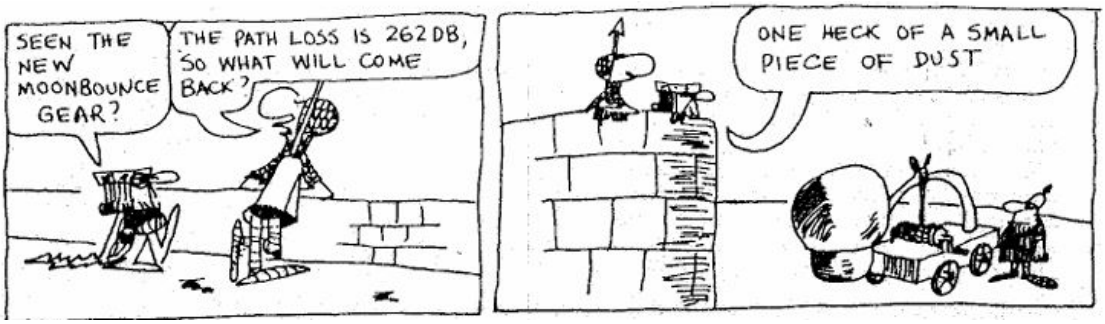
Upcoming meeting presentations ……

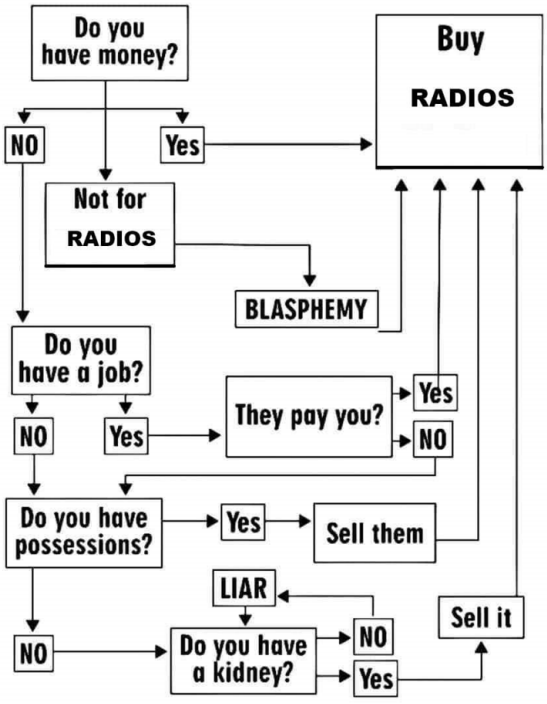
- **February 2025** : Project mania with Simon VK2KU. Simon will be sharing his latest, greatest project, if you want to know what it is, you will have to come along to the February meeting
- **March 2025** : Maritime mystery with Ned, VK2AGV. We all know Ned has some really good stories and this is another one of those interesting ones, I promised Ned we would not divulge. Come along and learn the truth.
- **April 2025** : Roger VK2VRK, portable comms. (will tell share more information next month)

Fun Corner

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

Thanks to all that sent in funnies.





The **IARS needs YOUR input and support,** any technical items, amateur radio news, any projects you would like to share, in fact any AR related goings on are welcomed.

Feedback is also very important for us as it helps maintain a good read, if you would like to see more of something, or would like to see a subject added. Please let us know iars.keithb@gmail.com

That's all for now, hopefully catch you all at the

Blue Scope visitors centre on the 11th February 7.30pm,

73

Keith VK2KQB

IARS Secretary

IARS, Amateur Radio in the Illawarra since 1948