

OXTALES

First published 1980

Club Nets on VK2RPM
146.700MHz
(CTCSS 91.5Hz)
Sundays 0900
Thursdays 1930

Newsletter of the Oxley Region Amateur Radio Club Inc.,

PO Box 712 Port Macquarie 2444

Club email address: vk2bor@orarc.org also on Facebook as Oxley

Region Amateur Radio Club

Club Website: <http://www.orarc.org>



ORARC's fiftyfirst Anniversary Year

May 2022

PRESIDENT: Henry Lundell VK2ZHE 6582 0534
VICE PRES: Paul Colledge VK2ICQ 6580 9912
TREASURER: Dennis Meade VK2DAM 6582 2998
SECRETARY: Henry Lundell VK2ZHE 6582 0534

ORARC VHF/UHF Repeaters

MIDDLE BROTHER

VK2RPM 2 metre (Voice - CTCSS 91.5Hz)
O/P 146.700MHz - I/P 146.100MHz

VK2RPM 70 cm (Voice - CTCSS 123Hz)
O/P 438.525MHz - I/P 433.525MHz
C4FM digital mode capability

VK2RPM-1 (APRS Digipeater)
SX 145.175MHz 1200bps

TELEGRAPH POINT

VK2RCN 2 metre (Voice)
O/P 147.000 MHz - I/P 146.400 MHz

VK2RCN 70 cm (DMR)
O/P 438.425MHz - I/P 433.425MHz

VK2RCN (6m Repeater)
O/P 53.800 MHz - I/P 52.800 MHz
VK2RCN-1 (APRS Digipeater)
SX 145.175 MHz 1200 Bps

President's Report

May 2022

President's Report



ORARC 2022 Field Day

The ORARC 2022 46th annual Field Day takes place on Saturday the 11th and Sunday the 12th of June during the 2022 Queen's Birthday Weekend.

The Field Day dinner will be held in the Function Room at the Port Macquarie Golf Club on Saturday the 11th of June 2022.

The Field Day program is being sent out with this issue of Oxtales. You can also view and download the program on the ORARC website at <https://www.orarc.org/>

Daytime Venue

Activities are in the Wauchope Showground Hall in High Street Wauchope on Saturday

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Down The Coax

ORARC meetings held in the S.E.S. Building
Central Road, Port Macquarie. Meetings are held
Under the ORARC COVID-19 Safety Plan

Monthly General Meeting
Saturday 7 May 2022 2:00 pm

Mayham Field Day
Sunday 1 May 2022 Wyong Race Course

World Telecommunication Day
Tuesday 17 May 2022. AX prefix permitted

Friday Night Get-Together
Friday 20 May 2022 7.00 pm

Monthly General Meeting
Saturday 4 June 2022 2:00 pm

ORARC Field Day Wauchope Showground Hall
Saturday 11 and Sunday 12 June 2022
Field Day Dinner Saturday Night Port Mac. Golf Club

Friday Night Get-Together
Friday 17 June 2022 7.00 pm

Winter VHF/UHF Field Day
Saturday 25 and Sunday 26 June 2022

Monthly General Meeting
Saturday 2 July 2022 2:00 pm

Friday Night Get-Together
Friday 15 July 2022 7.00 pm

Annual General Meeting
Saturday 6 August 2022 2:00 pm

Monthly General Meeting
Saturday 6 August 2022 after AGM

Net Controllers' Roster Nets on Voice Repeater VK2RPM 146.700 MHz

Sundays
(0900 Local)

Thursdays
(1930 Local)

May 2022

VK2FMGM	May 1	VK2ICQ	May 5
VK2FMGM	May 8	VK2EM	May 12
VK2FMGM	May 15	VK2ZHE	May 19
VK2FMGM	May 22	VK2ICQ	May 26
VK2FMGM	May 29		

June 2022

VK2FMGM	June 5	VK2EM	June 2
VK2FMGM	June 12	VK2ZHE	June 9
VK2FMGM	June 19	VK2ICQ	June 16
VK2FMGM	June 26	VK2EM	June 23
		VKZHE	June 30

July 2022

VK2FMGM	July 3	VK2ICQ	July 7
VK2FMGM	July 10	VK2EM	July 14
VK2FMGM	July 17	VK2ZHE	July 21
VK2FMGM	July 24	VK2ICQ	July 28
VK2FMGM	July 31		

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the 11th and Sunday the 12th of June 2022.

On arrival, please register at the Registration Table at the entrance to the Showground Hall. Please follow the ORARC Field Day COVID-19 Safety Plan. Please use the provided hand sanitisers.

Registration is \$5 per person which covers attendance at the Field Day for both days. There are no discounts available. Note that there will be some substantial lucky door prizes drawn during the prize giving on Sunday afternoon. The major raffle will have great prizes as usual. While you are at the registration table, remember to buy your raffle tickets along with the tickets for the food and drinks.

The Showground hall is an excellent venue and will support all the usual Field Day activities. There is plenty of on-site parking and the area is safe for the fox hunts.

Due to popular demand the traders will be open for business on both Saturday and Sunday. Similarly, the disposals will be open both days.

The Wauchope Showground permits camping and is pet friendly. For two people an RV or caravan is \$20 per night with power and a tent is \$10 per night with power. Contact the on-site caretaker 0475 111 074 for bookings. The web page is at <http://www.wauchopeshowsociety.com.au/camping.html>

Field Day Dinner



The Field Day Dinner is on Saturday the 11th of June 2022 at 5pm in the Port Macquarie Golf

Club Function Room. Sign in and follow the Golf Club COVID safety requirements. Meals and drinks are at Golf Club prices.

There is an extensive menu to cater for all tastes.

We must especially thank Gary Ryan VK2ZKT of Radio Supply Pty Ltd of Bellingen for his sponsorship of the Port Macquarie Golf Club Function Room hire for the Field Day Dinner again this year. Thank you, Gary. Gary has been a long-time supporter of the Oxley Region Amateur Radio Club. His company, Radio Supply, has exhibited at every ORARC Field Day for a great many years, and he has always been very generous in his sponsorship.

Field Day Attractions

The Field Day will have all the usual attractions with 2 metre and 80 metre fox hunts on both days, disposals; bring your items to sell, no commission charged, traders, barbeque lunch both days with bacon and egg breakfast available both days. Don't miss out on the traditional fruit salad and ice cream dessert following Sunday lunch. As usual, tea and coffee and biscuits will be free throughout the two days to those who have registered.

Food and Drink

There will be barbeque lunch both days with bacon and egg breakfast available both days. Don't miss out on the traditional fruit salad and ice cream dessert following Sunday lunch. Soft drinks and bottled water are available for purchase. Prices are very reasonable as can be seen on the Field Day program.

Tickets must be purchased at the registration desk for all food and drinks items. The tickets are to be redeemed at the serving counter in the kitchen area of the hall. No money will be handled by the kitchen as part of making the serving of food COVID safe.

As usual, tea and coffee and biscuits will be free throughout the two days to those who have registered.

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Just ask at the serving counter in the kitchen.

Raffles

Remember to purchase your raffle tickets from the registration desk. As usual the Major Raffle will have some substantial prizes. Thank you to the sponsors who have generously provided prizes.

The sponsors to date include Jaycar Electronics Port Macquarie, Radio Supply of Bellingen, QSL Comms, Tecsun Radios Australia and Battery World Port Macquarie.

The raffle will be drawn at the prize giving on Sunday afternoon.

Lucky Door Draw

There will be the usual Lucky Door prizes drawn during the prize giving on Sunday afternoon. There are prizes for those with callsigns and for those without callsigns so everyone attending is asked to please register. Entry in the draw is automatic when you register.

Disposals

Bring your items to sell, no commission charged. There is always a shortage of tables so please bring your own tables if you are able. Please note that you are responsible for the security of your items. The club is unable to accept liability. Items may be left on the tables overnight on the Saturday night but as there is no security in attendance during the night it is suggested that valuable items not be left unattended overnight. The hall will be locked overnight from 5pm on Saturday until it is opened by the on-site caretaker on Sunday morning.

Repeaters Monitored During the Field Day

The club station VK2BOR will monitor the Middle Brother VK2RPM 146.7 MHz 2 metre FM voice repeater for calls during the Field Day. This repeater requires a 91.5Hz CTCSS

sub audible tone for access. You can transmit to it on 146.1 MHz using Yaesu Fusion C4FM digital voice and it will retransmit you as analogue FM on 146.7 MHz.

In addition VK2BOR will monitor DMR Talk Group 505. It is hoped that the Telegraph Point VK2RCN 438.425 MHz DMR digital voice repeater will be back on after the major lightning strike at the repeater site but of course you can call on Talk Group 505 via any DMR repeater or suitable hotspot that you can access.

Traders

This year we are pleased to have two major traders at the Field Day: By popular demand the traders will be open for business on both Saturday and Sunday.

Radio Supply

Radio Supply of Bellingen <http://www.radiosupply.com.au/> will have a full range of accessories as well as the usual range of items such as the now hard to get analogue multimeters. Thank you to Gary Ryan VK2ZKT and Carol VK2CSR for their ongoing support of the Field Day.

QSL Communications

We welcome back QSL Communications to the Field Day as a trader again this year. QSL Comms have an extensive range of products including DMR digital voice and analogue FM transceivers, antennas, antenna mounts, power supplies, spare batteries for various radios, programming cables for various radios, and coaxial cable and connectors etc. Have a look at the QSL Comms website <https://qslcomms.com.au/> for details. At the Field Day the very popular Anytone and TYT DMR and analogue radios will be available. Also available will be multimode digital hotspots and the very popular Nano VNA. You can place your orders on line prior to the Field Day and pick your order up at the Field Day.

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ORARC

As a special service at the Field Day the Oxley Region Amateur Radio Club will be able to install a code plug in your newly purchased DMR radio, if it's one that they have a code plug for. Models that code plugs will be available for include the TYT MD-UV380 which takes the same code plug as the Retevis RT3S. Please see Paul Colledge VK2ICQ and Ian Lindquist VK2GL on the **ORARC stand**.

If you are contemplating purchasing a DMR radio for the first time you will need a DMR ID in order for your new radio to be programmed ready for you to use. You should apply for a DMR ID prior to the Field Day so that it will be available by the weekend of the 11th and 12th of June 2022. Just go to <https://vkdmr.com/> to learn about DMR and follow the link to apply for a DMR ID.

Please read the very informative DMR article by Ian Lindquist VK2GL/VK2IDL in the May 2021 issue of Oxtales. Past issues of Oxtales are available as .pdf files for reading or downloading on the ORARC website <https://www.orarc.org/>. Note that the DMR RadNet repeaters provided by ARNSW are part of the VK DMR network (formerly known as DMR-MARC). There are other world wide DMR networks such as Brandmeister which can be accessed using a hotspot or some other repeaters.

Jaycar Electronics Port Macquarie

Jaycar <https://www.jaycar.com.au/> are supporting the Field Day again this year. If you don't already have one you will be able to pick up a new Jaycar catalogue at the Field Day Registration Table. Jaycar have been very generous in providing a large number of useful promotional merchandise items including mechanical pencils, a very nice pocket screwdriver set, stainless steel pocket rules, LED pocket torches, USB rechargeable keyring torches and stubby

holders. You will receive a Jaycar bag containing some of these items when you register. While Jaycar won't have a stand at the Field Day, the Jaycar Port Macquarie store will be open for business during the weekend.

Fox Hunting

Foxhunting has always been an important part of ORARC Field Days. This tradition has been carried on continuously since the very first Field Day. I have previously mentioned the report by Pierce Healy VK2APQ in his column in the December 1972 issue of Electronics Australia where he reported on the foxhunts that were held during the ORARC Field Day that was held on the 13th and 14th of October 1972. This was only one year after the club was formed in 1971.

Members are currently working on the new 80 metre foxes which we started building but weren't ready in time for last year's Field Day. Special thanks go to Ian VK2GL for his work in building and testing the new 80 metre transmitters. They will be ready in time for this year's 80 metre foxhunts. The 2 metre and 80 metre hidden transmitter hunts are always keenly contested. The Saturday afternoon 2 metre talk in foxhunt offers an opportunity for those without direction finding equipment to participate in a foxhunt.

Home Brew Competition

Remember to bring your latest project along and enter it into the Home Brew competition and display. Last year the Home Brew competition was very popular with some excellent projects on display. This year we are expecting even more entries than ever with several amateurs working hard to complete projects in time for the Field Day.

Also have a look on the Radio Supply stand. Gary Ryan VK2ZKT will have an interesting range of his home brew projects on display.

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Gary has been very busy home brewing over many years. He will have lots of interesting home brew and restoration projects for you to look at.

ALARA



<http://www.alara.org.au/> have had a stand at ORARC Field Days for many years. This year Diane Wilson VK2DNE will be running the Australian Ladies Amateur Radio Association stand. Diane assisted long time ALARA stalwart Dot Bishop VK2DB in running the ALARA stand at last year's Field Day.

Diane has now taken over running ALARA stands at Field Days and we look forward to seeing her behind the ALARA table at the 2022 Field Day. The ALARA stand is always popular. ALARA is a very active national association of Ladies in Amateur Radio. You can read about ALARA activities in the ALARA column in each issue of Amateur Radio magazine. Please take the opportunity to have a look at the ALARA display and have a chat with Diane. She will be very pleased to answer your questions.

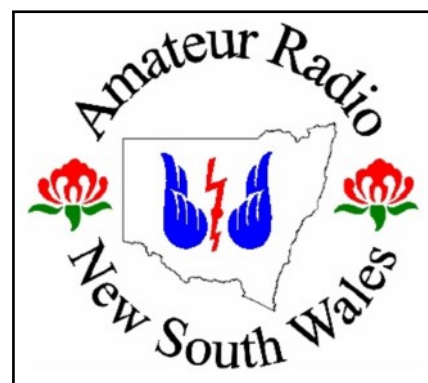
ARNSW

ARNSW <http://www.arnsw.org.au/> is a long

time supporter of the Oxley Region Amateur Radio Club Inc. Amateur Radio NSW is very active with the VK2WI weekly Sunday morning and evening news broadcasts and a wide range of other activities and projects supporting Amateur Radio.

The ORARC news appears in the VK2WI club news each week. The VK2RCN 438.425 MHz RadNet DMR repeater at Telegraph Point provided by ARNSW is the latest major support item to benefit ORARC and all amateurs within the coverage area of this repeater. The new repeater has greatly stimulated interest in DMR by local Amateurs. Previously ARNSW have subsidised 40 metre dipole antenna construction kits and balun kits which created a great deal of interest. A significant number of ORARC members benefitted from this very practical initiative in being able to construct these kits at a very affordable price for use in their stations.

Several ARNSW Board members are also ORARC members including Allan Hirschel VK2OK, Stuart Walker VK2BMX, Mark Blackmore VK2XOF, John Harper VK2LJ/VK3MS and Bob Yorston VK2CAN. They, and other board members such as Eric van de Weyer VK2VE regularly visit the area so you may get to meet a good cross section of the ARNSW Board and other ARNSW members such as Erik Houseman VK2EJH from the VK2WI broadcast team.



Demonstrations

There will be live demonstrations of multi protocol digital radio on air hotspots. You will be able to see

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the VK-DMR network activity on the DMR Dashboard. Club station VK2BOR will monitor DMR TG505, as well as on the C4FM/analogue FM Middle Brother VK2RPM 146.7 MHz repeater.

Thank you to Bruce Ekert VK2EM, Ian Lindquist VK2GL/VK2IDL and Paul Colledge VK2ICQ amongst others for running these demonstrations this year. Bruce VK2EM will have his high power hotspot in operation.

If you have just bought a new DMR radio and had a code plug installed at the Oxley Region Amateur Radio Club stand it will be a great opportunity to talk with Bruce VK2EM and see his hotspot in action. He will be only too pleased to demonstrate what you can do via your own hotspot. Running your own hotspot allows you full access to the digital modes even if you can't easily access one of the DMR repeaters. You can access several different digital voice radio network protocols using whichever type of digital voice radio that you end up purchasing. You don't need to buy one of each type!

For example your DMR radio can of course access DMR networks but with the same radio you can also connect to C4FM Yaesu Fusion networks.

Barefoot Times

Jeff Pages VK2BYY is well known for his barefoot foxhunting. In addition, Dr Pages is also an accomplished published author. His first novel, Barefoot Times, was published in 2004, followed by Call of the Delphinidae in 2006, The Mind of the Dolphins in 2008, Cry of the Bunyips in 2011 and Plight of the Tivinel in 2015. His 2018 published book, Rise of the Gomerl is the sixth and final book in the series. The books have been quite popular and have developed a following amongst those who have been introduced to the tales. In past years Jeff has had copies of his books for

sale at the Field Day but they have now sold out. However, you can download all 6 novels as PDF e-books for free via his website. For more details visit Jeff's Barefoot Times website at <https://www.barefoottimes.net/>

Helping to share the load at the Field Day

Please make yourself available when calls are made for assistance in running the Field Day. By sharing the workload we can all enjoy the weekend without anyone being overworked. It is important to make the field day a success as it is the major fund raising activity for the year.

Field Day Program

The Field Day program is included with this issue of Oxtales. The program can also be downloaded from the ORARC website <https://www.orarc.org/>

Telegraph Point VK2RCN Repeater Site

The VK2RCN repeater site suffered a major lightning strike on the evening of Friday the 25th of March 2022. All the VK2RCN repeaters are still off the air until a new underground power line can be run to the site and damaged equipment is repaired or replaced. This has not been possible due to the continuing wet weather since the lightning strike. However, it is hoped to have the repeaters back up and running in time for the Field Day.

The VK2RCN repeaters are the 147.0 MHz 2 metre voice repeater, the 438.425 MHz UHF DMR Radnet digital voice repeater, the 145.175 MHz APRS digipeater and the 53.8 MHz 6 metre voice repeater. Fortunately, the 6 metre repeater was not at the site when the lightning struck so it wasn't damaged, but there was damage to the repeater systems. Thank you to Lyle Smith VK2SMI for repairing the seriously lightning damaged 147.0 MHz repeater. The DMR repeater equipment appears to have escaped damage but is yet to be fully tested.

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The APRS digipeater however suffered significant damage.

New Telegraph Point Repeater Site.

As readers will be aware, two years ago the Oxley Region Amateur Radio Club Inc. embarked on an ambitious project to build a new repeater site for the VK2RCN repeaters. This project is the largest project that the club has undertaken in its 51 year history. The new site is a necessity as the club will have to vacate the existing VK2RCN site in the near future.

Building a new repeater site at a new location in the 21st century is a much more complex undertaking than when the existing site was established. As it is beyond the resources of the club to purchase a property in a suitable location, the solution was to take out a long term lease on a suitable site on private property. The owners of the property which is on the same ridge line as the existing site have been very supportive and the lease is on an annual peppercorn sum. An annual payment of \$100 is the modern equivalent of a peppercorn. Levido Law + Property very kindly did the legal work pro bono to set up a Registered Lease which assures the Club of continuing tenancy to protect the substantial asset which is being created.

Before site work could be commenced it was necessary to first obtain Development Application approval and then in order to apply for a Construction Certificate the club had to satisfy all the Certified engineering design requirements for the 29 metre guyed mast that will carry the repeater antennas. Several members made a concerted effort to obtain this certification pro bono but due to demand for engineering resources after the 2021 record floods this was not possible. The key members of the project Committee are also SES and RFS volunteers so they were unavailable during the flood emergency itself and the subsequent recovery period.

Future Engineering and Communication Pty Ltd, the manufacturer of the donated mast that the club has on hand was engaged to commercially undertake the engineering design and certification for the erection of the mast. The company was also engaged to construct the mast foundation and guy anchor blocks to the Certified Engineering standard.

The club is indebted to Port Macquarie Civil Engineering company King and Campbell for pro bono lodging the application for the Construction Certificate on behalf of the club with the Club appointing the Port Macquarie Hastings Council as the Principal Certifying Authority. The process for obtaining a Construction Certificate changed to a NSW Government on line electronic application system through the Government Internet Portal shortly after the Development Application Consent had been obtained. The previous system where application was made directly to the local Council was much simpler than the centralised on line application process which was new to everyone. The application lodged on behalf of the Club by King and Campbell was successful and the all-important Construction Certificate was finally issued on the 15th of February 2022.

After 380 mm of rain in February 2022, Port Macquarie had 610 mm of rain in March so even though the club had the Construction Certificate the site was far too wet for work to commence. While the 112 mm that fell in April is far less than the rainfall of the previous two months, there was rainfall on 19 out of the 30 days in the month so the site remained wet most of the time. May has continued the trend with 82 mm falling on 9 of the first 14 days of the month.

The accompanying series of photographs (that can be found at the end of this President's report) shows the progress from the greenfield site at the time the Construction Certificate was issued in February until the mast foundation block and guy anchor blocks were completed on the 3rd of May 2022.

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The site earthworks were completed during one of the short series of dry days. It can be seen that it was wet for the on site meeting with Future Engineering and Communication prior to commencement of the construction of the mast foundation and guy anchors as can be seen in the photograph below.



It was dry for the first 3 days of work but the rain returned prior to the concrete being poured.



After waiting a week for the site to dry out a little the guy anchor blocks were backfilled and the site prepared in readiness for construction of the equipment shelter concrete slab and Besser Block building by ORARC

volunteers but as can be seen in the photographs the ground was still quite wet.

At the time of writing this report the site is still wet after almost three weeks with some 70mm of rain falling on consecutive days during the last week. The site being too wet has so far prevented delivery of materials for the shelter.

The 20 foot shipping container that has been hired by the club for dry storage during the construction of the equipment shelter was delivered on the 27th of April 2022 but the delivery truck became bogged at the entrance to the site access track so the container is still sitting at the entrance.

Thank you to Michael Ward VK2FMDW for donating a large number of used bricks, and to Larry Lindsay VK2CLL, Arthur Monck VK2ATM, Rob Frost VK2CRF and Dennis Meade VK2DAM for transporting the bricks from Port Macquarie and placing them to improve access to the track to the site. When the site is dry enough another tilt tray truck will be engaged to move the container closer to the building site. This will coincide with the delivery of materials and commencement of construction of the equipment shelter.

The club was fortunate in securing a grant of \$23,361.00 towards the cost of the project from the NSW Government Community Building Partnership. Retention of this grant is conditional on the mast foundations and equipment shelter being completed by the agreed deadline which was originally extended to the 30th of April 2022 but a request to extend the deadline to the 30th of June 2022 has been lodged.

The project cost so far has been greater than originally estimated. The cost to have the lease site plans professionally drawn up to survey standards was a significant additional expense, as was the cost of the mast certified engineering design. It had been planned to construct the mast foundation and guy anchor blocks using volunteer labour but the impact of the continuing rain and COVID-19, and the need to finish this work to the designed engineering standard by the agreed 30th of April 2022 grant condition deadline meant that the work had to be done by a contractor. It is hoped to make some cost saving in the construction of the equipment shelter by predominantly volunteer labour.

The club received additional donations to augment the existing donations and grant money to help offset the greater than forecast costs so the club's nett financial situation has not been significantly impacted. The work that was done pro bono saved the club a significant amount of money. It has to be remembered that the club still has its normal operating expenses in addition to expenditure on this project.

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Last year the club was awarded a further Community Building Partnership \$6,800.00 grant towards the cost of connecting power to the site. The Committee reviewed the increased costs and the difficulty in running an underground power cable to the site, and the ever-increasing cost of grid electricity usage and availability charges. Even though the trees to the north of the site result in significant shading during the winter months when the sun is lower in the sky, a 4.5 kW total solar system with Lithium Iron Phosphate storage batteries will be sufficient to supply year around off grid solar power to run the five VK2RCN repeaters at the site.

The recent serious mains power lightning damage at the existing VK2RCN site demonstrates the risks from being connected to external mains power. Not having an external power connection will significantly reduce the chance of lightning damage at the new site. Accordingly, a request to change the Community Building Partnership grant to provide solar power rather than connect mains power was made when the Funding Deed for this grant was submitted. Of course, the off grid solar power will be free once the system is installed so there will be a significant saving in the cost of power. The batteries will have a projected life in excess of 10 years but the club will still have to make provision for replacing them in the future.

The Telegraph Point project committee has been extremely busy. Arthur Monck VK2ATM is planning and co-ordinating the construction of the equipment shelter building. As well as the design and supply of all the materials for the shelter itself, Arthur has sourced the solar panels so that the attachment of the panels to the roof will be an integral part of the roof design. Larry Lindsay VK2CLL, Rob Frost VK2CRF and Dennis Meade VK2DAM together with Arthur Monck VK2ATM have had numerous trips to the site for working bees and meetings in addition to the time spent planning and following up sources of

materials and services. Henry Lundell VK2ZHE is the project manager. As can be seen by the extraordinary number of tasks that have had to be carried out in order reach the milestones that I have outlined, there has been a very high continuing workload.

Once the equipment shelter building has been constructed Future Engineering and Communication will be engaged to erect the mast and attach the antennas and install the coaxial feed cables. Thank you to John McLean VK2KC for his donation of the mast sections. The antennas are on hand. Henry VK2ZHE purchased them as a donation a couple of years ago when WICEN NSW arranged a bulk purchase of antennas. Special thanks must go to Paul Jones VK2DEL who obtained the initial donations that made embarking on this project a reality.

Education

Education Officer Larry Lindsay VK2CLL has advised that it is planned to hold a Foundation training and assessment weekend at Port Macquarie soon as there are several candidates ready to participate. Now that the COVID-19 restrictions have been eased it will be possible proceed following the Club's COVID-19 Safety Plan. The practical component of the training and assessments require carefully planning to ensure that they can be run in a COVID safe manner. The AMC has to approve the safety plans before assessments can be conducted.

An Advanced theory assessment was conducted on the 2nd of April 2022 in the Port Macquarie SES Building by assessor Larry Lindsay VK2CLL. This was done with the fully approved protocols which were required even though there was only one candidate. Congratulations go to Murray Smith VK2LAT on successfully attaining his Advanced Licence.

If you would like to obtain your Foundation Licence or upgrade, please contact Education Officer Larry Lindsay VK2CLL. This will help Larry to plan

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the next Assessment weekend.

Urunga Convention



Sadly, the twice postponed 71st annual Urunga Radio Convention which was planned to have been held over the Easter Weekend on Saturday the 16th and Sunday the 17th of April 2022 had to be cancelled due to the difficulties in making the event fully COVID-19 safe.

Despite the cancellation of the 2022 Urunga Radio Convention several Amateurs including ORARC members Jamie Campbell VK2YCJ and Grahame O'Brien VK2FA and XYL Judy O'Brien VK2HZV/VK2ZZV holidayed at Urunga over the Easter weekend. They, and a few others met up for a meal to mark the Convention weekend.

Up until the cancellation of the 2020 convention, the Urunga Radio Convention had taken place over the Easter weekend every year for 70 years since the first one in 1949. The 70th annual convention was celebrated in style in 2019. Hopefully the 71st convention will be able to be held in 2023.

WICEN (NSW) Mid North Coast Group

The WICEN (NSW) Mid North Coast Region group holds a monthly meeting at the conclusion of the ORARC Monthly General Meeting on the first Saturday of each month. A number of new members have recently joined WICEN. They are looking forward to participating in the

activities of the group.

The WICEN (NSW) Mid North Coast Region group conducts a net on the WICEN 80 metre frequency of 3600 kHz LSB at 7 pm local time on Thursday nights. The nets finish in time for members to participate in the ORARC Thursday night net at 7:30 pm on the VK2RPM 146.7 MHz 2 metre repeater.

More information on WICEN may be found on the WICEN (NSW) website <http://www.nsw.wicen.org.au>



VK2BOR Club Station

The club station VK2BOR has been unable to participate in the usual events for the past year due to the COVID-19 safety restrictions rendering the use of the club's communications caravan impractical. The Committee is continuing to actively monitor the COVID-19 situation with a view to recommencing participation in events when restrictions are eased as the vaccination programme progresses.

In particular, coming events such events as the Remembrance Day Contest and the International Lighthouse and Lightship Weekend in August and the Scouts and Guides annual Jamboree on the Air (JOTA) in October are being closely looked at. VK2BOR has registered for the 2022 International Lighthouse and Lightship Weekend.

There will be more details regarding the RD Contest and the Lighthouse weekend and JOTA in the July issue of Oxtales.

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ORARC 2022 Christmas Party



The ORARC Christmas Party is held on the first Saturday in December each year. The 2022 Christmas Party will be held on Saturday the 3rd of December as marked on the ORARC 2022 calendar.

After the success of the ORARC 2021 Christmas Party last year we look forward another great Christmas Party this year on Saturday the 3rd of December 2022. The venue remains the same. It is the excellent covered outdoor picnic area at the Long Point Vineyard and Art Gallery.

Annual Membership Subscriptions Due 1 July 2022

ORARC Treasurer Dennis Meade VK2DAM reminds ORARC members that annual subscriptions are due for renewal on the 1st of July 2022.

Membership fees for the 2022 – 2023 Financial Year will be the same as last year's.

The Committee is very pleased that almost every member renewed their subscriptions in the 2021 – 2022 Financial Year. This almost perfect level of renewal and the addition of a substantial number of new members during the year despite a number of members becoming Silent Keys means that the club is able to hold member subscription rates at their current rates.

Ordinary Membership is \$40.00 per annum, Associate Membership is \$20.00 per annum, and Distant Membership is \$10.00 per annum. The Family Membership discount applies.

Membership subscriptions may be paid by Direct Deposit to the club's Regional Australia Bank account:

Bank Name: Regional Australia Bank
BSB: 932000

Account Number: 500032744

Account Name: Oxley Region Amateur Radio Club Inc.

Please use your callsign as the reference for the payment

Alternatively, you can pay by a cheque made out to Oxley Region Amateur Radio Club and post it to PO Box 712 Port Macquarie 2444, or you can pay in person at the club meetings or at the Field Day during the June Long Weekend. Contactless card EFT will be available at the Field Day.

Silent Keys

Sadly two of our esteemed members have become Silent Keys, Laurie Newham VK2ELN of Port Macquarie and Peter McAdam VK2EVB of Coffs Harbour. They will both be sadly missed.

Please see the Silent Key articles Vale Laurie Newham VK2ELN and Vale Peter McAdam VK2EVB in this issue of Oxtales.

Welcome New Member

Welcome to new member Dr Gabriel Lau VK2LAU, of Port Macquarie.

Life Membership

ORARC members are reminded that they are eligible for Life Membership at 85. Any members turning 85 please let the Committee know as Life Membership proposals must go before ORARC AGMs which are held in August each year.

Henry Lundell VK2ZHE
President



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Club Meetings are back on, subject to the relevant Covid Regulations for SES. Note the requirement of wearing masks inside the SES building.



The famous club meeting raffle is also back in full swing providing much needed additional funds for the club. Below a selection of raffle prizes.



A little humour

Peter VK2EVB (SK) had a well known sense of humour. Shortly before his sad passing, Peter gave Henry VK2ZHE the following

amusing picture for inclusion in an edition of Oxtales.



Book Review further comments

David VK2AYD

Henry's review of Dick Smith's Biography "*My Adventurous Life*" in Oxtales reminded me of two other books that you may like to read. "*Wireless Men & Women at War*" is available from the W.I.A. They are great Australian stories and touches on the big part the Radio Amateur played during WW II. Another book that I have really enjoyed is "*From the Wireless to the Web*": It describes and illustrates the Evolution of Telecommunications from 1901 to 2001. Superbly researched and written by Peter R. Jensen.

There are many very interesting stories and biographies that have been written since WW II (my school days) that touch on the activities of the Radio Amateur. Since my personal involvement in 1945 I have progressed from CW to AM to SSB, to FM to SSTV to Digital and operated (sometimes professionally) from GBR on 16 kHz to Metric and still prefer CW.

Hopefully the above two books will be for sale at our Field Day. If not call WIA.
de VK2AYD

Official Program for the
OXLEY REGION AMATEUR RADIO CLUB INC.

46th ANNUAL FIELD DAY

**Saturday and Sunday
11th & 12th JUNE 2022**

**In the Wauchope Showground Hall
High Street, Wauchope NSW**

Oxley Region Amateur Radio Club Inc.
PO Box 712, Port Macquarie NSW 2444
www.orarc.org | Club Station VK2BOR

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Oxley Region Amateur Radio Club Inc.
PO Box 712, Port Macquarie NSW 2444

CLUB STATION: **VK2BOR**

REPEATERS: **VK2RPM 146.700 & 438.525 MHz**
VK2RCN 53.8 MHz, 147.000 & 438.425 MHz
VK2RCN 438.425 MHz UHF (DMR repeater)

146.7 Repeater Requires 91.5 Hz CTCSS for Analog FM access
146.7 & 147.0 Repeaters are Analog FM out for either Analog FM or C4FM Digital input
438.525 Repeater requires 123 Hz CTCSS for Analog FM access
438.525 Repeater operates either Analog FM or C4FM Digital in the Auto-Auto Mode

APRS DIGIPEATERS: **VK2RPM-1 | 145.175 MHz**
VK2RCN-1 | 145.175 MHz

Welcome to the Oxley Region Amateur Radio Club Inc. (ORARC) 46th Annual Field Day.

The Oxley Region Amateur Radio Club Inc. was formed in 1971. A major objective of the club is to promote and foster the hobby of Amateur Radio. Since its formation the Oxley Region Amateur Radio Club has been continuously actively recruiting newcomers to the hobby. The club has an enviable ongoing record of success in conducting training classes to enable newcomers to obtain their call signs and get on the air. The club regularly conducts the licence exams locally. The entry level Foundation Licence has become very popular and the club regularly conducts a weekend training class which includes the assessment to qualify for the licence.

The club participates in various public service activities such as the Scouts and Guides annual Jamboree on the Air. The club has a communications caravan which used for both the public service communications training exercises, and to participate in Amateur Radio contests.

Please enjoy the Field Day. If you would like learn more about Amateur Radio please look at the Wireless Institute of Australia (WIA) website www.wia.org.au If you would like to obtain your licence through classes at Port Macquarie please contact the Oxley Region Amateur Radio Club Inc. (ORARC) at PO Box 712, Port Macquarie NSW 2444. More information and email addresses are available on the club's website www.orarc.org

The club meets twice per month in the SES building in Central Road, Port Macquarie.
The monthly general meeting is at 2pm on the first Saturday of each month.
A get together is held at 7pm on the 3rd Friday of each month.
Visitors are always welcome at these meetings.

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Oxley Region Amateur Radio Club Inc.
PO Box 712, Port Macquarie NSW 2444
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page*

FIELD DAY PROGRAMME

SATURDAY 11th June, 2022

- 0900 HALL SETUP** – Open for REGISTRATIONS \$5.00 from **1000**
1200 BBQ LUNCH Sausage sandwich \$2.50 Soft Drinks \$2.00
1300 2 Metre mobile **FOX HUNT** (Points allocated)
1430 80 Metre **PEDESTRIAN FOX HUNT** (Points allocated)
1600 2 Metre Talk in **FOX HUNT** (Points allocated)
1800 FIELD DAY DINNER in Seaview Room at the Port Macquarie Golf Club at menu prices. Seaview Room Sponsored by Radio Supply Pty Ltd.

SUNDAY 12th June, 2022

- 0830 REGISTRATION \$5.00** (No discounts) Children under 15 Free
0900 TRADE DISPLAYS and **DISPOSALS** open. Bacon & Egg Sandwich \$3
1000 80 Metre **PEDESTRIAN FOX HUNT** Standard Transistor Radio with No DF Mods or Attachments (Points allocated)
1100 80 Metre mobile **FOX HUNT** (Points allocated)
1200 BBQ LUNCH Steak sandwich \$4.50 Sausage sandwich \$2.50 Fruit salad & ice cream \$2.50 Soft Drinks \$2.00
1230 DRAW RAFFLES and Competitions
1300 2 Metre **PEDESTRIAN FOX HUNT** (Points allocated)
1400 2 Metre **MOBILE FOX HUNT** (Points allocated)
1500 Field Day concludes with **PRESENTATION** of Fox Hunting prizes and **PRESIDENT'S BRIEF ADDRESS & FAREWELL**

Prizes awarded for First Place in each Fox Hunt, Fox Hunt Champion, Runner-Up Fox Hunt Champion, Best Presented Amateur Vehicle, Best Home Brew display

\$5 registration covers both days & includes tea, coffee and biscuits
No charge or commission for **DISPOSALS** items but are at owner's risk

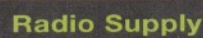
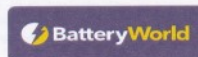
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thanks all our sponsors for their generous support.



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Telegraph Point Repeater Site Progress Photographs

Photographs Submitted by Henry VK2ZHE
Arthur VK2ATM and Rob VK2CRF.

Oxley Region Amateur Radio Club inc. Telegraph Point Repeater Site Progress Photographs Documentation from Green Field Site to Mast Foundation to Guy Anchor Block Completion.



Tally up time with the contractor



The site is cleared and the mast and guy positions staked out. Can just see the white stakes if photo is enlarged.



In the beginning there was just bush.

A new access road needed to be constructed before building could commence.



Nothing like a bit of mud to play in! Site meeting with mast contractor in the rain.



Starting work, clearing with the heavy equipment.



The site starts to take shape.

Nearly there with the clearing.



A road entrance is established ready for the next phase of construction.



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Positioning the site of the concrete block for the mast

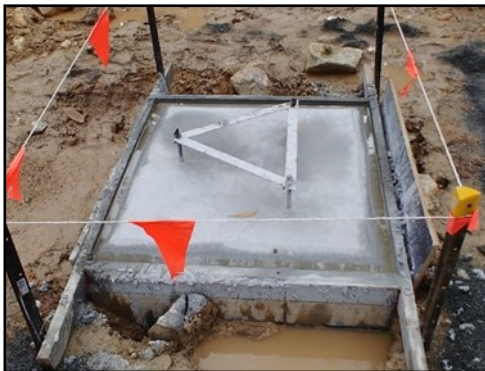


Mast North Guy Anchor block form-work.

Mast Foundation block formwork



Mast Anchor block concrete North Guy



Mast concrete block poured



Mast Anchor block completed and backfilled North Guy

Mast foundation block completed



Mast Anchor block form-work South West guy. Note the large size of the form-work compared with the contractor.



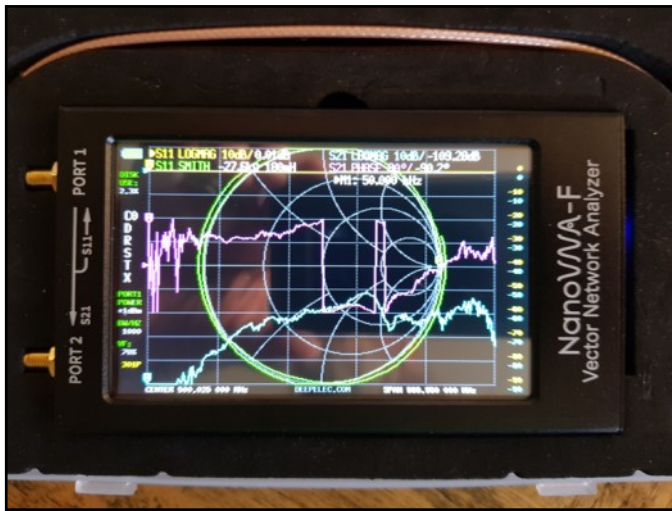
Mast Anchor block ready for concrete North Guy.



Mast Anchor block completed and back-filled South-West guy

A Look at The NanoVNA Vector Network Analyser

By Bob Ecclestone VK2ZRE



I bought my NanoVNA from Mark at QSL Comms through a pre-order deal before the 2021 ORARC Field Day. As I was literally on the Indian Pacific train enroute to Perth, WA during the Field Day event, I could not pick up my goodies personally and Ian, VK2GL, kindly agreed to collect them for me.

So what is a VNA anyway and what is a NanoVNA?

VNA is an acronym for Vector Network Analyser. A Vector Network Analyser returns coherent Magnitude and Phase measurement results from a Device Under Test (DUT). Hence the VECTOR reference in the name.

There are also Scalar Network Analysers, those most common to us are Spectrum Analysers (SA). A Spectrum Analyser returns only Magnitude results, there is no coherent Phase information.

Networks

So what is a NETWORK anyway? In this context, it has nothing to do with mobile phones, internet connections, LinkedIn or a night at the local pub.

For the average Amateur, we will generally be interested in measuring what are referred to as 1-Port and 2-Port devices. A 1-Port device is often an antenna or dummy load, a 2-Port device could be an amplifier, a filter or even a piece of coaxial cable. But don't be fooled, even the humble piece of coax can be either a 1-Port or 2-Port device depending on what we are trying to measure. More on this subject later.

Networks can have many ports, a mixer is a 3-Port device with an RF, LO and IF port. A VHF-UHF Diplexer is also a 3-Port device with VHF, UHF and Antenna ports. A circulator is a 4-Port device with Tx, Rx and Antenna ports, the fourth port being the termination. You get the picture.

The VNA Vs the Spectrum Analyser

The VNA and the Spectrum Analyser both have their strengths and weaknesses and are very different pieces of test equipment with different uses.

The Spectrum Analyser

The basic Spectrum Analyser by itself (no Tracking Generator [TG] or Return Loss Bridge [RLB]) can measure unknown signals across a chosen frequency range, with a very large dynamic measurement range of typically 120dB or more, something a VNA can not do.

They can also make measurements of those signals with very specific bandwidth constraints depending on what specific parameter is being investigated.

However, the Spectrum Analyser requires a Tracking Generator (TG) to make swept frequency/amplitude measurements of 2-port networks, for example amplifiers and filters. The measurement result is a coherent amplitude (magnitude) versus frequency response, but there is no phase information. Spectrum Analysers often have the TG built in as standard or as an internal option these days.

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A Return Loss Bridge (RLB) and a Tracking Generator are required to make coherent Return Loss/VSWR sweeps of 1-port devices, again returning only magnitude information.

But before the advent of the VNA, the spectrum analyser was undoubtedly one of the RF engineer or technician's most valuable pieces of RF measurement test equipment and one that many Amateurs often lusted over.

The Vector Network Analyser

The VNA on the other hand can make coherent magnitude and phase measurements on single or multi port networks. Whilst 2-Port, 2-Way VNAs are the most common, there are also VNAs that can make measurements on up to four ports at once, but the price starts to go exponential here.

Apart from a Calibration Kit used to calibrate the test setup before a series of measurements, the VNA does not require any other ancillary equipment to make these measurements. The VNA inherently combines a transmitter, a receiver and several phase sensitive detectors enabling all S-Parameters (see explanation below) to be measured at once on very high range equipment.

A 2-Port, 2-Way VNA enables all four S-Parameters to be measured without the need to change anything in the test setup. The VNA electronics automatically change the stimulus from Port 1 to Port 2 and the measurement from Port 2 to Port 1 for the S12 and S22 reverse measurements.

One of the beauties of the VNA is its ability to display the measurement results in so many different formats. S11 for example can be displayed as VSWR, Return Loss or Reflection Co-efficient in many different formats again including $R+/-jX$, $|Z|$ or the Impedance or Admittance Smith Chart. See an Introduction to Smith Charts later on.

Even a 2-Port high end VNA will set you back the cost of a reasonable house today, the required Calibration Kit is an additional cost equivalent to the cost of a small car. There are mid range units such as the Keysite FieldFox starting around US\$12,000 with the Calibration Kit costing an additional US\$800 or so.

This is why the VNA was considered for so long as such an esoteric piece of test equipment that could only be afforded by the most highly funded development laboratories.

But all that changed when the NanoVNA appeared on the scene.

The NanoVNA

The NanoVNA is a fantastic little piece of test equipment. The most common models (which I will refer to as Version 1) are derived from an open source hardware and software design originally developed by a Japanese developer "edy555". You could download the firmware, PCB layout and Bill of Materials and away you went and rolled your own. Make up a couple of test cables and a "calibration kit" and you were ready to roll.

Various manufacturers then started to supply "bare bones" assembled PCBs with a small 300mAh Li-ion battery and 2.8" display. You also needed some test cables and a calibration kit and a case if you wanted one, though many did not bother with a case.

In true Open Source style, other software developers soon got onboard and started to enhance the firmware, introducing new and refined measurement routines. Two notable players here are Hugen and DiSlord (their Google Group names). Hardware developers and clone manufacturers started to add, or indeed subtract, some features from the original design. The original design included an SD card interface and Real Time Clock (RTC) to enable saving measurement results.

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Most early clones deleted the SD card and RTC crystal to reduce costs although the facilities to mount them are often included on those PCBs that are a direct lift of the original layout design. As things developed, the most notable changes were to increase screen display sizes, include bigger batteries and various case designs. To further differentiate their product, manufacturers started to include the test cables and a full SOLT (Short, Open, Load, Through) Calibration Kit. Some included a custom storage case.

There are now many different variants available from various developers and outright clone manufacturers. Some are cheaper, some have enhanced capabilities, but they range in price from about A\$80 to A\$200 for the original Version 1 NanoVNA.

This unit can make measurements from around 10KHz to about 1.5GHz. The basic RF oscillator is a Direct Digitally Synthesised (DDS) IC, an Si5351A, which is specified to operate from around 50KHz up to 200MHz, but these units overclock the oscillator up to 300MHz and use the 3rd and 5th harmonics to reach 900MHz and 1500MHz respectively. Most units have difficulty making meaningful measurements above about 1300MHz though, due to internal leakage (crosstalk) and noise issues.

Some individual Si5351As oscillator parts are not stable at 300MHz and need to be pulled back to about 280-290MHz via a newly introduced Menu Item called “Threshold“. The “Threshold” command was always available from the Command Line interface, but has recently been added as a Menu Item in most recent iterations of the firmware. This limits the maximum 3rd and 5th harmonics to 870MHz and 1410MHz respectively, but for the average Amateur operating HF, 2m and 70cm, this is no great problem. This has become more necessary as some manufacturers are sourcing either out of spec parts or dodgy clone parts. As someone observed in a Google Group post recently, “China is the clone capital of the

world”.

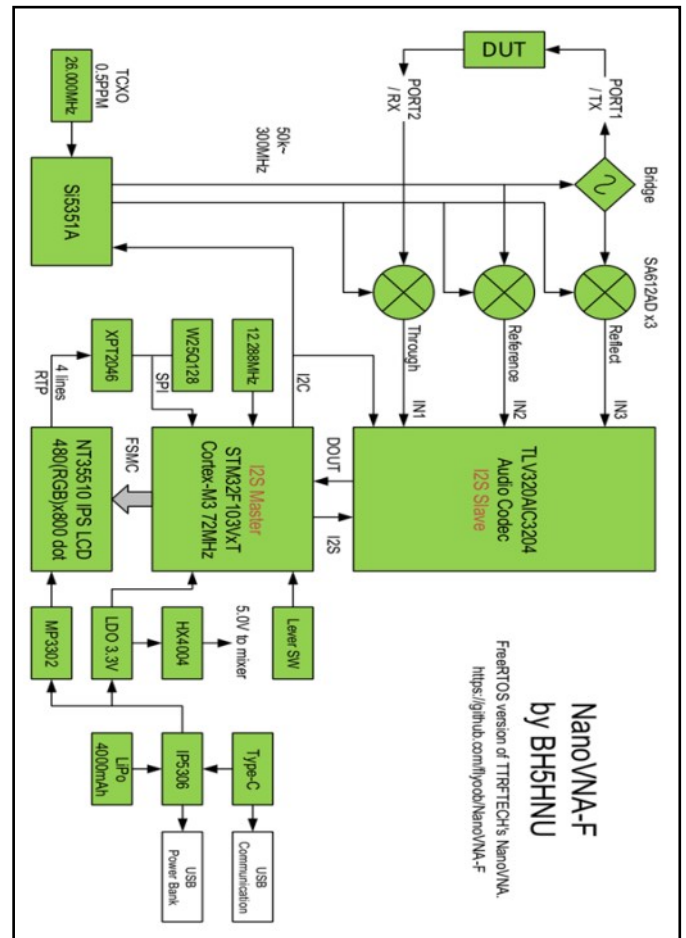


Fig 1: Block Diagram of the Deepelec NanoVNA-F. The W25Q128 Memory Chip is used here in lieu of the SD Card Interface to store Touchstone files directly on the device. The display is a 4.3” IPS LCD part with good resolution and can be viewed in sunlight.

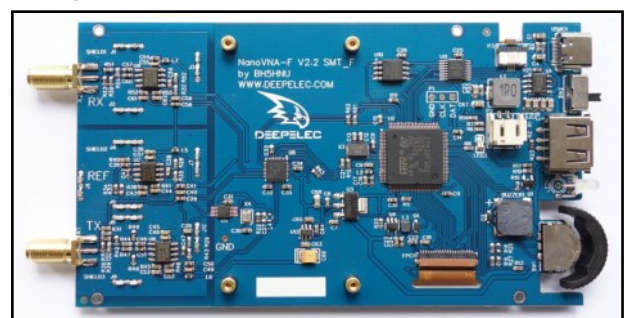


Fig 2: PCB of Thumbwheel version of Deepelec NanoVNA-F. Separate shields normally enclose both the “RX” and “REF/TX” sections of the board. Note the Type A and Type C USB ports. The Type C is the comms and charging port and the Type A can be used as a Power Bank to recharge a mobile phone from

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the onboard battery (Photo from Deepelec website).

The basic NanoVNA is a very clever device. See Fig 1. The original design was only intended to work up to 300MHz and that was only by radically overclocking the Si5351A Clock Generator which is only specified to Fmax of 200MHz. As the output of the Si5351 is a square wave, another developer, Hugen, worked out a way to use the harmonics to increase the useful upper frequency to around 1500MHz by using the 3rd and 5th harmonics for the Port1 stimulus signal. The Si5351A Clock Generator chip produces both the Stimulus signal and the mixer Local Oscillator signals. The IF is at 5KHz (yes, 5KHZ) and is processed by the TLV320AIC3204 Audio Codec. By very clever programming of the two oscillator/divider chains in the Si5351A, the Local Oscillator 5KHz offset is maintained by the appropriate choice of the fundamental, or the 3rd, 5th, 7th or 9th harmonic of the LO chain. One Group member developed an interactive Excel spreadsheet that can be used to demonstrate this clever programming feat.

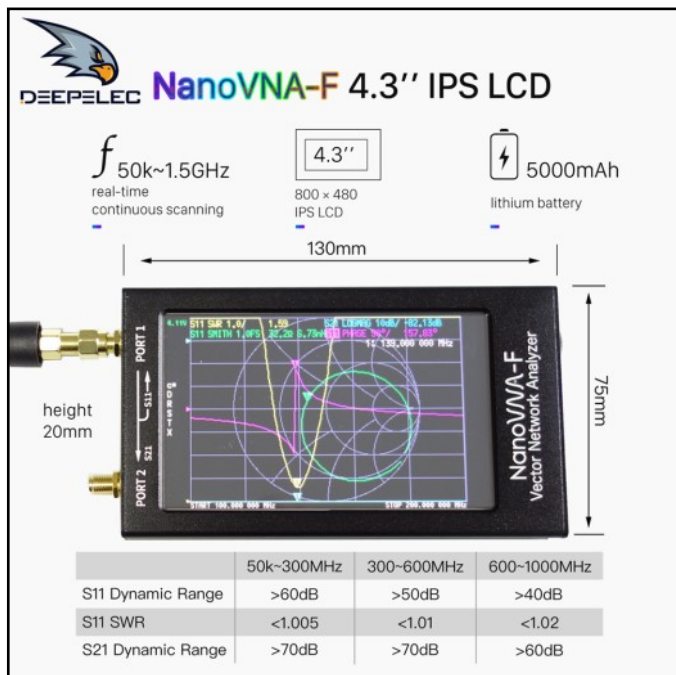


Fig 3: This is the Deepelec NanoVNA-F blurb from their online AliExpress web shop. The specifications are quite impressive for price.

Note the battery is now 5000mAh as opposed to the 4000mAh shown on the block diagram. These units are under constant revision.

NanoVNA Developments

There are now Version 2 NanoVNAs available which are specified out to 3-4GHz depending on the manufacturer. These units use a different architecture to the Version 1 units as they do not rely on the use of harmonics and have much improved internal leakage and noise performance. Unfortunately, one clone manufacturer is undercutting both the developer and other clone manufacturers to the point that the developer has decided to remove the Open Source status from future designs. In fact his latest Version 2 designs, the NanoVNA V2 Plus4 and Plus4 Pro designs are no longer Open Source, but are available to other manufacturers under licensing arrangements.

As a matter of interest, there are two independent comparisons of the NanoVNA V2 Plus4 against a commercial Keysight FieldFox VNA and an HP-8753E VNA. And this is for a US\$199 VNA! This represents really impressive performance for a unit that is still under \$300 Australian. See links here: <https://nanorfe.com/nanovna-v2.html>

They also have a new NanoVNA Version 3 about to be released which is specified out to 6GHz. The top of the line model is expected to be a full 2-Port, 2-Way VNA priced at around US\$1200. Remarkable value if it comes to pass.

The Version 1 original NanoVNA can make coherent magnitude and phase measurements of S11 and S21 parameters concurrently. S12 and S22 measurements can be made simply by reversing the Port 1 and Port 2 test leads. Pretty impressive performance for around A\$150 for the version I bought which includes a Calibration Kit.

Displays vary from a 2.8" LCD display through 4" and 4.3" screens. The Deepelec NanoVNA-F I bought has a great 4.3" IPS display which is

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very easy to read in sunlight. There are multiple comments on the Google group about display readability and the majority of poor comments relate to the smaller display sizes.

A Word on S-Parameters

This is not intended to be a tutorial on S-Parameters but a quick explanation that may be helpful in the context of this article. The web has some great tutorials.

The term “S-Parameters” is short for “Scatter Parameters”. For any device with (n) ports, Scatter parameters are a matrix of all possible stimulus and responses at all ports.

The first digit represents the measurement port, the second digit the stimulus port.

So for S11, we measure what comes out of Port 1 (reflected) when we stimulate Port 1.

For S21, we measure what comes out of Port 2 when we stimulate Port 1.

For a 1-port device, eg an antenna, there is only one S-parameter, S11.

For a 2-port device, eg a cable, filter or amplifier, there are four S-Parameters, S11, S21, S12 and S22. See Fig 4 and Fig 5.

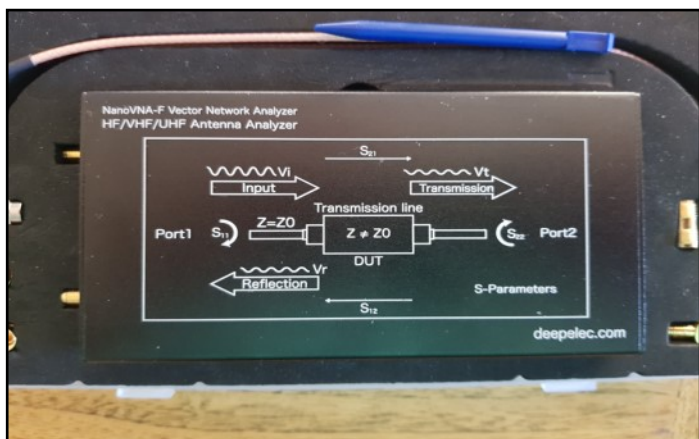
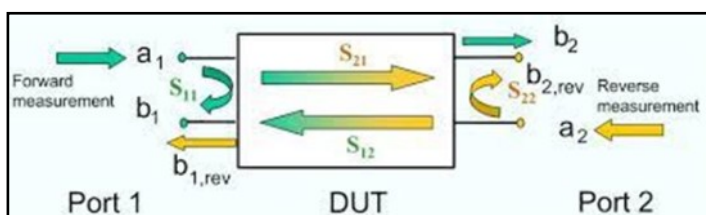


Fig 5: There is a handy S-Parameter Diagram on the rear of the NanoVNA

S11 is a measure of how much signal applied to Port 1 is reflected back from Port 1.

This can be expressed in many forms, the most common being VSWR, Reflection Coefficient and Return Loss. In Amateur radio, most of us think of this as VSWR.

In the case of S21 for a length of cable, we measure what comes out at Port 2 when we put a stimulus into Port 1. We generally think of this as a Cable Loss measurement.

In the case of S21 for a filter or an amplifier, again we measure what comes out at Port 2 when we stimulate Port 1. We generally refer to this as Insertion Loss for a filter or Gain for an amplifier.

But notice we also have a case where we stimulate Port 2. In the case of an amplifier, this seems counter intuitive, but S22 is a measure of the VSWR, or matching, of the output of the amplifier and S12 is a measure of the degree of isolation back through the amplifier from output to input.

The thing to remember about S-Parameters is that the number of S-Parameters for any given network is the square of the number of ports. So there are 4 S-Parameters for a 2-Port network, 9 for a 3-Port network, 16 for a 4-Port network and so on.

An Introduction to Smith Charts

Smith Charts were developed by Philip H Smith in the 1930s while he worked at Bell Telephone’s Radio Research Labs. They allow us to visualise all sorts of complex information about what is happening on a transmission line and the equipment attached at either end such as transmitters, receivers, amplifiers, antennas or resistive loads.

They were developed before the days of computers and any really serious RF measurement tools such as CROs and Spectrum Analysers. It was very much in the days of the slide rule, pencils and graph paper.

This is not going to

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\\be a tutorial on the use of Smith Charts for two reasons, I am relatively new to them myself and there are any number of great tutorials available on the web.

Basically, the Smith Chart can be drawn in two basic configurations, the Z Chart, or Impedance Chart and the Y Chart, or Admittance Chart. I will only refer to the Z Chart.

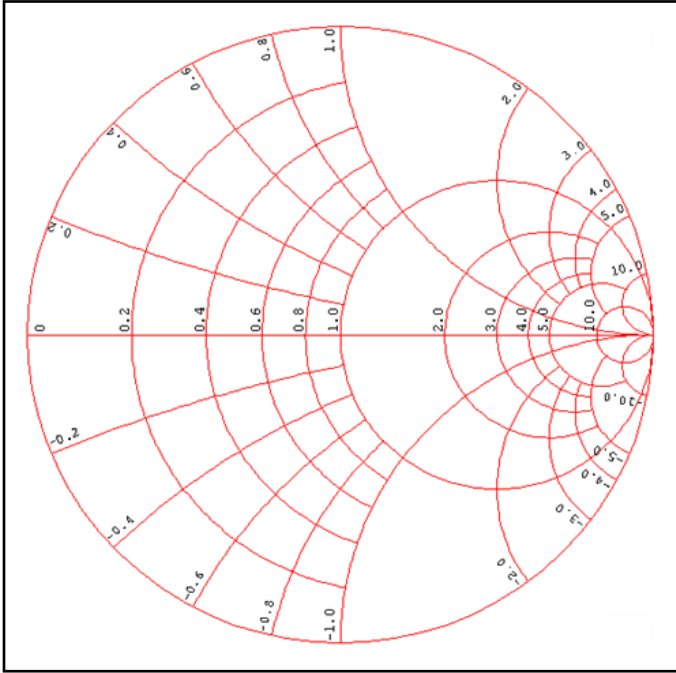


Fig 6: The Z or Impedance Smith Chart

Don't be put off if you are not used to working with Smith Charts.

Referring to Fig 6, the main things to take away from this are:

1. The horizontal centreline is pure Resistance
2. Zero Ohms (Short circuit) is at the extreme left of the centreline marked "0"
3. Infinite Resistance (Open circuit) is at the extreme right of the centreline
4. Reference Resistance (Impedance) is at the centre marked "1"
5. The upper hemisphere represents Inductive Reactance
6. The lower Hemisphere represents Capacitive Reactance
7. The outer circle represents maximum Reflected Power for an S11 plot.

For the purpose of this discussion, we will use 50 Ohms for our Reference Impedance.

The Reference Impedance may also be called the Normalised Impedance for the Chart. We will also only talk about S11 plots.

This then leads into the main subject of this article, the NanoVNA.

So What Can I Use It For?

This is only intended to be an introductory article to whet your interest. I will write up another article with applications, screenshots, etc.

But first and foremost, it is a great Antenna Analyser. And it is far more accurate than most of the more popular moving coil and LCD meter analysers that have been the mainstay of the Amateur test equipment arsenal for many years. And at a lower price in many cases.

If you want to cut a $\frac{1}{4}$ or $\frac{1}{2}$ wave matching or phasing stubs, a piece of cake!

With careful attention to calibration and test jigs, it is a very accurate LC meter. It can also measure R, but you do have a multimeter, right? There is some very good information on the Google group about this subject. There are also some excellent YouTube videos on the subject. You will be surprised at the depth of discussion and the not so obvious pitfalls you can run into doing something as apparently simple as measuring the value of a capacitor, inductor or indeed a resistor. Like when does an inductor become a capacitor due to stray capacitance, or a capacitor or resistor become an inductor. This stuff is really interesting and I guarantee you can spend hours just on this subject alone.

As with any piece of test equipment, there are things that you must be aware of to get the best results. But once you have played with it for a while, you will find the NanoVNA as

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indispensable as your trusty multimeter. It really is a remarkable little instrument.

A Word on Buying a NanoVNA

I would strongly urge any readers thinking of buying a NanoVNA to do their research. The google discussion group has a lot of information including valuable How-to through to Words-of-Woe. I strongly recommend you buy from a known reputable source, preferably within Australia to avoid frustration and tears. Where you think you might be saving a few dollars may well be a case of “Penny wise, Pound foolish” (to mix a metaphor).

Further Information

Again, I urge anyone considering buying a NanoVNA to do your research. The Google Group <<https://groups.io/g/nanovna-users/>> contains a lot of information on what you can do with a VNA and problems with various different versions of the NanoVNA. As an example, there are numerous threads about problems updating the firmware on some models. I was extremely lucky in that my Deepelec unit has a very simple method of updating the firmware. I have done this four times now without any issues. But it still required careful attention to loading drivers.

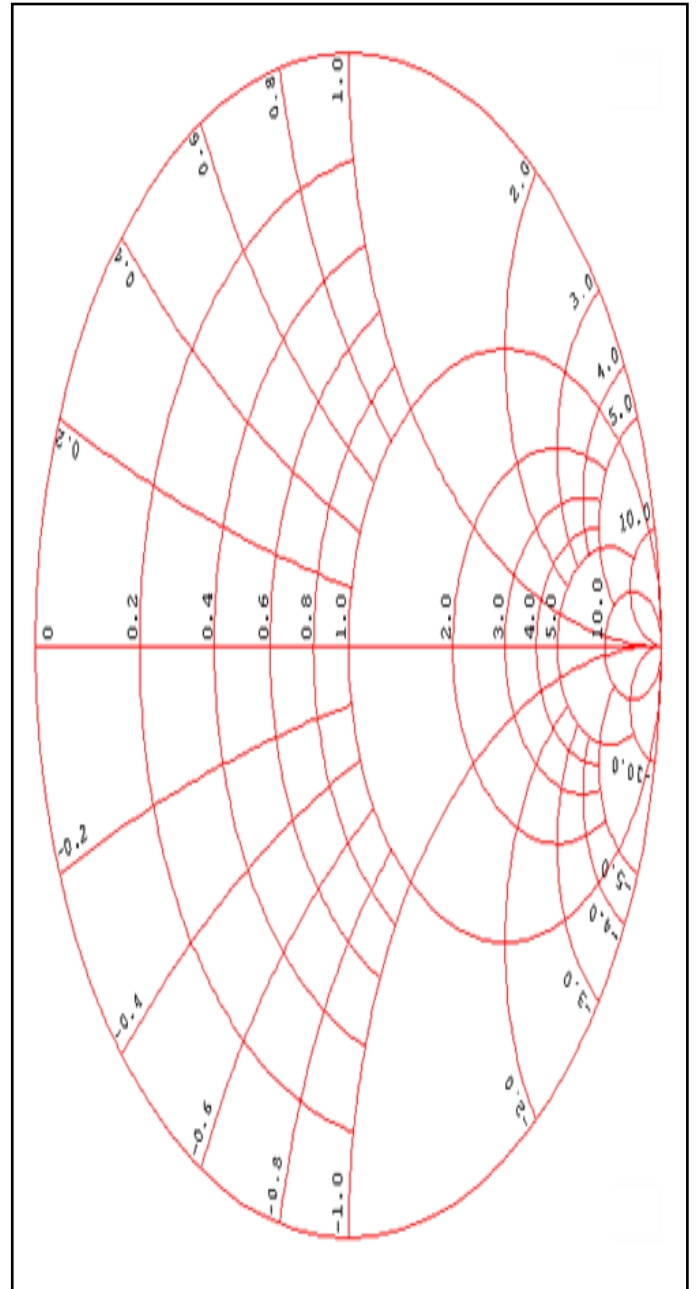
As an aside, one of the nice touches with the Deepelec NanoVNA-F and the newly released DeepVNA-101 is that you can put your own information such as name, callsign, phone number, etc on the Splash Screen and the Info Screen. See Fig 7.



Fig7: Note the customisable “User Info” field.

Disclaimer: I have not obtained any payment or advantage from mentioning either of these two companies. I only mention them because I have dealt with Mark and I have a Deepelec NanoVNA-F with which I am very happy.

Bob VK2ZRE



Above is a copy of the Smith Chart in the article enlarged for easier reading.

Blast from the Past

Blast from the Past' is the section of Oxtales where we reflect on what the club was doing in years gone by. Members are also encouraged to send in items relating to club members or club activities in previous years.

This month's blast is taken from the 2012 May issue of Oxtales which was a busy reporting time for our club which had 60 members. Henry VK2ZHE was President, Bruce VK2HOT Vice President, Keith VK2FKJA (SK) Treasurer and John VK2KC Secretary.

It is sad to see the number of SKs increasing over the past 10 years. However it is pleasing to note the number of new members that have joined during the past 10 years ensuring the viability of our club continues.

The main club activities reported on in May 2012 were the; Bago Forest Car Rally, John Moyle Field Day, the Urunga Radio Convention and the WIA Field Day.

The club also tested the VK2RCN-1 APRS digipeater prior to installation at the Telegraph Point repeater site. This repeater would increase reliability of coverage in the Port Macquarie and Wauchope areas that were not in the line of sight to the existing VK2RPM-1 repeater.

The following is taken from the John Moyle field day report written by Henry VK2ZHE

“ . . . Saturday 17th March 2012

This popular annual event attracted eighteen members of the ORARC to a colourful vantage point over looking the Rosendahl Reservoir from Clearwater Crescent picnic site at Port Macquarie.

The club's van, from which VK2BOR operated over the 6-hour section from Noon to 6.00pm, was located in a parking area adjacent to the new picnic/ BBQ facility, just completed by the Port Macquarie Hastings Council.

Although we were unaware at the time, the picnic site's recently installed, fully-functional

gas BBQ, had not been "officially opened". The official "opening" gave it an initial "acceptance test". A test from which it emerged with full marks . . .



Barry VK2FBRG (now VK2LBG) acceptance testing the BBQ.

John VK2KC, Lyle VK2FCVI (Now SMI) and Bill VK2ZCV (SK). Erecting the portable masts and beams.



Communications caravan set up on site.



Continued on next page



“The ever-popular, and long running Urunga Radio Convention, held on the Easter Weekend, once again attracted a pleasing representation from ORARC.

Pictured above is the main reception table, showing our President, Henry, VK2ZHE registering at Reception, being greeted by Arnold, VK2ADA (SK). The lady officials (L to R) are Marie Warwick, Micaela Winkler, June Austin, & Catherine Golden... “those who make it all happen” are to be seen, doing just THAT!

Pictured, Left, is Craig, VK2ZCM (now VK2CSM), the fox-hunter and XYL, Jenny (his Driver), with their collection of trophies won during the days’ events. The event trophies won by Craig and Jenny were:

*Saturday’s 2-metre Mobile, 2nd place,
40-meter Fun Type event, 1st place
80-metre Hunt, 1st place
Talk-in Mobile, 1st place
Sunday’s 2-Metre Mobile, 2nd place
Brian Starke Memorial Prize”*

WIA National Field Day

ORARC Members set up the club’s caravan and operated the club station, VK2BOR, on the Port Macquarie Town Green on Saturday the 14th of April 2012. The objective of the day’s activities was to engage with the community and to showcase Amateur Radio to the public.

HF conditions in the morning were poor, resulting in VK2BOR making only a few HF contacts before Noon. Several 2-metre contacts were made with groups in the surrounding areas. HF improved in the afternoon.

Bob, VK2EJK brought along his world map display, showing his confirmed contacts. This attracted a great deal of interest. (See picture on next page.)

Further interest was generated with the viewing the APRS tracking of the flights of the two balloons, LOKI 1 and HELIOS 1, when they were released by the Tamworth Radio Club, during the late morning.

LOKI 1 was the brainchild of the Tamworth Radio Club, and HELIOS 1 was conceived by secondary school students, Liam and Ricardo from VK4 land.

WIA Field Day Continued

HELIOS 1 was Helium filled and was the first to be launched from Breeza (south of Gunnedah). It reached a maximum height of 32,277 metres or 105,895 feet.

LOKI 1 was filled with Hydrogen and was launched a short time afterwards and followed

HELIOS 1, reaching an altitude of 33,073 metres or 108,507. Their flight paths, presented on WWW.APRS.FI/ from start to finish, made interesting viewing for all present.



Bob VK2EJK (SK) Displaying showing his confirmed contacts on Amateur Bands.

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Car Rally: Bago Forest Classic

Saturday 24th March, 2012

'The rally, conducted in the Middle Brother State Forest, SSW of Kendal, enjoyed excellent Autumn weather throughout the 9 hours that covered the setting up and actual running. Rally Headquarters was set up at Kendal Showground.

Members gathered at the HQ at 8.30am for a briefing on arrangements, and they were all ready in their allocated positions well in advance of the scheduled starting time of 11.00am.

Out of a final starting registration of 53 competitors, 43 were actual starters that began to "roar off" from the starting point at 11.09am. No serious accidents were recorded, and no injuries were sustained by competitors or onlookers as a result of a few minor "dings" and a reported "roll-over" of one vehicle.

Members of ORARC who participated, providing communications at the following manned sites, were:-

HQ (in club's caravan at Kendal

Showground):

VK2KCE (Charles), VK2AYD (David) VK2TT (Trevor)

Start:

VK2KSM (Stuart), VK2FCVI (Lyle) , VK2ZCM (Craig)

Road Closure Points:

1. VK2CLL (Larry), VK2RR (Ross)
2. VK2KC (John) & XYL Corrine
3. VK2HOT (Bruce—Coordinator), VK2FBRG (Barry)
4. VK2FKJA (Keith), VK2CHC (Richard)

Finish:

VK2ATM (Arthur), VK2ZCW (Bill), VK2DFN (David)

The well organised event, which was completed by 4.45pm, was another rally in which the club members' efforts were appreciated by the organisers.'



Charles VK2KCE (SK) and David VK2AYD at HQ



John VK2KC and Corrine at a road closure point



Some "rough and dusty" action shots of some of the competitors on the rally



Richard VK2CHC at a road closure



Presidents Report to the May 2022 AGM

Date : 07 / 05 / 2022

Author : Scott Williams - VK3KJ



In a year that was again dominated by the coronavirus pandemic, the focus of the WIA has been on supporting the Amateur Radio Service with strong advocacy.

With just less than one year under my belt as the newly elected WIA President, my training wheels are just coming off as I settle into two full years being on the WIA Board of Directors.

In a year where the coronavirus pandemic continued to be a disruptive force across

Australia and around the World for what is the third year in a row.

As the WIA President, I am pleased to report that the Board has progressed a number of initiatives this year, but much of our focus has been on improved engagement with the regulator, increased advocacy, supported by a range of submissions and improved governance both internally within the office operation and on the Board.

As I commented when I took up the President role, the WIA needs to get back to basics and improve our engagement with members and clubs and become more outwards focused. Despite we have made some progress, including appointing a new Club Liaison Officer, there is a long way to go and there is certainly acknowledgement that we have a range of challenges that need further action and attention.

(A full report of the President's address can be read on the WIA website. [Presidents Report to the May 2022 AGM \(wia.org.au\)](https://www.wia.org.au) .

WIA AGM to see two new directors appointed

Date : 02 / 05 / 2022

Author : Peter Clee - VK8ZZ

WIA Directors - change of positions

The election for the Board of the Wireless Institute of Australia is held at the beginning of each year. Retiring directors are allowed to re-nominate for a position on the Board.

At the AGM this year the term of directorship will expire for three members of the Board :-

- Lee Moyle VK3GK
- Philip Shields VK2CPR
- Oscar Reyes VK3TX

The returning officer has advised

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the results of the election of Directors.

The Directors newly Elected are: -

- Chris Dimitrijevic VK3FY
- Steven Green VK2TSG

And a returning director re-elected:

- Lee Moyle VK3GK

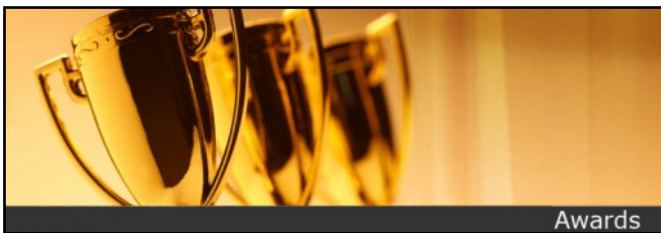
The term of the new and returning directors will commence at the closure of this years AGM on 7 May 2022.

Directors previously elected or appointed and continuing until May 2023 AGM are; -

- Greg Kelly VK2GPK
- Peter Clee VK8ZZ
- Scott Williams VK3KJ
- Peter Schrader VK4EA

The board currently has a full compliment of directors as allowed under the constitution.

WIA Merit Awards announced at 2022 AGM



Date : 07 / 05 / 2022

Author : Peter Clee - VK8ZZ

WIA Merit Awards announced at 2022 AGM

There were eight WIA Merit Awards announced at the WIA AGM today. Recipients of the WIA Merit awards in 2022 were:-

Peter Young VK3MV - Presidents Commendation

In recognition of a very extended service to the WIA. A recipient of the GA Taylor

Medal (2012), for exceptional services to the Wireless Institute of Australia Peter has been of a significant assistance to the institute over many years. He has only recently stood down from the position of WIA Monitoring Service Co-ordinator and as a director of the International Amateur Radio Union (IARU)

Dale Hughes VK1DSH - Presidents Commendation

Dale has previously received the G A Taylor medal (2016), the highest WIA Merit Award. Dale was also a recipient of the Ron Wilkinson Achievement award in 2012. Dale continues to serve the WIA on committees and as our representative to the World Radio Conference. He is an active member of the Spectrum Strategy Committee and the Regulatory Liaison Group. Dale is also an active member of the IARU liaison sub-committee. Dale also chairs one of the principal working groups.

Graham Kemp VK4BB - Presidents Commendation

In recognition of his contribution as Team Leader of the WIA News service group and a anchor of the weekly broadcast. Graham has a high profile in WIA Media circles and is trusted to bring the weekly news to our members throughout Australia. Graham was a recipient of the GA Taylor medal in 2005.

Ian Jackson VK3BUF Technical Excellence Award

In recognition of his technically contribution to the amateur service and articles and videos on the reduction of QRM and RFI including his article on ferrites and how they can be applied to RFI suppression.

Andrew Chapman VK4QF - Chris Jones Award In recognition of his special achievements and longstanding efforts

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for the benefit of the Amateur Radio community in Queensland. In particular for being integral in the establishment of the SE Queensland Wide Area Network (SEQWAN). The SEQWAN is a network of seven crosslinked repeaters providing reliable communications for a large part of south east Queensland.

Hayden Honeywood VK7HH - Michael Owen Medal

In recognition of service to Amateur Radio through the publication of HRDX internet web site and the HRDX YouTube Video Streaming channel. These internet and social media streaming outlets are educational, informative, entertaining and inspirational. Appealing to both younger and newer recruits as well as the older stalwarts of the Amateur Radio service.

Bevan Daniel VK5BD - Ron Wilkinson Achievement Award

In recognition of his valued contribution to value adding to the WIA National News Service by compiling a professional video version each week which is made available for retransmission on ATV systems around the world, including the British Amateur Television network as well as being published on YouTube and for personal use.

Grant Willis VK5GR - GA Taylor Award

In recognition of his outstanding contributions to the Amateur Radio Service and to the Wireless Institute of Australia as a member of the Spectrum Strategy committee and the IARU Liaison Sub Committee. Grant is the WIA representative to the IARU Region 3 HF Band Plan Committee and is the Chair of that committee of the IARU. Grant Willis is also a keen contesteer and was a recipient of a Presidents Commendation in 2018.



Radio Amateurs to Participate in MARS Interoperability Exercise during May 2022

Members of the Military Auxiliary Radio System (MARS) conducted an HF skills exercise from Monday night, May 2 through Saturday, May 7, 2022 to practice interoperability with the amateur radio community.

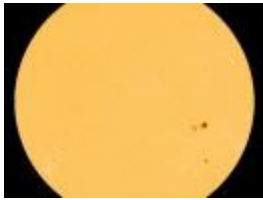
A 60-meter high-power broadcasted on May 3 at 0200 UTC followed by the FEMA region net. That continued for four more nights at 0200 UTC with the region net.

MARS members reached out to the amateur radio community via the 60-meters Channel 1 Net (5330.5 kHz). These were directed nets within regions. The nets were not typical "everyone check into the net" operations. Net control ask for stations meeting specific criteria to check in, e.g., stations in a particular geographic area.

In addition to 60 meters, MARS stations will also reached out on amateur frequencies such as 80-meter traffic nets and other bands. – *Thanks to Rob Hurd, N3HU and Chief Army MARS Paul English, WD8DBY.*

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The K7RA Solar Update



05/06/2022

www.spaceweather.com reported on May 4 at 0859 UTC that an M5 solar flare erupted from sunspot group AR3004, causing a shortwave radio blackout over the Middle East and Africa.

Recent flare update: <https://bit.ly/3OXvuo8>

Solar activity was lower this week, even though we could see sunspots every day.

Average daily sunspot numbers dropped from 109.3 to 68.6, while average daily solar flux went from 156 to 120.

Average daily geomagnetic indices were only slightly higher, with average planetary A index changing from 9.1 to 10.7, and middle latitude A index from 8 to 9.3.

Predicted solar flux looks low for the next month, even dipping below 100 in early June. In fact, from Wednesday to Thursday the predicted solar flux for the first week of the forecast dropped dramatically.

Amateur Radio Newline Report 2324 for Friday May 13, 2022

David VK2AYD is kindly supplying various Amateur Radio Newline Reports on the world of Amateur Radio.

REPORT: HAM RADIO USED ILLEGALLY ON TOUR BOAT THAT SANK

NEIL/ANCHOR: Our top story this week takes us to Japan where a report about a fatal tour boat accident says the operator may have made use of amateur radio ille-

gally. Jim Meachen ZL2BHF takes up the story from here.

JIM: A Japanese tour boat that sank last month, killing 11 of the 26 people on board, was making use of amateur radio illegally as one of its main communications methods, according to a report in one of Japan's main daily newspapers. Japan's Radio Act forbids the use of amateur radio for profit-making purposes but according to a report on the Mainichi Shimbun news site, the Yazu I tour boat relied often on ham radio to communicate with the office, other tour operators and other ships.

The boat sank on April 23 off the Shiretoko Peninsula of Hokkaido in the northern Japanese waters. The news account said that it was believed that the captain of the boat was unable to get a signal on his mobile phone and the onboard satellite phone was broken. The news report said that another cellphone was used to summon help but did not identify who it belonged to.

Anyone found guilty of violation of the Radio Act faces a possibility of as much as one year in prison or a fine of 1 million yen, the equivalent of \$7,700 in US currency.

BRAZIL PASSES REGULATION LIMITING SOLAR PANEL RFI

NEIL/ANCHOR: Brazilian lawmakers have passed a tough new law limiting RF interference from solar panels. Jeremy Boot G4NJH brings us the details.

JEREMY: Brazil took an important step in the containment of solar panel RFI by adopting new regulations and requirements that took effect on the 2nd of May. The ordinance governs the generation, conditioning and storing of electricity in photovoltaic systems. The move by Brazil's National Institute of Metrology and Quality was hailed by amateur radio operators, including members of the Spectrum Management and Defense Group of The Liga de Amadores Brasileiros de Rádio Emissão or LABRE, the Brazilian national amateur group. The Brazilian organisation provided guidance and feedback to

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the national institute with the help of the electromagnetic compatibility coordinator of the IARU and the ARRL.

A statement in English translation on the LABRE website praises the new regulation which exceeds the language of its 2011 version by providing this kind of RFI protection for the first time. In translation into English, LABRE praised the measure, calling it [quote] "an effective advance in the protection of radiocommunications in Brazil against interference generated by photovoltaic systems.

YOUTH ON THE AIR TO WELCOME VISITORS AT DAYTON HAM



Younger radio amateurs visiting Hamvention will find a busy agenda at the Youth on the Air Booth in the Xenia Fairgrounds' Volta building. Booth 4304 will be welcoming young visitors by hosting mini-forums on Friday and Saturday in coordination with ARISS, Ham-Sci, the Yasme Foundation and a number of other groups. There will also be social hours for young amateurs who stop by on Friday and Saturday at noon. These activities will take place in a small meeting area just behind the main booth. For more details, visit youthontheair.org/hamvention2022/

For Amateur Radio Newsline I'm Stephen Kinford N8WB.

90TH ANNIVERSARY ACTIVATIONS REMEMBER AMELIA EARHART



Few things can touch history and relay its message better than amateur radio, especially across an ocean. Two groups

of hams on opposite sides of the Atlantic plan to do just that, as we hear from Dave Parks WB8ODF.

Amelia Earhart, the American pioneering aviator, crossed the Atlantic Ocean non-stop on May 20 and 21 in 1932, becoming the first female pilot to do so. On the 90th anniversary of that achievement, some radio waves will accomplish the same thing, coming from transmitters in Atchison, Kansas and Londonderry, Northern Ireland. Hams in Londonderry will activate the callsign GBØAEL between the 13th and 30th of May, celebrating the pioneering pilot whose single-engine plane touched down on the very field where they will be calling QRZ. Operators will be amateurs from the North West Group Amateur Radio Club, MNØNWG.

Meanwhile in Kansas – Earhart's hometown – operators Steve, KCØVYS, and Chuck, KBØTOT, will be on the air on May 20th and 21st at what is now the Amelia Earhart Memorial Airport. Both stations will be offering commemorative certificates for hams who make successful contacts. Steve wrote on his QRZ page that the hams in Kansas will be using his callsign and promoting the Irish activation too.

The "AEL" in GBØAEL stands for "Amelia Earhart Legacy." Hams in the North West group have written [quote] "By making contact with GBØAEL, you will also be making history." [endquote]

For Amateur Radio Newsline I'm Dave Parks WB8ODF.

Equipment from the Past



Wireless Set WS

The Wireless Set 108 was designed and produced by Radio Corporation (Melbourne) during WW2. Wireless Set No. 108 was developed for the Australian Armed Services in early 1941 as a low power portable transceiver capable of voice transmission only. (WS No. 208 which was a very similar set was for CW only and will be featured in another edition of Oxtales). All makes of the WS No. 108 were manufactured by Radio Corporation Pty. Ltd. in Melbourne and were based on the existing British 18 set.

WS No. 108 could be attached to the standard Army Web Equipment as a backpack and could be operated whilst on the move. There were actually two models, the WS No. 108 Mk. I and Mk. II with different frequency ranges as follows:

108 Mk. I

8.5 Mc/s to 8.9 Mc/s The IF frequency was 455 Kc/s

108 Mk. II

6 Mc/s to 9 Mc/s The IF frequency is 1600 Kc/s

The Mk. II had the advantage of being able to communicate with the standard Wireless Set No. 101 which had a frequency range of 6 Mc/s to 6.8 Mc/s.

The set evolved over time, with 3 different variants being produced, known as the 108

Mk1, 108 Mk2 and 108 Mk3. The variants must have produced some problems for the army as they were not always able to communicate with each other, owing to differing frequency ranges as follows:

108 Mk1 8.5 - 8.9 Mc/s (1941)

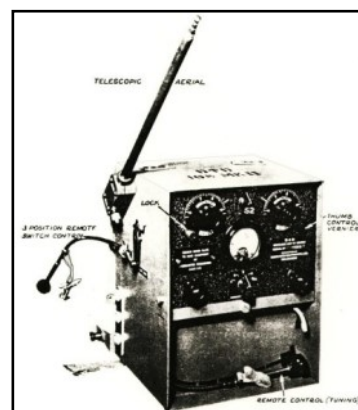
108 Mk2 6.0 - 9.0 Mc/s (1941)

108 Mk3 2.5 - 3.5 Mc/s (1943)

In 1944 a new version, the WS No. 108 Mk. III was introduced with an MCW facility and a different frequency range: 108 Mk. III 2.5 Mc/s to 3.5 Mc/s

As both the 108 Mk. I and Mk. II are externally very similar, the following description applies to both. The 108 was installed in a sheet metal case with a removable front lid and canvas covers to protect it from dust and moisture. It was carried on the operator's back and had two Bowden cable controls for the operator to access. One to operate the Send-Off-Receive switch and the other to tune the receiver. The operator had to tune the transmitter first, before placing the set on his back. An aerial mount on the side of the set mounted a whip antenna.

The 108 was powered by dry batteries of 90V HT (made up of two 45V blocks in series) and 1.5V LT which fitted into a compartment in the case, under the radio set. With a sending to receiving time ratio of 1 to 3 the batteries were expected to last around 110 hours for HT and 30 hours for the LT battery. The power output of the set was 0.4 to 0.45 watts (unmodulated) depending on the frequency and length of aerial.



WS No. 108 Mk. II

In the photo you can see the Bowden Cable for the Off-On-Receive switch, with its attachment strap. It has a push-in clip to hold it in place on the side of the case. Above it is the aerial

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socket and you can make out the long wire terminal underneath it. Below the remote switch cable are jacks for two sets of headphones and a microphone. The Remote Tuning cable is still clipped into the removable battery cover panel and has its attachment strap neatly folded up.

The aerial socket was mounted at 45 degrees so that it did not interfere with the operator in either standing or prone position. A whip aerial extendable up to 6 feet was provided but normally extended only around 3 feet and a long wire could also be connected to a terminal under the aerial socket.

Although the general design was similar, the front end circuitry of each set is very different, to account for the different frequency ranges and different IF frequency.

The sets would have found favour for portable amateur operations post war. However they were very low powered and had frequency stability problems that would have tried the patience of operators. The 108 Mk1 is very rare, as only a small number were made and was discontinued owing to the very restricted frequency range. The Mk2 addressed the lack of frequency coverage, but it would not perform in the tropics as the frequency was too high and therefore absorbed by the jungle.

The sets were all battery operated and featured a 1.5v LT battery and 2 45v batteries connected in series for HT. The unmodulated power output of the sets was between 0.4 and 0.45 watts depending on the frequency and the length of the aerial. The sets weighed in at just above 26 lbs (11 kilos without backpack frame of antenna pouches etc a complete station with accessories was around 20 kilos) A netting switch was provided to adjust the transmitter and receiver to a common frequency. There was also a 4 channel pre-selector system, which enabled 4 pre-determined frequencies to be quickly selected.

The WS No. 108 had a mixed reputation in the Pacific area. When it worked it worked well but it seems that failures were common. In addition the range in jungle was limited (but that would apply to any set). It was used as a coast watchers set when available because it was relatively small and light. The disadvantage was that it needed a guaranteed supply of dry batteries.

WS No. 108 Mk. III

The Mk. III was a development of the Mk. II and looked similar. However the battery was now a single multi-voltage block providing 99V HT and 1.5V LT and instead of spring terminals the battery had a multi-pin socket. The power input to the final valve was 0.5 to 0.6 watts, depending on frequency and length of the aerial. It could operate on voice and MCW and the frequency range of 2.5 Mc/s to 3.5 Mc/s enabled it to communicate with the No. 19, No. 109, No. 22 and No. 133 sets.



More attention was given to the aerial system in the Mk. III and a 10 position aerial coil tap switch was incorporated. Positions 1 to 10 were for long wires and 9 and 10 for rod antennae.

References:

[WS No. 108 \(qsl.net\)](#)

[Army No. 108 Wireless Set - Wikiwand](#)

[Ben Nock, Military Wireless Museum \(qsl.net\)](#)

Silent Key –

Lawrence Noel Newham VK2ELN known as Laurie



It is with great sadness that we record the passing on the 19th of March 2022 of esteemed long time ORARC member Laurie Newham VK2ELN of Port Macquarie. He passed away peacefully in hospital after a decade of indifferent health. He was aged 83 years.

Laurie was born on the 24th of April 1938. His family originally came from Cowra. He and his wife Robyn moved to Orange. Laurie had a great interest in cars and in flying both powered aircraft and gliders. He owned a glider which he bought from South Australia and transported home by road. Laurie regularly flew the glider from Dubbo. He always enjoyed building things and he and his brother built a caravan which they took all the way around Australia.

In the 1970s Laurie and his family moved to Port Macquarie where Laurie worked for Bob Todd Motors, the local Holden Dealer, and was well known for his expertise and resourcefulness in NRMA road service. Thank you to Laurie's family for the photo of Laurie in action jump starting a car that had a flat battery.



Laurie then established an automotive business in Port Macquarie, Port Macquarie Mufflers and Brakes. He also taught automotive trades at the local TAFE college. His technical expertise and practical experience were very highly regarded.

Many Amateurs bought used batteries for their stations from Laurie's collection of batteries replaced by his automotive electrical work. Some of these batteries were very large. While they might not have been able to start a D9 bulldozer anymore these batteries happily ran amateur radio transceivers for many hours.

In Port Macquarie Laurie continued to enjoy flying and was an active member of the Hastings District Flying Club and had an association with Bob Needham who ran a flying school as part of his aviation activities. In one of the accompanying photos from Laurie's family collection Laurie is shown familiarising himself with the cockpit of a Cessna 206.

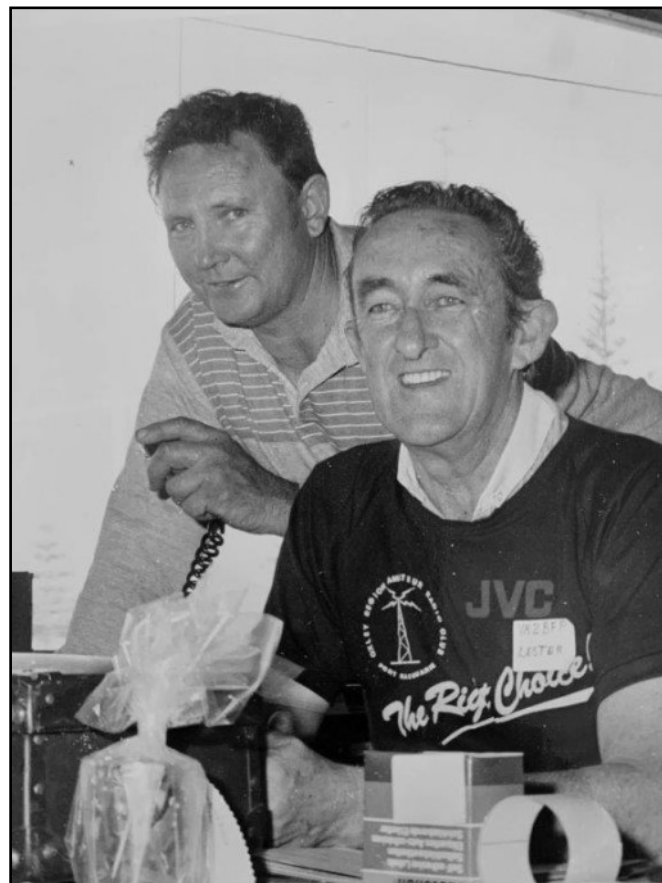


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Laurie built a gyrocopter which demonstrated his great skill in welding aluminium. At Laurie's funeral service Bob Needham delivered an interesting aviation eulogy which included the story of Laurie's gyrocopter which was powered by a Subaru engine. Laurie sold the gyrocopter after ground testing it and making one short hop.

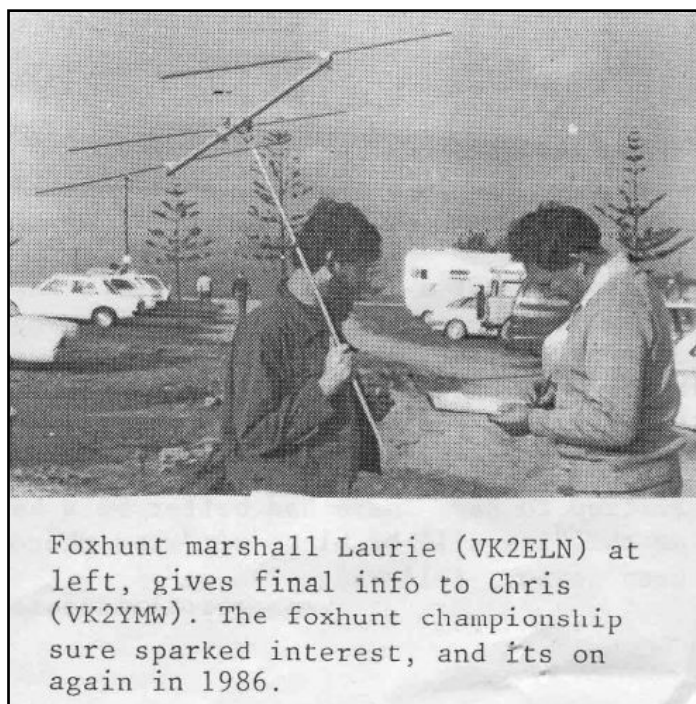
Laurie obtained his Amateur Radio licence and keenly participated in the Oxley Region Amateur Radio Club activities. One of the accompanying photographs taken from a 1985 issue of Oxtales shows Laurie at the 1985 ORARC Field Day speaking with Chris Williams VK2YMW in Laurie's role as the Foxhunt marshal.



Laurie with Lester VK2BFP (SK) at the field day in 1985

Laurie had been an ORARC member for 40 years and was looking forward to being awarded Life Membership next year when he would have turned 85.

In retirement Laurie lived on the canals in Port Macquarie. He built his own jetty and enjoyed boating and fishing. He enjoyed Amateur Radio and maintained his interest in aviation. He was always building and repairing things which made him very popular with his extended family and friends. He was very keen to record family activities and always had his video camera close at hand. The family photo of Laurie using his video camera was the cover photo on the Order of Service for Laurie's funeral.



Foxhunt marshall Laurie (VK2ELN) at left, gives final info to Chris (VK2YMW). The foxhunt championship sure sparked interest, and its on again in 1986.

Thank you to Laurie's family for the photograph of Laurie beside then club president Lester O'Connell VK2BFP (SK) at the Field Day. Laurie is speaking on the radio starting a foxhunt. In those days the annual Field Days were held in the RSL Nissen Hut at Oxley Oval in Port Macquarie. By the way, Chris VK2YMW has attended every ORARC Field Day and is still a keen foxhunter and only narrowly missed out on being Runner Up Foxhunt Champion at the 2021 Field Day.



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Laurie was a great conversationalist and enjoyed discussing a wide range of subjects. I always looked forward to hand delivering his printed issues of Oxtales to Laurie. He always had something interesting to show me and we always covered a wide range of interesting topics in our conversations.

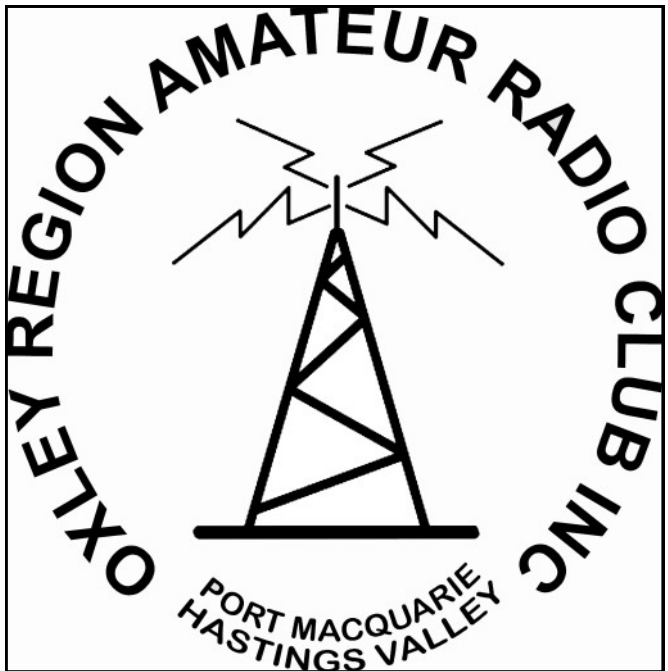
Laurie enjoyed reading Oxtales to keep abreast of Club activities. When I delivered his annual ORARC calendars he would always intently study the photographs to see who he recognised, and who was missing since the previous calendar.

Laurie is survived by his wife Robyn and children Jenny, Lisa and Chris and their children. Laurie's brother, Jeff, was at the funeral service and delivered one of the eulogies.

Over 100 people attended the funeral for Laurie in the Uniting Church in Port Macquarie on Friday the 25th of March 2022. There were several heartfelt eulogies, all of which shared valued memories of Laurie's long and interesting life.

Vale: Laurie Newham VK2ELN

Submitted by Henry Lundell, VK2ZHE on behalf of the Oxley Region Amateur Radio Club Inc.



Silent Key – Peter McAdam VK2EVB



It is with great sadness that we record the sudden passing on the 5th of May 2022 of Peter McAdam VK2EVB of Coffs Harbour. He was aged 71 years.

Peter had been enjoying his retirement in Coffs Harbour after retiring from the NSW Ambulance Service. He was an esteemed long-time member of the Oxley Region Amateur Radio Club.

Peter was very active on air and in his workshop. He particularly enjoyed QRP operation and often called back to the VK2WI broadcasts “VK2EVB QRP”. He called back on the Sunday before he passed away.

Peter was active on all bands HF, VHF and UHF including 23cm. He had recently upgraded his impressive home built satellite antenna system which included switch selection of polarisation and was a regular with excellent signals on satellite passes. He followed the ISS and had recently received the series of special SSTV images from the ISS.

The following two photographs show Peter’s impressive satellite antenna systems. Designed and built by Peter.



Peter was an avid electronics home builder and designer as shown by his polarisation switch shown in the above photograph.

Peter particularly enjoyed 6 metres and kept a close eye on propagation and shared news of the increasing number of openings with his friends. He was enthusiastically enjoying the return to excellent HF propagation in the new Solar Cycle. In the days before his passing he made some great DX contacts on 6 and 10 metres on both SSB and CW. He was very active on all the digital modes on both HF, and VHF/UHF. He particularly enjoyed D-Star and often operated pedestrian mobile during his daily walks. He was an exponent of APRS and operated an APRS Digipeater.

Peter enjoyed technical challenges including computer and digital technology. Peter enjoyed home brew construction and was always working on a new project. He built many QRP transceivers and was at home

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with microprocessor and computer based applications. He enjoyed experimenting with antennas and built a great variety of antenna types. He kept abreast of the vast amount of evolving technical information available on the Internet. He had great expertise in 3D printing and incorporated 3D printed parts in many of his projects. He had an enquiring mind and carried a wealth of knowledge in many fields.



The above photograph is of Peter at the 2018 Oxley Amateur Radio Field day demonstrating his 3D printer to fellow amateurs.

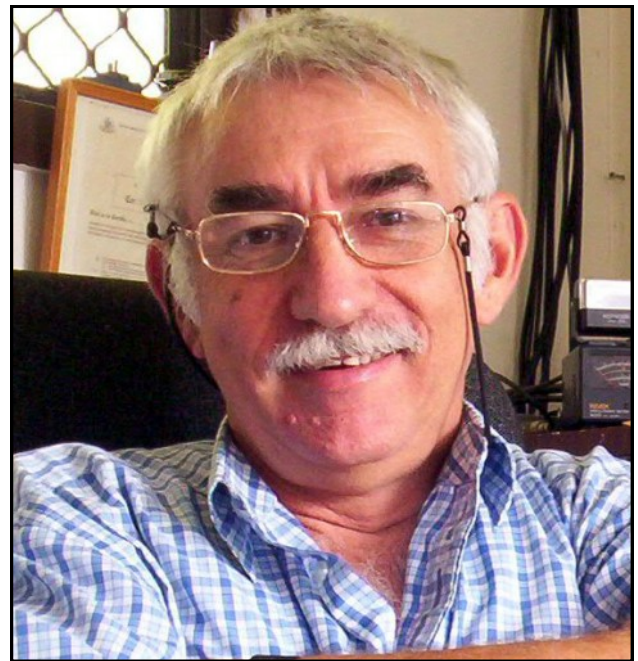
Peter had explored and mastered the many capabilities of the Icom IC-705. He was one of the first in the area to set up and operate D-Star using the Terminal Mode via WiFi and inspired fellow amateurs to try this mode. He also sent and received pictures using D-Star on this transceiver by both Terminal Mode and directly on air. He had operated his IC-705 backpack QRP portable in the field during his travels but used it in his shack as well.

After many experiments with his home constructed HF loop antennas he was looking forward to using his recently purchased portable HF loop antenna.

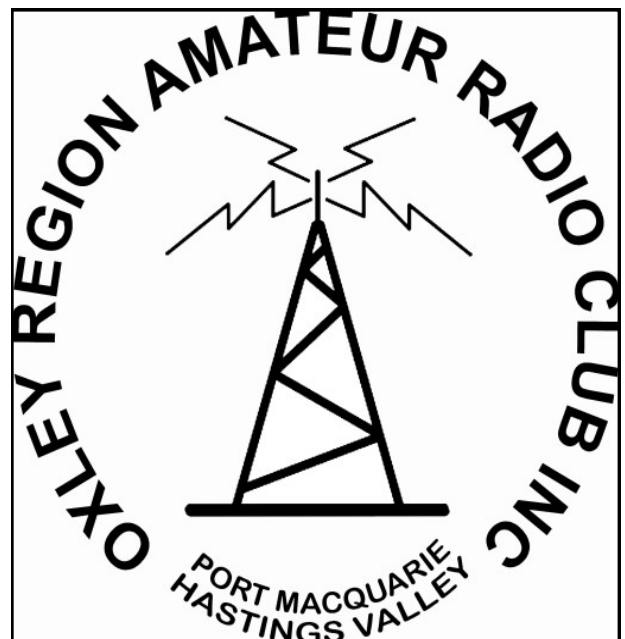
Peter will be sadly missed by the Amateur Fraternity.

We extend the deepest sympathy to Peter's wife Jenny and all the McAdam family.

Vale: Peter McAdam VK2EVB



Submitted by Henry Lundell, VK2ZHE on behalf of the Oxley Region Amateur Radio Club Inc.



MEMBERSHIP REGISTER Membership List as at 1 March 2022

No.	Cat	Surname	Given Name	Spouse	Call	Location	Phone	
1	D	ALLAM	DEREK	(CLARE)	VK2BTX	CUNDLETOWN	0403 796 102	
2	D	ALLAM	ROBERT		VK2CDX	CUNDLETOWN		Cat Key
3	O	BAILEY	JOHN	(FLORENCE)	VK2KHB	PORT MACQUARIE	02 6582 2192	A= Associate
4	O	BAILEY	ROD		VK2AJ	PORT MACQUARIE	0428 670 001	D= Distance
5	D	BAYLISS	KEITH	(DEBBIE)	VK2PTL	COOPERNOOK	0478 606 464	F= Family
6	D	BLACKMORE	MARK		VK2XOF	BAULKHAM HILLS	02 9639 0663	L= Life
8	D	BOYD	WADE		VK2EST	WINGHAM	0400 589 265	O= Ordinary
9	O	BREWSTER	DAVID		ZL3DS	LAKE CATHIE	0407 749 748	
10	D	BRICE	GRAHAM	(CYNTHIA)	VK2VV	SCONE	02 6545 0411	
11	O	BRUCESMITH	SANDY	(KAY)	VK2WH	PORT MACQUARIE	0435 356 466	
12	O	BURT	DAVID	(SHANNON)	VK2EYE	PORT MACQUARIE	0408 175451	
13	D	CAMPBELL	JAMIE		VK2YCJ	HAMILTON	0418 628 321	
14	O/F	COLLEDGE	PAUL	(PAULA)	VK2ICQ	PORT MACQUARIE	02 6580 9912	
15	O/F	COLLEDGE	PAULA	(PAUL)	VK2PDC	PORT MACQUARIE	02 6583 8829	
16	O	COURT	RICHARD	(LINDA)	VK2CHC	PORT MACQUARIE	02 6581 5658	
17	D	DORAHY	ALEX	(ANNE)	VK2HBF	TOORMINA	0400 849 098	
18	D	ECCLESTONE	BOB	(DIANA)	VK2ZRE	KEMPSEY	0419 414 412	
19	D	EKERT	BRUCE	(YULIA)	VK2EM	TUNCURRY	0414 532 496	
20	O	EKMAN	JOHN	(MELLISSA)	VK2VEX	WAUCHOPE	0417 448 998	
21	O/F	FLETCHER	CAROLINE	(PETER)	VK2CFZ	PORT MACQUARIE	02 6584 5191	
22	O/F	FLETCHER	PETER	(CAROLINE)	VK2HPF	PORT MACQUARIE	02 6584 5191	
23	D	FOX	JOHN		VK2AEG	WAHROONGA	02 8711 0100	
24	O	FRAPPELL	GRAEME	(BAMBI)	VK2GCF	PORT MACQUARIE	0490 088 048	
25	O	FROGGATT	DARREN	(KRISTY)	VK2MIA	PORT MACQUARIE	0488 01 8102	
26	O	FROST	ROBERT	(SUSAN)	VK2CRF	PAPPINBARRA	02 6587 6129	
27	D	GARLAND	JOHN		VK2CJG	JEWELLS	02 4948 1950	
28	O	GILSON	BARRY	(FAY)	VK2LBG	PORT MACQUARIE	02 6583 8814	
29	D	GREENE	DENNIS		KN4VKT	FLORIDA USA	+1321295 1184	
30	O	HALL	RICHARD		VK2BXO	PORT MACQUARIE	02 6582 6588	
31	O	HANSEN	JOHN		VK2AYQ	PORT MACQUARIE	0427 407 973	
32	L	HARDING	DAVID		VK2AIF	WAUCHOPE	02 6586 1947	
33	D	HARPER	JOHN	(VIVIANE)	VK2LJ	VICTORIA	0417 254 763	
34	D	HIRSCHEL	ALLAN		VK2OK	DOUBLE BAY	0415 259 777	
35	O	HULME	TREVOR	(JACQUI)	VK2TOV	BONNY HILLS	0402964278	
36	D	HUTCHESON	COLIN	(PAULINE)	VK5DK	MT. GAMBIER	08 8725 5527	
37	D	JANES	LES	(BEVERLY)	VK5JL	SALISBURY HEIGHTS	08 8281 3878	
38	D	JOHNSON	STEVE		VK2SJJ	BELLINGEN	0466 334 626	
39	O	JONES	PAUL	(SANDRA)	VK2DEL	PORT MACQUARIE	02 6584 3772	
40	D	KEIR	ANDREW	(BARBARA)	VK2AAK	DARAWANK	02 6554 3498	
41	O	KUCERA	PETER		VK2MPK	WAUCHOPE	0429 229 290	
42	O	LAU	GABRIEL		VK2LAU	PORT MACQUARIE	02 6584 1900	
43	L	LINDSAY	LARRY	(PENNY)	VK2CLL	HUNTINGDON	02 6587 1155	
44	O	LINDQUIST	IAN	(BERNADETTE)	VK2GL	PORT MACQUARIE	0414 419 462	
45	L	LUNDELL	HENRY		VK2ZHE	PORT MACQUARIE	02 6582 0534	
46	D	MACNAUGHTON	JENNY		VK2BA	MUDGE	02 6372 4053	
47	O	MARE	HANS		VK2MRK	PORT MACQUARIE	02 6582 7080	
48	O	MARTIN	CRAIG	(JENNY)	VK2CSM	SANCROX	02 6585 3452	
49	O	MCGUIRE	MARK		VK2FMGM	PORT MACQUARIE	02 6583 8875	
50	O	MCLEAN	JOHN	(CORRINE)	VK2KC	PORT MACQUARIE	02 6584 6220	
51	O	MEADE	DENNIS	(SUE)	VK2DAM	PORT MACQUARIE	02 6582 2998	
52	D	MEEHAN	TERRY		ex-VK2KL	KEMPSEY	-	
53	O	MELVILLE	STUART		VK2KSM	PORT MACQUARIE	0419 043 316	
54	O	MESSINA	TOBY		VK2XTX	PORT MACQUARIE	0417 293 377	
55	L	MONCK	ARTHUR		VK2ATM	PORT MACQUARIE	0459 679 425	
56	O	MULLINS	RAY	(LYNNE)	VK2JU	PORT MACQUARIE	0432 559 400	
57	O	NEIL	JIM	(CAROL)	VK2VIV	PORT MACQUARIE	0487 812 481	
58	D	NIVEN	TREVOR	(BETH)	VK5NC	MT. GAMBIER	08 8723 2432	
59	D/F	O'BRIEN	GRAHAME	(JUDY)	VK2FA	CARDIFF	02 4954 8688	
60	D/F	O'BRIEN	JUDY	(GRAHAME)	VK2HZV	CARDIFF	02 4954 8688	
61	D	OLSEN	KIMBERLY		VK2KMI	SINGLETON	04 5515 5798	
62	D	OSBORNE	RICHARD		VK2OKR	LEMONTREE PASSAGE	0429 824 951	
63	D/F	PETTET	JOHANNA	(STEVEN)	VK2FJMM	ILARWILL VIA MACLEAN	02 6645 5290	
64	D/F	PETTET	STEVEN	(JOHANNA)	VK2ZVG	ILARWILL VIA MACLEAN	02 6645 5290	
65	L	PILLEY	DAVID		VK2AYD	KING CREEK	02 6585 2647	
66	O	PISANI	VIC	(MEREDITH)	VK2UVP	BONNY HILLS	02 6584 8361	
67	D	PRATT	PETER		VK2PX	PENNANT HILLS	0418 965 962	
68	O	RAE	THOMAS		VK2ATR	PORT MACQUARIE	0409 808 528	
69	D	RAY	ROBERT		VK2ZWZ	SINGLETON	0412 573 861	
70	O	ROMAINE	PAUL		VK2UPR	PORT MACQUARIE	0428 466 075	
71	O	SANDERS	BILL	(SUELENE)	VK2MVC	FREDRICKTON	0437 004 228	
72	O	SMALL	ROBERT	(LYNNE)	VK2BIG	LAKE CATHIE	02 6584 8148	
73	O	SMITH	LYLE	(JEANNINE)	VK2SMI	WAUCHOPE	02 6585 2497	
74	D	SMITH	MURRAY	(MARGARITA)	VK2LAT	RAINBOW FLAT	0423 781471	
75	O	SMITH	STEVE	(HELEN)	VK2IS	RAWDON ISLAND	0404 612 126	
76	O	SOUTHWELL	IVAN		VK2IJS	PORT MACQUARIE	0439 611 452	
77	O	TERRY	COL	(KATHLEEN)	VK2LCT	YIPPIN CREEK	0429 002906	
78	L	THATCHER	TREVOR		VK2TT	WAUCHOPE	02 6585 2278	
79	D	THOMPSON	DES	(BETTY)	VK9FLHI	LORD HOWE ISLAND	02 6563 2152	
80	D	THOMPSON	LARRY	(KATHLEEN)	VK2LJT	TUNCURRY	02 6555 7994	
81	D	THRING	HAYDEN			TEMAGOG	0435 287227	
82	O	WALKER	BRUCE	(GWEN)	VK2HOT	PORT MACQUARIE	02 6583 8360	
83	D	WALKER	STUART		VK2BMX	BEECROFT	02 9869 0515	
84	D	WALSH	STUART	(JENNIFER)	VK2WAL	TUNCURRY	0409 531 310	
85	O	WARD	MICHAEL	(SEREENA)	VK2FMDW	PORT MACQUARIE	0418 291 276	
86	D	WILSON	DIANE		VK2DNE	LEMON TREE PASSAGE	0429 845 111	
87	O	WINCHESTER	JOHN	(PAULINE)	VK2NJJ	PORT MACQUARIE	02 6580 3031	
88	D	WINTER	JOHN		VK2PJW	KRAMBACH	02 6550 2590	
89	O	WYNN	STEPHEN	(LYALLE)	VK2ZSW	YIPPIN CREEK	02 6585 3327	
90	D	YORSTON	ROBERT		VK2CAN	ROSEVILLE	0428 310 407	