OXTALES

First published 1980

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

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

ORARC's forty ninth Anniversary Year

March 2020

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

President's Report

March 2020

ORARC 2020 Field Day 6 & 7 June Queens Birthday Weekend

Don't forget to mark your calendars for Saturday and Sunday the 6th and 7th of June for the ORARC 45th Annual Field Day over the 2020 Queens Birthday Weekend.

The venue for the 2020 Field Day is the Wauchope Showground hall in High Street, Wauchope. This hall is an excellent venue and will support all the usual Field Day activities. Last year's very successful Field Day was held in the Wauchope Showground and both locals and visitors were very pleased with the venue. There is plenty of on-site parking and the area is safe for the fox hunts.

The Wauchope Showground permits camping and is pet friendly. For two people

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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 (Voice - CTCSS 123 Hz)
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)

Down The Coax

ORARC meetings held in the SES Building Central Road, Port Macquarie.

Monthly General Meeting
Saturday 7 March 2020 2:00 pm

Sydney Amateur Radio Ferry Contest
Sunday 8 March 2020 Sydney Harbour

Friday Night Get-Together
Friday 20 March 2020 7.00 pm

***John Moyle Memorial Field Day**
Saturday 21 & Sunday 22 March 2020
VK2BOR at Camden Haven Airfield Cancelled

Westlakes Radio Club Car Boot Sale Cancelled
Saturday 21 March 2020 - York St Teralba

Monthly General Meeting
Saturday 4 April 2020 2:00 pm **Cancelled**

Urunga Convention Cancelled
Saturday 11 April and Sunday 12 April 2020

Friday Night Get-Together Cancelled
Friday 17 April 2020 7.00 pm

ANZAC Day AX prefix permitted by ACMA
Saturday 25 April 2020

Monthly General Meeting (May Meeting)
Saturday 2 May 2020 2:00 pm Cancelled

World Telecommunication Day
Sunday 17 May 2020. AX prefix permitted

Friday Night Get-Together
Friday 15 May 2020 7.00 pm Cancelled

Balun Construction and Testing Day Cancelled
Sunday 24 May 2020 SES Building 12 noon

Monthly General Meeting (June Meeting Early)
Saturday 30 May 2020 2:00 pm Cancelled

ORARC Field Day Wauchope Showground Hall Saturday 6 and Sunday 7 June 2020

Net Controllers' Roster

Nets on Voice Repeater VK2RPM 146.700 MHz

Sundays (0900 Local)		**Thursdays** (1930 Local)	
March 2020			
VK2FMGM	**March 1**	**VK2ICQ**	**March 5**
VK2FMGM	**March 8**	**VK2EM**	**March 12**
VK2FMGM	**March 15**	**VK2ZHE**	**March 19**
VK2FMGM	**March 22**	**VKICQ**	**March 26**
VK2FMGM	**March 29**		
April 2020			
VK2FMGM	**April 5**	**VK2ZHE**	**April 2**
VK2FMGM	**April 12**	**VK2ICQ**	**April 9**
VK2FMGM	**April 19**	**VK2EM**	**April 16**
VK2FMGM	**April 26**	**VKZHE**	**April 23**
		VK2ICQ	**April 30**
May 2020			
VK2FMGM	**May 3**	**VK2ICQ**	**May 7**
VK2FMGM	**May 10**	**VK2EM**	**May 14**
VK2FMGM	**May 17**	**VKZHE**	**May 21**
VK2FMGM	**May 24**	**VK2ICQ**	**May 28**
VK2FMGM	**May 31**		

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an RV or caravan is $20 per night with power and a tent is $10 per night with power. The use of toilets and hot showers is included. You can even get a stable for your horse for $10 per night! Contact the on-site caretaker 0475 111 074 for bookings. The web page is at http://www.wauchopeshowsociety.com.au/camping.html

The Field Day dinner as usual will be at 6pm at the Port Macquarie Golf Club on Saturday the 6th of June. The dinner will be held in the Seaview Room. Thank you to Gary Ryan of Radio Supply of Bellingen for kindly sponsoring this function room for the Field Day Dinner. As usual, please place your orders at the Aspire Restaurant. The club offers an extensive dinner menu to cater for all tastes at club prices.

There will be all the usual displays and activities at the Field Day. Entry is still a very modest $5 which covers admission on both days. The barbeque will work overtime with bacon and egg sandwiches for breakfast both days and sausages and steak for lunch both days. Tea and coffee and biscuits will be free all day for those who have registered. Soft drinks and bottled water will be available for purchase.

Radio Supply of Bellingen will have a large range of accessories and other items at their stand at the Field Day.

ALARA will be attending the Field Day again this year. Call in to the ALARA stand and meet Dot Bishop VK2DB.

Amateur Radio NSW will have a stand. ARNSW have been very active in promoting and supporting Amateur Radio. Following from the very successful 40 metre dipole antenna building and testing day at both Dural and Port Macquarie last year, ARNSW have again very heavily subsidised the cost of kits for baluns and Kevlar antenna wire for a balun building day on Sunday the 24th of May 2020. ORARC will run the day at Port Macquarie to coincide with the day run at Dural by ARNSW. If you would like to build a balun, please see the separate item in this issue of Oxtales.

Fox hunting is always popular. New 80 metre foxes are being built for the 80 metre mobile hunts. There will be mobile and pedestrian fox hunts on both 2 metres and 80 metres. If you don't already have a sniffer, now would be a good time to build or buy one for each band.

There is no charge or commission for disposals. While Sunday is the main trading day there will always be some items on the tables on Saturday.

The programme for the Field Day will be included in the May issue of Oxtales.

The planning for the Field Day is already under way. We look forward to another very successful Field Day.

The successful running of Field Day weekend is dependent upon the efforts of many members to undertake the myriad of tasks that are required, both in preparation, and during the Field Day itself. Please help where you are able. This will spread the work-load so that everyone has time to enjoy the weekend.

Stop Press

All Monthly General Meetings and Friday Night Get Togethers are cancelled until further notice. The minutes of the Committee Meetings will be emailed to members to keep members informed of club affairs.

Wednesday Working Bees are cancelled until further notice.

The Balun Building Day on Sunday 24 May has been postponed to a date to be advised.

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A decision will be made shortly regarding the ORARC 2020 Field Day on June 6th and 7th.

Foundation Licence weekend and Assessments 14 & 15 March 2020

On Saturday and Sunday the 14th and 15th of March 2020 the club will conduct a Foundation Licence Training weekend and assessments for all grades of licences on Sunday the 15th of March 2020.

This weekend has been very heavily booked. Under the new arrangements with the Australian Maritime College papers for assessments have to be pre-ordered in the names of the individual candidates with enough lead time to ensure that the papers are available on the day of the assessments. For this reason it is not possible to accommodate late comers.

It is planned to run another training and assessment weekend reasonably soon to accommodate candidates who could not attend the 14 and 15 March weekend. Please contact Education Officer Larry Lindsay VK2CLL as soon as possible to assist him in planning the next Assessment weekend.

John Moyle Memorial Field Day 21 & 22 March 2020

The major Amateur Radio event on the ORARC calendar in March is the John Moyle Memorial Field Day which commences at noon on Saturday the 21st of March and finishes at one minute to noon on Sunday the 22nd of March 2020.

Stop Press

Regretfully, the planned VK2BOR portable operation from the camping area at the Camden Haven Airfield for the John Moyle Memorial Field Day this Saturday and Sunday the 21st and 22nd of March 2020 has been cancelled. Sincere apologies for the inconvenience to those who were planning to participate.

The decision to cancel has been taken as there is concern that the field may not be dry enough after the prolonged heavy rain and further rain is forecast for both Saturday and Sunday. Additionally, operating as a group from the confines of the club's caravan for the weekend poses a small but real risk contrary to the guidelines in limiting the spread of COVID -19 virus. This is to comply with the Federal Government directive that precludes meetings or gatherings of more than 100 people and to also refrain from unnecessary travel.

Last year unfortunately the VK2BOR operation at the Airfield had to be cancelled at the last minute due to continuing significant rain on the Saturday morning. We are hoping for much drier weather this year. Unfortunately, if it is too wet at the airfield this year we will have to cancel again. Keep an ear out on the VK2RPM 2 metre repeater on the Saturday morning.

For more information on the John Moyle Memorial Field Day visit http://www.wia.org.au/members/contests/johnmoyle/

Don't forget to submit a log if you make some contacts in the John Moyle Memorial Field Day.

As most members will be aware, one of our club members, Ray Mullins, holds the callsign VK2JU. VK2JU of course was the callsign of Ross Hull so Ray's presence at the Field Day has the historic link in callsigns!

Antenna Shootout at Camden Haven Airfield on Saturday 21 March 2020

Stop Press

Regretfully, the planned VK2BOR portable operation from the camping area at the Camden Haven Airfield for the John Antenna

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Shootout in conjunction with the John Moyle Memorial Field Day 21 and 22 March 2020 this Saturday and Sunday the 21st and 22nd of March 2020 has been cancelled.

Westlakes Amateur Radio Club Car Boot Sale Saturday 21 March 2020 Cancelled

On Saturday the 21st of March 2020 the Westlakes Amateur Radio Club Inc. is holding a car boot sale in the club grounds in York St Teralba. As always, admittance is free and everyone is sure to find a bargain.

Note that Saturday the 21st of March is the Saturday of the John Moyle Memorial Field Day weekend.

With the reduced travel time to and from Newcastle, there is time to attend the Westlakes Car Boot Sale on the morning of Saturday the 21st of March, and still have time to get back to the Camden Haven Airfield on the Saturday afternoon for the John Moyle Memorial Field Day.

Urunga Convention 11 and 12 April 2020 Easter Weekend

Cancelled

The Urunga Convention runs over the Easter Weekend on Saturday the 11th and Sunday 12th of April 2020 at the Senior Citizens' Hall in Bowra Street.

The Convention has a long history. It has been held annually each year since 1949. This year is the 71st annual convention.

ORARC club members are always well represented at the Urunga Convention. If you are staying overnight don't forget the Field Day dinner at the Urunga Bowling Club on the Saturday evening. The fox hunting is always keenly contested but there is always plenty of opportunity for a quiet eyeball in the comfort of the hall and surrounds.

Regardless of whether you are in Urunga or not, please come on air between 9 am and 9:30 am on Sunday morning to participate in the famous Urunga Scramble – any power, any frequency, any location – highest number of contacts in the 30 minutes wins! Visit http://users.tpg.com.au/goldy2/ for the field day program and information.

World Telecommunication Day

World Telecommunication Day is on Sunday the 17 May 2020.

The day has been celebrated annually on 17 May **since 1969**, marking the founding of ITU and the signing of the first International Telegraph Convention in 1865. It was instituted by the Plenipotentiary Conference in Malaga-Torremolinos in 1973.

In Australia the ACMA authorizes the use of the AX prefix for Amateur Radio Stations in lieu of the VK prefix on World Telecommunication Day.

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Stop Press
The ARNSW Balun Building and Testing Day Sunday 24 May 2020 has been postponed to a date to be announced

A Balun construction and testing day was be held at the SES Building in Port Macquarie on Sunday the 24th of May 2020 to coincide with the Balun Buildathon being held at ARNSW at Dural on the same day. The balun construction day is an ARNSW initiative to promote hands on construction by Amateurs.

You have a choice of constructing a 1:1, 4:1 or 9:1 balun on the day. The kits for the baluns are different so I need firm orders for which kits are required. The kits offered for the buildathon are all subsidised by ARNSW as a service to Amateur Radio at $20 each. The kits may be viewed on the Tet-Emtron website https://www.tetemtron.com.au/category-s/61.htm Note that the TB-11K 1:1 and the TB-41K 4:1 baluns are intended for feeding balanced or two wire antennas whereas the TU-91K 9:1 balun is unbalanced to unbalanced which is normally used to feed a single ended long wire antenna. The manuals for the three kits may be downloaded from the Tet-Emtron website. There is a link in the text describing the individual kits.

The TB-11K 1:1 balun kit is the one that was used for last year's very popular 40 metre dipole buildathon. This balun is ideal for 50 ohm coaxial cable feeding dipole antennas cut for bands between 160 metres and 6 metres.

The TB-41K 4:1 balun kit is ideal for constructing an off-centre fed (OCF) (two wire fed Windom) HF dipole. The advantage of the off-centre fed dipole is that the dipole exhibits a low VSWR on the design frequency of the dipole and also a low VSWR on the even harmonics of the dipole when fed via a 50 ohm coaxial cable. For example, an off-centre fed 80 metre dipole will usually work without an antenna tuner on 80 metres, 40 metres, 20 metres and 10 metres. Those members who participated in last year's VK2BOR Remembrance Day Contest and ILLW operation from the ORARC Communications Caravan at the Tacking Point Surf Life Saving Club carpark will have seen an off-centre fed 80 metre dipole in use. (Photograph below.)

Performance was excellent on 80, 40, 20 and 10 metres. It's a big advantage to be able to switch between bands and use the same antenna. The off-centre fed dipole feed point is at one third of the distance from one end of the dipole.

The TU-91K unun is an excellent solution for end feeding HF long wire antennas via a 50 ohm coaxial cable feed line. Depending on the length of the long wire and the operating frequency, an antenna tuner will usually be required.

As a further service to Amateur Radio to encourage antenna construction, pre ordered Kevlar antenna wire is available for purchase at the subsidised price of 50 cents per metre. Orders will be pre-cut to length and available at the Buildathon.

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Note that ORARC is not making any profit in handling the balun kits and Kevlar antenna wire. Thank you to ARNSW for so generously subsidising the baluns and antenna wire.

Many ORARC members have already ordered and paid for their balun kits and Kevlar Antenna wire. If you haven't placed an order yet and still wish to do so, please email me lundell@tpg.com.au with your firm orders for balun kits and Kevlar antenna wire. Please advise your callsign, which kit is required, and the length of Kevlar antenna wire if antenna wire is required.

The closing date for this extended opportunity to place orders is Tuesday the 31st of March 2020. One balun kit and one length of Kevlar antenna wire per person. The balun kits and pre-cut Kevlar antenna wire will be available at the Buildathon in the SES Building at Port Macquarie on Sunday the 24th of May 2020.

Payment may be made by direct deposit to the ORARC bank account, or in person by cash to the Treasurer or President. The balun kits are $20 each and the Kevlar wire is 50 cents per metre.

The direct deposit details of the Oxley Region Amateur Radio Club Inc. account at the Port Macquarie branch of the Regional Australia Bank (formerly the Holiday Coast Credit Union) are:

BSB: 721-000 Account Number: 100032744

Don't forget to reference your call sign and balun to identify your payment.

Please email or phone me on 0427 947 921 if you have any questions.

We are looking forward to another enjoyable hands on construction day on Sunday the 24th of May 2020.

Special thanks to Al Hirschel from ARNSW for arranging for ORARC members to participate in the Buildathon. Thank you to ARNSW for supplying the kits and Kevlar wire at a subsidized low price as a service to Amateur Radio.

Recent Events

Central Coast Field Day at Wyong

This year was officially the 62nd Central Coast Field Day held at Wyong Racecourse on Sunday the 23rd of February 2020. The day dawned fine despite a forecast of rain. The weather at the racecourse remained fine all day for the Field Day.

Hoards gathering at the entrance

Rain is not a concern at Wyong as the entire Field Day is under cover. The Traders are accommodated in the air-conditioned semi-permanent carpeted marquee. The flea market is under cover in the breezeway that had been occupied by the Traders in past years. This arrangement is a great improvement in amenity for the respective sellers and attendees. The Traders in particular enjoyed an excellent environment. There were a few extra traders this year.

There were many bargains to be had from both the Traders and the Flea Market sellers.

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No-one went home empty handed unless they had exceptionally strong willpower.

The 'Flea' market undercover

As usual, a great number of ORARC members made the journey to the Field Day. Those members who wore their club Tee shirts and hats were very easy to spot in the crowd. I counted at least 12 members during the course of the day.

Arthur VK2ATM and Dennis VK2DAM survey the scene

Peter VK2MPK refuels

Paul VK2ICQ asks some searching questions

Bob VK2ZRE contemplates another foray into the market

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Shayne VK2XUV and Larry VK2LJT Take a break.

Long time participating Traders such as Radio Supply Pty Ltd, RF Solutions, Karera Communications, Cro-tek Instruments, TET-Emtron, Duro Services and Oatley Electronics did a brisk trade.

Mark VK6MOA from TET-Emtron

Radio Supply Team Carol VK2FCSR, Steve VK2ZVG and Gary VK2ZKT

As well as the flea market and the commercial traders there were many interesting stands set up by groups such as WICEN, Central Coast VRA, Westlakes Amateur Radio Club, Tube Radio Australia, WIA, ARNSW Home Brew and Experimenters Group, Over 50s Radio, Rotarians of Amateur Radio, AMSAT and ALARA.

Central Coast VRA Truck

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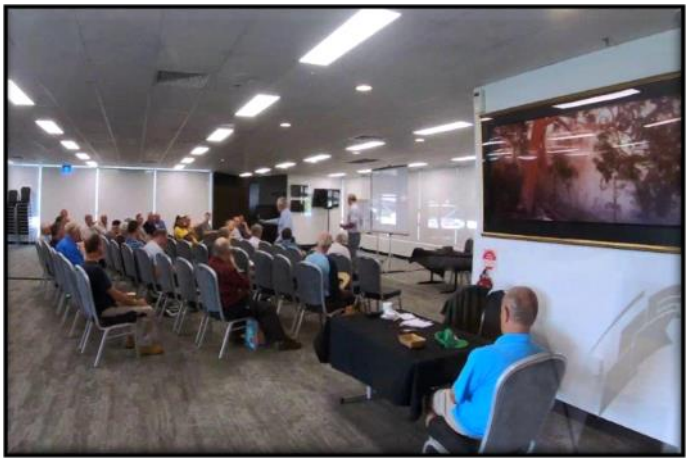
Amateur Radio New South Wales Mark VK2XOF and Charlie VK2CLH

Dot VK2DB at the ALARA stand

The various very interesting lectures and seminars throughout the day were very well attended. Below at the Military Communications Session.



the yellow shirts belong to Dennis VK2DAM and Bob VK2ZRE. There was something for everyone!

This year most Field Day announcements were made on 147.125 MHz which kept the wide area Public Address announcements to a minimum.

I wonder how many people can say that they visited all the flea market stands, all the traders and all the exhibitors during the course of the day after engaging in the countless eyeball QSOs that are a hallmark of Wyong Field Days. A thoroughly enjoyable day.

Henry VK2ZHE taking photographs at Wyong

Middle Brother Mountain VK2RPM Repeater Site

The Middle Brother Mountain VK2RPM repeaters are working well although it is hoped that the noise floor on 2 metres will be further reduced when TPG are able to complete the planned tower work.

Telegraph Point VK2RCN Repeater Site

The VK2RCN repeaters are all working well with the exception of the 6 metre 53.800 MHz voice repeater which is out of service pending replacement of the radio equipment and controller. It is hoped to install the new equipment soon.

The project to build an entirely new repeater site in the Red Hill area is

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progressing despite a delay caused by the priorities resulting from the extended bushfire crisis last year and early this year followed by the storms and continuing heavy rain that finally extinguished the bushfires.

The Club is expecting to receive advice late this month regarding the success or otherwise of our Grant Application to the

NSW Government Community Building Partnership Program to fund the greater part of the capital expenditure of the project to build the new repeater site at Telegraph Point. If the grant application is successful there will be an imperative to meet the 31 October 2021 Completion Deadline set by the grant.

Milestones

David Pilley VK2AYD recently joined the exclusive band of nonagenarian club members. Congratulations to David on celebrating his 90th birthday in style.

Congratulations to Michael VK2FMDW and Sereena Ward on the birth of baby Casper James Ward on the 7th of December 2019. Casper has already been introduced to most SES members and many ORARC members. Michael and Sereena recently celebrated their third wedding anniversary and are very proud new parents.

Henry Lundell VK2ZHE
President

SPECIAL EVENT CALLSIGN VI250COOK

This year is the 250th anniversary of Captain Cook's voyage to Australia and the Australian Maritime Museum's replica sailing ship, the Endeavour, will be sailing from Sydney in May up the east coast to Cooktown in late July/August.

Commemorating this event the Cairns Amateur Radio Club has been granted the special event callsign of VI250COOK for the months May to August inclusive. To help spread the love around we are offering use of this callsign to other clubs on the east coast for short periods as the replica Endeavour is in nearby waters and in some cases in port. Unfortunately, the Endeavour is not planning to enter Port Macquarie so will only be sailing past. She is expected to have to tack to pass Tacking Point.

The slot from 13/05/2020 to 17/05/2020 inclusive has been offered to the Oxley Region Amateur Radio Club Inc for members to use VI250COOK.

The offer was discussed at the ORARC meeting on the 7th of March 2020 but only a few members present at the meeting indicated that they would like to operate the special event callsign during the above time slot.

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If you would like to operate the VI250COOK callsign please determine which of the date(s) and the time period each day(s) and the bands on you would be able to make on air contacts using your own equipment.

Please email the details to Henry Lundell VK2ZHE at lundell@tpg.com.au not later than the 31st of March 2020. A roster will then be drawn up to enable maximum utilisation of the callsign.

This is a unique opportunity to make special event contacts using VI250COOK to celebrate the 250th anniversary of Captain Cook's voyage along the East coast of Australia. The anniversary has both local and international interest so it is desirable to activate the callsign on as many bands as possible.

The Cairns Amateur Radio Club is very heavily promoting the event and have provided the following guidelines and information:

"

- *We have set up a qrz.com page and will be expanding on it in the coming weeks and months.*
- *We will be sending articles to various publications in Australia and overseas, and DX websites.*
- *The special event licence is at advanced level, so advanced operators can use full power of 400 watts, general operators 100 watts and foundation operators 10 watts.*
- *The call will need to be used with "/portable".*
- *We need as a condition of the licence to keep a detailed log and will email you a template for it in due course.*
- *All contacts will in due course be uploaded at least to qrz.com, LOTW and eQSL.*
- *If you want to hold a public event during your use of the callsign we will be happy to assist in any way we can, we just ask that you keep us informed before, during and after it."*

Please support this event. It is important that ORARC is able to field enough operators to fully uitilise VI250COOK during the available time slot. In the event that insufficient operators are available we will have to ask the Cairns Amateur Radio Club to offer the callsign to other clubs.

Henry Lundell VK2ZHE, President ORARC.

Tim VK2ZTM has sent Oxtales a couple of lighthearted cartoons on the subject of becoming older and wiser. One of which appears below for our amusement.

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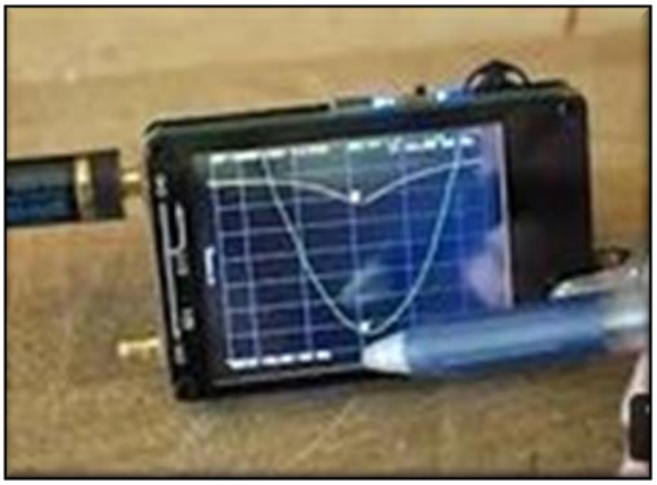
The VNA
(Vector Network Analyser)

Submitted by David VK2AYD



For most of my Amateur Radio life (about 75 years) I have used my SWR/Pwr (Standing Wave Ratio) meter to determine the resonant frequency of my antenna's.

Technology has changed all that. Arthur, VK2ATM, gave me a small NanoVNA unit that fits in the palm of my hand. Now I not only know the resonant frequency I also know the impedance matching. It's range is from 50 kHz to 900 mHz so it also shows other resonant points on the 65 mm TFT display.

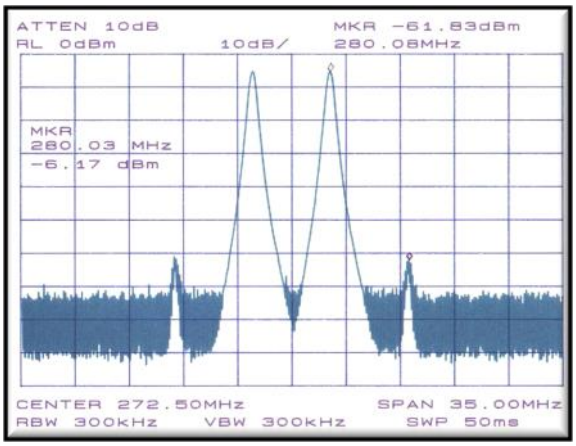
Check it out on the internet. It is not expensive. I'll bring mine along to the next meeting and, when I find out how, I'll down load the numerous short video's and show you. In the meantime look it up on the Internet.

73 David VK2AYD

Editors Note: This month's Oxtales carries three interesting and informative articles written by club members. I hope that this provides inspiration for more members contributions. Thank you to all the contributors.

PIM – A Primer and Case Study

Bob Ecclestone VK2ZRE



So what is PIM, how does it occur and what are its effects?

PIM is an acronym for Passive Inter Modulation.

PIM is also often associated with the words "distortion" or "interference".

We often encounter intermodulation distortion or intermodulation interference within pieces of electronic equipment. It can occur in RF equipment as well as audio equipment. It is often contracted to just "intermod".

Intermod can occur when any electronic circuit employing active components is operated or driven into a non linear mode of operation. These circuits can use semiconductors or thermionic (valve) devices. In fact, every radio with a mixer stage is using the effects of intermod intentionally. So, put simply, intermod is just the unwanted mixing of RF signals.

In its simplest form, if we have two frequencies F_1 and F_2 fed to a mixer, the output contains the two original frequencies F_1 and F_2 plus the mixing products F_1+F_2 and F_1-F_2.

When this mixing is intentional, it can be very useful.

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Lets take a simple superhet AM radio as an example.

You have your receiver tuned to the local ABC AM station on 684KHz. This is F_1. The local oscillator will be running at 1139KHz. This is F_2. We now feed these two frequencies into the mixer stage.

The output of the mixer will be 684KHz, 1139KHz, (684 + 1139) = 1823KHz and (684 – 1139) = -455KHz. Don't worry about the negative sign here, the detector doesn't know the difference in this case. The main thing to understand is that we now have a signal at 455KHz which contains the same information as the original RF carrier on 684KHz. We now feed this 455KHz signal into the IF amplifier tuned to 455KHz. We then feed the output of the IF amplifier to the detector to recover the audio we wish to hear. The input and local oscillator frequencies as well as 1823KHz signal are discarded by the input tuning of the IF amplifier, but we could have used it as the IF frequency equally validly.

From the above example, we can now see how mixing can produce other signals on very different frequencies to the two original signals. Great if that is what we want, as in the example of our AM radio. But it can be a real pain if this mixing happens "accidentally" and just happens to produce a "new" signal on a frequency we wish to use.

Let's take the VK2RPM 2 metre repeater on Middle Brother as a case in point.

Anyone who has ever tried to use the VK2RPM 2 Metre repeater on Middle Brother during dry weather will be only too aware of the apparent poor sensitivity of the VK2RPM 2 metre repeater receiver. They would also be aware of the "miraculous" improvement in performance during wet weather or when Middle Brother is shrouded in heavy (wet) cloud.

Ironically, the VK2RPM 2 metre receiver is only affected when the repeater is "repeating", that is, the transmitter is actually transmitting. In most cases of poor repeater performance, this is due to the repeater receiver being "desensed" by its own transmitter output due to poor design, poor alignment or poor maintenance of the repeater transmitter, receiver or the associated cavity isolator.

But this is not the case with the VK2RPM 2 metre repeater. On the contrary, considerable effort has gone into the design, alignment and subsequent maintenance of the whole repeater installation on Middle Brother. Yet the problem persists. Why?

PIM interference is why. So what is happening and what is with the "passive" bit?

PIM most commonly occurs when a nonlinear junction is inadvertently formed between two pieces of similar or dissimilar metals, often due to corrosion. If this junction is subsequently subjected to an RF field of sufficient intensity to cause the junction to partially or fully conduct, thus effectively biasing it, intermod can occur.

The effect is termed "passive" because the junction is not an intentional "active" device.

This inadvertent junction is often formed by corrosion around nuts and bolts holding any metal structures together, hence the other common name of "Rusty Bolt Syndrome". It should also be noted that the rusty culprit does not have to be part of the RF structure such as part of the antenna or supporting tower. It just needs to be within the RF field.

The large RF field can be considered to perform the function of the "local oscillator" which effectively biases the unwanted passive mixer junction.

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Once the junction is biased on, any other RF signals that are "seen" by the junction will be subject to the formation of the familiar sum and difference products of those frequencies due to non-linear mixing in the junction, just as occurs in intentional active mixers. In extreme cases, these new frequency products will themselves mix, giving rise to second, third and higher order intermodulation products.

As most readers will know, Middle Brother is also the site of the primary FM radio and TV transmitters in the Port Macquarie area designed to service a major portion of the mid north coast of NSW. These transmitters radiate considerable RF energy and the sheer number of different services result in a large number of high power RF signals. More than enough RF to excite even the most feeble "rusty bolt mixer".

The writer has heard considerable anecdotal comment that the VK2RPM 2 metre repeater suffered from intermodulation interference to some degree virtually from day one, although it was not as bad then as it is now.

So what has changed and why are things so bad now?

Back then, there were not the number of FM radio services on the tower and the TV services were a mixture of VHF and UHF analogue signals. With analogue TV services, we have a number of defined and discrete RF signals in the form of the sound and vision carriers. Whilst we also have a large number of sidebands in the vision signal, individual sidebands are at very low amplitudes compared to the main vision carrier. Therefore, the two, or three for stereo, sound and vision carrier frequencies are the predominate players in the mixing equations.

Digital TV on the other hand consists of a large number of theoretically equal amplitude carriers occupying a TV channel. On a spectrum analyser, each TV channel looks like a solid block of white noise about 6MHz wide. In the case of Middle Brother, there are five TV channels all in the VHF spectrum. Add the FM radio services in there as well and we have all the ingredients for a veritable "RF soup".

Subsequent intermod product analysis revealed many, many intermod signals were being produced on the repeater input frequency as soon as the repeater transmitter was activated. Given this analysis was performed on the TV channel centre frequency only, it became evident that products would be produced right across the entire 4MHz of the 2 metre band as the TV signals are 6MHz wide. This means it would be unlikely we could fix the problem by moving the VK2RPM operating frequencies elsewhere in the 2 metre band. This was confirmed when the ORARC Repeater Committee did a brief test using the VK2RCN Telegraph Point repeater frequencies. The intermod desense issues persisted.

The situation has improved somewhat following considerable cleanup work of unused hardware on the tower by the new owners of the tower the repeater is located on.

So, apart from being a bit of a nuisance to amateurs using the VK2RPM 2 metre on Middle Brother, "how else can PIM be a problem to me?" you ask.

Remember the VK2RPM situation; the interference is only evident when the repeater is transmitting. The additional RF from the repeater transmitter is either supplying the critical mixing frequency to create an input on the receiver input frequency or it is supplying a bit of extra RF field energy to push the passive junction fully into conduction to start mixing.

So it is with your home station. Do you, or more importantly, your neighbours, experience TV or radio reception problems when you fire up the rig in the shack?

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If so, it could be one of a number of possible causes:

1 Simple RF overload of the RF input of the affected equipment,

2 Injection of RF into the IF stages

3 RF detection occurring in the audio or video stages

4 PIM

Of these causes, Number 1 can often be helped by fitting a filter in the output of the transmitter or on the input of the affected TV or radio equipment.

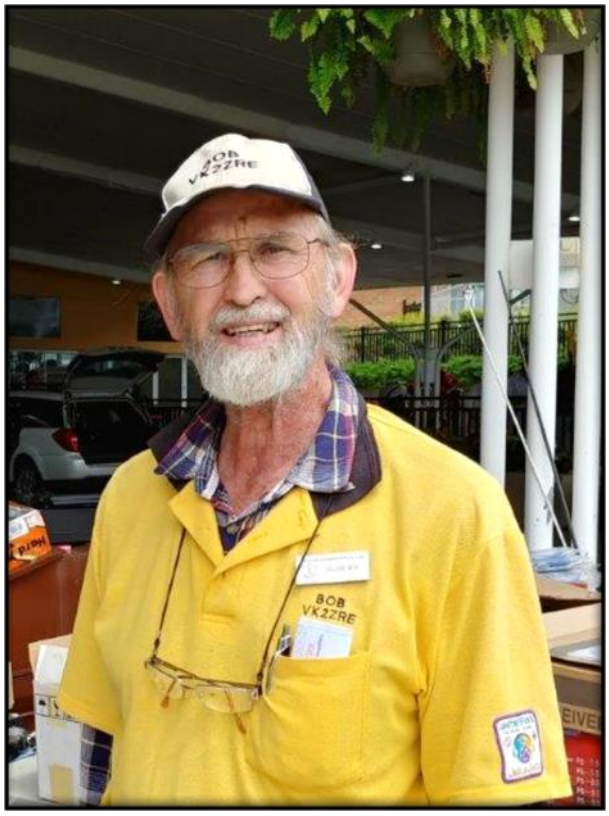
Causes 2 and 3 can often be cured with the use of ferrites and other EMI mitigation measures.

But Cause 4, PIM, is much more difficult to fix as it often causes interference signals within the passband of the signal you are trying to receive. So no amount of tuning, filtering or ferrites will have any tangible effect here.

That said, a low pass filter in the transmitter feed line may help if the intermod product is caused by a transmitter harmonic.

So if you have tried everything you can think of and everything the Great God Google suggests, it may be time to clean up your tower fittings and to check the condition of joints on your antenna elements and boom. And don't forget coax connectors. PIM junctions can be caused by corroded connections between braid and connector body and the connector screw or locking mechanism itself.

In a future article, I will give a brief explanation of problems I experienced with my own TV antenna installation, how I finally suspected the cause and what I did to fix the problem.



Editors Note: Thank you Bob for a most informative article and I am sure we look forward to your next.

Acknowledgement of graph by Nader Moussa - Created in the EE344 High Frequency Electronics Laboratory at Stanford University, CC BY-SA 3.0, https://en.wikipedia.org/w/index.php?curid=17562014

Northern Tasmanian Amateur Radio Club Inc NTARC

By Peter VK2MPK

I was asked to go to Tasmania to work with the company I drive for to cart the parts for the construction of a wind farm- from Bell Bay to Cattle Hill a trip of 280kms for 10 months. I took my Kenwood HH and talked on the local repeaters in and around Launceston.

I made a few contacts to find out that there was a local radio club, NTARC and that they meet three times a week.

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The club meeting times were Monday mornings from 9am to early afternoon, on Wednesday nights from 7pm to around 10pm or later and on Friday mornings from 9am to early afternoon.

With my work load I couldn't make it to the meeting during the mornings however I could attend the Wednesday night technical nights. So Peter VK7PD picked me up from where I was staying in Launceston and took me to their club house which is the old Scout Hall on the NW part of town.

Part of the club's equipment and repeater below

I attended the group and was welcomed with open arms and made me feel like it was my club room. I turned up almost every Wednesday night for the whole 10 months and attended some of the construction nights and working bees. The club even made me a honorary member which was so touching.

Club memberStuart VK7FEAT with Peter VK2MPK note honorary member's badge

The club is very active with a wide age group from the mid 20's to members in their 90's. However as in most clubs the older out number the young ones as may be seen in the photograph below. The club also had a collection of old radios one of which is shown below.

Note the radio is a portable operating with batteries!

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After the 10 or so months had passed, I was moved to Burnie for the start of a new wind farm at Granville Harbour on the West Coast (wet coast) of Tassie, about 40kms NW of Zeehan. There was almost no mobile phone service to be found, except within 5 to 6 kms of the towns. However on 2mtrs using my HH I had no problems with communications.

I was in Burnie for just on 2 months when work come to a stand still and I was sent home. It had been a wonderful time and I met some very interesting people and made friends for life.

I can not recommend Tassie enough; it is a great place and while your there do make contact with the locals they are good people, and no there are no "scares" to be seen. Ha ha ha! (insider Tasmanian joke!)

Peter - VK2MPK

Editors note: Thank you Peter for the story about your recent work in Tasmania. For those members interested in going to Tasmania, Peter has kindly supplied a link to the main repeaters in operation at that time in Tasmania.

https://maprad.io/au/search/licensee/Northern%20Tasmanian%20Amateur%20Radio%20Club%20Inc_220992_

The photograph on the left shows Peter VK2MPK with his trademark hat taken at the last ORARC club meeting.

Towers in Port Macquarie

The following two photographs were taken by Gary VK2ZKT during the recent upgrade of the Telstra Tower for 5G operation in Grant Street.

A crane that high would be useful when doing antenna work!

Items For Sale From the Estate of Charles Edmondson VK2KCE (SK) All Proceeds Donated to ORARC

Complete HF station comprising of:

1 Yaesu FT757GX HF Transceiver, Yaesu FC757AT automatic antenna tuner, and Yaesu FP757HD heavy du ty linear 12 Volt DC power supply with inbuilt speaker. Bargain price $250.00 as is.

2 Yaesu FT212RH 2 metre FM Trans ceiver 1 $30.00

3 Yaesu FT212RH 2 metre FM Trans ceiver 2 $30.00

4 Azden PCS-3000 2 Metre FM Trans ceiver no microphone $15.00

5 Power Supply 12V 3A DC output $20.00

6 GME Electrophone TX560 AM-SSB Marine 27MHz Transceiver in base station console with inbuilt mains power supply $50.00

7 Yaesu FT-23R 2 Metre FM Hand-Held Transceiver with antenna but no battery or charger $10.00

8 Yaesu FT-23R 2 Metre FM Hand-held Transceiver with no antenna but with battery and charger $10.00

9 Wouxun KG-UVD1 VHF-UHF FM Hand-Held Transceiver with antenna, battery and charger $10.00

10 Daiwa CN630 140-450MHz Cross Needle SWR and Power Meter with 20W and 200W ranges $75.00

11 Micronta Single Meter SWR/Field Strength Tester – No Antenna $5.00

12 Model 171 Twin Meter SWR/Power Meter $5.00

13 Coaxial Antenna Switch 2 Position with SO239 Connectors $2.00

14 Tech TE-20D Signal Generator 120kHz to 500MHz in 7 Ranges $25.00

15 Telequipment Single Trace 5Mhz Oscilloscope $25.00

16 Micronta 22-204C Range Doubler Analogue Multimeter with Probes $10.00

17 Archer Kit 28-4014 Range Double Analogue Multimeter with Probes $10.00

18 Dick Smith Q-1136 Analogue Multimeter with Probes $10.00

19 Standard Scope Soldering Iron with National Transformer $25.00

20 Whirlwind Rotary Tool with transformer and 60 Accessories in Box $10.00

Photographs below show item number.

All above items are sold as is and will be available for collection at the ORARC Monthly General Meeting in the SES Building at 2 pm on Saturday the 4th of April 2020. If you wish to secure any of the items please pay prior to the meeting. Direct Deposit details:

Oxley Region Amateur Radio Club Inc. account at the Port Macquarie branch of the Regional Australia Bank (formerly the Holiday Coast Credit Union) are:
BSB: 721-000 Account Number: 100032744

Don't forget to reference your call sign and item number to identify your payment. Please send an email to lundell@tpg.com.au to advise the details of the item and that a payment has been made.

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Amateur operating procedures

Date : 12 / 02 / 2020
Author : ACMA

acma
Australian Communications and Media Authority

The ACMA have today published an information page on their website with details relating to Amateur operating procedures.

Topics include :

- Information regarding amateur qualifications
- Emission modes and emissions
- Spurious emission limits for amateur stations
- Call and reply
- Emergency procedures
- Operating signals
- Phonetic alphabet
- Testing and monitoring
- Restrictions on connection to a public telecommunications network

Stop Press

WIA 2020 Annual Conference Weekend Cancelled

This is to comply with the Federal Government directive that precludes meetings or gatherings of more than 100 people and to also refrain from unnecessary travel.

The WIA apologise for any inconvenience caused.

The WIA 2021 Annual Conference will be held in Hobart and the date will be advised soon.

At the conference there will be an option of a trip out to the Grote Reber Museum and Radio Telescope at Mount Pleasant, about a 20 minute bus ride away.

Grote Reber was the father of radio astronomy, being the first person to build a "big dish" antenna for the purpose of mapping the sky at radio frequencies. He discovered many discrete radio sources, and he mapped the band of bright radio emission from our Galaxy, the Milky Way. Reber came to Tasmania in the late 1950s because of its unique location at high magnetic latitude in the southern hemisphere. He spent 40 years studying low frequency emissions with telescopes he built himself, first in partnership with the University of Tasmania School of Physics, and later on his own at Bothwell.

His accomplishments are remarkable, not only in radio astronomy but also in electrical powered transport, in carbon dating of aboriginal settlements, and in the genetic patterns made by growing bean plants. His creative vision had no limits.

The museum has exhibits that show Reber's telescopes, his life's work, and his many other interests. A unique feature is Reber's original radio shack, the control building for the radio telescope array at Bothwell, which is installed at the Museum with Reber's original radio equipment in place.

The museum also shows the radio frequency spectrum with graphic illustrations and physical demonstrations of electromagnetic waves. The radio sky is shown, with matching illustrations of galaxies as seen in the radio and optical spectrum data acquired by the Hubble Space Telescope.

A feature of the Museum is a Virtual Reality Theatre, provided by the Swinburne University of Technology. The museum will show entertaining and educational movies and demonstrations in three dimensions.

The tour takes about 1.5 hours.

This is a very unique and one off must see museum about a fascinating radio pioneer.

Next to the museum is the University of Tasmania 26m radio telescope that is used for research and you are able to get up close and personal with the dish!

Justin VK7TW and the WIA Annual Conference Organising Committee
(Image sourced from the UTAS/Grote Reber Museum Website)

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DXpeditioners Activating VI3RA

Author : Peter Rentsch - VK3FPSR

Look out for this activity next month on the 14th and 15th March 2020 as several of the SADARC members along with several other VK's, including VK3 contesters/DXers and DXpeditioners will be activating VI3RA using the existing antennas arrays of Radio Australia, located in Shepparton, Central Victoria.

We are looking at using 160m -10m, CW, SSB, RTTY, FT8. Activity will also include moonbounce EME If you need Australia, VK confirmed on 160m or 80m this may be a great opportunity to hear us from Down Under.

The Shepparton and District Amateur Radio Club (SADARC) with the kind permission of BAI Communications (Broadcast Australia) will connect amateur transceivers to the curtain array and rhombic antennas at the Broadcast Australia site in Shepparton which is located in North Central Victoria Australia.

This site was previously a Radio Australia location which was the Shortwave Service from Australia. The Radio Australia transmissions from this site ceased in 2017.

A unique call sign has been issued for the event which is Victor India 3 Radio Australia – VI3RA. All contacts made during the 2 day event will be issued with a specifically designed QSL card.

The event actually commences on Friday 13th March 2020, 1100 UTC (Midnight Friday VK3 AEDT) and will end at Sunday 1100 UTC 15 March 2020, (Midnight Sunday VK3 AEDT).

Frequencies used for the event will be 7, 10, 14, 18, and 21Mhz. (160m, 80m, 12m and 10m availability to be confirmed when on site)

Local Amateurs will be given the unique opportunity to explore the use of high gain antennas whilst giving Amateurs throughout the world a unique opportunity to contact a station using such high gain antennas.

This is a rare opportunity for amateur radio operators, who are only allowed a peak output power of 400 watts in Australia when compared to 100 Kw of Radio Australia transmitters to hopefully achieve some remarkable communication outcomes.

We expect to get a gain of 15dB on the lower frequencies' and at least 20dB on 21Mhz.

More information can be found at www.sadarc.org

Peter Rentsch
VK3FPSR

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. This months 'Blast' is taken from the 2015 March edition of Oxtales.

In March 2015, Lyle VK2SMI was President, Charles VK2KCE (SK) was Vice President, Secretary Larry VK2CLL and David VK2FRAB Treasurer. The club had 78 financial members.

The main stories reported in that month's Oxtales were on the Wyong Field Day and on he combined fox hunting practice day and VHF/UHF field day at John Downes Park and the Antenna shoot out at the sports ground in Tuffins Lane.

The following is from Lyle VK2SMI's report on the fox hunt.

'

The combined fox hunting practice day and VHF/UHF field day was held in January with about nine members attending. Three members participated in the fox hunt activities, Craig VK2ZCM, Steve VK2HOO and Lyle VK2SMI. The foxes were hidden by John VK2NJJ, and they were well hidden, as by the end of the day we sported scratches each on arms and legs from the thorns from the bushes they were hidden in.

While watching each other find the elusive foxes, it was interesting to note that we even pushed the fox aside looking for them. A bonus point to Bill VK2ZCV, for that camouflaged paint job!

It was noteworthy to mention that although Craig was using a commercial fox tracking setup, including a four element Yagi, and I was using an ex-TV field-strength meter and a three-element Yagi, that Steve, using a Baofeng UV-5R with standard antenna, was for the most part finding the fox only minutes behind us "fully kitted hunters". That just shows that you don't need all that technology to do a simple job.'

Steve VK2HOO and Lyle VKSMI inspect the foxes.

Craig VK2ZCM prepares a fox

Note the camouflaged foxes.

Editors note: The camouflaged foxes are still in use today.

The communications caravan set up in Tuffins Lane inspected by Bill VK2ZCV and Arthur VK2ATM

Some of the Trade displays from the Wyong Field Day Carol VK2FCSR from Radio Supply Bellingen with Trevor VK2TT filling up his backpack.

Who is the stand out ORARC member in his polo shirt? Those viewing this as a pdf file can magnify to see!

Equipment from the Past

R-394KM Стриж

The above piece of equipment is a USSR spy radio set - Swift Mark III R-394KM, codenamed Strizh (Russian: Стриж), and was a digital HF spy radio set, developed in the early 1980s in the Soviet Union (USSR), as the successor to the short-lived R-394K.

The radio was used by the countries of the Warsaw Pact during the final stages of the Cold War, and was the last model before the fall of the Iron Curtain in 1989 and the collapse of the Soviet Union in 1992.

The device features a digital messaging system as well as a digital split-frequency [1] readout. It was used by agents abroad as well as by Special Forces and was available with Russian or English text on its front panel. The spy version is known by its Russian code name *Strizh* (English: Swift).

The radio pictured has a fascinating history as told in the following report.

Sophisticated Soviet spy radio discovered buried in former forest in Germany

By Tom Metcalfe Live Science Contributor.

The Soviet spy radio was found buried beside a path through a former forest near the German city of Cologne, a few miles from a nuclear research center and a military airbase.
(Image: © Jürgen Vogel/LVR-LandesMuseum Bonn)

Archaeologists digging for the remains of a Roman villa near the German city of Cologne have found a sophisticated Soviet spy radio that was buried there shortly before the fall of the Iron Curtain.

The spy radio was buried inside a large metal box that was hermetically sealed with a rubber ring and metal screws. Although the radio's batteries had run down after almost 30 years in the ground, the box hissed with inrushing air when it was opened.

"Everything in the box was carefully encased in wrapping paper — it is a factory-fresh radio," said archaeologist Erich Classen from the Rhineland Regional Association (LVR).

The buried box and the hidden radio were found in August 2019 by a team of archaeologists digging near what was once a path through the Hambach Forest, about 20 miles (30 kilometers) west of Cologne, in an area earmarked for an open-cast lignite mine and now cleared of trees.

They expected to find fragments from a Roman-age settlement thought to have been built in the area, and so they were surprised when they instead unearthed a pit and the metal box.

"We think the radio will work if a new battery is available, but we didn't try," Classen said. "Restoration work was not necessary."

The radio has been identified as a model R-394KM transmitter and receiver — code-named "Strizh," meaning "Swift" — that was manufactured in the Soviet Union in 1987. It was carried by agents into Western Europe shortly after that, and only a few years before the fall between 1989 and 1991 of the "Iron Curtain" of communism that divided Eastern and Western Europe.

The scientists suspect agents would have used the spy radio to *Continued on next page*

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send secret reports back to the Soviet Union about observation of the Jülich Nuclear Research Centre, about 6 miles (10 km) west of where it was found; or of the military air base at Nörvenich, about the same distance to the southeast, where U.S. Pershing nuclear missiles were based until 1995.

It's possible that "Stasi," or State Security Service agents from the Soviet-controlled German Democratic Republic in the east of the country buried the spy radio in West Germany for future use, Classen said.

It may also have been a back-up in case a spy's other radios were damaged or seized. The high-frequency or shortwave radio was capable of transmitting and receiving messages as far as 750 miles (1,200 km) — far enough to reach Warsaw in Poland, which was then part of the Soviet bloc. But the pristine condition of the buried radio suggests that it was never used, and it was probably forgotten and left in the ground soon after the fall of the Iron Curtain, Classen said.

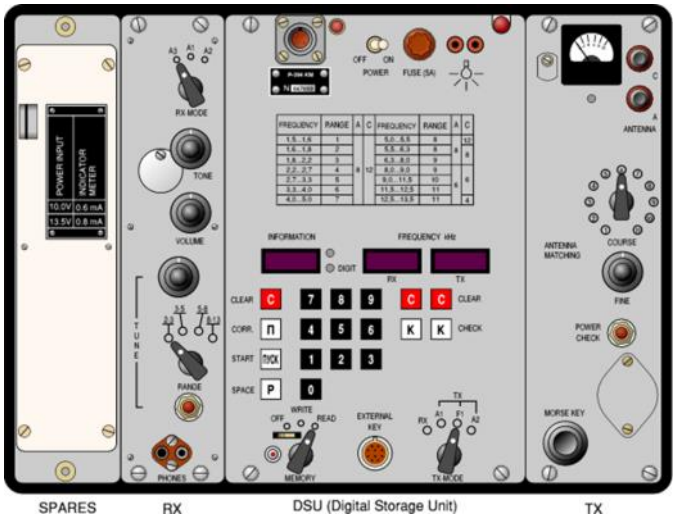
Some features of the Soviet spy radio hint at who might have used it. Unlike most other radios of the same model, which are labeled in Russian using the Cyrillic alphabet, the controls of the radio found in the Hambach Forest area are labeled in English and the Roman alphabet.

That suggests it was designed to be used by a German or an English speaker, rather than a Russian; but it may also have been a form of camouflage, to hide the true origins of the radio in the Soviet Union.

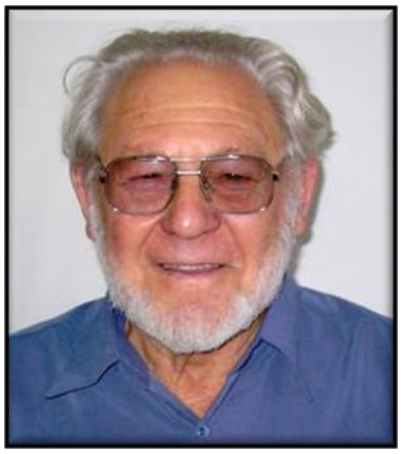
The paper wrapped around the radio, however, had sequences of numbers in Russian handwriting, giving positions of the dials on the radio that could be used — similar number sequences have been found on Soviet checklists, Classen said. It's unlikely that further details of the mystery of the Hambach Forest spy radio will be found, given that it's been so long since it was buried. But the spy radio itself is now part of the LVR's collection, and it is on display at the LVR-Landes Museum in Bonn until March 29, Classen said.

Some of the ancient artifacts from the same dig are also on display in the museum, but archaeologists haven't yet determined exactly how old they are, he said.

DATA SUMMARY Manufacturer:Russia. Year of Introduction:About 1984. Purpose:Special forces, front reconnaissance and border troops. Receiver:CW, MCW (A2) AM and PM. Circuit features: Digital PLL; dual conversion superhet. Frequency coverage:1.5-13.499MHz in four ranges in 1kHz steps; 1.5-3, 3-5, 5-8, 8-13.499MHz. Intermediate frequencies: 40.5MHz and 500kHz. Transmitter:CW, MCW (A2) and PM. Circuit features: Digital PLL. Frequency coverage: 1.5-13.499MHz in 1kHz steps. RF output:10W. Power Supply: 12V battery belt or other external 12V source. Size (cm):Height13.3, length23.5, width34. Weight:10kg. Accessories:See the R-394 KM on the website of the Cryptomuseum: www.cryptomuseum.com



Silent Key – James Kenneth Daniel VK2FJKD



It is with great sadness that we record the passing on Sunday the 8th of March 2020 of esteemed ORARC Life Member James Kenneth (Jim) Daniel VK2FJKD at Port Macquarie. He was 91 years old.

Jim retired to Port Macquarie with his wife Irene after a 40 year career with the Department of Main Roads (DMR).

Jim was born in Dungog on the 1st of December 1928. He had one brother and two sisters, all of whom predeceased Jim. His parents were farmers but Jim was interest in Science and Engineering. He moved to Harrington where he met and married his wife Irene. While there he obtained a job with the Department of Main Roads (DMR). His work took him to many isolated locations where he and Irene camped out. They had to very self-sufficient. He spent a lot of time on the Oxley Highway.

The line of this road was proclaimed on the 18th of November 1840 and proclaimed open on the 9th of September 1842 in the Government Gazette. In those days bullock drays took 10 days to reach Port Macquarie from the New England.

During Jim's 40 year career with the DMR a great deal of work was carried out to improve the highway, especially where it crosses the Great Dividing Range. The bituminous sealing of the section between Walcha and Wauchope finally began in 1969. Many of us well remember the old gravel road.

With the work on the Oxley Highway Jim moved to Port Macquarie. In the mid 1960s Albert York and others with an interest in astronomy worked hard to establish an Observatory which was built in Rotary Park with volunteer labour in the late 1960s.

Albert York was the President of the Port Macquarie Astronomical Society and Jim Daniel was the honorary Secretary for a great many years. Jim had an enduring passion for astronomy and spent the last 50 years inspiring members of the society and the large number of visitors to the Observatory with his infectious enthusiasm and encyclopedic knowledge of astronomy. He delivered countless talks to attentive groups of visitors over those years.

As a schoolboy in the 1960s I watched the Observatory being built and attended some of those talks. The highlight of every open evening at the Observatory was an opportunity to look through the telescope. Jim had tremendous patience in shepherding the long queues and explaining to each eager viewer how to look through the eyepiece and what they were seeing. Jim was a Life Member of the Society.

Jim also had an observatory at his home. He took many photographs through his impressive telescope. He was particularly proud of his excellent photos of the transit of Venus which is a key event in the astronomical calendar. His photos of the 2004 and 2012 transits were published in various journals but Jim always had the original photos on hand to show those who visited his home.

Jim enjoyed 30 years of very active retirement. The Astronomical Society Observatory was like a second home to him but he had many other interests as well.

Jim was a keen supporter of preserving history and assisted the The Port Macquarie Museum with the Wauchope Sugar Mill and obtained

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original bricks from Yarras.

Radio was another of Jim's passions. He was a keen short wave listener. In the early days of CB his impressive antenna on his tower was a landmark. Jim obtained his Amateur Radio Licence through the Oxley Region Amateur Radio Club and was licenced as VK2FJKD. He was proud of his Life Membership of the club.

Jim was interested in all things mechanical. Trucks were a big part of his life. Many people will remember his motor cycle and motor scooter.

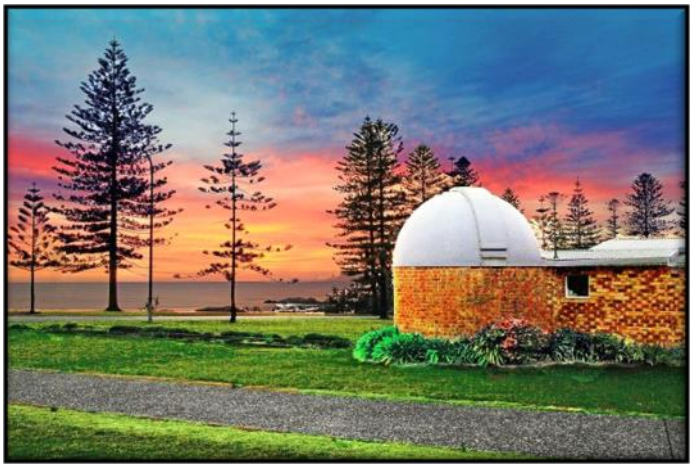
Jim and Irene enjoyed 67 years of marriage. They have one son, Peter. The Oxley Region Amateur Radio Club extends its deepest sympathy to Irene and to Peter and his wife Jenny and daughter Alkira.

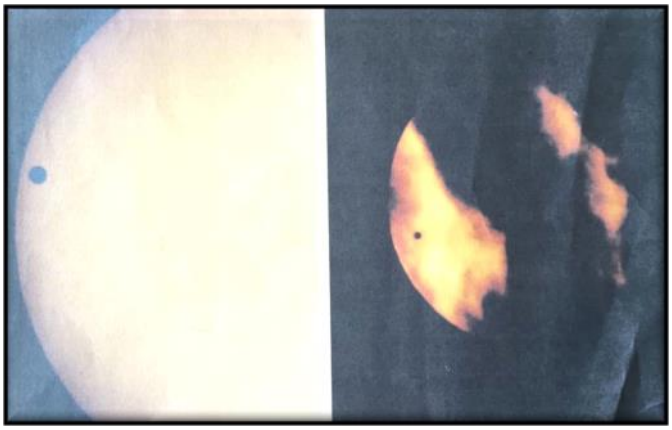
The very well attended funeral for Jim was held in the Chapel at the Innes Gardens Crematorium in Port Macquarie on Thursday the 12th of March 2020.

Vale: James Kenneth (Jim) Daniel VK2FJKD

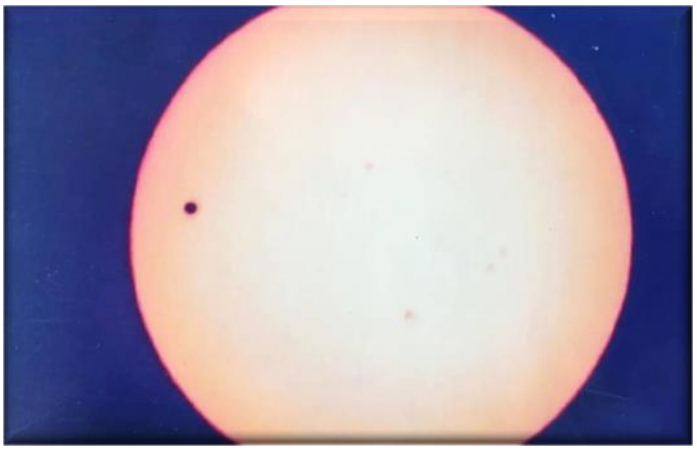
Submitted by Henry Lundell VK2ZHE on behalf of the Oxley Region Amateur Radio Club Inc.

Port Macquarie Astronomical Observatory





Photographs taken by Jim Daniel VK2FJKD of the transit of Venus.



Membership List as at 16, March 2020

No.	Cat	Surname	Given Name	Spouse	Call	Location	Phone
1	O	BAILEY	JOHN	(FLORENCE)	VK2KHB	PORT MACQUARIE	02 6582 2192
2	D	BLACKMORE	MARK	-	VK2XOF	BAULKHAM HILLS	02 9639 0663
3	L	BLYTH	BOB	-	VK2XIQ	TELEGRAPH POINT	-
4	O	BREWSTER	DAVID		ZL3DS	LAKE CATHIE	0407 749 748
5	D	BRICE	GRAHAM	(CYNTHIA)	VK2VV	SCONE	02 6545 0411
6	O	BRUCESMITH	SANDY	(KAY)	VK2WH	PORT MACQUARIE	0435 356 466
7	O/F	COLLEDGE	PAUL	(PAULA)	VK2ICQ	PORT MACQUARIE	02 6580 9912
8	O/F	COLLEDGE	PAULA	(PAUL)	VK2FPDC	PORT MACQUARIE	02 6583 8829
9	O	COOPER	GORDON	(GLENDA)	VK2GFC	LAKEWOOD	02 6559 6502
10	O	COURT	RICHARD	(LINDA)	VK2CHC	PORT MACQUARIE	02 6581 5658
11	D	DORAHY	ALEX	(ANNE)	VK2HBF	TOORMINA	0400 849 098
12	O	ECCLESTONE	BOB	(DIANA)	VK2ZRE	KEMPSEY	0419 414 412
13	D	EKERT	BRUCE	(YULIA)	VK2EM	FORSTER	0414 532 496
14	O/F	FLETCHER	CAROLINE	(PETER)	VK2CZF	PORT MACQUARIE	02 6584 5191
15	O/F	FLETCHER	PETER	(CAROLINE)	VK2HPF	PORT MACQUARIE	02 6584 5191
16	O	FROGGATT	DARREN	(KRISTY)	VK2MIA	PORT MACQUARIE	0488 01 8102
17	O	FROST	ROBERT	(SUSAN)	VK2CRF	PAPPINBARRA	02 6587 6129
18	D	GARLAND	JOHN		VK2CJG	JEWELLS	02 4948 1950
19	O	GILSON	BARRY	(FAY)	VK2LBG	PORT MACQUARIE	02 6583 8814
20	L	GREEN	LEWIS	(PAMELA)	VK2AG	PORT MACQUARIE	02 6584 9162
21	O	HANSEN	JOHN	-	VK2AYQ	PORT MACQUARIE	0427 407 973
22	L	HARDING	DAVID	-	VK2AIF	WAUCHOPE	02 6586 1947
23	D	HARPER	JOHN	(VIVIANE)	VK2LJ	SYDNEY	0417 254 763
24	D	HIRSCHEL	ALLAN	-	VK2OK	DOUBLE BAY	0415 259 777
25	D	HUTCHESSON	COLIN	(PAULINE)	VK5DK	MT. GAMBIER	08 8725 5527
26	D	JANES	LES	(BEVERLY)	VK5JL	SALISBURY HEIGHTS	08 8281 3878
27	D	KEIR	ANDREW	(BARBARA)	VK2AAK	DARAWANK	02 6554 3498
28	D	JOHNSON	STEVE	-	VK2SJJ	BELLINGEN	0466 334 626
29	O	JONES	PAUL	(SANDRA)	VK2DEL	PORT MACQUARIE	02 6584 3772
30	O	KOPPEL	HORST	-	VK2FHKO	LAKE CATHIE	02 6585 5992
31	O	KUCERA	PETER	-	VK2MPK	WAUCHOPE	0429 229 290
32	L	LINDSAY	LARRY	(PENNY)	VK2CLL	HUNTINGDON	02 6587 1155
33	O	LINDQUIST	IAN	(BERNADETTE)	VK2IDL	PORT MACQUARIE	0414 419 462
34	L	LUNDELL	HENRY	-	VK2ZHE	PORT MACQUARIE	02 6582 0534
35	D	MACNAUGHTON	JENNY	-	VK2BA	MUDGEE	02 6372 4053
36	O	MCDONAGH	JOHN	(KARIN)	VK2VY	PORT MACQUARIE	02 6582 0020
37	O	MARE	HANS	-	VK2MRK	PORT MACQUARIE	02 6582 7080
38	O	MARTIN	CRAIG	(JENNY)	VK2CSM	SANCROX	02 6585 3452
39	D	McADAM	PETER	-	VK2EVB	COFFS HARBOUR	-
40	O	McGUIRE	MARK	-	VK2FMGM	PORT MACQUARIE	02 6583 8875
41	O	McLEAN	JOHN	(CORRINE)	VK2KC	PORT MACQUARIE	02 6584 6220
42	O	MEADE	DENNIS	(SUE)	VK2DAM	PORT MACQUARIE	02 6582 2998
43	D	MEEHAN	TERRY	-	ex-VK2KL	KEMPSEY	-
44	D	MELVILLE	STUART	-	VK2KSM	NORTHERN RIVERS	0419 043 316
45	O	MESSINA	TOBY		VK2XTX	PORT MACQUARIE	0417 293 377
46	D	MILLS	TIM	-	VK2ZTM	BEECROFT	02 9868 1434
47	L	MONCK	ARTHUR	-	VK2ATM	PORT MACQUARIE	02 6581 0960
48	O	MULLINS	RAY	(LYNNE)	VK2JU	PORT MACQUARIE	0432 559 400
49	O	NEIL	JIM	(CAROL)	VK2VIV	PORT MACQUARIE	0487 812 481
50	O	NEWHAM	LAURIE	(ROBIN)	VK2ELN	PORT MACQUARIE	02 6583 5387
51	D	NIVEN	TREVOR	(BETH)	VK5NC	MT. GAMBIER	08 8723 2432
52	D/F	O'BRIEN	GRAHAME	(JUDY)	VK2FA	CARDIFF	02 4954 8688
53	D/F	O'BRIEN	JUDY	(GRAHAME)	VK2HZV	CARDIFF	02 4954 8688
54	D/F	PETTET	JOHANNA	(STEVEN)	VK2FJMM	ILARWILL VIA MACLEAN	02 6645 5290
55	D/F	PETTET	STEVEN	(JOHANNA)	VK2ZVG	ILARWILL VIA MACLEAN	02 6645 5290
56	L	PILLEY	DAVID	-	VK2AYD	KING CREEK	02 6585 2647
57	O	PISANI	VIC	(MEREDITH)	VK2UVP	BONNY HILLS	02 6584 8361
58	D	PRATT	PETER	-	VK2PX	PENNANT HILLS	0418 965 962
59	O	RAE	THOMAS	-	VK2ATR	PORT MACQUARIE	-
60	D	RAY	ROBERT		VK2ZWZ	SINGLETON	0412 573 86
61	D	ROMAINE	PAUL	-	VK2UPR	PORT MACQUARIE	0428 466 075
62	O	TERRY	COL	(KATHLEEN)	VK2LCT	YIPPIN CREEK	0429 002906
63	O	SANDERS	BILL	(SUELENE)	VK2FWHP	REDBANK	0437 004 228
64	O	SMALL	ROBERT	(LYNN)	VK2BIG	LAKE CATHIE	02 6584 8148
65	D	SWINDLEY	RON		VK2DDQ	KEMPSEY	0417 299 397
66	O	SMITH	LYLE	(JEANNINE)	VK2SMI	WAUCHOPE	02 6585 2497
67	O	SOUTHWELL	IVAN	-	VK2IJS	PORT MACQUARIE	0439 611 452
68	L	THATCHER	TREVOR	-	VK2TT	WAUCHOPE	02 6585 2278
69	D	THOMPSON	DES	(BETTY)	VK9FLHI	LORD HOWE ISLAND	02 6563 2152
70	O	THOMPSON	LARRY	(KATHLEEN)	VK2LJT	TUNCURRY	02 6555 7994
71	O	WALKER	BRUCE	(GWEN)	VK2HOT	PORT MACQUARIE	02 6583 8360
72	D	WALKER	STUART	-	VK2BMX	BEECROFT	02 9869 0515
73	O	WALSH	STUART	(JENNIFER)	VK2FSTU	WAUCHOPE	02 6586 4490
74	O	WARD	MICHAEL	(SEREENA)	VK2FMDW	PORT MACQUARIE	0418 291 276
75	O	WINCHESTER	JOHN	(PAULINE)	VK2NJJ	PORT MACQUARIE	02 6580 3031
76	O	WYNN	STEPHEN	(LYALLE)	VK2ZSW	YIPPIN CREEK	02 6585 3327
77	D	YORSTON	ROBERT		VK2CAN	ROSEVILLE	02 9426 3727

Cat Key : A = Associate D = Distant F = Family L = Life O = Ordinary