Amateur Radio

Volume 85
Number 5
May 2017
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General

This month's cover:
Three eagle-eyed fox hunters taking part in the NERC Radio Showcase during the January School holidays. The multi-faceted event put Amateur Radio and technology to the fore. See the story commencing on page 20. Photo by Stuart Fillmore VK5STU.

Technical

Columns

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are welcome and will be considered for publication. Articles attached to email are especially welcome. The WIA cannot be responsible for loss or damage to any material. Information on house style is available from the Editor.

Back Issues
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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

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Editorial

Peter Freeman VK3PF

Members decide

The results of the 2017 WIA Board election process were announced on 31 March on the WIA website. The announcement is reproduced in this issue of *AR*.

Only one incumbent Board member was re-elected: our current President Phil Wait VK2ASD.

The current Board members' tenure concludes at the end of the Annual General Meeting (AGM). The new Board's tenure commences at that time, but effectively at the first Board meeting after the AGM – I am guessing perhaps that will occur on either Saturday afternoon or Sunday morning.

I am sure that it will take the new Board some time to be up to full operating speed, so members should allow the Board some space/time to establish itself.

Callbook Editor resigns

Peter Hartfield VK3PH has tendered his resignation from Publications Committee (PubCom) effective immediately, which means that we need to find a new Callbook Editor.

You will find a call for Expressions of Interest elsewhere in this issue.

Any questions regarding the role can be directed to either the Secretary of PubCom or to myself.

Vehicle fun

Many readers will be aware that my main vehicle was destroyed by fire whilst undertaking a SOTA day trip back in September 2015. Since that time, I have been considering my options. My current vehicle has taken me to several summits but is not adequate for my needs/desires to get as close as possible to SOTA summits and into Parks.

In mid-March I decided to purchase a new 4WD utility. I am currently working on fitting some radio equipment into the new vehicle; work which I am sure will occupy a significant amount of time over the Easter weekend. Then the fun will begin in assessing the RF compatibility of radios and vehicle! But at least I should be able to attempt some new summits which need more ground clearance on the access route.

The new vehicle is much larger and heavier than previous vehicles, so it will take me some time to adjust to the vehicle characteristics. Parking certainly requires more care!

AGM is rapidly approaching

It will be around three weeks from the expected delivery date of this issue to the AGM weekend of activities in Hahndorf.

I managed to chat on-air with one of the members of the organising committee in recent days. He advised that there around 200 people registered at that time. The program details have been updated, including information posted on Facebook. It looks like we will be in for a busy few days.

I am planning a road trip, allowing me to tackle some SOTA summits and/or Parks during the trip to and from the meeting.

I certainly look forward to catching up with friends and am certain that new friendships will be formed. See you in Hahndorf.

Until next month,

Cheers,

Peter VK3PF

WIA comment

Phil Wait VK2ASD

Members choose

The WIA elections recorded the highest level of member participation in many years. According to the Returning Officer, John Marshall, more than 10,000 candidate votes were recorded from the 1500 voting papers submitted. I sincerely thank John Marshall and his team of volunteers for making this year's election a very smooth and painless process.

Six new faces were elected to the seven-director WIA Board - almost a clean sweep. WIA members have demonstrated a clear desire for change in a properly democratic process, and the new directors will take up their positions immediately following the AGM in Hahndorf, SA. The outgoing directors are very aware that members have spoken for change, and that the new Board will want to carve a path of its own, without being too constrained by the past. However, I am very pleased to say that all outgoing directors have indicated their willingness, if asked, to pass over their specialist knowledge and experience to the new Board, or to act as committee members. It will be up to the new Board to make that request.

Obviously, the new directors will be on a steep learning curve, and they need to be given some time to master that often cantankerous animal that is the WIA. The WIA is a small but very complex operation, much more complex than most small businesses. Not only does it have to deliver a range of member services within a very restricted budget, and strive to satisfy increasing member expectations, it has to foster and maintain a strong high-level working relationship with government and the communications regulator. This is a dichotomy: on one hand, there is an increasing appetite amongst members for change and improved licence privileges, on the other hand, in the highly regulated radio communications sector; the pace of change is sometimes glacial.

In short - we all need to temper our expectations and give the new Board a fair go.

Through these President's Comments I have tried to impress upon readers the importance of the social relevancy of amateur radio. I truly believe that amateur radio has an exciting future, provided it can change to meet new social and technological realities. The greatest threat I see to Amateur Radio is that technology and society will simply pass it by, leaving it a quaint remnant of the technological past, practiced by a few hardened enthusiasts. Just look around at the age profile at club meetings and you'll get an idea of its trajectory. Conversely, the greatest opportunity I see is the new appreciation of the importance of science, engineering and technology in our education system, and the popularity of Maker groups.

Introducing Amateur Radio to the Maker community has the potential to open up a whole new area of possibilities for Amateur Radio. It may not be mainstream Amateur Radio as we know it today - it may be more about using Amateur Radio as a tool to do other interesting things, but I think it's a 'no-brainer'. Makers are probably not going to come to Amateur Radio – Amateur Radio needs to go to them. Any amateur with microcomputer, mechanical or mechatronic experience should go join a Maker group, and promote the possibilities of Amateur Radio.

This will likely be my last President's Comment, or my last Comment as President, depending on who writes the next Comment which will appear after the appointment of the new Board. I have been elected as the only returning director from the outgoing Board, and my current ambition is to smooth the transition process as much as possible and then quietly retire. The sound of the ocean is calling. I will not be accepting any (albeit unlikely) nomination as President or Vice-President, and my recommendation to the new Board will be that this director position initially be made a one-year term , in order to re-establish the yearly cycle of half-Board appointments.

I have very much enjoyed being President (well, not so much the past year). From what I have seen so far, it looks like the WIA will be in good hands. I would like to sincerely thank the WIA office staff, Bruce and Petra, for their continuing dedication to the WIA, and for putting up with me. Naturally, a big thank you goes to the outgoing Board and the many close advisors and volunteers that I have worked with on a daily basis. Many of who, quite frankly, have devoted way too many hours to the WIA, while at the same time, being forced to endure a level of public criticism and harassment that was quite over-the-top. I sincerely hope things will settle down and the new Board can

Continued on page 5

WIA news

Volunteers Needed For WIA Monitoring System

Wireless Institute of Australia observers looking for intruders on the 'Primary' frequencies of the Amateur Service on high frequency bands in 2016 found more than five thousand intrusions. These are collated into a monthly report before sending to the relevant spectrum regulatory agency in IARU member countries. A resulting clamp down on the Indonesian 'village radio' stations was occurring with the government regulator progressively removing offenders.

The WIA reports intruders to the Australian Communications and Media Authority, but due to the itinerant nature of some intruders the ACMA has difficulty in confirming them which draws out the process for their removal. Unfortunately, some administrations seem to ignore requests for the removal of interfering services. The observations have included a multitude of Over-The-Horizon-Radar (OTHR) systems mainly Chinese, Turkish, Iranian and British systems. There have also been CODAR systems (oceanographic radars) particularly on the 20 m to 10 m bands.

With the downward trend in the solar cycle, there will be increasing numbers moving to the lower HF bands in future years. Among the observers is the very active John Kirk VK4TJ with monthly reports. Individual volunteers have also left frequent reports sent via the WIA website electronic lodgement system, including Lyn VK4SWE and Col VK4CC.

An increasing number of digital emissions are intruding, and the use of Software Defined Receivers (SDR) has identified non-amateur digital systems that are frequency hopping. The Manly-Warringah Amateur Radio Society of New South Wales has a five-band SDR receiver system that greatly assists in monitoring activities.

Other clubs could use SDR systems to not only help their club members but the intruder monitoring system as a whole.

For the WIA monitoring system to work volunteers are required. Information can be found on the WIA website on how to become an observer and what is involved. If you are interested in assisting as a volunteer, send a message to Peter Young by email *vk3mv@wia.org.au*

Please note, all applicants should have read and agree with the draft WIA Volunteer Charter.

ACMA "Deed" with the WIA discussed by Senate Committee hearing

The Senate Environment and Communications Legislation Committee discussed a range of matters with the ACMA on Friday 24 March, including the contract between it and the WIA for the provision of examination related services. Senator Anne Urquhart asked for details of the deed of arrangement with the Wireless Institute of Australia for amateur radio accreditation, when was it commenced and for what purposes?

In reply for the ACMA Giles Tanner said that there were certain requirements or qualifications that users of amateur licences need to hold. The ACMA has a delegation to the Wireless Institute of Australia in connection with the examination and accreditation of amateur users.

Senator Urquhart asked if the deed of arrangement set out governance and reporting standards or requirements for the WIA to meet. Mr Tanner replied, yes, it does, but did not have the detail with him. The Senator asked what arrangements the ACMA had to satisfy itself that the governance and licensing arrangements at the WIA were appropriate.

Mr Tanner replied that as with other contracts for provision of services, the WIA had reporting and other requirements. Any complaints from third parties were also carefully investigated.

Senator Urquhart asked if the ACMA was aware of concerns about governance and financial processes at the WIA? The Senator referred to the WIA website and a number of fact sheets stating claims that WIA was in trouble with ASIC and ACMA are without foundation. And she read from it "Some WIA members have noted accusations and criticisms on social media and elsewhere, and asked that the WIA Board make detailed responses to these issues … many issues are either exaggerated, misrepresented, or without foundation. Some statements are totally inaccurate".

Mr Tanner replied the ACMA was well aware there was a lot of contention within the amateur community around the WIA and there were a number of people seeking changes in the WIA. He expressed no comment or speculation on that but said the issue of particular relevance to the ACMA was WIA's performance under its contract.

The ACMA has assiduously followed up the dimensions of these complaints and concerns that bear on WIA's contractual relationship. He made it clear that the WIA was an independent body that is entrusted with a key contract for delivery of services. "It is a perhaps sometimes a difficult message to get across to the amateur community … a great wish to find some sort of agency that will deliver a review with particular terms of reference that bear on the grievances and concerns that people have." He said the ACMA was very determined to ensure that the deed was discharged properly.

Australian university students to launch satellite in 2018

Students at the University of Melbourne are well advanced on a program to build a nanosatellite, with the Wireless Institute of Australia assisting in the IARU frequency and other coordination processes. Through the Melbourne Space Program (MSP) affiliated with the University of Melbourne, all is moving ahead for a hand-over of the nanosatellite in November and a launch as early as January 2018. Funding comes from the University of Melbourne, while the Melbourne Space Program is an organisation that holds the licensing, and other matters related to the launch.

It has involved a group of ambitious students, seeking to understand and help redefine the Australian space sector through innovation in education, economics and policy, as well as engineering.

Australia is the only Organisation for Economic Cooperation and Development (OECD) nation without a space agency. In 1966, University of Melbourne students built Australia's first satellite that was launched in 1970 as Australis Oscar 5, to be tracked by 200 radio amateurs in 27 different countries.

The Melbourne Space Program has about 70 active members who are students ranging from 1st year university to masters level and post-graduate. The key objectives include being the first students to launch an Australian nanosatellite, create education, research in space, collaborate with academia and industry, and promote gender parity in the STEM (science, technology, engineering and mathematics) and Arts disciplines. Work was continuing launch Australia's first nanosatellite and more news is expected in coming months.

WIA comment

Continued from page 3

spend its time productively rather than fending off constant negativity as has plagued the past year.

So, just as the dolphins said in Douglas Adams' 'Hitchhikers Guide to the Galaxy' when they departed Planet Earth just before it was demolished to make way for a hyperspace bypass – "so long, and thanks for all the fish". I appreciate their philosophical view.

Phil Wait VK2ASD

PS: The Spectrum Strategy Committee will shortly be seeking formal views from the Amateur community of the WIA-proposed changes to the licence conditions. This survey exercise is to be an important component of liaison with the ACMA in creating a new LCD for the future. While the exercise will be predominantly conducted online via the WIA website, the Committee is aware that some stakeholders in the Amateur community do not have online access, or prefer not to use it. Accordingly, hard copy of the survey material can be requested from the National Office; just send a short note requesting the Licence Conditions Survey material and it will be sent to you when it becomes available.

An L-match antenna coupler for QRP portable use

Peter Parker VK3YE

Figure 1: Schematic diagram of antenna coupler.

End-fed wires are popular choices for portable QRPers. It's not hard to know why. They are quick to erect with only a single high support required. If made with thin wire they can be rolled up very small. There is also no heavy feedline to carry.

A half wavelength wire on the lowest frequency band of interest is popular. These have more relaxed ground requirements compared to shorter antennas. However their feedpoint impedance can range up to 4000 ohm and require transformation to the transceiver's 50 ohms.

Common options include a broadband transformer with a 9:1 turns ratio, a parallel tuned circuit with a low impedance primary winding or an L-match coupler. Of these the L-match is most versatile due to the number of bands on which it can allow a single wire to operate.

Description

An L-match comprises just two components – an inductor and a capacitor. The inductor is wired between the transceiver and antenna. The capacitor is from the high impedance side (normally the antenna) to ground. Both must be variable to match a range of impedances.

Transistor radio variable capacitors suitable for QRP are easy to find. However variable inductors are not. Roller inductors are the 'Rolls Royce' choice but are heavy, expensive and rare. Alternatives include a single tapped toroid on the rear of a rotary switch or several series inductors and shorting switches to allow selection.

Although flipping several toggle switches is less convenient than turning a single rotary, the greater number of inductance steps possible with the former won out. With room for four switches I chose inductances of 0.5, 1, 2 and 4 μH. This provides a 0 to 7.5 μH range in 0.5 μH steps.

A small plastic Jiffy box suits the coupler well. To suit many QRP rigs, which have BNC antenna sockets, a panel mounted BNC female was used. This can be converted to a PL259 with a widely available adapter. Such direct connection to the transceiver saves the need to bring along a jumper cable which is too frequently left at home if going portable. At the other end of the box are the binding post connections for antenna and earth. The central socket of these accepts a banana plug, small alligator clip or PL259 inner.

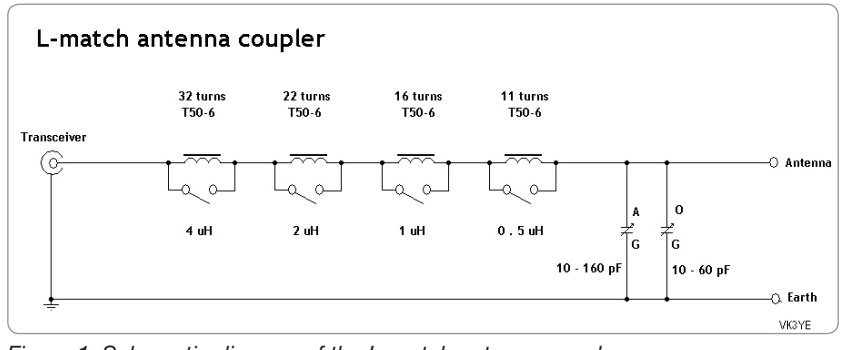


Figure 1: Schematic diagram of the L-match antenna coupler.

Winding the four toroids is the fiddliest part of construction. Each has a single layer of enamelled copper wire, such as from old power transformers, spread over about ¾ of the toroid's circumference. Approximately 0.3 mm gauge is suggested but this is not critical. It needs to be thin enough to fit all windings around the toroid without overlap but not so thin as to be lossy.

The number of turns is the number of wire passes through the inner side of the toroidal ring. Because inductance rises in proportion to the number of turns squared, twice the turns gives four times the inductance. Turn numbers are given in **Figure 1**.

Each toroid is mounted on the back of its corresponding switch; taking care to keep leads short. Sparingly used glue keeps windings in place and adds support.

Mount the switches in order of diminishing value of their parallel inductor, with the largest toroid on the left. That way you can select values like binary numbers, with closed switches (inductor out) representing 0s and open switches (inductor in) representing 1s. The table below shows the relationship between switch positions and inductance.

Inductance (µH)	Switch 1 (4 µH)	Switch 2 (2 µH)	Switch 3 (1 µH)	Switch 4 (0.5 µH)
0	Closed	Closed	Closed	Closed
0.5	Closed	Closed	Closed	Open
1	Closed	Closed	Open	Closed
1.5	Closed	Closed	Open	Open
2	Closed	Open	Closed	Closed
2.5	Closed	Open	Closed	Open
3	Closed	Open	Open	Closed
3.5	Closed	Open	Open	Open
4	Open	Closed	Closed	Closed
4.5	Open	Closed	Closed	Open
5	Open	Closed	Open	Closed
5.5	Open	Closed	Open	Open
6	Open	Open	Closed	Closed
6.5	Open	Open	Closed	Open
7	Open	Open	Open	Closed
7.5	Open	Open	Open	Open

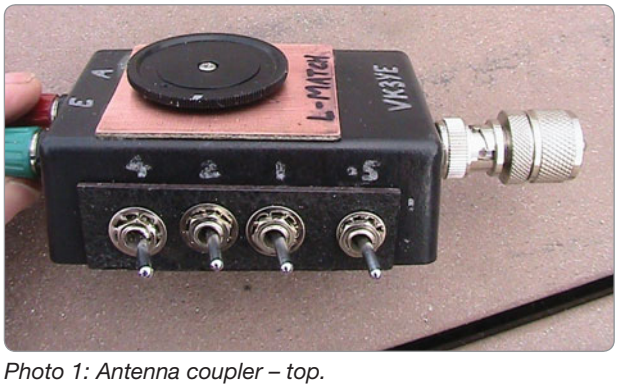


Photo 1: Antenna coupler – top.

In use

This coupler will load a wide range of antennas on most HF bands. However, I suggest starting with an end-fed wire about 20 metres long (not critical). It can be horizontal or end-fed as an inverted-vee with a single high support. A counterpoise, connected to the coupler's earth terminal can be a 1 to 3 metre wire offcut. You may also wish to experiment with buried earth stakes or metal fences.

Connect a QRP transceiver and close all switches. Opening one switch (while the others remain closed) allows a selection of four inductance values – 0.5, 1, 2 or 4 μH. These, plus 7.5 μH which occurs when all switches are open, are useful for coarse adjustments. Experiment with these while adjusting the variable capacitor for maximum noise on receive. Also try intermediate values with other switch combinations to see if you can get a louder sharper noise peak.

With a QRP SWR indicator connected apply a carrier. Reflected power will vary greatly with coupler settings. However you should be able to get a combination of inductance and capacitance where it is low or nil and you'll be able to make contacts.

The coupler has proved ideal for portable use from bay-side locations around Melbourne. Many successful contacts have been made with generally good reports, mostly on 7 MHz. A demonstration appears on the author's YouTube channel at *youtube.com/vk3ye*

Enhancements

As is the coupler is versatile but improvements to make it more so are possible. The first I'd suggest is a 1 MΩ resistor across the antenna and earth connections to discharge static build-up. This is particularly important if using a kite supported antenna.

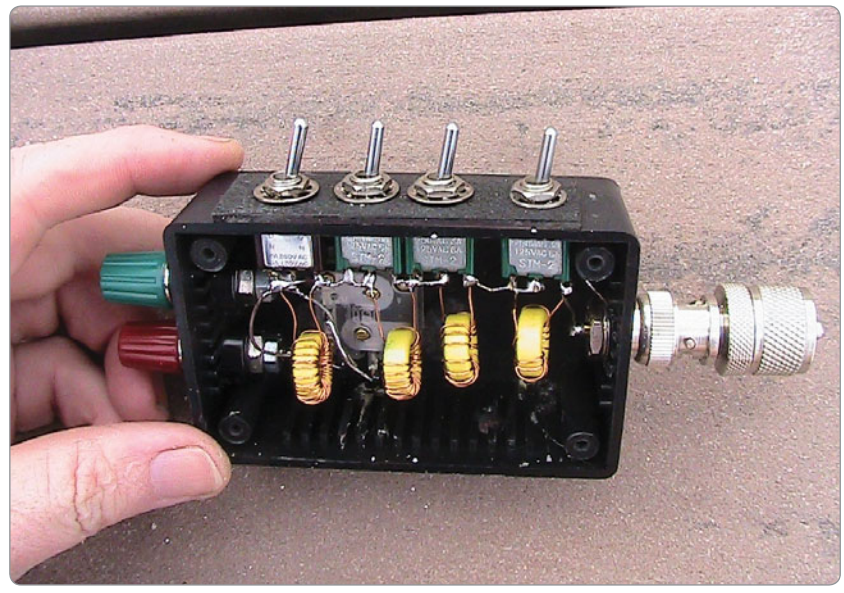


Photo 3: Antenna coupler – inside.

A fifth switch and 8 μH inductor will give up to nearly 16 μH total and allow easier operation on 3.5 MHz. A wider capacitance swing, enabled by switching in a parallel 220 pF polystyrene capacitor, is also desirable.

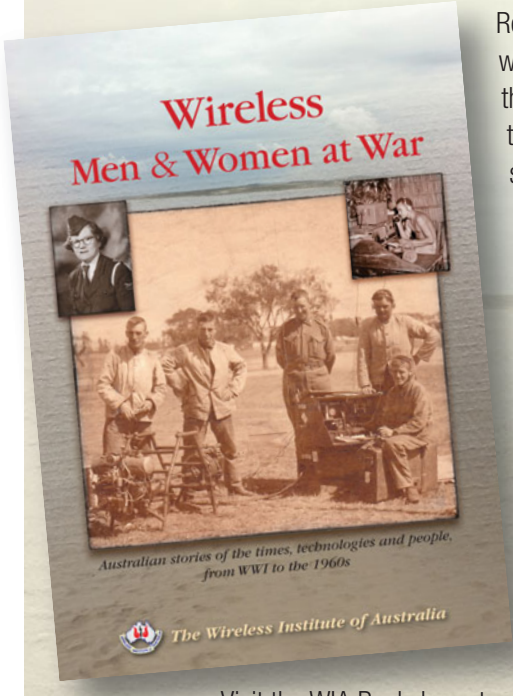
A sixth switch and 0.25 μH in parallel would mostly not be used. However the finer inductance steps on the higher HF bands and possible coverage of 50 MHz still make it worthwhile if space is available.

Finally some sort of tuning indicator can be fitted if your transceiver doesn't have one inbuilt. This can be an LED resistive bridge or relative RF indicator. This works well at night but needs the LED to be recessed down a dark tube for it to be visible in bright sunlight.

Photo 4: Antenna coupler – in use.

Participate **International Telecommunications Day** (AX prefix) | 17 May

Wireless Men & Women at War



Real life stories of unusual people in unusual situations. Many of these war-time stories have never been told before. In many ways, most of these 'unusual people' lived an ordinary life – that was until they found themselves in difficult situations, often far from home on the other side of the world. It was then that they bloomed and made use of their hidden talents developed as radio amateurs. This book contains their stories.

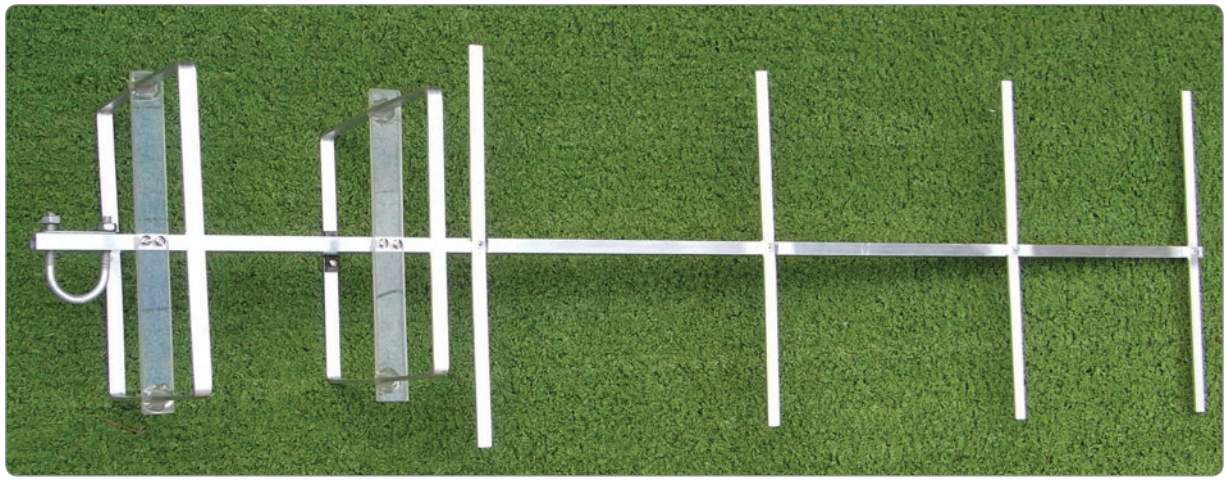
In the eyes of the general public today, more than likely these individuals would be thought of as 'electrical nerds' but it was the skills they possessed, mainly through 'self-education' and 'hands-on experiences', skills which allowed them to step outside their normal responsibilities and make their substantive and often unusual contributions to their colleagues and country.

Young men and women who behind the scenes, were able to successfully use their developed skills in such a way as to make a difference – sometimes a big difference brought about largely by their interest in private radio communications.

Visit the WIA Bookshop at: ***www.wia.org.au/members/bookshop/page_data.php?id=258***

Build a Quagi for 70 cm

John Hassell VK6JAH



Photos 1 & 2: The completed antenna.

A Quagi is a Yagi antenna with Cubical Quad loop elements for the reflector and driven element.

A problem at UHF frequencies is that the usual methods for matching the feedline to a dipole driven element often get very critical to adjust at these frequencies and may only operate over a narrow bandwidth. Using quad elements gives much less critical matching and a wider operating bandwidth. The quad elements also add about 1 dB of gain over a similar short Yagi using a dipole driven element.

The Design

What I wanted was an antenna that was reasonably compact and rugged.

Looking at the materials I had on hand, I decided on a six element design on a one metre long metal boom. The design centre frequency was to be 440 MHz.

For antenna design, I have been using MMANA-GAL by Makoto Mori JE3HHT.

This antenna modelling software is a free download with good documentation. One great advantage of MMANA-GAL is that it has a sophisticated antenna optimisation module which shuffles antenna parameters such as element lengths and spacing to give the best possible design solution for the attributes you desire (for example gain or front to back ratio).

The biggest problem with antenna modelling at UHF frequencies is that this software has difficulty accounting for things such as a metal or non- metal boom, whether the elements are insulated from the boom or not and the effect of the boom diameter on element length. Even after producing an optimised design, some adjustment will be required to the built antenna to get the best results.

For example, MMANA's optimal design gave a theoretical 1:1 SWR with a feed impedance of 49.9-j0.04. However when the antenna

was built and checked with an antenna analyser, I found the feed impedance was 45-j18. I had to move the first director closer to the driven element and move the other directors slightly to give the best obtainable match to 50 ohms of 50-j4 for a SWR of 1.1:1.

Construction

All the metalwork was obtained from Bunnings hardware store. The boom was a 1 metre length of 20 mm x 10 mm rectangular section aluminium tube. The elements were cut from 10 mm wide x 3 mm thick aluminium strip. Cut the elements carefully as a 1 or 2 mm error can be detrimental. The directors, after final adjustment, were fixed to the 10mm wide top of the boom with a single pop rivet and then soldered in place using aluminium solder. Soldering the elements to the boom ensures a good electrical and mechanical bond.

The quad loops were also made from aluminium strip. I drew out the dimensions of the driven element and the reflector on a sheet of paper and carefully bent the aluminium strip to fit. I soldered the ends of the reflector loop together with aluminium solder.

The 8 mm gap in the driven element was bridged by a small piece of acrylic and fastened with M3 stainless steel nuts and bolts. Do not use brass fixings as brass and aluminium corrode very quickly when placed together.

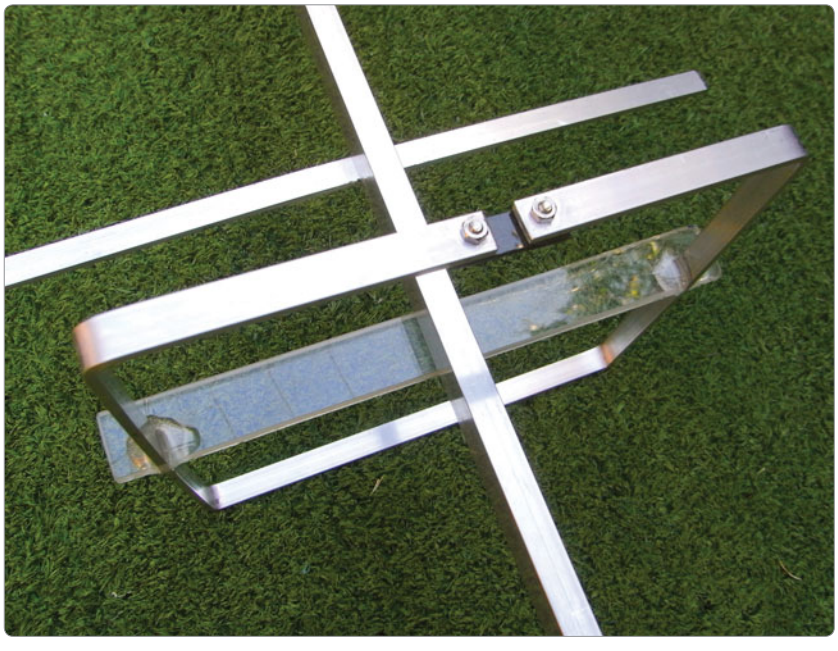
The insulated cross pieces supporting the quad loops were cut from acrylic strip 6 mm thick by 20 mm wide. I cut notches in the acrylic to accept the quad loops and glued them in place with epoxy. Make sure the loops are centred around the boom when gluing them to the acrylic cross pieces.

The acrylic cross pieces are fixed to the boom with small stainless steel self-tapping screws.

The antenna occupies 930 mm of the boom, leaving 70 mm of space behind the reflector for clamping to a mast. This avoids the effect of the mast altering the characteristics of the antenna as would be the case if the antenna were mounted mid boom.

From MMANNA-GAL modelling, the design should give a gain over a dipole of around 10 dB and a front to back ratio of 12 dB. It is interesting that this design solution optimised the directors such that directors 3 and 4 are longer than director 1, differing from the usual design where the directors are shorter in length the more distant from the driven element.

Photo 3: The driven element and feedpoint showing how the quad loops are attached to the supporting acrylic strips.



Adjustment

When all the elements had been completed, I mounted them temporarily in position on the boom using strong elastic bands.

I connected up a KVE520A antenna analyser to the antenna with a carefully cut, electrical full wavelength, at 440 MHz, of coaxial cable. As mentioned above, the matching was not good, so I carefully moved each element a few mm at a time to see if I could improve things. Moving the first director closer to the driven loop made a big improvement. I then shuffled the other directors a few mm each way until I was satisfied that no further improvement could be achieved. Moving the reflector had little effect.

The best feedpoint impedance I could achieve was 50-j4 for a SWR of 1.1:1 which I thought was quite satisfactory.

It is important to use a multiple electrical half wavelength of coax cable at the design frequency to connect to the antenna, this will reflect the impedance at the feedpoint to the analyser. If you do not have an antenna analyser then a good SWR meter can be used.

After carefully marking the position of all the elements on the boom, fix them in position as described above.

A short length of good quality RG-58 cable is used to bring the feed along the boom out of the back of the antenna. Be sure to weatherproof the cable termination at the feedpoint with some neutral cure silicon. I then changed to RG-213 cable for the run down to the transmitter. Don't be tempted to use RG-58 for the full run. It is far too lossy at 440 MHz.

Photo 4: The coaxial cable routed through two ferrite sleeves to the feedpoint.

Final thoughts

Purists will point out that a quad loop is a balanced element and in this design it is being fed with unbalanced coaxial cable. This may lead to radiation from the outer surface of the coaxial braid, causing a distortion of the radiation pattern of the antenna, affecting gain and front to back ratio. The solution to this is to slip one or two ferrite sleeves over the cable close to the feedpoint. These will choke off any RF currents on the coaxial braid. I used Jaycar LF-1260 ferrite sleeves.

Conclusion

This is a rugged, easy to build antenna that presents no problems in adjustment to achieve a good match to 50 ohm coaxial cable. The antenna is relatively broad band and exhibits good gain and front to back ratio. Modelling indicates a gain of 10 dB and a front to back ratio of 12 dB with a measured better than 2:1 SWR from 434 MHz to 447 MHz.

Appendix

MMANNA-GAL is available at *http://hamsoft.ca/pages/mmana-gal.php*

Aluminium solder can be obtained online at *http://www.durafix.com.au*

Be sure to look at the Durafix tutorial on aluminium soldering.

Aluminium rectangular section tube and aluminium strip is available from Bunnings.

The gap the in Quad loop driven element at the feedpoint is 8 mm. Dimensions are in mm. Intervals between elements measured centre to centre.

Elements are made from 10 mm x 3 mm Aluminium strip.

Form	Interval Spacing	Length	Outer Perimeter
Quad Loop Reflector	0		780
Quad Loop Driven	157		715
Director 1	72	278	
Director 2	240	269	
Director 3	240	279	
Director 4	208	282	

Table 1: Dimensions of the 6-element Quagi for 440 MHz centre frequency.

How Secondary School Science, Mathematics and other STEAM Teachers can gain much from the American Radio Relay League's (ARRL) 'Education And Technology Project' (ETP)

Trevor Molde VK5NIX

Suppose that as a teacher, you were able to apply for a professional development course in another State, that paid for your travel and accommodation for four days of appropriate intensive training in things technological that you could incorporate into your courses, with all equipment being used given to you *gratis* to take home, some $2000 - $2500 in all. As a graduate of the course, your school could apply for a grant of a full radio station of equipment and you would also be eligible to return to higher level courses as they occurred. You would learn how to track and use information from satellites, guide robotic vehicles and drones, gather environmental data from the air (via weather balloons), on top of water (marine buoy) and under the water (marine robot); perform experiments to retrieve data from remote sensors, interpret it and use it to control things.

This would be 'mouth-watering' to a STEAM teacher.

The term 'STEP' (Science, technology, engineering project), has evolved into 'STEM' (by including mathematics) and at long last, 'STEAM'- a name to include Science, Technology, Engineering, Arts, and Mathematics. No longer is the Art Teacher to be regarded as the 'hoon down the hall', showing students how to make better graffiti on the communities' walls, railway carriages and lamp posts, but are now to be regarded as the 'creative and innovative designers and talented packagers of things technological', thanks to the association with design of the popular 'Arduino' open-source electronics modules and stages and their ability, when asked, to simplify prototypes, make understandable manuals, put them into attractive containers and packaging and defining the copyright when the engineer-technologist wishes to sell them.

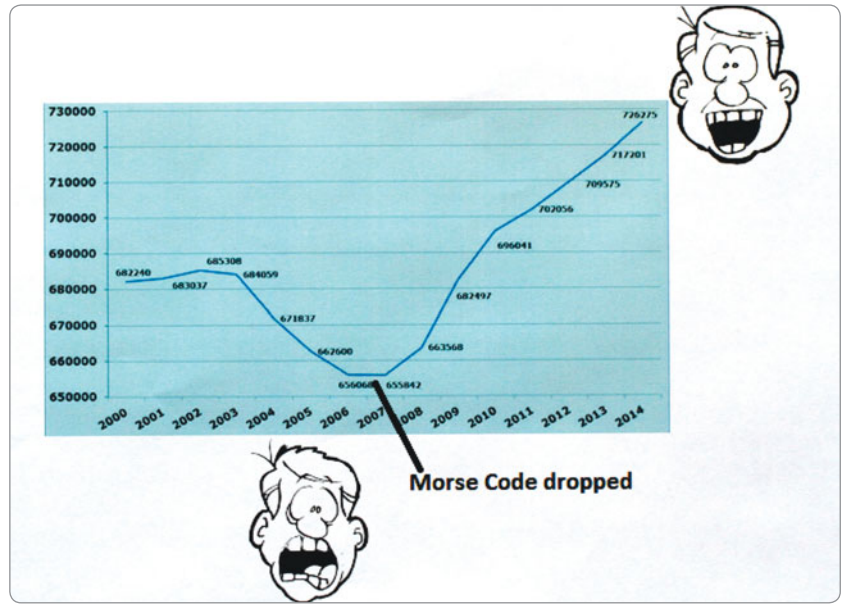


Figure 1: Number of ARRL members.

All these activities involve waves in the electromagnetic spectrum, particularly in the safer radio waves part of the spectrum. Teachers however, are reticent about using radio, because of the severe restrictions on their use that require an amateur radio licence. But for STEAM teachers, nothing could be easier! My 12 year old grandson has his licence. Gaining a Foundation licence has become much easier in the US and Australia ever since the requirement for Morse code has been dropped. The number of amateur radio licences granted after the prerequisite of Morse Code was dropped in the USA has grown to explosive proportions.

Here in Australia, learning the theory and sitting for what is really an easy 'Foundation' licence exam, gives the required hours of *appropriate* teacher professional development for an additional week of school holiday at the end of the school year. All costs can be claimed as an income tax deduction. For the theory, buy the text 'Your Entry into Amateur Radio' by Ron Bertrand and Phil Wait and make sure that people at school have seen you reading it for obvious reasons. A good idea

would be to join the Australian 'Electronics and Radio School' ($30) after using a web-browser to find it. This is a correspondence course with interactive CD and plenty of help from experts, over the computer. All your test items and slides for teaching are suggested by the course materials. Training by an Amateur Radio Club could typically be on a Saturday from 9 to 5! The practical training on how to operate a radio and the actual exam would probably be next day on the Sunday. A cheque to the WIA of $70 for the licence (plus a fee for a callsign recommendation) means that you can walk away a fully accredited amateur Foundation licence operator, after the WIA has sent you the paperwork for a 'call-sign' and the ACMA processes your licence application and you pay the licence fee.

If we are uncertain on the projections of what kind of jobs there will be in the future, one thing is certain … a knowledge of communication, electronics and technology can only help our students gain employment. The Australian National Curriculum is bent on linking schools' subject matter with aspects of STEAM, so as to bolster the myth that we are, or will become; a 'clever nation' and those things technological will cure our present and future ills. I can read your thoughts at this point dear reader and pragmatic teacher. "Oh yes! Where is the money and time for training going to come from?" Well the Americans have done it and gone down the same path as we no doubt will, and all their materials, including teacher lesson plans, circuits for 'activity boards' are either downloadable, or can be purchased from their commercial suppliers. These can be used as enrichment and motivation in Primary and Secondary courses. If the school does not pay for them, then you can employ the income tax deduction principle for 'work related materials'.

The Americans have had a16 year lead of providing

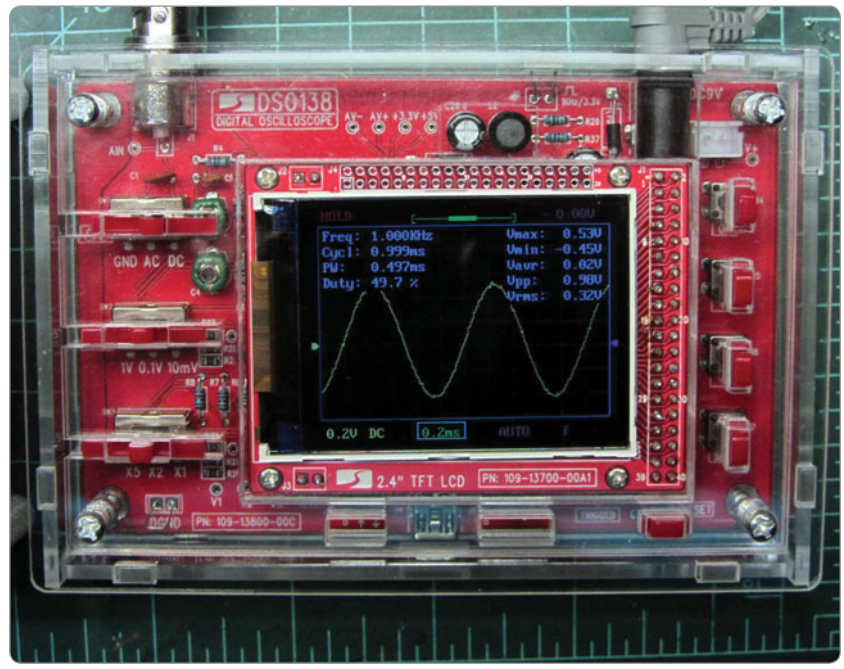


Photo 1: USB PC Oscilloscope.

empowerment to teachers in teaching and demonstrating radio and technology principles allied to their STEAM courses, providing motivation to students regarding their employment prospects. Their students have been gaining certificates of attendance and proficiency to bolster their interviews for jobs, or as part of one's curriculum vitae when going for a Rotary-exchange scholarship.

The 'Big Project', as it was originally known, began in the year 2000, launched by the Dallas Ham Radio Club, the second oldest in the USA, as an entirely donor funded project. Many teachers remain uncomfortable with wireless technology and are unaware of the best ways to teach it. Their aim was to transform teaching using wireless technology in an attempt to make the population more radio literate. The organizers knew that incorporating "wireless literacy" into the broader educational landscape is not something that would happen overnight, but it could have a role in developing a favourable climate for it to occur. They believed that reaching teachers first was the key.

The American Radio Relay League saw the value of what the Dallas club was doing and took it over as the 'ARRL Educational and Technology Project'. It still focussed on empowering teachers and considerably strengthened its donor base, enlisting other radio clubs and corporate sponsors such as Yaesu and Parallax and increasing the number of people who could apply. The project started with only nine people who came together in one state. Now there are 'Teacher Institutes' ('workshops' or 'seminars') in four separate and dispersed states throughout the US, catering for around 30 people in each, and now with four recent graduate teacher-facilitators, where once there was only one ARRL Education Officer with volunteer helpers.

In 2004 it launched what was to be the first highly successful teacher professional development program lasting four days, aimed at providing the nine attendees, teachers from Primary to University level, with basic tools and teaching strategies, to introduce the Science of radio, space technology, weather, microcontroller basics and robotics in their classrooms.

Hands-on instruction during what was now called ‘Teachers Institutes’ included learning how to solder by building a 24-hour clock, conduct a fox-hunt activity (i.e. find a hidden transmitter), participate in ham satellite contacts, observing the collection of satellite imagery transmitted by NOAA satellites, assemble a robot and learning how to program a microcontroller to guide the robot through a maze. The next step was to control the robot with commands sent by ham radio using APRS! These are all activities teachers will use to engage students with interactive learning when they return to their classrooms.

Five years later in 2009, they offered the first ‘Advanced Teachers Institute program’, called TI-2, to focus training for previous Teachers Institute graduates on ‘Space in the Classroom’. One of the goals of this seminar is to prepare schools for ‘International Space Station’ contacts.

Four years later again, in 2013 they introduced an advanced TI-2, focused on using electronic sensors and ham radio for data transmission. The seminar was aptly named, ‘Remote Sensing and Data Gathering’.

Three types of resources are given to successful applicants and their schools. Resources for instruction, including kits and projects; a professional development opportunity, open to Amateur Radio licensed and unlicensed Primary and Secondary teachers; grants for radio stations and related equipment open to schools *with a Teachers Institute graduate on staff*. Each school must formally accept the grant (thus locking in their support). The total package of the station grants is approximately $3600. Schools winning a grant would receive basic equipment and an antenna system to establish an Amateur Radio station at their facilities. Schools are encouraged to partner with a local Amateur Radio club.

Photo 2: Interpreting oscilloscope signals.

There is not a super-abundance of grants. The ARRL Executive Committee reviews ETProject grant applications twice a year, in June and December. The ARRL Board of Directors accepts the recommendation of the Executive Committee and approves up to four grants to schools twice a year.

In the 2015-2016 academic years, seven schools received grants from the ARRL. Resources awarded ranged from licence manuals, foxhunting equipment (to find a hidden transmitter), a marine buoy, a transceiver and a complete station. So far 579 schools have received support from the ETProject

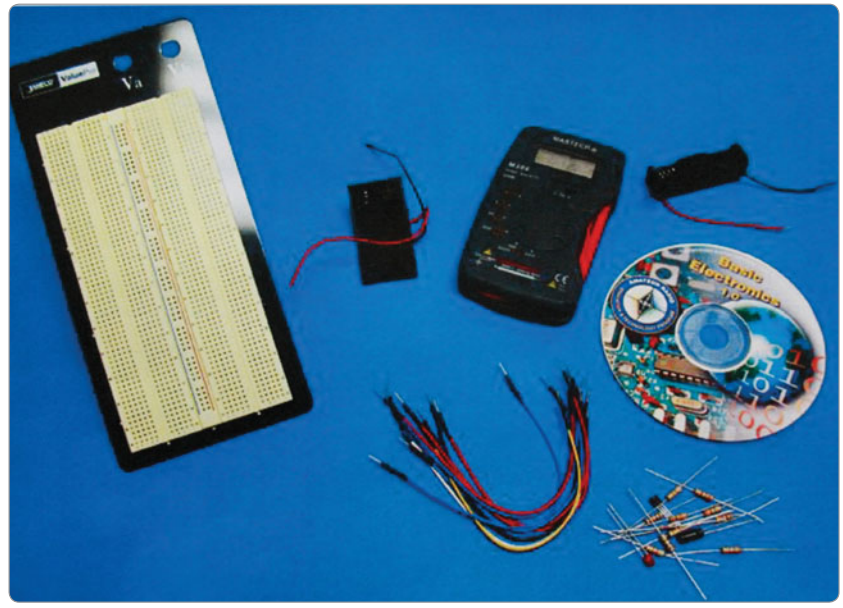


Photo 3: A basic electronics kit.

in the form of equipment and resource grants.

The ARRL Teachers Institute program makes the connections between science and math concepts and the engineering and technology applications of those concepts…in other words STEAM instruction that will result in real student learning. Teachers use mathematical, graphing, graphics calculator, spreadsheet and critical-thinking skills -to make sense of the data collected during the various activity-board activities.

To be eligible as an applicant, teachers must demonstrate that they have been active in their schools, college or professional educational organizations serving grade levels, 4 - 12+, (or those leading school affiliated enrichment programs) .Though participants need not hold an Amateur Radio licence to enrol in the introductory TI-1, to be considered for a seat in TI-2 advanced courses such as 'Remote Sensing', participants must possess at least a Technician (US) licence at the time of application. Previous participation in the TI-1 is required and ARRL membership is also required. One can see the bias towards the ARRL here.

Donations from the ham radio community and the equipment sponsors have helped the ARRL Education & Technology Program provide teacher training to more than 570 schools (2015) and 650 teachers since the inception of the Teachers Institute in 2004. One can guess that it is a smart marketing ploy giving teachers one of every activity board and piece of equipment at cost to the ARRL. When the teacher goes back and finds that he or she needs multiple sets of the same, this is where the commercial supplier reaps the reward for clever marketing.

Overall, the program is moving in the right direction, but is not easy to document. "Any real change in the educational community takes at least 12 years to come to fruition. In many cases, the program plants a seed that might flower down the road when a youngster exposed to wireless technology and electronics via the ETP makes his or her academic plans and career choices" (QST Nov 2009 p 67).

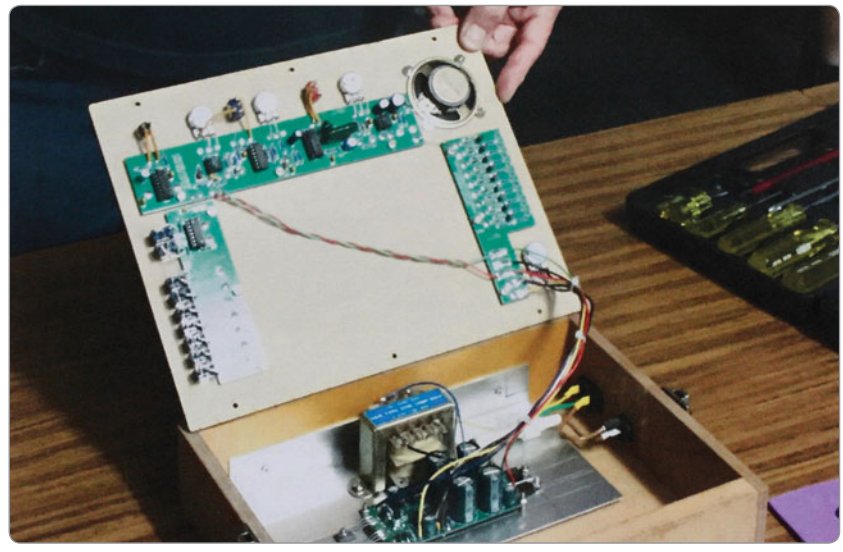


Photo 4: A components board built up.

Here is a precis of some activities that have evolved over the 16 years that the ETProject has been in existence.

How to operate and use a PC Oscilloscope: this 'dongle', which is USB driven, is the first thing that teachers are provided with (and take home) on their first day of attendance. The organizers ensure that these work on the students' own laptops for doing work in the courses (for us, the dongle and course book may be purchased from 'Parallax' and the Adelaide Hills Amateur Radio Society is showing interest in BangGood's JYE Tech DSo138 DIY Digital Oscilloscope Kit SMD soldered 13803K version with housing oscillator for US$22.70 or AUS$30 postage free).

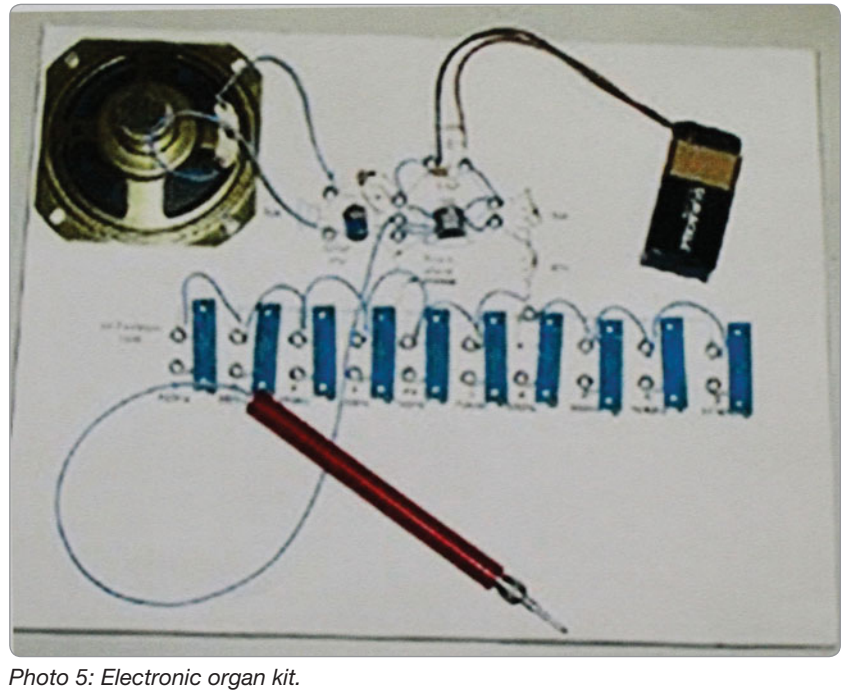


Photo 5: Electronic organ kit.

Photo 6: Soldering.

Basic Electronics Course: Included is a PowerPoint presentation and instructor's script. The course is designed around affordable components, prototyping board, and multimeter and uses 'Understanding Basic Electronics' – a teacher downloaded zip file containing the course description, script, presentation and parts listing needed to execute the demonstrations.(Download using a browser at the ARRL site).

Here in Australia, a member of the Adelaide Hills Radio Society has resurrected an electronics teaching board which was made 'in the thousands' for TAFE students 'some years ago'. It has been greatly reduced in price (say around $80) and we are looking for a way of interesting teachers to teach electronics using component and system electronics in addition to 'Arduino'. This is used in conjunction with the 'BangGood' oscilloscope mentioned above.

No-Solder Code Practice Oscillator and no-solder electronic organ are applications of the 'Basic Electronics Course' (circuit diagrams and instructions from ARRL site).

Soldering 101: ARRL provided a PowerPoint lesson which walks you through the basics of soldering from start to finish and attendees use their skills to solder together parts of a digital clock (from ARRL site).

Interface Connections TI-1 course: How to interface activity boards safely to computers (ARRL site).

L/C/Resonance activity board: Allows students to explore many facets of alternating current and Radio Frequency theory. It helps them unravel the mysteries of capacitive and inductive reactance, verify reactance formulas using actual data taken from the activity board and measure the resonant frequency of either series or parallel L/C circuits (circuit diagrams and instructions from ARRL site equipment purchasable from 'Parallax').

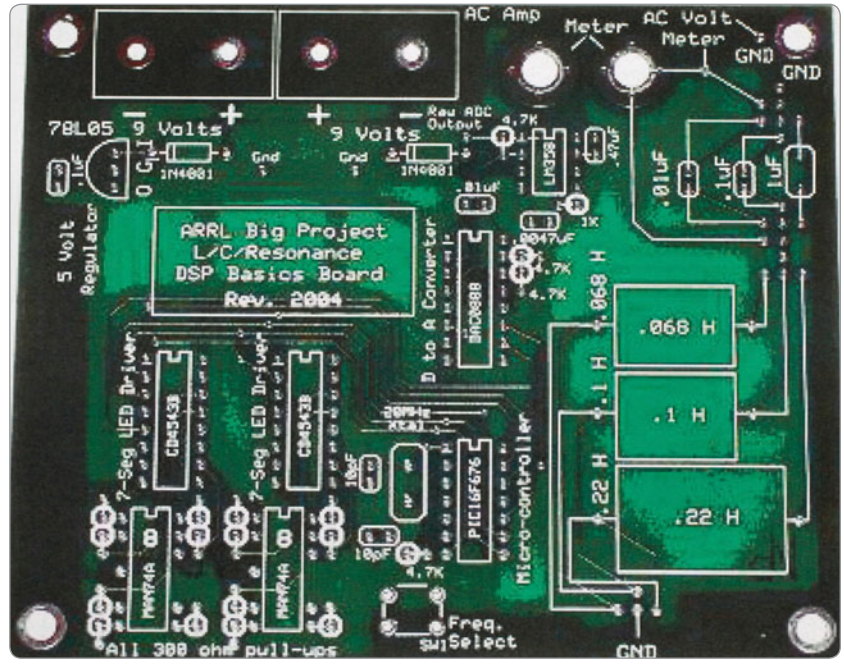


Photo 7: Project board.

Photo 8: Satellite hunting.

Digital to Analog Converter (DAC) Board: Leads to exploration of digital signal processing (DSP) fundamentals including root mean square (RMS) voltage and current and the mathematical derivation of RMS (circuit diagrams and instructions from ARRL site or purchasable from 'Parallax').

Satellite tracking: -teachers are shown how to build their own Yagi directional antenna employing metal tape measures as the driver and reflectors. A circuit board attachment to a radio enables the teacher to listen to the satellite after having used software to track and identify the satellite. (Google for tape-measure plans, circuit available from ARRL, download 'Orbitron' for free and look at YouTube for practical applications).

Fox Hunting: a term for using a 2 m radio and homemade directional antenna to locate a hidden transmitter (circuit diagram off ARRL).

Programming a microcontroller: An entry-level tutorial introducing circuit-building and microcontroller programming at the same time with a tiny on-board computer like the ones found in many electronic devices. There are 40 hands-on activities in a 350-page text (Text, experiments and microcontroller available from 'Parallax').

MAREA [Mars Lander/ Marine Amateur] Radio Robotics Exploration Activity: This activity involves programming robots to respond to commands sent by packet radio. It employs a UHF radio transceiver designed for communication with the robot.

Remote Sensing and Data Gathering seminar over 5 days (a TI-2) using a low cost marine research buoy outfitted with sensors for environmental exploration.

The buoy is a hands-on project that each teacher assembles and programs. This "do it yourself" activity trains the teacher in how electronic sensor data is converted into usable information about the environment, how the microcontroller is programmed to sample the data, how to configure the program APRS to send and receive the data, and how to upload the data into 'Excel' for evaluation and analysis. The aim is that students will be using technology to do active research. The end point is to provide the in-depth knowledge and tools teachers need to help their students actually "do" remote sensing from start to finish, develop the sensor packages, collect the accumulated data, and perform the math to make sense of the data.

Home-brew Radio Telescope: teachers are shown how to make a small radio telescope and how to collect and analyse the radio frequency energy that is emitted by bodies in space, very much like how astronomers use light energy collected by telescopes; how to connect several together to make a larger radio telescope and use it to determine solar drift of the Sun.

There are more projects available.

Members of the Adelaide Hills Amateur Radio Society will be looking closely at events unfolding in the WIA (Wireless Institute of

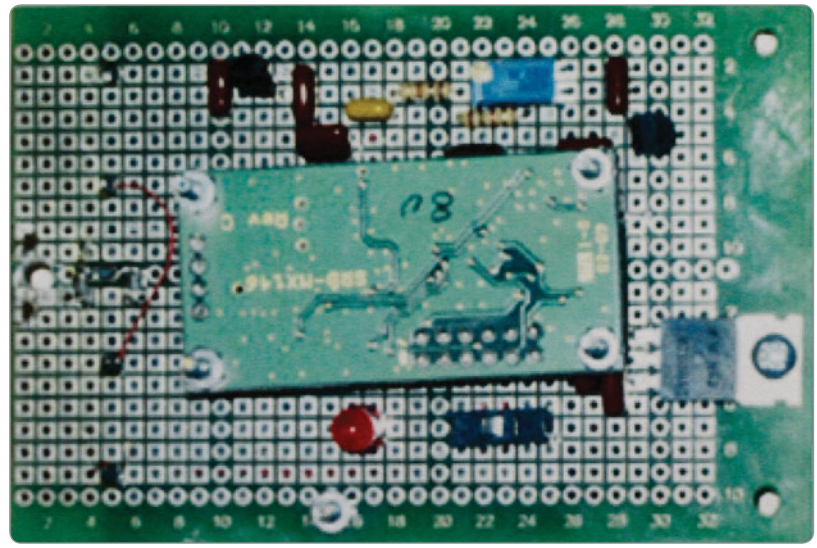


Photo 9: FoxHunt board.

Photo 10: Marine bouys.

Australia) Annual General Meeting to be held at Hahndorf in May. Reading what has occurred already at their October 2016 invitation-only conference in Canberra, proposals seem to identify to this writer that the participants have the same ideas and projects that the ARRL 'Teacher Institutes' have been employing for the last 16 years. This will undoubtedly colour what will happen in Australia. We have a long way to catch up!

It would be difficult to mount such a scheme here in Australia … but not impossible. Certain aspects of it could be implemented. We are certainly capable of doing similar things where the teachers pay for their own professional development or the Education Department… as they always have. We do not have the population and largesse of our American counterparts. Motivation in part, for teachers in South Australia and elsewhere, can be provided by their right to join the students with an extra week of holidays at the end of the year, if they can prove that they have had so-many hours of appropriate professional development throughout the year. Any workshops would be centred on a state capital and most people from the country either have friends or alternative accommodation in those cities. Because of State Government stipulations on professional development of teachers, expenses are automatically a tax deduction. Our radio clubs have 'more expertise per square metre' at their meetings than anywhere else in Australia, to be able to design 'activity boards' using the wealth of circuit diagrams placed on the Web by the ARRL, or purchased and 'reconfigured 'from the American suppliers. There are lesson plans and enough guidance for us to do what the Americans have always done to us in the past … copy and improve on the original! Why reinvent the wheel?

It would also provide the means of having many interesting talks and workshops for our radio clubs; keep the members abreast of what is happening in schools to help their children and grand-children; and provide expert help to the teachers and youths/children in our schools. Without us the teachers face' burn-out'. The retired 'old fellas' would have a real purpose in life, where experience, based on prior employment, or interests, could be a very valuable resource for our youth and lead to a betterment of our communities.

Bibliography

QST magazines from 2000 to 2017, available from major state libraries.

Photo 11: Radio telescope project.

Plan ahead

International Telecommunications Day (AX prefix)	17 May
Oxley Region ARC Field Day - Port Macquarie	11-13 June
SERG hamfest & Foxhunt Championship - Mount Gambier	11-13 June

VK5 School Holiday Technology Program is a Resounding Success

Trevor Quick VK5ATQ and Stuart Fillmore VK5STU

Photo 1: Two youngsters eager to get on the air.

Younger generation not attracted to our hobby? Well, if you were at the Tea Tree Gully Council library in Adelaide recently, you might have thought otherwise.

The North East Radio Club (NERC), in conjunction with the Tea Tree Gully Council, held a Radio Showcase activity day over the January school holidays which was very well attended by young (and not so young) people.

The event was the brainchild of Peter VK5PX and designed to complement the STEM (Science, Technology, Engineering and Maths) initiative. The Council were initially a bit unsure about it all, however once it was clear that STEM was the guiding principle they were every welcoming.

It was decided to encompass radio and associated topics, such as HF phone and digital radio via EchoLink, VHF/UHF radios, construction by soldering a selection of kits from Jaycar, Morse code with two units to play battleships and another table with a couple of keys and oscillators for the first timers to simply tap out their names. Fox hunting was also included which proved to be a very popular activity, prompting the question from several visitors *"Are you really hunting foxes?"*

The day was structured into three sessions which required participants to register. The event was promoted in major newspapers and online, via the Council's website. The promotion and logistics on the day were coordinated by the Council staff and was very well organised. A number of staff members ended up getting involved in the activities themselves!

The fox hunting station was established outside the building near the main entrance and proved to be a very popular activity. Peter VK5PX obtained a number of receivers from VK3YNG which worked flawlessly. The antennas were home brewed by Trevor VK5ATQ, and a number of tape measures eventually made the ultimate sacrifice to be used as the elements, in traditional amateur radio fashion. Knowing young children would be using them, the tips of the elements were suitably protected. All of the units worked flawlessly.

The locations of the foxes were varied throughout the day and sometimes proved very elusive but always brought a smile or laugh to the hunter when found, even if it was a mum or dad who really wanted to find it. One fox was located in the back of a vehicle parked approximately 40 metres from the start point. Colin VK5ACE may have also had one in his pocket

as he walked around (all day it seemed) helping the hunters. After three very busy sessions, everyone was ready for a rest. A number of NERC member's partners assisted with activities, for which everyone was very grateful.

Another very popular activity was soldering and construction. This was limited to eight participants at a time which allowed Phil VK5SRP, Eric VK5BT and Rod VK5ZRK to take the participants on a one hour journey of discovery as they assembled and soldered a basic electronics kit. Safety precautions were taken and no injuries were reported. All participants successfully completed their projects (though one or two components may have had to be reoriented to achieve a functioning device).

A Morse code activity station kept a number of people enthralled for hours. The most popular was the simple table with the key and oscillator. The children received much enjoyment from playing Battleships or tapping out their name on a practice oscillator. Royce VK5FRWF was instrumental in conveying the rich and detailed history of Morse code. It was clear his passion and enthusiasm held people's attention.

A HF station was established outside in the park, utilising a shelter that is permanently in place.

Photo 2: Colin VK5ACE with a keen hunter and Council staff member.

Photo 3: Soldering and construction with (Left to right) Eric VK5BT, Rod VK5ZRK and Phil VK5SRP.

Photo 4: Royce VK5FRWF discussing Morse code.

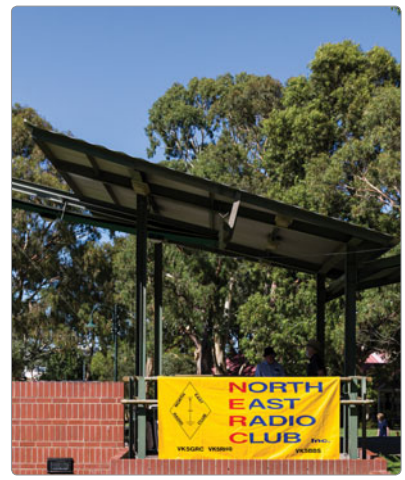


Photo 5: The HF outdoor HF station.

Unfortunately there was not the same amount of traffic as the indoor activities. This is likely due to it being some distance from the main building. Les VK5KLD did a sterling job keeping things going regardless.

The digital modes station was manned by Charlie VK5KDK who was operating a remote station (located at his QTH). This proved to be fascinating to some people who came to realise that modern technology is indeed part of the hobby.

Photo 6: Eagle eyed fox hunters.

Photo 7: Charlie VK5KDK and Nigel VK5NIG at the digital station.

The feedback from all involved, including the Council staff, was that the event was a great success and exceeded expectations. The aim of introducing young people to the hobby and what is possible was achieved and we hoped to have planted the seed for future career decisions. Future activities are already being planned at the same location. The challenge now is to improve upon what was achieved.

While it was very encouraging to see so many children interested in the various activities, the parents were also very keen to have their children participate. Reflecting on the fact that evidence seems to suggest the hobby is not attracting young people, there seems to be some residual interest. Initiatives such as STEM will certainly help keep the interest alive.

Thanks to the following NERC members: Alethia VK5FLAX, Colin VK5ACE, Charlie VK5KDK, VK5ATQ Trevor, VK5FLIW Fred, VK5KLD Les, VK5FWAA Dennis, VK5NIG Nigel, Stuart VK5STU, Eric VK5BT, Geoff VK5ACZ, Royce VK5FRWF, Rod VK5ZRK, Geoff VK5KIK and Phil VK5SRP.

Photos supplied by Stuart VK5STU.

Photo 8: Another young person engaging in radio communication at the event.

ALARA

Diane Main VK4DI

From VK7: Congratulations to Shirley VK7HSC

The Meet the Voice event was held in Ross, Tasmania on 18 March. This annual event is organized by the Tasmanian Sewing Circle – which is not what it seems, as there is not a needle in sight! The Circle began in 1962 when the late Jack Batchelor VK7JB SK and his friend Snowy Harrison VK7CH, maritime mobile on the MOORINA, had daily conversations on 80 metres. Jack's wife Joy VK7YL said that the men reminded her of a group sewing circle at school - a select group of students who were allowed to talk as they sewed.

The Sewing Circle Net trophy is awarded to the 'most loquacious' amateur operator who has operated on this net over the past year. This year the Trophy was presented to Shirley VK7HSC by Cedric VK7CL on behalf of Gavin VK7VTX who could not be present. The look of surprise on Shirley's face when the announcement was made had to be seen to be believed.

Photo 1: Shirley VK7HSC – Winner of the Sewing Circle Net Trophy.

Shirley has just returned to amateur radio in the last year after looking after her elderly husband Max VK7KY for at least 10 years. In Shirley & Max's heyday, they were very active on packet radio, RTTY and most of the bands. Eric VK7EV and seven other local amateurs rallied for a working bee at VK7HSC Shirley on Sunday 29 January 2017. They had previously replaced

Photo 2: ALARA lunch in Williamstown. Back row L to R. Kaye VK3FKDW, Mum Elsie, Robyn VK3WX, Cheryl VK3FCYL & Pam VK3NK. Front row L to R Jean VK3VIP, Margaret VK3FMAB and Susan VK3FZZY.

her 2 m and 70 cm antennas and removed dangerous towers, mast and falling down antennas. On the Sunday they erected a Fan Dipole for 80 m, 40 m, 20 m and 10 m as well as strapping the tower firmly to the roof structure, as previous mountings were rotting and installed an Earth system for the radios. Thanks to everyone for their help.

It is great to see that the working bee has benefitted Shirley, who is now active on the bands again and has resulted in this award.

Thanks to the Meet the Voice website for the background information. For more details about the Sewing Circle Net and how to join in go to *http://meetthevoice.org/*

There were eight OMs and one YL at the QTH of Shirley VK7HSC recently as volunteers to erect a Fan Dipole for HF. It was a fine but windy day, which caused some hassles but it all went well and Shirley met some other hams for the first time face to face which made for a great social day.

As the result she now has 80, 40, 20, 15, and 10 m and it seems to be going well.

Previously a few amateurs had established her on 70 cm and 2 m with new antennas. Everything was in tatters before they started. Without their help, Shirley wouldn't be on air and she is very grateful for all the help and support she has received, from VK7EV, VK7DC, VK7MD, VK7XR, VK7JON, VK7HCK, VK7TG and YL VK7FOLK and Rodger Hewison as well as quite a few that made donations of parts needed instead of assistance.

Heartfelt thanks to all who assisted Shirley to return to the hobby she loves.

VK3 News

On Saturday ALARA held their lunch in the seaside town of Williamstown; it was a lovely sunny day. The lunch was at the Customs House Hotel and was organised by Susan VK3FZZY; about 15 ladies attended. Susan organised to help celebrate the birthdays of Jean VK3VIP and Margaret VK3FMAB with a decorated table and birthday cakes.

Photo 3: ALARA at the EMDRC Hamfest. Back row left to right Margaret VK3FMAB, Jean VK3VIP. Front row left to right Kaye VK3FKDW, Mum Elsie and Emma VK3MUM.

Sunday 26 March saw John VK3DQ with Mum Elsie and Jean VK3VIP heading to Heathmont for the EMDRC Hamfest, arriving early so Jean could set up the ALARA table for Kaye VK3FKDW and Mum Elsie who looked after the table. They did a great job and sold quite a few items, much to Jean's delight. Thanks Ladies.

Margaret VK3FMAB and Jean VK3VIP worked hard in the kitchen serving tea, coffee and soft drinks along with cake and biscuits.

Shirley VK5YL: E51XYL

Shirley is up on cloud 9 (or as her OM says 'six inches above the floor') at the moment. They will be heading off to Rarotonga in June for their 50th wedding anniversary gift to themselves and thanks to Andy E51AND. Shirley now has the special call sign (for 12 months) she can use to operate whilst on the island. It is of course E51XYL.

So, sometime in the middle of June have a listen on 20 metres, probably during the ANZA net on 14.189 MHz and you will be able to work Shirley.

VK4 News: International Women's Day Activity

Sometimes special events just seem to "happen" with very little forward planning – this occurred one Monday evening, when ANZA Net Controller John VK4LJ said to Lyn VK4SWE: "I thought you'd be running the net on Wednesday as it is International Women's Day!"

Well! That was it! Lyn quickly rang the Net Co-ordinator Lindsay VK3WM, who gave the go-ahead to ring Wednesday's controller Tex VK1TX, who kindly agreed to swap days. Lyn then emailed and telephoned some of the ALARA YLs but with so little time to plan ahead, she wasn't sure how many would be able to make it. Well! There were SIX YLs on the ANZA DX Net that day! Lyn is sure there have never been so many YL's on at one time before! It was terrific fun with several call-backs after the net to say how much people enjoyed it. Mike VK4GMH made some recordings which he kindly emailed Lyn later for us to use on our ALARA Facebook page and website! Taking part were Lyn VK4SWE, Diane VK4DI, June VK4SJ, Shirley VK5YL, Ricna DU7P and Michiyo JN2OWE.

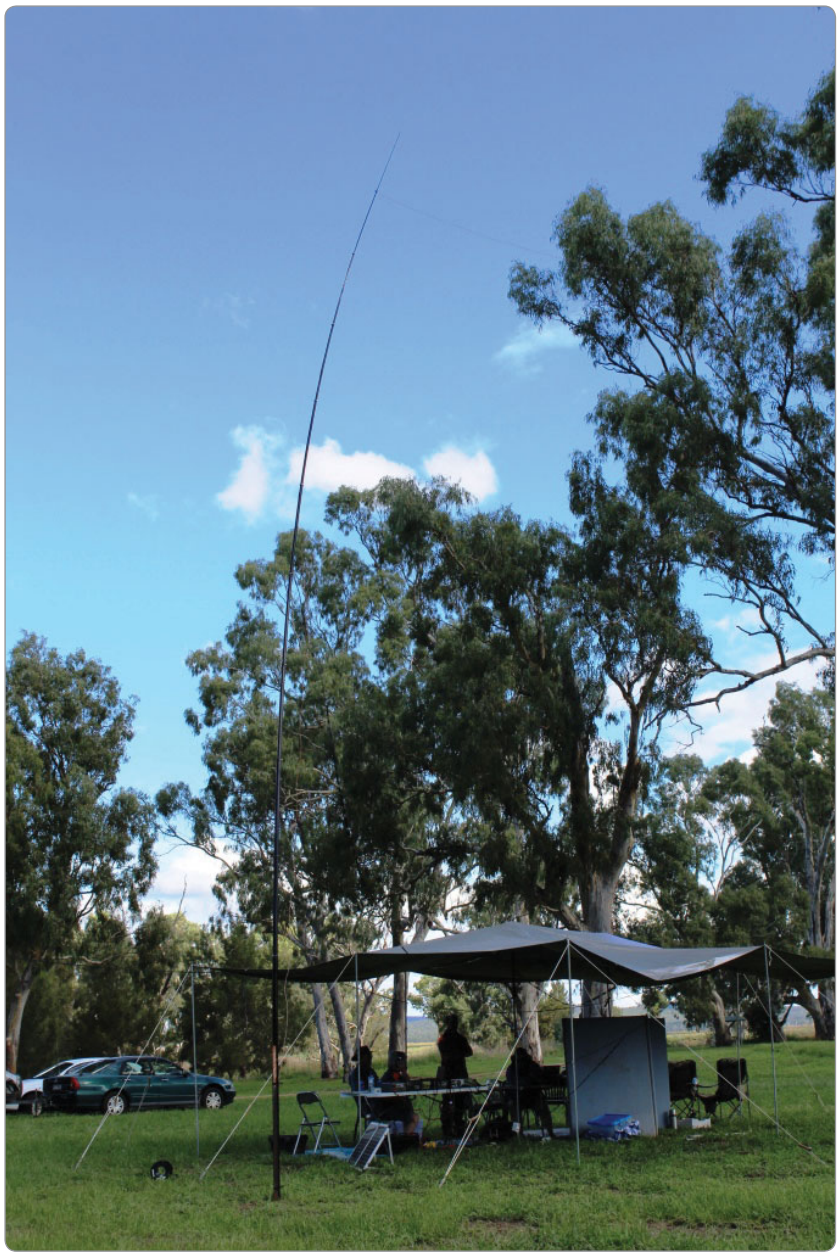


Photo 4: The set up at Passmore Reserve for the John Moyle Field Day.

John Moyle Field Day on the Darling Downs

The Darling Downs Radio Club had a great weekend at the JMFD at Passmore Reserve, Ellangowan. Passmore Reserve is a lovely spot on the Condamine River. As it's a short term camping spot, there were no facilities so everyone had to be totally self-sufficient. Camping took varied forms; a trailer camper, a tent and a caravan. The weather held up and no rain fell on Saturday or Sunday but the black soil made for an interesting experience after a load of rain on Friday night. The club had three radios set up under a large tarpaulin and tarps under the operating area stopped them sinking into the soil underneath. They had around 20 people to either assist in set up and breakdown, operate or simply come along to see what happened. Apart from the two newly licensed YLs, Tess VK4FDDC and Sarah VK4FURY, another three hams expressed an interest in coming along next year and getting involved. It was a fantastic way to combine contesting with a social event.

Equipment used included a G5RV, a 40 m OCF dipole and an 80 m OCF dipole. All equipment ran on battery power trickle charged with a generator, one extra battery was solar charged and the 12 m heavy duty Squid pole held the 40 m OCF and they used trees as masts. Radios were an IC-7300, an FT-450 and an IC-718. VK Contest Log (VKCL) was used to record and collate the scores and the girls were very quick to learn how to use it. All in all they made 444 contacts on HF SSB. Sarah and Tess have never contested before as they are newly licensed, so this was their introduction. They both enjoyed it, and did very well. They are looking forward to learning more about contesting.

ALARAMEET 2017

Registrations are coming in for the Cairns ALARAMeet in September. The program and registration form are on the website *http://www.alara.org.au/alarameet/index.html*

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Diane VK4DI

Plan ahead

GippsTech 2017 Annual VHF/ UHF/microwave Technical Conference | 1-2 July

South East Radio Group Amateur Radio Club

53rd Convention and Foxhunting Weekend

- **When**: Saturday 10 and Sunday 11 June 2017.
  Doors open Saturday at midday and 9:00 am on Sunday.
- **Where**: Mount Gambier Scout Group Hall in Margaret Street, Mount Gambier.
- **Catering**: Excellent, reasonably priced catering will be continuously available for the duration of the convention including the famous steak sandwich, soup, hamburgers, Sunday breakfast selection, cakes and goodies, coffee, soft drinks and of course a happy smile from the helpers. The highly successful Convention Dinner on Sunday evening will be repeated this year.
- **What**: The Australian Fox Hunting Championship is a highlight of the event. Beginning at 11:00 am on the Saturday the nine event programme runs until early Sunday afternoon. Some events may need physical agility and speed, others guile and there is always an event or two to surprise and challenge the competitors.

A home brew competition with great prizes will be held as is our tradition and there are tables of new equipment, pre-loved gear and parts that no shack should be without.

A pre-dinner talk will be given by David Rowe VK5DGR on several topics including his FreeDV project.

Entry fee is $5 for the weekend and this includes the lucky door prize raffle. For table bookings contact our Secretary on ***vk5sr@wia.org.au***

Contact us: Programme information and where to find us may be found on the club website at ***http://serg.mountgambier.org***

Accommodation should be booked early as this is a busy weekend in Mount Gambier.

Silent Key

Baden Young VK7BRY

It is will great sadness that we inform you of the passing of Baden Robert Young VK7BRY on 17 March 2017. Born on 20 August 1924, Baden was 93 and died peacefully in one of his loves; namely his garden.

Baden was interested in radio from an early age (1930s) and when a boy at Moogara used to walk over the hill to visit someone who built wireless sets. Baden became a keen CBer and would regularly talk with Athol Harris who was another CBer in Oatlands.

Baden went on and studied amateur radio in the same class with David VK7OB, Wynn VK7WY and Charles VK7PP. He passed his Novice exam and became VK7NBY and upgraded to a full call in 1997.

Baden used a Yaesu FT-7 for many years and would regularly talk with Ollie SM0KV with 15W on the FT-7. In later year he would regularly be heard talking on air with Jack VK7IL.

Vale Baden.

(Richard VK7RO, Denis, David VK7OB)

Don't forget to register for MEMNET.

DX Talk

Luke Steele VK3HJ

There is not a lot to report on this month, as your author's station has not been much on air since moving to a new property, but April should see some towers and beams in the air, and hopefully, amongst some interesting DX again. So far, only a 13 m tall ground-mounted vertical has gone up, with a bare handful of QSO in the log, including USA, South Cook, Tuvalu, Micronesia, Bangladesh and Timor Leste. One of the more interesting QSO was in mid-March on 40 m with Tom NY0V maritime mobile near Baker and Howland islands in the middle of the Pacific Ocean. Tom was on a yacht involved in an expedition conducting deep sea sonar surveys to a depth of 5400 m, searching for the remains of Amelia Earhart's Lockheed L10E.

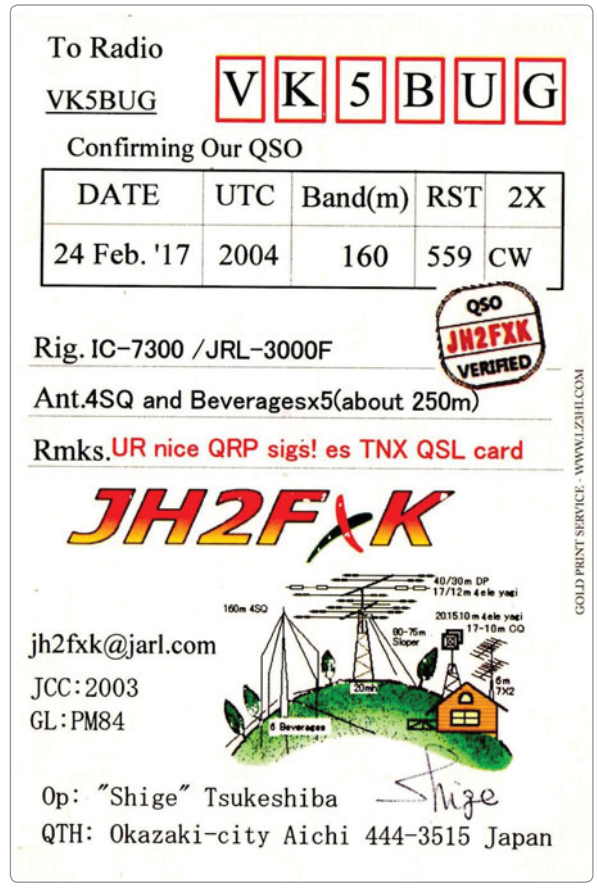
The sun flat-lined for almost the whole of March, apart from a significant uplift in activity in the last week and into the beginning of April where the solar flux index rose above 100, with the sunspot number rising towards 100. Region 2644 fired up just before it rotated off the western limb of the sun, producing several M-class flares, and a prolonged period of geomagnetic storms.

Thanks to Grant VK5GR for providing the following report:

E51DWC has been active on 40 m RTTY from the Cook Islands - easily workable from VK at night. There have been some 10 m openings to JA and north Asia as well early in March, and again during the CQ WPX contest. 20 m SP Europe has been very variable over the past month with it not appearing at all some nights.

The geomagnetic storms we have had have made it difficult at times. Several nights there have been some very strong "auroral tones" on digital signals, leading to significant inter-symbol interference caused by the delay echoes as a result of the geomagnetic disturbances.

Despite the cycle dropping, 15 m is still a band to watch. Afternoons into Asia have yielded a number of good runs of RTTY contacts, and there were at least two nights where 15 m was still open well into the evening. Don't overlook it!


To Radio
VK5BUG
V K 5 B U G
Confirming Our QSO

DATE	UTC	Band(m)	RST	2X
24 Feb. '17	2004	160	559	CW

QSO JH2FXK VERIFIED

Rig. IC-7300 /JRL-3000F
Ant.4SQ and Beveragesx5(about 250m)
Rmks.UR nice QRP sigs! es TNX QSL card
JH2FXK
jh2fxk@jarl.com
JCC:2003
GL:PM84
Op: "Shige" Tsukeshiba
QTH: Okazaki-city Aichi 444-3515 Japan
GOLD PRINT SERVICE - WWW.LZ5HI.COM

There have also been some good IOTA activations to chase. A35JP/P OC-123 was strong into VK when he was active and the team out on Tuvalu continues to put in good signals on JT and RTTY. IOTA activity was also seen from E20HHK/P on AS-126 Lipe Island. H40FN has also been active from Temotu Province this month, either audible or worked on 40, 30, 20 and 17 m from this QTH. The Caribbean has also been active, beginning with the ARRL DX CW contest onwards. PJ4/K2NG portable on Bonaire Is SA-006 was worked on 40 m from VK5, amongst the illegal QRM around 7002 kHz, and KL7/VE7ACN was also worked on 40 m CW from NA-041 in SE Alaska.

March has also been DXpedition month, with multiple expeditions heard in VK. 9N7EI, the Irish team that went to Nepal was accessible on multiple bands from 40 m - 12 m by my station in Adelaide, and the BERU (Commonwealth) contest netted a few more, such as Guernsey Island GU80CC, El Salvador YS1YS, V21ZG Antigua & Barbados. The cherry on the top for me was 5U5R from Niger in Africa via 20 m RTTY. Africa was a popular DXpedition destination in March with several other activations across the African continent.

Others heard but not worked by me included 9G5X in Ghana, TU7C Ivory Coast and TZ5XR in Mali. Breaking through the EU, NA and JA stations to make a call with all of the African stations has been very difficult. Steve VK5SFA however did manage 30 m CW with 9G5X during the John Moyle weekend, as I am sure did several other VK and ZL stations from what I saw. To cap of the month's DXpeditions, we had S21ZEE from Bangladesh audible most nights of their activity, although difficult to work due to the EU and JA pileups.

Finally, look out for Cliff VK9VKL who has moved onto Christmas Island. He only just received his amateur licence before moving to the island, so has lots to learn. Please help him out when you can! He has been heard several times now on 40 m SSB during the evenings.

All and all, it was a busy month for DX, despite the at times poor solar conditions. In my case, everything I've reported was worked with 100 W and either wire antennas or a 2-element beam, so you don't need to be a gun station to still have fun with DX!

73 de Grant VK5GR

And from Stewy VK4SC:

V633KS - Chuuk Islands, Micronesia IOTA OC-011. Was active 19 March – 3 April. I've only managed to get him on 30 m and 80 m CW.

T2QR Marek on Tuvalu is active. Caught him tonight on 80 m CW.

Grant has it covered very well, and the highlight for the month for me was 5U5R on 40 m CW.

Stewy VK4SC.

Thanks Grant and Stewy, for your reports.

Upcoming DX

DXpedition activity scheduled for May includes the following:

MJ **Jersey** (EU-013) 5 - 11 May. PA1AW, PA3EWP, PA9JO and PB5X will be operating MJ/homecall on 160 - 10 m. QSL via LotW, PA1AW or Club Log.

E51LYC **North Cook Is**, Pukapuka Atoll (OC-098) 11 - 23 May. Cezar VE3LYC will be on 40 - 10 m using CW and SSB, with vertical and wire antennas. QSL via VE3LYC. For more information see *http://e51lyc.weebly.com/*

AD8J/HR9 **Honduras,** Guanaja, Bay Islands (NA-057) 13 - 27 May. John AD8J will be operating on 160 - 15 m, mainly CW with 100 watts and a dipole over water. On his QRZ page, John notes (regarding LotW confirmations): "Make sure you enter the call as AD8J/HR9 and not the other way around." QSL via LotW, or direct to AD8J.

ED9T **Ceuta & Mellila** 18 - 21 May. Ten Spanish operators will be on air from the Spanish enclave in Morocco, for the King of Spain CW Contest. They will also be on air before the contest as EG9TOR, and will be operating mainly CW. QSL via EA4PN. For more information see *https://www.qrz.com/lookup/eg9tor*

FG/DL2AAZ **Guadeloupe** 22 May - 7 June. Reiner DL2AAZ will be returning to the Caribbean to Sainte Rose, Guadeloupe, French West Indies, with plans to operate on 30 - 10 m using SSB and CW. QSL DL2AAZ bureau or direct.

See NG3K's "Announced DX Operations" website for a very up-to-date calendar of DX activations around the world. *http://www.ng3k.com/misc/adxo.html*

Other news

Doc VK5BUG sent me photos of the QSL card he received from the 160 m QRP contact with Japan reported last month.

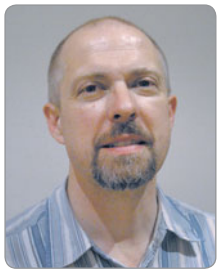
Doc is also enjoying QRP CW QSO on 30 m, including one with John G4RCG in Leeds.

Please email me with any DX related news for inclusion in this column. I am particularly interested in hearing about DX worked or heard in other states.

vk3hj@wia.org.au

73 and good DX,

Luke VK3HJ.



VK7news

Justin Giles-Clark VK7TW
e *vk7tw@wia.org.au*
w *https://groups.yahoo.com/neo/groups/vk7regionalnews/info*

Meet the Voice 2017

Held on Sunday 19 March 2017 on the banks of the Macquarie River in the historic township of Ross in Tasmania's Midlands, this event is organised by the Sewing Circle net which is held every night at 1700 on 3.59 MHz or 7.12 MHz.

This event is an opportunity to have eyeball QSOs with amateurs from around VK7 and beyond and "Meet the Voice" behind the callsign. There is the annual presentation of the Sewing Circle trophy for the most loquacious amateur in the last year and this is presented by the previous recipient. This year Cedric VK7CL on behalf of Gavin VK7VTX presented the award to Shirley VK7HSC. Congratulations Shirley.

The car boot sale area was doing brisk trade and many amateurs walked away with a bargain. Thanks to Lyn VK7FLYN and Yvonne VK7FYMX who were our registration and raffle ticket collectors. The proceeds from the day went to REAST and CHARCT for their repeaters and beacons programs.

The raffle saw the major prize of a handheld going to Ivor and the wine prize thanks to Stirling Heights and Geoff VK7GW going to Mike VK7DMH; congratulations. Thanks to Jackson VK7FJAX who helped out with the raffle draw and Rod VK7TRF for the podium and PA support.

The BBQs were then fired up and a great lunch had by all. Pictures of the event are available on the MTV website at: *http://meetthevoice.org/*

Photo 1: Cedric VK7CL presenting the Sewing Circle Trophy to Shirley VK7HSC (photo courtesy of Justin VK7TW).

North West Tas. Radio & TV Group (NWTR&TVG)

http://www.vk7ax.id.au/atvgroup

Congratulations to Elizabeth Burr who passed her Foundation assessment and has applied for VK7FLIZ. NWTR&TVG supported the Kentish Endurance Ride in the Sheffield area on 18 March. There was an 80 and 40 km rides with three checkpoints and base. Thanks to all who assisted on the day: Mathew VK7ML, Ross VK7WP, Bob VK7MGW, David VK7VDS, Roger VK7ARN and David VK7DC.

Northern Tasmanian Amateur Radio Club (NTARC)

http://www.ntarc.net/

NTARC now has another assessor in Bill VK7MX who can assist Peter VK7PD and Idris VK7ZIR with education in the North of VK7. Saturday 11 March was a BBQ meeting which finalised arrangements for the Special General Meeting to change the club rules which will be held on 12 April.

WICEN Tasmania (South)

http://wicentas.com/

Sunday March 12 saw WICEN assist the Southern Tasmania Endurance Riders with their ride in and around Margate, Kingston and Leslie Vale with an 80/40 and 20 km rides. There was even a 5-year old rider on a pony with Mum on a horse who completed the 20 km ride. Thanks to everyone involved: Roger 7ARN, Chris VK7FCDW, Justin VK7TW, Garry VK7JGD, Peter VK7TPE, Rod VK7TRF, Stu VK7NXX, Cedric VK7CL, Jackson VK7FJAX, Dale, VK7FNED and Tony VK7VKT.

Radio and Electronics Association of Southern Tasmania (REAST)

http://www.reast.asn.au/

The 23 cm QSO Parties are still attracting a good crowd with an average of eight participants each Sunday morning. Mt Wellington is the 1270 m passive reflector using the FM mode on 1296.1 MHz and then there is digital JT-65C

Photo 2: Justin VK7TW, Roger VK7ARN and Chris VK7FCDW on checkpoint duties. (Photo courtesy of Roger VK7ARN.)

and QRA-C between Hobart and Launceston on 1296.2 MHz.

The REAST March Presentation Night was a two for one offer with a look behind Uber and then RTL-SDRs. Thanks to Tony VK7VKT who is an UBER driver and gave us a look behind the intricacies of how the various algorithms appear to work with surge pricing, driver guaranteed income, geolocation data and many more elements to make this a fascinating use of technology. Thanks Tony. Scott VK7LXX then demonstrated the many things you can do with RTL-Software Defined Radios. Scott went through the many types, the software that is available and how to link the various pieces of software. We saw an RTL-SDR on Gqrx and how you can make it available on the web, decode pager, ADSB, LIPD and other protocols. Thanks Scott.

Our Satellite Experimenter's nights continue with many interesting items - Rex VK7MO brought along his newly refurbished 20 dB horn for receiving the DL 10 GHz beacon off the moon; Tom VK7NTK brought along the filter circuit he has been working on for the IRLP node; Scott VK7LXX gave the progress on the SATNOGs and GNU Radio projects; Tony VK7LTD talking about SOTA; Ron showed his RC plane, FPV and OSD display units; Trent VK7HRS showed his Bitx40 QRP rig and the author showing the progress on the VK7RST GPS Disciplined beacon controller.

Photo 3: Tony VK7VKT showing how UBER works (photo courtesy of Justin VK7TW).

SOTA & Parks

Allen Harvie VK3ARH

Photo 1: VK3BYD Warren's antenna on Mt Big Ben VK3/VE-105.

1 April 2017: 160 m SOTA VK Challenge

Poor HF conditions recently have led to an interest in 80 and 160 m. VHF 2 m activations are increasingly available to all licence classes, effective where the summits are grouped around larger population centres and offer a low-cost entry into portable operations. However, higher frequencies are not well suited to remote summits. The use of 80 m is increasing and on this weekend, several operators are planning to activate on 160 m.

160 metre portable antennas for SOTA were discussed at the recent VK3 SOTA conference. Many were sceptical as to value and reluctant to carry additional weight but Peter VK3YE proposed that the easiest is the inverted L. The usefulness was an all-round antenna being good for both local and longer distances; basically, as much wire as possible fed with an L-match coupler. A single 9-metre squid pole can support it but you want the top wire to be as close to horizontal as possible. That may mean taking another squid pole if you can't tie it off on a nearby tree.

So, laden with extra wire and an optimistic outlook, activators set-off to exploit low bands and a bit of AM; considering summits with enough space to host 40 odd metres of wire and conveniently located trees.

Warren VK3BYD, Ron VK3AFW and Allen VK3ARH were out for the day, whilst David VK3IL, Tony VK3CAT, Gerard VK2IO and Nick VK2WP (VK2AOH) all separately activating and camping overnight with 80 and 160 m.

But that was not all; Rob VK4AAC, Bill VK4FW and Mark VK4SMA were out activating parks in VK4. Tony VK3XV and Brett

Photo 2: VK3ARH on Mt Beckworth VK3/VC-024.

VK3FLCS were activating VK3 parks whilst Mick VK3GGG and Peter VK3PF were separately activating SOTA summits and Parks in Western VK3.

Not to be left out, Andrews were represented with VK1AD and VK1DA whilst VK3ARR called in as HL1ZIH from South Korea.

So there was a lot to chase, opportunities for all.

Warren VK3BYD reports arriving on Mt Big Ben (VK3/VE-105) around 4 pm local, on air around 5 pm and quickly worked six stations on 160 CW, with 5 of these being S2S. After this he worked stations on both 80 and 40 metres before returning to 160 as the sun was disappearing around 7 pm. Then he worked another four unique stations, three of which were S2S before closing and packing up in the dark.

Total contacts on 160: 7 S2S, 11 unique stations with only two of these on SSB and the balance on CW.

The 160 m antenna was an Inverted L, the vertical section was supported by a 11 m squid pole resulting in an effective height of 9 m, the balance of the 40 metres of wire was held aloft by a rope thrown over a convenient tree. An old guy point was used to secure the squid pole.

The L was fed against two radials of 26 m each simply laid out on the ground.

The antenna worked well; the L is cheap to make and was easy enough to put up if there is enough space. As the 40 m length is a half wave length on 80 m, the ATU would not match the high impedance presented. There are a few options to address this and will be investigated before next 160 m activation.

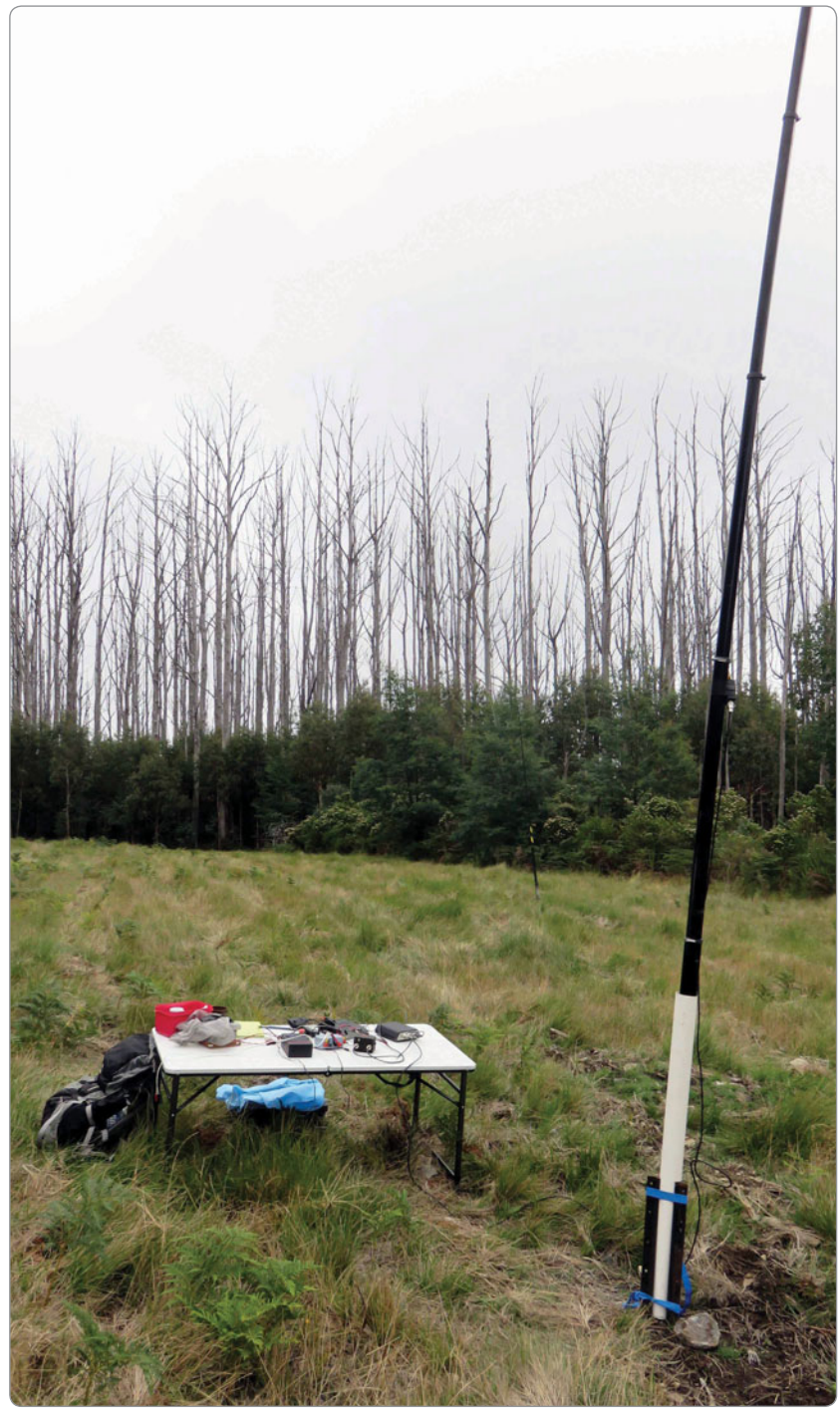


Photo 3: VK3AFW on Mt Strickland VK3/VN-030.

Allen VK3ARH reports that it was a beautiful evening to be out on Mt Beckworth VK3/VC-024. It did get slightly wet and chilly as the sun went down but that didn't detract from the activation.

Not believing that I was going to have much success with ground wave, I decided to activate in the afternoon when conditions should allow contacts. The antenna was a 43 m end fed using 7 m squid pole with 9:1 Unun to RG174 coax to a KX3 where the internal tuner ensured a better match and allowed me to work 80 m and 40 m.

Research led me to choose 43 m being near a quarter wave and a 12 m counterpoise which was actually my 40 m end fed antenna used to assist with tuning. Mt Beckworth was selected due to the clear summit with good access allowing for an evening walk out. Arrived on site around 17:00 local time and setup to immediately to work Warren VK3BYD/p, then Tony

VK3CAT/p and Ron VK3AFW/p on 160 CW. A great start as the summit was nearly qualified with S2S contacts.

After an AM contact with Mick VK3GGG/p, it was back to work Gerard VK2IO/p, to then pick up Peter VK3PF/p on 40 m then to work Bernard VK2IB/p on 80 m with the final contact with Matt VK1MA/p on 160 m SSB.

Great activation with a walk out in the evening and short run home for dinner!

Bernard VK2IB reported making thre contacts on 160 m, all on CW from Mt Granya VK3/VE-165 and a lot more on 80 m including an AM contact with VK3GGG. All but two QSOs were S2S. He was using a 26 metre doublet fed from the Barrett 940 with about 20 W out. On 160 m, he tied the balanced feeders together and tuned it as a top-loaded vertical against an elevated ground plane. It worked OK but probably isn't all that efficient. It was the best that could be done with the limited time available.

VK3AFW Ron chose Mt Strickland VK3/VN-030 reported to be a pretty good day out, even if the weather was a bit mousy with several misty rain showers and low temperatures and spotting didn't seem to work although he could receive spots with one bar on phone S meter.

A few good AM contacts but SSB showed why we use it instead. The new Palm mini single paddle would not talk to the FT-817 at first and I then found my straight keying with a mini key SK was really RS. Eventually got the 817 to respond to the paddle and CW went better then.

Antenna used was an OCF 160 m HW dipole with short end at 2.3 m agl and then a 12 m vertical section and the rest horizontal to a second 12 m pole. The large clear space and a couple of wattle trees were the reason for choosing the site. Antenna tuned up OK on all bands tried. For less than 1 hour, I heard EU dx on 20 m but not particularly strong. 1 CW QSO on 30 m with VK2WP/P, 40 m was OK, 80 m was good as was 160 m.

He heard but was not copied for a QSO by PA0LEO on 40 m. Some strong EA stations there too but no chance of getting a report due to power level differences.

Ron gave up when he could not see well enough to read the log book. Packed up using a head torch, lost his water bottle and hoped nothing else missing.

VK3IL David went with a loaded vertical.

The antenna is a loaded vertical with 4-wire top hat and 15 m ground radials. It is built on a squid pole with the resonator up about 6 m. The resonator is made from 40 mm PVC pipe with end-caps and banana sockets. The resonator is split so that the antenna can be used for both 80 m and 160 m. The match is an L-match with the coil wound on a 90 mm PVC pipe. The radiator is clipped to the Match coil using an alligator clip to tune for the operating frequency. On the 160 m SOTA activation, he was running about 50 W SSB from a HF mini-Packer amplifier driven from his KX3.

The "Real Activator" award goes to Paul VK3HN who made the 160 m transceiver and inverted-L antenna to operate from Mt Gordon VK3/VN-027. He worked Tony VK3CAT/p 160 CW on Mt Mitchell and Ron VK3AFW/p on Mt Strickland. After listening around for a while, he set up for 40 m SSB and worked a string of chasers in good late afternoon conditions. As dark approached, 160 CW came alive and he worked Gerard VK2IO/p, Warren VK3BYD/p and John VK2YW. Reports were all R5, S4 to 5. The rig and antenna performed well. Packed up in the dark and left, leaving two squid pole caps somewhere on the summit as an unintended sacrifice to the SOTA Gods.

https://vk3hn.wordpress.com/2017/03/21/160m-sota-activation-1st-april-2017/

In short 160 metres portable is a fun challenge. The inverted L end fed is a worthy antenna for any site with enough space.

Thanks to all activators and chasers.

73

Allen VK3ARH

Photo 4: VK3IL David on King Billy No 1 VK3/VE-016.

VK4news BARC

Les Neilson VK4FAEB

On Friday 11 November 2016 we had the pleasure of Dave Prince, one of our founding members of the Brisbane Amateur Radio Club, deliver an excellent presentation on the history of RADIO ALTIMETERS that were used in aircraft during the Second World War.

Dave had to do some wheeling and dealing to get this piece of equipment with another collector giving up some of his valued collection in the process.

Dave's unit consists of a frame mounted unit complete with the transmitter and receiver and the ability to produce readings back to the unit to mimic how it would operate in flight.

The unit was usually operated and setup and maintained by the Radio engineer but a light display could have been located in the cockpit for the Pilot or Navigator to fly by. See Figure 2.

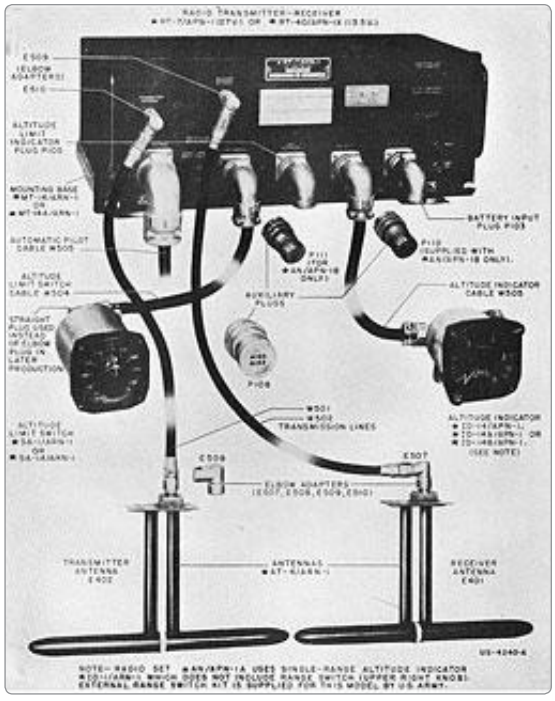


Photo 1: Typical major components.

The advantage of this unit was that it gave a direct reading of height over the ground level rather than utilising air pressure to determine sea level then to manually calculate your height over land etc.

For the safety conscious this is a great advantage having the ability and confidence to maintain your height above ground level at a consistent distance, notwithstanding cloud covered mountains of course.

Dave explained to our members the senders and receivers and how they were positioned on both wings with the fuselage in-between to reduce any false signals back to the unit.

Dave then demonstrated how the audience as a pilot could maintain height by watching the light display in conjunction with their aircraft's altimeters.

Official description

The radio altimeter is an electronic aircraft instrument designed to indicate an aircraft's absolute altitude above the surface of the earth from zero to 4,000 feet.

A transmitter and receiver are the main components of the radio altimeter. They generate and receive all the signals required for altitude measuring.

The altitude indicator shows the absolute altitude of the aircraft directly in feet, by needle deflection. Another altitude indication is provided by a limit switch and limit lights. By watching these limit lights, the pilot can fly at a predetermined, fixed altitude. This is done by setting the limit switch to the altitude that it is desired to maintain. Any altitude between 50 and 300 feet-at 25-foot intervals can be selected (AN/APN-1 has additional range settings of 500 and 3,000 feet, at 250-foot intervals). As long as the aircraft's altitude is within 10 feet of the limit switch setting, a white indicator light glows (100 feet for 400- to 4,000-foot range). If the aircraft rises more than 10 feet above the limit switch setting, a green light glows (100 feet for 400- to 4,000-foot range). If the aircraft falls more than 10 feet below the limit switch setting, a red light glows (100 feet for 400- to 4,000 foot range).

Principles of operation

An electronic altimeter system, shown diagrammatically in Figure 1, comprises the following elements:

1. An FM transmitter and audio oscillator.
2. A receiving unit:
3. An indicator unit:
4. Transmitting and receiving antennas.

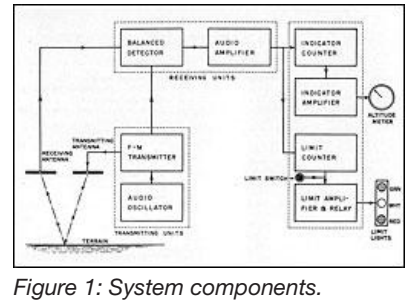


Figure 1: System components.

Mode of operation

Altitude calibrated current meter

The AN/APN-1 series of radio altimeters employ a frequency-modulated transmitter to generate a constantly changing radio frequency wave (constant in amplitude) which is directed toward the earth by a

transmitting antenna. A reflected wave returns from the earth, is picked up by a receiving antenna and passed along to the receiver section of the equipment. At any one instant of time there will be a difference in frequency between the reflected wave and the transmitted wave. This frequency difference will be proportional to the time (distance) required for the wave to travel from the aircraft to the earth and back again to the aircraft.

Suitable circuits in the receiver convert this frequency difference into values of current whose strength is proportional to altitude. The current indicating meter is calibrated in terms of feet of altitude.

Altitude limit lights

An additional indication of levels of altitude is obtained through the use of current-relay-operated altitude limit lights. When an altitude limit switch is set for any given altitude within the range of the equipment (in steps of 25 feet for the low range and 250 feet for the high range), relay switches, affected by changing values of current, will operate to cause indicator lights to glow.

If the aircraft maintains the pre-set limits of altitude, a white light glows. If the aircraft's altitude rises above the pre-set limit, a green light glows. If the aircraft's altitude falls below the pre-set limit, a red light glows. See Figure 2.

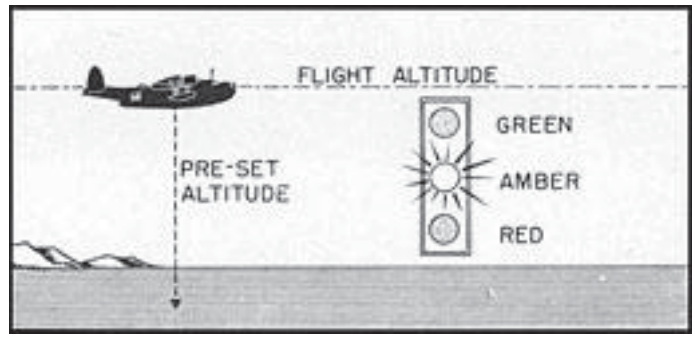


Figure 2: So long as the aircraft maintains an altitude equal to the value pre-set by the altitude limit switch, amber light will glow. If the aircraft deviates more than 25 feet from this pre-set altitude a red light glows for decreased altitude and a green light for increased altitude.

As always Dave vast knowledge of this vintage equipment kept everybody engaged and enthused throughout the presentation.

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial amateur radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft. AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly net

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 0930 Z or 1030 Z depending on daylight saving. Check-in starts 10 minutes prior to the start time. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RBM Blue Mountains repeater on 147.050 MHz

In Queensland
VK4RIL Laidley repeater on 147.700 MHz
VK4RRC Redcliffe 146.925 MHz IRLP node 6404, EchoLink node 44666

In South Australia
VK5TRM, Loxton on 147.175 MHz
VK5RSC, Mt Terrible on 439.825 MHz IRLP node 6278, EchoLink node 399996

In Tasmania
VK7RTV Gawler 6 metre repeater 53.775 MHz IRLP node 6124
VK7RTV Gawler 2 metre repeater 146.775 MHz IRLP node 6616

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT or VK3JED conferences. Past experience has shown that the VK3JED server offers clearer audio. The net is also available via IRLP reflector number 9558. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email. Frequencies and nodes can change without much notice. Details are put on the AMSAT-VK group site.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night. Currently only SO-50 is available.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

VHF/UHF - An Expanding World

David K Minchin VK5KK

Introduction

This month we have a report from Leigh VK2KRR on WSPR activity on 50 and 144 MHz in VK/ZL as well as a report on JMFD 47 GHz operation. We also have an initial report on the much touted and long awaited LimeSDR!

WSPR March 2017 Propagation Report

Leigh Rainbird VK2KRR reports on WSPR activity for March 2017

This report will cover any significant propagation openings detected by WSPR across the month of March.

50 MHz WSPR: After summer finished, it has been noted that the MUF has significantly dropped and there has been virtually no good 50 MHz WSPR activity noted for March of which I am aware.

144 MHz WSPR: With the sun moving back to the north and winter approaching; March has slowed down propagation on the 2 m band. There has still been some good propagation detected though, at times.

On 1 March to 3 March there was a path detected across the Great Australian Bight. This involved Phil VK5AKK and Derek VK6DZ of course @ 1909 km with huge signals; some as big as +22 dB. Others that heard VK6DZ were Steve VK3ZAZ @ 2193 km, Peter VK5PJ @ 1945 km, Bill VK5ACY @ 1985 km and SWLKFN41 @ 1902 km.

On 7 March, another Bight Path opening occurred between Phil VK5AKK and Derek VK6DZ @ 1909 km.

On 16 March, the newly installed 70 cm WSPR beacon at KH6HME Hawaii was being decoded by Chris N3IZN @ 4074 km and Greg W6IT @ 4021 km.

Photo 1: 144 MHz WSPR paths detected by ZL3TY on 18 March 2017.

On 17 March, another Bight Path opening between Phil VK5AKK and Derek VK6DZ @ 1909 km occurred. This was also still running during the morning of the following day.

On 18 March, there was some good Tropo initially from VK5 heading east. Some very large signals recorded between Leigh VK2KRR to Jeff VK5GF, Phil VK5AKK, Andy VK5LA and Bill VK5ACY.

Then in the afternoon of 18 March, a path developed across the Tasman and Bob ZL3TY was able to decode signals from Rex VK7MO @ 1943 km, Andrew VK3OE @ 2243 km and Rhett VK3WE @ 2070 km.

On 19 March, good signals again were noted, mostly in the southeast. Some significant paths included: VK5AKK to VK7JG @ 1018 km, VK5GF to VK7JG @ 981 km, VK5ACY to VK7JG @ 975 km, VK5AKK to VK3DUT @ 868 km, VK5GF to VK3DUT @ 853 km, VK5AKK to VK3WE @ 849 km and VK5GF to VK3WE @ 833 km.

On 28 March, another opening around the southeast of the country occurred as well as across the Bight. Phil VK5AKK had some paths with Derek VK6DZ @ 1909 km. There were some strong signals between VK2KRR and VK5GF with signals reaching +25 dB over our 763 km path.

I came across some interesting digital mode tests recently, on a website by Daniel EA4GPZ, comparing the threshold sensitivity of digital modes. The following results were obtained:

WSPR -30 dB
JT9A -27 dB
QRA64 -27 dB
JT65A -25 dB
JT65B -25 dB
OPERA2 -25 dB
OPERA05 -19 dB

Although these modes may decode at weaker levels, the decode reliability drops significantly according to the test results. More information is available from site *http://destevez.net/*

All contributions on propagation and WSPR are welcome; just email Leigh VK2KRR at *vk2krr@wia.org.au*

JMFD 47 GHz contacts

Despite the John Moyle Field Day (JMFD) not being a dedicated "VHF and above" field day, it is good to see the level of activity on microwave and mmWave bands. As the JMFD is at the end of the Tropo season, it has long been the default "Autumn" field day. The different rules and flat scoring system promotes a more "laid back" activity day if you just focus on VHF and above. The 3-hour blocks are in contrast to the sometimes hectic pace extracting maximum points from contacts on a sliding 2-hour scale. The blocks allow you get all easy contacts out of the way first and then have time to experiment on the not so easy bands and paths.

For 2017 JMFD, Simon VK5TE, Iain VK5ZD and David VK5KK went out to various field day sites with 47 GHz equipment. Tim VK5ZT (the Rover) and Keith VK5OQ also located at additional sites with equipment up to 24 GHz. As luck would have it, conditions on the Saturday were quite stable, cloud free right under a high pressure cell (1033 hPa). During the previous evening there was mild local lift across St Vincent Gulf out to 200 km. VK5KK went to the head of the St Vincent Gulf near Kulpara (PF95aw) 180 metres ASL; from here it is an all water path south for 180 km. Iain VK5ZD went to a hill above Gawler (PF95ji) 190 metres ASL, a LOS distance of 93 km to VK5KK. Simon VK5TE went to the VK5ARC club station site at Louds Hill Road (PF94gq) 320 metres ASL. The path distance from Kulpara to Louds Hill Rd is 146 km, 75% over

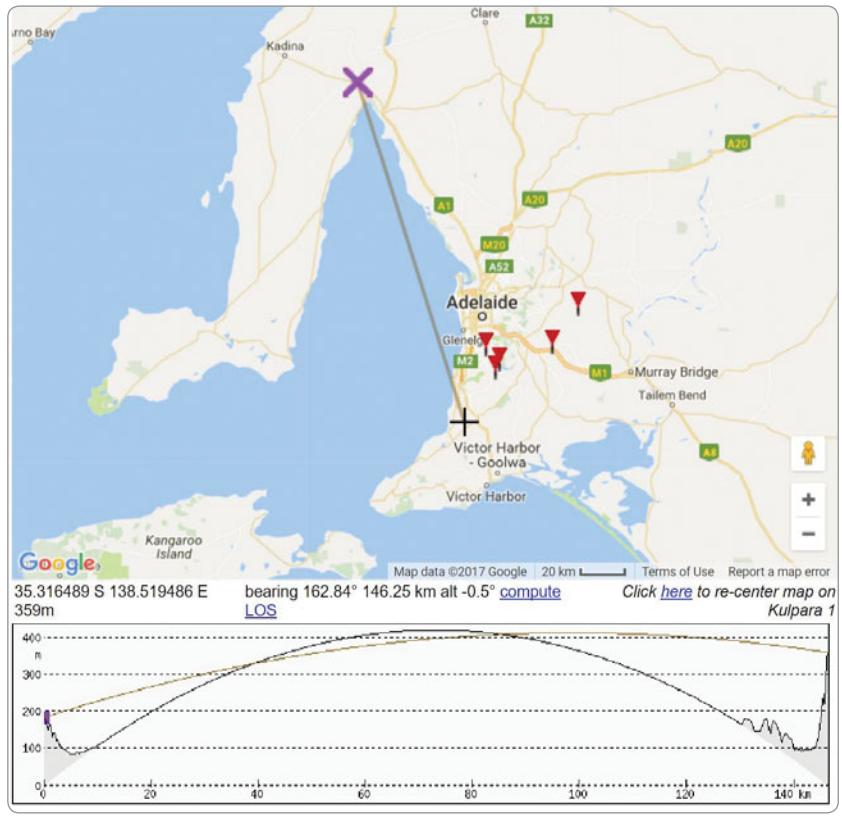


Photo 2: 47 GHz 146 km PF95aw to PF94gq path.

water and 50 km further than actual line of sight. Over the years we have worked over this path on 24 GHz out to 170 km; in some cases from quite low altitudes or sea level.

VK5TE and VK5KK started the first tests around 0230 UTC on 18/3/2017 on 10 GHz. It was clear we had some enhancement from a low level evaporation duct as signals were 59 + with the typical random sharp QSB. Signals on 1/2/3 GHz were much more stable and not at the same level. We then QSYed to 24 GHz where we found signals appeared to be stronger with less dramatic QSB. The QSB was not quite in sync with 10 GHz but we started to find a few more side lobes when there was QSB with the more directional (600 mm) antenna.

At 0253 UTC we QSYed to 47 GHz, signals appeared straight away on the headings we had lined up from 24 GHz. Signals 59 both ways (SSB and FM) on the "non-line of sight" 146 km path. Initially the QSB was sharper than both 10 and 24 GHz but also quite out of sync. We found over a ten minute period the same phenomena of scattering signals a few degrees either side. Initially we used FM to check antenna direction with the aural S/N difference but gave that away as the QSB was a few Hz! Signals got stronger and the QSB disappeared around 0430 UTC when conditions became calm. Both systems at either end had similar power levels and antenna gain on 24 and 47 GHz. There was very little difference between the two bands over this "enhanced" path. The afternoon sea breeze kicked in around 0530 UTC bringing back the QSB; signals were still good at 0630 UTC when we packed up.

At 0503 UTC Iain VK5ZD activated 47 GHz from PF95ji using his bare (150 μW) mixer transverter into a 300 mm dish. Iain's signals peaked up to 56 over the 93 km

path. Tim VK5ZT also worked Iain over the same path. For those interested, there is a YouTube video of both ends of the 47 GHz contacts; it gives some idea on the QSB and the eventual level of signals: *https://www.youtube.com/watch?v=qy_FxG02kZ0*

Little is known about evaporations ducts in the mmWave region but clearly they do work at least as high as 47 GHz to extend signals past line of sight. Evaporation ducts form at very low level (20 metre ASL) over the water during the day as the sun heats up the surface of the water. Any wind on the path disturbs this rather thin layer by putting holes in it, hence the sharp QSB. The enhancement of 10 GHz (and up) was discovered many years ago when research was done into why ships radar sometimes "missed" objects travelling close to sea level. The Exocet and other such "Sea skimming" missiles rely on this layer for stealth; the reason why modern warships now have a secondary radar system close to the waterline.

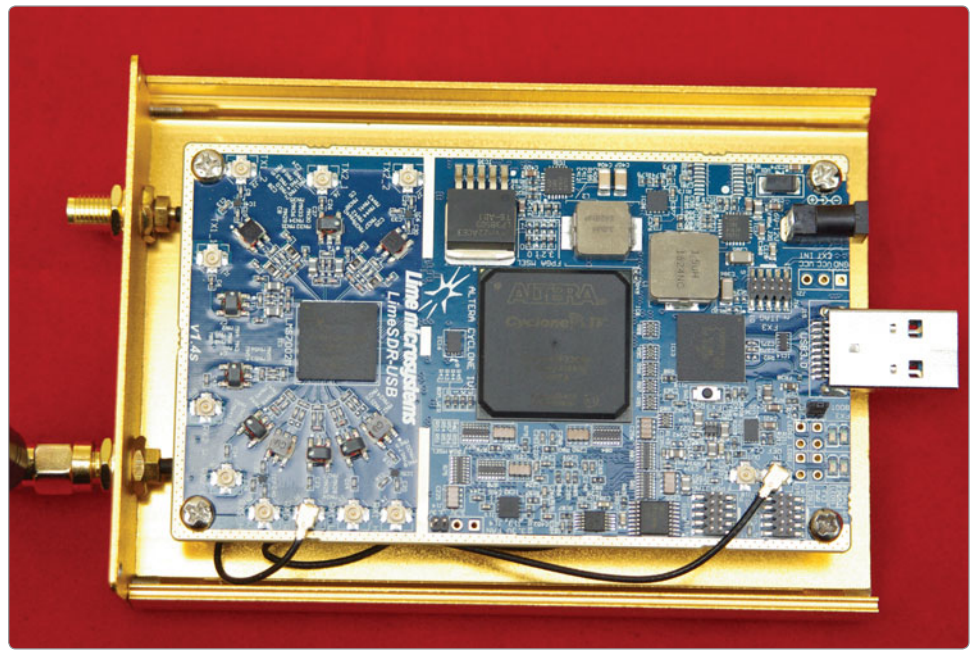


Photo 3: The LimeSDR does exist!

LimeSDR – A developing story

Over the last few (!) columns I have hinted/threatened/promised an out of box review on the LimeSDR development board. Unfortunately the delivery data on the LimeSDR slipped a few months. Mine arrived mid-March; by the time you read this all pre-orders should have been delivered. If you have ordered one you should have it by now, over a 100 have been shipped to Australia and NZ!

As a recap the LimeSDR is a single board SDR transceiver with a specified coverage from 100 kHz to 3.8 GHz. The baseband IF bandwidth is a maximum of 61.44 MHz determined by an Altera Cyclone IV FPGA. The FPGA looks after the signal processing; the board then communicates using a USB 3.0 connection to a host PC for control and data. In the PC, a software plug-in called SoapySDR sits between the LimeSDR and the SDR software. SoapySDR works with a range other SDR platforms like RTL-SDR, HackRF, etc. LimeSuite software that comes with the LimeSDR includes SoapySDR. Whilst it is more a development suite it can be used for basic testing of the LimeSDR.

The LimeSDR uses the proprietary LMS7002M chip as the RF transceiver front end. The chip contains multiple Rx/Tx mixers and amplification circuitry as well as two separate PLLs for a dual transceiver with two independent I/Q ports. The board has a total of 4 Receive and 4 Transmit ports although only 2 Rx and 2 Tx can be used at any one time. For more information download the LMS7002M tech data sheet. The various receiver inputs have optimised ranges for 800-960 MHz, 1710-2170 MHz, 2400-2700 MHz and 100 MHz to 3800 MHz with filtering on the PCB. The latter input has a deliberate sharp roll off at frequencies below 100 MHz. Fortunately only one inductor needs to be removed to enable operation down to 100 kHz if you want to try it on HF. The transmit power output is up to +10 dBm (frequency range not specified). The transmit ports have a simpler low pass filtering arrangement.

As a bit of evaluation for our "VHF-UHF" transceiver we need a few ticks in boxes. Firstly, software to be able to control the LimeSDR and encode/decode modes like SSB, CW etc.

At this point GQRX by Alexandru Csete OZ9AEC works with SoapySDR but there are a range of issues still to be solved. I have not managed to compile a version that works, so can't comment further! CubicSDR, Pothos and GNURadio are also options that use SoapySDR. CubicSDR I have got working but all have a bit of a "learning curve" to get working. There is quite a deal of open source work happening at the moment with "Snaps" aka Apps for Linux/Ubuntu, that looks like the preferred platform at this stage In short, software is still early in development; however with most LimeSDRs now delivered, we should see some progress.

What PC power is required? Whilst the FPGA does the signal processing "heavy lifting", in testing it was more than apparent that a reasonable amount of PC processing power is needed. This is mostly to keep up with the USB 3.0 port, a mandatory requirement to use the LimeSDR anywhere near its full potential. Luckily we are only looking a few 100 kHz of bandwidth and "simple" analogue modes so it is possible to get away with a USB 2.0 port on a reasonably modern laptop. A Raspberry Pi only has USB 2.0 ports so the same applies; don't consider anything except the latest Pi3! To use the LimeSDR with a dedicated front end using, for example, an ARM STM32 processor will need some firmware development. The Russian Tulip SDR controller has firmware to control a HiQSDR but it is not open source. Watch that space, as the LimeSDR is less than half the price of the HiQSDR, there are rumblings.

The next area of concern is frequency stability. The LimeSDR uses a good Rakon 30.72 MHz TXCO and in quick tests listening to signals the stability proved to be quite OK for casual use. The board also has reference in and out ports so can be connected to an external reference (10 to 52 MHz). An ADF4002 PLL is used to lock the on-board TXCO to the external reference in much the same fashion as an XRef. This worked fine when tested; a single carrier on 3.4 GHz from the LimeSDR was perfectly locked on frequency. One big tick!

The next consideration is the PLL. There are two PLLs inside the LMS7002M; both are Fractional-N PLLs with 3 VCOs similar to the ADF435* series. The quoted phase noise is very similar to these devices, more than sufficient for a VHF/UHF transceiver. The PLLs are not like DDS oscillators, so don't have lightning fast 1 Hz tuning like a conventional transceiver. The minimum step size when you crunch numbers is around 25 Hz with a loop settling time of around 150 ms. This is no issue as a SDR with a wide base band does not need to tune in fine steps; this can all be done in the SDR baseband processing. Tuning could be in 10 – 100 kHz. Yes another tick but some work to be done in software.

Other considerations like power consumption, port interfacing etc. all seem to be under control. There is a lot of electronics on the LimeSDR board, a bit of an unravelling story currently as documentation hasn't caught up yet. I think the developers are hoping for the community to own some of this and eventually self-propel the development.

So what is the verdict? Is the LimeSDR a suitable base for a low GHz transceiver or a development tool a step or two away from that goal? Yes but not yet! The hardware is most certainly capable but some serious software development is required before the LimeSDR can be fully utilised. Thankfully there are suitable software platforms about that work with "competing" SDR platforms like the Ettus B200/210 and HackRF One. All have similar architecture, so let's hope developers look at the LimeSDR. To be continued!

(Ed: The GippsTech team are planning to run a special raffle to celebrate the 20th running of the event. Second prize is a LimeSDR! The prize has arrived, so watch for further details.)

Next month I will conclude the digital antenna rotator controller series with a look at the various encoder options and mechanical interfacing

In closing

Feel free to drop me a line if you have something to report. Contributions regarding club projects or proposed activities are always welcome. Just email me at *david@vk5kk.com* and I'll include in the column.

73

David VK5KK

Meteor Scatter Report

Dr Kevin Johnston VK4UH

Mention has been made in earlier articles about complete new software platforms for digital modes for both Meteor Scatter and other specialised propagation modes. In the last month, an upgraded version of MSHV (version 1.35) was released (*see note below). MSHV was introduced as a comprehensive Meteor Scatter operating platform, developed by Christo LZ2HV, using open source software from Joe Taylor K1JT, the author of WSJT. The new Windows version is available for 32 or 64 bit systems and also for Linux with some additional compiling. The new platform supports almost all of the "common" digital modes used for Meteor Scatter i.e. FSK441, FSK315, MSK144, JTMS, ISCAT and JT6M and in addition now supports JT65 (sub modes a, b &c) intended for more general VHF/UHF digital operating. The full range of transmit periods is available from 5 -30 seconds. The Graphical User Interface is very attractive and operation is straight forward. Auto-Decoding and Real-Time Decoding can be implemented, QSO logging functions are available, separate Macros for each mode are separately retained and many other tune-up improvements have been included. This has turned MSHV into a highly adaptable and usable platform for all VHF/UHF digital operators.

Being super-critical, the new version of MSHV still does not support ST (single-tone / short-text) operation which is still commonly used here in Australia to complete difficult FSK441 contacts and secondly the programme does not provide automatic recording of all .wav files recorded during receive periods. This can be useful for those of us who routinely use the second pass decoding of programs like MSRX, running in the background.

Free software downloads of MSHV ver. 1.35 (and older versions) and comprehensive documentation in English Language are available from the LZ2HV Amateur Radio Website: *http://lz2hv.org/mshv/* I strongly recommend giving this platform a try.

For comparison, the latest release version of WSJT-X (ver. 1.7.0 r7405) supports a wide range of "slow" digi modes for all sorts of bands and propagation modes. Modes covered include JT9, JT65, JT9+JT65, JT4, WSPR-2 WSPR-15, QRA64 and echo. This latest version now also has some fast/burst modes, ISCAT and MSK144 suitable for MS operation, re-implemented. It is a crying shame, in the authors view at least, since some MS modes have been re-implemented in this latest version, that FSK441 has not been included in the supported mode-list. Since FSK441 remains the mainstay of MS operation in VK-ZL, I feel that this will severely limit the uptake, for Meteor Scatter in this region at least, of this otherwise excellent platform. Who knows, that decision could yet be reversed.

As a post script, since this article was prepared, a further new release of MSHV (ver. 1.36) was announced with further improvements and enhancements. The new package is running successfully and I will revisit this next edition.

For those who wonder how 144 MHz Meteor Scatter operation was done before the release of FSK441 and its predecessor JT44 in the 1990s (The first version of WSJT was released by K1JT in 2001), an interesting article appeared in the VHF/UHF column of our sister journal Rad-Com from the RSGB in the UK. In the March edition Richard G4HGI recounts his memories of running high speed CW (HSCW) for 144 MHz Meteor Scatter QSOs. In the 1970s he describes arranging marathon two-hour skeds via HF nets, by phone call or even by snail-mail post; remembering that this was pre-internet, pre-e-mail, pre-logger and almost pre-home computer. Using standard speed CW at 12 wpm, a typical 150-200 ms meteor ping would equate to only a few CW characters at best, so virtually impossible to achieve a contact. To conduct a 2 m MS QSO required High-speed CW (HSCW) with speeds of around 500-800 lpm. Although there were designs around for electronic keyers that could be persuaded to go that fast, many rigs and transceivers of that time were incapable of keying at those speeds, through the normal CW key jack, without modification. During the receive periods of pre-arranged skeds, Richard describes the incoming Rx white-noise being recorded on "Fearsome Grundig reel-to-reel tape recorders" running at maximum speed on record and then played back at slow speed to unravel any captured pings by the unaided ear. The reporting system including the ubiquitous "26" report still in use today, dates from this time. Timing of transmission periods was done with the aid of the telephone speaking clock to synchronise the shack clock on the wall and the confirmation of completed QSOs, after two hours of blind operating, was often sent with a QSL card via the post.

Later advances came with the use of computer generated audio frequency shift keying (AFSK) direct into the microphone sockets of SSB transceivers, more akin to current practice, and the use of early audio capture applications (solid state recorders) to play-back and decode keying speeds up to 1,000 lpm equivalent. Remembering of course the limitations of available home computers from the 1970-80s. Prior to the introduction of computer generated FSK441 digital mode, there were successful attempts at fully automated HSCW transceive using software packages such as MSDSP, supported on Win 98, the newest OS of the time.

This software was capable of electronically generating and decoding HSCW speeds of up to 10,000 lpm. Such innovations opened the horizons for digital MS operation as we know today. It is often said that "If you don't know your history – you don't know your subject". It is interesting to look back now and see how far we have come.

The next major Meteor Shower event for 2107 will be Eta Aquariids expected around 6 May.

Contributions for this column are as always welcome. Please e-mail to *vk4uh@wia.or.au*

Kevin Johnston VK4UH
Brisbane

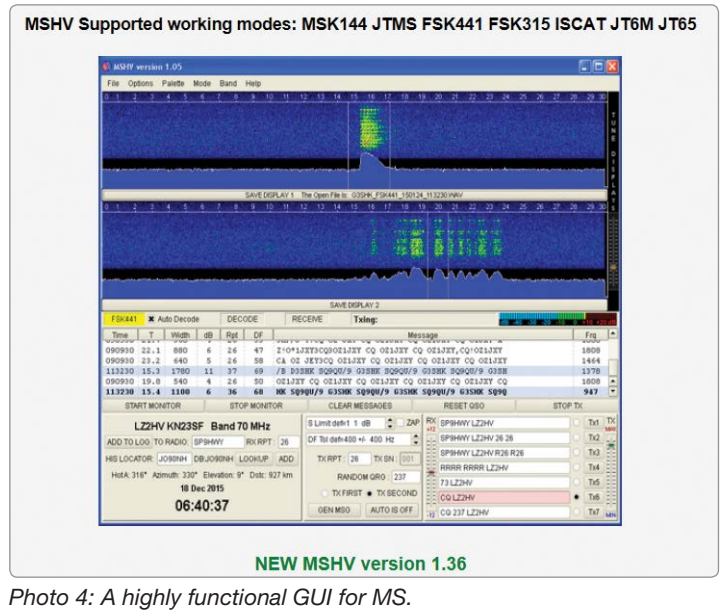
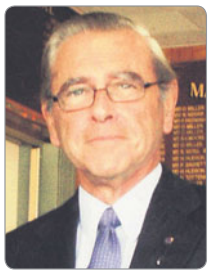


Photo 4: A highly functional GUI for MS.



VK3news Geelong Amateur Radio Club

Tony Collis VK3JGC

Photo 1: Top: Bert VK3TU and Peter VK3WK; Bottom: Lou VK3ALB and Ken VK3NW.

The GARC - VK3RGC - VK3ROW - VK3RWL Repeater Linking Project

In the third or fourth quarter of 2017, the GARC will have established a permanently linked VHF repeater network which provides wide area coverage of the Geelong Otway region extending from Geelong to Warrnambool and beyond; by adopting a strategy of using UHF repeaters for local coverage in regional cities (in our case VK3RGC 70 cm in Geelong and VK3RWL 70 cm in Warrnambool) and use the existing underutilised VHF repeaters for the linked network. This will then be a wide area network providing the potential for complete regional coverage rather than stand-alone repeaters covering a specific area. This project was launched on 28 February 2015 as an official club project that the GARC Committee had determined would be supported through club funds. A comprehensive planning document (GARC Repeater Linking Project – available on the club forum) described all aspects of the project and formed the roadmap for its implementation. Club members and other interested parties had input to this document ensuring differing requirements were addressed prior to commencement.

The principals involved in both its inception and implementation were Lou VK3ALB, Peter VK3WK and Bert VK3TU; with inputs from other club members including Ken VK3NW , the officer responsible for the Club's Repeaters and Beacons.

Summary of work required at each site

At **VK3RGL** Mt. Anakie, installation of UHF node and link equipment and associated antennas. Mt. Anakie is the primary network node providing connectivity for VK3RGC, IRLP node 6752 and future "in- fill".

At **VK3RGC**, the installation of a link from to the Mount Anakie node and interfacing to the MTR2000 2 m repeater.

At **VK3ROW** Beech Forest, it required the replacement of the tower and antennas after damage by an on-site contractor; then a rebuild at the GARC clubhouse, of the 2 m repeater/duplexer to be linked to Mt Anakie. The Club is currently in discussions with the site owners for a replacement building to house the equipment.

At **VK3RWL** it was necessary to re-wire and re-configure the existing racks, replace the existing VHF and UHF repeaters and existing antenna systems. Then re-align antenna duplexers, upgrade the filtering

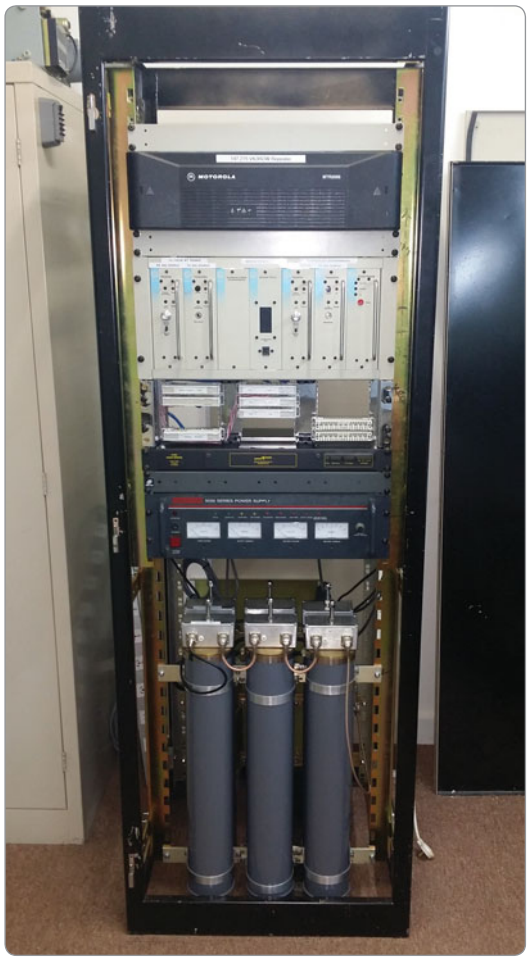


Photo 2: VK3ROW at the GARC Club House.

and to eventually install a link to the Beech Forest access node.

For IRLP activities the node computer was replaced with a low power solid state machine, designed and built by Lou VK3ALB and then the existing VHF transceiver will be replaced with a UHF link for network access through the Mount Anakie node. It was necessary to customise the IRLP node code to simplify access to multiple broadcast sources at different times. This facility, as indicated last month, has been running on test via the VK3RGL 2 m repeater at 9 p.m. every evening since mid-January.

The existing APRS Gateway at Beech Forest had its radio and modem replaced along with antenna filtering.

Future Considerations

The linking network infrastructure is designed to enable the addition of "in-fill" repeaters to extend coverage if necessary. The most obvious "hole" in our network will be the Great Ocean Road where at least two additional strategically located repeaters would be required to provide basic coverage.

Extending network coverage to the west from Warrnambool to the South Australian border will require co-operation with other groups and the distances involved would dictate the use of internet linking. Internet linking can be easily integrated into our network at the Mt Anakie node but will require the provision of an internet service at the site.

The GARC would welcome partnering with other groups to extend the network coverage to the VK5 South Australian Border and encourage ARV to develop a regional repeater linking strategy for Victoria, providing the direction for individual groups to work towards a common goal.

GippsTech 2017

The annual GippsTech conference is coming. With a reputation as a premier amateur radio technical conference, GippsTech focusses primarily on techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts.

GippsTech 2017 will be happening on the weekend of 1 and 2 July, at Federation University Australia Gippsland Campus in Churchill, Victoria, about 170 km east of Melbourne.

Call for papers

Anyone wishing to share information with others is invited to submit a title and brief summary of your planned presentation to the Conference Chair Peter VK3PF as soon as possible. Please be sure to indicate your expected length of presentation: it could be a short 10 minute item through to a detailed presentation of up to an hour.

We look forward to seeing you at GippsTech in early July.

Those wishing to present at this year's conference should contact the Chair as soon as possible:

vk3pf@wia.org.au

Peter VK3PF

Conference Chair

Further details will be available from the Eastern Zone Amateur Radio Club website: *http://www.vk3bez.org/*

VK5news Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

First ordinary meeting for the year

This meeting was addressed by Joe VK5WU; he also holds the callsign G3ZCZ and has held a number of others throughout his career as it took him around the world. Because he has been an amateur for many years, he has sought to find and contact DX stations from wherever he happens to be living.

The topic for his talk was *"Fishing for DX"* which is exactly what he has done. As an IT person, he has created a number of programs to help him and others to find DX from anywhere in the world. NOTE: he has found that Australia is one of the most difficult countries from which to find DX stations to contact.

The reason for this is quite simple for two reasons; one is obviously because of the time difference but the other reason is because we are side on to the beams aimed between Europe and the USA. Amateurs anywhere in Europe or the USA will know they are most likely to find someone to talk to by aiming their beams between each other rather than 90 degrees away. If you see a great circle map based on London and compare it with one based on Adelaide when you mark on the map the stations available the difference is immediately obvious.

This does mean that any VKs who have earned a DXCC are to be especially congratulated. Pat yourselves on the back if you have reached this goal.

Joe's experience goes back to the days of RTTY, AMSAT and packet so many of our members can relate to those experiences, too. Joe operated from club stations, even before he got his licence – a common practice on the Continent – and before he had any antennas of his own. He has operated in Singapore and places where you cannot erect aerials. If you remember, Sasi VK5SN spoke to the club some time ago about his time operating from Singapore with a wire strung on the balcony of his room. Joe has done the same.

To make it easier to find DX contacts, Joe developed an automated calling system which on one of its later versions could not only call automatically but actually make a two-way contact and record the fact. Recently I spoke to someone who uses such an arrangement. He can tune his set, set the automatic call system, then go and spend time with his family during the evening. When he goes back to his rig he can see what stations he has connected with and see the signal reports. He is happy and has spent time with the family as well.

Throughout his career Joe's programming skills have been used in the space industry and in many other fields but he has always continued his interest in amateur radio and has sought to make it easier for him and others to make those DX contacts.

Today he is playing around with automatic tracking with computers and he recommends to anyone

JMFD in the shack.

interested in finding DX to look at "DX clusters" on the internet, Apparently there are groups around the world gathering information about amateurs equally interested but who don't want to sit there for hours calling when there is no one there. With DX Clusters you know when and where to find a contact.

John Moyle Field Day Contest

Unfortunately, due to the predicted hot weather, the decision was made to not go up to Swan Reach for the Field Day. Whatever the predicted temperature for Adelaide is, we know that the temperature at Swan Reach will be at least two degrees higher and when you consider that the operators will be sitting out in the open under the trees, it is not reasonable to ask them to run their equipment in 40 degree heat. We have done it before and spent most of the day taking cold towels out to put on the necks of the operators.

To add to the problem, the members of the club had not been eager to travel for two hours to Swan Reach, no matter how well they know they would have been looked after. There was only expected to be six operators, anyway. This is really not enough to man five HF stations with people to give the operators a break from time to time. Is it time we found another venue, nearer to the city? Something to ponder upon for next year.

Fortunately John VK5EMI – who had offered to go up to Swan Reach – offered to run the Club station at the "Shack" in Blackwood as a Home station. This worked very well and there were quite a number of club members who went up to share the operating.

However, when we submitted the log we discovered that there was no section for Home Club stations (Multi-operators). Some years ago the section in which we operate at Swan Reach – multi-operator, HF only Club station – needed a special category. Do we now need another new one?

As it is, we are so pleased that so many members did go to the shack and participate. Our thanks for keeping VK5BAR alive and well.

Other activities at the "Shack"

The series of mini lectures by Graham and Jim and others continue to be well attended and the tea and coffee social mornings on alternative Saturdays are an excellent way for members to continue their friendships and exchange information.

Friday luncheons

These are held on the second and fourth Fridays and are also well attended. Recently we have been delighted to have "Spud" VK8ZWM join us and we welcome any other visitors as well as our members to come along to the Blackwood RSL for a good and not expensive meal with friends at noon on those Fridays.

Next meeting is a members' Buy and Sell

Like our regular meetings, this is held in the Blackwood Community Centre, Main Road Blackwood, on the third Thursdays of the month. Visitors welcome.

73

Christine Taylor VK5CTY

Silent Key

Roy William Burges VK2EJB

Roy passed away peacefully at Port Macquarie, NSW, on 2 February 2017. He was aged 91 years.

Roy and his wife June retired to Port Macquarie many years ago after a long and interesting career in the publishing industry. Roy was perhaps better known under his long-time previous callsign of VK2YOR. He took out VK2EJB a few years ago.

Roy was born in the UK in 1926. He migrated to Australia where he spent most of his working life. Roy was a leading innovator in the introduction of modern technology to publishing. At Consolidated Press he oversaw the Women's Weekly's transition to electronic typesetting which led the industry.

In retirement Roy was an active member of the Oxley Region Amateur Radio Club

and until very recently rarely missed a club event. He was proud to have been made a Life Member. Over the years Roy presented several very interesting and entertaining lectures at club meetings on his experiences in the publishing industry. He was always modest and unassuming but privately he occasionally hinted at just how interesting some of his experiences had been. For many years Roy enjoyed an annual white knuckle ride down the mountain course in the commentary vehicle at the Beechwood Billy Cart Classic.

The Amateur Radio fraternity extends its deepest sympathy to Roy's wife June and to their children Penny and Scott and their families.

Vale: Roy Burges VK2EJB.

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

Contests

Trent Sampson VK4TS
e *vk4ts@wia.org.au*

Contest priorities for May 2017

Contest	Date (UTC)	Rules	Difficulty	Software	Modes
ARI International DX	6-7 May	*http://www.ari.it/*	Easy	N1MM any generic logger	CW SSB and RTTY
Jakarta DX Contest	13 May	*https://jakartadxcontest.com/rules/rules-english/ NB 1000Z 2200Z*	Easy	N1MM any generic logger	SSB
CQ WW WPX Contest, CW	27-28 May	*http://www.cqmmdx.com/rules/*	Easy Fun	N1MM any generic logger	CW

Don't be frightened off by CW

For ease of setup and transferring information on HF, CW is still one of the best HF modes - To learn CW to operate contests it is not a hard job - You need to have a speed of at least 20 wpm with 30 wpm more preferable.

Some of the tools to help you get there are PC based; RUFZ and Morse Runner are the most popular.

RUFZ is callsign copying programme starting at around 40 wpm. It slows down by one wpm every time you fail to completely copy a callsign and speeds up by one wpm every time you get one right.

Morse Runner simulates using Enter Sends message format CW and is in the simple serial number format. It genuinely sounds like a real contest including LIDs, QSB and noise. You can make it as difficult as you wish.

Originally part of the TR Log format, Enter Sends message is a very slick way of operating CW contesting. Enter key is pushed and the program calls CQ e.g. CQ TEST VK5CP TEST, enter the calling station into the log and enter again sends their callsign and then report. e.g. JA1AAA 5NN001. After their report is entered into the log, hitting enter sends Thank you Call sign e.g. TU VK5CP. If no one responds enter again sends CQ TEST VK5CP TEST

It helps you through the long nights on the rig - Obviously it can be automated further with timed CQs. This feature is found in most modern programmes e.g. TRLOG, WinTest, N1MM, Writelog and TR Log for Windows.

If you haven't tried it, take the time to see what it is like - Many of the top dog CQ Contesters these days use the paddle very little and tend to send entirely off the keyboard.

Contester of the Month Chris Platt VK5CP

Chris has been active on the contest scene in VK for many years and was one of the founding group of the VK Contest Club (VKCC).

His old callsign VK5JJJ was regularly heard around the traps - Chris has presented at Contest University at Dayton and thinks one day his station can out do VK4KW - We will see.

What is your favourite Contest?
I like the IARU contest; it's only 24 hours and in recent years the WIA has allowed us to use the VK5WIA callsign as the VK HQ station (a multiplier). It's a great opportunity to allow new contesters a chance to operate pileups and as a HQ station we can't win, so no pressure. Plus its cold and we can have some nice SA Shiraz in front of the fire when

we are not at the operating table.

What is your favourite Rig?
Anything by Elecraft. We use K3s loaded with 8 pole filters at the contest station. The MonstIR antenna talks to the radio and our antenna is always optimised.

What modes do you contest in?
Mainly SSB. I do have a M100 RTTY machine I need to fire up on 160 m.

What is your favourite contest band and why?
40 m - I have a full size 3-element Yagi on 40 and we are proud and loud on this Band.

What is your preferred Contesting Software?
N1MM is our logger (it's a bit of a learning curve to get it all networked and Mark VK5QI is in charge of that) we have a results screen in the lounge room. We also use a splitter and a SDR on each radio to give is a waterfall of the entire band.

What is your preferred Mic and Key?
Heil Pro-Set Elite - they are light and robust, although they do let the room noise in (which is bad for the person next to me as I get loud during a big pileup) I also use Heil FS-2 Footswitch.

What is your "not so secret" weapon?
Red Bull keeps me awake and the visibility of each operator's N1MN rate makes for competition. Normally Theo VK5MTM always arrives before dawn to work all of his countrymen in EU. The AREG contesting team (VK5FGRY, VK5ZM, VK5QI and VK5AKH) work to continually improve the station.

What is your best tip to a newbie contester?
Jump in and operate, practice on the JA and NA pileups and then try and control an EU mob. If you are not big enough to run, search and pounce until you get your DXCC, save up and go to Dayton, attend CTU and talk to the really big guns face to face.

What are your aspirations in contesting?
To beat VK4KW.

What would you like to improve in either your skills and/or station?
Re-learning the code is on my bucket list, :-) I am envious when my DX mates post their new countries on to the AREG email list - mostly CW contacts. Current project is to move the tower about to the top of the cliff (an extra 50 m). That will allow us to a better take off for long path EU.

Who is VK5CP?
I work at the Fair Work Commission assisting parties to resolve industrial disputes. I started off on CB in the peak of Cycle 21 and that was the pathway to amateur radio. My electronics knowledge is self-taught, so I leveraged off my first Elmer Dave VK3RU and now all the Engineers in AREG (too many to detail see *www.areg.org.au*).

Contest Terms

Run = Call CQ and stay on the same frequency

Search and Pounce = Tune across bands looking for stations calling CQ

Multiplier = a station that increases your score owing to contest rules

Multi = Short for Multiple operator or transmitter

SO2R = Single operator 2 radio

VK4TS Trent is the admin of VK Contest Club (VKCC) web (*www.vkcc.com*) and Facebook pages and has been an active contester since the 1970's

Emails can be sent to *vk4ts@wia.org.au*

VK6news

Steve Kennedy VK6SJ

Northern Corridor Radio Group (NCRG)

NCRG have had an eventful month with continued work on the extension to the club rooms. The extension provides a battery and equipment room which will also double as a training room. Our aim is to eventually augment the great work carried out by Ham College to provide training and exam facilities in the northern half of the city.

Wayne Johnson VK6EH is currently in the Cocos Keeling Islands (VK9C) for work and some vacation style DXing and is also casing out the place in readiness for a planned DXpedition to the islands by the club in 2018, possibly during either Oceania or CQWW.

Work continues on the remote HF station which is now in use by many of our members.

The club participated in the John Moyle Field day in early March, with multiple operating positions and Yagis on 2 m and HF. We operated from the Paruna Sanctuary just outside Perth.

Work continues on our 23 cm repeater which will be installed at our new repeater site in Gnangara. The antenna has been ordered and is due to arrive in early April.

Our newest member Matt VK6ML has been building a DMR network in Perth and many of the club members are getting more active in this interesting mode.

Bunbury Radio Club

The next monthly meeting of the Bunbury Radio Club will be held on Saturday 13 May 2017 from 2:00 pm. at 21 Halsey Street, Bunbury. In addition to our regular meeting, Richard VK6PZT will be talking about his experiences in operating QRP CW. Visitors to our meetings are very welcome.

Photo 1: NCRG 2 m beam being prepared.

Photo 2: The operating desks at NCRG for JMFD.

We are starting to make progress in reinstating our licence assessment program. Murray VK6HL has applied to be recognised as a WIA Assessor. With his teaching qualifications we have high hopes that the process will be swift and successful. The ability to run these assessments have been valuable in many ways, including recruiting new members and providing a convenient service to potential amateurs in the region.

The Bunbury 2 metre repeater VK6RBY is still off the air, following storm damage to the shack. The Club is considering various options including repairs or purchase of a new piece of equipment. Meanwhile travellers can work the Bunbury area via our 70 cm repeater on 438.650.

Alek VK6AP continues to organise monthly "Ham and Cheese" social gatherings. These are gathering momentum with a steadily increasing number of members attending. The gatherings are not limited to Bunbury and will be held at various regional locations in the South West.

At the March meeting, Norm VK6GOM spoke about his experience with R&D during the Vietnam War. For those who need to plan months ahead, the program of technical talks is as follows:

June Brian VK6HBS – the FT 1200
July AGM
August Steve VK6HSB – Antenna developments at the Boak QTH
September Nick VK6FSEA – TBA

Any South West based amateur (or anyone interested in radio or electronics) is more than welcome to join and participate in our activities. Because so many of our members come from near and far, we are evolving into a semi "virtual" club. Consequently, regular attendance at meetings is not a requisite for membership. The annual fee is only $50.00. Those wishing to join can contact the Club via our Secretary, Nick Evans on 0429 201 343, or *vk6brc@wia.org.au.* Further details can be found on our website at *http://www.bunburyradioclub.com/*

Photo 3: Part of the HARG JMFD station.

News from HARG

The club has been busy with club days, preparations for the HARGfest and the John Moyle Field Day.

By the time you are reading this, this year's HARGfest will have been run. This year we have had great donations towards our raffle prizes with Ian VK6EA and Kylea VK6XYL Garnet donating a Yaesu FT-7900, Mark from TET-Emtron donating a $100 gift voucher, the local electronics supplier, Altronics, donating a variable power supply, multi-meter and an electronics toolkit. Stuart VK6BG has donated a Bosch 3-piece cordless drill set. I would like to thank each and every contributor and would encourage you all to support the businesses that have helped us put on another successful event.

Again, this year, the club participated in the John Moyle Field Day. This year's location was at Mt Dale in the picturesque Darling Ranges, just to the east of Perth. A few members set out of Friday around lunchtime with the aim of being ready for the start this year. Christie VK6CXJ, Alan VK6PWD, Mitch VK6MHZ and Ray VK6ZRW managed to get most things set up by sundown on Friday night. This year we had an unusual mount to the 2 m/70 cm collinear. A few half hitches around the white stich saw it hauled about 15 m in the air, where it dangled all weekend. The loop antenna was around 230 m long this year and performed well on all bands from 160 m through to 6 m. We had a slight setback on Saturday morning when the skies opened to let us know our gazebo roof had started to leak. A quick rescue call to Ian VK6DW saw a tarp erected over the entire area and kept us all dry. Some of the members thought they would put out a beverage antenna this year and Mitch thought it would be a good idea to haul it out through the bush using one of his quad copters. The one he used had a camera hooked to some VR goggles. One of the funniest things I have seen was when Rob VK6AAH was wearing the goggles whilst Mitch was flying the quad copter. All was going well until Mitch ran the quad copter into a bush and Rob hit the deck trying to avoid the collision.

HARG Meetings are held twice a month at their club rooms at the

Paxhill Guide Hall near the corner of Brady and Sanderson Roads in Lesmurdie. The social and practical meeting is held on the second Saturday of the month and the last Saturday of the month has the general meeting, often with a technical talk or demonstration. Doors open at 1.00 pm for a sausage sizzle and the meeting starts at 2.00 pm. More information at *www.harg.org.au*

73

Ray VK6ZRW

President, HARG

I thought it might be a good opportunity to describe the amateur fraternity in WA in general. This month the focus is on Perth. Next month will be on our country based clubs.

WA Clubs

With over half the population of WA living in Perth and Perth having grown exponentially during the recent resource boom, the ham scene here is quite vibrant considering its size. We have a number of clubs and organisations in the city catering for varying interests and all contributing to a great culture for our hobby here. As a recent returnee to Perth (three years ago), I was pleasantly surprised by how friendly the amateurs are here. We have one core repeater in Perth with almost city wide coverage (146.700 VK6RAP) which most of the community sits on and it's actually pretty rare to not find someone to chat on it – even at 6 AM when I'm on my way to work. Listening around HF as well, particularly on 80 and 40 m, it's also very active here.

Clubs include the Northern Corridor Radio Group – with arguably one of the best club room facilities in the nation and a membership of around 90 and catering for amateurs north of the river (although like all clubs in Perth, all are welcome to join); Hills Amateur Radio Group – another very active club catering for amateurs living in the hills area in the eastern part of Perth. HARG has bounced back well from a major setback in 2015 when most of their equipment was stolen from the club. The Peel Amateur Radio Group is based in Mandurah which used to be a country town and seaside holiday spot but has become the southernmost city in Perth as the city has grown. PARG has a heavy involvement with the local SES. The three clubs each run an annual event that is well patronised by the Ham community and the three are spread out far enough apart that they are all held in high regard.

Special Interest Groups

Augmenting the club scene in Perth are a number of special interest groups including Ham College – who provides an excellent training facility and contribute almost all the new amateurs into our hobby in Perth. They run regular classes and exams for Foundation licence attainment and at least one or two standard and advanced licence courses and exams. WA Repeater Group is another active organisation providing the lion's share of repeaters not only in Perth but across the state. In addition to owning and operating a number of repeater sites and associated linking systems, they also support clubs with expertise and equipment allowing clubs to own and maintain their own repeater systems. The VHF Group - was formed in 1955 for a group of experimenters to build radios for the higher frequencies, 144 MHZ and above and to study propagation. Over the years, the group has built-up and maintained a network of radio beacons in Western Australia and is now the single largest licence holder and operator of terrestrial VHF, UHF and SHF beacons in Australia. WAARN (WA Amateur Radio News) is another great organisation providing the NewsWest broadcast every Sunday morning at 09:30 WST following the 09:00 National News. The news is transmitted through the linked repeater network, originating on VK6RAP 146.700 and various HF frequencies. The news is also transmitted in VK2, VK3, VK4, VK7 and VK8; check the full schedule for your local broadcast. Incidentally, WAARN last year hosted an excellent tech event; "PerthTech", which was focussed on technical presentations across a number of fields including DMR, antenna building etc. Looking forward to the next one guys!

Next month we will look at country based clubs in WA.

73

Steve VK6SJ

VK2 news

Tim Mills VK2ZTM
e *vk2ztm@wia.org.au*

The recent Central Coast field day was the 59th in the Club's 60th year. The forecast had not been promising but ended up with no rain on the day. The attendance was perhaps down a bit on the previous year. The lack of major equipment traders may have also kept the numbers down. There were more than a dozen well attended lectures during the day. To help with planning for 2018, the Central Coast ARC has a survey page to gather feedback, advises Bob VK2AOR. Go to the web site *fieldday.org.au* and the link is on the home page, near the bottom of the text.

The call for nominations for the ARNSW committee for the next year saw the current committee members as the only candidates. By the time these notes appear the ARNSW AGM will have been held. This month will be the next ARNSW Foundation weekend on 13/14 May 2017. Inquiries and bookings by email to *education@arnsw.org.au*

The next ARNSW Trash & Treasure is at the end of May on Sunday 28. There is a Talk Fest scheduled for early July. ARNSW is now in its 107th year resulting from that formation meeting in Sydney in March 1910. There was one taker for the ARNSW Development Fund Grant which was available to clubs and groups during March.

Other Sydney based Foundation weekends are St. George ARS on 20 and 21 May, with Waverley in June on 17 and 18. Exams for a US licence were held at Wyong during the field day. The Blue Mountains ARC had a Foundation weekend in April at their Glenbrook club rooms. The next weekend will be on 11 and 12 June.

The Hunter Radio Group – formally the Hunter Branch of the NSW Division – held their AGM and elections in March. Not much change in the line-up with Trustee and President Len VK2ZFD; Vice President Greg VK2HT; Secretary / Treasurer Rodney VK2CN; Repeater / Beacon Officer Greg VK2HT; EchoLink sysop Grahame VK2FA; Broadcast Officers Len VK2ZFD, Michael VK2CMM and Charlie VK2CLH; Social Secretary Ardel Prout; Education Officer Steve VK2LW.

Westlakes ARC will have their AGM at their club rooms in Teralba on Saturday 13 May 2017, starting at 1.30 pm. There is a new club on the North Coast of VK2 advises Brad VK2CEC. It is the Clarence River Valley in the Grafton District. It was formed last year and they hold a monthly social meeting and a weekly net on the local two metre repeater, VK2RCV on 146.675 MHz on Monday evenings. They were active in last year's Lighthouse and Lightship weekend at the Yamba Lighthouse and they had planned to take part in this year's John Moyle. Listen out for the group's call sign VK2CLR.

Last month mention was made that the Armidale and District ARC had won a grant from a local financial institution. Well - they have done it again with a grant from the local Shire Council. It pays to be persistent.

Elsewhere in this issue of *AR*, you will find details of the annual Oxley Region Field Day at Port Macquarie over the June long weekend. A popular holiday spot, it pays to book accommodation early on these long weekends. Oxley Region has been doing well with courses and assessments for new local Amateurs. Their mid-week working bees have been getting their regions six metre repeater closer to coming up on air.

WICEN NSW is providing comms to various Alzheimer's Memory Walk and Jog events including Leichardt Sydney on 7 May, Hunter on May 13 and in Port Macquarie on 4 June. In Sydney there are plans for a First Aid course. In June there is True Grit at Lower Portland on 10 and 11 and the annual Navshield over the weekend of 24/25 June.

The Manly Warringah RS 5 band SDR web site proves to be very popular in having a look at what signals can be heard in Sydney. It also provides an alternate source of receiving VK2WI News when conditions are poor. Go to the MWRS web site *mwrs.org.au* and click on the WEB SDR link in the top menu. They have a theme night planned for 31 May – Microphones.

73

Tim VK2ZTM.

WIA Contest Website

To keep up to date with all of the major Australian contests, including rules and results, at the WIA Contest Website at:
www.wia.org.au/members/contests/about

DX Awards

Marc Hillman VK3OHM/VK3IP

Go to *http://www.wia.org.au/members/wiadxawards/about/* to use the online award system.

New awards

DXCC Multi-band (1)

#	Call	Name	Mode	Band	Count
161	VK3WE	Rhett Donnan	Open	20m	100
162	VK3AWG	Christopher Bellmont	Digital	20m	112

DXCC Multi-band (5)

#	Call	Name	Mode	Band	Count
70	VK3VT	Greg Williams	Open	40-30-20-15-10m	771

DXCC Multi-mode (Digital)

#	Call	Name	Count
63	VK4YMB	Andrew Burns	100

DXCC Multi-mode (Open)

#	Call	Name	Count
447	VK1DW	Deane Walkington	105
448	VK4YMB	Andrew Burns	100

Grid Square

#	Call	Name	Mode	Band
267	VK3WE	Rhett Donnan	Open	6m
268	VK4YMB	Andrew Burns	Open	HF
269	VK2BV	Waverley Amateur Radio Society	Phone	HF

IARU Worked All Continents (Basic)

#	Call	Name	Mode	Band
75	VK2RT	Bruce Beresford	Digital	
76	VK5ADO	David Oates	Open	
77	VK5ADO	David Oates	Phone	

Worked All VK Call Areas HF

#	Call	Name	Mode
2370	VK4CAG	Graeme Dowse	Open

DXCC updates

DXCC Multi-band (1)

#	Call	Name	Mode	Band	Count
12	VK3EW	David McAulay	CW	30m	319
43	VK7CW	Steven Salvia	CW	20m	267
152	VK6DW	Ian Cook	Digital	20m	106
13	VK2VEL	Edwin Lowe	Open	20m	133
17	VK6WX	Wesley Beck	Open	20m	195
34	VK3MEG	Steven Barr	Open	20m	217
90	VK6DW	Ian Cook	Open	20m	154
91	VK2ZQ	Michael Ramsay	Open	20m	229
108	VK3AWG	Christopher Bellmont	Open	20m	176
158	WX3P	John Plum	Open	20m	125
14	VK2VEL	Edwin Lowe	Phone	20m	120
35	VK3MEG	Steven Barr	Phone	20m	203
39	VK6WX	Wesley Beck	Phone	20m	155
92	VK2ZQ	Michael Ramsay	Phone	20m	212
107	VK3AWG	Christopher Bellmont	Phone	20m	130
159	WX3P	John Plum	Phone	20m	120

DXCC Multi-band (3)

#	Call	Name	Mode	Band	Count
24	VK3EW	David McAulay	CW	30-20-17m	874
37	VK7CW	Steven Salvia	CW	30-20-17m	731
66	VK3EW	David McAulay	Digital	30-20-15m	466
36	VK7CW	Steven Salvia	Open	30-20-17m	776
63	VK2ZQ	Michael Ramsay	Open	40-20-10m	526
69	VK3MEG	Steven Barr	Open	20-15-10m	520
97	VK6DW	Ian Cook	Open	40-20-15m	394
64	VK2ZQ	Michael Ramsay	Phone	20-15-10m	489
68	VK3MEG	Steven Barr	Phone	20-15-10m	489

DXCC Multi-band (5)

#	Call	Name	Mode	Band	Count
21	VK3EW	David McAulay	CW	40-30-20-17-12m	1353
35	VK7CW	Steven Salvia	CW	40-30-20-17-15m	1113
34	VK7CW	Steven Salvia	Open	30-20-17-15-10m	1188
2	VK3EW	David McAulay	Phone	40-20-17-15-10m	1599

DXCC Multi-band (7)

#	Call	Name	Mode	Band	Count
10	VK3EW	David McAulay	CW	80-40-30-20-17-15-12m	1738
14	VK7CW	Steven Salvia	CW	40-30-20-17-15-12-10m	1461
7	VK3EW	David McAulay	Open	40-30-20-17-15-12-10m	2293
15	VK7CW	Steven Salvia	Open	40-30-20-17-15-12-10m	1556
8	VK3EW	David McAulay	Phone	80-40-20-17-15-12-10m	2171

DXCC Multi-band (9)

#	Call	Name	Mode	Band	Count
12	VK3EW	David McAulay	CW	160-80-40-30-20-17-15-12-10m	2052
1	VK3EW	David McAulay	Open	160-80-40-30-20-17-15-12-10m	2775

DXCC Multi-mode (CW)

#	Call	Name	Count
211	VK7CW	Steven Salvia	300
234	VK3MEG	Steven Barr	130
243	VK3WE	Rhett Donnan	110

DXCC Multi-mode (Digital)

#	Call	Name	Count
20	VK3EW	David McAulay	273
33	VK7CW	Steven Salvia	136
47	VK3AWG	Christopher Bellmont	139
48	VK2ZQ	Michael Ramsay	115
58	VK2RT	Bruce Beresford	130

DXCC Multi-mode (Open)

#	Call	Name	Count
342	VK2VEL	Edwin Lowe	146
370	VK3MEG	Steven Barr	257
376	VK6WX	Wesley Beck	243
381	VK3VT	Greg Williams	315
397	VK3AWG	Christopher Bellmont	220
445	JS3OSI	Toshiyuki Tanaka	202
446	WX3P	John Plum	175

DXCC Multi-mode (Phone)

#	Call	Name	Count
549	VK2VEL	Edwin Lowe	133
573	VK6WX	Wesley Beck	207
575	VK3MEG	Steven Barr	247
596	VK2ZQ	Michael Ramsay	285
602	VK3AWG	Christopher Bellmont	167
615	WX3P	John Plum	171

Marc Hillman VK3OHM/VK3IP

VK1news Canberra and Region Amateur Radio Club

Pieter Kloppenburg VK1CPK

The Canberra and Region Amateur Radio Club (CRARC) attracted many of its members to come and listen to the Over the Horizon Radar (OTHR) program that was delivered by Amanda Hawes VK1WX and Pieter Kloppenburg VK1CPK on Wednesday 22 March 2017 at our regular meeting place.

The transmissions from many OTHR stations around the world causing interference on the amateur bands was explained in detail with recordings of the sounds we hear on our bands together with graphic details shown on computer and oscilloscope screens. The range of sounds and colourful images was truly amazing and reflect the complexity of the modulations that are used to extract data from faraway places around the world.

Also shown was a documentary that was made by the Australian Broadcasting Corporation of the OTHR station *"Jindalee"* near Alice Springs in the Northern Territory. The documentary showed interviews with staff of the station, the radio equipment that is used to collect the data as well as the enormous area of real estate that is required to accommodate the many antennas that are required to extract every microvolt of data returned from the targeted areas.

The program revealed that not only countries like America and Russia have networks of OTHR stations but also small countries like Cyprus, Denmark, and Israel allocating large tracts of real estate to these stations.

It was also revealed that much information about OTHR is provided to radio amateurs by the International Amateur Radio Union - Region 1 (Europe). A special segment entitled *"RADAR Systems on Shortwave"* is available at: *www.iarums-r1.org/iarums/radar-2012.pdf*

At least, we can inform ourselves about OTHR penetrations on our bands and report the details to the Wireless Institute of Australia's Monitoring Service.

Participate

WIA 2017 AGM and Weekend of Activities – Hahndorf

Technical Presentations

David Minchin VK5KK and Iain Crawford VK5ZD
Introducing Amateur Microwaves

David Carwana VK5DMC
Getting into Digital Amateur Television

Paul Simmonds VK5PAS
Operating Field portable in the great outdoors

Steve Adler VK5SFA
Operating Low Band HF in confined spaces

Mark Jessop VK5QI
High Altitude Balloon Tracking

David Rowe VK5DGR
Developments in digital voice modes for HF: competition for SSB?

Julie VK3FOWL and Joe VK3YSP
Promoting Amateur Radio

STEM Practitioners
How we can all get involved in promoting Amateur Radio

2017 WIA AGM & Convention – Program Update

Grant Willis VK5GR

Figure 1: VK5WOW Logo.

Hopefully by now you have already booked your place to attend the 2017 WIA AGM Convention in South Australia! If you haven't, there is still time. The WIA Website has all the details for how to register your attendance (*www.wia.org.au*).

Special Event Call Signs

The theme for this year's event is all about inspiring people to explore Amateur Radio and its diversity. We are promoting the idea that *"Radio is Magic"* to new people outside the hobby. We also want to rekindle that magic into new areas of exploration for those of us already engaged in this fantastic hobby of ours.

Inspiring new people to take a look at our hobby means inspiring that feeling of wonder and amazement as they realise what they are witnessing. Find and demonstrate something that makes students go "WOW" is the common theme that educators tell us inspires young people to come and take a closer look. As a technical hobby with fantastic community engagement potential, no other individual or group pursuit has the ability to draw together science, community, technology and a spirit of exploration all from your own back yard!

To promote these themes, the VK5 organising committee is pleased to announce the following special event call signs will be active in the lead up to the Convention weekend. VK5WOW will be heard on various bands, channels and modes starting from 1 April through to 12 May 2017. Then, from 12 May through until the end of the AGM, the special call sign VI5WOW will be on air. There will be a special award available for stations who work one or both call signs as follows:

The General Award

- 5 contacts with VK5WOW or VI5WOW
- Among the 5 contacts, at least two different modes or channels (e.g. SSB and RTTY, or analogue FM, EchoLink and CW) need to have been used OR at least one contact has to be with the call signs when they have been activated from a Park under the terms of the VK5 Parks awards. (Watch the usual parks activation alert sites for times and parks).

The Gold Award

- 5 contacts with VK5WOW & 1 contact with VI5WOW – must include a digital data or voice modes contact and contact with at least one VK5WOW or VI5WOW Parks activation.

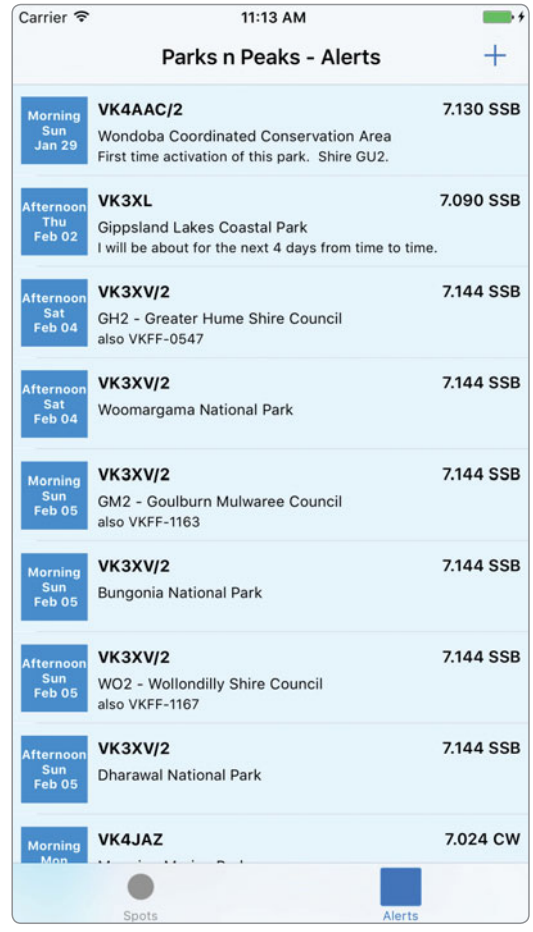
  Contacts via HF (Voice, Digital Voice, Digital Data and CW), VHF, UHF, Microwave, ATV, EME, EchoLink, D-STAR, DMR, FUSION, IRLP, Satellite, and Balloon Repeater will all count for this award.

The aim here is to encourage people to explore the diversity of the hobby, so time to start scanning the bands and give us a call!

Parks and Peaks iPhone app Launch

In addition to our guest speaker, Craig VK5CE, another event during Saturday Evening will be the launch of a new iPhone application developed by Sue VK5AYL. This app is designed to connect to the Parks and Peaks website, written by Allen VK3ARH.

Figure 2: Parks n Peaks Alerts.



Small screens can create problems when trying to read information on a website. So the app downloads Spots and Alerts and formats them so that they fit nicely within the screens-cape.

You can also save Spots and Alerts back to the website. Searching for a site is quick and easy. When there is no mobile network you can record Spots and Alerts for later upload when the network is available.

The app is intended to fill a void for iPhone/iPad users who wish to connect with the Parks and Peaks website.

Sunday Radio Activities Day

After the showcase event on Saturday, the activities continue on Sunday as well! From 1.00pm activities will kick off at Hahndorf Oval, Pine Avenue, Hahndorf.

Things to see and do will include:

- 10 GHz Portable EME Demonstration by David VK5KK – special event call sign VI5WOW will be bounced off the moon into Europe on 10 GHz! (this will start early at 12.30 pm and run to approximately 2.00 pm at Moon Set).
- FreeDV HF Digital Voice Communications demo by David VK5DGR.
- Microwave Communications Equipment Demonstrations by Iain VK5ZD from 1.2 to 120 GHz.
- Digital ATV Demonstrations.
- Come and see a HF Magnetic Loop antenna and use it on the air from the event thanks to Steve VK5SFA.
- Radio Direction Finding, Satellite Tracking and HF Digital communications with Joe VK3YSP and Julie VK3FOWL.
- High Altitude Balloon Tracking and Wenet Imagery decoding demonstrations by the Amateur Radio Experimenters Group Inc.

Figure 3: Site Map.

AREG is planning a high altitude balloon launch from nearby Mt Barker High School to coincide with the event in Hahndorf from approximately 1.30 pm (weather permitting). This will allow stations to track the balloon from Hahndorf Oval and come and see first-hand how it is done and learn how you can get involved live.

We are also hoping to arrange for some demonstrations of MF and LF equipment by Doc VK5BUG at the oval. If you have ever wondered how to get onto those bands, then here is your perfect opportunity to find out more!

For the keen parks activators, there are plenty of opportunities to call CQ from a park within the Adelaide Hills. Several local activators will gather early Sunday morning to take the very keen out to their favourite spots. A further opportunity will be available to "come and try parks portable" departing from the Radio Activities day venue at Hahndorf Oval. This shorter activity will start from 2.00 pm at the Oval. Registrations for all of the Sunday Parks activations will be taken on Saturday evening at the dinner.

For those who can't make it to Adelaide, the Sunday will be a great time to hear both VK5WOW and VI5WOW on the air from either the event venue or from one of the many parks in the Adelaide Hills.

Sunday Wrap-Up

Sunday will wrap up with a Barbeque being hosted by the Adelaide Hills Amateur Radio Society. Registrations are required to this free event so that catering can be determined.

We hope this will be a fitting end to a fantastic weekend of Amateur Radio! We are looking forward to seeing you all here in South Australia!

Wireless Institute of Australia 2017 Board election results

John Marshall

Dear Members of the WIA,

I have had the pleasure of working with many members of the WIA over the last six months or so, and am impressed by the enthusiasm and dedication of those with whom I came into contact.

The sheer number of members who took the trouble to record and send back their ballots was also impressive, with around only 1% being deemed invalid for one reason or the other.

The hard work of those volunteers involved in the counting also needs to be commended. When it became obvious that around 1500 ballot papers had been returned, necessitating the recording of over 10,000 votes, the call went out at short notice for volunteer counters. The response was overwhelming.

The count took place over two nights, between 6.30 and 11 on the evening of 28 March and from 5.50 p.m. to 1 a.m. overnight on 29 March.

I must also commend the staff at the head office, who worked so hard to bring the ballot together in a timely fashion. A massive task, often requiring quite lengthy attention out of hours and over the weekend. Whatever I asked for they just seemed to be able to produce without any fuss.

The members of the WIA have every right to feel proud of, and have confidence in their office bearers.

The successful candidates for election to the Board, and the number of votes polled, are as follows:

Justin Giles-Clarke (1182)
Gregory Kelly (1114)
David Ford (1072)
Marcus Berglund (955)
Peter Clee (891)
Philip Wait (690)
Brian Clarke (687)

I wish them every success in the work they have ahead of them. Under the constitution, up to half of the board will be required to resign and face re-election next year. After that election, hopefully the usual 2-year tenure will return.

The unsuccessful candidates were:

Ewan McLeod (645)
James Linton (627)
Roger Harrison (611)
Garry Page (607)
John Fisher (563)
Fred Swainston (489)

I thank the unsuccessful candidates for nominating, and remind them that the next election is only 12 months away.

John Marshall
2017 Ballot Returning Officer
Wireless Institute of Australia

Making Homebrew Beautiful with E-waste

Carmel Morris VK2CAR

Recently a friend gave me a little VHF/UHF transceiver to play with, the QYT KT-8900, purchased on eBay. My first thought was to replace the old dual band in my vehicle. However there was nothing wrong with my current radio and it was DIN mounted. The QYT is much smaller, so a DIN adaptor would need to be made. I then wondered if this could be made as a portable unit to complement my HT.

Before we get to the portable homebrew solution, here's a brief description of the KT-8900, a compact mobile programmable radio costing around $100 and having the following specifications:

- VHF: 136-174 MHz
- UHF: 400-480 MHz
- Step Frequency 5, 6.25, 10,12.5, 15, 25 kHz
- CTCSS / DCS / 5Tone / 2Tone / DTMF
- High/Low Transmit Power 5 W/20 W
- 200 channels

Some specs show the power rating at 25 W/20 W. The radio received tested at 25 W and 5W. Rejection, SNR, harmonic and intermode specs can be found at: *http://www.446shop.com/Product/Pro659.html*

The unit measures a tiny 98 mm wide x 35 mm high x 118 mm deep. With the plethora of cheap Chinese transceivers flooding the market, don't be surprised if this radio goes through several generations of change and perhaps (wish list) some digital mode features.

Programming software (Windows) is often provided with the radio or you can buy separately, depending on whom you buy from. When running the UV_CPS installer you may be prompted to update the driver. Many have reported the later driver is not compatible with the radio's firmware, so stick with the one supplied on the installer. Alternatively, manual programming is surprisingly uncomplicated and there are simple procedures available online.

Photo 1: Two Radios

The UV_CPS software has confused some folks upon install. On initial launch you'll see a user interface populated with questionable characters (requiring a Chinese character set). To make the menus readable, click the menu bar item (**??**) located second from right, and from the drop down select **English**. Now you're ready to program your radio which is fairly straightforward.

Portable Solution

Back to the e-waste topic; as there are no 'portable field kits' available for this radio at time of writing, there was a requirement to work out a

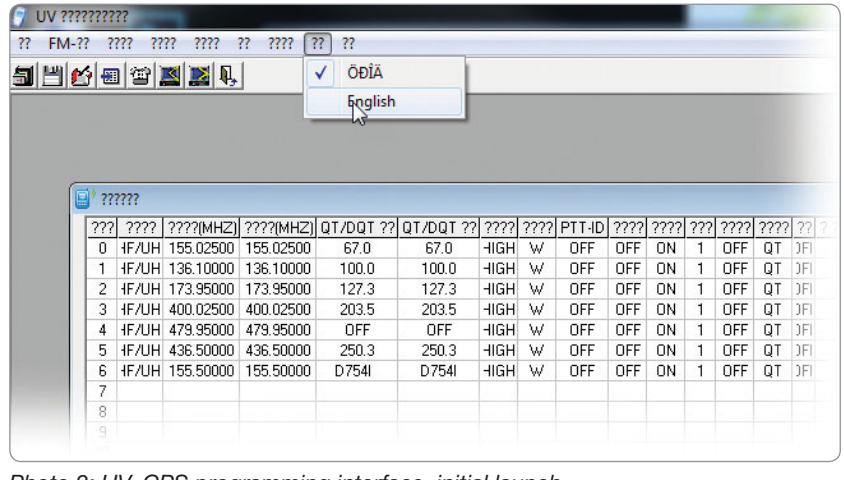


Photo 2: UV_CPS programming interface, initial launch.

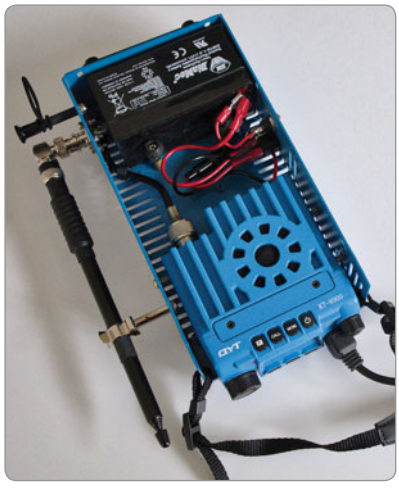


Photo 3: Internal setup with room for a bigger battery; radio can be removed easily.

way to make a compact case with battery and antenna. Preferring QRP, the radio would be set to 5 W.

Driving past a pile of trash for council clean-up, I noticed a switch-mode power supply. The aluminium case looked undamaged and it had the smell of blown capacitors.

Lovely; perhaps an easy fix for later. However the case struck me as ideal to mount the new radio in. From there it was a matter of cleaning up, painting with primer and spraying blue paint, a close-enough match for the blue radio (they come in blue, red, black, and camouflage) and spraying clear coat enamel to protect the newly-painted surface – proving E-waste does not have to be ugly.

Working out the positioning of the radio in the PSU case was not difficult. Some measuring, nibbling and drilling holes and the radio was positioned nicely, using old PCB spacers on the inside. The switch-mode case had plenty of vents; ideal for heat escaping from the radio's large heatsink which forms part of its case.

For desktop operation, PCB spacers were used for supporting posts to mount a dual-band telescopic antenna, made to swing down via a right-angle BNC connector and lock to the other post via a hairband. For stable upright position, the lid off an old jiffy case made for a suitable base. Our radio club has lots of trash and treasure and a small healthy gel battery was taken home.

A note on batteries: ideally for extended usage lithium batteries would suit; there are plenty of cheap ones available online. Be careful choosing the right battery as polymers can suffer from thermal runaway (though on low current demand (as seen for some CW field radios) such batteries are acceptable and lighter on the backpack).

Some folk prefer lithium cobalt or phosphate types even if they are a little heavier, as their cycle life is typically longer. Some old laptop batteries can prove to have plenty of life in them. The thermistor (typical 10 kΩ) can fail due to rising positive temperature coefficients or there is a failed regulator etc. but some cells can still be in good condition and cobbled together to make ~13.8 V. Ensure they are first recharged separately and have the same current rating when taken from different computers. Working with old laptop batteries is a little more involved, with some caution taken into consideration. I may detail this in a future article.

The KT-8900 tested to draw around 3 A on full power and around 600 mA @ 5 W on 12.5 volts. The radio draws 21 mA in standby mode which is probably okay for a car battery but can flatten a small battery over time. Add a case switch to avoid the radio's passive draw. Add an old camera strap and you're ready to go portable. All in all this was a fun simple project, with physical mounting challenges taking the most time. The portable operation works well, and adding external batteries via the charge port extends the usage. Bring a larger supplementary battery for contests so you can go full power when required.

The 40 metre Homebrew

Again, e-waste was called upon to complete a 7 MHz SSB radio. The radio is a compact (component-only) kit designed by Mustafa TA3AMT with DDS board included (AD9833 (0-12 MHz) having buffer and 10 MHz low-pass filter). The parts were acquired some time ago and now the DDS board can be purchased assembled if you are lucky to catch an eBay listing.

The main board is more compact than other kits, allowing for a smaller case, however a suitable case was difficult to find. An old audio resistor bridge was

Photo 4: Radio operates well with telescopic dual band antenna. To avoid scratches, add heat shrink tubing to the area where the antenna clips back in to side of case.

found at a junk sale and after some cleaning and a new paint job, it was not an issue to design a new panel in Visio, print out, laminate and affix to the aluminium face plate. Note: prior to laminating any panel for your radios, cut out the area where the LCD is so when the printout is laminated, you'll have a clear protective area over the LCD. And it looks neater.

The speaker grill was not purchased. I cut off the metal finish ring from a dead LED downlight, mounted some cut-out mesh from an old business card holder and added t-shirt fabric behind.

Having finished building the radio, it was mounted it in a portable Pelican knock-off case (from Bunnings). This case holds the radio, external battery, microphone, patch leads and field antenna all in one unit. Apart from an in-case external battery, lithium batteries were also squeezed into the transceiver case itself for stand-alone receiver use, using a battery cradle from an old radio. Needing a compact but neat 40 m dipole, the decision was made to use two old audio tape reels to mount the wires, and feed a patch through the centre to connect to my Z-matcher (an Emtech antenna matching kit, reputed to be able to match a wet piece of string –must try that, hi hi). This solution allowed the dipole to be neatly wound up when finished – a compact and attractive solution.

Photo 5: Complete 40 m SSB transceiver with antenna and z-matcher (mic and leads tucked under foam) ready to go SOTA.

Anything is possible

E-waste is a big problem but, some stuff made years ago can still have an aesthetic appeal, if one appreciates 'old stuff'. I have built microphones into old pens, built computers into old Reel-to-Reel recorders (replacing motors with smaller ones to turn the reels to great effect, and wiring audio card to the VU meters) and more.

Recently we came across an old cassette deck in a junk pile. The case is now restored but the mechanics removed; it is now a carry case/hand bag and it has been wired to light up like a regular tape deck, with flashing LEDs where the spindles used to be. The cassette itself has a transit card mounted inside it (careful where you cut the holes for the card: you can see the induction receiver wires inside a transit card by holding a CREE flashlight against the plastic; also check that it's legal in your state). This hard case cassette deck is now used to carry my portable multiband antennas and the latest copy of *AR.*

Finally, ignore your YL or, in my case, my OM and keep your junk boxes full; you may never know when you will need that piece of junk – perhaps the one you just threw out a week before. Isn't that always the way?

Photo 6: Decked out and ready to take to the next field day, this 'case' contains an OCF dipole and test gear.

WIA Callbook Editor

The WIA is seeking a passionate, motivated and energetic volunteer to coordinate the annual **Callbook** production.

The Role

This is a consultative and relationship-focussed leadership role, reporting to the WIA Communication Committee leader and being a member of the Publications Committee.
The role involves leading the full lifecycle of Callbook production from planning, updating content, coordinating layout, and scheduling production by end of September each year.

The Candidate

The ideal candidate would have experience in publications, content editing, communication, and project management. The role is focused on collecting information updates from various sources (i.e. other WIA volunteers), refining data, identifying changes, and coordinating layout with the nominated graphical designer who produces the print ready files.
These files are then scheduled for printing with the nominated printer. The Callbook Editor is responsible for obtaining quotations from any external organisations required during the process to be approved by the WIA Board.

Experience

The ideal candidate would possess:

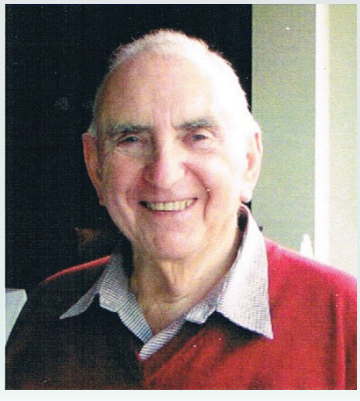
- Project management experience
- Publications experience
- Ability to coordinate delivery of information from other sources, including other WIA volunteers
- A keen eye for detail
- Ability to edit documents and identify changes
- Excellent presentation and communication skills

All applicants should have read and agree with the WIA Volunteer Charter.

To apply, please send your resume via email by the closing date of June 30 to ***armag@wia.org.au***

Silent Key

Dr Hugh Ivens VK2DHI



To all who knew him, Hugh Ivens VK2DHI, was a most agreeable person; a kind man who went out of his way to help others; the quintessential, ex-Sandhurst Englishman. He died on 15 January 2017 at 92 years of age.

His interest in ham radio commenced during his time in medical practice. One of many mature-age entrants to the hobby, he took to it with enthusiasm. He was motivated not so much by technical interest, as the ability it gave him to openly communicate with others.

Hugh had a long and varied career, serving first in the Royal Armoured Corps of the British army from 1942 – 1947, joining more or less out of school at about age 18. He did well, for during his five years Army service he was selected for officer training at the Royal Military College Sandhurst and commissioned Second Lieutenant. Posted to India from 1945 to 1947 in the last days of the British Raj and attaining the rank of Captain, he became deeply interested in the people,

Continued on page 62

Continued from page 61

their country and traditions; an interest he never lost.

During his time in the Armoured Corps, especially in India, he decided that medicine might follow his return to civilian life and was able to secure a place at London University's renowned St Bartholomew's Hospital. He graduated as a medical doctor in 1953 and entered general practice in the UK for some three or four years. At St Barts he was to meet Daphne, a trainee theatre nurse and his wife-to-be.

In the late 1950s, the Royal Australian Navy was recruiting in the UK and elsewhere for medical staff to take up short-service commissions in Australia; for Hugh, a prospect of some interest. He applied, was accepted and with his family transported by sea to Melbourne for officer training at HMAS Cerberus on the Mornington Peninsula for two and a half years, thence to take up as Surgeon Lieutenant in HMAS Vendetta. By all accounts, this posting was more than a little agreeable: ports of call in the mysterious East, ship-to-ship transfers on the high seas, the camaraderie of the mess and such.

None of this is to suggest that Hugh was other than a highly dedicated naval medical officer; he most certainly was – but he enjoyed life and a gift horse is a gift horse. After the Navy, the growing family moved to general practice in Goulburn for five years to 1965 and then to Sydney where he practised for about thirty-six years to 2001. They had and Daphne still has a large home in Turramurra.

As said above, people from all walks take up amateur radio but they must have a motivation to undertake the preliminaries. What could entice a practicing medical doctor in suburban Sydney? He may have been casting around for a retirement activity, still about six years away or, more likely; it was his time in tanks in India as Communications Officer. Radio intercom was vital, usually via the universal HF/VHF No. 19 Set, Morse code etc. It was not so much the workings of radio gear but what it actually did, which attracted him. In fact he frequently declared himself non-technical – a badge of honour almost.

Technical or otherwise, he appeared in the 1985 Callbook with the novice call VK2VFK and in 1988 as VK2DHI. Some long time later, the writer asked Hugh, as an avowed non-technical person, how did he manage to obtain an unrestricted and highly technical, licence? Ah, well now ... he replied and then proceeded with a lecture on examination technique. Which the writer doesn't entirely believe; he did a great deal of technical swotting.

There was another occasion relatively recently when a number of two-letter call signs were made available. Hugh was reminded of this but declined – he was perfectly happy with DHI. A completely random call, of course; that it stood for Doctor Hugh Ivens was quite accidental!

As said, Hugh threw himself into ham radio, working mainly 40 metres and VHF and making many friends. At this point, mention must be made of Col's Net established by Colin Paterson VK2BCP in late 1982 attracting hams from up and down the eastern states. Its popularity had to do with it being neither territorial nor a special interest net; people of any calling logged in from anywhere getting proper acknowledgement and their fair share of air time. The net was running a few years before Hugh became licenced but in due course he found it. Suiting him down to the ground, he became one of its stalwarts and in time the regular Friday afternoon net controller.

Of his more or less regular on-air contacts was such as Lucky John VK4LJ, the formidable DX operator who lives on the Gold-coast hinterland and another Queenslander Norman VK4LD who lives near Toowoomba. He got to know Les VK2LW, one of the earliest controllers who ran the net almost every day and many from nearer home. A close friend was Franklin VK2DYP, a senior civil engineer in the Water Board who, when no longer able to drive, was chauffeured by Hugh to the net's monthly BYO lunch at the WIA headquarters then at Wigram St, Harris Park. Others, from Hugh's early days in ham radio, include Dave VK2AIF, who shared a military background, the veteran Bill VK2XT, Alex VK2ICL, John VK2JT(SK), Peter VK2EMU and of course Dennis VK2RM (SK) who tightly managed the Net and endorsed Hugh as one of the regular controllers. Today there would be many more.

The writer first encountered Hugh on air and was invited to join a small VHF net operating at 9.00 most mornings. Apart from VK2DHI, the regulars were Keith VK2AXN (SK) and George VK2BGU; also Roger VK2FGE (SK), an academic at University of New England, Armidale, who got onto the net via EchoLink. It was quite a social group, arranging dinners from time to time at local BYOs and elsewhere. On such occasions, Hugh remarked once or twice that brandy and dry ginger was not against his religion.

He was a survivor if ever there was one, undergoing major surgery restricting, to some degree, his freedom of movement. Being open to glycaemic episodes, he carried around sugar in the form of Mars Bars – though brandy and dry was better, he said.

Getting back to ham radio, VK2DHI had an antenna issue. For some reason, people can get quite aggressive towards a neighbour who strings up a visible wire antenna – TV aerials, satellite dishes etc. were OK - but not wire aerials. Hugh's home in leafy Turramurra had a backyard long enough for a significant aerial farm, with a largish clump of trees at the far end into which he submerged a virtually invisible G5RV. It was fed from the house with a very long length of buried coax. It worked, but the writer was not impressed. Hugh was persuaded that a centre-fed wire, out in the clear, with an open-wire feeder, a good balun and a short run of coax high-and-dry in the roof space would leave it for dead. The neighbours would have to put up with it. This antenna was made and worked as expected; and he got no flak from next door.

Hugh had a long and diverse career; Sandhurst, the British Raj, medical school, the RAN, general practice in the UK and Australia; and through it an endless fund of things to tell. Almost up to the time health forced him off air and into a quite different lifestyle, he could be heard dispensing professional counsel and anecdotes from his past, usually at someone's request. They were stories of interest, recounted with a style for which he had particular talent. Some were humorous stories and a few were not. They were his hallmark and are greatly missed.

Dr Hugh Ivens VK2DHI was a good ham; he believed in the importance of the hobby; especially for communication without borders. He upheld the Radio Amateurs Creed and made many friends. May he rest in peace.

Hugh was a valued friend of the writer, Kevin VK2JS, and many others.

AR magazine Media Sales

The WIA is seeking a passionate, motivated and energetic volunteer to assist with the sales and management of advertising space in *Amateur Radio* (*AR*) magazine.

THE ROLE

This is a consultative and relationship-focussed role, reporting to the WIA Communication Committee leader and being a member of the Publications Committee.

THE CANDIDATE

The ideal candidate would be a marketing manager or salesperson with experience in print and media sales. The role is focused on prospecting, cold calling, presenting, negotiating, selling advertising space with new *AR* clients as well as maintaining the relationships with existing advertisers. The successful candidate will manage advertisement bookings, ensure the supply of appropriate artwork to the WIA's magazine production company, provide invoicing details to the WIA National Office, and follow up client payments as required.

EXPERIENCE

The ideal candidate would possess:

- 5+ years' sales experience.
- Ideally having worked in the print and media sales industry (past or present) or have had experience working for a company where the role and responsibilities included marketing and advertising.
- A good track record of securing new business and achieving sales targets.
- Outstanding business acumen.
- Excellent presentation and communication (both written and verbal).

All applicants should have read and agree with the draft WIA Volunteer Charter.

To apply please send your resume via email to: *president@wia.org.au*

Hamads

FOR SALE – NSW

CTCSS Encoders. The Hunter Radio Group has produced another batch of CTCSS Encoders, 91.5 HZ-123 HZ Switchable, Crystal Locked, which fits most VHF/UHF Transceivers. Cost is $18.00 plus postage.

Rodney VK2CN. 0249448393 or *rprout@idl.net.au*

FOR SALE – VIC

Shack clean out: Yaesu FT-480R 2 m all mode transceiver with handbook, $200.

FT-780R 2 m all mode transceiver with handbook, $200.

FT-2900 R/4 2 m FM transceiver with handbook, never used, $300.

FT-480/4 FM transceiver with handbook, $250. FT-208 R2 2 m FM HH with handbook, $100.

Icom IC-730 HF transceiver with abnormal figure in display, $60.

Mirage 2 m linear amplifier with remote control and instructions, $200.

All prices as quotes or the lot for $1000.

Call Brewster on 03 9527 2661 after 6 p.m. and before 10 p.m. If no answer, leave a message.

FOR SALE – VIC

Three used antennas: Hy-Gain TH3JR Yagi three bands (10, 15, 20 metres) $100.00.

Cushcraft R5 Vertical five band (10 – 20 metres) $200.00 and Butternut HF6V-X Vertical (10 – 80 metres) with 160 metre adaptor $200.00.

Handbooks provided. Buyer to collect and take away.

Phone (03) 9836 0151, VK3BJN - QTHR. Many thanks, Charles R. Welch, Camberwell 3124.

WANTED TO BUY – VIC

Wanted a working VK3XDK 10 GHz Transverter (version 2), as featured in *Amateur Radio* magazine (December 2013), that may be surplus post upgrading to another transverter or have just lost interest in.

Reply to Phil VK2JDL at *vk2jdl@wia.org.au* or 0439 130 403

MISSING – SA

PRESUMED STOLEN TRANSCEIVER

Defective Barrett SB950 transceiver removed from my workshop store. Serial number 95201835.

Remote head and leads were with transceiver for repair. Radio faulty when taken.

Fault: radio was NO TRANSMIT and diagnosis had shown the PA/Driver fuses to be blown with charring / arcing during the fuse link blow-out.

Unit was last programmed in 2015 for VKS737 and amateur radio.

The programming reflects this. Richard (Rik) A. Thiel VK5MU.

Contributions to *Amateur Radio*

AR is a forum for WIA members' amateur radio experiments, experiences, opinions and news.

Your contribution and feedback is welcomed.

Guidelines for contributors can be found in the AR section of the WIA website, at *http://www.wia.org.au/members/armag/contributing/*

Email the Editor: *editor@wia.org.au*

About Hamads

- Submit by **email (MUCH PREFERRED)** or if written and mailed please print carefully and clearly, use upper AND lower case.
- Deceased estates Hamads will be published in full, even if some items are not radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from those who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising on these pages Contact admanager@wia.org.au
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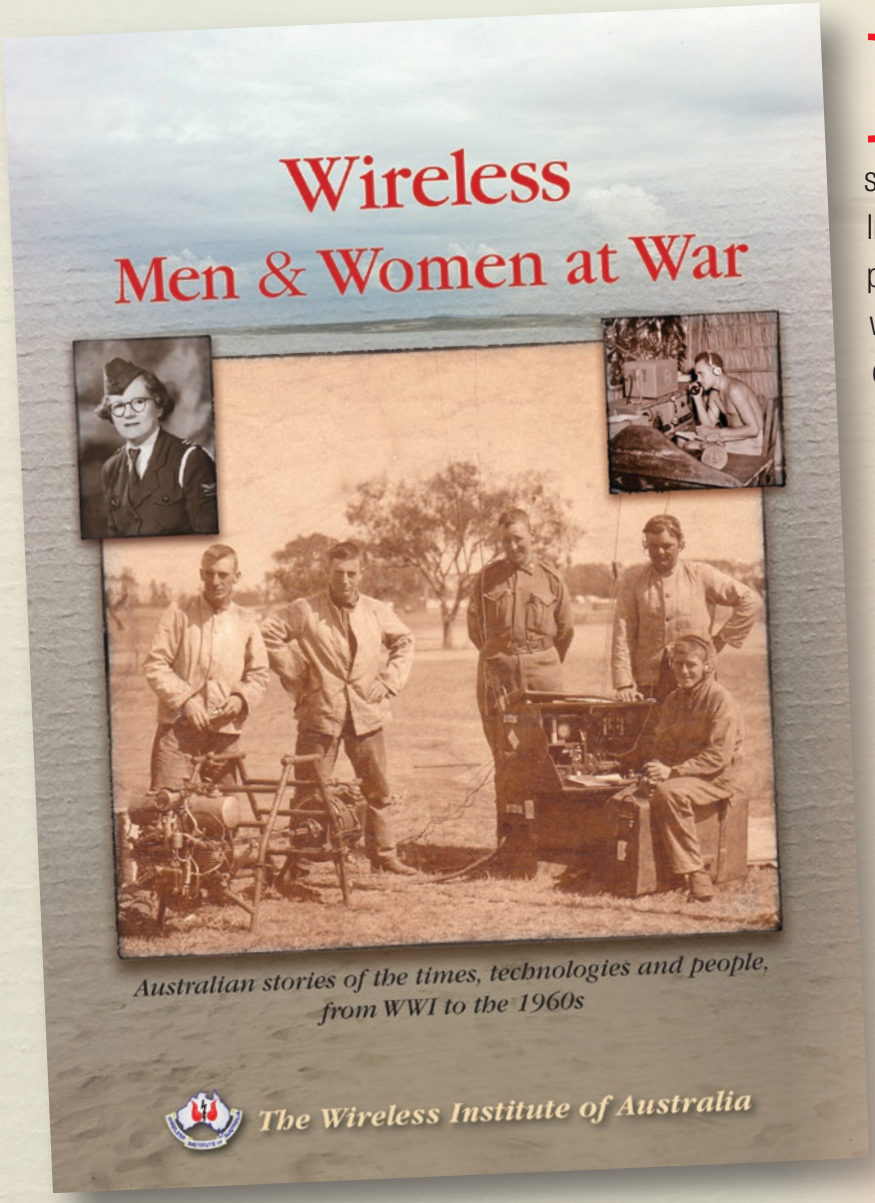
Wireless Men & Women at War



REAL LIFE STORIES of unusual people in unusual situations. Many of these war-time stories have never been told before. In many ways, most of these 'unusual people' lived an ordinary life – that was until they found themselves in difficult situations, often far from home on the other side of the world. It was then that they bloomed and made use of their hidden talents developed as radio amateurs. This book contains their stories.

In the eyes of the general public today, more than likely these individuals would be thought of as 'electrical nerds' but it was the skills they possessed, mainly through 'self-education' and 'hands-on experiences', skills which allowed them to step outside their normal responsibilities and make their substantive and often unusual contributions to their colleagues and country.

Young men and women who behind the scenes, were able to successfully use their developed skills in such a way as to make a difference – sometimes a big difference brought about largely by their interest in private radio communications.

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