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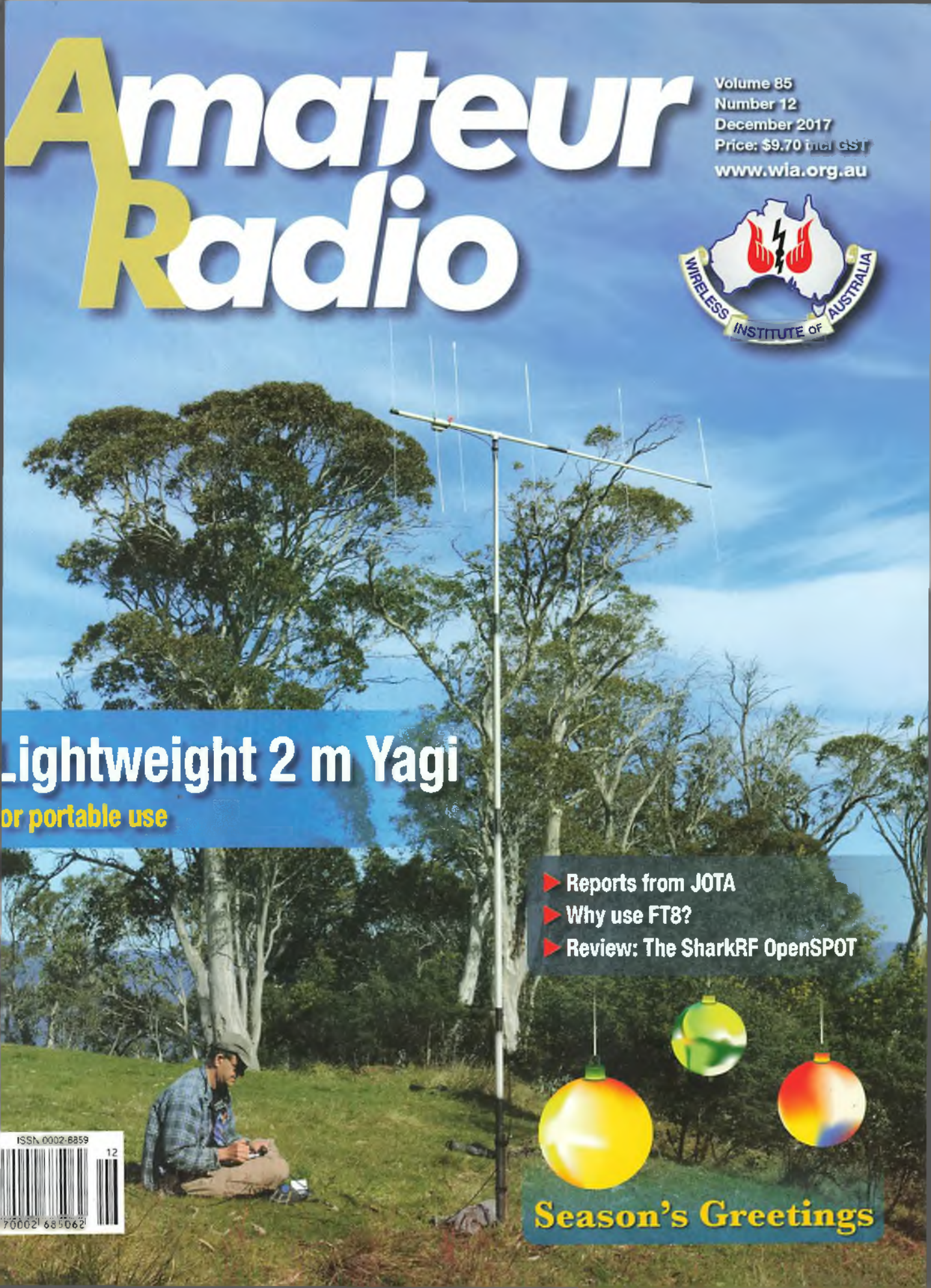

Lightweight 2 m Yagi

or portable use

- Reports from JOTA
- Why use FT8?
- Review: The SharkRF OpenSPOT

Season's Greetings

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Amateur Radio

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Registered Office
Unit 20 11-13 Havelock Road
BAYSWATER VIC 3153
Australia
Phone: 03 9729 0400
Fax: 03 9729 7325

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General

Technical

Columns

This month's cover:
Erwin VK3ERW on Mount Emu VK3/VE-061, using the lightweight 144 MHz Yagi built by Peter VK3PF. Read the details in the article starting on page 8. Photo by Peter Freeman VK3PF.

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.

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Amateur Radio Service

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.

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Registered Office of the WIA
Andersson House
Unit 20, 11 Havelock Road
Bayswater, Victoria, 3153
Tel: (03) 9729 0400 Fax (03) 9729 7325
email: *nationaloffice@wia.org.au*
http://www.wia.org.au

All mail to
PO Box 2042 BAYSWATER VIC 3153
Business hours: 10am – 4pm weekdays

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Editorial

Peter Freeman VK3PF

Engaging with younger people

At the local radio club, we have not been engaged with Jamboree On The Air (JOTA) for several years. This is due to a number of factors, including clashing events on the local Scout calendar.

Earlier this year we were contacted by one of the local Guide leaders. After meeting and discussing options, a plan started to form. We decided to hold a brief introductory session about five weeks prior to JOTA at the normal Guide meeting. We had several amateurs arrived and talked a little about "what is radio". We started the discussion by pointing out that mobile telephones are really just radios, interlinked by significant infrastructure. But what would happen in the interconnecting systems failed? The girls quickly realised that they would not be able to communicate easily! We quickly finished the discussions and after a brief explanation of how to make a contact, we had the girls try talking using some 2 m FM hand held transceivers. All seemed to work well. After the local school holidays, we had the girls come to the radio club rooms for a visit, including some more time on air.

Although the wind was at moderate strength, the weekend turned out to be reasonable weather. We had a doublet erected by early afternoon, together with a trapped dipole for 80 and 40 m and a simple vertical antenna for VHF. The station was set up in the common room of the bunk-house style building on site, with cables running in through the windows.

The Guides were due to arrive at around 1500; we had some contacts with some Cubs at a Scout camp around 70 km away, using 80 m – the band was a little noisy, but we had solid signals. After the Guides arrived, we started making contacts with various groups. It was difficult at times to find other JOTA stations to work, not helped by ionospheric conditions meaning that 40 m had no NVIS. But we encouraged the girls to get on air. Late in the afternoon we briefly tuned around on 40 m, hearing a number of loud European stations calling for DX – but no JOTA stations. Explaining the callsign prefixes together with a world map brought interest from the Guides.

After dinner, we continued searching around the bands and making contacts. We also ran some simple fox hunts on 70 cm. One club member brought along a telescope and the cloud cleared allowing most of the Guides to look at Saturn and Jupiter. Inside, there were other activities to entertain the girls, including making name bracelets using beads and Morse code to spell out their names. The younger girls left for home at around 2100, whilst the older girls stayed overnight. The common room was very noisy at times, requiring those at the radio to listen carefully.

I left after midnight to return home. I understand that the Guides thoroughly enjoyed a Morse activity on Sunday morning, plus the team ensured that every girl had made at least one on-air contact.

One observation was that the art of conversation was not demonstrated by the girls, especially at the noisy HF station.

Continued on page 5

Board comment

Justin Giles-Clark VK7TW

Accounting and *AR* magazine revitalisation

Since late May when your new Board took office, we have been coming to grips with the way this organisation operates. It has been a journey of discovery that has taken longer than originally thought. There have been many positive and some not so positive things we have discovered.

One that you have already heard about on the weekly WIA National Broadcast from fellow director, Greg Kelly VK2GPK, is the financial status of the WIA. This WIA is currently cash-flow negative, and has been for a number of years – that is where expenses exceed revenue. At the time this Board took office, the WIA was on average spending approximately $11,200 per week when revenue was only $10,000 per week.

This is an area where I want to focus on for this comment. On the positive side we identified key areas of focus to place the organisation on a much more sustainable platform and are continuing to work to further improve the financial position of the organisation. By the end of first quarter 2018, with the initiatives we have instigated to date, we expect to see the cash flow to look much healthier, approaching cash flow neutral and cash flow positive by mid-year.

The 2017 FY end of year deficit is projected at around $65,000. This doesn't mean we are insolvent – the WIA is able to pay its employees and bills on time, however, to do this we are using our provision account and this needs to be reversed. That provision account has around $300,000 in it and although not related to cash-flow, our property assets are worth well over $400,000.

How did we get into this situation, I hear you ask? One day at a time over many years!

This is a complex historic picture about a voluntary organisation. It has taken the Board the best part of six months to unravel it. It is a mixture of both discretionary and non-discretionary costs. Let me start at the beginning of this financial year with the previous Board quoting costs incurred that included legal, accounting and additional auditor costs to react to the demands raised by a small group of agitator members. The quantifiable costs are over $13,000 without taking in to account the opportunity costs of the time spent by Board members, volunteers and staff and the decrease in membership. However, in comparison to the organisation going into paid voluntary administration because of a Board spill as was being lobbied by these few members for a special general meeting– the costs would have been much, much higher and probably fatal for the WIA. These few members hold strong views and believe they are acting in the best interests of the WIA, but many of their actions just divert Board attention from more pressing WIA issues.

The next body of discovery work involved the ACMA Performance Reporting that the WIA is obligated to provide under its agreement with the ACMA to provide services on its behalf. This service is provided on a cost-recovery basis for the ACMA using a financial model established in 2009 and this model and charges have not been updated since 2009. Last year there was an under-recovery of approximately $12,000 for services rendered, this year will see a similar under-recovery. Couple this with falling examination rates and increasing callsign administration and this makes for a cumulative loss of approximately $60,000 over the life of the ACMA contract. This service is supplied to all radio amateurs in Australia and yet the administration cost sits with the WIA. WIA members are effectively cross subsidising all amateurs for the delivery of some of these services, e.g. licence database management. The costs historically attributed to ACMA activities do not currently reflect true lifecycle costs, such as infrastructure refresh and security management.

The annual IARU payments for both 2016 and 2017 were both paid earlier this financial year, including an administrative overpayment of around 350% using all Australian amateurs rather than just the WIA transmitting membership. Attendance at IARU overseas meetings has also added to the financial pressure to the tune of $8,000, although the recent Strategy Advisory Committee survey respondents rate this function as one of the main reasons they are members of the WIA.

AR magazine publishing 11 issues a year is projected to have an annual ongoing expense of $198,000. This is based on most recent payments and is

Continued on page 4

Board comment Continued from page 3

by far the largest expense this organisation has. It is the printing and distribution costs that have contributed to this increase along with falling advertising revenue. For completeness of the picture, I cannot leave out that employment and insurance costs have increased by at least CPI if not more each year.

What is the Board doing to rectify this rather negative situation outlined above?

- The Board has sought operational plans for reducing the number of 2018 *AR* magazine issues from 11 to 6 and started an *AR* magazine revitalisation process. Budget saving approx. $50,000 pa.
- The Board has proposed a new fee structure to ACMA for the ACMA contract to eliminate under-recovery beginning 2018. This already has in-principle support from ACMA. Budget saving approx. $12,000 pa. This will result in higher costs for some assessment and callsign / licence management to reflect the real costs of providing these services.
- Recruitment for a volunteer person/team to undertake a *Media Advertising* role to start to attract higher levels of advertising in the magazine and other WIA publications.
- The WIA is in credit with the IARU for the next two to three years and therefore will not incur this expense for the next few years. Budget saving approx. $3,000 pa.
- Building in the provision for technology refresh of antiquated equipment and systems. This includes implementation of a service desk system and ongoing maintenance and support over the life of the equipment.
- Membership engagement processes to attract and retain more members and engage with existing members more effectively and efficiently. Licence analysis shows that since 2005 approximately 40% of newcomers to the hobby do not renew their licence so, retention needs to be the main focus.
- The Board has resolved to draw down the provision fund to provide bridging funding as this is a cheaper option than the current overdraft arrangements.
- Recruitment for an Operational Management group that will undertake the day-to-day management of the organisation enabling the Board to focus on steering the organisation.

Sustainability is the key word that describes what the current Board is attempting to implement to setup the WIA for the future. It will not happen overnight but it is happening.

Given this is the last issue of *AR* magazine in its 11 issue format, I would like to finish off with some of the ideas that are being put forward in relation to the revitalisation of *AR* magazine. With the move to 6 issues we have an opportunity to refocus the magazine. Summarised below are some key ideas put forward so far:

- More technically focused publication by moving the club news and obituaries to a professional *AR* magazine dedicated website along with sourcing and contributing technical articles from/to other IARU societies.
- Move to eBook digital format with lower cost for concession and digital only subscribers including print on demand editions. eBooks have global distribution and well established business and advertising models which the WIA can utilise.
- Advertising sustaining the magazine directly – thinking laterally e.g. retirement industry advertising.
- Move to the concept of a paywall – you need to be a member to get through the paywall. Facilitates moving to a full digital version sometime in the future.
- Cooperation with Silicon Chip / Diyode / Makers / Hacker space magazines. Focus the articles for younger, first time readers and different market sectors.
- Publish compilations of technical articles from each *AR* year into an eBook compilation.
- Attracting experienced authors, reducing lead time and possibly rewarding them in some way.

We will be seeking member feedback regarding possible changes to *AR* magazine via a new survey in the near future.

Exciting times ahead for our flagship magazine and I look forward to seeing more of these ideas developed and realised.

Have a safe and RF filled festive season and see you in 2018.

Justin Giles-Clark VK7TW on behalf of the WIA Board.

Office closure

The Wireless Institute of Australia extends to all radio amateurs very best wishes for the festive season.

The WIA office will be closed from **4:00 pm Friday 22 December** and will reopen at **11:00am, Monday 22 January, 2017**.

Editorial

Continued from page 2

Yet during Saturday afternoon we saw several girls spread out around the grassed area chatting away happily using 2 m FM hand held radios. The conversations were diverse and interesting, probably helped as we had a Guide from Jabiru who had joined in the activity for the weekend. She was very busy talking about the exotic wildlife and vegetation that was common around her home.

Overall, the Guides rated the weekend a huge success and are already talking about next year and perhaps some other joint activities over the coming 12 months.

With a simple approach, it was easy to engage the girls into various activities. They all seemed to enjoy the activities. Whilst we may not have any immediate recruits into our hobby, we have at least engaged some young minds and stimulated them to consider some different activities. Who knows what may come in the future? The Guide leader is already talking about studying for her Foundation licence.

I trust that you all have a safe and prosperous Christmas and New Year. Take care when travelling and I trust that you have some productive time on the radio.

Until the next edition,

Cheers,

Peter VK3PF

WIA news

Queensland students talk with an astronaut

The Amateur Radio on the International Space Station (ARISS) linked up the Beaconsfield State School in McKay with Italian astronaut Paolo Nespoli IZ0JPA via a telebridge last Thursday. About 300 students, parents, dignitaries and teachers gathered at the school with one visitor travelling 390 km from Townsville just to attend the event. Also watching proceedings were a newspaper reporter and a local radio announcer.

Leading up to the ARISS event the school set up several space theme displays, with some students dressing up as astronauts – the costumes were great – and a display of several photos of Paolo Nespoli were posted around the building. In addition, several video screens were in the school hall with ISS tracking displays, BATC streaming display (Tony VK5ZAI streamed to BATC) as well as a portable satellite ground station. This emulated what was occurring at Claudio's ground station – the portable ground station was complete with tracking antennas and Doppler correction, resulting in many questions being asked.

Then came the telebridge link-up with Claudio IK1SLD in Italy and Tony VK5ZAI in South Australia. The WIA ARISS Coordinator Shane VK4KHZ was at the school to moderate the link-up. When Paolo began his pass he was amazing with the students and many parents commenting after the contact on how well he interacted with the young students.

During the contact students were able to ask all 13 questions and received answers. Science Teacher Anna Berrigan thanked Paolo and the audience had loud applause. Immediately after the event the Mackay Tropical Stargazer Group invited everyone to the school grounds where they had set up large telescopes for planet viewing.

One of the highlights was to see the ISS pass over Queensland about 40 minutes after our ARISS contact, giving most their first look at the International Space Station. The evening was highly successful and an enjoyable event, with a few of the primary school students now thinking of being involved in the space industry.

Major antenna manufacturer ends its production

Known worldwide Polar Electronic Industries of Australia, the designers and manufacturer of quality communication antennas for 41 years, has closed leaving a gap for the radio amateur community. It serviced 51 countries with quality product. Polar especially supported the Amateur Radio need for special non-standard antennas outside the usual commercial frequency range.

Among the Polar products covering 2 MHz to 2.9 GHz were communications antennas, multicouplers, duplexers and accessories. Retirement of its two engineers and owners is given for the closure. Based at Moorabbin in Melbourne's south, it had extensive engineering and test facilities, including computer-aided radiation measuring equipment. Through research and development it remained an industry leader.

The directors Ben Czerniewicz and Neville Sleep, were always ready to provide special product for mountain top repeaters, using the heavy duty methods of standard commercial frequency antennas. WIA Repeater & Beacon Coordinator, Peter Mill VK3APO said he had found nothing matches the ruggedness and longevity of Polar antennas, and loss of that source

Continued on page 15

PL259 connectors and 4.95 mm coaxial cable

Kevin Parsons VK2JS

The various components of our shacks, rig, coax switch, filter, amplifier, tuner and antenna wall plate etc. mostly end up with SO239 sockets interconnected as appropriate using PL259 plugs.

For short cable lengths, RG213 is often cumbersome in the extreme, but as 4.95 mm coaxial cable is more workable, most settle for it. This article is about how exactly does one solder such cable into the ubiquitous PL259 UHF plug with RG58 reducer? Many don't even try, using crimp-connectors exclusively; but there is something to be said for a good soldered connection.

To start with, we should, in the writer's opinion, think twice about RG58. It has shortcomings; especially its polythene dielectric of less than 1.5 mm between centre conductor and braid. Also, unless the cable is fairly new, the PVC jacket contaminates the braid which makes soldering to it not that easy. Very easy though, with the applied heat, is to create a highly dubious mess where the centre conductor and dielectric emerge from the reducer sleeve.

So the strong suggestion is that we leave the RG58 on the drum in the garage and invest in three or four metres of RG142. Rolls-Royce coax: brown FEP jacket, double braid of silver-plated steel, Teflon dielectric, 4.95 mm OD. The braid tins easily and the dielectric will not melt. If bought in short lengths, it costs about fifteen dollars or so per metre - but worth it. Shop around.

Now the plugs. Commonly available are PL259 plugs with the screw-in RG58 reducer; nice plugs, nickel-plated brass, PTFE dielectric, gold-flashed centre pin, but not a hint as to how one could solder the braid of the coax to anything. It would be interesting to know what the manufacturer had in mind; was it assumed the uncovered braid could simply sit in loose contact with the reducer so long as the centre conductor was soldered? The writer must be missing something. Also the reducer sleeve, when fully screwed in, almost touches the dielectric encasing the pin. Even if one teases out the braid, folds it back along the sleeve, and manages to solder it without cooking the polythene too much, there is a good chance of ending up with a short between braid and pin.

A piece of RG142 and modified reducer ready for soldering prior to final assembly of the PL259 connector.

At one time RG58 adapters with solder-through holes could be found, maybe silver plated, and many may have devised some other method of soldering the braid onto the common reducer, such as onto the outside of the head of the component. Much of this is by the by; we are not going to use RG58. What follows is dead easy, will never fail in use, and will not damage the dielectric to produce a potential voltage breakdown point. It lasts for ever.

The first step is to file down the length of the reducer sleeve by a millimetre or so to guarantee no shorting to the pin. The next is to file or grind a chamfer of about 45 degrees right across the end. Then to scuff up the inside of the shortened reducer and tin it thoroughly using as much heat as needed. A little liquid solder flux can be helpful.

Having prepared the reducer, take the RG142 and with a sharp knife remove about 3 cm of the brown outer jacket exposing the silver plated braid. Then tin about a centimetre of the braid all round, just beyond the jacket; as said, you will find this easy. Now we need a miniature tube cutter.

First clamp the coax horizontally in a vice – not too hard, with about 5 cm clear of the jaws. Then with the tube cutter, cut through the tinned braid leaving five or six millimetres in place and pull away the excess. Go easy with the cutter; cut and test and go a bit deeper if needed. We should end up with a thing of beauty; a few millimetres of nicely tinned braid ending at right angles to the line of the coax with no dags or whiskers and the PTFE dielectric totally unmarked.

All that remains, leaving the coax in the vice, is to slide the reducer over the cable so that the tinned braid just comes to the end of the sleeve. Hold it at that point with some temporary device such a scrap of PVC tape at the other end. Soldering is now simple and guaranteed as the chamfer allows solder to be run down from above into the tinned sleeve and around the braid in sufficient quantity to form a sound mechanical, and electrical, joint. The dielectric remains undamaged. Then remove carefully the appropriate amount of dielectric (it is good to allow five or six millimetres to continue inside the pin), screw the connector body over the reducer and solder the conductor to the pin; trim the excess and it's finished. RG142 is not all that flexible, but very OK for static interconnections.

The attached photograph, before sliding the modified reducer right up to the soldering position, may be useful; but the process is not rocket science.

73

Kevin VK2JS.

A lightweight Yagi for 2 m

Peter Freeman VK3PF

Readers will be aware that the author has been very active in SOTA and Parks activations and chasing others activating Parks and/or summits. This led the author to ponder a significant question:

SOTA: HF or elsewhere?

40 m activity has dominated SOTA operations in VK (and continues to be the dominant band). But what about other bands? This is a 2-edged sword:

- The Activator needs Chasers to gain the points for the activation.
- Chasers have been hard to find on bands other than 40 m.
- 40 m gives common ground to all VK licence classes.

Is this the Chicken or the Egg? 2 m has worked for several activators, especially for summits closer to major city centres. In recent months, more activators have added 80 m antennas (or antenna extensions) to their equipment list.

Why not 2 m?

Well, why not? There are relatively few Chasers on 2 m FM. Even when close to a major city, it can be hard to find someone to answer an FM CQ call. It can also be difficult to raise anyone on a repeater who may be willing to try a simplex frequency for a contact. Of course, most major centres have some regular 2 m SSB operators but are they interested in SOTA? Well, there are some active in SOTA but more would be nice. If you can find at least one SSB operator, then you might be able to stir up some of those listening in the background. Once contact has been made on 2 m, why not try higher bands? But remember that the SOTA Activator needs to carry their equipment to the operating site and operate without motor vehicle based assistance. Therefore, what should the Activator take?

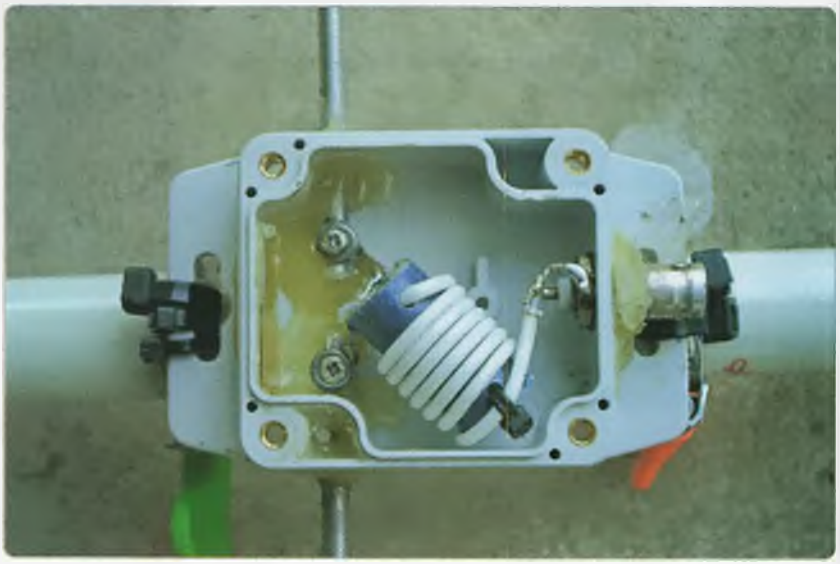

Photo 1: The Yagi feed details.

Basic Activator gear

The Activator will have his/her own gear preferences, but a typical set up might include a 7 m squid pole, a 40/20 link dipole (or EFHW or other HF antenna) and perhaps a 2 m vertical. For the radio, an FT-817 is a good flexible choice plus a battery, coax and perhaps some other RF related gear. Add the usual bushwalking safety equipment; food, water, etc. So if we want to add 2 m SSB, we should consider adding a Yagi for 2 m. There are many options, but remember that

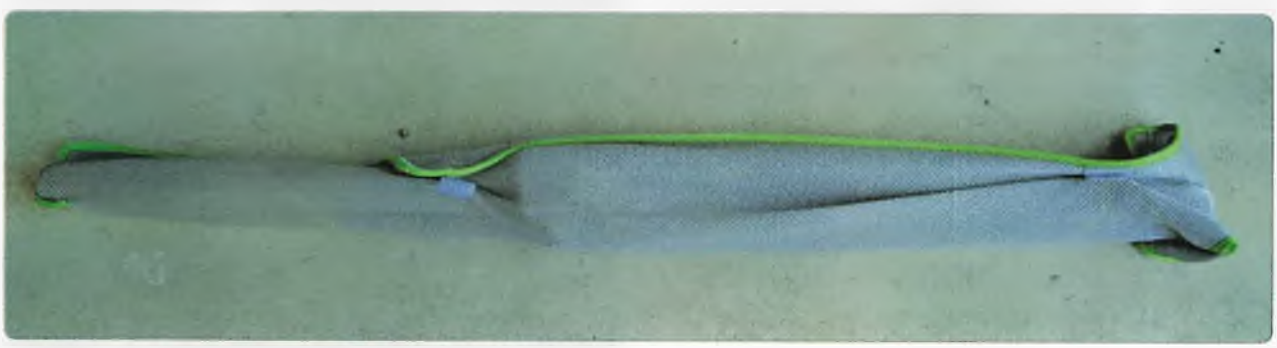

Photo 2: The Yagi packed in a modified fishing rod holder.

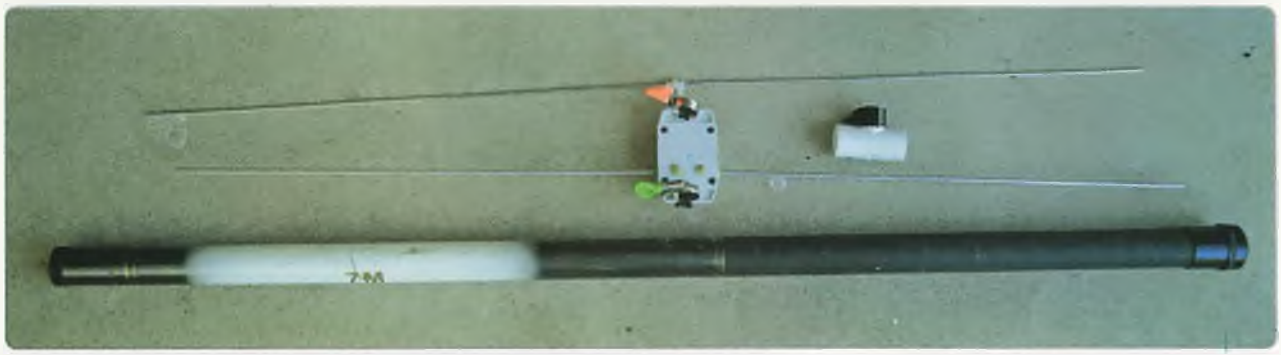

Photo 3: The Driven element, mast and mast-boom bracket

the Activator will want to keep the mass as low as possible, as it all must be carried onto the hill.

Which Yagi?

I looked at many published designs before settling on the Lightweight Yagi by Martin Steyer DK7ZB (1). It is a 6-element OWA 2 m Yagi, with a 200 cm long boom (Type 1 on the website) (2). Practicalities meant that I modified the design a little.

DK7ZB claims that the antenna has 9.2 dBd gain, with 18 dB F/B to cover the smaller European 2 m band. The gain and antenna impedance curves look reasonable for the bottom end of the 2 m band (144 – 146 MHz).

VK3PF variations

I wanted to minimise any extras to the existing SOTA gear. I was using a 7 m heavy duty squid pole (3) to support the HF link dipole, so I chose to use two sections of squid pole.

Materials used:

- 3.2 mm Aluminium welding rod for elements
- 3.96 mm Aluminium tube for driven element
- Poly box, screws, small coax, BNC connector
- 2 O rings and a PVC 20 mm pipe T piece
- 2 stainless steel hose clamps plus some cable ties

Construction

Having selected your material, examine the tables on the DK7ZB

Photo 4: The mast, boom and other components.

website (2). Fortunately for me, the tables include 3.2 mm element as an option, with the driven element recommended to be made of 4 mm material. Having 3.96 mm tubing available, I considered that would be near enough for our purpose.

The Aluminium welding rod was purchased as a box of rods (2.5 kg of rods) from a local welding supply house. The box contained many more rods than I needed for the project, so I have many spare for future projects.

I commenced by marking out the element positions on the selected two segments of the squid pole that will be used as the boom. I opted to not use the top section of the pole for the antenna and used the next two lower sections for the boom. This arrangement leaves about 4 metres of squid pole to use as the antenna mast.

Having marked the element positions, the next challenge is to hold the boom at the correct angle so that the long axis of the boom is parallel to the table of a drill press, thereby ensuring that the drilled holes are perpendicular to the long axis of the boom. As the boom tapers, you need to do some calculations to set up the boom correctly! The boom is fibreglass, so appropriate safety precautions should be followed. I used a 3.3 mm drill that had not been sharpened for a long time and drilled with care and a high drill speed. After drilling the holes, I carefully sanded the edges of the holes to remove any fibreglass splinters. I positioned the boom correctly, drilled one pair of holes (for the reflector) and then used a surplus segment of element material to hold the boom in position on a timber frame. This assisted with drilling parallel holes for the directors. No hole is required in the boom for the driven element.

There are some caveats in using the welding rods: they are 1 m in length – plenty for the directors, but not long enough for the reflector, plus they have a compressed/flattened region near each end to enable fitting the rod into the welding apparatus. This requires a little thought. For the directors,

Photo 5: The components ready to assemble.

simply cut the flattened area off from one end only and file the cut end to create a slight bevel. This will allow the element to be slid into the hole through the boom from one end only. If you attempt to place the element through the boom from the wrong end of the element, you will only be able to place 12 mm of the element into the boom due to the flattened region.

For the reflector, I used two rods to make up the element, cutting off the 12 mm of material near the flattened area from one half-element, giving a convenient flat section to screw down against using a terminal block segment. I measured the boom diameter at the location of the reflector, calculated the radius and then subtracted the radius from half of the required reflector length. This gave the required position of the end of the terminal block section which would be positioned against the outside of the boom once the element was inserted through the boom. The length of the half reflector to be inserted through the boom must therefore be half of the required reflector length plus the boom radius plus several millimetres to be inserted into the terminal block section – I used half of the length of the terminal block section. The other half of the reflector will need to be half the required reflector length minus the boom radius minus half the terminal block length. I chose to cut the shorter half reflector and then flatten the cut end to go inside the terminal block a little with a file so the flattened and deformed end of the rod would prevent the reflector from being inserted through the boom from the wrong direction.

The Yagi has a design impedance of 50 ohms, so a simple split dipole can be used together with a choke balun at the feed point. I used a sealable plastic case, drilling 4 mm holes for the driven element halves on the sides near one end plus a hole to mount a BNC connector at the opposite end of the box. I drilled and tapped some M2 holes in the element ends to attach the feed and then glued the element ends into the box. I used a small section of fibreglass tube (from a broken ski stock) as the former for the choke balun and wound some RG223 style Teflon cable as the choke cable and to connect to the BNC connector.

The box used had flanges for mounting purposes. I used the flange holes to cable tie a hose clamp at each end of the box. As a result of the mounting method used, the Driven element is offset from the other elements. I used EZNEC to model the Yagi both as designed by DK7ZB and in the configuration proposed. From the modelling, it looks as if the Yagi should work well, even if at only 4 m above the ground. Of course, there will usually be lots of mountain underneath the Yagi!

The Yagi is carried packed in a modified fishing rod holder (Photo 2). Photo 3 shows the squid pole with the driven and reflector elements, plus the PVC T-piece – the boom to mast bracket. Photo 4 shows the four directors are stored inside the top section of the squid pole. Also

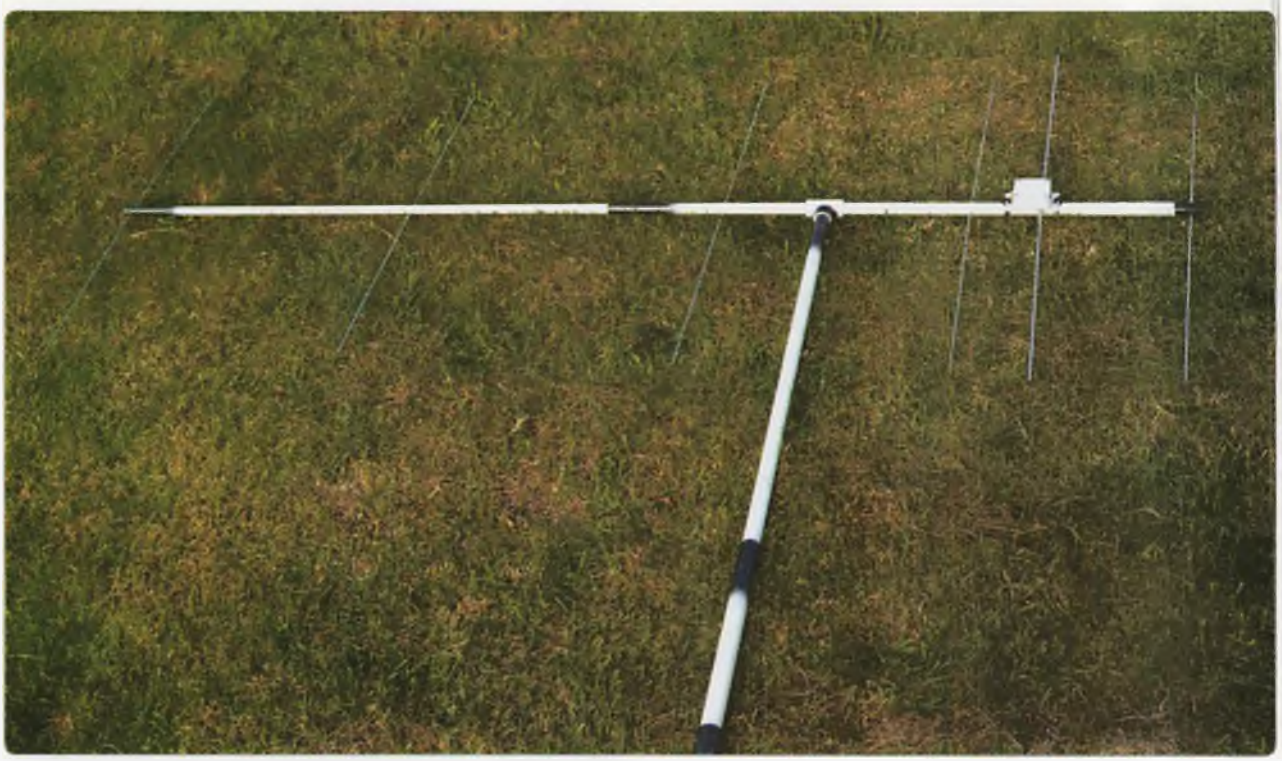

Photo 6: The Yagi and mast assembled and ready to raise to the vertical position.

visible are the two O rings used as packers to remove "slop" between the T-piece and the boom of the Yagi.

To assemble the Yagi in the field, unpack all the elements (see Photo 5). As noted above, the top section of the squid pole is not used when using the Yagi. The next two sections down from the top have been marked out and drilled for the reflector and the four directors.

Each of the directors has some tape to mark the position against the boom, plus small sections of heat-shrink tubing to label the director: one piece of heat-shrink means Dir1, four pieces means Dir4.

The Yagi is assembled by placing the driven element roughly in position, then mounting the reflector, followed by the first director. Then position an O ring close to the expected centre of balance, then the poly T piece, followed by the second O ring. Then place the remaining directors in position, aligning the front section of the boom so that the front directors align with the elements on the rear half of the boom. Finally, position and align the driven element with the other elements and carefully tighten the hose clamps which hold the driven element assembly on the boom. Overtightening of the hose clamps can damage the underlying fibreglass tubing. Assemble the bottom four sections of the squid pole to form the mast, placing the T-piece over the top of the mast and secure the bottom of the PVC T-piece with some electrical tape. Attach the coax and secure the coax to the boom and mast (more electrical tape or some double-sided Velcro ® tape). Finally, raise the mast, making sure that the Yagi is balanced and in the correct polarisation.

Photo 6 shows the Yagi assembled and on the mast, ready to be raised – in this case, vertically polarised. The coax cable has not yet been connected. Given that the elements are simply inserted into the mast, care must be taken when raising the assembly. Also note the orientation of the Yagi if you plan to use it vertically polarised, lest the

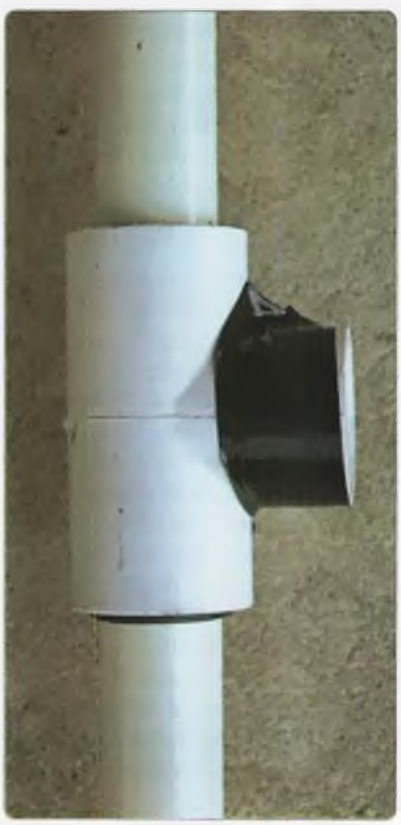

Photo 7: The T-piece over the boom, with electrical tape to fasten to the mast. Just visible at right is one of the O rings which stabilise the T-piece on the boom.

Photo 8: The Yagi and mast in use by Erwin VK3ERW at Mt Emu VK3/VE-061 during a joint activation.

elements slip out of the boom.

DK7ZB also claims that the Yagi performs reasonably well on 70 cm but I have not yet tested this claim. Based on the results of modelling in EZNEC, it looks as if will work nicely, even if it has three forward lobes when used at 432 MHz.

Summary

The design goals were met: a lightweight Yagi and mast combination was constructed. The total mass is 1260 g, with the squid pole alone having a mass of 910 g.

The whole system can be rapidly assembled or disassembled. If not wanting to use the Yagi, the squid pole can be used as a 7 m (or shorter) mast to support a HF wire. One can also mount the HF wire just below the Yagi, but then the HF wire is very low. This may not be an issue, as most HF wires supported by such masts are at low heights with respect to wavelength and are probably acting best for NVIS propagation.

Thanks to Martin Steyer DK7ZB for sharing his antenna designs.

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JOTA in Far North Queensland 2017

Mike Patterson VK4MIK

Wilf VK4ZNZ, Mike VK4MIK, Conner Askey-Doran and Rosa Askey-Doran.

For the past 35 years Malanda has seen Scouts, Cubs and Guides gather with much anticipation for a great weekend of Amateur Radio activity that we know as "Jamboree of the Air". This year was no exception, and saw Scouts and Cubs travel from Malanda, Freshwater, Edge Hill, Goondi, Mission Beach and Gordonvale. Guides were represented from Atherton, and also gladly participated in all activities.

Our arrangements for High Frequency operations were pretty straight forward as we utilized a 13 m mast to hook up our multiband inverted V. This was used in conjunction with our trusty Yaesu FT-897D, 100 watts of power and the call sign of VK4GHL. For added enjoyment and knowledge of this whole experience for the young people, we erected a 25 m Morse Telegraph Line. By way of this and some Morse code keys we showed them how to send messages to each other.

Many were unaware that this was indeed the primary form of communications up here in North Queensland from the earliest of days by way of wire and Oppenheimer poles that still stand scattered up north here. To complement this early form of communications, we also introduced them to Morse Light Signalling. One of the Scout Leaders also had a set of flags for Semaphore to complement our communications station. At a nearby Girl Guide hall there was a modern touch to it all with a JOTI set up to boot.

Sadly the weather Gods had chosen to try and dampen our spirits for the weekend. But despite the fact it had been raining for several days we were not downhearted. And though it was still drizzling, we endeavoured and succeeded with the assistance of the scouts to erect the mast, and antenna. The next step saw us running the 300 Ohm feed line into the Scout hall for connection to the

transceiver with much anticipation of making on air contacts with other Scouts.

With everything set up and checked, we proceeded to call CQ JOTA. The children were rewarded with their first contact at 0011 UTC, by way of Brendon VK4MAC at Malanda, who later visited us to say hello. It was soon obvious to us all that a lot of Amateurs stations were in operation across Australia and New Zealand. It was not all perfect sailing with plenty of QSB, which we explained to the gathered Scouts, Cubs and Guides.

Our preparation for setting up our JOTA Station were rewarded with the following stations being contacted:
VK4SAA op Jeff north of Brisbane, VK4IAN op Ian Brisbane, VK6SBK op Stuart North of Perth, VK4BRC op Alan at Stanthorpe, VK4SBP op Geoff in Brisbane, VK3CUB op Col in Bendigo, VK4AAH op Bob Townsville, VK4FNQ op John at Charters Towers, VK4HH op Bill Lockyer Valley.

From the above list our best effort was indeed VK6SBK at over 3400 km from Malanda, North Queensland. Added to this was the excitement of receiving stations from New Zealand and later on a station from both the UK and USA.

The operators were a good example to the scouts/cubs and guides of how Amateur Radio operates with curiosity and polite manners and frequent use of the Q groups and phonetic alphabet to describe operating conditions and locations. This made it a very pleasant experience for all involved and was much appreciated by us.

At one point we held a brief explanation of radio propagation and what the meteor pings were and the various layers about earth, and the effects of the sun upon conditions. We also touched on sporadic E and tropospheric ducting and its effect on the early radars in World War II and CMEs. It was great to hear the questions from the young folk and it showed an interest was in its early stages. – I then reminisced how that had happened to me when Townsville Amateur Bob Britain invited me into his station way back in the 1960s!

It was very pleasant that many come back several times to talk again as they relaxed. Of particular note was the contact with the station run by Bob VK4AAH at Blue Water, just north of Townsville, where the Guides were set up and the Atherton Guides knew their friends down there. It was pleasing to see the confidence build and co-operation between the youngsters develop. They looked after us very well and ensured that we had lunch and they made us very welcome and expressed appreciation for us doing this event for them.

Personally I found the weekend of JOTA very enjoyable as all too often we only hear bad news about youngsters. The positive influence on Children by way of the Scouts, Cubs and Guides cannot be overstated. The chance that we as Radio Amateurs have each year to perhaps influence these youngsters through the magic of Amateur Radio is indeed highly rewarding for both Operators and the Children.

We from the Tablelands Radio Group have had the pleasant experience to operate with a positive and friendly group of youngsters who are guided by dedicated leaders. Several of the Scouts have their Communications badge which is a credit to their desire to learn new skills by way of Radio. We are now planning and looking forward to next year's JOTA, how about you?

This year's operators were Wilf VK4ZNZ and Mike VK4MIK.

Mike VK4MIK for the Tableland Radio Group.

WIA news

Continued from page 4

with its excellent customer service has come as a surprise and shock. The decision affects lots of repeater owners throughout Australia and beyond.

WIA Radio and Electronics Convention and AGM 2018

The 2018 Wireless Institute of Australia Radio and Electronics Convention and AGM will be held on the Gold Coast, a few weeks after the Commonwealth Games on the weekend of 18, 19 and 20 May, 2018. Most events will be at the Sea World Resort.

Accommodation is available at excellent rates within the resort or in any number of hotels, caravan parks and other locations in close proximity to Sea World Resort.

As is traditionally the case there will be a Friday night dinner, that will lead to a full day on Saturday with a Field Day on the Sunday and many unique tours. The AGM organising committee is keen to hear from those who are interested in participating by providing radio or electronics demonstrations during the Field Day on Sunday 20th. Expressions of interest can be emailed to *VK4APM@wia.org.au*

Whilst the programme is in the process of being finalised and will be published soon, we encourage everyone to begin planning for next year's AGM. Online booking for the event will be shortly available through the WIA website.

It is suggested that now is the time to make plans to be part of the WIA Radio and Electronics Convention and AGM 2018 on May 18-20 2018.

JOTA in Coffs harbour

Russell Ashdown VK2VK

Yet another successful annual Scout JOTA (Jamboree On The Air) was hosted by the Coffs Harbour Amateur Radio Club on Saturday 21 October at the Rex Hardaker Oval, Hogbin Drive, Toormina.

The Guides were encouraged to make voice contact by amateur radio with other Scout/Guide groups around the world. There were several members of the Coffs Harbour Radio Club assisting, with one member teaching Morse code, another member running Foxhunting, where an antenna is used to locate a beacon outside, and others assisting with the radios.

Countries reached by radio included Russia, New Zealand (North and South Island) and various destinations within Australia. Young Guides were chatting to the world about their lives in Coffs Harbour, such as school, pets, teachers(!), favourite past times, sports, games, weather, wildlife - including the wild possum which has made a home in the Club cupboard and radio contacts. A record was kept of all contacts made.

Glenreagh Scout Camp had been earmarked to host 250 older Scouts and Guides from the Coffs area for Saturday and Sunday for further JOTA radio work but that had to be cancelled due to bad weather. All efforts, as a result, were concentrated on the younger Guides, making for a shorter than usual JOTA this year, lasting from 1-5 pm on Saturday, instead of all weekend.

The Guide leaders also held organised groups in the Club House, where the younger Guides learnt Craft skills.

The Coffs Harbour Amateur Radio Club would like to thank Toni Nissan and the rest of the Guide leaders, for their support throughout the years.

The Coffs Harbour Amateur Radio Club at the Rex Hardaker Oval meets every Thursday between 10 am and 2 pm. All interested are welcome to attend or call Russell on 0409 155 123 for further information.

Russell Ashdown VK2VK
President
Coffs Harbour and District
Amateur Radio Club

Photo 1: Les VK2CPC operating as Club call VK2EP and Emily Barter (L to R).

Photo 2: The two Guides together are Jenna Haley and Emily Barter (L to R).

Photo 3: Jenna Haley and Emily Barter (Coffs Harbour Guides) and a friend of the Guides, prospective member (L to R).

The SharkRF OpenSPOT review

Ben Broadbent VK5BB and Peter Jung VK5JP

Introduction: Digital Voice Modes

Amateur radio operators, being what and who they are, will see opportunities and take advantage of those opportunities and this includes adapting, modifying and coaxing all sorts of electronic equipment into the amateur radio service. This includes surplus and cheap radio equipment which now also includes equipment capable of operating in the "digital voice" (DV) modes.

Digital modes in various forms are now quite common across all bands and commercially manufactured amateur radio specific radios that include digital voice have been readily available since the early 2000s. The first on the market was D-STAR, sponsored by the JARL and Icom. Following this was Yaesu with their C4FM System Fusion equipment. Kenwood has also now joined the digital voice market with their D-STAR capable radio. Of course amateurs being amateurs, surplus and cheap DMR radios and ex-government P25 radios are also being programmed and pressed into the amateur radio service. To complete this picture we must not forget the Codec2 digital voice system, primarily developed by David VK5DGR, as an open source digital voice system for HF radios and is being taken up by enthusiastic amateurs all around the world.

One of the big things about these digital voice systems, speaking primarily here about the four most common ones (D-STAR, Yaesu System Fusion C4FM, DMR and P25), is that the many repeater systems that have been installed to support these modes are being networked via the internet.

Photo 1: The SharkRF OpenSPOT.

This allows local users to access nodes and gateways elsewhere around the world, via Reflectors and Chat Rooms or even a direct connection to a repeater gateway. A digital version of the IRLP but with additional features that allow data transfer that can show user information at the receiving end radio via "short messaging" or similar.

Now, the fact is that with all these digital voice networks on the internet out there, these networks are accessible by any amateur with suitable interfacing equipment. This has seen the development of "Hot Spots" a small low powered transceiver interfaced via some sort of digital interface through a computer of some sort and into the internet that accesses the respective digital voice network.

As D-STAR was the first readily available DV system with networking, many amateurs started to experiment and home brew their own DV equipment and this includes non Icom D-STAR radios, repeaters and hot spots. If you type "D-STAR hotspot equipment" into Google, you will get a plethora of returns and you can take your pick as to what you review etc.

Of course all the above information relates to D-STAR, so what about the other "flavours" of digital voice, especially C4FM and DMR? C4FM is rapidly being taken up within the amateur radio

Photo 2: The OpenSPOT in operating mode, the OpenSPOT and the TP Link router affixed on top of the 5 volt battery power pack. VK5BB.

fraternity due to marketing by Yaesu while DMR is also becoming popular due to cheap radios primarily out of China and Korea.

Over to Peter:

Yaesu C4FM

Yaesu C4FM is the newest format on the block and is quickly growing in popularity overseas. Here in Australia, the East and West coast C4FM users have installed a considerable number of repeaters with NT and Tasmania also coming on line. In SA several repeaters were also installed but located in country areas with none in the CBD.

This is being rectified over the next few months with a new repeater to be commissioned. Due to the efforts of Adam VK3ATI and Chris VK3YT we now have an "Australia Repeater Network" with some 24 nodes connected to it.

Unlike D-STAR and DMR that have reflectors attached to the repeaters to communicate locally and globally, the Yaesu Fusion C4FM uses a format known as WIRES-X which is a "Node" (HRI-200) that can either be plugged into the repeater directly through a 10 pin port or can be RF Linked from a remote site.

The HRI-200 is Voice Modem developed by Yaesu to interface between computer/internet and repeater/radio. The cost of the node being reasonable, a lot of amateurs chose to purchase a unit and set up a local hotspot. That was great till you wanted to go portable. You needed a laptop, a digital radio with a 10 pin port and a Wi-Fi internet connection with port forwarding; rather a bulky set-up to go portable.

Hotspots

Until relatively recently, most hotspots were home brewed, though there are quite a few kits on the market that make it easier to build and set up your own hotspot without "having to re-invent the wheel"! Also available is the DVAP (digital voice access point) which needed to be interfaced into a computer which in turn is connected to the internet, thus creating a hotspot that can access the D-STAR networks and many reflectors and gateways.

Amateurs being amateurs of course have been experimenting with home brewed hotspots for these flavours of DV and are

being supplemented by a number "commercially" manufactured "dongles" such as the DV4mini and DV4mini-ambe, which are capable of operating and supporting the four main flavours of DV.

Behind all these variations of hotspot equipment, generally they all need some sort of computer, being either, a desktop, laptop, Raspberry Pi, Arduino or similar single board computer which is connected to the Internet by some means.

SharkRF OpenSPOT

Along comes the SharkRF OpenSPOT! The OpenSPOT is a single stand-alone self-contained hotspot unit with an inbuilt web interface, micro controller and an Ethernet LAN interface that allows direct connection to the Internet without the need to use a separate computer.

The SharkRF OpenSPOT has been developed primarily by a couple of amateurs, in a small company in Tallinn, Estonia (ES) and the unit has been on the market for just over 12 months or so. Software/firmware ongoing support has been very good with feedback to the developers via the SharkRF community forum on the Internet, with firmware upgrades regularly available via the OpenSPOT Web pages and on line User Manual. The user manual is an online document therefore is as up to date as is practicable. (https://www.sharkrf.com/products/openspot/)

The OpenSPOT has a 70 cm low power simplex digital mode transceiver, (20 mW max.) which can be programmed to a 70 cm frequency of your choice thereby allowing you access to the DV networked world via your local portable or mobile DV radio. This inbuilt transceiver then interfaces to the Internet via the inbuilt microcomputer and LAN interface and into a respective "flavoured" amateur DV network.

Just to ensure clarification here, to use a hotspot, you do need a radio that is capable of the DV mode of your "flavour" be it, D-STAR, C4FM, DMR or P25 and this includes using the OpenSPOT.

The beauty of the OpenSPOT (at the time of writing) is that it is capable of supporting D-STAR, C4FM and DMR. It is assured that given time and with firmware upgrades, the OpenSPOT will be able to support other modes including P25.

To use the OpenSPOT all you need is, the OpenSPOT, a 5 volt power source, a DV capable radio and an Ethernet port with access to the Internet, most probably via your home/shack computer network to the Internet. Currently the Open Spot's only access to the Internet is via its Ethernet port, though I believe Wi-Fi connectivity is being considered at some later hardware upgrade.

Effectively, once the OpenSPOT has been set up, all control and commands to connect to the various DV networks can be done via your local DV radio. Once connected to a DV Internet network, you can put out calls or respond to CQ's and have QSO's with amateurs anywhere in the world that has corresponding DV nodes/gateways/repeater systems; a digital version of the IRLP with additional features.

OK so there is a small catch! To set up the OpenSPOT for operation you do need a computer with a web browser. This computer needs to be connected to the OpenSPOT via the Ethernet port and this might be via your local LAN network. With the web browser you call up the Open Spot's dashboard. Within the dashboard, you then set the radio/modem interface receive and transmit frequencies, normally a single common frequency for both receive and transmit but it will allow split frequencies for receive and transmit though you cannot operate in duplex mode, only simplex.

Also within the dashboard, you will configure a number of other parameters to suit your "flavour" of DV. Once all set and saved, you no longer need to have the computer connected to the OpenSPOT. However, if you leave the computer connected, you can monitor the DV network activity and OpenSPOT's communication with both the network and to your radio.

The beauty of the OpenSPOT is that it is self-contained and with its connection to the Internet and with your DV radio, you are on air in a DV mode, connected to the big wide world of amateur based DV. The OpenSPOT can only handle DV modes, not analogue voice as normal FM.

A neat feature of the OpenSPOT is that it talks to you via the radio and tells you in a clear animated voice what it is doing or happening, such as, "OpenSPOT disconnected" or "OpenSPOT connected to R E F 0 2 3 Charlie" plus a number of other messages depending on the status of operations. So, without a computer to monitor operations, the OpenSPOT does communicate via voice announcing its status and connection happenings.

Operating the OpenSPOT in D-STAR mode – VK5BB

OK, as I have invested in D-STAR and iCom equipment and at this time cannot justify additional radios to play with other flavours of DV, I can only comment on my experiences with the OpenSPOT into the D-STAR network world. Within this document, Peter VK5JP will comment on his experiences with the OpenSPOT into the C4FM and DMR world, including "transcoding" between C4FM and DMR.

In setting up my OpenSPOT, one of the first things I had to do and this is strongly recommended on the OpenSPOT web page and user manual, was to upgrade the firmware to the most recent version of the time (April 2017). Following the instructions in the user manual, this was relatively simple; download the latest version of firmware into a folder on my computer, then boot the OpenSPOT into Boot-loader

mode and then initiate the firmware uploading. This took a number of minutes, thereafter the OpenSPOT self-rebooted and all was done. I now had the latest "bug fixes" and an additional feature for D-STAR operation.

Through the OpenSPOT's dashboard, I configured the on-board transceiver's receive and transmit frequencies and I also added the same frequency into my Icom IC-91AD D-STAR portable. I also set the OpenSPOT's configuration for operation on D-STAR. All seemed to be done, now to try it out?

In the D-STAR operating mode, there are two ways of initiating a connection into the D-STAR networks. I can initiate a connection via the dashboard or I can initiate a connection using commands directly from my radio.

Dashboard mode: Through a drop-down box on the dashboard, I can select where I want to connect to. For example, I selected Reflector REF023C, which is a D-STAR reflector primarily used to cover the Australia and New Zealand region, though there are other users from around the world who also may be connected to this reflector. On selecting this reflector and initiating the connection, the OpenSPOT shortly advised, "OpenSPOT connected to R E F 0 2 3 Charlie" meaning we were now connected into the reflector. I put out a call and a VK3 responded and we had a short QSO where comments both ways advised that the audio quality was excellent and it seemed like each end was "next door!" I thanked the VK3 and initiated a disconnect where the OpenSPOT again spoke and advised, "OpenSPOT disconnected".

Radio command mode: The second mode of operating is to control the OpenSPOT connections via commands through my radio. This is the normal way to operate D-STAR network connections and is done by using the UR (your call) address field in the radio. I have set up a number of UR addresses and commands in the UR memories of my radio and all that is required is to set the UR field with the respective address command, key the radio briefly, listen for a response then reset the UR address to CQCQCQ, which is the normal D-STAR QSO address mode.

An example of a connection: I decided I would try a connection to Reflector REF030 Charlie which

Photo 3: The "Kit" in its transport case. It may also be operated from within this case. (Not shown is the Internet Dongle). VK5BB.

is a 2 metre reflector based in the Atlanta area of the USA. I dialled up from the radio memory, REF030CL into the UR address field, (the 'L' is the command to link to the respective address being REF030C). I pressed the PTT, held, let go and listened. (There is no need to voice ID as my call sign is automatically sent every time I PTT) The OpenSPOT responded, "OpenSPOT disconnected" a pause then "OpenSPOT connected to R E F 0 3 0 Charlie", indicating the connection was successful. I changed my UR address field back to CQCQCQ and put out a call. I had a W station come straight back and we briefly discussed the operation of the OpenSPOT, again with crystal clear audio both ways, then said our 73's and I disconnected using the disconnect command in the UR field on my radio.

What a little beauty, it works a treat, my own D-STAR hotspot without all the work in cobbling up my own home brewed unit.

One advantage of using this OpenSPOT hot spot over connecting via my local VK5RWN D-STAR repeater gateway; I am able to connect to reflector networks other than the original D-STAR 'REF' reflectors, such as the newer independent XRF and DCS network reflectors. So the OpenSPOT has allowed me access to most of the D-STAR networks, old and new, though there are plans to upgrade VK5RWN in the near future which will increase local flexibility into the D-STAR world.

Operating the OpenSPOT in C4FM mode – VK5JP

OK, so over the last few years I had invested heavily into the Yaesu C4FM format from the "Shack in a Box" FT-991/FT-991A; a mobile, a hand held etc. I wasn't about to foray into the other digital realms. A chance conversation with Stu (M0SGS) in London over the WIRES-X, a discussion around the "OpenSPOT" was about to change all that. At the time I purchased mine, Ben VK5BB was experimenting with his on D-STAR.

I set up my SharkRF with a TP-Link TL-MR3020 tethered to a Telstra FM901 and a 10 A.hr 5 volt battery with 2 USB ports. The TP-Link 3020 offers port forwarding with direct connection for a Wi-Fi USB Stick or tethering, but the TP-link 802 works just as well. OK, a new version of firmware loaded "srf-osp-1.1-0119.bin"; this new firmware has enhancements for C4FM and DMR.

Right, using my Yaesu FT-2D and $75 HP Notebook with Linux Mint, I logged onto my TP-Link 3020. Using Firefox as the Web browser I logged in to my OpenSPOT. Under 'Connectors' I set up the following:

Active Connector: FCS (Choice under System Fusion is FCS or YSF Reflector)

Modem Receive freq: Example 439.100 MHz

Modem Transmit freq: Example 439.100 MHz

Server / Room number: Here there are 4 Reflectors:

- FCS001,
- FCS002,
- FCS003 and
- FCS004

Each with 100 nodes/rooms labelled from 000 to 099. The rooms are numbered differently to the WIRES-X dash board and not all rooms are represented. Looking through the list I found on FCS004 020 CQ-UK WIRES-X Room (great!) clicked on that. Server Address and Port are automatically filled in.

Call sign: Added mine in the rest was auto filled in.... click, save (Modem setting automatically saved at the same time) and the SharkRF responded.....success!

Put out a test call..... silence and then Stu M0SGS popped up. He reported that all was good with clear audio reported. While I had Stu's undivided attention I tested the FT-991A, the FT-400DR and the FT-100D all with the same excellent results, another quick test this time on Reflector FCS002 090 (America Link WIRES-X) and I again caught up with Stu M0SGS and also Chris K9EQ. Now where did I see the "Australia Repeater link?

The Australia Link is on FCS001 014 and 028??? Which one is active?? I tried 014 and found it was linked to a VK4 repeater. As luck would have it I spoke to Matt VK5ZX who was Truck Mobile at the time and listening to his WIRES-X node at Freeling.

Fantastic, I now have my own portable C4FM hotspot but how do I navigate to the different rooms using my FT-2D or my FT-400DR without the aid of a Computer Screen, Notebook or Tablet? I have explored the following methods which seem to work well.

Method 1:

In the OpenSPOT under "Settings" "Config Profile" there is 5 default settings available: 0 - 4

To set up CQ-UK FCS004 020 go to "Connectors"

- "Edit connector": select "FCS"
- "Server/room number: select FCS0040 020 CQ UK WIRES-X (save)
- Go to Settings: Active Profile slot displayed: 0: default
- Change to profile slot: select 0 to 4 from drop down window. 0: default will be displayed.
- Change Name: Active profile Name: change to 020 CQ UK WIRES-X (save)

The Active profile slot will now read 0 (020 CQUK WIRES-X). The above requires repeating for each of the remaining 4 default settings.

To "Access" each off the default settings the DTMF access is

- *A0 for Default "0"
- *A1 for Default "1"
- *A2 for Default "2" etc.

Each time the "Default" setting is changed the SharkRF OpenSPOT will issue a voice response confirming the setting change after rebooting.

I had no problems accessing the now stored defaults using my FT-2D and using the DTMF mike on my FT-400DR mobile. I believe this will also work with the FT-100DR as well.

Success with going mobile! I was able to access the America Link, CQUK WIRES-X and Australia Repeater Net, all with good results.

Method 2: Using Yaesu FT-2D

Having spoken with Mark VK5ZZ and exchanging ideas on how to best manipulate the SharkRF and the available rooms using our hand-held's, in this case the FT-2D, Mark brought my attention to the set up Menu "Signalling" option 5 DTMF Memory.

Here there 10 DTMF Memory slots available to program up to 10 rooms using the DTMF Access.

- Firstly under signalling the Menu option 4 DTMF Mode needs to be switched from "Manual" to "Auto",
- Then in Menu option 5 DTMF Memory you can store the individual DTMF tones for each of the sites listed on the WIRES-X Browser: - FCS001; FCS002: FCS003 and FCS004. Example:

1. *A1 This is my FCS Profile in the OpenSPOT
2. *202 FCS reflector 2, room 02 - Alabama
3. *223 FCS reflector 2, room 23 - Minnesota
4. *290 FCS reflector 2, room 90 - America Link
5. *420 FCS reflector 4, room 20 - UK Link
6. *128 FCS reflector 1, room 28 – Australia

Method 3:- Using Yaesu FT-2D, FT-70D and FT-400DR

Playing around with the new Yaesu FT-70, Eugene VK5ZA wanted to know if it would work with his SharkRF OpenSPOT. So I punched the DTMF tones in for Wisconsin - 049, the Shark responded! Thinking it was a coincidence I punched in 2 digits for CQ-UK (20), again the Shark responded and we were on CQ-UK! One more try, America Link (90) punched in 2 digits, yes only 2 digits and the SharkRF did the rest. I was able to replicate the above settings using the FT-2D and the FT-400DR.

OK, one last test on DMR. Using the # key I entered the DTMF Codes for the US 3101 while I was on the Australian server 5051. The SharkRF toggled to the US DMR Repeater group, WOW! I chose a couple more, Belgium, Scotland, UK and more..... all worked!

However, I did discover a couple of issues though; one was the FT-70D on some sites puts up a 10 digit code *****H5RG6, the other is toggling back from DMR to Fusion.

This third method is all new at the time of writing and warrants more experimenting. It has certainly opened my eyes as to how flexible and the ease of use the SharkRF OpenSPOT is as a Hot Spot. The above 3 methods are certainly not definitive and is open for you to explore, so in the meantime have fun experimenting.

Operating the OpenSPOT in C4FM to DMR mode – VK5JP:

Now one assumes here that you have some knowledge of DMR and how it works. As I am still learning about DMR BrandMeister and the OpenSPOT I will keep this short.

Make sure the "Advance" Mode is ticked before you start.

Connectors: In connectors select Home-brew/ MMDVM

Modem RX TX frequency: eg: 438.800MHz

Protocol: Select Home-brew

Call sign: Enter your call VK5xxx

DMR ID: You will require a DMR ID: South Australia begins with 5055000; go to the DMR Web site to obtain number, usually issued within 24 hr.

Auto connects to ID: for Australia it is 505: - select "Group call"

Route C4FM Calls to ID: enter 505 select: "Group call"

Reroute DMR TG9 calls to ID: enter 505: Select: "Group call"

Click on "Save", the settings will be saved and an option to ignore or swap modem settings will pop up. Click on "ignore" as the modem needs to be on C4FM.

If all is correct push the PTT button on your transmitter and under "Status" you should see the following:

To: 505 (Australia) Group DMR voice call from modem At: - "time"

From: VK5... Name 5055000, Adelaide, South Australia.

On my first call from C4FM I received confirmation from VK3 and VK6 to confirm that audio received was crystal clear on DMR. When asked which DMR radio I was using, I was happy to reply that I was using a Yaesu FT-2D on digital narrow through the Shark RF. Since then I have used my FT-400DR and FT-70D with excellent results received for both.

I must thank Brendan VK5FBFB for the help with BrandMeister and the settings on the SharkRF Talk Groups.

Using the OpenSPOT as a portable Hotspot – VK5BB

One of my interests with using D-STAR is demonstrating D-STAR to those who show an interest, with the aim of showing that D-STAR is not hard to use, is very flexible with the connectivity options available and therefore, you can "talk to the world" using amateur radio digital voice networks.

Previously, where access to the local D-STAR repeater system was either not reliable or not available, I have used my DVAP, laptop and 4G Internet Dongle, but now with the OpenSPOT, it allows for a very simple and compact portable hotspot. Effectively all you need is portable Internet access which these days are very simple via any of the major Telcos and a portable Internet Dongle of some sort.

As long as you are in range of a 3G/4G signal, you have access

Photo 4: VK5JP's OpenSPOT setup, operating from within its transport case.

to the amateur radio digital voice networks. You do not need to be in range of any local amateur radio base or repeater system. Great when you are travelling and are outside of the local repeater footprints and HF propagation is just not there!

OK, my set up is not a new concept and I drew my ideas from watching a number of You Tube clips which gave me a variety of ideas how to go about setting up the OpenSPOT as a portable digital voice hotspot.

What do you need? Well, this is my list:

- The OpenSPOT,
- Portable Internet access, a 3G/4G dongle- mine a Telstra Netgear Aircard with Wi-Fi,
- An Ethernet port for the OpenSPOT to connect to. In my case I selected the TP Link WR802N portable router, cheap, less than $30. One reason I selected this unit was that it can be set up in "client mode" which allows it to connect via Wi-Fi to my Netgear Aircard as a client and therefore the on board Ethernet port allows connection to the OpenSPOT.
- Portable power source, a 5 volt power pack with 2 USB ports, many can be found via eBay, but watch what you buy as there are some ridiculous claims re the capacity of these units and I don't think the versions with the solar cells are worth it?
- Transport case, in my case a small "pelican style copy" from Jaycar.

The TP link portable router needs to be configured appropriately, into 'Client mode', which is the opposite to the normal 'Access Point mode' to allow it to connect via Wi-Fi to my Internet dongle and making the Ethernet port look like a source connected to the Internet. The user manual was a little bit obtuse here but we worked it out.

With the router set up all that was needed is to plug it all together, linking the Ethernet ports on the OpenSPOT to the router and plugging in power to both units and to switch on the 4G Internet dongle, allowing it to connect to the big wide world of the Internet. All done!

Once the OpenSPOT "saw" the Internet, it was active and connected to my last connection. From here I am able to command the OpenSPOT via my D-STAR portable radio to connect into any of the D-STAR networks and monitor

traffic or put out calls or respond to any incoming calls, all in a portable mode without the need to access a local D-STAR repeater or gateway.

The beauty of this set up; I can be travelling or mobile or anywhere and as long as I have good access to the Internet via the 3G/4G telco networks, I have independent access to the D-STAR networks and gateways or repeaters. This set up is Magic when demonstrating D-STAR operation as you use all the standard practices used for D-STAR operation when connecting or disconnecting into the D-STAR digital voice networks, the exact same as if going through a full blown local D-STAR repeater and gateway.

Peter's description of how he has set up his OpenSPOT was based on our discussions regarding my portable experimentation and he has followed through with his in the "portable mode" for his experimenting with C4FM and DMR. It really is simple to do as per the two examples demonstrated within this document.

Currently I am investigating suitable antennas for 4G operation in a mobile set up within my car. For true 4G operation, the 4G dongles use two antennas but if only one antenna is available you do not get the full advantage of 4G. Yes it does still work though and works very well where I have tried it out.

Summarising: Using the OpenSPOT for D-Star, C4FM & DMR

The SharkRF OpenSPOT is good value for money and certainly bridges the gap between Yaesu Fusion C4FM and DMR. This includes access to the D-STAR networks too. The flexibility of being able to go mobile and not be tethered to local repeaters is a great feature but there are some limitations.

Firstly, there are blind spots with the local and country Telco towers; Telstra seem to have the best coverage there. The use of external antenna on the Telco Wi-Fi Dongle could help minimise the drop outs.

Secondly, the available rooms on the WIRES-X are those that had bridging software to the Reflectors on the SharkRF; so the amount of Rooms/nodes are minimal but fortunately the most common rooms are available, though the third method seems to have increased the "user friendliness" of the OpenSPOT.

Access into the D-Star networks is easy as you can select any of the D-STAR gateways or reflectors from linking commands from within your D-Star radio, either from the lists in the new generation radios or from pre-programmed memories in the older units. It really is simple to use once you understand the "addressing" requirements within the UR address field.

The DMR landscape is forever changing, as new repeaters and new operators appear and older systems are phased out. The code plug needs to be updated regularly to add the new data to the system.

The biggest plus though, is the ability to use a Yaesu Fusion Radio to operate DMR and of course the converse DMR radio to operate on Fusion C4FM. Unfortunately, there currently is no "transcoding" interface between D-STAR and either C4FM or DMR using the SharkRF OpenSPOT.

Of course, if you don't have access to local repeaters on any of the digital voice modes, with the SharkRF OpenSPOT connected to the internet via your own "shack" internet connection, this gives you access to the big wide world of amateur radio digital voice systems, currently based around D-Star, C4FM and DMR.

Aaah! Isn't amateur radio great? Always something new to investigate, learn about and put into service as another facet and mode of Amateur Radio!

Happy "Internet" DXing through your SharkRF OpenSPOT!

73

Ben VK5BB and Peter VK5JP.

Why use FT8?

Ron Cook VK3AFW

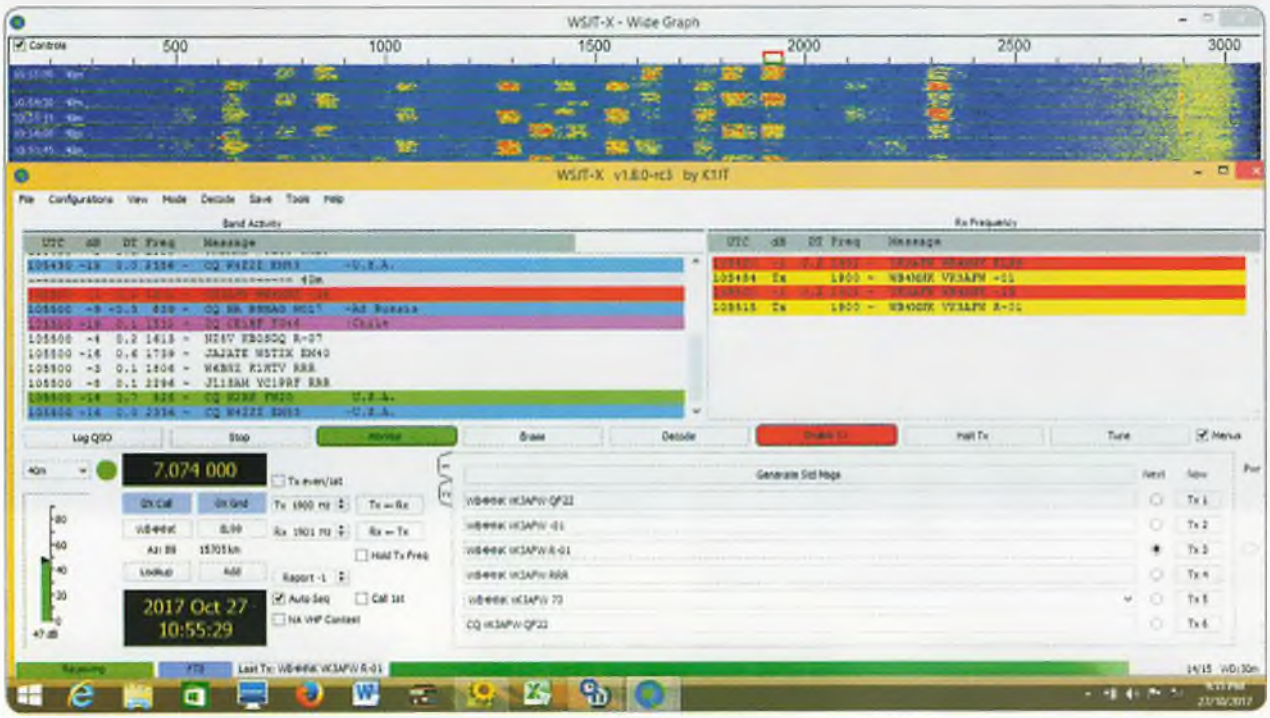


Figure 1: A copy of the screen in my shack after working a station on 40 m.

FT8 is the latest and most popular of the digital modes with more people using it than any other mode. A description of it appeared in the October issue of *AR*. In my opinion, it is as big a change as the introduction of telephony to the amateur bands.

If you don't want to work DX, then FT8 probably isn't for you.

However if:

- You want to work dx even though propagation is down
- You have a significant noise level at your QRH making it impossible to work weaker dx signals
- You want to work DX but you don't have or don't want to use a linear
- You want to work DX and only have a modest antenna
- You want to work DX but your CW skills are not up to it
- You have a hearing problem with call signs on SSB DX
- You don't want a 599 report no matter what
- You don't want to record QSOs on paper scraps for later transcription

Then FT8 is the answer to every one of these.

You get more than 10 dB improvement over CW and the screen messages are correct, or they do not appear.

The reports are the ratio of the received synch pulse to the noise in a 2 kHz bandwidth. 0 dB in my opinion is about S8 (Strong signal) on the pre S meter reporting scale.

You only need basic keyboard skills and a little common sense.

Some comments

Before using the program, READ THE USER INSTRUCTIONS and the version updates. Please.

Use the latest version. Check on Joe Taylor's home page or the Sourceforge software site.

FT8 requires 15 seconds for each receive or transmission interval. The fastest QSO time is thus 1 minute, which is very slow compared to DXpedition CW rates but there should be no need for repeats unless the signal fades completely during an over.

FT8 does keep a log but it isn't a substitute for some of the

```
---------------------------------- 17m
060945 -10  0.2 1467 ~  RW0LT A5A +04
060945 -19 -0.2 1844 ~  CQ DX EW1KP KO33   !Belarus
---------------------------------- 17m
061000 -16  0.2  341 ~  A5A VK5GR PF95
061000  -5  0.2  461 ~  CQ JA4GOC PM54      ~Japan
061000 -21 -0.4  907 ~  JA2XYO RG4F +02
061000 -17 -0.0 1078 ~  CQ JG1ERW PM95       Japan
061000 -10  0.4 1397 ~  A5A JE6HJT -14
061000  -7  0.2 1467 ~  A5A RW0LT R-10
```

Figure 2: Stations received in one 15 second window on 18 MHz.

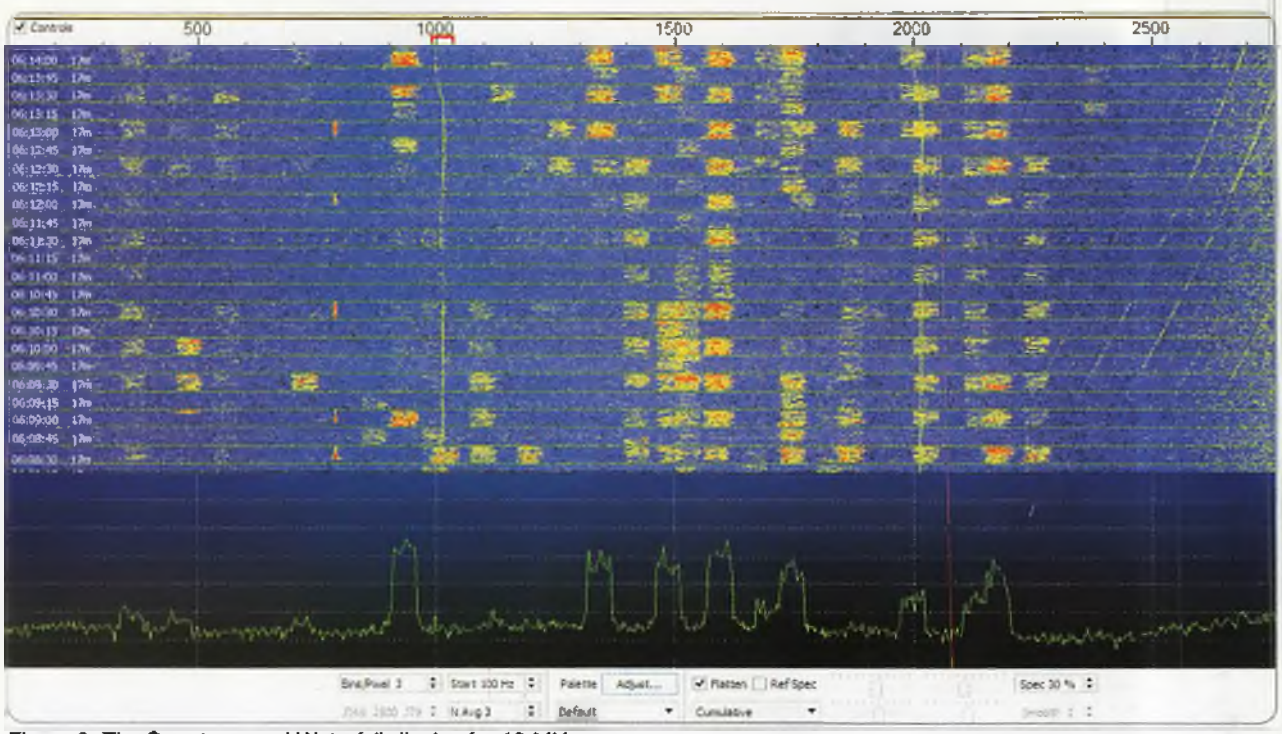


Figure 3: The Spectrum and Waterfall display for 18 MHz.

sophisticated logging and DXCC recording programs that are out there. I've given up on the paper log and scraps of note paper.

If you want to rag-chew then you need to choose another mode. FT8 like the other JT weak signal programs has a 13 character free text limit per transmission.

If you have a 100 W rig, set it to no more than 50 to 75 W and make sure you are not driving any of the audio stages close to clipping. I've seen signals with more than 1 dB of their signal being wasted in unwanted sidebands. Don't run with all controls hard right. If you must run a linear, remember 120 W is the maximum legal output in VK without a specific permit.

Many audio interfaces are prone to RF feedback. Keep the RF out of the shack and use proper grounding. You may need to open the box to find a ground connection and then add a terminal. Some bypassing might still be necessary. Reducing power can also help reduce the problem. Unplug the microphone.

Disable your "Windows Sounds" - they cease to be amusing once you have heard then on the band three or four times day. Or disable the TX function of your interface until FT8 is up and running.

Do use a program such as Dimension 4 to synchronise your computer clock. I start a session with several manual time sets until I get an error reported of under 0.05 seconds. Use a local time source to minimise possible asymmetry in the link delay times. Definitely disable the "feature" in Dimension 4 that uses a different time source for each synchronisation.

If you don't transmit and receive in intervals accurate to 1 second or better, then the decoding is likely to fail.

Until you have experience, stick to the standard message format and sequence. Watch for hiccups in the sequencing due to the other guy sending something odd. You can type in the call of the other station and then click on "Standard Messages" when double clicking on his call in the "decoded" window.

A feature of the rc2 and later versions of the software intended to minimise QRM cancels the "enable" setting of your transmitter if the target call sign calls someone else. Be patient and wait for the 73s to be sent before trying another call.

FT8 is a DX mode so expect all the good, bad and terrible operating behaviour as with CW and SSB. Don't engage in tit for tat, just move up or down the band and keep on working.

There is a downside to this fantastic new mode. FT8 has become a victim of its success. The digital modes propagation reporter, PSK Reporter, has become overloaded with updates taking 4 hours to make it to the summary, if at all.

It is hard to find a clear channel on 40 m or 20 m even though there are nominally 40 channels available. 30 m and 17 m are useful alternatives but they can get very busy too. 15 m is open most days and 12 m and 10 m show brief periods of activity. Don't neglect 80 m for night time DX. The present allocation of 2 kHz will have to be doubled and quadrupled as band conditions improve.

FT8. Better than sliced bread.

SOTA & Parks

Allen Harvie VK3ARH

Photo 1: View from Phil VK2JDL's operating position on Mt Tomah.

Phil mainly activates during the week, as the work roster permits spending weekends with his wife. SOTA is his form of exercise and has noticed a huge improvement in fitness. Other benefits include operating as radio from home is very limited as the Strata Title forbids outside antennas. An Alex Loop standing in the front driveway (a hard way to make contacts outside of Summit to Summits) is deployed to support chasing from home.

Phil reports he has had the pleasure of talking to a great bunch of people, who have made his efforts worthwhile and helped improve myself.

Congratulations to Phil on achieving Mountain Goat. It is long but worthwhile journey. Looking forward to contacting you from a peak soon.

Phil VK2JDL makes SOTA Mountain Goat at Mt Tomah VK2/CT-043 26/10/2017.

Congratulations to Phil VK2JDL for achieving SOTA Mountain Goat during an activation of Mt Tomah VK2/CT-043. Phil has done 191 activations to reach MG and is the 21st VK MG.

Though Phil's interest in amateur radio started before moving to New Zealand, it was around 1991 as ZL1TSC that the first licence was gained. After moving to the USA he passed the General licence and had the call sign KG6CSM. Moving back to Sydney in 2005, he then obtained the current call sign of VK2JDL. Many years drifting and fooling around on digital modes (mainly packet BBSs, thank Gerard VK2IO).

In 2014 whilst laid up with burns to both feet, Phil discovered SOTA in the WIA's *Amateur Radio* magazine; after checking out the SOTA websites he decided to give it a go. After an abortive attempt with PSK on Mt Tomah, where only a single contact made before nearly being blown off the mountain in an electrical storm, he returned a week later and gave voice a go. From that point on was hooked.

Photo 2: Christine VK3FCEK, Tony VK3CAT, Paul VK3HN, David VK3IL, Marc VK3OHM, Derek VK3KX, Glenn VK3YY and finally Andrew VK3BQ. Closest to the camera are Andrew and Christine's sons.

VK3 SOTA Dinner

Whilst a small group attended (Photo 2), the conversations were full around recent activations, upcoming plans and different radio options. Tony's French trip (*https://vk3cat.wordpress.com/voyage-francais-en-2017/*) and Glenn, David and Andrew's trip to Mount Kent and environs (*http://vk3il.net/mt-kent-mt-dawson-and-picture-point-range-78-october-2017/*). I used the opportunity to review proposed activations and was directed to a better route to pick a first activation of VK3/VE-106 (*https://vk3hra.wordpress.com/?p=2871*)

Parks

VKFF State/Territory representatives

Paul VK5PAS has been running the VKFF and WWFF program in Australia since March 2013. The program has exploded in popularity, with park activators now being heard almost every day of the week (even in the middle of the week). Well done Paul.

To spread the work load, State/Territory representatives have been assigned for the VKFF program. They will be responsible for uploading logs for activations from their respective State/Territory, and also processing/forwarding award applications/certificates for amateurs from their respective State/Territory:

- Ian VK1DI.
- Gerard VK2IO.
- Mick VK3GGG.
- Mark VK4SMA.
- Paul VK5PAS (VKFF National co-ordinator).
- Hans VK6XN (will also be doing VK8).
- Jonathan VK7JON.

The results of an activation are sent to the contact for the state in which the park is located. If you activate a park in VK1 (no matter what your call may be), the log will now be forwarded to Ian VK1DI. If you activate a park in VK2, then Gerard VK2IO is your contact and so on.

Photo 3: The VK4WIPouts team.

More info and contact details can be found on the WWFF Australia website at: *http://www.wwffaustralia.com/vkff-team.html*

The 2017 VKFF Teams Championship was held on Sunday 22nd October.

Not to be confused with the new VKFF team, the VKFF teams event encourages amateurs to activate parks as a team. Over a 6-hour period, the teams compete against each other with the goal of obtaining the most number of contacts, whilst activating from a qualifying VKFF park.

There were six teams who ventured out:

- 'The Special Ks' comprising Les VK5KLV and Peter VK5KPR
- 'The VK4WIPeouts' comprising Mark VK4SMA and Murray VK4MWB
- 'Team Kookaburra' comprising Mick VK3GGG and Tony VK3XV
- 'Team Onka' comprising Mike VK5FMWW and Larry VK5FHLR
- 'Penguin Pirates' comprising Hans VK6XN and Phil VK6ADF
- 'The 2 Robbies' comprising Rob VK4AAC and Rob VK4FFAB.

Richard from SOTABEAMS has offered a WSPRlite for the winners of the QRP section in this Sunday's VKFF Team Championship. QRP being 5 watts or less.

Overall winners were the Walkie Talkies with 197 QSOs. They will receive a glass etched trophy each and a winner's certificate.

The winners of the QRP section were The Special Ks. They will receive a WSPR Lite, kindly donated by SOTABEAMS, and a winner's certificate for that section.

The Foundation section was won by Team Onka. They will receive a $50.00 book voucher from Pages of Cobram and a winner's certificate for that section.

Thanks to the sponsors, the teams for venturing out and the chasers for contacts.

Upcoming

Saturday 10 and Sunday 11 March 2018. Fifth year anniversary activation weekend for the VK5 National Parks & Conservation Parks Award. Please send Paul an email with details of your intended activation/s to vk5pas@wia.org.au

You can also check out the Upcoming Events & Calendar page on the WWFF Australia website: *http://www.wwffaustralia.com/upcoming-events--calendar.html*

Third Annual SOTA SUMMIT @ Mt Hotham

Brian McDermott VK3MCD

Following on from the previous SOTA SUMMIT tours of Mt Hotham in 2016 and 2017, Brian McDermott VK3MCD is planning another event in 2018. The purpose of the HOTHAM SUMMIT is to activate as small groups a number of local 8 and 10 point summits around the Victorian High Country from Friday 2 through until Monday 5 February. In past years, most participants manage to activate around 10 summits.

Brian has spent the last four winters at Mt Hotham and has an excellent knowledge of how best to access the local summits.

Of course the event provides a great base for partners with excellent bush walking opportunities around Mt Hotham with the Huts and Mt Loch walks on offer. For those amateurs wishing to Chase those activating, Mt Hotham provides an ideal base. HF and VHF facilities will be setup at our accommodation to allow contact with our Activators.

For those new to SOTA this presents an opportunity to join the SOTA Goats and SOTA Shack Sloths at work.

The event presents a great opportunity to share stories of good and bad activations, showcase how each of us are setup and the process we go through to activate. A highlight in prior years has been the collective sunset activation of Mt Hotham next to the fire tower. The sunset over Mt Buffalo is generally spectacular.

Propagation in past years has not been ideal; this year we are hoping for improved conditions.

The weekend will be based at Anton Huette ski lodge at Mt Hotham, details are currently being finalised and will be published via the SOTA Australia Group on Yahoo.

Please feel free to lodge an expression of interest via *bcmcdermott@tpg.com.au* or ring Brian direct on 0425 721860.

The Melbourne SOTA Conference

Under the guidance of Ron Cook VK3AFW, Moorabbin and District Radio Club (MDRC) are once again planning the Melbourne SOTA conference at the MDRC Club Rooms on Saturday 17 February 2018. The format of the conference is generally a 9:30/10.00 am start with a BBQ lunch around 1 pm. A show and tell follows in the afternoon. MDRC will have a small shop operating with stocks of Squid Poles, RG174 coax with BNC/UHF plugs fitted and coax winders.

Ron is currently seeking expressions of interest from those wishing to present.

In prior years we have had updates on the progress of SOTA in Australia including the latest updates to the summit database, presentations on kits, new radios, antennas, logging software, etc.

This is an ideal opportunity for both activators and chasers to meet face to face and to share stories on the summit that got away.

Presentations from past conferences are available on the SOTA Australia Yahoo group website.

Further information on presenters will be published via the SOTA Australia Yahoo Group closer to the date. Please feel free to drop Ron Cook an email (*vk3afw@optusnet.com.au*) should you wish to consider presenting.

DX Talk

Luke Steele VK3HJ

The sun was generally quiet throughout October but a recurrent coronal hole solar wind stream resulted in geomagnetic storms in the middle of the month. The only solar activity of note was the return of R2682 (24 September - 6 October) that didn't do much last time around but on the rotation before (29 August - 10 September) as R2673, it produced a number of X-class flares. This time, numbered R2685, it produced a M1.1 flare just as it rotated into view late on 20 October but nothing more.

DX noted in October was H40GC Temotu Province of the Solomon Islands, A5A Bhutan, VU7T Lakshadweep (Kavaratti Island), VK9XI Christmas Island, VK9CI then VK9CZ Cocos-Keeling Islands and JG8NQJ/JD1 Minami Torishima. The CQ WW SSB Contest was on over the last weekend of October and good activity was reported, with many new countries worked by some of our newer DXers.

Thanks to Lawrie VK5LJ for his DX news from the Barossa Valley:

"With a 100 watts and wire dipoles at 10 m high, I've made the following DX contacts on CW during October and the first couple of days in November.

On 19 October at 1100 UTC, a little run of stations on 80 m from Japan, Canada and the United States including JE2FJI, W1MK, K3RA VE3DZ, VE3MM and N3MVX. Rob W1MK is quite often on 3.508 and receives quite well, so put out a call or two, you might be surprised.

21 October at 0720 UTC, a couple of stations worked in Europe on 20 m including EA2KV and SM6NZA.

1 November at 1120 UTC, I worked VK9CZ in Cocos-Keeling Island and W3WH in Houston, Pennsylvania on 40 m.

2 November at 1010 UTC, a mixed bag with VK9CZ in Cocos-Keeling Island on 20 m, W1MK on 80 m and A5A from Bhutan on 17 m. There were interesting conditions that night as I could hear the station from Bhutan easily but none of the stations that he was working.

3 November starting at 1952 UTC, I decided to put out a few calls during the morning grey line on 30 m with the following 18 stations worked in about an hour. Z37CEF from Macedonia started the run and was just workable in the noise, then E74E, ON4PQ, PA7RA, PA3AM, S57V, DL4MO, RM2D, DK7AH, IK5BCM, IW1ARB, SP7BCA, IZ1LBG, PE5ROS, OK1DN, OK1ATS, PA3AKL, IU5ASA. Signal strengths gradually increased to good levels with 579 both ways at the peak, before the band dropped out at around 2100 UTC."

Upcoming DX

DXpedition activity scheduled for December and January includes the following.

HC8LU **Galapagos** (SA-004), 29 November - 8 December. A team of four Argentinian operators will be on air from San Cristobal Island on 160 - 6 m, mainly SSB, and a range of digital modes. QSL via IK2DUW. For more information see website. *https://hc8lu.blogspot.com.au/*

XW4ZW **Laos**, 3 - 8 December. Ken K4ZW will be operating Low Bands from near Vientiane. He has made a special effort with receiving antennas and location to improve reception. QSL via LotW or K1SE. See Ken's *QRZ.com* web page for more information.

V85/KC0W **Brunei**, 3 - 8 December. Tom KC0W will be operating on 80 - 6 m CW and FT8. QSL via KC0W direct.

ZC4MK **Cyprus** Sovereign Base Area, 5 - 12 December. Adrian G0KOM will be operating 40 - 10 m from the UK Sovereign Base Area on Cyprus. Try and work this one if you don't have ZC4, as there have been no active resident operators there after the passing of Steve ZC4LI a few years ago. QSL via LotW or via G0KOM bureau or direct. See Adrian's *QRZ.com* web page for more info.

R150ANO **South Shetland Islands** (AN-010), 1 January - 31 March. Alex UA1OJL continues occasional activity from Bellingshausen Station, King George Island, all bands, CW, SSB, and digital modes. QSL via LotW.

3Y0Z **Bouvet**, on air late January. A large team of operators is getting ready for a planned departure from King George Island on 13 January. The earliest they expect to arrive at Bouvet is 23 January, after which they will need a few more days to get equipment and personnel ashore and stations operational. See their website for news. *http://www.bouvetdx.org/*

Cocos Island, which one?

With the recent activity from Cocos-Keeling, your author learned there was another "Cocos Island". There is a Cocos Island off the coast of Costa Rica and this is also a separate DXCC entity (TI9). One reason our Indian Ocean territory of Cocos-Keeling wasn't just "Cocos

Island" is to distinguish it from yet another "Cocos Island" in the Bay of Bengal near Myanmar. Discovered in 1609 by Captain William Keeling of the East India Company, "our" Cocos-Keeling islands have a most interesting history. John Clunies-Ross operated coconut plantations there with a Malay workforce, the descendants of whom still live there. The islands have been owned privately by Clunies-Ross, annexed by the British Empire and administered by the Governor of Ceylon, then by the Colony of Singapore before becoming part of the Commonwealth of Australia on 23 November 1955. Charles Darwin visited there in 1836 as part of an expedition to take soundings of the atoll and Darwin used these results to support his theory of atoll formation. The first naval confrontation of WW1 took place there between the German raider Emden and HMAS Sydney. Read about the most interesting history of Cocos-Keeling Islands at: *https://en.wikipedia.org/wiki/Cocos_(Keeling)_Islands*

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 and from newer DXers. *vk3hj@wia.org.au*

73 and good DX,
Luke VK3HJ

THE WIRELESS INSTITUTE OF AUSTRALIA ABN 56 004 920 745

Election of Directors - Call for Nominations

Pursuant to clause 14.1 (c) of the Constitution the WIA Board has determined that the election of directors shall be conducted by postal ballot.

Three directors retire at the conclusion of the next Annual General Meeting which will be held in the Gold Coast Queensland, 19th May 2018, namely Peter Clee, Philip Wait and Brian Clarke. Each retiring director is eligible for re-election.

Nominations are called for from persons seeking election as a director of the WIA.

A director must be a voting member of the WIA and must hold an Australian amateur radio licence.

Any person wishing to nominate as a candidate for election as director of the WIA must deliver or cause to be delivered to the Returning Officer by not later than 31 January 2018:

A statement signed by the candidate signifying their willingness to be a candidate for election as a director together with; the full name, age, occupation and callsign of the candidate, and such other biographical details or other information as the candidate wishes to accompany the ballot papers, but in all not exceeding 250 words.

Delivery to the Returning Officer may be made by hand when the WIA national office is open at:

Unit 20
11-13 Havelock Road
Bayswater
Victoria 3153

or by mail to:
PO Box 2042
Bayswater
Victoria 3153

Nominations received by facsimile or by electronic means cannot be accepted.

John Marshall
WIA Returning Officer

WIA Awards

Marc Hillman VK3OHM/VK3IP

Below are listed all New awards issued in Oct 2017, plus all updates to DXCC awards.
Go to *http://www.wia.org.au/members/wiadxawards/about/* to use the online award system.

New awards

Antarctic

#	Call	Name	Mode
99	VK6WX	Wesley Beck	Open
100	VK6WX	Wesley Beck	Phone

DXCC Multi-band (1)

#	Call	Name	Mode	Band	Count
185	VK2BYI	Christopher Fredericks	Digital	20 m	131
186	VK4CC	Colin Clark	Digital	20 m	104
187	VK2IUW	Hilary Bridel	Open	20 m	101

DXCC Multi-band (3)

#	Call	Name	Mode	Band	Count
111	VK2CA	Allan Meredith	Digital	20-17-15 m	419

DXCC Multi-band (7)

#	Call	Name	Mode	Band	Count
39	OH8LXT	Veikko Pennala	Open	40-30-20-17-15-12-10 m	1523

DXCC Multi-mode (Digital)

#	Call	Name	Count
71	VK3LDB	David Burden	107
72	VK3VM	Stephen Ireland	100
73	VK9VKL	Clifford Tindall	105

DXCC Multi-mode (Open)

#	Call	Name	Count
459	VK3VM	Stephen Ireland	100

DXCC updates

DXCC Multi-band (1)

#	Call	Name	Mode	Band	Count
168	VK3FZ	Roger Stafford	CW	10 m	120
3	VK2CA	Allan Meredith	Digital	20 m	178
54	VK3EW	David McAulay	Digital	20 m	188
146	VK2RT	Bruce Beresford	Digital	20 m	128
185	VK2BYI	Christopher Fredericks	Digital	20 m	131
6	VK2CA	Allan Meredith	Open	20 m	314
61	VK4CC	Colin Clark	Open	20 m	239
143	VK2BYI	Christopher Fredericks	Open	20 m	146
145	VK2RT	Bruce Beresford	Open	20 m	141
166	VK3FZ	Roger Stafford	Open	10 m	206
5	VK2CA	Allan Meredith	Phone	20 m	273
39	VK6WX	Wesley Beck	Phone	20 m	162
62	VK4CC	Colin Clark	Phone	20 m	187
167	VK3FZ	Roger Stafford	Phone	20 m	174

DXCC Multi-band (3)

#	Call	Name	Mode	Band	Count
18	VK2CA	Allan Meredith	CW	30-20-15 m	533
24	VK3EW	David McAulay	CW	30-20-17 m	885
66	VK3EW	David McAulay	Digital	30-20-15 m	481
17	VK2CA	Allan Meredith	Open	20-17-15 m	878
102	VK3FZ	Roger Stafford	Open	20-15-10 m	576
108	NS3L	Stephen Nordahl	Open	20-15-10 m	600
2	VK2CA	Allan Meredith	Phone	20-17-15 m	711
68	VK3MEG	Steven Barr	Phone	20-15-10 m	495
96	OH8LXT	Veikko Pennala	Phone	20-17-15 m	475
103	VK3FZ	Roger Stafford	Phone	20-15-10 m	460
109	NS3L	Stephen Nordahl	Phone	20-15-10 m	434

Participate

Ross Hull Memorial VHF/UHF Contest January (Rules on page 44)

Summer VHF/UHF Field Day Contest 13 - 14 January

DXCC Multi-band (5)

#	Call	Name	Mode	Band	Count
20	VK2CA	Allan Meredith	CW	40-30-20-17-15 m	828
21	VK3EW	David McAulay	CW	40-30-20-17-12 m	1369
35	VK7CW	Steven Salvia	CW	40-30-20-17-15 m	1125
66	OH8LXT	Veikko Pennala	Digital	20-17-15-12-10 m	848
79	VK3EW	David McAulay	Digital	40-30-20-17-15 m	711
47	VK3SX	Bob Robinson	Open	40-20-17-15-10 m	947
65	OH8LXT	Veikko Pennala	Open	20-17-15-12-10 m	1210
72	VK3FZ	Roger Stafford	Open	30-20-15-12-10 m	846
77	NS3L	Stephen Nordahl	Open	20-17-15-12-10 m	919
19	VK2CA	Allan Meredith	Phone	20-17-15-12-10 m	1064
52	VK3SX	Bob Robinson	Phone	40-20-17-15-10 m	928

DXCC Multi-band (7)

#	Call	Name	Mode	Band	Count
9	VK2CA	Allan Meredith	CW	40-30-20-17-15-12-10 m	1099
10	VK3EW	David McAulay	CW	80-40-30-20-17-15-12 m	1760
14	VK7CW	Steven Salvia	CW	40-30-20-17-15-12-10 m	1476
6	VK2CA	Allan Meredith	Open	40-30-20-17-15-12-10 m	1772
35	VK3FZ	Roger Stafford	Open	40-30-20-17-15-12-10 m	1072
36	NS3L	Stephen Nordahl	Open	40-30-20-17-15-12-10 m	1153

DXCC Multi-band (9)

#	Call	Name	Mode	Band	Count
12	VK3EW	David McAulay	CW	160-80-40-30-20-17-15-12-10 m	2079

DXCC Multi-mode (CW)

#	Call	Name	Count
202	VK2CA	Allan Meredith	305
225	VK4CC	Colin Clark	182
244	OH8LXT	Veikko Pennala	285
249	VK3FZ	Roger Stafford	224

DXCC Multi-mode (Digital)

#	Call	Name	Count
19	VK2CA	Allan Meredith	244
20	VK3EW	David McAulay	281
54	OH8LXT	Veikko Pennala	287
56	VK2BYI	Christopher Fredericks	142
58	VK2RT	Bruce Beresford	140
61	VK4CC	Colin Clark	137
65	VK3FZ	Roger Stafford	121

DXCC Multi-mode (Open)

#	Call	Name	Count
401	VK2IUW	Hilary Bridel	122
421	VK4BRT	Benjamin Beresford	154
431	VK2RT	Bruce Beresford	154
440	VK2BYI	Christopher Fredericks	161
444	VK5GR	Grant Willis	154
451	VK3FZ	Roger Stafford	300
457	NS3L	Stephen Nordahl	272
458	VK3LDB	David Burden	108

DXCC Multi-mode (Phone)

#	Call	Name	Count
591	VK4CC	Colin Clark	225
617	VK3FZ	Roger Stafford	257
620	NS3L	Stephen Nordahl	215

TAC Notes

John Martin VK3KM

At their latest meeting, the IARU Region III directors agreed to consider how to bring the Region III band plans into closer alignment with the Region I and II plans. The issue will be revisited again at the next Region III Conference next year.

Since the changes made earlier this year, our HF band plans already agree very closely with the Region III plans, and wherever possible with the Region I and II plans.

The exception is 160 metres. The three IARU regions have quite different digital modes segments. They are:

Region I	1838 - 1843 kHz
Region II	1800 - 1810 kHz
Region III	1830 - 1840 kHz

And just to complicate matters, Australia is in Region III, but our digital mode segment is 1800 - 1810 kHz. (This was adopted back in the days before Region III had a 160 metre band plan.)

Hopefully next year's Region III Conference will be helpful in resolving the clashes between the three regional band plans. We will also have to do our part by bringing our band plan into alignment with the Region I plan.

The big problem area is the segment 1840 - 1843 kHz. Clashes can occur between digimode stations working into Region I, and LSB or AM stations operating on a carrier frequency of 1843 kHz. These clashes will occur more and more often as new digimode stations move into this part of the band.

It is not easy for the existing activity on 1843 kHz to move because many of the stations are crystal controlled. However there is no turning back the tide of digimode activity, especially from Region I on frequencies up to 1843 kHz. Ultimately, AM activity will have to move higher in the band.

VHF/UHF - An Expanding World

David K Minchin VK5KK

Introduction

This month we have Leigh VK2KRR's regular WSPR report as well as a quick overview of a "Plug'n'Play" microwave transverter system. Also we have yet another release from the LimeSDR camp towards our ultimate goal for a Microwave SDR, as well as Kevin VK4UH's regular Meteor Scatter Column.

WSPR October 2017 Propagation Report

Leigh Rainbird VK2KRR reports on WSPR activity for October 2017: *"Some movement in propagation during October, giving us indications that summer is approaching. Some long tropospheric paths have made an appearance on 2 m and single hop Sporadic E on 6 m."*

*"**50 MHz WSPR**: On 11 Oct, a brief opening occurred around midday from north Queensland to Sydney with VK4TVL being heard by VK2YOC and VK2EFM. Then on the following day an afternoon opening with paths from VK4TVL to VK5MR and VK5AZL which also skimmed into VK3ZAZ. A number of different paths were used on 23 Oct from north QLD to Sydney with VK4TVL to VK2DVM, VK2EF and VK2HC. Also from Sydney area to SA with stations involved being VK2HC, VK2BMU, VK2EFM, VK2YOC, VK1KW, VK5DC, VK5MR and VK5DSP. A path from SE QLD opened with VK4QG to VK3ZAZ, VK5KAA and VK5AKK. Just prior to this, a path was also available between areas of eastern Australia to New Zealand; stations involved being VK2DVM, VK2HC, VK3WE, ZL2IT and ZL4JW."*

"On 25 Oct, a Great Dividing Range path between VK4CVM and VK3WE, plus VK2HC, VK2YOC somehow picking out a single signal each to VK5MR. On 26 Oct, a path between VK2 and VK5 areas with those pulling out signals being VK2YOC, VK2EFM, VK2HC, VK2BMU, VK2KRR, VK5MR, VK5KAA, VK5DC and VK5RY. On 28 Oct, VK8ZI in Darwin had a rarely observed path east to VK4TVL in Townsville, 5 spots between 0652 z to 0840 z with only 200 mW TX power from VK8ZI, a good effort with only weak signals noted. On 29 Oct, another Great Dividing Range path out of Tasmania to the north, with VK7HH seeing a path to VK2DVM, VK2YOC, VK2BMU, VK2HC and VK4CMV. On 30/31 Oct, weak sporadic paths were seen from VK4CMV to VK3WE, VK5AKK, and VK5KAA. Next, VK3WE in Gippsland had paths to VK4CMV and VK4TVL but also across the Tasman to ZL2WHO and ZL3PX which was a great pick up. Likewise VK2HC had some brief paths to ZL3PX and ZL2IT. VK4TVL also had some excellent signals into SE QLD and NE NSW with numerous signals to VK4ALF and VK2XN."

*"**144 MHz WSPR**: On 5 October, the first Tropo path across the Great Australian Bight for the 2017/2018 season was observed, thanks to Derek VK6DZ near Albany and Phil VK5AKK near Adelaide at 1909 km. This occurred between 1058 and 1944 UTC. On 15 Oct, Phil VK5AKK ran up 100 watt test signals with 2 getting through to VK6DZ but path was quite weak. On 20 Oct, from 0434 UTC, VK6DZ with 10 watts was received by VK5AKK at 1909 km. The path eventually progressed to take in Steve VK3ZAZ at 2193 km, then Alan VK3DXE at 2463 km and ending up with a path to VK2KRR at 2664 km. Signals weak on the VK2KRR path being -24, -28, -29 and -30 dB but not so bad considering we're only running 10 watts. Signals continued on to the 21st but only between VK6DZ and VK5AKK." "Identify High MUF paths using WSPR: I hope that we will see the return of some high E layer MUF and Sporadic E at 144 MHz or higher during summer. It's very easy to identify areas of potential high E-MUF once you become familiar with the WSPR database and how the E layer MUF (max usable frequency) works."*

*"What you do is, go to the WSPR database query page: **http://wsprnet.org/drupal/wsprnet/spotquery** and use these settings:*

BAND = 6 m

COUNT = 500

Leave CALL & REPORTER boxes blank.

IN LAST = Hour

SORT BY = Distance

Check REVERSE box and then press UPDATE.

You will see is a list of spots for the 6 m band listed in order of longest distance at the top down to shortest at the bottom of the page. What you're looking for are spots in the shorter distance range of between about 400 km and 900 km that are showing very strong signals, +1 dB or stronger from low power up to 20 W max. So if you see there is a path showing +10 dB over a 650 km path length from a 10 W transmission then you know the approximate midpoint of that path potentially has the ability to be refracting signals in

the 2 m band back to earth but at a greater distance than the 6 m path, 1500 km is fairly average. The trick is having stations positioned at the correct distances either side of the high MUF area to test the path on the 2 m band."

"WSPR is extremely good at observing and identifying this kind of phenomena but it directly corresponds to the amount of stations that are active. The more stations able to take part, the more observations are reported over a wider area and thus we get a better picture of what the E-layer is doing on a particular day. So if you have a spare radio and antenna please consider setting up for WSPR on 2 m and 6 m and join in the fun."

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

"Plug'n'Play" mm Wave Transverter System

Most Transverters built for microwave use (especially above 10 GHz) tend to be a "work in progress" development with bits added on as you go. Our preferred development platform is a flat plate with modules scattered in a fairly logical arrangement so parts can be tested or swapped easily.

The end result can be something the size of a pizza box with a dish hanging off the front. If it works why change it?! This is OK until you need to transport your transverter half way around the world. Size, weight and system robustness then becomes an issue so the 2 dimensional layout needs to be "folded" into something three dimensional. Add the need to carry more than one band with a common antenna and the mechanical issues start to outweigh the RF issues!

For the 2017 trip to Europe, the challenge was to have something with good power levels and compactness for 24 GHz and above. Also to have the ability to change bands quickly so tests could be done in the short period of time available before the last cable car left! The box that was settled on was the smallest size the typical transverter plus amplifier could be squeezed into. That ended up being a 200 x 135 x 80 mm Eddystone diecast box as in the photos. This enabled all three (24, 47 & 76 GHz) Transverters to be transported in a small Pelican case. The combination weighs around 7 kg so it could be carried on aircraft as hand luggage!

For 24 GHz and above antenna alignment is a critical factor with fraction of degrees alignment required. The accepted practice is to align the dish antenna on the lowest band then to use the same antenna for the higher bands so that no or only minor re-alignment is required. For simplicity it was decided to use a back-fed Cassegrain reflector antenna (a Nurad 300 mm) with the original horn feeds modified for 24, 47 and 76 GHz. 122 GHz wasn't been attempted as results (so far) with the Nurad on this band have been poor.

The beauty of using a rear mounted horn feed on a Cassegrain antenna is the ease of being able to swap the whole transverter by simply sliding in/out the transverter block and have the weight central over the tripod. The geometry of the Nurad sees the focal point at the exact base of the dish. As the focal

Photo 1: Plug n Play system - 76 GHz transverter and GPS locator box.

Photo 2: Plug n Play system - 47 GHz transverter mounted.

point of a horn feed is at its apex all that is required for alignment then is for the horn feed to be machined at the base so the two points align when the horn feed is fully seated. A simple frame (see photo) was then mounted to the rear of the Nurad dish to support the weight of the transverter. The horn feed is aligned with four studs at the back of the dish and pushed into place, the weight of the transverter then holds in place. The frame was mounted on a ~$60 Carbon Fibre camera tripod with a ~$ 90 Fluid head (see eBay!).

Band changes can be done in under a minute; most of this time is spent unplugging and plugging in cables! One modification could be to have the IF and DC connectors mounted so that these engage when the transverter has been slid in. Nice but it would be the one critical failure point that you don't want on top of a remote mountain! If anyone would like more details on the dimensions of horn feeds and the frame just drop me an email.

LimeSDR 10 GHz Frequency Shifter Board

Last month we covered the LimeSDR Mini, the half sized, half spec plug in 3.5 GHz SDR being released in early 2018. Late in October 2017, Lime Micro announced the addition of a limited edition (150) Quad Up/ Down frequency shifter board that will work with either LimeSDR. It is essentially a four channel, bi-directional "Transverter" that extends the SDR's frequency coverage to 10 GHz.

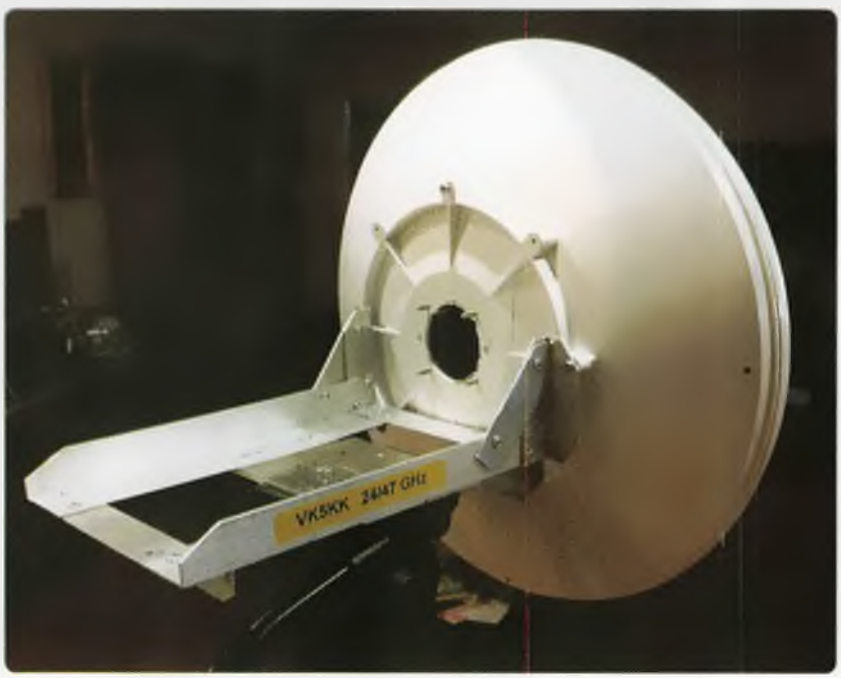


Photo 3: Plug n Play - Frame, fluid mount and tripod.

The Board uses the LMS8001A chip primarily aimed at the emerging 5 G market but also other commercial and military data applications. This chip has 4 I/Q Mixers, 2 PLLs (X 2 for final frequency), 2 LNAs and 2 output stages making possible two separate receive and two transmit paths to compliment the capabilities of the LimeSDR. The board can be used with an IF frequency of 100 MHz or higher. The provisional specs of the board state 9.2 GHz as the maximum LO frequency and a maximum operating frequency of 10 GHz (low side LO) whereas the original proposed specs for the LMS8001* was for a maximum frequency of 12 GHz. This maybe because of PCB material limitations or just that the first batches of chips are only within specification to 10 GHz.

Just what can you do with the LMS8001 board? It is probably way over the top for any single channel amateur transverter unless you want a dual channel, dual band one! However if you need something as the basis of a Data or DVB-T "Repeater" then this is a good start. The board does not need a Lime SDR to work, in fact it could be used with a variety of SDR or conventional back ends.

Not working above 10 GHz is a bit of a deal breaker for us so for the time being the LMS8001A board is probably more an indication of what is still to come. The cost of US$299 is probably higher than you would want to spend to find out if it will work on our band anyway! Let's wait for the next release?

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's

David VK5KK

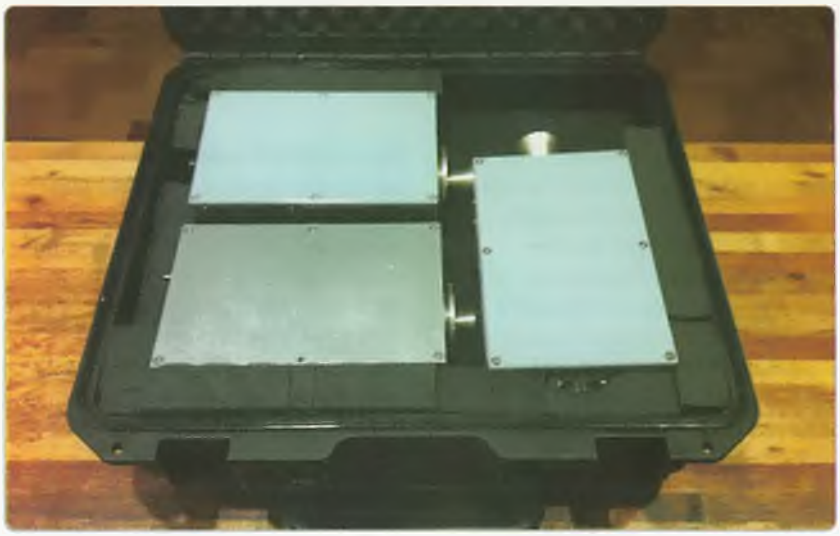


Photo 4: 24, 47 and 76 GHz Transverters in their transport case.

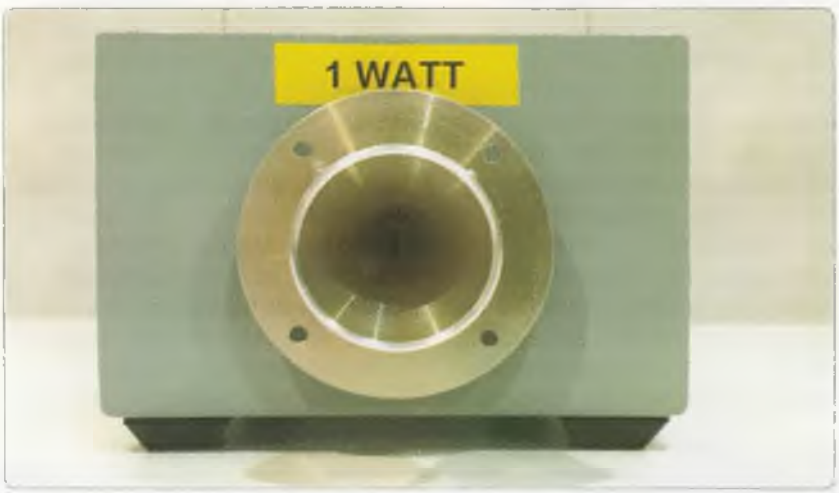


Photo 5: End view of the machined horn feed for 47 GHz.

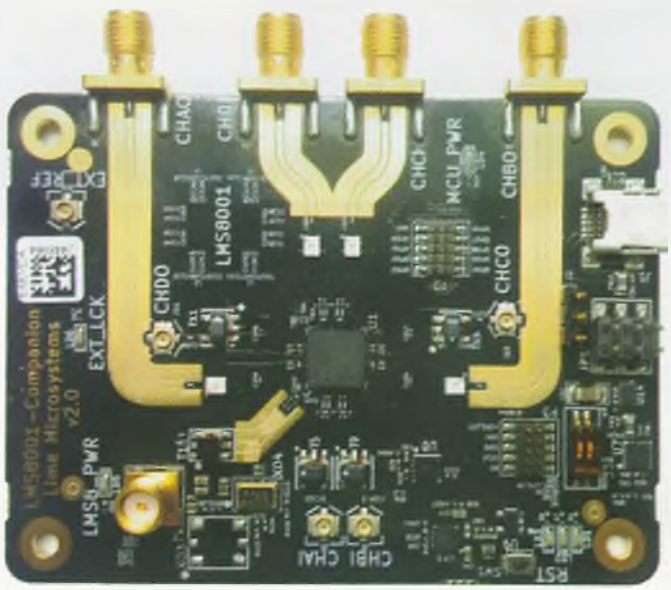


Photo 6: LimeSDR LMS8001A 10 GHz companion board.

Meteor Scatter Report

Dr Kevin Johnston VK4UH

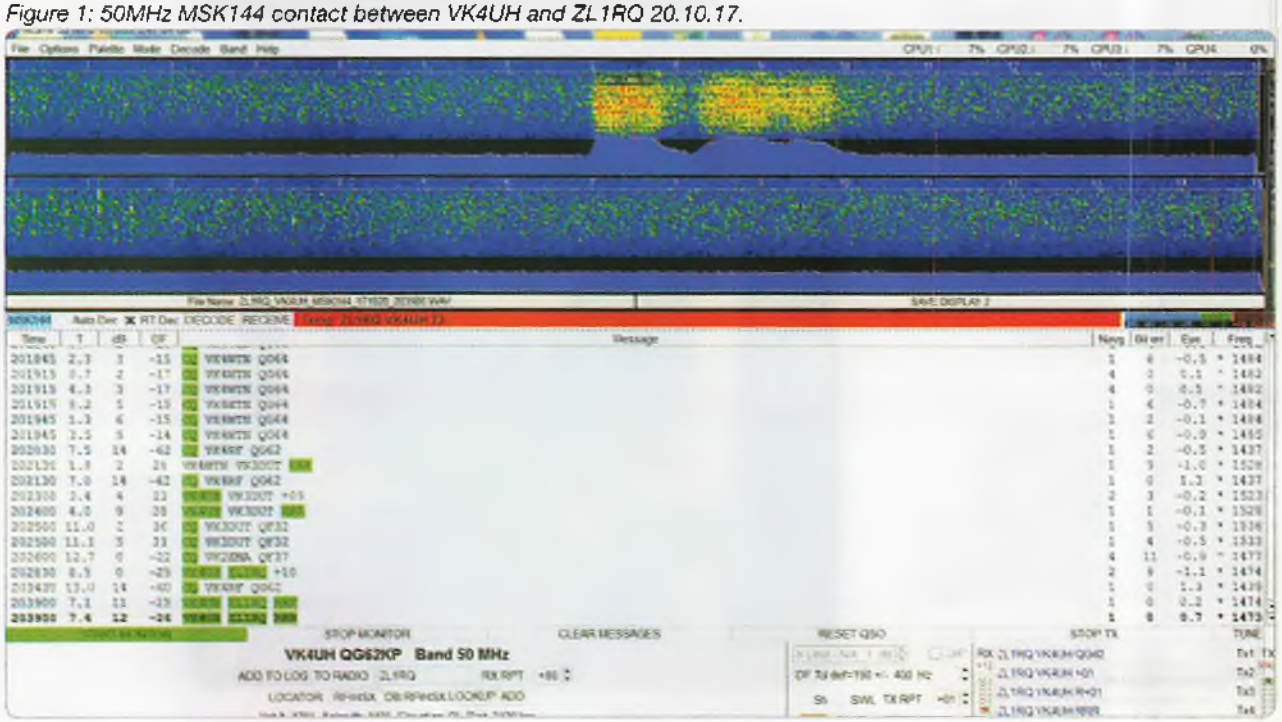
We live in interesting times. This month I will include news of some distance breaking achievements for successful Meteor Scatter contacts between Queensland and New Zealand, a report of activity from the Orionid Meteor Shower and on recent changes in Standard Operating Practices that have occurred during the last month.

Last going first, those following this column over the last few months will be aware of the discussions surrounding the introduction of the new FEC (Forward Error Correcting) digital mode MSK144 from Joe Taylor K1JT and the world-based WSJTx software design team. In very short order this new mode has all but replaced the well-established FSK441 mode, released as part of the original WSJT suite of software and which had reigned supreme for Amateur Digital Meteor Scatter communication since its release in 2001. Although relatively restrictive in terms of the format of the available message strings that can be transmitted, MSK144 has been so widely adopted primarily due to its clear benefit in decoding weaker and shorter meteor pings than was previously possible. Unlike our colleagues in both Europe and North America, the VK-ZL MS community, adopted by consensus, the MSK144 mode on both 144 MHz and 50 MHz, retaining the 30-second transmission periods as previously used for FSK441. After extensive discussions amongst VK and ZL operators, predominantly through the MS Facebook Page, a trial was conducted over several weeks of the use of the shorter 15-second periods as selected by the rest of the world. Clearly the use of the shorter periods had to be by consensus as the two options would be entirely incompatible on the same frequency due to local QRM. Following the trials there has been a complete shift, across all subsequent weekend Meteor Scatter activity periods, to the 15-second transmission periods. By default, the use of 15-second periods in MSK144 mode has become the new norm here too.

For clarity the first/even periods start at 00 seconds and 30 seconds and the second/odd periods start at 15 seconds and 45 seconds in each minute. The establish protocols for which call-areas run in which periods have not changed. Early concerns that the shorter periods would require even more attention to correct computer clock timing have not been manifested. Another unforeseen advantage of the shorter periods has proven to be less stress on the final amplifiers during transmission.

As was discussed previously, a general upturn in meteor based propagation was predicted after passing the vernal (autumn) equinox in September. After a very deep and very prolonged null, during the last season, the anticipated improvement in conditions has been very slow to materialise. One

Figure 1: 50MHz MSK144 contact between VK4UH and ZL1RQ 20.10.17.



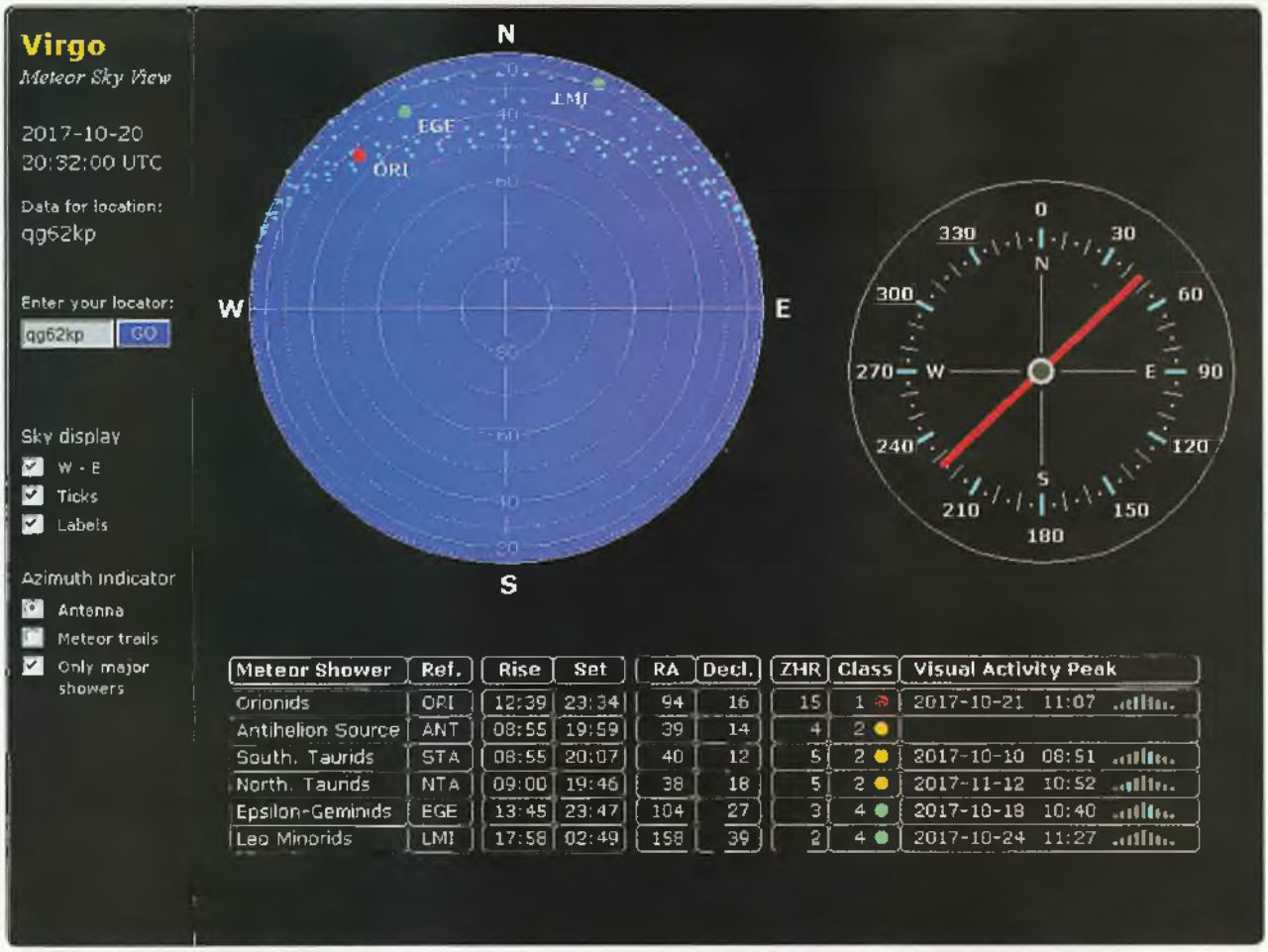


Figure 2: Virgo Meteor Sky View showing position of Orionid Radiant and NE-SW supported path 20.10.17 in red.

small exception to the recent poor conditions was the passing of the Orionid meteor shower which peaked around 22 October 2017. Although the Orionid shower is classified as a Major (Class 1) shower, it is one of the weaker events on the annual calendar with a predicted ZHR (Zenith Hourly Rate) of only 25 meteors/hour. Since the "background" levels of activity have been so poor however, even this event provided a vast improvement in general conditions. The shower spanned the two weekend activity days on 20 and 21 October (UTC). From this location in QG62kp, completions were achieved with VK3ZL (QF22fe), VK3DUT (QF32vf), VK2EMA (QF37qs), VK2BLS (QF55kk), VK5PJ (PF95mk) and VK3HY (QF22pd). Similar completions occurred between call areas VKs 1, 2, 3, 4, 5 and 7 on both 2 m and 6 m.

During this same period successful contacts were made by VK5CZ (QG62lp) and VK4UH (QG62kp) on 50 MHz using Meteor Scatter to Alan ZL1RQ (RF64sx) at a distance of 2139 km. While 2 m and 6 m MS contacts between southern VK call-areas and ZL are commonplace, the additional distances involved in the path even from the north of ZL to VK4 has made such contacts illusive despite prolonged attempts. These contacts represented a "First" for all three stations concerned and to date my furthest contact distance achieved on Meteor Scatter. This distance is well beyond the normal accepted range for simple/unsupported meteor scatter propagation. This distance limit is generally agreed to be around 1800 - 2000 km and is determined by the geometry of the 100 km height of E-layer, where the majority of meteors are ablated and the curvature of the earth itself. Distances beyond this limit generally require support from another mode of propagation to fill-in the gaps at one or both end of the path. In general, the most likely secondary modes of propagation capable of extending meteor scatter on VHF include Sporadic E (Es) and Tropospheric Ducting (tropo). On the morning 20 October examination of ionograms on the usual IPS (Ionospheric Propagation Services) websites showed no evidence of any significant E-layer ionisation over any of the major VK or ZL cities at the time. Enhancement was highly unlikely to be due to Es. The on-line and VK-logger presented

Hepburn charts which indicate the probability of tropospheric ducting, forecast the likely formation of ducts occurring at the ZL end of the path between SE-VK4 and North Island NZ. Tropo was the likely second propagation mode in play for these contacts. There was no suggestion, from logger reports or beacon reception of any episodes of tropospheric ducting extending right across the Tasman at any time over that weekend. The received pings also retained all of the characteristics of normal meteor returns.

Initially all three stations concerned in the 6 m Trans-Tasman Meteor Scatter assumed that credit must go in part to the Orionid meteor shower itself with coincidental enhancement by tropospheric ducting. This however may not be the case. Closer review of the on-line VIRGO facility showed that at the time of the successful contacts the radiant of the Orionid shower, i.e. the point in the sky where the meteors appear to be originating, was in a position where only North-South radio paths would be supported. In general, the heading to the radiant of a meteor shower and the paths supported are at right angles (90°) to one another. The position of the Orionid radiant would explain enhancement of the path between VK4 and the other Australian call-areas, along a North-South corridor, but would not have supported the predominantly East-West path between VK4 and ZL1. The implication is that the Orionid Shower was entirely coincidental and that Meteor Scatter between VK4 and ZL may be possible far more frequently than we have previously assumed and not actually related to shower activity. Indeed, a repeat performance was almost possible on 4 November UTC, on 50MHz again, between VK4UH and ZL1RQ where clear MSK144 decodes, well over the noise, were received in both directions. Unfortunately, the final RRR was not received so the contact was not valid, however what was received was entirely due to normal background meteor activity with no assistance from any meteor showers.

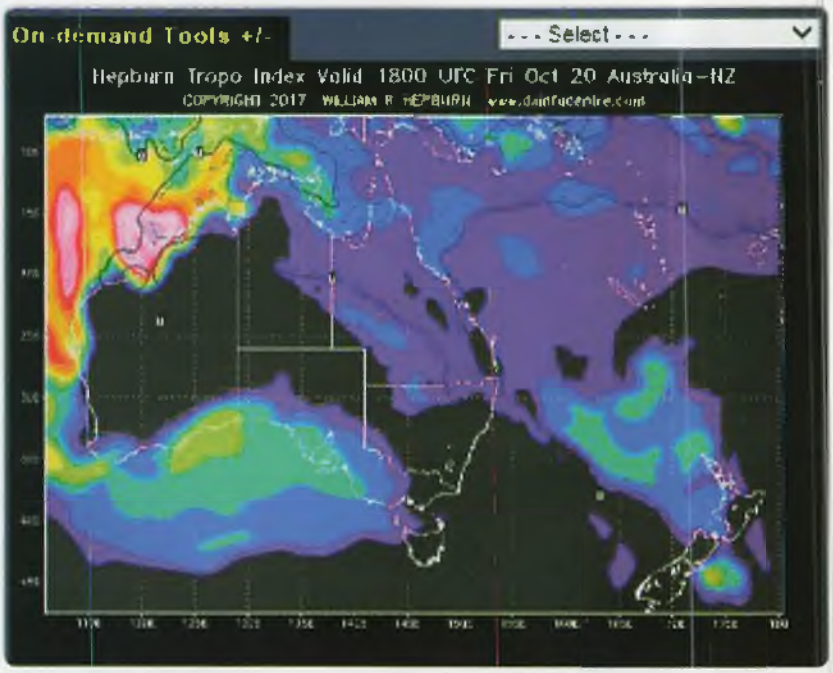


Figure 3: Hepburn Chart 20.10.17 showing potential tropospheric ducting from VK4 to ZL1.

Meteor Showers

The next major shower on the calendar will be the Leonids around 18 November 2017 and then the Geminids around 14 December 2017.

Activity Sessions

The weekend activity sessions run on Saturday and Sunday mornings from before dawn (around 20:00 UTC or earlier) until propagation fails.

Frequencies: 2 m 144.230MHz, 6 m 50.230MHz

Mode MSK144 15 second periods.

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

Kevin Johnston VK4UH
Brisbane

Contests

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

Contest priorities for December 2017

Contest	Date (UTC)	Rules	Difficulty	Software	Modes
ARRL 10 m	0000Z, Dec 9 to 2400Z, Dec 10	*http://www.arrl.org/10-meter/*	Easy- but expect tough conditions	N1MM TR4W Writelog VKCL	SSB CW
Stew Perry Top band Challenge	1500Z, Dec 30 to 1500Z, Dec 31	*http://www.kkn.net/stew/*	Easy – distance based	TR4W N1MM Writelog	CW

Contest rant of the month

"Organise your QSLing to take care of cards. The last compliment of QSO is the confirmation card and many VKs are notorious for not sending QSLs. If you are not going to QSL, notify on your QRZ lookup page that you don't in any way.

It is very easy to send out electronic QSL cards via the digital card systems e.g. eQSL and if you already have a contest logging programme the upload is only a click away.

As manager of the ANZAC callsigns around 20% of the activations never forwarded the logs for the uploading. To be honest, it was a disgrace to the memory of those who served.

But try as I may, the logs never appeared. Personally I feel these "clubs" should not be able to use future special event callsigns. But it will be all water under the bridge next time around and the offenders will reappear.

We are supposed to be a technologist hobby and using the excuse you don't know how to use computers should see you handing in your callsign".

Contester of the Month

Bill Main VK4ZD

Bill was introduced to contesting back in 1978 by Bill Hockley VK6AS (SK). Bill H's stated aim that year was to make 1,000 QSOs (1,000 individual hams) in the RD Contest and he came very close to succeeding. This was before the 3-hour re-work rule was introduced.

Bill H's novel logging method was to use a roll of government issue toilet paper (that lovely shiny stuff) with the numbers in red felt pen pre-written on it and carefully re-rolled!

Bill was VK6NDZ at that time and upgraded to VK6ZX in 1980. Bill and his wife Diane (VK6NGQ/VK6KYL) contested out of Kalgoorlie for many years.

Photo 1: The VK4ZD operating desk.

What is your favourite Contest?
One of the contests I enjoy is the JIDX SSB as it gives me a chance to contact some of the rarer Prefectures and Counties (🔫 Guns), as well as giving me a chance to

practice my very limited Japanese. I always participate in the RD Contest and various others.

What is your favourite Rig?
Currently an Apache Labs ANAN 100D, although I hope to become familiar with the new Icom IC-7610 soon. I tend to operate Multi 2 in most contests with Diane VK4DI. We run almost identical stations from our evolving contest shack. We have Expert 1.3KF-A amps and use both an Array Solutions 6 Pack and coaxial stubs.

What modes do you contest in?
Generally SSB.

What is your favourite contest band and why?
40 m because it offers the biggest potential during this low part of the cycle. Current antennas include 2 x 160 m horizontal Delta Loops at approximately 30 m up in the trees. We do have a couple of 40 m Yagis yet to be assembled and placed in the air.

What is your preferred Contesting Software?
VKCL for local contests and N1MM for international contests.

What is your preferred Mic and Key?
Heil Pro-set Plus and footswitch.

What is your "not so secret" weapon?
I'd have to say Diane as she tends to pre-prepare meals in the slow cooker, keeps the Cappuccino machine working overtime and always makes sure we have enough food at hand which maintains my level of alertness.

What is your best tip to a newbie contester?
Read the rules, and preferably keep a copy on hand to check if you need to during the contest. Find someone who does it well and ask to sit in and observe them. Watching and listening was what got me started. Field days are really good for this. Listen in on the DX Contests and learn how the great contesters operate. Have a go in the smaller VK contests like the Harry Angel Sprint and practice, practice. You can then work up to the more intense DX Contests and don't feel overwhelmed when participating in a major contest; you will continue to improve each time you participate.

Photo 2: VK4ZD in action during the Remembrance Day contest 2017.

What are your aspirations in contesting?
To enjoy the participation, winning is a bonus.

What would you like to improve in either your skills and/or station?
I'd like to gain adequate CW contesting skills. We want to increase the antenna flexibility. We have a number of antennas and towers still to be installed.

Photo 3: The 40 m VK2ABQ antenna.

Who is VK4ZD?
I initially started training as a PMG Technician in the late 50s in Adelaide.

The first radio I built was a 1 m transceiver using an acorn valve, a 5Y3 as a rectifier and a 6V6 as a modulator in audio output stage. The family with whom I lived caught me transmitting and I was forced to dismantle the equipment. The antenna was a folded dipole fed with 300 ohm ribbon. I was about 15 years old.

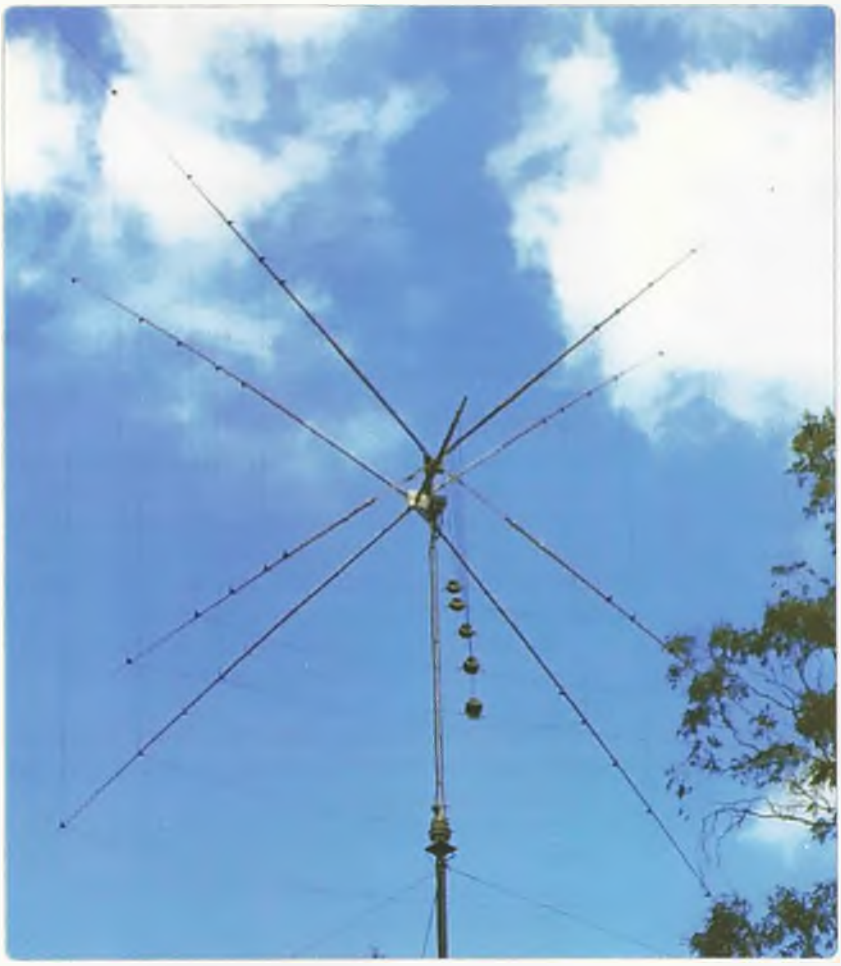


Photo 4: The 5-band quad antenna.

I was always interested in electronics and started by repairing an old valve radio I purchased for 10 shillings. That kicked off my interest in Short Wave.

I moved to Kalgoorlie in 1967 to catch up with my Dad and became a Guard with the Commonwealth Railways.

I had always wanted to get my amateur licence but didn't pursue it until I was advised by Diane soon after we married to both go to the local Tech College and do the course or she didn't want to hear the words Ham Radio from me ever again. The threat worked and not only did I attend but she did as well, getting her own amateur licence a few months after me.

I used to work 5 watts "Railway Mobile" with a Ten Tec Argonaut 509 and a HF vertical clamped to the side of the Guard Van. I referred to it as going mobile with a coast to coast ground plane. It was exciting to a newly licensed Novice to be able to work DX whilst traveling across the Nullarbor Plain on a regular basis on 10 m, 15 m and 80 m.

We moved to VK4 in 2004 and the first building to be erected was the shack. Since then we have upgraded it from shed to a fully insulated and lined open plan shack with two dedicated operating positions. Antennas are a 13 element 10/12/15/17 m Yagi at 17 m, a Home brew 5-band 2 element spider quad at 17 m, a 20/30/40 m VK2ABQ Beam and 2 x 160 m horizontal loops at about 30 m in the trees.

Contest Terms

Dupe: Duplicate contact

NIL: Not in Log

Busted: incorrect logging

Unique: Callsign in one log only

M2 (Multi Two): Multiple operators Two Transmitters

MM (Multi Multi): Multiple Operators Multiple Transmitters

Lockout: A device that stops multiple transmitters keying at once outside contest rules

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 1970s.

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

Ross Hull Memorial VHF-UHF Contest 2018

Retiring contest manager: John Martin VK3KM

The next Ross Hull Contest will run through the month of January. It works this way. Be on the alert for DX opportunities during the month of January. Keep a log and send it in at the end of the month. Note that you do not need to be working at it for the full month: your log is based on the best seven days or the best two days. Remember that you can count Summer Field Day contacts (one contact per station per band per day) in your Ross Hull Contest log. Logs are due in by February 12.

Last year, I advised that I would retire as contest manager, but here I am back again for a "final final". The reason is that my successor as contest manager has not been appointed yet. This is my fault for not getting out there twisting arms during the past year. But it is definitely time for me to move on and the WIA now has a new system for volunteers wishing to make their services available to help their fellow amateurs. So, volunteers: step right up. The contest has been running since 1950, so let's not miss the opportunity to keep it going into the future.

The Contest

The WIA maintains a perpetual trophy in honour of the late Ross A. Hull and his pioneering achievements in VHF and UHF operation. The contest is open to all amateurs. Certificates are awarded to all entrants, including certificates for the top scoring amateurs in each licence class.

Duration

0000 UTC January 1 to 2400 UTC January 31.

In Eastern Summer Time, that is 11 a.m. on January 1 to 11 a.m. on February 1.

Sections

A: Best 7 days, analog modes.

B: Best 7 days, digital modes.

C. Best 2 days, analog modes.

D. Best 2 days, digital modes.

Digital modes are defined as those in which the decoding of the received signal is done by a computer.

Entrants may submit logs for more than one section.

General Rules

One callsign and one operator per station. Stations may operate from any location. You may claim one contact per station per band per UTC day. Repeater, satellite, EME and cross-band contacts are not permitted. Split frequency operation is allowed, for example on 50/52 MHz. Calling frequencies should be kept as clear as possible so as not to interfere with other stations making or listening for calls. If contact is established on a recognised DX calling frequency (i.e. 50.110, 144.100 etc.), stations should QSY up to .150 or higher to make the contest exchange. All rulings of the contest manager will be accepted as final.

Contest Exchange

For Section A or C, Entrants must exchange RS (or RST) reports plus a serial number. Serial numbers need not be consecutive. *NOTE: For propagation modes such as meteor scatter or short-lived sporadic E openings, it is sufficient to exchange callsigns plus two further digits that cannot be predicted by the other station.*

For Section B or D, exchange callsigns plus two further digits that cannot be predicted by the other station.

While not an essential part of the contest exchange, Maidenhead locators may also be exchanged as an aid to distance calculations.

Logs

Logs must contain the following for each contact:

- Date and UTC time.
- Frequency and callsign of station worked.
- Reports and serial numbers sent and received.
- Approximate location or grid locator of station worked.

Separate scoring columns for each band would be helpful.

Scoring

Scoring will be based on the best 7 UTC days nominated by the entrant.

For each contact, score 1 point per 100 km or part thereof (i.e. up to 99 km: 1 point, 100 – 199 km: 2 points, etc.)

Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher bands
x 2	x 3	x 5	x 8	x 10

Then total the scores for all bands.

Cover Sheet

Logs must be supplied with a cover sheet containing:

- Operator's callsign, name and address.
- Station location (if different from the postal address).
- Section(s) entered.

Date	6 m		2 m		70 cm		23 cm		etc		
Day 1	xxx		xxx		xxx		xxx		xxx		
Day 2	xxx		xxx		xxx		xxx		xxx		
2 Day Subtotals	xxx	+	xxx	+	xxx	+	xxx	+	xxx	=	**xxxx (2 DAY SUBTOTAL)**
Day 3	xxx		xxx		xxx		xxx		xxx		
Day 4	xxx		xxx		xxx		xxx		xxx		
etc.											
7 Day Totals	xxx	+	xxx	+	xxx	+	xxx	+	xxx	=	**xxxx (7 DAY TOTAL)**

- A scoring table set out as the example above.
- A signed declaration that the station has been operated in accordance with the rules and spirit of the contest, and that the contest manager's ruling will be accepted as final.

Please use the following format for your scoring table. See above. If you wish you can cross-check by adding the daily totals across the table, but please make sure that you include the separate band totals.
A cover sheet and scoring table is included in the postings on the WIA web site. Copies can also be obtained from the e-mail address given below.

Penalties

Minor errors may be corrected and the score adjusted. Repeated use of recognised DX calling frequencies (especially when the reports indicate strong signals) may lead to disqualification. Inclusion of any false log entries will lead to disqualification.

Entries

Paper logs may be posted to the Manager, Ross Hull Contest, PO Box 2042, Bayswater Vic 3153. Electronic logs can be e-mailed to *rosshull@wia.org.au* Acceptable log formats include: ASCII text, RTF, DOC, DOCX, XLS, MDB, PDF, or any Open Document format.

Logs must be received by **February 12, 2018**. Early logs would be appreciated.

Note on Calculating Distances

Absolute accuracy is not required. You just need to know whether each station is above or below the nearest multiple of 100 km, so you can use a compass to draw 100 km circles around your location on a map. Alternatively, you can use contest logging software that can calculate distances. If so, you will need to exchange 6 digit Maidenhead locators to get an accurate distance measurement. You can also calculate distances from six-digit Maidenhead locators using a computer program that is available on the Ross Hull Contest page of the WIA web site.

Contest web page: *http://www.wia.org.au/members/contests/rosshull/*

ALARA Contest 2017 Results

Diane Main VK4DI

Callsign	Name	Points	
VK7QP	Linda Luther	6,800	Top Overall Top Member
VK3WQ	Jenny Wardrop	1,920	Top VK3 member
VK1FELF	Elizabeth Hickey	1,269	Top Foundation Top Non Member
VK5YL	Shirley Tregellas	900	
VK2AX	Hillary Bridel	856	Top OM
ZL3VZ	Bill Cousins	520	TOP DX OM
VE7IM	Suzanne Snape	455	TOP DX Non Member
VK2FMYL	Michelle Fanden	335	
VK3FKDW	Kaye Wright	324	
VK2DEK	Derrick Harcourt	270	
VE3IO	Maureen Nightingale	225	
VK4SWE	Lyn Battle (CW)	126	
VK3FI	Ron Ferguson	120	
VK2FAIB	Gordon Gam	100	
VK2SVN	Steve Newby	45	
VK4TMZ	Mark Rutherford	45	
VK6POP	Bob Bristow	15	
VK2UTL	Ulrich Thiel	10	
VK5HEL	Geoff Osborne	10	
VI4ALARA	Diane Main	17,280	CHECKLOG

Notes:

Congratulations to Linda VK7QP for again taking out Top Overall and Top Member.

A fantastic effort by Elizabeth Hickey VK1FELF on 40 m phone to take out the Top Foundation spot and winning a 12 month membership to ALARA.

One again Hillary Bridel scooped the OM pool with a great score.

Statistics:

7 YL Members.
3 Non Members including 2 DX
10 OM including 1 DX.

Soapbox comments:

Generally OM bemoaning the lack of YL on HF and although conditions weren't perfect, calling CQ ALARA Contest on 20 m and 40 m did attract good results.

Diane Main VK4DI
ALARA Contest Manager

YLs at JOTA

Christine Taylor VK5CTY

A number of YLs did participate in JOTA this year, although HF conditions were not good. Fortunately IRLP or EchoLink was available across the world.

Jenny VK5FJAY was at the JOTA group at Glenelg and here we see her with Karen from the Seacliff Sea Scouts using Morse. There is a group of components on the desk along with a sheet with the Morse code printed on it, so that a little information about amateur radio could also be explained.

Jenny VK5FJAY with Seacliff Sea Scout Karen.

Jenny's OM Kevin VK5AKZ ran a desk for CW contacts but had little success due to the poor HF conditions. When the predictions charts were studied, they explained why HF was not useful this year. A few VK stations were heard but no DX at all. Maybe next year will be better.

73
Christine VK5CTY

VK3 news Amateur Radio Victoria

Jim Linton VK3PC
e *arv@amateurradio.com.au*
w *www.amateurradio.com.au*

For most, the summer holidays are a time to perhaps relax and also enjoy the hobby of Amateur Radio.

As always it has been productive year for the Council who all wish you the complements of the season and a Happy New Year 2018.

The office at 40g Victory Boulevard, Ashburton will close at 12.30 pm on Tuesday 19 December, and re-open Tuesday 6 February next year.

On behalf of Council, a sincere thank you to the volunteers who carrying out administrative functions, involved with the QSL bureau, interface with the public and work on the repeater network.

While the office is closed for summer, urgent matters will still be handled. The end of our year is 31 December, with financial statements, stocktaking and an audit to be done.

Classes induct new hams

On a regular basis Amateur Radio Victoria holds training sessions for the Foundation licence and at least one Standard Bridging Course for those wanting to upgrade to the Standard licence.

Experienced instructor Kevin Luxford VK3DAP/ZL2DAP had about 40 Foundation licence candidates through his session, which is topped off by Barry Robinson VK3PV covering the practical test training.

There are two parts for this entry-level licence; a theory and regulator paper and a hands-on practical test.

Kevin VK3DAP/ZL2DAP also did the multi-week Standard Bridging Course in October attended by seven people who had already qualified with the Foundation licence.

The weekends throughout 2017 also saw 11 Regulations assessments, nine at the Standard level and three Advanced.

Among the three classes, there were six candidates found not yet competent but with a little more study, they achieved competency and are now on air.

Are you a member?

It is a surprise to many that Amateur Radio Victoria (WIA Victoria) is spending a lot of money to the general benefit of Amateur Radio but not all Victorian amateurs contribute by being a member.

It costs $30 for two years or $25 concession for two years. This money helps pay for many of the services provided, which seem to be taken for granted by non-members. Member forms are on our website, or can be supplied on request.

Australian presented with Yasme Foundation Excellence Award

Jim Linton VK3PC

These prestigious awards, which began in 2008, recognise individuals and groups who have made a significant contribution to Amateur Radio. The Yasme Foundation, a not-for-profit corporation supporting scientific and educational projects related to Amateur Radio, has given five Excellence Awards this year.

One went to Dale Hughes VK1DSH, acknowledging his international work at the World Radiocommunication Conference in November 2015. The award is for excellent chairman work in both the Amateur Working Group in ITU-R Working Party 5A, and a Sub-Working Group that addressed the allocation of a worldwide 60-metre Amateur Radio band. A humble Dale VK1DSH told the WIA and IARU he was surprised at receiving the Yasme Excellence Award, which consists of a cash grant and an individually engraved crystal globe. He has attributed the successful outcome to a team effort resulting from a great deal of work by individual delegates, amateur societies, the IARU and supportive national administrations.

The IARU team went to the World Radiocommunication Conference in November 2015, not at all confident about getting the allocation. It was not until a lot of negotiation and the Sixth Plenary that a new secondary allocation of 5351.5-5366.5 kHz was passed. Although now widely available, the ITU allocation did not come into effect until January 2017, when national administrations must formally revise their rules to permit amateur operation.

Some countries including Australia are yet to release the 60-metre band allocation. Information on it can be read on the WIA website 'Current WIA Hot Issues' at: *http://www.wia.org.au/newsevents/hotissues/current/index.php*

The other Yasme Foundation Excellence Awards went to:

- Dayton Amateur Radio Association for its Hamvention.
- Paul Verhage KD4STH and Bill Brown WB8ELK for leadership and continued technical innovation in Amateur Radio high-altitude ballooning.
- Nathaniel Frissell W2NAF and Magda Moses KM4EGE who created the Ham Radio Science Citizen Investigation that sponsored the Solar Eclipse QSO Party.
- The WSJT Development Team that has produced digital weak-signal mode software.

A Supporting Grant also went to Gary Pearce KN4AQ for the HamRadioNow and YouTube videos.

The Yasme Excellence Award consists of a cash grant and an individually engraved crystal globe.

Full details are available at: *http://www.yasme.org/yasme-excellence-awards/*

VK2news

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

Season Greetings as we put another year behind us. ARNSW has advised that their 2018 AGM will be held on Saturday 28 April 2018 at the VK2WI Dural site with an 11 am start. As has become the practice during the holiday period, VK2WI News will, for three weeks, be a morning only transmission on 24 and 31 December and 7 January. A weekly report of the Solar Flux Index is given in the news which is provided by Noel VK2FUL.

ARNSW

The 2018 Upgrade course conducted by ARNSW will be from March to November on a Monday evening. The ARNSW Foundation weekend for next year will be bi-monthly on the odd numbered months, most likely two weekends before the regular ARNSW Trash & Treasure. The ARNSW Home Brew and Experimenters Group scheduled a second 'QRP by the Harbour' in October but after setting up and making a few contacts they suffered a rare occurrence, it rained. There will be another event on 4 February 2018. ARNSW members will be receiving the 2018 magnetic calendar and an invitation to obtain or up-grade and a membership badge.

Hunter Radio Group

The Hunter Radio Group in Newcastle celebrated their 94th anniversary in October. First formed as the Newcastle Radio Club, they became the Hunter Branch of the NSW Division, then the Hunter Radio Group when the changes occurred with the WIA in 2004.

Their last meeting in this year was in November and they will resume on the second Friday in February.

Central Coast ARC

Also celebrating a 60th anniversary is the Central Coast ARC which was formed on 8 October 1957. They were for a time the Central Coast Branch of the NSW Division but became a separate club when they needed to develop firstly the club rooms at Kariong and later the Somersby repeater site. They have conducted an annual field day since their formation; at first at the Gosford Sailing Club, then the Gosford Showground before moving to the present Wyong Racecourse site where WFD2018 will be held on Sunday 25 February 2018. Check out ccarc.org.au

Westlakes ARC

Westlakes ARC have had a small production of a receiver kit. Called a Globe Band Receiver, it's an all-band world-wide regenerative receiver. Only twenty kits have been produced, which comes with a CD of construction and operating instructions. *www.westlakesarc.org.au*

Other Radio Club News

The **Illawarra ARS** held an auction on their meeting night in November. It is this time of year when many clubs do not hold a meeting for a couple of months. They should however maintain their weekly nets to keep members interested, lest they drift off into other activities and be lost to the club.

Trek for Timor, a **WICEN NSW** activity, which was cancelled this year due to the concern of dry conditions and a bush fire risk is expected to be rescheduled to April 2018. **St. George ARS** provided a large operation for the 60th JOTA at their regular site of Kurnell. They operated with the special call sign VI2JOTA60. **HADARC** held an auction night in October and found while there was a good attendance, it was mostly sellers. The **Oxley Region ARC** will be holding the December monthly meeting, their Christmas function, on Saturday the 2nd at the same venue as last year.

Interest and operating of the various digital modes is on the increase and this has required the expansion of the VK sub bands to align as much as possible with the world. On 80 metres, for example, the digital window has been aligned as much as possible to Regions 1 and 2 with the upper limit at 3600 kHz. WSPR in 80 metres currently operates round 3594.0 to 3594.2 kHz. There are many existing club nets and VK2WI 3595 in the sub band who may now need to relocate to avoid the increasing digital traffic.

Those who have had the opportunity to attend the 2017 or earlier Dayton annual Hamvention may be sad to learn that the venue – the Hara Arena – is no more; it has been sold and will be demolished. Looking at the ads in RadCom, the RSGB magazine, one retailer – ML&S – is stocking the Australian Bushcomm antennas.

73

Tim VK2ZTM.

Plan ahead

John Moyle Field Day 17-18 March 2018

VK7news

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

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

JOTA and JOTI in the North West of Tasmania was well covered by NWTR&TVG. At the Spreyton Scout Hall were Eric VK7EV, Helen VK7FOLK and Shirley VK7HSC operating HF, 70 cm and 2 m on local repeaters with the Joeys. At Burnie Scout Hall the operators were Lucas VK7LSB, Dion VK7DB, David VK7DC, Mathew VK7ML and Kirsty VK7FKKK with operation on HF, EchoLink and the 2 m local repeaters. There was a Joey Scout skype meeting held on the Saturday afternoon and JOTI was operating on ScoutLink. In Ulverstone at the Paton Park Camp there were operators – Ross VK7WP, Steve VK7BI, Tony VK7AX, Graham VK7NGA and Terry VK7TG who operated video cameras, HF, VHF, UHF, EchoLink and IRLP making contacts.

The weekly NWTR&TVG Video Broadcasts are now available via the link: *http://www2.vk7ax.id.au:46800/spectrum/video*. The files consist of the last four videos produced on a weekly basis and they rotate on a monthly basis. This includes the VK7 Regional News and the WIA National News and check-out the nostalgia directory where the complete series of "Nostalgia with VK7FR" can be found.

Northern Tasmanian Amateur Radio Club (NTARC)

October saw NTARC involved in

Photo 1: The NTARC Communications trailer setup at Santarena Park for the Equine Endurance Event (Photo courtesy of Roger VK7ARN).

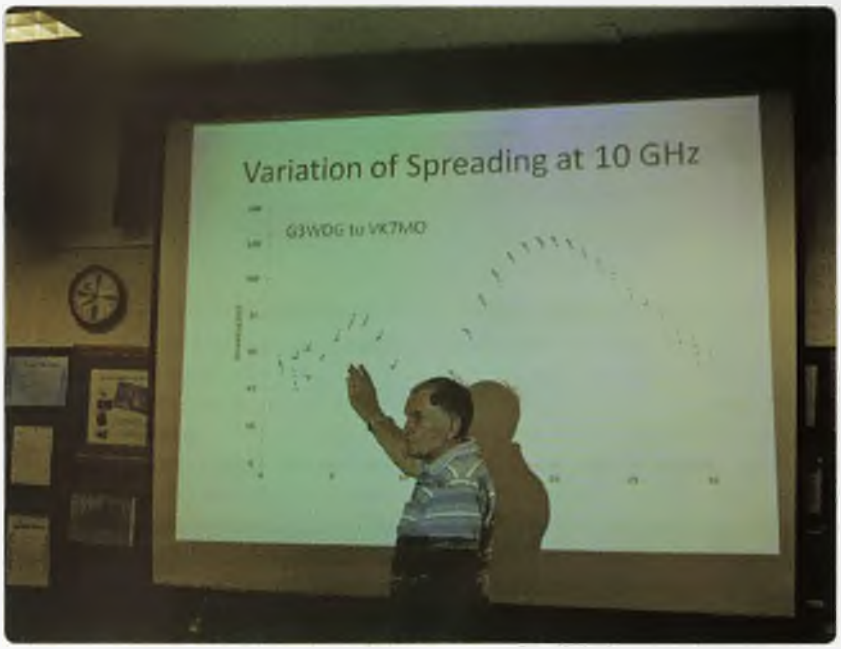


Photo 2: Rex VK7MO explaining spreading at 10 GHz due to lunar libration (Photo courtesy of Justin VK7TW).

the checkpoint communications support for the 160 and 95 km events for the Tasmanian Equine Endurance Association's Tasmanian State Championships for 2017. This event was held in NE Tasmania at Santarena Park and was a dress rehearsal for the 2018 Tom Quilty ride to be held at the same place in October 2018. This was also a test of the integration of the Australian Endurance Riders Association (AERA) RFID base timing system with the NTARC RFID system and it worked seamlessly thanks to some midnight oil burning by André VK7ZAB and long distance member Peter VK7FPWS from Switzerland.

A large monitor was setup to display the feed from the AERA system which informed the NTARC operator of vet-outs and retirements. Another innovation was the automated Strapper Call system, developed by Ken VK7KVV and Peter VK7FPWS. This uses FM radio calls with rider bib numbers completing each leg which helped strappers meet their horses at the end of the event. A big thank you to all helpers: Idris VK7ZIR, André VK7ZAB, Norm VK7KTN, Peter VK7FPWS, Ken VK7KVV, Peter VK7KPC, Idris VK7ZIR, Wayne VK7FWGH, Roger VK7ARN, Bill VK7MX and Yvonne VK7FYMX.

JOTA/JOTI at NTARC involved Peter VK7KPC, Idris VK7ZIR, Ros, André VK7ZAB, Stephen VK7ZSB, Alvin VK7ADQ, Kevin VK7KJL, Stuart VK7FEAT, Norm VK7KTN, Bernie VK7BR and Lewis VK7FLPL who either manned the BBQs, radios, helped the fox hunters and generally assisted the Scouts with various activities. At the Guide camp at Nindethana Joe VK7JG, Brian VK7KWB, Roy VK7ROY, Brendan VK7VIP and Al VK7AN operated. At Huonville Scouts Hall, sporting the new callsign of VK7HSD, there were Joeys, Cubs, Scouts, Venturers and Leaders from Cygnet and Huonville led by the Huonville team of Michael VK7MRS, Dale VK7FNED, Jackson VK7FJAX, Lawson VK7FLFG and Nicole VK7FNJS on EchoLink and HF.

Radio and Electronics Association of Southern Tasmania (REAST)

Danny VK7HDM and Noel VK7FLCN setup at The Lea scout camp and operated HF, VHF 2 m and UHF on 70 cm + DMR. The Scout Groups that camped at The Lea included Mt Stuart, Glenorchy, Howrah, Lenah Valley and Mt Faulkner. This year was great communications from The Lea with many overseas SSB and digital contacts being made.

REAST has a new acting Treasurer in Tony VK7VKT. Tony will be acting in the role until the AGM in February 2018. Welcome back Tony. REAST's October presentation was given by member Rex VK7MO who gave a four part illustrated presentation on his recent 18,000 km journey chasing 10 GHz Grid Square EME DXpedition. Rex travelled far and wide into VK3, VK5, VK6 and VK8. Rex started with a short presentation on the VK6 Northern Corridor Radio Group which very much impressed him. The next part of the presentation was a tutorial on EME propagation and then moved to his grid tour and getting the Czechoslovakian club station - OK1KIR up to over 100 grid squares on 10 GHz EME. These grid squares were from the OH, OG and OF grid fields along the West Australian seaboard. The last part of the presentation was Rex's recent 10 GHz EME world record with James WA3LBI over a distance of 18949.4 km using QRA64D. Congratulations Rex. The presentation was videoed and will be available on REAST YouTube channel very soon. A huge thank you to Rex for this presentation.

A reminder that DMR is back on air in Southern Tasmania: VK7RCR in Hobart is again operational. Frequency is 438.525 MHz with a -5 MHz offset and it is located at Lenah Valley. Thanks to Clayton for that item. The Wednesday Experimenter's nights have seen some interesting retro technology with Kim VK7KB bringing along an ex-Antarctic Division time standard that used impressive large flat seven segment neon display units. The author bought along a range of Nixie tubes and Decatron tubes and we managed to carefully power

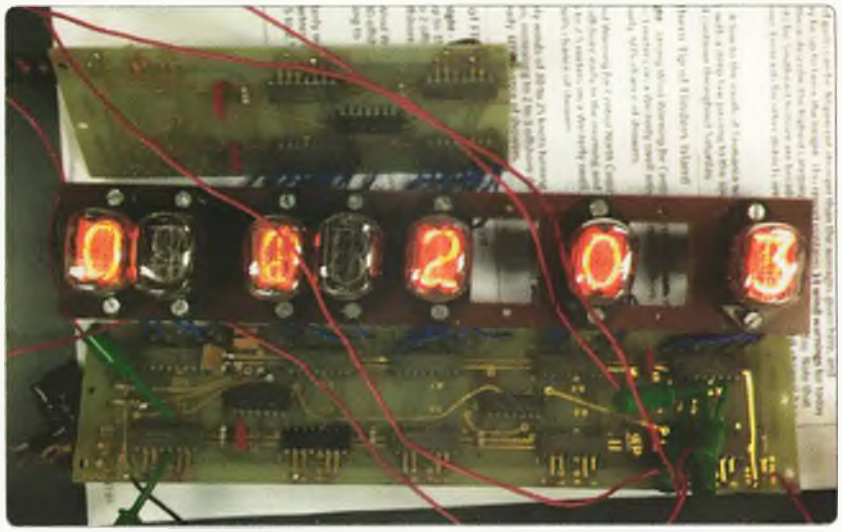


Photo 3: Nixie night saw the resurrection of some Nixie tubes (Photo courtesy of Justin VK7TW).

them and apply some BCD to get them to count. We also saw a modern Vacuum Fluorescent Display using a valve seven segment display unit that is used in the Arduino based Nixie Clock project. We have also put together a MiniKits 3.4 GHz power amplifier kit and three Minikits GALI-39 22 dB amplifiers thanks to Ron Cullen. We have also played with a Zumspot DRM/DSTAR/ C4FM & P25 modem thanks to Scott VK7LXX and we are starting to experiment with the 3.4 GHz panel transverters.

AMSAT-VK

AMSAT Co-ordinator
Paul Paradigm VK2TXT
email: *coordinator@amsat-vk.org*

Group Moderator
Judy Williams VK2TJU
email: *secretary@amsat-vk.org*

Website:
www.amsat-vk.org

Group site:
group.amsat-vk.org

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 Australian National Satellite Net is held on the second Tuesday of the month (except January) at 8.30 pm eastern, that's either 9.30 or 10.30Z depending on daylight saving. Please note we will be taking check-ins from 8.20pm-ish. 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. Operators may join the net via EchoLink by connecting to 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 numbers 9558. 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
VK4RRC Redcliffe 146.925 MHz -ve offset IRLP node 6404 EchoLink 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 2 m. Repeater Stowport 146.775 MHz. IRLP 6616

In the Northern Territory
VK8MA, Katherine on 146.750, CTCSS 91.5, IRLP Node 6800

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.

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

VK6news

Steve Kennedy VK6SJ

Northern Corridor Radio Group (NCRG)

We had a reasonably quite month getting over Hamfest in October. In light of the work required to get 15 m, 40 m and 80 m up and running, the contest operators at the club decided not to participate in the Oceania and CQWW contest this year and instead concentrate on getting the missing bands up and running.

Wayne VK6EH gave a very interesting presentation on Antenna Analysers, with an emphasis on his home made analyser.

We have set the date for the Hamfest 2018 at the weekend of 25 and 26 August 2018. NCRG hosted two groups of Scouts for JOTA as well as the first Foundation course on the weekend of 21 and 22 of October 2017. The date was also set for the annual Christmas party to be held at the club on 16 December 2017.

NCRG will hold its annual car boot sale at the club premises at Whiteman Park on 3 December 2017.

73

Steve VK6SJ

Bullsbrook Scouts JOTA Station VK6SBK

At our JOTA station, we had approximately 30 cubs and scouts from both the Bullsbrook and Ellenbrook Scouts Groups – Swan District – lucky to be able to sleep over and operate from the club rooms at the NCRG – at the northern end of Whiteman Park.

Operations took place on HF (mainly 20 and 40 metres), UHF DMR BrandMeister, and EchoLink both direct and via VK6RTH and 2 m via local VHF repeaters. However, the majority of our international contacts were on AllStar link via VK6RLM.

We spoke locally to groups sitting at Ham College, Wireless Hill and Leighton Battery. Thanks to the operators who assisted at those locations, in particular Neil VK6BDO, Dennis VK6AKR, Peter VK6LB and Brian VK6FFRA. A shout out also to Lewis VK6LDX, who operated VK6SNB at North Beach.

We made a few contacts interstate in VK2, VK4 and VK7.

Internationally we took the Scouts to England, Scotland and Wales, 10 states in the US, then on to Portugal, Germany, the United Arab Emirates, India, Japan, the Philippines and, not to forget, our cousins in New Zealand.

If it's at all possible, one young lady at our station ended up working an AllStar pile-up at 2 am Saturday morning, as the northern hemisphere cranked up in preparation for the weekend.

While it was the 60th year for JOTA, it was also a 60 years anniversary for WACRAL – running special callsign GB6CRA.

At one camp in North Carolina, they had 900 scouts at the station – obviously not all on-air at once.

Once again HF provided a challenge with atmospheric noise, possibly due to a nearby meteor shower, as well and other noise periodically rising and falling.

Our hardest contacts to make were talk group 907, the Brandmeister JOTA talk group, where many international stations were just coming over the top of each other – a little chaotic to say the least.

During the day – the Ellenbrook Group also managed a fox hunt – teaching the group the joy of radio direction finding.

Photo 1: HF Antennas at VK6GGS showing the station antennas of Future Systems used to demonstrate the Flex Radio and Hustler range.

On Saturday afternoon, James set up a great display of radios old and new, with a show and tell of many aspects to our hobby.

Lots learnt for me to improve for next year? You bet – but I expect we'll have a bunch more operators. The kids really enjoyed themselves and a number have shown a strong genuine interest in following on to get Foundation calls. Bravo.

Big thanks to the operators at the NCRG, in particular Anthony VK6AL, Stu VK6BG, Ian VK6YI and VK6TWJ – your patience and assistance was much appreciated – by both groups and myself.

Glynn VK6PAW on behalf of VK6SBK.

Seaward Region Girl Guides JOTA Station – VK6GGS

We had approximately 40 Guides and Brownies involved at Seaward Region located at the Guide/Scout hall at Perry Lakes Reserve in Floreat. We had HF (remotely located station in Malaga with user interface at the hall) and UHF DMR (both MARC and Brandmeister networks). We also maintained a JOTI presence. Equipment used was a Flex6700, Acom2000 amplifier (throttled down to 400 W of course), SteppIR for 20 - 6 m @ 15 m and a Hustler 5BTV used on 40 and 80 m. Antenna rotator and controller was also remotely controlled.

Our main focus for JOTA was on HF which is by far the most successful HF operation over the four years we have run JOTA from Floreat as VK6GGS. We worked Scout stations in NSW, (including our sister station in the Hunter Valley – VK2GGC), Perth, New Zealand, Germany and the USA.

Next year we have plans to set up at the new Guides State HQ in Belmont; hopefully with their own equipment, but with the Malaga remote system as a plan B. This will allow us to take more Guides on the radio journey to keep JOTA and amateur radio alive in the WA Guide community. We will also be operating from Friday afternoon through to Sunday afternoon, with radio also forming a part of the night time operation.

DMR MARC JOTA Talk Group 30 was well patronised but a little crowded so we stuck to HF in the end. JOTA could do with a number of talk groups for the event (maybe a calling Talk Group and a number of other channels for contacts).

Big thanks to Andrew VK6IA, Wayne VK6EH, Stu VK6LSB, Gerald VK6XI, Lindsay Horner (rigger extraordinaire) and Jennifer VK6FSYS for a great effort in getting the station on air in time for JOTA.

VHF Group JOTA Station

The WA VHF Group participates in JOTA / JOTI from our shack located at Wireless Hill, south of Perth in Applecross. Each year, for many years, we have assisted the Scouts, Cubs, Guides and so on to link up via radio and the internet. In 2016 for example we had some 80 Scouts participate on the Saturday even though band conditions were not stellar.

This year some spice was added to the mix when a request came in from one of our members, asking if we could support a second base in the Mosman Park region. Our member Bryan, VK6FFRA, kindly volunteered but was concerned about a number of aspects not the least of which being his relatively recent journey in Amateur Radio. Happily, Bryan is a highly qualified secondary school teacher so dealing with children was not going to be a problem. We made plans to support him in - to us - an unfamiliar location.

To complicate matters, the weather report for the up-coming weekend was not good with rain, high winds and electrical storms predicted and communication with the leader of that Scout group was intermittent at best until the 11th hour. However, by dint of perseverance and the efforts of several members we established that the site, the Leighton Gun Battery, would be suitable. And so it proved to be... on the Saturday Bryan hosted some 45 Scouts (Cubs, Guides) and nearly 20 parents and leaders too. So interested were this group in radio communications that we may have three new Amateurs recruited from their ranks, a welcome benefit for Amateur Radio.

We had nearly 50 QSOs at Wireless Hill during Saturday.

Thanks are due to many members of the WA VHF Group for making this happen - Ty VK6HTY our JOTA / JOTI coordinator and internet boffin Bob VK6KW a former Scout and long-time coordinator / font of wisdom on matters including JOTA, Peter VK6LB who with Bob and I assessed the Leighton site and loaned a working rig setup, Steve VK6BBM a former Queen Scout who operated Peter's rig at Wireless Hill (with Peter of course), Steve VK6VHZ and Allan VK6MST supported us with DMR, employing Allan's hotspot for connection. Terry VK6ZLT with Bob ensured that Leighton base ran smoothly for Bryan and that he wasn't alone in "the tunnels". Peter, Bryan and I also did some range checking on 2 metres a few days prior to the event to determine if we could work simplex as well as through the local repeater - we tried to be as prepared as possible.

On the day HF conditions were marginal although Bob coaxed a number of contacts from the noise. Peter, Steve (BBM) and I ran 2 metres and DMR very successfully although the congestion on 2 m - through our local VK6RLM World-linked repeater was interesting at times! DMR provided several contacts into the Northern Hemisphere - Denmark and the UK - and potentially into VK3 and VK7 as well. "Potentially" because lining up a prospective QSO partner and then corralling a group of youngsters intent on JOTI and fox hunting proved to be very interesting. Timing is all. Yes, the fox hunting was a success with thanks to Ty for helping secrete the foxes. My apologies to WA VHF Group members if I have missed an attribution - there was a lot happening on the day, not all visible to yours truly.

And so we rest our PTT thumbs

until next year. If you're reading this and have not yet participated in JOTA / JOTI please consider taking the opportunity - it can be "challenging" at times, but the overall feeling is satisfying and the smiles on young faces; priceless. And who knows, maybe we'll recruit a few new operators to our great hobby.

73 de Denis VK6AKR

Hills Amateur Radio Group (HARG)

The club's remote station is taking shape with quite a few members taking advantage of a relatively noise free location with some good antennas to make some great contacts. During the month the club gave a demonstration of how the system worked from both a remote user's perspective and how to set up your own remote station, from software installation to audio interfacing.

JOTA has been and gone for another year and the club made its facilities available for the local Guides and Scouts in the area. We had several groups through and had a great time working mainly 20 m. Even the local Guide leader took to the microphone, making contact with a group that her father had once been involved with. It was really pleasing to see the kids get involved and once over their initial shyness, take to the radio like they'd been rag chewing on 80 m for years, hi.

By the time this goes to print the VKFF activation weekend will have been run for another year. Unless our plans face last minute challenges, the group will have again taken to the bush and activated (or hopefully activated) the Avon Valley National Park, VKFF-0008. This weekend coincides with the spring VHF/UHF field day, so on top of our usual HF setup we will have antennas set up for 6 m, 2 m, 70 cm and 23 cm. The site we picked is about 280 m above sea level so hopefully some decent contacts with other participating stations will have been made.

The club is again having its usual Christmas function, to be held in our club rooms. This year we are holding it on Saturday 16 December 2017. Members and partners will again enjoy a top notch feast. Everyone is welcome; however we do ask a small contribution from non-members to cover our costs.

With this the last *AR* magazine of the year, I would like to take the opportunity to wish all a Merry Christmas and a Happy New Year. I would also like to thank Steve VK6SJ who has done a great job taking over the reins, compiling the VK6 Notes.

HARG has two officially set meeting days each month on the second and last Saturdays. We have access to the shack on most other Saturdays as well. The last Saturday of the month contains the general meeting with all other occasions left open for social and practical activities. Even the Saturday with the generally meeting is a social event. Doors officially open at 1:00 pm but you'll usually find someone there a little earlier. We usually kick off with a sausage sizzle. Visitors are always welcome. Get some more information at our website www.harg.org.au or our Facebook page @hillsarg.

73

Ray VK6ZRW

Ham College

By the time this edition of *AR* appears, JOTA/JOTI for 2017 will have long gone and the College will have run two more Foundation courses and two more assessment days. This has been a busy year introducing over 30 new hams to the hobby and upgrading many others. The College wishes to thanks all those who have assisted in running courses and assessments; without such enthusiastic volunteers we could not function. There is the continuing need to update the information that goes out on the College Beacon on VK6RIB on 145.175 MHz. If you have a listen and your club's details and meeting information are missing that's because we haven't received an update. The College has some exciting projects planned for 2018, so if you want to gain a standard, advanced or foundation licence express an interest via the college website *www.hamcollege.com.au*

73

Andrew VK6AS

West Australian Repeater Group

WARG continues to meet on the first Monday of the month, or second where the first is a public holiday, at our new meeting venue, the 1st Pelican Point Sea Scouts facility located at 12 Australia II Drive in Crawley, adjacent to the Royal Perth

Photo 2: Geoff VK6YR.

Yacht Club. Doors are usually open at 19:00 for a 19:30 start, with tea, coffee and refreshments available. Remaining meeting dates for 2017 are 2 October, 6 November and 4 December.

WARG's regular on-air technical and general net continues every Sunday, at 10:30 local time, on VK6RLM, 146.750. New members are welcome, contact WARG at *secretary@warg.org.au*

73

Anthony VK6AXB

Bridgetown Annual Hamfeast

Around 32 people attended the Bridgetown Hamfeast at The Cidery on Tuesday 26 September 2017.

Whilst the weather outside wasn't the most favourable, it provided the perfect excuse to gather around the open fireplace and the bar to enjoy the day.

Lunch selections included chicken Caesar salad, beer battered fish and chips, burgers and apple pie for desserts.

The now famous Hamfeast raffle prizes were won by Richard VK6HRC, Doug VK6DEW, Alek VK6APK, Murray VK6HL, Max VK6FN and Chris (I think) VK6KCH and raised $280 for Southern Electronics Group.

Many thanks go to Geoff VK6YR for his sterling effort making the name badges, Chris VK6JI for his photography skills and of course all those who attended, as it's everyone who comes along and joins in the day that makes it so great.

VK6JI's photos are online on his website: *http://www.cwjames.info/bridgetownhamfeast/*

Would also be interested to know your feedback on The Cidery venue (good and bad) in case The Quinninup isn't rebuilt next year.

Bunbury Radio Group

Firstly, at our 2017 Annual General Meeting, the following were elected to the Club's committee:

President: Norman VK6GOM

Vice President: Brian VK6HBS

Secretary: Richard VK6PZT

Treasurer: Murray VK6HL

Members:
Danny VK6FDRW
Bob VK6TJ
Richard VK6VRO

Because many club members live outside Bunbury, it has been decided to reintroduce quarterly meetings at regional locations. The feedback we received was that in the past these visits were really enjoyed by those who participated. It is proposed to hold our December meeting in Nannup.

Our Christmas function will be held at the Boyanup Tavern on 18 November 2017. Those who attended last year had a great time and the response for this year has been great. Members, who are interested in attending, should contact Alek VK6APK.

We conducted license upgrade assessments on Sunday 17 September and I am pleased to announce that Samuel Mayne passed his Foundation licence exam with flying colours. However, the story of the day is our own Paul Hamilton, who sat for his Standard licence and passed with ease. In fact, it was so easy, that he decided to sit for his Advanced licence and passed that as well. Many thanks to Andrew VK6AS for coming down from Perth to help out. Also congratulations to Richard VK6PZT for qualifying as a WIA Training Facilitator.

The September meeting went well, with several interesting technical topics. Highlight of the day was a talk by Paul Hamilton on the "Make It" activity which he (and XYL) are involved in. These people make all sorts of electronic circuits using Raspberry Pi and Arduino micro computers for the core innards.

Of particular interest was small digital component tester he had purchased from the internet. One simply plugs a component into a couple of terminals and it automatically brings up its complete specifications. It tests R, C, L, transistors, diodes to name a few. Now wait for it – it cost him $7 including postage.

In addition, Bob VK6TJ ran Bob's "Naughty Corner" which resulted in some interesting metaphysical ruminations on the difference between, electromotive force, potential and voltage. This was a lot of fun, but I'm still not sure I understand!

In the "Help" segment Richard VK6PZT asked for help with understanding how long a length of coaxial cable running to an antenna could be. He received a lot of advice in response to this question as it is quite a complex issue. Never-the-less Richard was able to walk away with the answer he needed and the rest of us had a good interchange of ideas.

The repeater mast upgrade continues at a steady pace. It is planned to erect the new tower within the next week or so. Nick VK6NA has also acquired a donga, or something, to house the electronics. Some members reported that the performance of the current repeater has fallen off. This will be looked at during the changeover process. The team will be looking for volunteers to help with the erection of the tower.

It's pleasing to see that the new WIA Board appears to have listened to the members and several changes are afoot. Apparently the finances are in bad shape and the Board is looking for ways to balance the books. One measure is to reduce the production of Amateur Radio to a bimonthly journal as it is a major expense. There is more to do and the Board seems to be on the right track.

The main technical activity at our November meeting will be a demonstration of the SDR Play communications receiver.

Radio Amateur Old Timers Club (WA Chapter)

Back in 1974 it was suggested to

the founder of the RAOTC, the late Bob Cunningham VK3ML, over the air that there should be some sort of Old Timers Club in Australia which would allow amateurs to belong to a common cause that would unite hams who have talked to one another for years. Subsequently 70 amateurs attended a dinner in Melbourne in 1975 and the Radio Amateurs Old Timers Club of Australia was inaugurated.

The first issue of the Club's magazine, Old Timers News, more commonly known as OTN, was published in March 1985 and has now grown to a 60 page A4 size magazine published twice a year.

OTN contains a wealth of stories, often profusely illustrated and mainly with an amateur radio flavour, written by members themselves. Each year the author of the best contribution wins the Stewart Day Award, an award in memory of Stewart's service to the RAOTC in producing OTN over a long period of time. OTN, now edited and produced by Bill VK3BR, is said by many to be one of the finest Club magazines in Australia.

Although the RAOTC currently has some 500 members Australia-wide, the nucleus of the Club remains where it started. At present all Office Bearers reside in VK3 and regular committee meetings as well as the Annual General Meeting are held in Melbourne. However, there is no reason why members from other states should not hold office should they offer to stand for election.

In Western Australia, members hold an informal lunchtime meeting at the Bayswater Hotel, Bayswater on the second Tuesday of each month except for January.

The objectives of the Club are to maintain the interest and original pioneer spirit of amateur radio, honour the history and heritage of our hobby, and encourage good fellowship amongst all radio amateurs. Membership is available to any person who has held, or has been qualified to hold, an Amateur Licence for a minimum of 10 years. Incidentally, there are often misconceptions about the phrase 'Old timers'. Club members are not necessarily 'old fogies' but are radio amateurs with experience and can be as young as in their twenties, thirties and forties.

On the first Monday of each month, except January, a half-hour of the latest Club news together

Photo 5: Equipment building and towers after the fire.

Photo 3: Inside before the fire was the equipment rack.

Photo 4: The fire on the mountain from a distance.

Photo 6: Inside the equipment room after the fire.

with items pertinent to the history of radio or of general interest is transmitted on several different frequencies and times, covering most of Australia. Full details are to be found at the Club website. For those unable to tune in at these times, the audio file can be downloaded from the Club website as from the following day. All amateurs and SWLs, whether or not they are Club members, are cordially invited to listen in and to join in the call backs which follow. See the Club website for details.

If you would like further information about the RAOTC, please have a look at the Club's website at *www.raotc.org.au*

73. Clive VK6CSW.

Amateur Radio Society of North West Australia

On 8 October the VK6RTP 2 m repeater located in Tom Price was destroyed by fire.

This repeater was installed back in 2009, located on top of Mt Nameless (Jarndunmunha) in the remote town of Tom Price in the West Australian Pilbara region. The mountain is 1130 m above sea level which made this repeater the highest in VK6. It comprised of a Spectra MX800 commercial repeater, 7 inch Toshiba laptop, iLinkboard audio interface for EchoLink as well as a 3G modem for internet connectivity and homebrew cavity filters built by WA Repeater Group many years back.

The repeater serviced the Tom Price / Paraburdoo area which is also frequented by many tourists visiting the nearby Karajini National Park.

An out of control fire started near the mountain on the afternoon of 8 October 2017.

Strong winds helped push it up the hill which engulfed the hut which housed the repeater. The hut and everything in it was subsequently destroyed.

I'd like to thank Craig VK6FLAM, Steve VK6HV, Michael VK6TU and Matt VK6MRG who have all had some input in some way shape or form in the operation of this repeater over the years.

Jono VK6DF

Peel Amateur Radio Group

The Peel Amateur Radio Group is pleased to announce that their next Annual Swap meet will be held on Sunday 4 February 2018 at the Bortolo Pavilion in Mandurah. The Bortolo Pavilion has been a great venue for us, it is also air conditioned and being the middle of summer it will be nice to keep cool whilst attending our third annual 'Swap Meet'. We look forward to seeing you all there.

Please RSVP to *parg_secretary@iinet.net.au* with your expression of interest – tables are free to book.

Doors will open for sellers at 8 am and buyers from 9 am – entry fee $5 per head.

There will be raffle tickets on sale as well as refreshments to get you through the day.

A number of vendors will also be there.

VK3news Geelong Amateur Radio Club

Tony Collis VK3JGC

The GARC Solar Panel Power System

For domestic households and those Clubs with their own premises who have not yet converted to Solar Panels to ease the continuing burden of electrical supply costs, the following start up statistics gathered by Lee VK3PK, GARC Club President, might be found useful in determining a way forward.

A typical day in *Figure 1* shows the daily use without any member activity at the club. Our quiescent power usage is about 0.1 kWH for 13 hours or 1.3 kWH imported with NO import during daylight hours. The peak shown was just under 100 WH.

The export during solar illumination is approximately 25-30 kWH/day and has been some 150 kWH/week. It is the exported power, during that time that we expect will pay for **all our imported power and daily connection charges**.

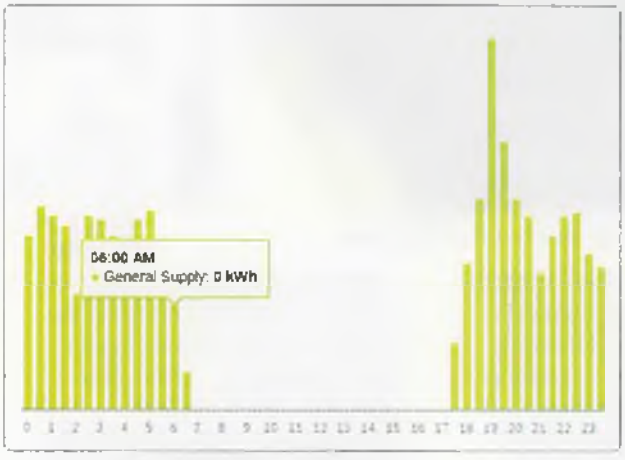


Figure 1: Power Usage with Solar Panels.

On the Wednesday afternoon meetings, all our power including boiling the jug and light is provided by solar panels and in addition the air-conditioning in summer.

In winter the club will have to pay for some import from the grid, as there will not be enough solar power to provide for heating and lighting.

Exported back to the grid in the first 35 days of operation was just under 700 kWH.

Photo 1: Solar Panels on Club House roof.

The Oceania Contest

A Preliminary report from The GARC Oceania Contest Manager Lou VK3ALB:

(Note that these figures are not official and they may change (downwards) after official log checking.)

Summary Statistics:

- 717 contacts across six bands giving an aggregate score 191,881 points
- 107 unique call prefixes worked
- 143 unique call signs outside VK
- 12 GARC members participated of which 7 GARC qualifying logs submitted
- 3 GARC Foundation operators on the air

Band activity for the club:

- 160 m 64 contacts & 8 prefixes
- 80 m 63 contacts & 8 prefixes
- 40 m 399 contacts & 53 prefixes
- 20 m 143 contacts & 62 prefixes
- 15 m 41 contacts & 28 prefixes
- 10 m 7 contacts & 2 prefixes

In preparing for the contest, the approach of the club was one of enthusiastic encouragement with talks in recent months bringing the Oceania contest to the attention of the members. There was also a presentation on the installation, configuration and use of VKCL logging software as in previous years and reminders via the club mailing list that the contest was approaching.

Conditions this year were considered by the majority of participants to be very poor with some of our more seasoned operators struggling to reach the target for the club award.

In early November the club held a "Contest Review" to allow all the members to get together and exchange war stories and experiences from the contest weekend. The evening also allowed the members to discuss tactics and explain their station setups and hear hints from the more experienced contesters on how to get the best out of contesting.

One Operator's Experience over the two days:

One of the more successful operators, Ken VK3DQW, went "bush" in Western Victoria and experienced both low noise and great band conditions and gave a presentation to the Club on his experience.

In all Ken spent four days out "bush" in preparation and operating, managing to work over 200 contacts covering all bands from160 m to 10 m. The most interesting time for Ken was at the start of the contest where 20 m was in great condition and he logged a page within 30 minutes.

The 40 m band was great towards evening on both days with lots of DX from North America, JA and EU.

The antennas Ken used were an 80 m Horizontal Loop at about 20 m height on HF (and 160 m as a Top Loaded Vertical) and another (Half Square) for 40 m and 80 m. Overall, 7 trees were used as supports.

Generally band conditions Ken experienced were good on all bands except for 15 and 10, and when daylight propagation was not available.

Photo 2: Ken VK3DQW.

Change to the GARC Executive Committee

As Peter VK3KP has relinquished the role of Club Secretary, this has now been taken up by Nick VK3TY.

Plan ahead

John Moyle Field Day	17-18 March 2018
Eastern & Mountain District Hamfest	25 March 2018
WIA Radio & Electronics Convention & AGM Gold Coast	18 - 20 May 2018

VK4news BARC

Les Neilson VK4FAEB

Les VK4SO retires

Les has indicated that he will finally retire from the role as Radio Licence assessor, a role that he has held for a number of years.

Les originally volunteered to attend a WIA course and became the official BARC member who had the qualifications to conduct examinations. There is no doubt that Les' contribution helped many a 'wannebe' ham get started on their way to radio heaven.

For instance, over the last five years our Club has had over 11 members gain their Foundation Licences, a further three members upgraded to standard licences and one member upgraded to an Advanced licence.

For me personally, Les was present and in action for my foundation licence and Standard Licence.

Thanks Les for all your contributions over the years we appreciate it

New Parrot repeater

Kevin VK4WA has recently installed a new repeater at the BARC Shack, power output is 10 watts and its frequency is 146.475 MHz.

You have a maximum of 3 minute record time and once you stop transmitting it will repeat what you said back to you and if the signal is noisy on replay it is a good chance that is how you are transmitting.

Our members have been testing it on all their radios to see what difference there is, if any. We have also heard some others radios on the frequency and wondered how they found it and what they thought of it.

JOTA - Saturday 21st October

The Rochedale Scouts hosted a very successful JOTA/JOTI for themselves and surrounding Scout/ Guide groups. But what a wet day all day we had for JOTA, yet it did not quell the enthusiasm of the attendees; all the Scouts and Guides were enthusiastic as can be. A very informative communication day was delivered for all the attendees ensuring they all experienced the various communication activities set up for the Scouts and Guides with many nearby groups attending throughout the day.

They provided the internet hubs to talk to other scouts which was well patronised, as well as many other organised communication activities and each participant had a wrist log for them to complete all the activities provided on the day and yes they were even talking to each other using cans and string - I know old school, but it made them laugh.

BARC members who attended were Les Neilson VK4LEZ, Len Eaton VK4FIAA, Jim Kelly VK4HJK and Greg Meyers VK4FPGM.

VHF

Les and Greg operated continuously the entire afternoon on the VHF Radio, firstly with Beenleigh Scouts operated by SARS and then BP Park at Samford which was operated by Redcliffe Amateurs, All of us had times when we had no one to talk to but we kept it going wherever possible. I even did a recruitment drive down in the hall and got swamped shortly thereafter with eager participants.

Our Parrot repeater was successfully put into good use by getting shy students accustomed to operating a radio, resulting in lots of laughter and embarrassing looks after hearing themselves on the air.

Leaders and Scouts really enjoyed the practical experience of the repeater and afterwards we did get a lot more participation on the real radio VHF.

HF

It was disappointing this year as we had two stations operating. Len brought and set up all his own gear next to the Scout hall and tried really hard on HF and he did hear the following stations: VK2XRB, VK2SCB, VK4AKK, VK3SED, VK4SMK, VK7JON, but no one answered his transmissions.

He stayed on 7090 for the 3 hours with several shifts to 7080 for variation, then cranked up the power to 100 w now and then, but still no luck.

And to rub salt into the wounds he had one operator constantly and persistently calling over everyone with quite a strong signal but then this operator never answered anyone's returns; how frustrating!

Jim Kelly operated the Yaesu FT-897 up in the shack and had a similar experience as Len on the same frequencies and then started scanning for operators and while he found a lot of traffic there was still no one to converse with.

Photo 1: "Rain, Rain, go away" not likely, JOTA enthusiasm reigned over the rains.

Photo 2: Yes I can hear you - Joeys enjoying can and string communication.

Photo 3: Len using his buddy pole and trying his best to find HF stations his audience could comprehend.

The re-erected Windom antenna (we got it up higher) seemed to work quite well, but future trials will give us a better appraisal of its potential.

Antenna Mast

We have accepted an offer for a 15 metre windmill type fixed base mast that is no longer in use. It will replace our extendable mast that we have not completed installing yet.

This mast will allow easier access to multiple antennas, as it was operating with total of 7 antennas for HF, VHF & UHF, plus a TV antenna as well.

This is a great gain over the previous mast as it would only handle one or two at maximum and we have the bonus of no guy wires either to contend with.

Future Presentations

ANTENNAS for all seasons - As this topic probably is one of the most discussed or argued topics in Amateur Radio; plans are underway to let our members deliver some informative discussion sessions in our future meeting presentations. We shall have some theory on antenna types and applications, some practical demonstrations to show what really works at home and in the field and we might be able to build some too. Ha ha! I think this should keep us occupied for all of 2018, without any introducing any other topics.

Thanks
Have a great Day
Les Neilson
Rochedale Sth Qld
Ham VK4LEZ
BARC President

Hamads

FOR SALE – VIC

IC-92AD D-Star Radio includes Icom rapid charger SMA to PL259 adaptor to suit radio Comet SMA24 4 dB gain antenna to suit $500 ono. LA145 2mtr SSB/FM linear base station never been mobile 85 W output $120.
KL405 upgrade HF linear 200 W output never been mobile $120. Manson SPS9250 25 amp PSU Switch Mode $200. FT-1802 Transceiver 2 m 5 W – 50 W output never been mobile $80. Powertech MP3078 20 Amp PSU 13.8 V brand new switch mode never been used $100. SWR145 2 m Oscarblock SWR/Power Meter $70. Opek HVT600 10 Band vertical antenna 200 W version with H/Duty Magnetic base and cable never been used $120. Aviation Altronic C9073 Head phones never used $80. Werner Wulf 12 Element 13 dB 2 m Yagi in storage for 30 years $130. Large quantity of *AR* mags etc. back to 1976 $50. All manuals and original cartons. No Mods TLC by owner.
Stan VK3BNJ 03 9743 6708.

FOR SALE – NSW

Kenwood TS-870 HF transceiver with built in antenna tuner. Also included is a new hand held mike and a complete owner's manual. The unit is in good condition with no marks or scratches on the casing. Priced at $950.00 inc. freight or $900.00 with purchaser paying freight.

Contact by email only at *bevin63@yahoo.com.au*
Bevin Newitt VK2FBNC

FOR SALE – QLD

Shed clean out: Older commercial TWR units – Philips FM828 Mid Band and Motorola Syntrex Mid-band and UHF, plus others.

Call Kevin for details VK4KWT Mareeba 0428839469
Kevin Thomson VK4KWT.

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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/*

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