Amateur Radio

Volume 81
Number 3
March 2013
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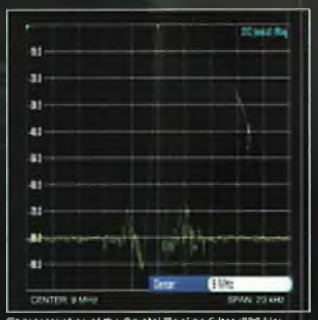

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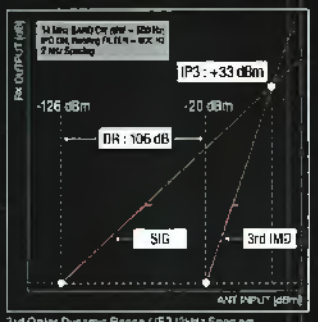

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Contributions to Amateur Radio

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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The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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

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Member of the International Amateur Radio Union

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Editorial

Peter Freeman VK3PF

Software Defined Radio

Radio manufacturers are releasing more models which use Digital Signal Processing (DSP), with most models using the DSP predominantly in the receiver. Some manufacturers produce complete Software Defined Radios, with perhaps FlexRadio Systems the best known with their various models. Many amateurs in Australia as well as around the world have been purchasing the boards developed by the hpsdr project, facilitated by TAPR and AMSAT.

The hpsdr project initially produced, over a period of time, a number of modules to plug into a motherboard to produce a functioning SDR transceiver made up of a half watt transmitter, receiver and a board to communicate with the controlling computer. Add-ons include a precision frequency source, a 20 W power amplifier and a full set of band pass filters for Tx and Rx. I must admit that I have not yet fired up my modular hpsdr system!

In the second half of 2012, hpsdr released the Hermes single board transceiver, incorporating all the key modules on a single Eurocard size board. It is again only 0.5 W output on transmit, but is capable of operation from 50 kHz to 55 MHz. A matching amplifier is the next likely production project.

If you are interested in a Hermes board, you are not yet out of luck. TAPR only produced the number of units pre-ordered. However, you can buy a Hermes transceiver from Apache Labs in India. Apache Labs also offer the Anan-10 transceiver, which uses the Hermes board combined with a 10 W power amplifier and filter board in a very smart looking case. They are also developing two 100 W transceivers, one based on the Hermes board, with the second using an enhanced version which has two separate receivers on the board, together with a large controlling FPGA chip which in the future may be able to include a simple controlling computer.

None of these SDR transceivers are cheap, but they are also not expensive in comparison to conventional transceivers, especially if you already have a suitable computer in the shack. They all have the advantage of excellent performance combined with the ability to be run by software which can be readily updated and even customised if you have the programming skills.

At the other end of the scale are a number of SDR receivers. The January 2013 issue of *QST* had an article *Cheap and Easy SDR* by Robert Nickels W9RAN. Robert describes how to use a cheap (nominally $20) TV dongle as a VHF/UHF receiver using free software and an upconverter board to enable the reception of signals in the HF bands.

The latest issue of *RadCom* (The RSGB equivalent of this magazine) has a detailed review of the latest FUNCube Dongle Plus. It is a little more expensive, at around 150 pounds, but it includes HF through to 1700 MHz reception, with a gap.

For anyone with a computer and access to the web, there is no reason why you cannot be exploring the possibilities of SDR – all you need to do is to find one of the

Continued on page 5

WIA comment

Phil Wait VK2ASD

Our Volunteers: The Backbone of the WIA

As I write this President's Comment, some bush fires are under control and the flood waters in southern Queensland and northern NSW have receded. These catastrophic events seem to be coming around all too often in Australia and, as our climate is ever-changing, this pattern may continue or even get worse.

A big thank-you to all those radio amateurs who helped out by devoting their time and effort to the Volunteer Bush Fire Brigades, the SES, WICEN, NGOs, or simply lent a hand. You have done the very best thing possible for the future of amateur radio.

Last month I announced that the WIA was adopting a new Cloud-based Membership Management System called MEMNET. As I said, we expect this arrangement will help improve member services and also help to contain the WIA's costs in the medium to long term.

I now want to tell you about a second initiative: one which we hope will encourage more members to participate in the workings of WIA, and to make the WIA a more transparent and open organisation.

The WIA is a membership organisation with a very wide range of specialist functions and member services. For such a small organisation the range of complex activities is truly remarkable.

Core functions and services are administrative in nature, (membership administration, examination and call sign management, product sales, etc.), and are mainly performed by salaried staff.

Volunteers then perform the diverse range of highly specialised functions: publications *(you're reading one of them)* and the website, the WIA Broadcast, licence training and assessment, contests and awards, QSL card distribution, repeaters and beacon co-ordination, the club grants scheme, ITU, IARU and ACMA liaison, general technical advice, interference and Standards, etc.

These represent the majority of the WIA's more visible activities and without doubt our volunteers do a terrific job, often inadequately recognised, balancing their family life and work commitments and many other activities against the demands of the WIA.

In order to reduce the workload on volunteers, and to improve the member experience, we need to attract more people into the workings of the WIA, and we believe to do that we need to structure things a little differently.

We are proposing to group the WIA's non-core activities into 10 broad functional areas, each comprising a team of volunteers with a Leader, Deputy Leader, and a WIA Board member. The WIA Board member will not act as the committee Leader, rather is there to ensure the committee acts in line with the Objectives stated in the WIA Constitution and that WIA Board policy is enacted. Existing volunteers are expected to take leading roles in the new committees, at least initially.

We will encourage the committees to interface closely with members and Affiliated Clubs, and to formulate recommendations for the WIA Board.

It is hoped that this structure will spread the workload on our volunteers, improve communications and interaction between members and the WIA, improve services and responsiveness, and encourage more people to become involved in the WIA.

Hopefully, with time, it will also encourage more people to join the WIA.

So, we have our work cut-out for us this year with the introduction of MEMNET and our proposal for restructuring volunteers. We have now entered into the formal agreement with Omni Software for access to the MEMNET Membership Management System, and we are now entering the implementation stage.

We have circulated our proposals for the new volunteer system amongst our current volunteers, and we plan to circulate the proposal more widely after we have reviewed and incorporated a number of their excellent comments and suggestions.

A recent change to Australian Corporations Act 2001 means public companies and associations with less than $1 million turnover can elect to have their financial accounts 'reviewed' rather than 'audited' (for details of this change, see www.asic.gov.au). Although the process of investigating the accounts is similar, the less formal review process is significantly less expensive. The changes also allow small corporations such as the WIA

Continued on page 5

WIA news

ACMA updates information on High Power Trial Assessment

The ACMA has updated information on the high power trial assessment that has now commenced. The ACMA web page which discusses the trial has now been updated to include the FAQs.

In addition, an announcement has also been placed on the ACMA */engage web page. Information on the trial assessment is also included in the February edition of *AR* magazine.

Doug McArthur VK3UM, a well-known Earth/Moon/Earth experimenter, has generously allowed the WIA to place his popular EMR assessment calculator on our website. The Calculator allows assessment of safe zones in the HF, VHF, UHF and microwave amateur bands for a variety of antenna situations, and covers a number of EMR Standards including the Australian Standard for EMR.

You can find links to the above items in the News section of the WIA website.

You can visit Doug VK3UM's website *http://www.vk3um.com/*

WICEN involvement in flooding

The great flood disaster in the Australian state of Queensland continues, but as it begins its big clean-up and recovery phase, a picture of emergency communications provided by radio amateurs is starting to emerge.

Initial reports from Ewan McLeod VK4ERM, the WIA National WICEN Coordinator, are that HF links were requested by Queensland's Water Police from Brisbane to Cairns. Other WICEN help was given to the Townsville and Rockhampton regions pending repair by Telstra of its fibre optic cables to the north.

Widespread power and communication disruption took a number of days work by repair crews. No more is immediately known about WICEN and its emergency role, but this should be available soon. At least six people have died in Queensland. Others are missing. Many thousands are homeless and sheltering in relief centres, while some towns remain inundated and isolated.

The weather system, ex-tropical cyclone Oswald that caused record flooding in many areas, moved south to affect many parts of New South Wales.

Jim Linton VK3PC, Chairman IARU Region 3 Disaster Communications Committee

WIA 2013 Annual Conference Registrations now online

Registrations are now open for the 2013 Annual Conference. You will find the online registration form at *conference.vk6.net*

The Conference is on the last weekend of May, 24th-26th, at the Tradewinds Hotel Fremantle.

The organisers have negotiated a special room price for the conference, and you'll need to mention the WIA Conference at the time of making your hotel reservation with Tradewinds hotel. Their phone number is (08) 9339 8188 and their website is *http://www.tradewindshotel.com.au/*

There is an early bird discount of $10 per person for registrations made before April 1st, so do get in early to save a few bucks.

Australia's first amateur satellite

The Australian Geographic website features an article on Australia's first amateur satellite.

They say: On 23 January 1970, Australia's first amateur radio satellite was launched. Built in 1966, Australis-OSCAR-5 was the first amateur radio satellite constructed outside of the United States.

In the 1950s and '60s amateur radio was a popular hobby. The Melbourne University Astronautical Society began tracking amateur radio satellites, which developed into a project with the Melbourne University Radio Club to build their own amateur radio satellite. The US Air Force and NASA provided free launch opportunities when there was spare capacity available on the launch of their larger satellites. In Australia, however, the OSCAR-5 had to wait several years for this type of launching opportunity to arise.

Unfortunately, the delay meant that it was beaten to the status of Australia's first satellite by the Weapons Research Establishment's satellite, WRESAT, which was launched from the Woomera rocket range in November 1967.

Read the full Australian Geographic article at: *http://www.australiangeographic.com.au/journal/australias-first-amateur-radio-satellite-launched.htm*

Tasmanian Bush Fires operations

WICEN in Tasmania was finally stood down after 20 continuous days of operation at the Incident Management Centre at Cambridge, near Hobart airport. Operations have now been wound back. WICEN was posted by the Tasmania Fire Services to mainly control the busy 80 MHz radio traffic during massive fires.

Both major fires started on 3rd January, on the Tasman Peninsula and in the Derwent Valley, and were still considered active in late January, one being classified as contained and the other controlled. The days serviced by WICEN and other southern Tasmanian radio amateurs varied between 12 and 24 hours.

WICEN Tasmania (South) Operations Coordinator Rod

Editorial

Continued from page 2

cheap TV dongles. Just be sure to do some research first, so that you buy one which is compatible with the software that is freely available.

SOTA progresses

Only a few days after I had submitted my last Editorial, news came through that the VK1 SOTA Association had completed all steps required for registration. VK1 became "live" in the SOTA system on February 1 at 0000Z.

In VK1 the height bands for summit points are markedly different to VK3 and VK5, primarily because most of the ACT is 600 metres or more above sea level.

The local Canberra club had a meeting in the week prior to the commencement of SOTA in VK1 and some of the locals who had already been participating in the program gave a presentation on SOTA. The 40 m band was alive with activity on the Friday morning, with six summits activated in the ACT. Several operators activated summits in VK3 and VK5 – I managed to work seven summit to summit contacts from one of the local summits. I think that I worked all the VK1 summits except for the summit which was only activated with 2 metres FM.

Activity has continued to be at a good level in VK1.

There was also a lot of activity in VK3 on the day of the Centre Victoria RadioFest, with several operators activating summits before, during or after the RadioFest. Part of the idea was to enable people at the event to make a SOTA contact from the event site. This did not eventuate due to the high level of noise at the RadioFest. It also made it harder to qualify a summit – many of the regular chasers were at the event.

Work is progressing with the surveying of summits in Tasmania and New South Wales. These states should hopefully become live in the SOTA system later this year.

Cheers,

Peter VK3PF

WIA comment

Continued from page 3

to make financial accounts available to members on request, rather than having to mail every member a printed set of accounts. These two changes will provide savings of almost $4,000 annually to WIA.

The financial report will also be placed in the member's area of the WIA website and distributed at the WIA's Annual General Meeting in Perth. Members who would like a printed copy of the financial report should request a copy from the WIA office.

I must say I have been encouraged by the number of registrations for WIA Directorships this year; so many that we need to hold elections. Election and candidate information can be found in this edition, so please do take the time to vote, and choose very carefully. WIA Directors have significant responsibilities to the members and to the law, and should be chosen carefully for their relevant skills and experience.

WIA news

Continued from page 3

Finlayson VK7TRF reports that 24 radio amateurs contributed to the effort, totalling 666 hours at the radio desk, plus time in logistical support keeping up the supply of operators to the task. Seven operators did in excess of 45 hours each, including three more than 60 hours and one working a total of almost 80 hours.

WICEN Tasmania (South) Secretary, Roger Nichols VK7ARN said initially that there were two operators on each of the two networks, but this was wound back to one on each after ten days. Roger VK7ARN said workloads gradually declined and, over the last few days, consisted mainly of aircraft tracking, ensuring each aircraft's position and the situation was known at least half hourly. This effort was enabled by having a core group of trained and experienced operators who were able to guide others until sufficiently familiar with the task.

A key learning issue was knowledge of the working of, and roles within, an Incident Management Team made up of Fire, Parks and Forestry personnel. Roger VK7ARN said, "This was particularly complex in this case because two incidents were being managed within the one centre." All reports to date are of a high level of satisfaction by the 'powers that be' for a job very well done. "Though this particular campaign has ended, it's still a long way to go to the end of the bushfire season in an even drier environment." WICEN has at least now a larger pool of experience to draw on if the need arises.

Australian given an AMSAT accolade

Jim Linton VK3PC

It was a very humble Tony Hutchison VK5ZAI, of Kingston, South Australia, who received an award from AMSAT for the voluntary work he has done for the Amateur Radio on the International Space Station (ARISS) program.

In accepting this award, Tony VK5ZAI said it was a very nice honour which made him feel humble. *I look at it as a combined effort for all those that have helped over the last 20 years because I couldn't have done it alone,* he said.

The citation said: *In recognition of your outstanding contributions to AMSAT Human Spaceflight. Thank you for your support and leadership to AMSAT as the key coordinator and mentor of all the ARISS schools in Australia. AMSAT also commends you for your sustained support as the premier ARISS telebridge operator. Your efforts and can-do spirit are an inspiration to us all.* It was signed by Barry A. Baines WD4ASW, President.

In praise of ARISS, Tony VK5ZAI said, *They're a great group to work with and I have made many friends through it and amateur radio.*

He said ARISS was a positive way of introducing amateur radio to students and others throughout the world by demonstrating how it is used to communicate with the International Space Station crew members.

His space communications involvement began in 1993 when South Australia's Loxton High School students talked with Cosmonaut Alex Serabrov on the MIR space station.

In 1998 Tony VK5ZAI handled most of the communications between Australian-born astronaut Andy Thomas VK5MIR and his family during his flight on MIR. He was then invited to be an ARISS telebridge station to begin handling most of the private family contacts for the first three crews on the International Space Station, along with school contacts.

Tony Hutchison VK5ZAI with his certificate of recognition from AMSAT. Photo courtesy of Tony Hutchison VK5ZAI.

On one occasion he arranged an ARISS contact that occurred during the Australian Scout Jamboree at Elmore in January, 2007, as part of the world scouting movement's centenary.

For his years of achievement he received the Group Achievement Award from NASA's Lyndon B. Johnson Space Centre in Houston Texas in 2008.

By being the Australian ARISS Coordinator and a Telebridge Earth Station, using his satellite-tracking system, he has figured in many scheduled link ups with the ISS by schools.

His working know-how has spread to other countries through the development of IRLP and EchoLink for ARISS contacts, plus the design of interface units used for ARISS telebridge contacts in Australia and Europe.

The WIA presented him with the Chris Jones Award in May, 2009.

The exploits of Tony VK5ZAI have also appeared in print, including a 2010 article in 'Extra', an insert in local regional newspapers.

At the time he took a six month appointment as the international operations leader for ARISS. The appointment did not preclude him arranging the hardware and telebridge support for a space contact during the WIA Centenary Dinner. The ARISS contact involved ten students from the Trinity Christian School at Wanniassa, and made history as the first to occur in Canberra.

The Channel 7 'Today Tonight' show interviewed Tony VK5ZAI who gave some great insights as to how amateur radio can provide support for NASA, as well as raise public awareness through the ARISS schools program. The segment has been posted on the WIA website and also to YouTube and features as a prelude to many Australian school contacts with the ISS.

The Summer Loop: an ultra-light magnetic loop antenna for pedestrian mobile

Peter Parker VK3YE

Given the number of FT-817s around it is surprising that more do not operate pedestrian mobile, especially on the higher HF bands. A suitable antenna is usually the stumbling block. Described is a lightweight 40 cm diameter magnetic loop suitable for fifteen through to six metres. Make it for the summer sporadic-E propagation and the prospect of DX as sunspot counts rise. It can be built in an hour and you may already have the parts.

How it works

The magnetic loop is a large tuned circuit with a single turn coil of copper tubing or thick cable. A variable capacitor resonates this to the frequency of interest. Signals from the transceiver are coupled via a smaller loop, a fifth the diameter of the larger loop. Provided tuning is sharp, indicating a high quality tuned circuit, and resistances are minimised, the loop will radiate efficiently. Their wide range of radiation angles allow them to compare well against larger antennas on transmit. Advantages on receive include low noise pickup and directivity to null out interference.

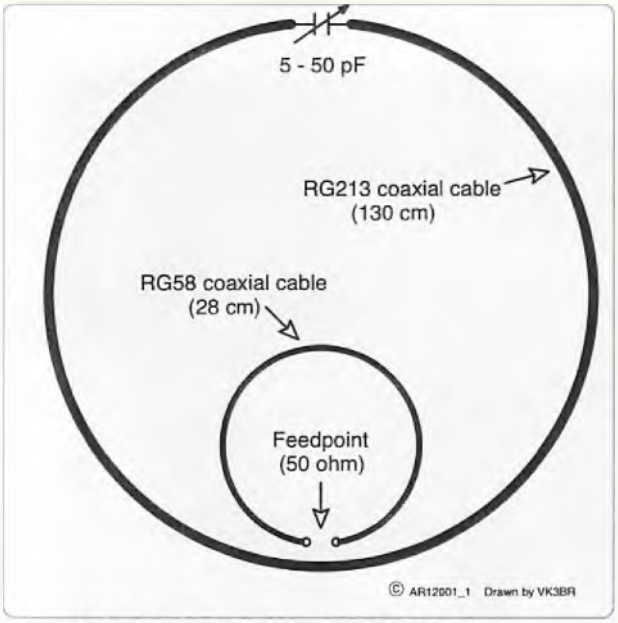


Figure 1: The Summer Loop schematic diagram.

Obtaining the parts

You will need the following:

- RG-213 coaxial cable – 130 cm (for main loop)
- RG-58 coaxial cable – 28 cm (for coupling loop)
- 5 to 50 pF air spaced tuning capacitor
- RG-58 coaxial cable – 150 cm (for feedline – not critical)
- BNC or PL259 plug (to suit transceiver)
- Timber dowel – 120 cm x 10 mm
- Single sided fibreglass PC board material – small pieces
- Small nut and bolt
- Gaffa or insulation tape

The hardest part to obtain is the tuning capacitor. I used a 5 to 50 pF beehive trimmer from an old VHF low-band transceiver. Several turns will go from minimum to maximum – a big advantage as the antenna's tuning is very sharp. These have concentric cylinders, about 20 mm high, whose capacitance varies with the degree of overlap. 25pF beehive trimmers are more common and are about 10 mm high. Two in parallel will suffice for the higher HF bands, though their higher minimum capacitance may put six metres out of reach unless the loop is made smaller. A conventional small air-spaced variable capacitor will also do. Use a reduction drive, or at least a large knob, to overcome the very sensitive tuning. If all else fails make your own capacitor. Circuit board material, copper pipe, tinplate or coaxial cable may all be useful. Because they're so cheap to build, making several single band loops, each with a fixed tuned capacitor, may be easiest. Suggested centre frequencies are 21.250, 24.930, 28.450 and 50.150 MHz.

While I used 50 ohm coaxial cable to form both the main and coupling loops, you could use alternatives provide you are aware of their performance characteristics. 13 or 19 mm copper tubing, available from hardware stores, would work better than the RG213 used here. In contrast a thinner conductor, such as TV coax or three-wire mains extension cable, would be worse. Online magnetic loop calculators or downloadable spreadsheets such as at *www.aa5tb.com* indicate the efficiency penalties of changing loop size or conductivity.

Photo 1: A small loop is ideal for a lightweight pedestrian mobile station.

Construction

Start with the larger loop, cutting the RG-213 coaxial cable to length. From each end strip about 20 mm of outer jacket, splay out the shield and strip about 15 mm of inner conductor. Twist the shield over the inner conductor and solder together. Think about how you will mount the variable capacitor at the top of the loop. The connection between it and the outer loop must be both electrically sound, that is, low resistance and mechanically sound, so the loop does not stress the capacitor's terminals, even when walking around. Photo 3 gives one idea.

I used a piece of single sided printed circuit board material. Hacksaw slits made copper 'islands' for each end of the loop and for the variable capacitor to be soldered to. Another scrap of circuit board and 3 mm bolt allows fastening to the carry pole. *Ignore the etchings as these were from another project.* The length of RG213 used here is short enough not to need cross-pieces for support. However the bottom does need support. I achieved this on mine by drilling a 2 mm hole in the dowel and threading some fine line through to hold the loop.

Photo 2: The Summer Loop itself.

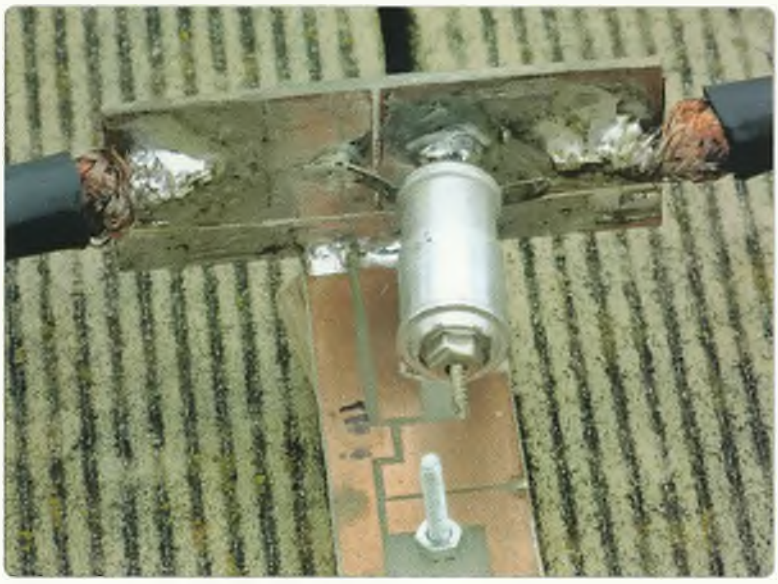


Photo 3: The beehive capacitor assembly.

The RG58 coupling loop's inner and braid are again shorted at both ends. These connect to the feedline. This should appear as a short circuit across the antenna plug. Insulation tape or similar holds this against the bottom of the loop, away from the variable capacitor. The RG58 feedline length is not critical except it should be long enough to comfortably connect to the radio and short enough not to be tripped over. 130 to 150 centimetres is suggested if the radio is carried at around waist height.

Adjustment

Connect the loop to a 28 MHz SSB transceiver with attenuator off and RF gain set to maximum. Do this at home or somewhere you know electrical noise is present. Adjust the capacitor from minimum to maximum, pausing frequently to listen for band noise. There should be a sharp rise in noise. Tuning past it will cause noise to subside. Apply no more than five watts of RF and note SWR. You should be able to find a point where it dips to an acceptably low value. If it is not near 1:1, move the coupling loop a little for a better match. Change frequency and note how sharply the SWR rises away from the centre frequency. If it does not rise much then your loop is likely high DC resistance, low Q and inefficient. Repeat the test on other bands to establish the loop's coverage. If your variable capacitor tunes the specified range you should be able to cover fifteen to six metres.

If its minimum capacitance is too high, you will lose six metres. Those who do not care for six metres could make the loop larger say, 2 m circumference, and enjoy the 17 / 20 metre coverage and higher efficiency.

What to expect

The loop's ability to get contacts reflects the propagation and operating practices on the frequencies it covers. Six metres SSB has good local coverage but is usually quiet as most users are DXers who rarely transmit during the band's off-months. However December – January is the sporadic-E season, which can provide good QRP contacts up to about 3000 km. Japan is another popular DX catch, especially from northern Australia. FM has its moments but is generally less useful than SSB. The 6 m FM one MHz repeater split is also too wide for optimum transmit/receive performance with this antenna.

Like six, ten metres also comes alive over summer. The MUF more often exceeds 28 MHz than 50 MHz so long distance DX contacts are more common there than on six. Although deep fading makes FM a frustrating mode, ten's narrower 100 kHz repeater split can be accommodated on a magnetic loop. If building a single band loop, I would recommend ten metres and making it double size to maximise efficiency.

Results and conclusion

The Summer Loop was finished during a VHF/UHF field day. Good reports were received from stations up to 100 km away on six metres. Summer openings have provided JA on 15 and 10 metres and interstate contacts on 10 and six metres. It will not make you the strongest signal, and I would not recommend it as an only antenna unless space is tight. Think of it as a fun antenna for when conditions are good. However even if only infrequently used, its low construction cost makes it a worthwhile and enjoyable project with a high chance of success.

Handy cable organiser

Justin Giles-Clark VK7TW

If you are like me, I am constantly battling with cables, coax, power cords, and the like in the shack. I can never seem to find the right patch cable, even though you know you have made it up.

On a recent trip to the local tip shop I came across some random fridge and stove shelves. I took some RF connectors with me for spacing and located a suitable shelf. Carefully cutting the shelf in half with a hacksaw or angle grinder provides two cable racks. File or grind off the sharp burs on the cut ends.

Place the cut ends in a vice and pursuade them to bend ninety degrees and you have created the end stop for your cable organiser.

Find some suitable length screws with large washers and mount on the back of a door or end of an equipment rack and you have two recycled cable organisers for the shack. Happy recycling!

Photo 1: Cable rack cut.

Photo 2: Cable rack bent.

Photo 3: Cable rack with cables.

The 'Split 40': a split frequency QRP CW transceiver for 40 metres

Peter Parker VK3YE - www.vk3ye.com

Introduction

Successful QRP operating needs more than usual attention to antennas, frequency selection and operating habits to compensate for the lower power. Equipment is also important; those who say it's not have never used a 'bare bones' rig!

Minimalist homebrew transceivers are sometimes lauded for their small size, simplicity and the novelty of housing. However they often lack features that win contacts, such as frequency agility, a transmit frequency offset, efficient tran`smit/receive switching and receive selectivity.

Rudimentary designs aren't pleasant to use while the best are too complex for most. The practical 'middle ground' in homebrew QRP is occupied by medium complexity direct conversion and simple superhet designs. With the right features such transceivers can give many enjoyable contacts.

In this article I'll describe what makes a successful QRP transceiver. An example suitable for conversational use is described. While it operates on 40 metres, minor component changes can allow other bands.

Feature	Conversational CW	DX / contest CW
Frequency coverage and control		
Crystal control: no VXO	Not acceptable	Not acceptable
VXO control: 15 – 20 kHz segment	Acceptable	Not acceptable
VFO: entire CW segment	Desirable	Essential
Good bandspread/low tuning rate	Desirable	Essential
Transmit/receive frequency offset	Essential	Essential
Split frequency capability/dual VFOs	Not important	Desirable
Transmit/receive switching		
Multiple switches transmit/receive	Not acceptable	Not acceptable
Single switch transmit/receive	Acceptable	Not acceptable
Semi-break-in	Desirable	Essential
Full break-in (QSK)	Desirable	Essential
Receiver muting and sidetone	Desirable	Desirable
Transmitter		
> one watt power output	Essential	Essential
Full five watt QRP power output	Desirable	Essential
Receiver		
High sensitivity	Desirable	Essential
Good selectivity (eg audio filtering)	Desirable	Essential
Single signal reception	Not important	Essential
High receiver dynamic range	Desirable	Essential
Low receive current drain	Essential for portable	Essential for portable
Miscellaneous		
Small size/light weight/robust	Desirable for portable	Desirable for portable

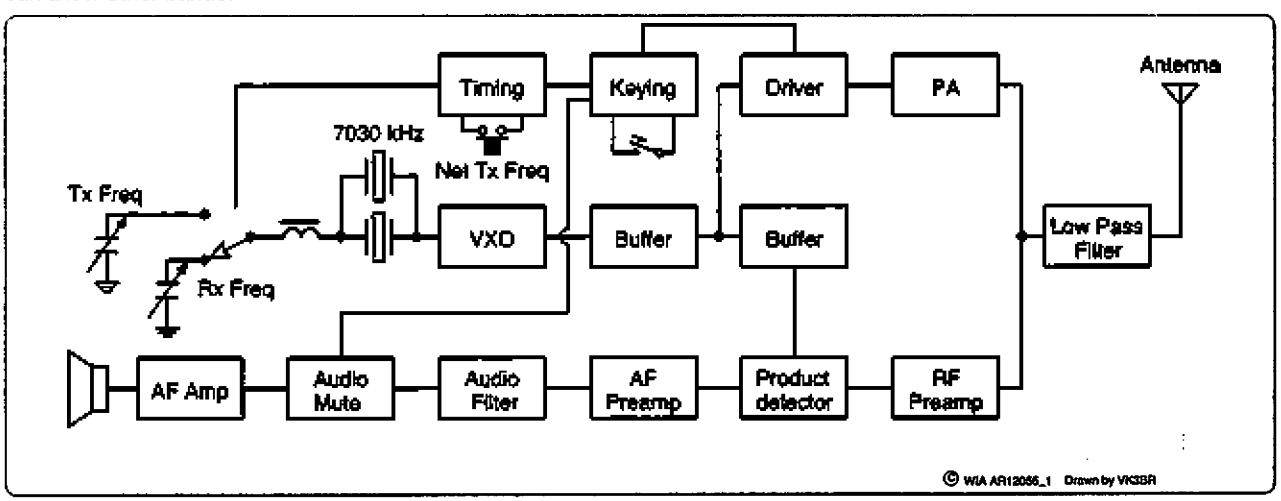


Figure 1: Block diagram.

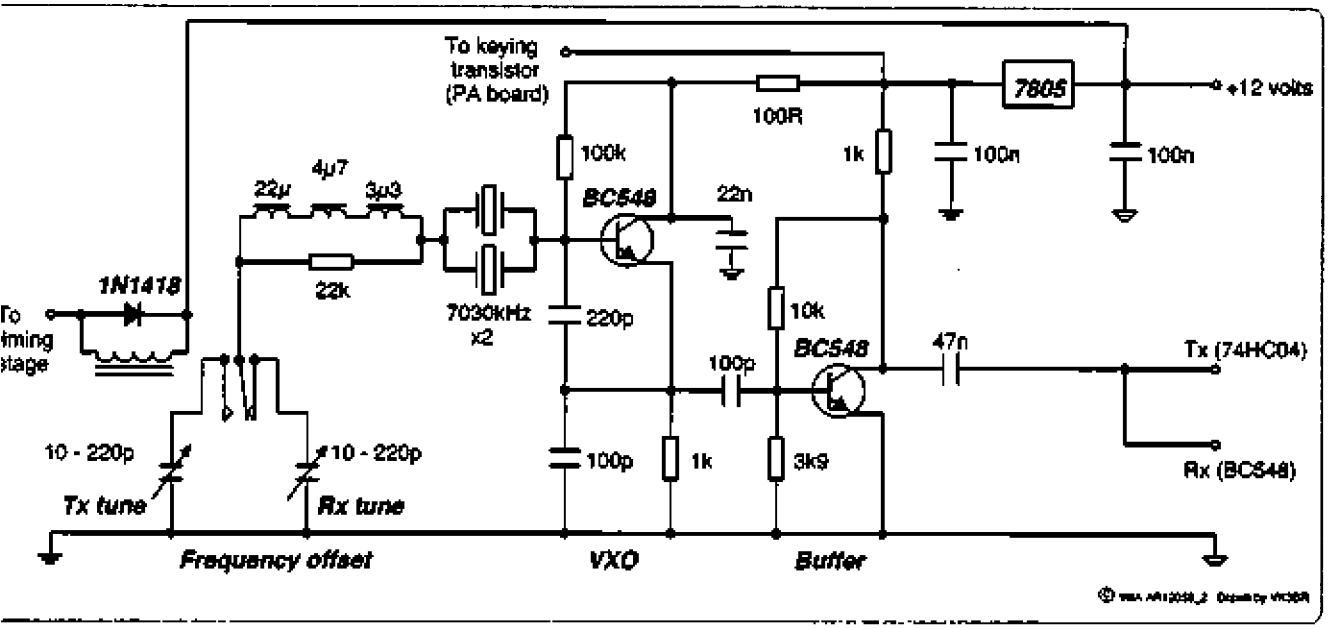


Figure 2: VXO and buffer module.

What's important and what's not

The table below lists features needed in a practical QRP CW rig. The importance of each depends on the preferred operating style. DX or contest operating has stricter requirements than casual activity involving distances up to about 1000 km. These rules also apply to voice rigs, with a little more output power and frequency coverage desirable.

While stations can be worked with equipment that does not meet these needs, contacts will be rare and hard work at both ends.

Crystal control, for instance, stymies activity if the frequency is occupied. It also precludes the three top methods QRPers use to make contacts; answering other people's calls, tail-ending stations ending a contact or finding the clearest frequency to call CQ. Almost every operating style requires frequency agility, with the number of contacts proportional to the frequency range available. Crystal locked transmitters are only really practical for testing, beacons or skeds with friends since making random contacts with them is hard work. Either a wide swing VXO (variable crystal oscillator), ceramic resonator VXO, free running VFO or DDS VFO will provide the needed range.

Poor transmit/receive switching is another common short-cut. A very basic VFO or VXO direct conversion CW transceiver won't have an automatic frequency offset and needs to be zero-beat and manually switched for transmit. Using such a rig can be difficult, especially with limited tuning bandspread or where your contact invites you to transmit without warning. Replying on the right frequency is particularly critical when signals are weak since your contact will have switched in narrow filters and won't be expecting drift.

A single manual transmit/receive switch suffices for casual operating. However automatic transmit/receive switching, that is, semi or preferably full break-in, is preferred.

Full break-in's major advantage is that it allows listening between sent letters. With cunning timing this lets you slip in a callsign during a dead moment and snatch a contact. Yet because you're also monitoring, you can cease if other stations are also calling, saving a futile call and the possibility of causing interference.

Without 'brute force' power to over-ride other stations, frequency selection and timing of calls are critical. A good tuning range, frequency offset and efficient transmit/receive switching let you exercise this operating skill. Receive muting and sidetone are also desirable but less important than the basics above.

Description and Design

The Split 40 uses largely discrete components. It features a wide-swing variable crystal oscillator and direct conversion receiver. Despite its simplicity, more than usual attention was given to frequency control and transmit/receive switching.

The Colpitts variable crystal oscillator moves nearly 30 kHz on 7 MHz, covering almost the entire CW segment. This range was achieved through the following:

- two same-frequency crystals in parallel to more than double the pulling range.
- low stray capacitance through short leads, absence of rotary switches and avoiding diode RIT circuits.
- careful series coil selection; even a microHenry can greatly affect swing.

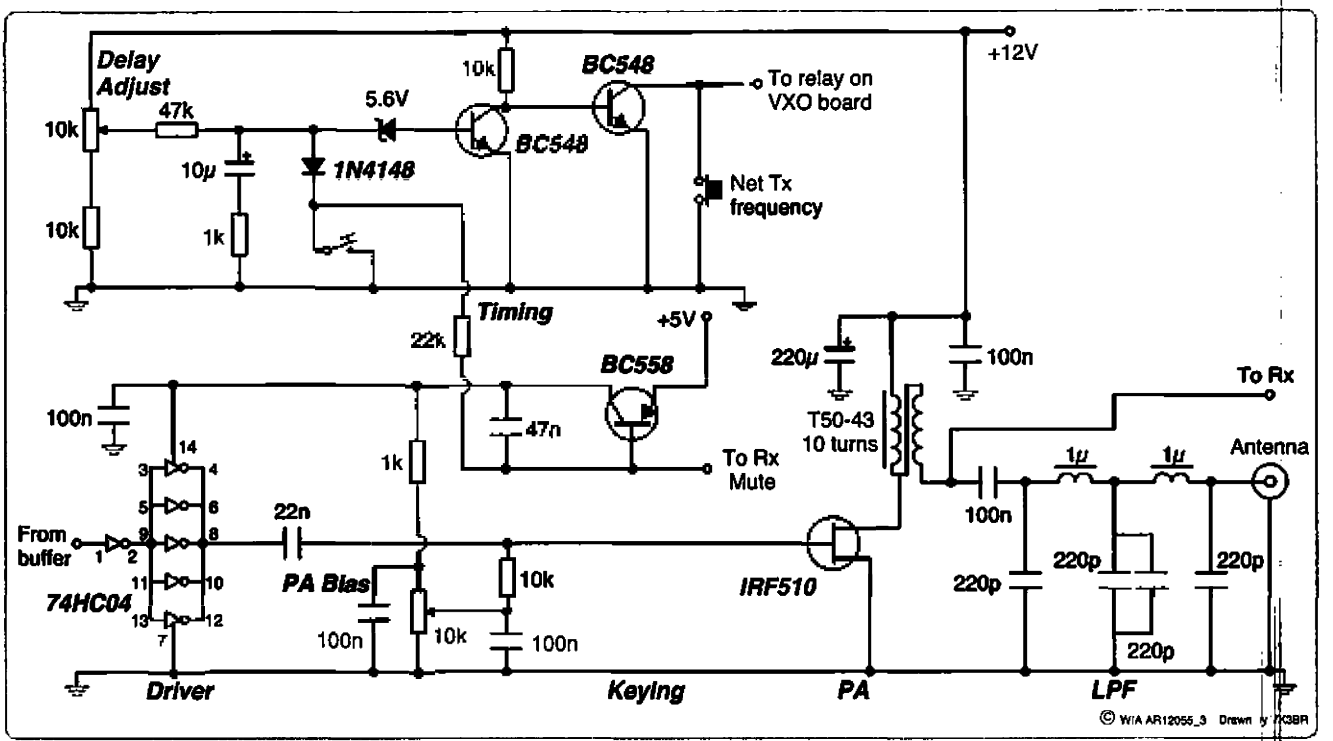


Figure 3: Timing and transmitter module.

HC18 crystals for 7030 kHz, cheaply available from Expanded Spectrum Systems, were used. With some minor changes to component values, a 20 metre version will produce nearly 60 kHz swing from 14.060 MHz crystals.

Designing the offset circuit proved the next challenge. VXO tuning is non-linear so adding a fixed capacitor in parallel with the tuning control will not provide the desired even 700 Hz shift across the full tuning range. Varactor diode RIT circuits are similarly non-linear and add capacitance, lessening top-end tuning range.

A second relay-switched variable capacitor was the solution. The existing variable capacitor adjusts the receive frequency only while the new capacitor sets the transmit frequency only. There is also a momentary 'Net Tx Freq' switch that changes to the transmit capacitor in receive mode to permit zero-beating to a calling station. Once this is done the transmitter will be exactly on frequency. The receiver can then be retuned as desired without upsetting the transmit frequency.

This switched VXO arrangement, to my knowledge not described elsewhere, has benefits apart from the offset. The first is split frequency operation; not common for a simple transceiver. Secondly it allows 'opposite side' tuning on receive; particularly useful for a direct conversion receiver to dodge interference. The few extra parts are well worth it; it's almost as good as having two VFOs.

With a good frequency range and offset method, the next consideration was transmit/receive switching. Switching needs to occur for the receiver muting, antenna changeover, power to the transmitter and frequency offset.

A panel-mounted T/R switch would have worked but break-in was chosen because it allows slicker operating. This adds complexity but not cost; the parts required for the timing circuit cost less than the manual transmit/receive switch it replaces. The timing circuit is described in more detail in *Experimental Methods for RF Design* (page 6.68).

A FET switch in the audio chain mutes the receiver on transmit. A capacitor, inductor and two parallel diodes allow antenna switching without relays. Most suitable for low power monoband transceivers, the method uses a series inductance and capacitance resonant on the receive frequency to offer little resistance to incoming signals, while the diodes limit overloading of the receiver. Again this approach is from *Experimental Methods for RF Design* (page 6.70).

The key controls three pieces of circuitry: a timer and relay circuit, FET audio mute and a PNP keying transistor. Its purpose is to apply DC to the IC driver stage and bias to the power amplifier's gate when the transmitter is keyed. A sidetone can be keyed from this line if desired.

The transmitter's power amplifier is an IRF510. Adjusting its bias sets the output power. While this circuit can deliver four to five watts, I set it to two watts for lower power consumption, improved PA stability and relaxed heatsink requirements.

Spurious oscillations in homebrew rigs can be hard to

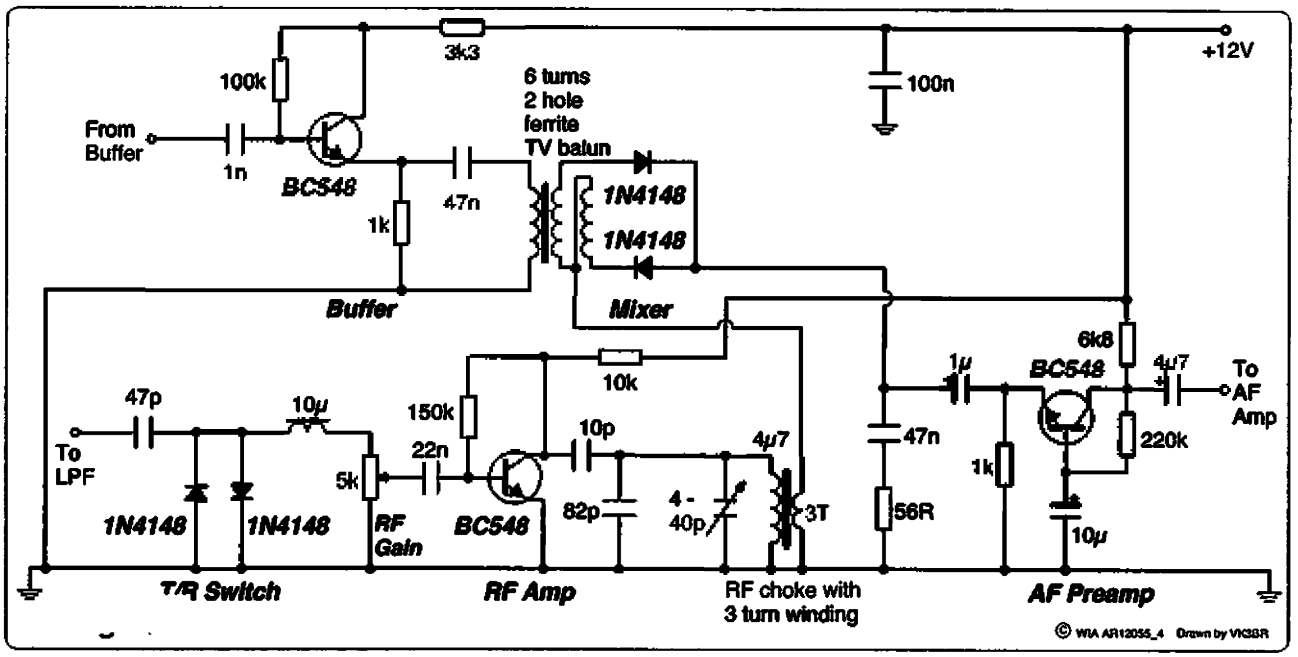


Figure 4: Receiver mixer module.

track down. Sometimes the signal may be clean into a dummy load or a coax fed dipole but dirty when an antenna coupler is connected. Adjusting this can present the transmitter final with odd impedances and cause instability under some load conditions. Power output may vary and hash or spurious signals may be heard on a nearby receiver. Use of an end-fed antenna near the transceiver, as is often done when portable gives rise to such instability. Coax-fed antennas may help but it's better to aim for stability under all conditions.

The receiver's RF Gain control can attenuate incoming signals. This is sometimes useful to prevent overload from strong broadcast stations in the evening. An RF amplifier follows, presenting incoming signals to a singly balanced mixer via a tuned circuit. The tuned circuit comprises a three turn secondary wound over a 4.7 µH RF choke as the primary.

This mixer requires a substantial local oscillator drive so has its own transistor amplifier to boost the buffer's output. A transistor after the mixer boosts the audio level before the audio filter.

Compromises were made here as space was limited. Those starting from scratch could allow enough room for a double balanced mixer (two extra diodes and balun) and extra front end tuned circuit. Including these will make the receiver less prone to broadcast interference.

Figure 5: Receiver audio module.

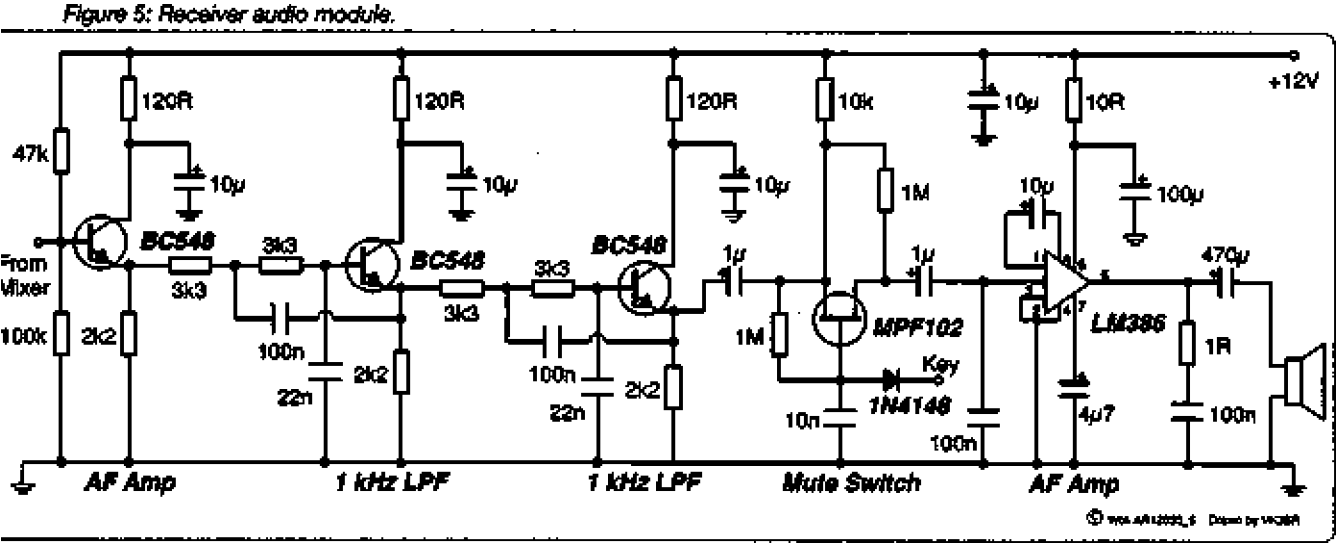


Photo 1: Front of the transceiver.

The audio module uses all discrete components for the low level amplifier and filter stages. After the first amplifier is a one kHz low pass filter with two transistors. It's simple, cheap and greatly aids selectivity.

Further audio amplification is provided by an IC audio amplifier. No volume control is needed as the RF gain control suffices. The LM386 will drive anything from an eight ohm speaker to a crystal earpiece.

If using stereo headphones be mindful that these have a good high frequency response undesirable for CW reception. An additional low pass filter in the headphone lead can reduce hiss. Because the impedance here is low, you can use higher capacitor values and lower inductance values, including commonly available RF chokes up to a few milliHenries.

Construction and testing

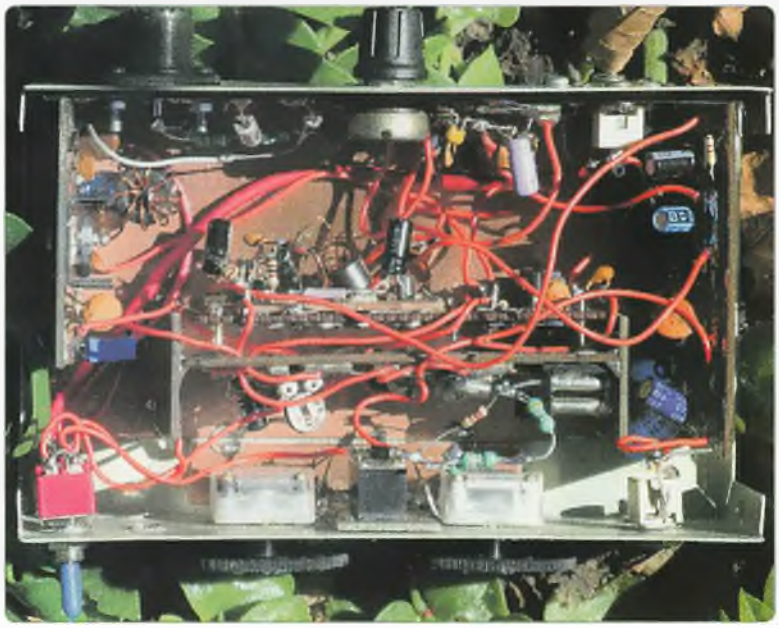
When building transmitters it's best to begin with the low level stages and work towards the power amplifier. With receivers start at the easy to test audio amplifier and work back. Since the VXO, buffer and offset circuitry is so central to this project's success, I recommend these be built first.

Most components are mounted 'dead bug' style on several pieces of circuit board material. Boards are placed against the sides of the enclosure and/or back to back in the middle of the case.

A VXO providing about 5-7 kHz shift (one crystal) or 10-15 kHz shift (two parallel crystals) can be built easily. Beyond this capacitance needs to be minimised (to retain top end coverage) and experimentation with the series inductor will be required (for bottom end coverage).

There is a 'tipping point' beyond which higher inductor values cause the crystal to lose control or for spurious oscillations to develop. And even if the tipping point is reached outside the amateur band, you'll want the VXO's lowest frequency to be safely inside the band (say two kHz up from the lower edge) to save bandspread and prevent out of band operation.

Photo 2: Inside the transceiver.



Buy a collection of RF chokes (between about one and 22 µH) for experimentation with coil values. It should be possible to obtain the correct value your VXO needs with two or three chokes in series. Chokes remaining will always be useful for other projects.

Sometimes VXOs can oscillate at multiple frequencies. The chance of this increases with swing. Oscillations can be audible as tunable 'birdies' in the receiver with the antenna disconnected. A 22k resistor across the VXO's inductors eliminated these oscillations in the prototype. If top end range is lacking, ensure that both trimmers on the rear of both tuning capacitors are set to minimum (unmeshed – that is, you see a full circle rather than a semi-circle).

The most critical part of the receiver is winding the balun transformer in the diode mixer. Take three pieces of enamelled copper wire (about 30 cm long, found in old power transformers), secure one end in a vice or pliers and twist them together (either with a hand or slow electric drill).

Old power transformers are a good source of this wire. This is wound on a two hole TV ferrite balun. The insulation is then scraped off the ends of the wires

which are then tested for continuity. The end of one is connected to the opposite end of another to provide the centre tap to which the incoming signal is applied.

The receiver's only tuned circuit is simply a 4.7 µH RF choke in parallel with about 100 pF capacitance, formed by an 82 pF in parallel with a 40 pF trimmer to provide adjustment. A secondary comprising three turns of fine enamelled copper wire couples this to the diode mixer.

The rest of the receiver comprises audio amplifier and filter stages. Any general purpose NPN transistors can be used here. The FET used for the audio muting is a similarly non-critical small signal type.

Connecting an antenna (with the RF gain control wound up) should result in signals being heard, especially in the early morning, late afternoon and evening. The receiver front end trimmer should be peaked on a signal around 7010 – 7015 kHz. VXO tuning should be smooth and stable. Neither should anything be heard when the antenna is disconnected and the set tuned through its range.

Pressing the Net Tx switch should actuate the relay and allow receive tuning with the other variable capacitor. Its frequency range (which can be tested by monitoring on a nearby receiver) should be similar to that of the first variable capacitor.

The 74HC04 driver stage is somewhat critical. Decouple well and keep leads short to avoid oscillation. Either use a small piece of matrix board or (if brave) mount the IC upside down and solder direct to the pins.

At this point it's worth doing some testing. Five volts should appear on Pin 14 of the driver IC when the key is pressed. With a wire connected to its output, the transmitted signal should be much stronger on a nearby receiver with the key down.

A separate small board hosts the IRF510. Unlike the balun in the receiver, its output transformer is wound on a FT-50-43 ferrite toroid with two wires needed, not three. Again these can be twisted by drill or by hand.

To save coil winding, pre-wound RF chokes are used for the pi-network low pass filter. Disc ceramic capacitors can be used here if that's all you have, but polystyrene or silver mica capacitors offer lower loss. The LPF is right near the antenna socket; because transmit/receive switching is electronic there is no need to have it near the relay, which switches the VXO capacitors only. Instead signals are tapped off via a 47 pF capacitor and 10 µH choke and fed to the receiver.

IRF510s are quite fragile and its gate bias should be wound back to near zero to start off with. With a dummy load/RF power meter connected, press the key and monitor output. Gradually adjusting the bias control should result in increased power output. Though capable of more, I chose to stop at around two watts. Even at this power level a heatsink is essential (remember to use conductive paste for maximum effect) and will get warm.

The transmitted signal should be stable and not chirp. It should be free of buzz or hum when received on another receiver tuned away from the transmit frequency. If not, pay attention to matters such as shielding, decoupling and short leads.

Results and conclusion

Good results have been had with this transceiver, with contacts made throughout VK and ZL. Compared to previous rigs its automatic frequency offset and transmit/receive switching is a real luxury. Even if you don't build this unit, the twin tuning capacitor arrangement is highly recommended as an upgrade for new or existing VXO CW transceivers.

Silent Key

George Bollas VK3LA

It is with deep sadness that we have to report the passing of George Bollas VK3LA, at the age of 97, after a short illness. George passed away on 24th November, 2012.

George's life story of 80 years on the air was printed recently in *AR* magazine and Old Timer's news. He was active in 23 cm ATV until shortly before his illness ruled otherwise.

A much loved and respected friend and mentor to all who knew him. George's wife Daisy passed away some years ago. He is survived by daughter Valerie and son Raymond.

Contributed on behalf of George's host of long and short term friends by Bill Magnusson VK3JT and Richard Robbins VK3RR.

Woody Island OC-170 – the easy one

Nigel Dudley VK6NI

Photo 1: The operating location in the camper's kitchen Woody Island Eco Stays with Wally VK6YS working 30 metres CW.

The West Oz DX Group have been activating the IOTAs of Western Australia for over ten years and the decision to go to Woody Island (OC170) off the coast of Esperance was one of *'well we haven't done this one yet, it's easy to do and a trip to Esperance would be a good run down through the wheat belt'*.

We announced our intentions to visit the island on our website *www.westozdx.net* and started planning with an initial team of Wally VK6YS, Nigel VK6NI and Jane VK6FJPD, XYL of Nigel. Woody Island is probably the only south coast island in Western Australia that is easy to get to as Esperance Island Cruises *(http://www.woodyisland.com.au/)* run a regular ferry equipped for up to 90 persons to the island in the summer holidays and at other times by arrangement. The island is well set up with a visitor's centre, safari style accommodation and camper's kitchen. Shortly after we started planning, Reinhard DF4TD contacted us; he was planning a trip through WA and enquired if he and his partner Rita could join us on the island? The answer was of course a yes as another operator takes some of the load off everyone.

Planning for this type of trip takes some effort if you want things to go well and initial contact was made with Esperance Island Cruises well in advance. After some initial *'you want to do what?'* questions all was cleared for us to go and set up antennas and whatever on the island. We elected to go slightly out of season, at the start of November, as this would mean we would have few other people with us on the island. As it turned out there was no one else there as even the caretaker was off site and we were left to look after ourselves. There was some question over power supplies as it was not clear what was available in the way of 240 volts and the website said 'limited 12 volt solar supplies for lighting only'. As it turned out the island had recently been taken over by new owners who were working hard to restore the infrastructure that had been allowed to run down over the years, and limited meant very limited! The 240 volt supply was intended for camp utilities and fridges but was only to be run in daylight hours. So as with all other IOTAs we have activated we elected to take our own power supplies in the form of two one kilowatt inverter style generators. One of them was a trusty Honda that had been used before and is clean on HF, the other was a 'Bushpower' brand that had been sourced over the internet for a price considerably less than the Honda but when fired up turned out to produce terrible interference across the HF spectrum. Initial thoughts were that it would be unusable but after a bit of head scratching and looking at various options a CORCOM 10R6 filter was fitted and the problem was completely cured. These filters present a brick wall on the mains line above one MHz and we would recommend them to anyone with a similar problem; ours was sourced direct from the US however a quick check at the time of writing shows they are readily available on eBay. Both generators ran flawlessly for the four days we were on the island.

The two operating stations consisted of Icom IC-7000 radios interfaced to laptops to help with logging. One of the radios was also set up to allow keyboard CW sending. Antennas were a Spiderbeam for 20, 15 and 10 metres for one station and the second station had a Force12 Sigma 40XK vertical dipole with switching to simple resonant vertical

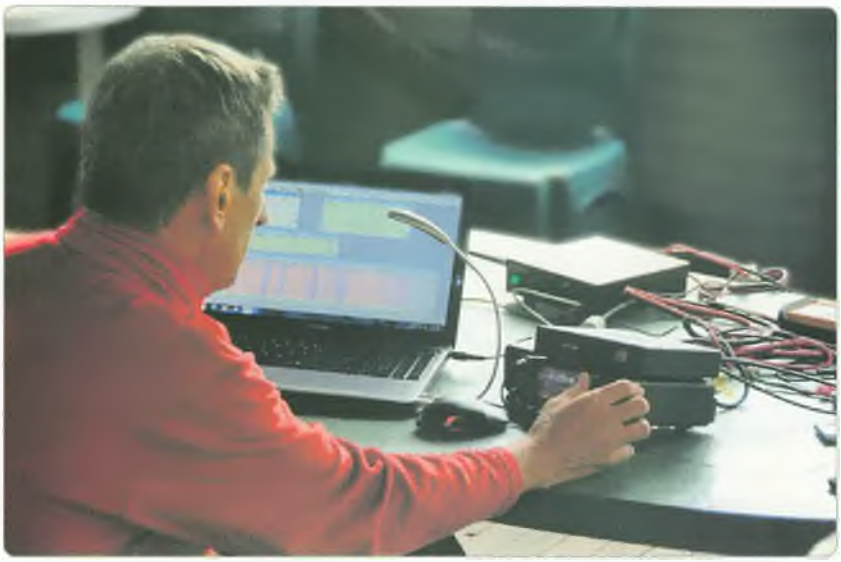


Photo 2: Reinhard DF4TD working from the second station on 15 metres SSB using the Spiderbeam.

antennas for convenience on some of the higher HF bands. Power supplies were 20 A switched mode units that had been used before and were known to be RF quiet. We also took a 100 Ah battery and 80 watt solar panel for back up and listening during quiet times but in the end we did not need to use them. ICE band pass filters were used on both transmitters to stop interference between the two stations.

On arrival in Esperance we met up with Reinhard and Rita and went to Esperance Island Cruises office to make ourselves known. It turned out there was a bit of a problem; they could not take us off the island on the organised day but would we be OK to stay on for another day? When faced with another 24 hours of DX, what would any full blooded amateur do but make the sacrifice and stay on? We had decided to take the optional island and wildlife sightseeing cruise on the way out to the island and this turned out to be well worth while with a great view of the local wildlife and scenery.

Set up on the island turned out to be easy after we got ourselves orientated. Since there were no other people on the island, the campers kitchen became the operations centre with both transceivers set up in the shade, and within calling distance of tea or coffee. Antenna erection was easy for the verticals but the

Photo 3: Woody Island IOTA expedition team from left to right: Wally VK6YS, Reinhard DF4TD and Nigel VK6NI.

Spiderbeam proved troublesome as there was limited cleared space and lots of shrubbery to snag every wire, it seemed, as we put it up. Eventually everything was in place and we were up and running using the callsign specially issued for the event, VK6WDI. The DX came in well when the bands opened. We started late on Friday afternoon working 17 metres SSB into Japan, Russia and eastern Europe and this carried on into the night with activity shifting to 20 metres SSB and 30 metres CW with contacts all over Europe and even some to the east coast of the United States. We worked late into the night until the bands finally gave out and then had about five hours sleep before it all started again.

The next two days were much the same with action starting early in the morning with plenty of JA stations, a scattering of VKs and contacts into the west coast of the US on 15 and 20 metres SSB. As the afternoon wore on 17 metre CW activity started and 20 metres SSB opened up into Europe. There was always a lot of QSB on the signals and it was obvious that some Europeans were having a lot of trouble hearing us above local QRM. Locally the noise level was very low and that meant we often heard stations but they could not hear us. For us to have gone with greater transmit power and better antennas would have complicated transport and increased cost considerably, hence this type of expedition is always a bit of a compromise. We are firm believers that as the one being chased we should apply the KISS principle to activate these islands and it is up to those chasing to accept the challenge to work us. It is evident that many did from the range of calls, 52 countries worked on 20 metres SSB and 36 on 30 metres CW for an overall 1294 contacts in two and a half days. Despite OC-170 not being on the most wanted list of IOTAs, the QSL cards are now pouring in. There was also a pleasant Sunday morning catch up on 40 metres after the WIA news broadcast from VK6WF in Kellerberrin with 12 VK6s taking the time to work us.

Two days into the operation we got word that our anticipated extra time on the island had been curtailed and we would be picked up as originally planned. Much to our surprise the ferry, instead of having a scattering of people on it as had happened on the way out, was full with upwards of 80 people on it. It turned out a cruise ship with 3,500 passengers had docked in Esperance and overnight the population of the town had boomed! Somehow we managed to get our equipment on board and get back to the mainland. This all goes to show that a little bit of flexibility is a good thing when it comes to planning these expeditions as you never know what might come up.

All contacts for the weekend were uploaded to Club Log *(http://www.clublog.org)* as we were within range (just) of Esperance mobile phone coverage. Entries can be checked by going to the Westozdx page for OC-170 *(http://www.westozdx.net/IOTAS/OC170/OC170.html)* or if a QSL card is needed go to VK6YS on QRZ.com for the details of where to send a card.

Photo 4: The Spiderbeam, situated in thick scrub.

Pennyroyal Propagation Party, 31 August – 3 September, 2012

John Fisher VK3DQ

In what may be the largest event of its type in Australia, a group of nineteen operators participated in a special event radio weekend hosted at King Parrot Resort which is high in Victoria's Otway Ranges and overlooks the Pennyroyal Valley.

Located at approximately 300 metres above sea level, our station was located in 'The Lodge' which provides a large split level common area, the lower level with large panoramic windows opening onto extensive verandas looking toward the north, and an ideal area for the four operating positions to be set up. The higher level is dedicated as a dining/lounge area and the entire area is heated by a large wood stove.

Most of the participants met at VK3DQ's QTH and drove in a convoy to Winchelsea, a drive of about 90 minutes, and where we stopped for a coffee before proceeding to the King Parrot Resort. Accommodation for the group was in two cottages, the four-bedroom Mannagum and the Lodge/Hall which has three bedrooms plus an eight bed dormitory that we dubbed 'Hogwarts'. For our group of nineteen this was a most satisfactory arrangement and enabled us to keep the costs of the weekend to a very reasonable sum.

On arrival the radio stations were set up and antennas erected; four operating positions were installed. Antennas included a two element tri-band Yagi for 10, 15 and 20 metres, which was mounted atop a trailer mounted Clarke mast at nine metres above ground, and had a home built rotator. A two element Raybeam for 17 metres was deployed atop of a nine metre push up mast, and a ¼ wave vertical for 40 metres, with elevated radials, was also erected. For 40 and 80 metres a trapped dipole was deployed in an inverted V configuration, and for 160 metres a ½ wave dipole was erected some 30 metres up in the high trees. There was also a Diamond X-50 2/70 base antenna in use.

Photo 1: Operating position 1.

The radios in use included an Icom IC-706MkIIG, a Kenwood

Photo 2: Operating position 2.

Wright Flyer, as well as a significant collection on the Wright Brothers and flight, including several patches which have flown on the Space Shuttle.

The National Museum of the US Air Force at Wright-Patterson Air Force Base has a huge range of US and captured aircraft, and related items, including Wright Brothers material. Certain displays, such as VIP aircraft, are in a separate area, for which overseas visitors need to show a passport.

I hired a car, and drove to Detroit on the Monday. One thing to be careful of is to stay in the correct position within the lane on the Interstates (freeways). I caught the local Transit Windsor bus ($4 fare) from Detroit downtown (behind the Mariners' Church) through the DW Tunnel to Windsor, Ontario.

It is worth splashing out on one of the hotels facing the Detroit River, such as the Hilton. The Monday after Dayton, being the Monday before the 25th, is the Victoria Day public holiday across Canada.

I then caught the VIA Rail Windsor to Toronto service, making a final stop at College Home Hardware at 304 College Street, Toronto (in Fashion District) for some electronic bits and pieces, then flew back to Birmingham, arriving Wednesday morning. This counted as a return fare, and I found making a side-trip from Britain appeared to be cheaper than an around-the-world fare. Rail travel between any of the airports in England, or even northern France, and any English or Welsh town is only a few hours, and is inexpensive if booked ahead.

While it appears that even Foundation licence holders can operate under reciprocal arrangements, all amateurs taking advantage of this system are restricted to the power level and other licence conditions of their home country licence. Further, Australian licence holders must be Australian citizens, or also hold a licence from the country of their citizenship. US dual citizens are ineligible.

The alternative is to obtain a US licence. Any person can pass a US exam at any location worldwide. A US postal address is required. Several clubs in Europe offer this service. I did mine with the Ripon and Districts ARS in north-east England, and my licence was in the FCC ULS database within a week. With a number of clubs in Germany running exams, it is often possible to find one there. See the ARRL's Exam Locator. Your author is also a Volunteer Examiner.

You will need to change channel steps on your hand-held, and given the mix of 15 and 20 kHz steps, 5 kHz may be most suitable, especially on two metres. Simplex calling is 146.52 MHz. Some Ohio 70 cm repeaters are on a 12.5 kHz channel. Some HTs sold here are also capable of operating on the 223 MHz (1.25 metre) repeaters.

Some references that may be useful

http://www.hamvention.org/
http://www.amtrak.com/maple-leaf-train
http://www.viarail.ca/en
http://www.nationalmuseum.af.mil/
http://www.libraries.wright.edu/
http://www.arrl.org/find-an-amateur-radio-license-exam-session

Over to you

Noise on 40 m

Graeme Scott VK2KE

Lately I have noticed a higher level of what appears to be power line noise on 40 metres here in Albury.

So I have had to switch on the noise reduction system (noise blanker) in my IC-7600 and it kills the hash quite well and makes copy much easier in the 10 am Albury Wodonga net. Even Ron VK3MRH in Wodonga is reduced in readability even though he is 5/9 (putting the Noise reducer circuit on fixes the noise though).

The other day I decided to drive around local streets to see if any power pole was the offender and got a very high noise level from some new poles in a street near us. I listened on 774 ABC radio from Melbourne as it was a weak signal, also I had a portable radio tuned to 7055 kHz and the noise from a few poles in the vicinity was very high so I started to suspect some poles which had recently been replaced, (they appear to be 22 kV lines above the 3 phase 415/240 V lines).

This was in the middle of the day with bright sunshine.

Incidentally the noise is S9 on 7055 kHz and almost below S1 on 14 MHz, which I find interesting.

Well, I went for a walk tonight at 8 pm local time and the noisy poles that were evident on the sunny day at about 12 noon were quiet. I was carrying the portable SW receiver tuned to 7055 kHz.

Then I noticed a house with 21 PV panels on its roof; so, I'm now suspecting a noisy inverter there. My next trip will be at about 12 noon tomorrow and we shall see if the noise is high again with the neighbour's PV panels generating.

I've noticed that some operators on the 40 m net have commented in the recent past upon noisy inverters so we may have a neighbour who is generating the noise here in my district. (my 3 kW inverter here appears to be OK).

I'd be most interested in hearing from other operators as to their experiences with noise on 40 m and I'm wondering if some inverters use 7 MHz as a clock frequency or similar and are generating the hash on this band.

Question - are these inverters certified in any way in relation to hash being generated on HF bands? Or do we have yet another device foisted upon us that is not clean?

73 Scotty VK2KE

PS: On further investigation, it seems that the poles and wires in the street are OK as they are very newly replaced so I think it's my solar inverter and its only evident on the 40 metre band. I have used a portable radio set to 7055 kHz to sniff around and it seems to be the loudest at the inverter and in certain places around my property!

See details on page 39

It makes me feel old!

Steve Mahony VK5AIM

Eric VK5LP's article in the June 2012 *AR* all about 288 MHz, one metre amateur equipment in the 1950s makes me feel *old*!

My wife Sue says well, 'you are old'. I turn 79 this Christmas!

I saw my first 288 MHz amateur transmitter in about 1948/1949 at the home of Rob Burns – I cannot remember his pirate call, at a nice old house on East Ave, Allenby Gardens, in Adelaide.

The pirate transmitter consisted of a three foot plank of flooring board. There was a metal bracket at about the middle which had two sockets with valves parallel to the board. The valves were 7193 triodes, which had their anodes and grids brought out as top caps. On seeing them later my wife said they looked like little 'Daleks'. From the anodes there were two quarter inch copper tube lines about 610 mm long. These were joined where the HT, about 240 V DC, was supplied. There was a small shorting clip which could be adjusted for tuning. The cathodes had similar copper lines with the heaters/filaments fed down through the tubes. The grids were joined and went to earth through a resistor, the value of which I have long forgotten. If you were real keen you could have an ammeter shunt to measure the grid current! AM modulation was via the HT from a 6V6 from a carbon microphone.

The receiver was a 'super-regenerative' type, again using tuned lines of quarter inch copper tube. This was shorted at one end but with a small split stator capacitor connected across the lines for tuning. The valve was a 955 Acorn type, an American valve designed for VHF/UHF. As the connections of the valve came out the side of the acorn shaped envelope, a special ceramic doughnut like socket was required. This also impressed the visitors. The audio was taken off via a plate audio transformer, to a 6J7 and a6V6 to drive a speaker. All this was mounted on a wooden board with an aluminium front panel. Regeneration was controlled by varying the voltage to the plate of the 955 via a potentiometer on the front panel. Too much voltage and the super-regen radiated enough to be heard miles away.

Photo 1: Where it all started: 1954 in the Mount Lofty car park. Steve, now VK5AIM, and John, later VK5JQ, now SK, admiring the 288 MHz amateur setup of Vic VK5JH. Vic was in QSO with Jack VK5MX located portable at Kulpara at the top of St Vincent Gulf, 120 km distant. Note the multiple element antenna fed with open wire line. Signals were 58 each way.

Rob turned on a switch, the valves lit up and a rushing sound came out of the speaker. 'That is the sound a super-regenerative receiver makes with no signal', explained Rob. Rob then picked up a funny looking microphone, with a rubber mouth piece, depressed a spring loaded switch and called, 'Bob VK5... do you read'? The receiver went quiet and a voice replied, 'Yes Rob loud and clear'. Rob replied, 'I have a couple of visitors here. Explain about your station'. This Bob did. We listened enthralled! Then Rob handed me the microphone and said, 'Tell Bob your name and of your interest in wireless'. This I did with great excitement. A few more exchanges were made. *I was hooked.* And have been for the past 60 years.

In the 1950s, about 1952/3, I built my own 288 MHz, one metre station and 'pirated' with the late John VK5JQ. We learnt a lot about the practical side of radio with the 'cut and try' system. We later became involved professionally in radio like many others of the time.

QRM from in-home data transfer products using the electrical mains wiring

Gilbert Hughes VK1GH and Rob Milliken VK1KRM

Is it really a problem?

Background

Devices that use the in-house electrical wiring to transfer data at a fast rate between two points in the home – as distinct from WiFi – are an attractive alternative to data cabling. These products are relatively inexpensive and work well. See 'Computer Choice' magazine No. 89, September/October 2011 report on the data transfer performance on a selection of these units. We sought to determine the answer to two key questions:

1. Do the devices comply with the emission limits of the standard?
2. Do the devices cause 'harmful interference' to HF amateur reception?

The QRM issue

These devices work by wide band modulating the HF spectrum – generally from about 2 MHz to 28 MHz – to transfer data. It is well known that these products can potentially generate wideband noise signals that could degrade the reception of HF signals in the amateur service – and potentially other users of the HF spectrum. In Australia it is a requirement that all such products carry markings that indicate compliance with the applicable standards. These and similar devices have been the subject of debate in the US, Europe and the United Kingdom concerning interference to HF reception. More recently, devices using VHF spectrum in addition to the HF spectrum, have been available in the UK. Check out the following site *http://www.bbc.co.uk/rd/publications/whitepaper195.shtml*

The applicable standard

Australian administrations require that evidence of compliance with the emission limits set out in the CISPR 22 standard be held by Australian manufacturers or agents who apply for the mandatory 'C tick' approval number to be displayed on their products. Information on the operation of the 'C- tick' procedures can be found at *http://www.comlaw.gov.au/Details/F2010C00267*

It is interesting to observe that as the emission limits of this standard are difficult to meet for BPL type technology, some administrations have accepted a more 'BPL friendly' standard with higher emission limits.

Testing against the CISPR 22 limits

We purchased a pair of Netgear XAVB2001-100AUS that the 'Choice' testers found to be the fastest of the 200 Mbps units, and considered how to perform accurate measurements against the CISPR 22 standard in a home environment.

The first hurdle encountered was how to accurately measure conducted emissions on the power lines of the house generated by the EUT (equipment under test) and exclude other conducted emissions from the test set up. Note that CISPR 22 sets *conducted* emission limits below 30 MHz, not radiated emissions. (The National bodies that compile the CISPR standards are currently considering including HF *radiated* emissions into the standard – this will take several years to achieve and may not happen).

The CISPR 22 conducted emission limits

Emission limits are set for electrical mains ports and telecommunication ports – we measured against the electrical mains ports emission limits. These are further divided into 'Class A' and 'Class B' where the latter has tighter emission limits. Class A devices are to carry a label that 'the product may cause radio interference'. No such label was on the device we examined. We measured against the Class B Quasi-peak limit of 60 dB(µV) that in our 50 ohm test set up equates to minus 47 dBm - *the solid line on the screen prints close to the dotted minus 50 dBm line.*

We have shaded the analyser screen plots different colours above and below the standard for ease of reading. The boundary of the two shades is the emissions limit of the Standard.

A search of the internet found a useful German document that sets out the actual levels established in CISPR22 and a means of conducting the tests. This document can be found at *http://www.ispic.org/docsearch/Proceedings/2002/pdf/09110115.pdf*

In articles written by Keith Armstrong (acknowledged as a world expert on EMC and measurement techniques) in The UK EMC Journal, he described a method of construction of the above apparatus. See the many relevant articles in *http://www.compliance-club.com/default.aspx?id=1*

This procedure required the construction of three units to allow

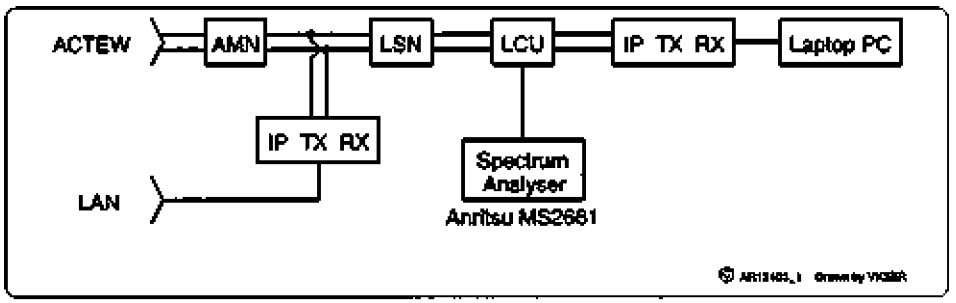


Figure 1: A block diagram of the network.

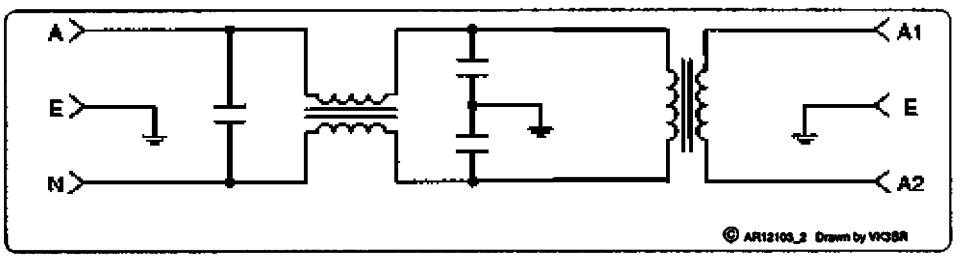


Figure 2: The artificial mains network (AMN)

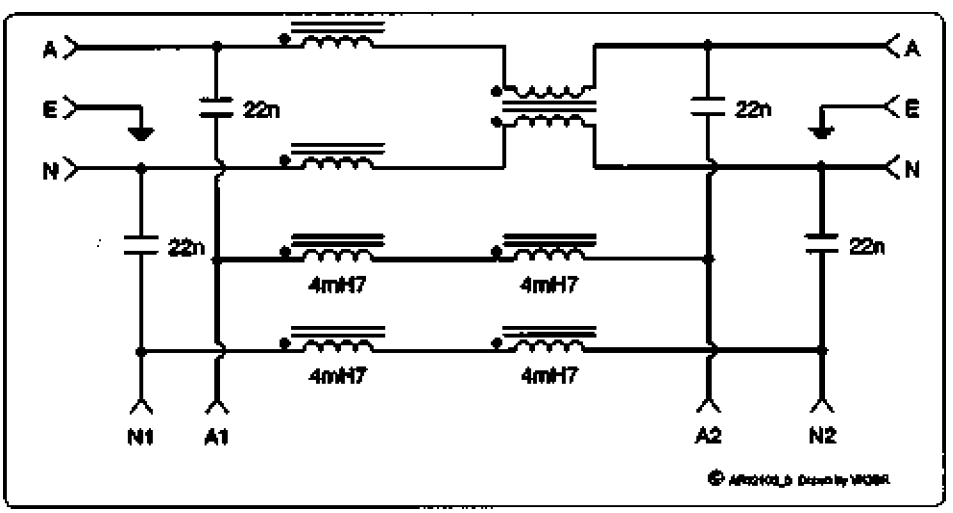


Figure 3: The line impedance stabilisation and signal attenuation network (LSN).

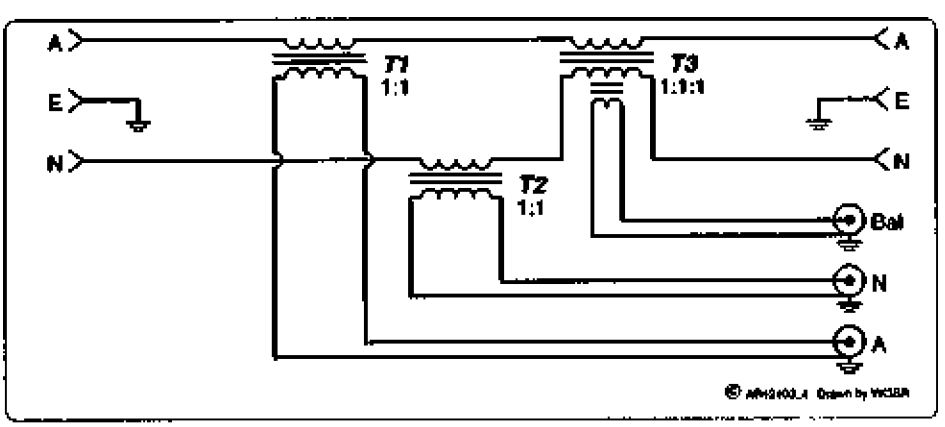


Figure 4: The Line coupling unit (LCU).

measurements to be made:

- Artificial mains network;
- Line impedance stabilisation and signal attenuation unit; and
- Line coupling unit.

The construction of these elements included a calibration process using an independently calibrated signal generator and spectrum analyser.

This network performs the following functions:

1. Removes any mains borne external signals from interfering with the test setup,
2. Attenuates the path between the data transceivers to ensure 'worst case' operation and ensure that each data transceiver is transmitting at full power;
3. Establish a standard 50 ohm impedance to ensure accurate power measurements, and
4. Isolate all equipment and operators from the MEN system and a mains accident.

The circuit of each element of the network is shown below.

Test setup

We unreservedly accept that the test environment is not perfect. The tests are not intended to be read as a definitive result of the performance of one particular unit.

This broad issue is one of magnitude. Without getting into an involved technical debate we are reasonably satisfied that from our testing of the mains network using NATA accredited laboratory

certified test equipment that the results achieved will certainly be within +/- 3 dB. This is adequate for the purposes of test setup adequacy and the device under test receiving a green tick or a big red cross!

Whilst we have followed CISPR22 it needs to be recognised that the device under test and the mains network on which it is tested is performing as a balanced transmission line and that the data on the line is running in transverse mode. Clearly in the real world the mains network is not balanced (as a direct result of the MEN connection system) and therefore there will be marked variances between the test environment prescribed in CISPR22 and the real world.

It is for this reason that once we had tested the device in the objective 'laboratory' environment we then tested it in a normal operational environment to determine whether or not we could subjectively detect any specific interference from the device under test.

The 'laboratory' setup comprised the following:

The plots from the Anritsu MS2661C are shown on next page:

This is a plot from the network with no data transceiver present to establish a base line of external interference and noise floor for the test. Note that the noise floor varies with the res bandwidth and frequency limits of the span (that is, the noise floor for a 30 MHz span will be 'higher' than the noise floor for a narrow span).

In the following results the first plot is that of the power being transmitted in one leg of the mains network (that is, the transverse or 'balanced' power in the network) which is the non-radiated component.

The second plot (of the same frequency span) shows the power that could be radiated from the network (that is, the longitudinal or out of balance power in the network).

Note: These measurements are of the power contained within the network and should not be confused with a measurement of the radiated signal received by a calibrated test antenna in an anechoic chamber. This is the 'power' going to the antenna not the power received at the antenna terminal of a field strength receiver.

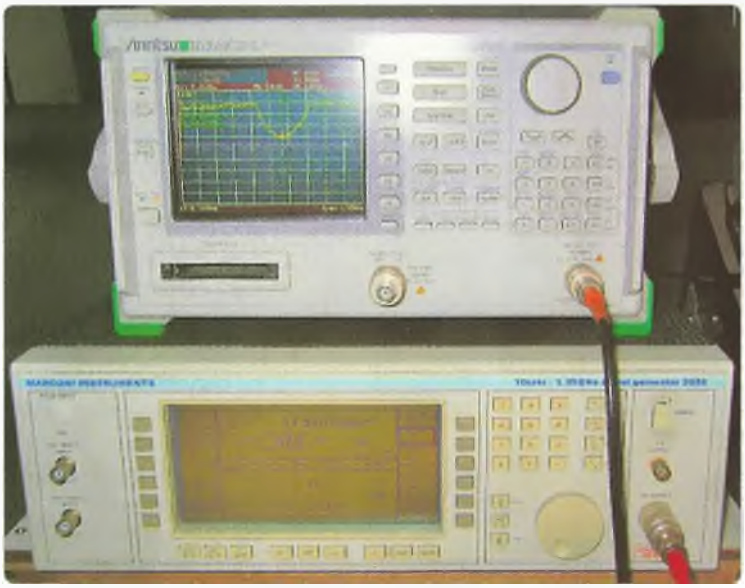


Photo 1: The Anritsu MS2661C spectrum analyser and tracking generator and Marconi 2030 signal generator used to first normalise the network and then test the data transceiver.

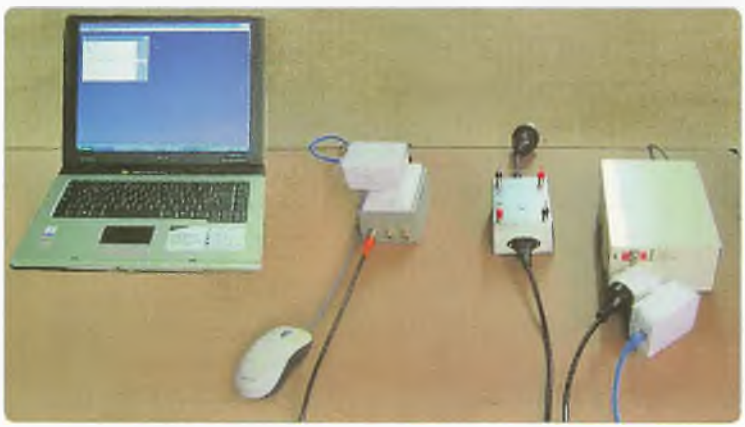


Photo 2: The laptop used to both send and receive data over the test network and record the results from the Anritsu (note the 50R balancing resistors on the terminals of the LSN).

Photo 3: The Netgear mains data transceiver tested.

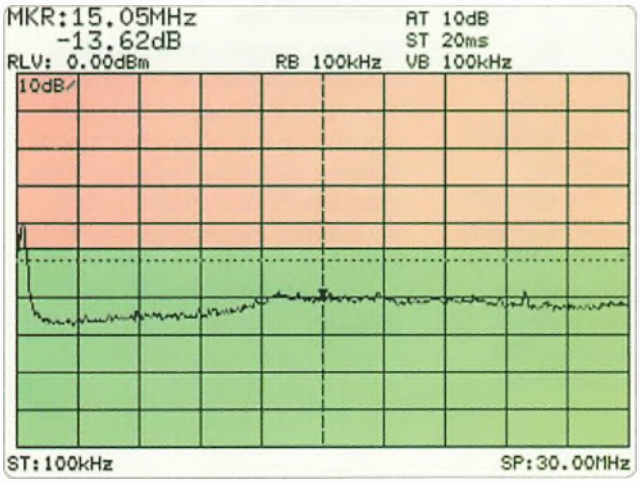


Figure 5: Plot from the Anritsu MS2661C with no data transceiver present.

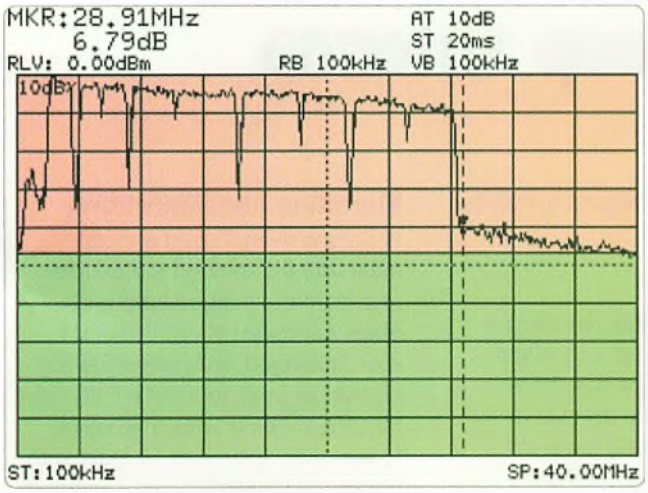


Figure 6: The 100 kHz to 40 MHz span showing the transverse (or balanced) power in the network.

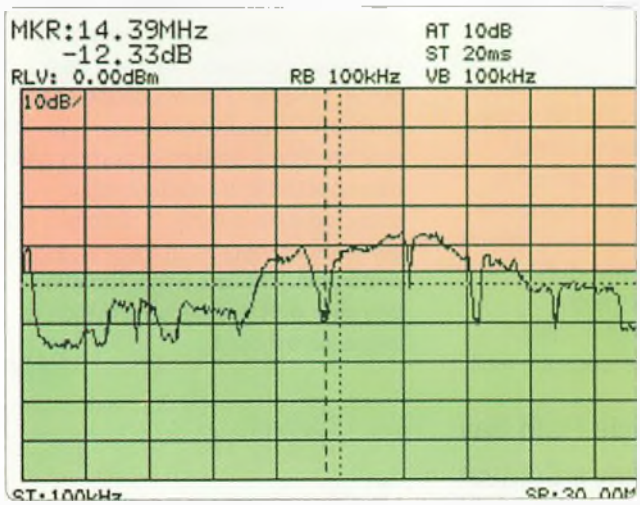


Figure 7: The 100 kHz to 30 MHZ span showing the longitudinal or out of balance power in the network.

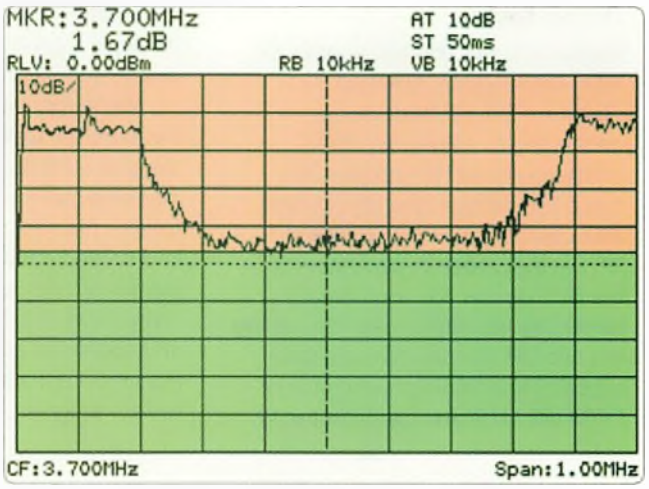


Figure 8: Results for the 80 metre band - the transverse power.

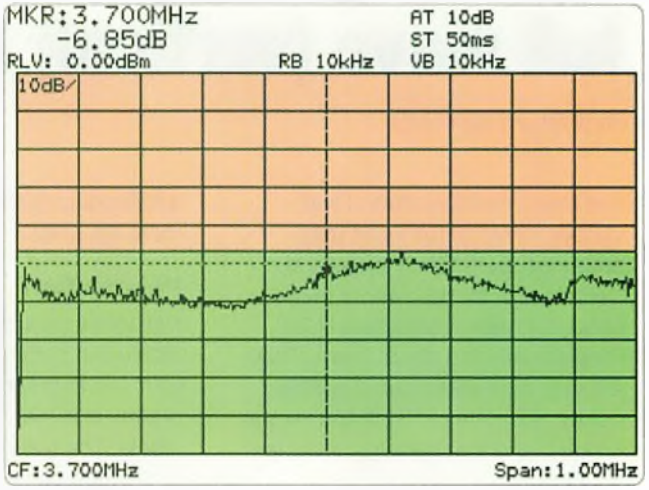


Figure 9: Results for the 80 metre band - the longitudinal power.

Consequently the power levels recorded above are orders of magnitude greater than we would expect to see from a field strength meter.

Editor's Note: Although the authors published results for all bands from 160 metres through to 10 metres, space limitations in the magazine do not allow their publication. However, they are available on the WIA website for those interested. In summary, they do support the conclusions noted below.

What we found

Thanks to the manufacturer's 'notching' of the device's emissions, we found the device we tested meets the CISPR 22 conducted emission limit as far as the amateur service bands are concerned.

There is evidence that outside the amateur bands emission limits of the standard are exceeded.

On air tests

Adjacent to our test arrangements was Rob's slightly tweaked 'hot' Yaesu FT-757 HF transceiver connected to a Hy-Gain 18AVT trapped vertical HF antenna. We could not detect if the BPL device was operational in any amateur HF band or mode of operation of the BPL device. We tried greatly extending the mains lead connecting the two BPL devices around the property and again no evidence of QRM could be audibly detected in the amateur bands. We could detect low level signals from the BPL device outside the amateur bands.

Not surprisingly, attempts to measure the radiated field strength using two FSMs designed to measure continuous transmissions failed – the very short pulse lengths and spread spectrum of the BPL signals did not register on either instrument. A calibrated antenna and spectrum analyser would be required to measure the level of radiated signals.

Conclusions

We were pleased to find that in a suburban Canberra environment there is no evidence of degraded reception in the HF amateur bands from the device we tested, and the conducted emission limits within the amateur bands meet CISPR 22 limits.

We welcome feedback from readers.

Tips for getting the best out of your HF full wave (vertical) loop antenna

Felix Scerri VK4FUQ

I've been messing around with various forms of full wave loop antennas, both Quad loops and Delta loops, for the twenty metre band, for many years, and I just keep on learning about them. They are very nice antennas, if possibly quirky, with one or two traps for the unwary, and that certainly includes yours truly.

What length? Well, nominally 'one wavelength'; however as with all resonant wire antennas, resonance should be checked with an antenna analyser, noise bridge or dip oscillator of some kind. I have always used the 1005/frequency = length in feet formula, but many state that formula is wrong. Apparently the loading effect of plastic covered wire, for instance, the 2.5 mm electrician's earth wire that I use, affects this resonance, and I have always found 1005/f an accurate formula with plastic covered wire. With bare copper wire a formula of 1032/frequency may be more accurate.

Polarisation

Horizontal polarisation results in a dipole like pattern but with 'slight gain' in the broadside directions, slightly less than one dB over a dipole. The nulls along the ends of the loop can be larger than possibly expected, up to 12 dB or thereabouts – more on this later. Vertical polarisation is interesting, resulting in pronounced low angle vertically polarised radiation with a 'nearly' omnidirectional pattern. Nulls off the 'ends' are reduced to about three dB or thereabouts. Full wave loops do work well close to real earth, however attaining as much height as possible and keeping the loop as clear of nearby metal objects as possible is recommended, as reduced 'effective height' considerations and other allied effects with full wave loops are real!

Mounting considerations

For many years I used a metal mast running through the middle of a diamond shaped loop and I often wondered about this and I even managed, with some friends' invaluable help, to erect a PVC pipe mast to check on this. I've come to the conclusion that, at least with horizontal polarisation, this method of mounting is entirely permissible and the effect of a metal mast running through a loop is absolutely minimal. Vertical polarisation is a different matter though and strong coupling to a metal mast will take place. Whether this will cause any problems in practice is uncertain though. Some pattern distortion can be expected and a deterioration of impedance is likely. If possible, some other method of mounting is preferable. The low angle radiation possible with vertical polarisation is impressive though.

Participate

John Moyle Field Day	16 & 17 March
COQC QRP Hours Contest	6 April
Harry Angel Memorial Sprint	4 May

Reuse and recycle...your antenna

Dale Hughes VK1DSH

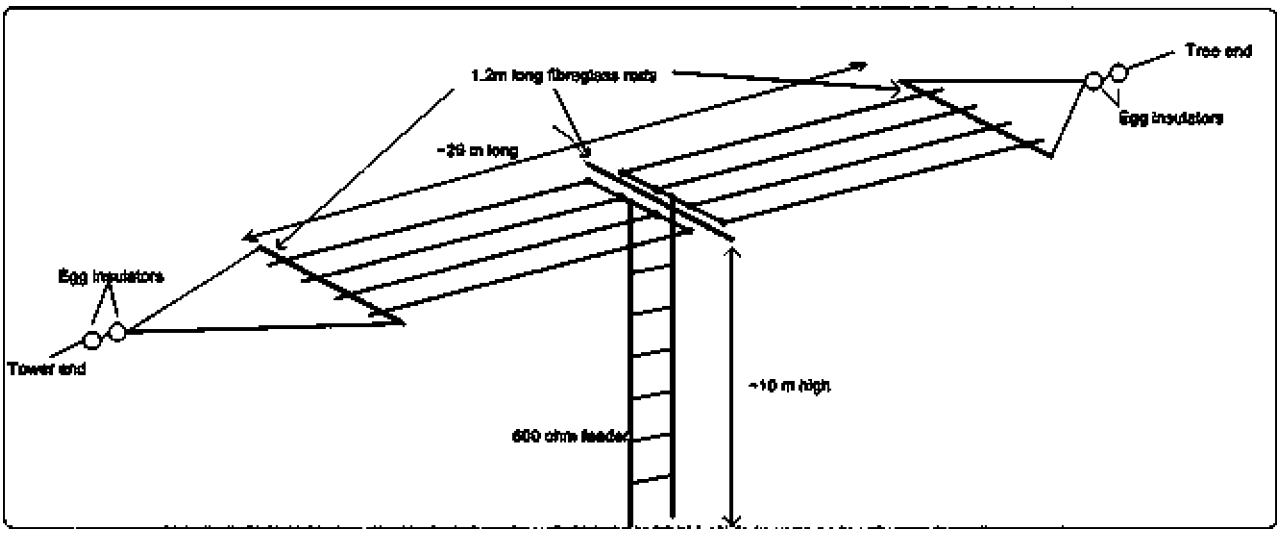


Figure 1: General mechanical details of the antenna. The fibreglass rods are used for electric fence insulators and can be purchased from rural equipment suppliers. The wire is one mm hard-drawn copper wire. Both sets of horizontal wires terminate on the central rod, but are spaced so that there is no direct electrical connection between the two halves. The far ends of the horizontal elements are terminated in small loops ~one cm in diameter to avoid Corona discharge.

Many of us have limited space for aerials. The average suburban block doesn't usually permit many large antenna structures to be built, so making the most of what you have is important, especially if you are interested in the lower frequency bands. My interests extend down to our lowest frequency band at 137 kHz and I also like to use a number of HF bands as well; this presented a problem as there isn't space for more than one large antenna.

My original HF antenna was an Off Centre Fed dipole which worked very well and my first LF antenna was a very heavily loaded vertical antenna about 10 m high which worked (after a fashion) but was prone to arcing over, even at low power levels. I experimented with using the OCFD as a top loaded vertical by joining the feeder conductors together and using a loading coil to resonate the antenna on 137 kHz (see Reference 1). This configuration worked much better at LF than the vertical but still required a significant amount of loading inductance (about 6 mH) to work, so more capacitive top loading was required.

The OCFD came down and in its place I installed an antenna that is best described as a 'Centre Fed Doublet' (see Reference 2), however my version has four parallel conductors spaced over 1.2 m in the horizontal section and each horizontal conductor is split in the centre and connected in parallel to a 600 ohm open wire feeder which goes to ground level. The additional horizontal conductors add a significant amount of capacitance which improves the LF transmission efficiency and, as it turns out, doesn't appear to impair HF operation. The overall length of the horizontal section is 26 m and it is about 10 m high. Figure 1 shows the general configuration of the installed antenna.

When the antenna is used on the 137 kHz band (2200 m) both sides of the feeder are joined together at the bottom and connected to a 4.3 mH loading coil which makes the whole system resonant and an effective antenna for that band. The same configuration can be used around 500 kHz (600 m) where the required loading inductance is about 250 µH. (The frequency band 505 to 515 kHz was used under a third party experimental licence for a period of time as part of work towards WRC-12). A slightly larger amount of inductance will be required for use on the 472 to 479 kHz band when we are given access to that part of the spectrum.

A transformer is used to match the now resonant antenna to a 50 ohm coaxial feed line. For use at 137 kHz a suitable transformer can be made using a large ferrite core with multiple taps; my transformer has 30 turns, tapped every two turns, wound on a ETD49 core of 3C90 ferrite (the type commonly

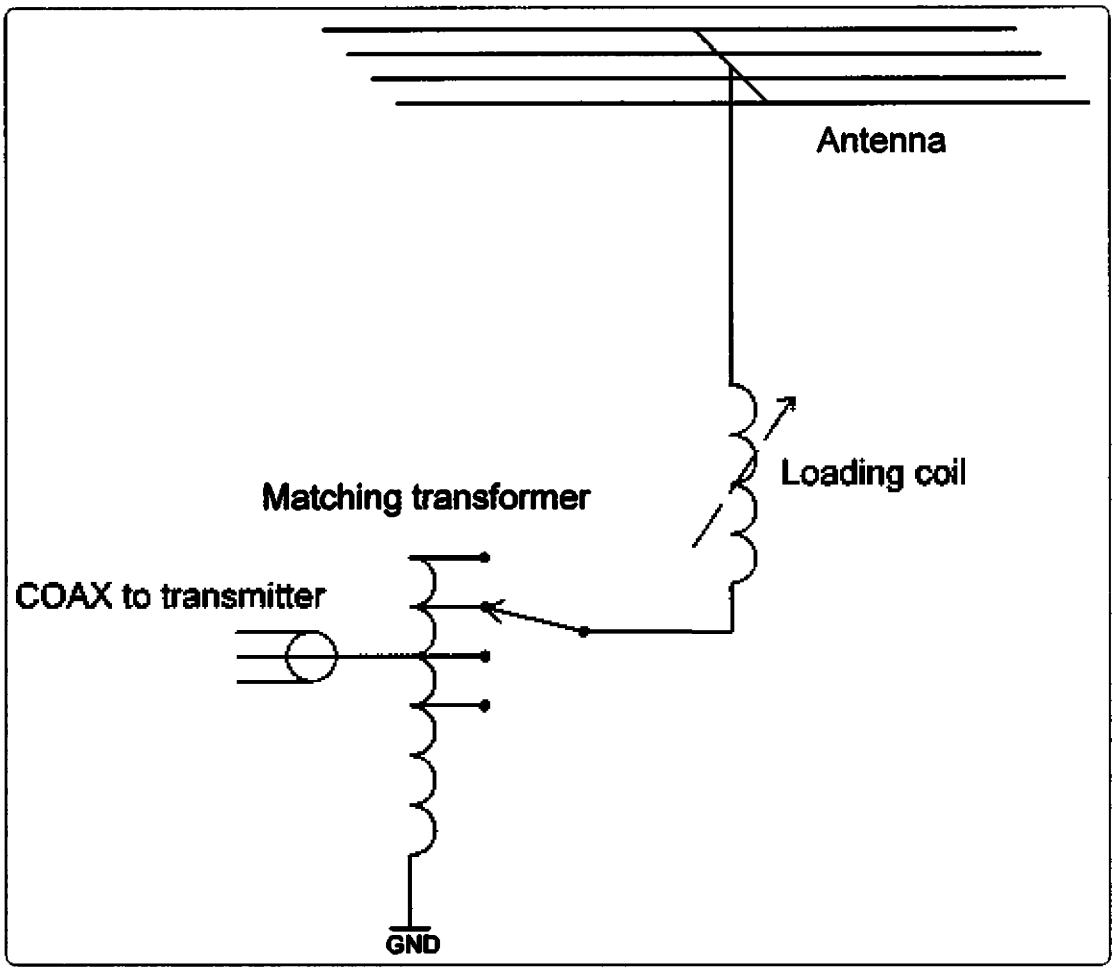


Figure 2: Electrical details for using the antenna at 137 and 500 kHz. As the Q of the antenna is very high, it is necessary to adjust the loading inductance to retune the system when changing the operating frequency. The single feed line is obtained by joining together both conductors of the open-wire feeder at the ground level end.

used in switch-mode power supplies). At 500 kHz I used an Amidon T157-15 powdered iron core wound with 60 turns, tapped every five turns. The tap on the transformer is adjusted to give the lowest Standing Wave Ratio. Reference 1 gives more information about suitable matching transformers. Figure 2 shows the electrical arrangement of the 2200 m and 600 m configuration.

I also found that the configuration works very well on the 1.8 MHz band. In this case a loading inductance of 9.6 µH and an input side shunt capacitance of 2200 pF made the antenna resonant and matched to 50 ohms, no transformer is required. Figure 3 shows the details for use at 1.8 MHz.

Table 1 shows the approximate loading inductance for each band. Note that:

- a very good earth is required for this type of antenna to be efficient,
- that this sort of aerial has a very high Q factor and consequently operates at a very high voltage – stay clear when using it!

But what about operation on the HF bands? By feeding the antenna as a doublet, that is, with a balanced feed, it can be used on the various

Band	Loading inductance (approx.)
137 kHz	3 mH
500 kHz (472-479 kHz)	500 µH
1840 kHz	9.6 µH + 2200 pF capacitor

Table 1: Details of loading inductance required for the different bands. Note that different values will probably be required for other installations due to different amounts of stray capacitance and inductance. The inductors were all air cored.

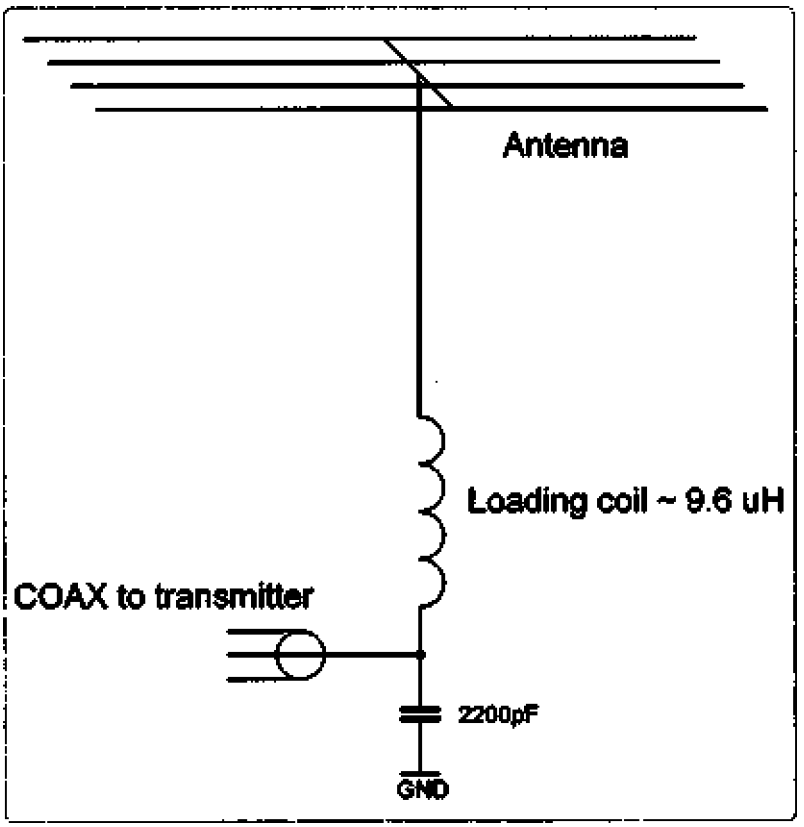


Figure 3: Electrical details for using the antenna on the 160 m band.

HF bands. Ideally an antenna tuning unit would be situated at the ground-level end of the 600 ohm feeder and this would result in a highly efficient antenna. However, in my case that wasn't really convenient and neither was extending the open wire line to the shack.

After some research I came across the idea of using an air cored balun to convert the balanced feed to a coaxial feed so a standard coaxial ATU could be located and used in the shack (see Reference 2). Of course this is a compromise, as the coaxial cable to the balun does suffer a high SWR, but the extra loss at HF is a small price to pay for very convenient operation (even so it's worth using RG-213 instead of RG-58). The antenna tunes up very nicely on many of our HF bands and appears to work very well. Figure 4 shows the general arrangement when using the antenna in this way. A standard ferrite cored balun should not be used in this situation as it will be exposed to a very high SWR which will result in significant losses and the possibility of core saturation.

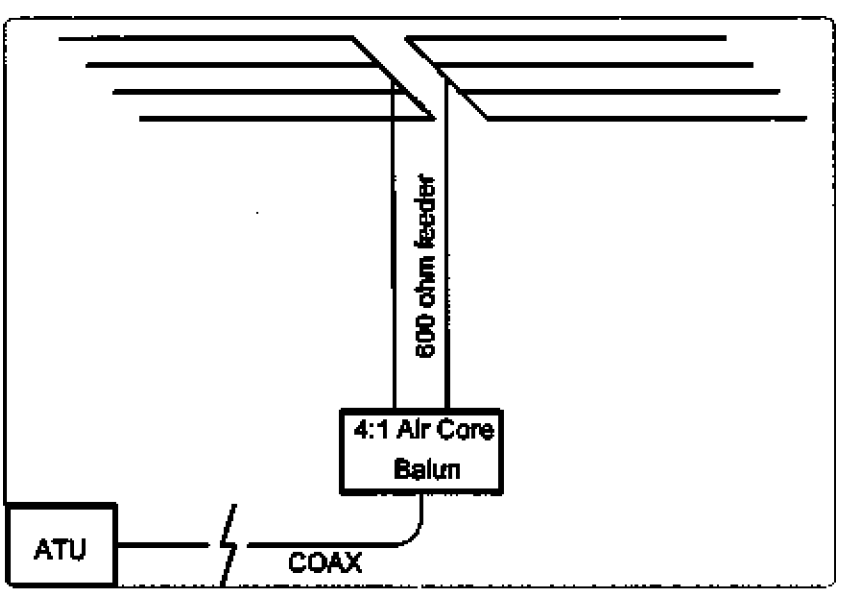


Figure 4: Electrical details for using the doublet at HF.

The air cored balun design is based upon the work originally published by Dick Rollema PA0SE (see Reference 3 and Figure 5) and my version of the balun is somewhat different to that shown in the Radio Communications Handbook. While it is electrically the same, the physical arrangement is different: the two lengths of coaxial cable are coiled up as two separate bunches inside a plastic enclosure with terminals at the top for connection to the 600 ohm feeder and a coaxial connector at the bottom. Figure 6 shows the balun as constructed.

Conclusion

The ability to use a single antenna over a range of frequencies is very desirable if you only have space for one large antenna. By using your HF antenna as a top loaded vertical you can extend its usefulness to lower frequency bands and any antenna with a reasonably long horizontal length as high as possible should work. While the end result is a compromise, it's a way to get on to the lower frequency bands and much better than no antenna at all!

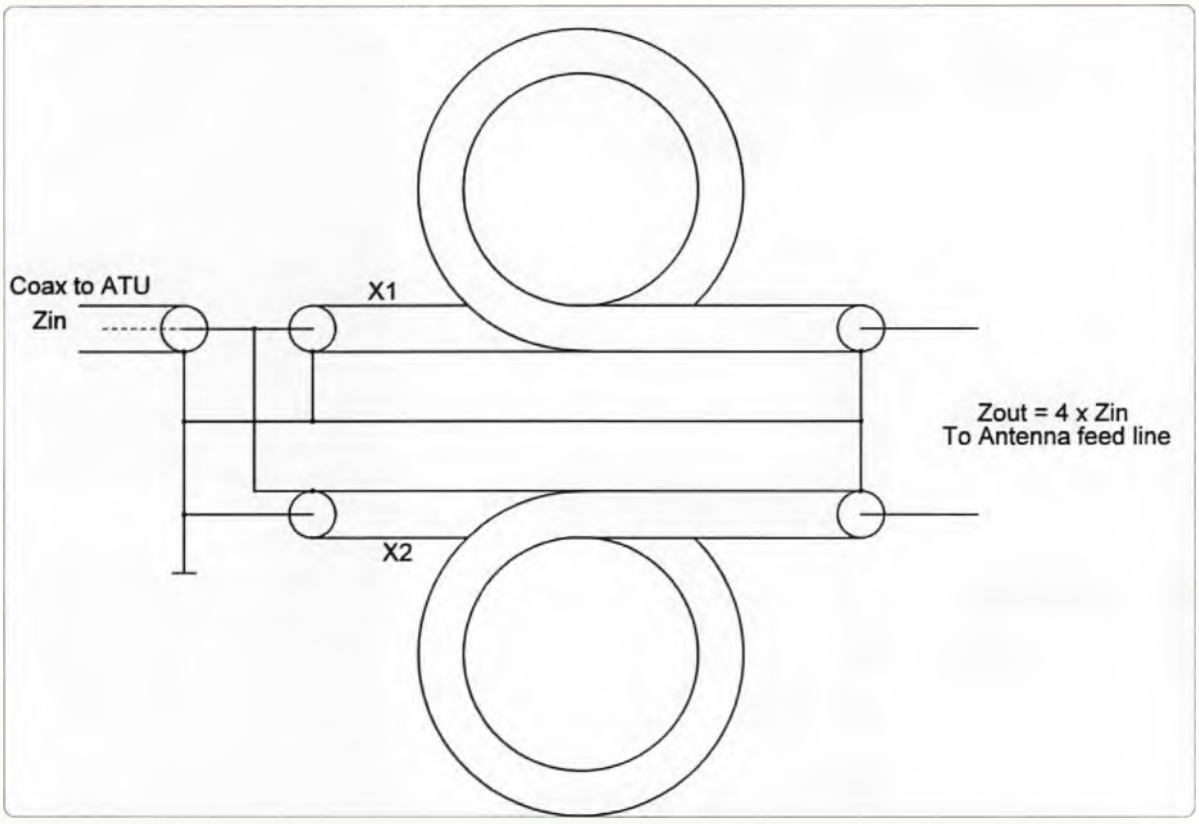


Figure 5: The air cored balun. Each coaxial cable (X1 & X2) is approximately four metres of 75 ohm TV cable coiled up as two separate bunches. The diagram is adapted from reference 3 which also contains a detailed technical description on how the balun works.

Figure 6: The completed air cored balun. Note that the two coils of coaxial cable are coiled in opposite directions.

References

Reference 1: P 28, LF Today, A guide to success on 136 & 500 kHz. 2nd edition. M. Dennison, G3XDV & J. Moritz, MOBMU. RSGB, 2007.

Reference 2: P 15.10, Radio Communication Handbook, 8th edition. Edited by M. Dennison, G3XDV & C. Lorek, G4HCL. RSGB, 2005.

Reference 3: P14.15, Radio Communication Handbook, 8th edition. Edited by M. Dennison, G3XDV & C. Lorek, G4HCL. RSGB, 2005.

VK3 news Amateur Radio Victoria

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Honour for volunteer

A lot has been happening during the holiday break including one of our councillors, Peter Mill VK3APO, receiving the Order of Australia medal in the Australia Day Honours.

The long serving Amateur Radio Victoria member of Council, and WIA Repeater and Beacon Coordinator, has also found the time to help St John Ambulance.

His well-earned award is for service to the community, particularly in the field of radio communications.

Homebrew and constructors group

A regular meeting is now planned for this group of enthusiasts who want to know more about building equipment for amateur radio use.

The Homebrew and Constructors Group held its inaugural meeting on November 10, with Rob Whitmore VK3MQ in the chair. At the Amateur Radio Victoria office, 40g Victory Boulevard, Ashburton, its meetings on a Saturday consist of both the seasoned homebrewer and those who want to learn more about the craft.

A survey of those attending found that they are interested in almost everything to do with building, ranging from kit-building, transceivers, power amplifiers, restoration, software defined radio, microprocessor use and antennas. The design and construction of equipment is educational and allows greater experimentation, as well as the development of techniques and performance.

Each meeting features a 'show and tell' segment, and has a guest speaker. On February 2, it was Peter Cossins VK3BFG who dusted off his old black and white SSTV gear from the 1980s to support an informative talk on the early digital days of the mode.

Putting all National Parks on air

An activity that has been made easier due to light-weight gear is operating portable. With that in mind Amateur Radio Victoria revived its Keith Roget Memorial National Parks Award (KRMNPA).

Peter Fraser VK3ZPF is the first to activate all 45 locations under the KRMNPA rules. Manager of the award, Tony Hambling VK3VTH has confirmed this outstanding achievement.

It truly is a great effort that required dedication over several years. Not only did Peter VK3ZPF work from all parks, he also worked from 25 of them on the 20 metre, 40 metre and 80 metre bands. In addition he made contact with 25 on mixed bands and 15 on 40 metres.

Although the 3rd KRMNPA Activity Weekend is on November 15-17, activations of National Parks can occur at any time. For full award rules and requirements please check our website.

Secure online payments welcomed

Our online facility, accessed via our website, can be used for the renewal of a membership or new members and purchases of the logbook, Callbook and Foundation Licence Manual from the bookshop.

Support through membership is encouraged for the active state-wide body that offers membership services and has a vast repeater and beacon network. Real value is offered at $30 for two years, or $25 concession membership available now online or through the post.

AMSAT

David Giles VK5DG
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I have a mixed bag for this month. I offer my apologies to those who were expecting to see the six-monthly review in last month's issue. If you would like a copy then send me an email at the above address.

The six monthly review – the condensed version

Without going into the detail I normally go into, here's the shortened version of what would have appeared in the January/February issue.
The only significant launch during the past six months was the five cubesats thrown out of the ISS. As they are expected to de-orbit in the next few months I would not have included them in the list. FASTRAC-1 has created some interest with its LED experiment and its 5.84 GHz downlink. FASTRAC 1 and 2 (FO-69 and FO-70) are now non-operational and would have been deleted from the list. LUSAT (LO-19) has been heard but only as a very weak carrier on 437.125 MHz. All other satellites in July's list were heard during November and December with the exceptions of NO-44 and SO-67.

Other changes to the six-monthly review.

CO-55 (CUTE-1) - Now semi-operational. The downlink is mostly straight carrier and is almost as loud as the CW telemetry.

KKS-1 - Now semi-operational. Doesn't transmit a full message, looks like batteries have deteriorated.

PRISM – The CW BBS is now active. Details were in the December column.

STARS – Now semi-operational. Only the 'Mother' satellite is now active.

Flashing FITSAT

The LEDs on FITSAT have been seen from various places around the globe. The green LEDs for the northern hemisphere, red LEDs for us. On their website some results of the observations have been posted. To successfully see it the sky must be dark enough to see the Milky Way. One comment was that the light was a magnitude 7 or 8, which is dimmer than can be seen by the naked eye in a dark sky. The best way to observe it is with an accurately pointed telescope or camera though it should be visible through binoculars. Again you will have to know where and when to point. The FITSAT controllers are now taking requests from observers for suitable times and places. Pictures taken of FITSAT-1 can be seen at *http://www.ne.jp/asahi/hamradio/je9pel/fitsatle.htm#led*

FOX-1 IHU

AMSAT-NA's FOX-1 satellite now has a brain. The first Integrated Housekeeping Unit has been developed and is now being tested in the engineering model. The software team are busy writing drivers and hardware test programs for the new IHU and due this month.

PRISM Photos

The controllers of PRISM have released a selection of pictures taken by the satellite since its launch in 2009. They are holding a 'popularity' contest but even so it is remarkable what can be achieved by a university student built satellite. I particularly liked the Cyprus one as it was the most easily recognisable. I also gave the Earth-Moon photo a tick. The website is at *http://www.smaster.jp/Sheet.aspx?SheetID=72633*

Do the STRaND

STRaND-1 is a cubesat being developed by members of SSTL and the Surrey Space Centre (makers of the UoSAT series). Surrey Training, Research and Nanosatellite Demonstration STRaND-1 will demonstrate two different propulsion systems, one electrical the other chemical. It will have eight pulsed plasma thrusters to give it the ability to orientate itself as desired. The other is the WARP drive (Water Alcohol Resistojet Propulsion system). This squirts a water alcohol solution through a 0.2 mm hole (twice the thickness of a human hair). The width of the thruster is about the size of a drinks coaster so it could be incorporated easily into other small satellites.

The satellite is controlled by its own on-board computer, has a high speed computer payload and a third payload using a NEXUS Android smart phone. A smart phone is a sensible choice as it combines small size, low electrical power consumption, plenty of computing ability with a common operating system, camera, accelerometers and large memory storage; all useful features for a small satellite. In recent years the most popular consumer cameras have actually been smart phones. STRaND-1 uses two cameras to determine the position of the Earth and the Sun, the camera from the smart phone to take pictures of the Earth and an internal camera to take pictures of the smart phone's display using the high speed computer.

The development team from SSTL are building STRaND-1 voluntarily in their spare time.

If STRaND-1 is successfully launched it may be the first cubesat to use plasma thrusters and be able to have full control of its orientation by use of thrusters. STRaND-1 will have a 70 cm downlink as well as a speech synthesiser to pay homage to the first UoSATs (UO-9 and UO-11).

Portable operations

Ivo Klinkert PA1IVO has written in some detail about his portable satellite setup. It consists of two FT-817 transceivers, Arrow antenna, desense filter, headset, battery and cables. He has made up a cradle to hold the FT-817s together with power cable routing and fuses. The whole lot is contained in a carry bag during operation. The desense filter is a 2 metre low pass filter mainly for reducing any 3rd harmonics generated from getting into the 70 cm receiver – very useful for FO-29. His station can be seen at *http://ivok.home.xs4all.nl/pa1ivo/index.html*

Another portable set-up is described by KB5WIA. He also uses two FT-817s but with an Elk antenna mounted on a tripod. He also uses a netbook for tracking and Doppler control with one FT-817 dedicated to 2 metres, the other for 70 cm. A diplexer is used for combining the radios and for desense filtering.

One neat idea is that the cables are colour coordinated with the display colour of the FT-817. No doubt we have all been caught plugging the wrong cables in at some time. His detailed setup can be seen at *http://kb5wia.blogspot.nl/2010/10/satellite-portable-station.html*

Also check May and July 2011 postings for portable operations.

But what if you have only one FT-817? SatPC32 can control one FT-817 by setting it up in split mode and using one VFO for uplink and the other for downlink. It will update each VFO every second or so which can be distracting. Mark Spencer WA8SME described in October 2012 QST a small device he has developed that alleviates this problem. It is a small PCB using a PIC microcontroller that has an RS-232 interface to the computer, LEDs to indicate power, data and PTT status, a mode switch (V/u for FO-29 and SO-50, U/v for VO-52 and AO-7) and a PTT switch. At the time of writing I don't have the details on how it works but I expect it allows only the downlink values to go to the FT-817 while receiving. When you hit the PTT button the latest uplink value is sent to the FT-817 and then the controller sets the FT-817 to transmit. More details in a future column if I manage to get one. Full or partial kits are available from the ARRL education services. See *http://www.arrl.org/news/ft-817-satellite-interface-available-as-a-kit*

Final pass

Twice I have tried to view FITSAT but without success. The first time I had a calm, clear, dark night but they had cancelled the activation. The second time they moved the activation back a day due to the weather forecast (the previously proposed night was only partially cloudy). Sigh. Maybe we will have a better chance with OSSI-1 and its 44 watts of LEDs (due to be launched in April, 2013, see my column in October, 2012).

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly net

Australian National Satellite net

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

In New South Wales

VK2RMP Maddens Plains repeater:146.850 MHz
VK2RIS Saddleback repeater: 146.975 MHz
VK2RBT Mt Boyne Repeater on 146.675 MHz

In Queensland

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

In South Australia

VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz IRLP node 6278, Echolink node 399996

In Tasmania

VK7RTV Gawler 6 m. Repeater 53.775 MHz IRLP node 6124
VK7RTV Gawler 2 m. Repeater 146.775 MHz. IRLP node 6616

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. 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.

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.

ALARA

Margaret Blight VK3FMAB – Publicity Officer

So far 2013 has certainly brought much weather torment in its early months. We have seen terrible fires in Tasmania, Victoria and New South Wales, and storms and floods along the east coast in Queensland and parts of New South Wales. Other parts of the country have also experienced fires and inclement weather. In all of these situations the police, firemen and SES volunteers have used their radio communications to enable them to carry out their tasks efficiently.

While it is heartening to see the wonderful work these personnel have been performing, it is interesting to learn that there have been failures in other forms of telecommunication with mobile phones unable to function in a number of areas. This leaves some members of the public in a difficult situation. Such failure can lead to considerable anxiety among a population needing up to date information on what is happening in their area. While it is appropriate to ensure that everyone has a battery operated radio available to hear the news, it is not always sufficient to provide relevant warnings to people who need it.

Perhaps it is time to consider alternative methods of communication that would provide a more suitable communication network for the general public.

News from VK2

Dot VK2DB has informed us that this is usually a period when plans are still being made for the rest of the year. The Central Coast Field Day is approaching and the ARNSW Anniversary BBQ will take place early in March. Dot will be manning the ALARA table at both these events and looks forward to meeting any ALARA members and interested parties.

Dot also let us know some of her recent activities: *'I have given a few speeches to our Senior's club; first with OM John about amateur radio, next was our trip to Switzerland, then the YL International Meet in Munich and last year, the Adelaide YL Meet. I've also spoken at radio clubs, but that is speaking to the converted. I have also talked about ALARA twice on the local FM radio station.*

Now I have been asked to give a talk about radio to the folk in a retirement village in a suburb close by. Not a technical talk but something that would interest them and there are probably more women than men in the group. I have a feeling that if the talk goes well, word will spread and I'll join 'the speaker's circuit'. I take a PowerPoint presentation so it's not just my voice droning on, and have a bit of quiet music playing very quietly in the background with a smattering of CW and a few words from a radio contact. It will be more about communication although there will be photos of beams and aerials, radios and the visit to the radio museum at Kurrajong.'

Keep up the good work Dot. You provide encouragement to others.

VK3 news: VK3 ALARA picnic – a radio event

For the first social gathering of the New Year, ALARA held a BBQ picnic lunch in Bundoora Park. Contact was made with WANSARC, a local radio club, and they agreed to become associated with the event. Lino VK3EI from the EMDRC brought along his portable trailer and this enabled a 'live' link on VK3RTV1 and it was possible to talk in on 146.450 simplex FM.

The day was fine and a group of about 28 people attended. These included ALARA members, OMs and friends plus WANSARC members. A former ALARA member Elizabeth VK3FEIZ called in to greet

Photo 1: From L to R - Mary, Naree, Heidi VK3FHID, Ada, Carla, Monica VK3FMON, Jean VK3VIP, Muriel and Wendy.

everyone but unfortunately could only stay a short while. However, it was good to see her. Food was plentiful and although the weather was initially cool it warmed up to become a sunny afternoon. This was an enjoyable social event, one that we may need to repeat on future occasions.

WANSARC have provided a good write up on the event with plenty of photos and this can be viewed on at *http://www.wansarc.org.au/downloads/WANSARC_NEWS/2013/WANSARC_Vol_44_Issue_022013.pdf*

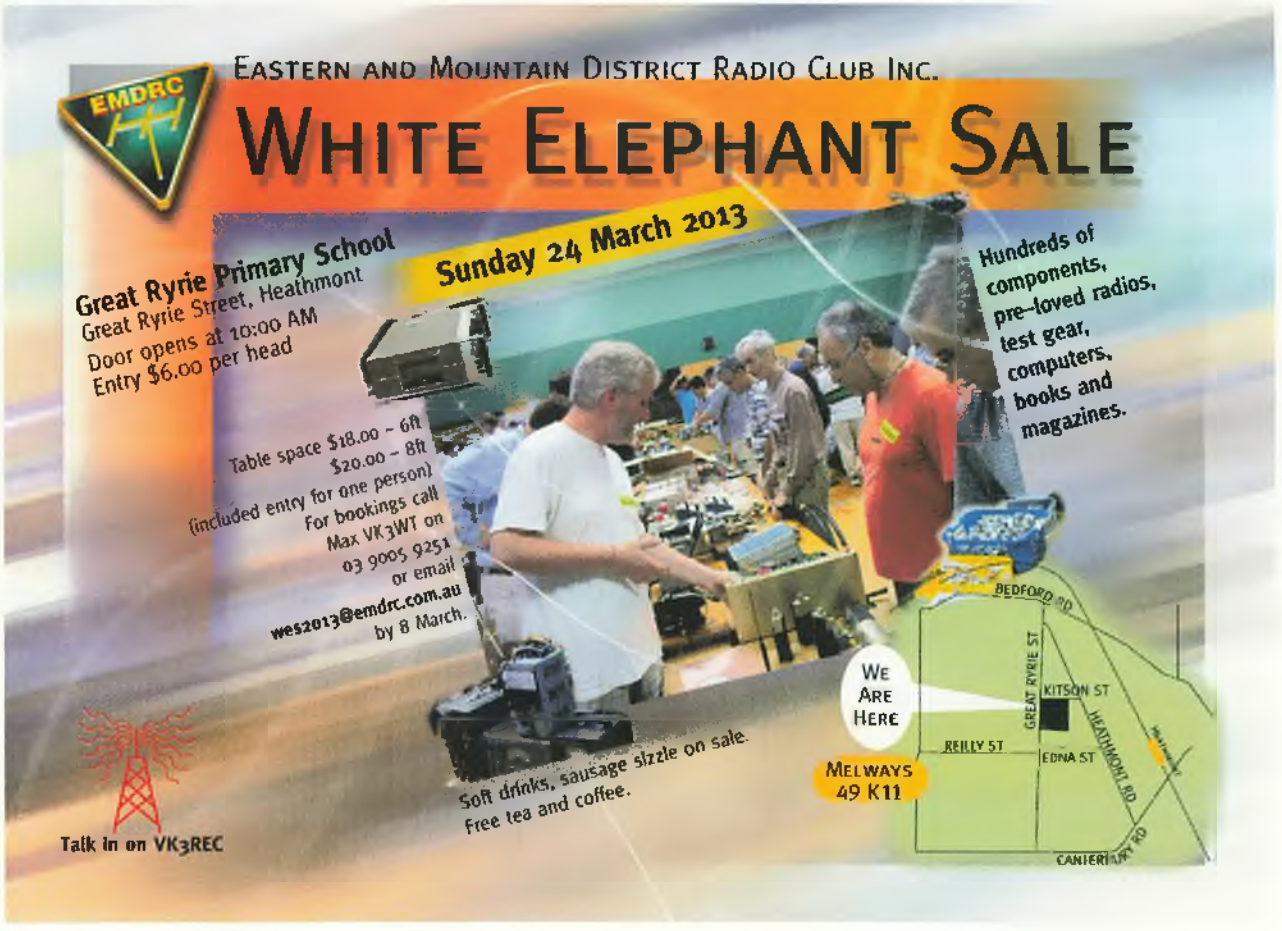
From Jenny VK3WQ

Not much amateur radio news except to report that about 10 ladies attended the Macedon Ranges ARC Family Picnic Day last Saturday (19th January). Pam VK3NK and Jenny were the only ALARA members, but the good roll-up showed there is some interest on the part of the ladies. Check the Macedon Ranges ARC web site *www.mrarc.org.au* for more information and photos of the event.

Jenny also included an insight into life in the outer suburbs during our long summer – 'The perils of living in outer suburbia.'

'We haven't had any major bush-fires near here, but we have had a couple of minor dramas. Just after Christmas there was a grass fire in the large holding behind us. Fortunately, it was on the other side of our back paddock and the wind was not in our direction. Then two weeks later, OM. Peter was at his friend's place, one street away, when the fellow opposite set his grass on fire trying to cut it with a ride on mower. We've had very little rain for several months and everything is so tinder dry and once the long grass was ignited, it just 'took off'. Peter raced over and tried to get the nearly-new ride-on mower away from the fire, which he did, but the fire must have spread later as there is now a very sad burnt out shell of the mower there. On both of these occasions four or five fire trucks turned up. Fortunately there were no houses damaged or people hurt and we have had reports from a number of states that the item was shown in many TV news services. This of course was before the subsequent tragic fires in most states.

And as if that wasn't enough excitement, one day last week I went up to put the kitchen scraps in the compost bin and disturbed a very large Eastern Brown snake. Fortunately, he heard me coming and headed in the opposite direction.'



DX-News & Views

Luke Steele VK3HJ & Chris Chapman VK3QB
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January and February on the bands

The New Year started out in fine form, with over 200 countries active and band conditions making it possible to contact most of them. 15 metres proved to be the best band, 10 metres had some activity, but propagation was patchy. The low bands were average, but 160 metres showed some good activity, especially around the CW 160 metre contest, and some evenings have offered contacts into South America and the Caribbean.

Solar indices picked up dramatically in early January, tapered off later in the month, and look like remaining fairly low for February. Geomagnetic conditions were mostly quiet. Propagation was better than January 2012, but the three-month moving average of solar indices was lower than that in late 2011. It has been suggested by some that we are already on the way down from the peak of Cycle 24, yet others predict a peak later this year. There could even be a double peak in activity. Nonetheless, there are the usual seasonal changes in HF propagation. Spring and autumn appear to show improved conditions, and winter has shown a decline. It would be a good strategy to make the most of the quite fickle 10 metre and slightly better 12 metre conditions while they last. Be sure to enjoy the generally good 15 metre conditions.

There were few DXpeditions in January, but a team of Japanese operators had a radio holiday in Lord Howe Island, some Europeans in Africa, and there was quite a bit

Some upcoming DX operations

The following table summarises some of the DX activations that may be of interest to VK operators.

Date	Call	QSL via	Information
28 Feb – 10 Mar	TX5K	N2OO	Clipperton I (NA-011). Cordell Expeditions, international team, all bands, all modes.
2 – 17 Mar	PJ7AA	AA9A	Sint Maarten I (NA-105), AA9A, 160 – 10 m, CW, SSB and some RTTY.
5 – 20 Mar	J34G	G3PJT	Grenada (NA-024), QRV for Commonwealth contest.
7 – 10 Mar	VO2AAA	VE3AAQ	Canada, Labrador (CQ Zone 2), QRV for Commonwealth contest.
7 – 13 Mar	VP5	W1UL	Turks & Caicos, Providenciales I (NA-002), W1UL and W2PKV, all bands, CW, SSB.
8 – 22 Mar	PJ2	Home call	Curacao I (SA-099), W1USN, AA1M, W2SSR, 160 – 10 m, SSB, CW, PSK, RTTY.
8 – 25 Mar	H44G	DL7DF	Solomon I (OC-047), European team, 160 – 6 m, all modes. *http://www.dl7df.com/h4/index.php*
10 – 18 Mar	9M4SLL	LoTW M0URX	Spratly I (AS-051), International team, all bands, all modes. *http://www.qrz.com/db/9M4SLL*
10 – 29 Mar	FS PJ7	DK5ON	Saint Martin and Sint Maarten (NA-105), DK5ON, 80 – 6 m, SSB, RTTY, PSK.
12 – 23 Mar	H40T	DL7DF	Temotu I (OC-100), European team, 160 – 6 m, all modes. *http://www.dl7df.com/h4*
13 – 23 Mar	T2GM	GM4FDM	Tuvalu (AS-015), Scottish team. *http://t2gm.org/*
14 – 20 Mar	ZL7LC	ZL1LC	Chatham I (OC-038), ZL1LC, PSK31.
15 – 23 Mar	PJ7	N0TG	Sint Maarten (NA-105), N0TG, AA4VK and N1SNB.
20 – 27 Mar	XR0YG	LoTW	Easter I (SA-001) English team, 160 – 10 m, mainly CW.
25 Mar – 12 Apr	TO7BC	DL7BC	Mayotte (AF-027), DL7BC, QRV for WPX phone contest.
26 Mar – 15 Apr	A3EAQ	SP5EAQ	Tongatapu (OC-049), 80 – 10 m, SSB.
30 Mar – 13 Apr	VK9C	LoTW	Cocos-Keeling I (OC-003), GM3WOJ and GM4YXI as VK9C/ GM2MP, SSB, CW, some RTTY.
30 – 31 Mar			CQ WW WPX contest, SSB

of activity in the Caribbean. Late in January, there was quite a stir when ZK3T commenced operation from Tokelau. This was unusual in that over the past years an unknown CW operator has been pirating the same callsign, so this recent activity was viewed with suspicion. It soon became apparent that this was a proper DXpedition, by Dick DJ2EH, who will be part of the ZK3N DXpedition in April. Dick chose not to announce his activity, so when he came up using the old 'pirate' call of ZK3T, you can just imagine the consternation expressed on the DX Clusters and internet forums!

February had plenty on offer, with expeditions to Africa, Pacific and the Caribbean. The Clipperton Island DXpedition should be in full swing when this reaches your mailbox.

PJ7AA, **Sint Maarten.** 2 – 17 Mar. Tom AA9A will be operating from Sint Maarten, using CW, SSB and perhaps some RTTY. QSL via Bureau or direct.

J34G, **Grenada.** 5 – 20 Mar. Robert G3PJT will be in Grenada for the Commonwealth contest (9 - 10 Mar). Look for him before and after the contest too.

VO2AAA, **Labrador, Canada.** 7 – 10 Mar. David VE3AAQ will be operating in Labrador for the Commonwealth contest. He'll also be QRV for those needing CQ zone 2 before and after the contest.

VP5, Turks & Caicos. 7 – 13 Mar. Urb W1UL and his XYL Pat W2PKV will be operating as VP5/home call from Providenciales Island, on all bands. Urb mainly CW and Pat mainly SSB.

PJ2, **Curacao I.** 8 – 22 Mar. Mike W1USN, Bob AA1M and Scott W1SSR will operate as PJ2/home call on HF, all modes. QSL home call via bureau or direct.

H44G, **Solomon I.** 8 – 25 Mar. DK1BT, DK7LX, DL4WK, DL7KL, DL7DF, DL7UFN, DL7UFR, SP3CYY, and SP3DOI will be operating from Guadalcanal with four stations, 160 – 6 m, all modes. From 12 – 23 Mar some of the group will be operating from **Temotu** Islands as H40T. See the website for further information. *http://www.dl7df.com/h4/*

9M4SLL, **Spratly I.** 10 – 18 Mar. 9M6XRO, 9M6DXX, 9V1YC, N6MUF, G3BJ, EA3NT, and KM0O will be operating from Pulau Layang Layang (AS-051) with several stations, all bands all modes. QSL M0URX via bureau, direct or OQRS. See website for further information. *http://www.qrz.com/db/9M4SLL*

FS, PJ7/DK5ON, **Saint Martin, Sint Maarten.** 10 – 29 Mar. Andy DK5ON will be operating from both French Saint Martin and Dutch Sint Maarten on 80 – 6 m, using SSB, RTTY and PSK. QSL via home call.

T2GM, **Tuvalu.** 13 – 23 Mar. The experienced Scottish team, Rob GM3YTS, Tom GM4FDM, Gavin GM0GAV and Clive GM3POI will be operating from Funafuti Atoll. They will be using two 500 W stations. See the website for further information. *http://t2gm.org/*

ZL7LC, **Chatham I.** 14 – 20 Mar. Jim ZL1LC will be operating PSK31 only. Look for him on the usual PSK frequencies. During pileups, he will split 100 – 400 Hz up.

PJ7, **Sint Maarten.** 15 – 23 Mar. Randy N0TG, Ron AA4VK and Jeff N1SNB will be in St Maarten operating as PJ7/home call. QSL direct only via N0TG.

XR0YG, **Easter I.** 20 – 27 Mar. Mike G7VJR, Nigel G3TXF, John G4IRN and Martin G3ZAY will be operating 160 – 10 m, mainly CW. QSL via OQRS and G3TXF.

TO7BC, **Mayotte.** 25 Mar – 12 Apr. Hartwig DL7BC will be operating from Mayotte. He'll be active in the WPX phone contest. QSL direct or via bureau.

A3EAQ, **Tonga.** 26 Mar – 15 Apr. Jacek SP5EAQ will be QRV from Tongatapu, 80 – 10 m, SSB. See the website for more information. *http://sp5drh.com/a3eaq/*

VK9C, **Cocos-Keeling I.** 30 Mar – 13 Apr. Chris GM3WOJ and Keith GM4YXI will be operating as VK9C/GM2MP on CW, SSB and some RTTY.

Lastly, we (Chris & Luke) will be off to Norfolk Island from 3 May until 13 May with the Oceania DX Group *(http://www.odxg.org).* The team will comprise 10 Australian operators and one North American operator. For more details visit the website *vk9nt.odxg.org* – we look forward to hearing many VK operators and hopefully filling any band slots you need.

We had promised some discussions on DXpedition financial management and fund-raising this month. Unfortunately the editorial deadline has beaten us. We'll definitely be providing an insight into this important topic next month. Until then, good DX and as always, please drop either of us an email with your news or questions.

Correction Annual Index

On page 32 of Amateur Radio January & February 2013, there is a typo in the 'Silent Keys' listing.

Don Graham is shown as VK5HK when in fact, he was VK6HK.

We apologise for the error.

VHF/UHF - An Expanding World

David Smith VK3HZ
e *vk3hz@wia.org.au*

Weak Signal

After the excitement of the New Year day's openings across the country, January 2nd was somewhat quieter with contacts from VK2 across to ZL, and some intense propagation between VK3, 5 and 7.

After that, there was a lull for a few days. Then on January 6th, as I was writing the last column, the bands opened up to produce one of the best (if not THE best) days for many a year. For those in VK2 and VK3, there was a huge tropo opening to the east to stations spread up and down New Zealand from Bob ZL3TY in the south to Steve ZL1TPH/P at his usual portable location in the north. Then the band opened from VK3 to the west to VK6.

Once again, rather than trying to detail the many contacts, below is a map of the Spots registered for the day, courtesy of the VK Logger:

Figure 1: Contacts for 6 January 2013.

As we now have the marvel of colour printing, I should explain that the red lines represent 2 m contacts, blue for 70 cm, green for digital modes (EME off the page) and yellow for spots of propagation indicators (FM stations, AIS ships etc.).

While some lines appear to travel from ZL all the way to VK6, there were no contacts of quite that distance. However, several stations in VK3 worked both ways to stations separated by over 5000 km. For example, Jim VK3II worked Bob VK6BE (2480 km) and a little while later worked Steve ZL1TPH/p (2580 km).

Best 2 m contact for the day was from Colin VK5DK in Mt Gambier to Steve ZL1TPH/p – a distance of 2995 km with 5x1/5x2 reports.

On 70 cm, Arie VK3AMZ near Geelong worked Steve ZL1AVS on the coast to the west of Auckland – 2652 km with 4x1 reports. Just to show that it wasn't a fluke, they repeated the contact later in the morning and then again in the evening with 5x1 reports. Several other Geelong region stations also worked Steve on 70 cm including Ken VK3AKK, David VK3QM and Chas VK3PY – all distances within 2 km of Arie's effort. Overall, Steve ZL1AVS had 12 contacts into VK3 on 70 cm.

Also on 70 cm, Andrew VK3OE up on Mt Dandenong worked Steve ZL1TPH/p for a distance of 2595 km with 5x5 reports. Andrew ended the day with 3 ZL stations on 70 cm.

At the end of the day, Steve ZL1TPH/p reported:

In the log for today:
144 MHz; VK2DO, VK2NC, VK3DUT, Heard VK1BG, VK3KH, VK3AMZ, VK2AH, VK5DK, VK3EK, VK3BDL, VK3GHZ, VK2IJM, VK3II, VK2BCC, VK2ZT, VK3OE, VK3AKK, VK2DVZ, VK2ZT,

432 MHz; VK3OE,

I'd like to thank the VK3 operators for going quiet (they must have been hearing both ends) while VK5DK and I persevered for the 3000 km contact on tropo. I thought that was so neat, and so a word of thanks to the VK3 operators.

Gavin VK3HY writes:

The weekend of 5th and 6th January started out in the usual way at my QTH. In the shack Saturday morning just before 2000 UTC for the FSK441 meteor scatter activity on 144.230 MHz. Within an hour, contacts were completed with VK4AMG, VK4JMC, VK4UH, VK2AMS and VK2XN. After that, I beamed out to the west hoping for a repeat contact of a few days earlier with VK6BE. This did not eventuate but good contacts were made with VK5DK and VK5PJ. On Sunday morning, meteor scatter activity was unusually quiet resulting in just one contact with VK4KSY. It seemed that with the Hepburn tropo index looking very promising between VK2/3 and ZL, most of the 144 MHz DX stations were concentrating on that path. The path to ZL from my QTH is obstructed by the Dandenong Ranges so I resigned myself to just listening to others enjoying VK3 to ZL contacts.

However, to my surprise and great pleasure, I eventually received

JT65B signals from ZL3TY at -24 dB and we completed a contact at 2220 UTC. At 0003 UTC I again worked ZL3TY RST 529 on CW. No other ZL stations were received at this location. My beam heading to ZL3TY is 111 degrees. To illustrate the degree of difficulty in making these contacts, my antenna is 220 m ASL and in the ZL3TY direction, fires straight into 244 m of dirt just over a kilometre away rising to a 488 metre ridge between Sassafras and Ferny Creek at about 2.8 km distance. I guess this proves that just about anything is possible. I've now had just four ZL contacts on 144 MHz in 47 years. Some of the less geographically challenged probably bettered that in a few hours on the 6th January, 2013.

From the south island of ZL, Bob ZL3TY reports:

The opening started on Saturday morning with JT65 QSOS with VK3GHZ (1945Z), VK3AMZ and followed by VK3GHZ on 70 cm. I was out of the shack until 0335Z when VK3GHZ was in again on 2 m and 70 cm. I then worked ten VK2 stations and four VK3, with some of the Sydney stations very strong. On 70 cm in the evening worked VK3GHZ, VK3EK, VK2BHO and VK2ARA.

On Sunday, initially open to VK2 and 3, worked five VK2s, then later in the day the opening shifted with good signals into VK3 as far west as Geelong vicinity. Worked 28 VK3s, at one time had a nice pileup into Melbourne. Tried JT65 and worked 9 stations in total including VK2EMA, several were subsequently worked on SSB. On 70 cm worked VK3GHZ, VK3PY/P, VK3AKK/P, VK3QM/P, VK3EK, VK3DUT. Unfortunately the opening didn't extend as far as VK5 from here.

Beacons heard during the opening included VK3RGI, VK3RED, VK2RSY and VK3RGL. On Sunday evening VK3RGI was S9 for several hours.

My AIS receiver logged ships in mid-Tasman throughout the opening; at one time on Saturday two ships off SE VK3 were logged. It appears that my AIS antenna's main lobe favours VK2/4, as I would have expected more ships in Bass Strait given the strength of the VK3s at times. As a propagation indicator, it did show ships in the Tasman preceding the first VK signals.

A big thanks to all stations worked; this opening was up there with the best experienced here.

On January 7th, the VK2/3 to ZL opening continued at a somewhat diminished level with the two Steves (ZL1TPH/p and ZL1AVS) featuring heavily and nearly all contacts on 2 m. Conditions between VK3, 5 and 7 were also well up. Norm VK7AC near Launceston worked Brian VK5BC/p holidaying at Corny Point on 23 cm - 1130 km with 5x1 reports.

From there, things dropped off and the rest of the month produced only a few high spots. On January 9th, it was the turn of the VK4's to work ZL, all contacts on 2 m. On January 13th, the conditions were repeated together with some good propagation from the Brisbane area up to FNQ, which continued into the 14th.

On the morning of January 16th, an intense tropo patch across western Victoria allowed Ralph VK3WRE to work Colin VK5DK on 10 GHz with 5x2 reports. Of note is that both are home stations.

Finally, after the frenetic start to the month, nothing really of note occurred for the last half of January.

National 23 cm ATV Record

Rod VK3BQJ in Gippsland reports on his ATV efforts:

While there has been much attention recently to the excellent tropo conditions to ZL, there was superb tropo across Bass Strait from Sunday through Tuesday, 6 - 8th January, at least from the Lakes Entrance area in VK3 to Penquin in VK7.

The 2 m repeaters VK7RMD on Mt Duncan and VK7RAA on Mt Barrow were received in east Gippsland at unprecedented signal levels for many hours. On the 8th in particular 70 cm repeaters, particularly VK7RMD, were received at unprecedented signal strengths for unprecedented periods of time. Also noted were VK7RBH and VK7RAB.

On the 7th, Winston VK7EM and I had a 23 cm analogue ATV contact from 1310 to 1500 hours local, basically P5 throughout with fast deep QSB appearing particularly from 1430 hours. Frequencies of 1283 MHz - VK7 and 1250 MHz - VK3 were used, just convenient frequencies.

Prior to the ATV QSO VK7EM ran an unmodulated video carrier for circuit adjustment; this was received on a conventional SSB receiver at VK3BQJ. A simulation of the signal on the 8th using Spectrum Lab, a handful of attenuators and a signal generator suggested that the signal from Winston was at least 80 dB above noise. As the contact progressed it was quite evident that the signal level went much higher from readings on a signal meter on the tunable dedicated video RX, the latter readings have not been quantified.

It later became evident that some/most of the troubling QSB was caused by the 2 m dish at the VK3 end having been lined up 15° off the true azimuth for the entire QSO - map reading error; an ever stronger gusting wind as the QSO progressed caused the 2 m dish to rock sideways.

An application for a new 23 cm ATV national record will be made in due course. If accepted the new distance will be about 400 km - the existing record is 216.5 km.

[The new record distance of 399.2 km has since been accepted by the WIA.]

VK5DK 144 MHz and up activity

Colin VK5DK in Mt Gambier submitted the following report about his activity for December and January:

Although all the antennas were repaired or replaced, I have been subjected to severe power line noise

from the 11 kV line that runs down the street that I live in, but most mornings the noise has been low enough to be able to work any DX that has been about.

This DX season there has been very little Sporadic E on 144 MHz with only one brief opening that I encountered with contacts to VK2ZT and VK2MAX on the 18th of December 2012.

On the 30th December, conditions improved with several contacts being made with Brian VK5BC/P at Corny Point on the Yorke Peninsula through to Ralph VK3WRE in Traralgon, and Norm VK7AC and Joe VK7JG in Launceston. During this time the VK6REP beacon in Esperance was heard in Mt Gambier, but no contacts into WA were made.

On the 31st of December the VK6REP beacon was quite strong and a contact was made with Ron VK6VOX in Katanning at 1113 UTC with a 5 x 8 signal being received followed by a contact with Bob VK6BE in Albany with 5 x 9 signals at 1348 UTC. Both stations were again worked the following morning at 2155 UTC for VK6VOX and VK6BE at 2230 UTC.

Conditions on the 3rd of January were still extremely good (as suggested by the Hepburn Tropospheric charts) with contacts to VK7XX on 144 MHz and 432 MHz, but with power line noise problems at this QTH no other contacts were made. Again on the 5th January the propagation to VK3 and VK7 was extremely strong and the following stations were worked, (some on 144 MHz and 432 MHz), VK7AC, VK3XDX, VK3WN, VK7PD, VK3BY, VK3GHZ, VK3BBB, VK3WRE, VK3AXH, VK3AMZ, VK3AXH (2.4 GHz), VK3HY, VK3ALB, VK3MQ and VK3II.

The Hepburn Tropospheric charts were indicating a very good duct from VK6 right through to ZL for the morning of the 6th January so an early start on 144 MHz with a contact with Norm VK7AC (who was beaming ZL) at 1852 UTC 5th January) with 5 x 9 signals both ways followed by a contact with Mike VK3BDL at 1933 UTC 5th January. At this stage ZL1TPH/P (RF73HM) was making several contacts into VK3 on 144 MHz and 432 MHz but was not audible here in Mt Gambier.

At around 2015 UTC I was able to start hearing Steve ZL1TPH/p's 'K' at the end of each of his transmissions. Thanks to all the VK3 stations for standing by to allow Steve and I to finally make the tropo contact of 3000 km on 144MHz. I received Steve at 5 x 1 and Steve received my signals at 5 x 2. Unfortunately, the power line noise was increasing and no more contacts were had from this QTH. ZL2ADU was heard by both Trevor VK5NC and Gary VK5JR/P, but no contacts were made.

Again on the evening of the 6th January, conditions were still good with the following stations worked, VK3GHZ (144 and 432), VK3FASW, VK5BC/P, VK3XDK and VK3HZ, on the 7th January VK3BDL, VK7AC, VK5BC/P (144, 432 and 1296) VK3AUU, VK5NEX, VK3II, VK3ZQB and VK5TH. Conditions have not been all that good since, apart from the morning of the 16th January when on checking the beacons I was able to hear all of the VK3RGI beacons (144, 432, 1296 and 10 GHz) all at good strength. At 2321 UTC 15th January (16th January) I was able to contact Ralph VK3WRE and our first two way SSB contact made on 10 GHz from home station to home station with Ralph's signal at my QTH peaking to S7 and received a 5 x 2 report from Ralph; this is a distance of 506 km.

At present my noise problem from the power line is running on average S9+ most days. Although the power company has located the offending insulator, to date it has not been replaced.

VK3ER Field Day microwave additions

Peter VK3QI reports that the VK3ER Field Day station is now capable of contacts on all bands to 47 GHz:

I have the 24 GHz and 47 GHz setups running – 3 watts and 150 mW respectively. Had a couple of 24 GHz contacts in the Summer VHF/UHF Field Day but I have a problem with FMing of the doubler (even though it is GPS-locked) – it seems that the amplifier which draws about 4 amperes is causing the voltage to drop somewhat on modulation. I need to upgrade the power cable feeds. We solved the problem in the

Photo 1: The VK3ER microwave tower with 13 cm to 24 GHz.

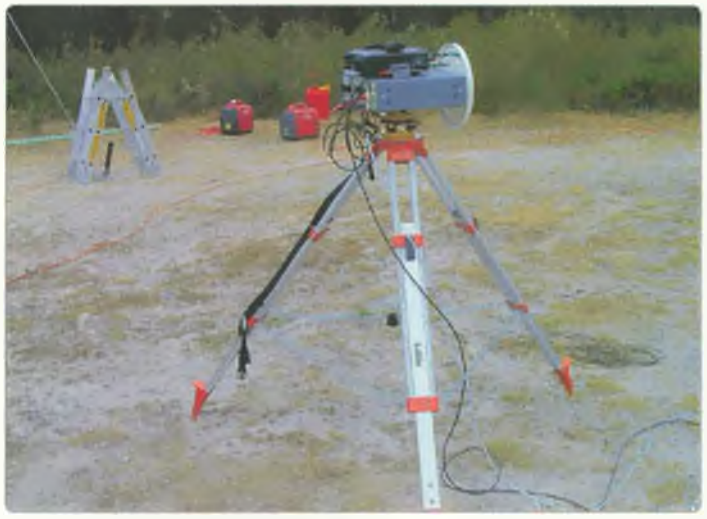

Photo 2: The VK3ER 47 GHz System.

FD – just went to FM and had full quieting QSOs!

The 47 GHz setup is going – I just need to find some active stations – Peter VK3APW, David VK3QM and Charlie VK3NX seem to be the only ones around!

Pictures of the microwave setups are photos 1 & 2.

Please send any Weak Signal reports to David VK3HZ at *vk3hz@wia.org.au*

Digital DX Modes

Rex Moncur VK7MO

JT65b - Tropo opening 5th and 6th January, 2013

Bob ZL3TY reports:

Before commencing the regular Saturday morning meteor scatter session I logged the VK3RGI and VK3RED beacons. During the session I could see traces of tropo signal on the SpecJT screen and it appeared to be Rhett VK3GHZ. We tried JT65B and completed an easy QSO, followed by Arie VK3AMZ. I was away from the radio until later in the day and after 0400Z worked into VK2 and VK3 on SSB and CW.

On Sunday morning, after working into VK2 and eastern VK3 on SSB and CW, I changed to JT65B and worked VK3II, VK3AMZ, VK3HZ, VK2EMA, VK3HY, VK3KH, VK2KOL, the VK2EMA QSO being the best of the opening at 2385 km.

Initial Tests on 24 GHz EME with small portable dish

Following the success in using JT65c with Doppler correction on 10 GHz, Rex, VK7MO has started experimenting with WSJT on 24 GHz using his 47 cm plastic offset dish. Everything gets more difficult on 24 GHz with water vapour absorption, libration spreading increasing in proportion to frequency, difficulty in aiming, increased losses requiring waveguide, in getting low noise pre-amps and generating power. The tests were run one way with Al W5LUA who has a 2.7 metre dish and 100 watt TWT. The first attempt was encouraging with evidence of a single tone on the waterfall. After some work on the feed alignment, the single tone became clearly evident and an attempt was made with JT65c. Two syncs were achieved but no decodes even though signal levels were around -29 dB where 10 GHz would normally decode at similar spreading. While JT65c works well on 10 GHz with just 10.8 Hz tone spacing, with libration spreading of up to 150 Hz, this seems to occur because the bulk of the signal is reflected as a specular peak from the centre of the moon. Looking at the single tones on 24 GHz, it was evident that the signal is spread more evenly and thus the close tone spacing of JT65c works against decoding. Looking at the literature it is seen that as one goes up in frequency the reflection moves from almost completely specular at VHF to part specular and part diffuse around 1296 and is largely diffuse by 24 GHz. Accordingly, it seemed that it would be necessary to use a wide binwidth mode such as JT4E and accept its lower sensitivity of around -19 dB. Tests with JT4E showed that it could detect something because the DT was consistent with the distance to the moon. And while two syncs were achieved, again nothing was decoded. The results were forwarded to Joe Taylor K1JT, who was challenged to see if he could decode the wave files. His initial work on some 10 GHz wave files showed that he could by averaging achieve decoding of weak JT4G signals but with only two files on 24 GHz the averaging was insufficient. Joe then implemented his Deep Search algorithm on JT4 and was able to decode the 24 GHz signals as below.

174459 2 -23 3.1 22 46 * VK7MO W5LUA EM13 0 26 E

175259 0 -25 3.1 22 44 * VK7MO W5LUA EM13 0 10 E

While these decodes were not achieved until over two weeks after the actual test, they do demonstrate that is should be possible to use JT4 with just a small dish to undertake 24 GHz EME. Getting a two way QSO is still a long way off as this was done with 100 watts at the other end.

Please send any Digital DX Modes reports to Rex VK7MO at *rmoncur@bigpond.net.au*

The Magic Band – 6 m DX

Roger Harrison VK2ZRH

Hi there! This is just a "guest spot" while the Editor leg ropes a new columnist.

I must pay tribute to Brian VK5BC for filing this column for the past eight years. A monthly contribution can be a tough gig, requiring fortitude, dedication and application. All the best Brian, I trust that the fish always bite and the DX favours your QTH whenever you're on-air.

As Brian reported in his last column, the long-haul DX into VK generally spread its favours elsewhere for December 2012. January proved more exciting – the New Year's Day openings into the South Pacific and USA just a taste of what was to come.

January 10th was a better day for the ZL stalwarts, with Hiyo JR2HCB working Dave ZL2OK, Ross ZL3ADT and Paul ZL4PW with 55 signals reported on both SSB and CW. Not content with that, the trio also worked JH1WHS. The ZL2WHO and ZL3SIX beacons were also spotted by the two JAs. Meanwhile, at 0725 UT, Jack VK2XQ spotted Pascal FK8IA, Noumea, at 5x6 calling CQ. Bob ZL1RS spotted the JA6YBR beacon on the 11th at 0608 UT, at 429 with QSB. Perhaps this flurry was a taste of early-season TEP to come?

King of the UT day (11 Jan local) was Bob ZL1RS, who worked Javi LU5FF in central Argentina (1822 hrs, 10/1 UT), at 10,753 km giving a 559 report. About an hour and 20 minutes later, Bob had an incomplete QSO with Dale CE2AWW near Santiago, Chile, at 9,850 km, reporting 449 sigs. Just to round things out, later that day, Bob spotted the JA6YBR beacon at 429 with QSB, at 8,640 km.

The middle of January proved productive for VK2, VK3 and VK5 stations. On the 16th, Steve VK3ZAZ opened the long-haul proceedings by working Ed WP4O at 15,752 km, then Austin N4WW at 15,886 km, both from Florida, with signals at 559. Norm VK3DUT heard WP4O, but lucked out on a contact, then made up for it worked K6FV at 12,413 km, at 519. Jack VK2XQ also bagged K6FV, toughing out the conditions – 319 sigs – to span the 11,926 km path. Steve VK3ZAZ heard Pat W5OZI at 14,434 km, but no QSO through the heavy QRM. Meanwhile, Andrew VK3OER put K5RK in the log at 519 and 14,524 km.

John VK5PO made King of the day, working Larry K5RK in Texas at 14,989 km (559 sigs), then Terry K4RX in Florida at 15,996 km (559), followed by Bob N3LL (Florida, again) for dessert at 16,028 km (by my calculator) – the longest path for the day.

The ZLs also got amongst the action on 16 January. Bob ZL1RS managed to work W4PO (12,907 km) at 559, and Rod ZL3NW spotted the XE2HWB/B (10,839 km) beacon at 529 (2,103 hrs, 15/1 UT) and then two hours later scored Roger K6QXY in California, at 11,168 km, reporting 539 sigs. The next day, 17 Jan local (ZL), ZL1RS spotted the XE2K beacon at 10,524 km early in the day then, much later, worked K4RX in Florida (2,327 hrs, 16/1 UT) at 12,872 km, coming through at 449.

The long-haul DX continued with Andy VK6OX spotting the E51WL/B beacon on North Cook Islands (9,133 km) at 0217 UT on 18 January, with 519 sigs. The ZLs were favoured over the 18th and 19th (local date), with ZL1RS and ZL3NW working into Florida, Illinois and California.

Some afternoon TEP into ZL showed up on 20 January, with Mark ZL2WHO in Palmerston on the North Island spotting the JA2IGY beacon at 319, then working JR2HCB (9,242 km) eight minutes later at 519.

This seems to have been a precursor for afternoon TEP between JA and VK2-VK4 on 21 January. Alan VK4WR, west of Brisbane, spotted JA2IGY pounding in 599 at 0809 UT, followed by Scott VK4CZ at Clear Mountain spotting JE7YNQ at 529. Geoff VK2WDD at Lismore exploited the opportunity, working Taka JM1IGJ (7,264 km) at 55 on SSB at 0839 UT. He was spotted at 59 a few minutes earlier on VK Logger by Hiyo JR2HCB.

A hiatus in long-haul DX settled over the band for the rest of January, save for Alan VK4WR spotting the JR0YYE beacon (Niigata, 7,347 km) at 0436 UT on Australia Day, with 529 sigs.

Afternoon TEP opportunities seem like they'll pick up from February. At 0644 UT on the 6th, Wayne VK4AMG was spotted on VK Logger by JH1WHS at 59, then working each other at 0709 UT, Wayne giving JH1WHS a 57 report. At 1825 UT on 7 February, Wayne VK4WTN at Hervey Bay heard BG6CJR calling CQ (at 519) from OM90LO – Ningguo City, west of Shangai, and 7,162 km distant. The equinox is on 20 March – the weeks either side providing increased probability of TEP, both afternoon and evening-type. For those new to 6 m, you'll find introductory articles by your truly on the internet – just Google "afternoon TEP" and "evening TEP". My articles are always the top link.

Before I leave you, let me remind you that Craig Hayhow VK6JJJ will be on the air as VK0JJJ from Mawson in Antarctica this year. His QSL card is pictured here. Craig's online blog is at: *http://craighayhow.blogspot.com.au/, and his QRZ.com details are at: http://www.qrz.com/db/vk0jjj*

Craig advises that he intends running a beacon, VK0RTM, with 50 W on 50.300 MHz. I'm pleased to see this continues the tradition of Antarctic 6 m beacons, which began during my sojourn at Casey over 1970-71. At the urging of Ron Wilkinson VK3AKC (SK) I built a 50 W 6 m beacon and three-element Yagi from discarded equipment, which went to air over December 1970 to February 1971.

The VK0JJJ QSL card.

After returning from Antarctica, I secured a job at IPS Radio & Space Services, where I initiated a transauroral zone anomalous VHF propagation research program for which IPS built and installed 100 W 6 m beacons at Mawson (VK0MA) and Casey (VK0GR) on the Antarctic mainland in January 1972. The VK0GR beacon was subsequently heard in Australia, demonstrating that these high latitude locations could be contacted on VHF via ionospheric propagation.

Finally, thanks to the VK Logger (www.vklogger.com). I wish the next columnist all the very best.

73, Roger VK2ZRH.

ACMA proposes reallocation of 2300 - 2302 MHz

Phil Wait VK2ASD

The ACMA has informed the WIA of proposed changes to spectrum usage in the 2300 – 2302 MHz band, which will result in Advanced licensees losing access to that spectrum.

The ACMA proposes to acquire the spectrum for LTE radio purposes. LTE, or long-term evolution (marketed as 4G LTE), is a wireless standard for high-speed data over mobile phones and data terminals.

Losing any spectrum is always a great concern to radio amateurs. Some years ago the ACMA reallocated 2302 - 2400 MHz to create 14 MDS television channels, and these MDS licences will expire in 2015.

The ACMA now proposes to give LTE services the full 100 MHz segment from 2300 – 2400MHz, or twenty 5 MHz LTE channels. Naturally the government revenue from any resulting spectrum auction would be very significant.

The spectrum at 2300 - 2302 MHz has been used for EME contacts between Australia and Region II (where EME activity is on 2304 MHz) or Region I, where EME activity is on 2320 MHz. This requires split frequency operation, but it has been done successfully. This ACMA proposal would confine EME to 2400 MHz and above, where there are interference problems with ISM and Wi-Fi equipment. The interference has been evident for some time, with many Advanced amateurs already building equipment for the segment at 2300 – 2302 MHz.

The ACMA plans to recommend the change to the Minister for Broadband, Communications and the Digital Economy, and make the changes under section 153B of the Radiocommunications Act 1992. If the Minister approves the change radio amateurs will probably lose access to the spectrum in 2015.

Before making such a recommendation to the Minister, the ACMA is required to undertake extensive consultation with stakeholders, and has prepared a consultation paper with the draft recommendation attached. The ACMA will also be writing to all Advanced Amateur Radio Operators (who are affected by this proposal) to provide them with a copy of the notice and inviting their comments.

Radio amateurs are encouraged to forward their comments to the ACMA by Wednesday 27th March 2013, to the address in the paper.

There is a link to the consultation paper on the WIA web site at *http://www.wia.org.au/newsevents/news/*

Spotlight on **SWLing**

Robin L Harwood VK7RH
e *vk7rh@wia.org.au*

It is March and I have been surprised how quickly propagation can change, even in the course of a few minutes. The boffins are saying we have probably reached the peak of the current sunspot cycle and it is lower than those we have had in the past. Of course, there has been quite a dramatic drop in usage by HF users worldwide. Many in the broadcasting arena have been forced by a combination of economic circumstances and technological advancements to migrate to other platforms on the Internet. The broadcasting allocations have demonstrated this by numerous gaps in frequency occupancy, compared to five years ago. Major organisations such as the BBC World Service, the Voice of Russia and Deutsche Welle have dramatically reduced their output whilst others have completely disappeared altogether such as Radio Netherlands, RAI, Croatia, Portugal , Radio Sweden and Radio Prague, just to mention a few.

March 31st, which coincides with Easter Sunday, will see the commencement of the A-12 period at 0100Z. This is also the date when most of Europe brings in daylight saving. It is also, sadly, the date when the BBC World Service closes the Limassol, Cyprus relay which has serviced the Middle East and Africa. That date also will see a dramatic decline in shortwave output from London. I believe that the total English output will be reduced to six hours and Arabic eliminated almost completely off shortwave. Apparently these changes have been forced by severe budgetary constraints to the entire BBC organisation.

There has also been a nasty political dogfight over the future of American external broadcasts from the IBB, which administers US government broadcasting. There also have been severe cuts to output on HF and programmers have been gravitating to the Internet platforms. However, as has been pointed out, these can be spotty especially in Africa, Asia and Latin America. Apparently programmers and their masters decided to transfer an entire language output to podcast and cell phone. The region chosen was central and western Africa where cellphone coverage, if available, would be prohibitively expensive in data charges, well beyond the reach of the audience they are trying to reach.

I have remarked that the Chinese have actually increased their shortwave output, despite the trend in Europe and North America. I can hear programming 24/7 from China via shortwave. However it is not a two-way street because China seems to actively block external broadcasts in Chinese or in the various minority languages spoken in that nation. Whilst the Firedrake may have reduced their output to a small Taiwan network that apparently utilises small portable senders on non-standard channels. Jamming on standard channels will usually be to relays of domestic networks.

I also have noted an increase in HF broadcasts from Middle Eastern locations, such as Kuwait, Saudi Arabia and Iran. The latter has also increased their output yet reduced their English language broadcasts. They do not target Australasia. You will find many Middle Eastern signals on the 13 metre broadcasting allocation such as Hausa from Teheran on 21480 from 1130Z to 1200Z. Saudi Arabia is very strong in Arabic from 1200Z on 21505 and Kuwait is on 21540, also in Arabic.

I recently came across two mystery broadcasts whilst using remote receivers. One was on 5865 at 0500Z and was in a common North African dialect of Arabic, called Magreb. The broadcast commenced with a stirring march which lasted for five minutes. Online guides suggested that it was Algeria and sure enough Googling the Algerian national anthem produced the identical march. Ironically some of the words were far from complimentary of the former colonial power, France. Guess where the signals originated? Yes, from their former colonial masters! This was only a few days after a botched rescue attempt of an Algerian oilfield where an Al-Qaeda group captured and executed western hostages in reprisal for French assistance in nearby Mali, from Islamic extremists allied to the same group. The war in Mali is still underway and now has other nations involved in supporting the joint French/Mali operation.

The other mystery signal I came across was on approximately 9191 at around 0330Z. It was barely audible and I alerted other DXers to its presence. It has been provisionally identified as being in Arabic and starting with an Islamic call to prayer, traditionally said at the local dawn. I also received confirmation from Egypt that the accent was from Cairo and probably is from there. Another source claimed that it was aimed at North America but this is doubtful as the signal was barely making it compared to a much stronger level from Cairo further up the band. Anybody who has heard Cairo is painfully aware that the usual modulation is either inaudible or as is often the case, horribly distorted. Well distortion was not there but the modulation was virtually absent most of the time.

Well that is all for now. Have a safe Easter and keep monitoring!

Contests

James Fleming VK4TJF
e *leartez@bigpond.com*

Well my contest friends, March is just upon us and the start of a new contest season this year. There are some great international contests and some really nice home field Australian contests as well. The big one for March is the ARRL International SSB contest on the 2nd and 3rd of March. The contest is a 48 hour contest that goes from 0000 UTC Saturday to 2359 UTC Sunday. This one should be fun and a good chance to get your headphones and microphones out for some good DX contacts all around the world on the 160, 80, 40, 20, 15 and 10 metre amateur bands. If you really want to ramp up the fun, get some friends together and operate in the multi-op section.

You can bet that there will be some keen contesters within Australia to make this contest competitive. Even if you are not into contesting this is a great opportunity to pick up some new states for the ARRL's Worked All States (WAS) award. This is a nice contest to either operate in a single band or to try all bands. One can use any power as well, from QRP to full legal limit here in Australia. Scoring is pretty simple, three points for W/VE QSOs and multipliers for contacts with the 50 states in USA and also the 13 provinces in Canada thus making 63 possible multipliers per band. So many different combinations - I'm sure that if you pick the right one for your circumstance you could easily earn a certificate. They even have a category called single operator unlimited where you can use the spotting networks and spotting assistance legally. Just about any logging program will have this contest and it is very easy to email your file to the ARRL. However you don't even have to do that, even if you just give out a few numbers

Mar	2/3	ARRL International DX Contest	SSB
	9/10	**RSGB Commonwealth Contest**	**CW**
	16/17	**John Moyle Field Day**	**CW/SSB/FM**
	16/18	BARTG RTTY Contest	RTTY
	16/17	Russian DX Contest	CW/SSB
	30/31	CQ WW WPX Contest	SSB
April	**6**	**QRP Hours**	**CW/PSK31/RTTY/SSB**
	13/14	Japan International DX Contest	CW
	21/22	YU DX Contest	CW/SSB
	22	Harry Angel Sprint	CW/SSB
	27/28	Helvetia Contest	CW/SSB
	27/28	SP DX RTTY Contest	RTTY
May	**4**	**Harry Angel Memorial Sprint**	**CW/Phone/Mixed**
	11	**VK/Trans-Tasman 80 metres Phone Contest**	**SSB**
	11/12	CQ-M International DX Contest	CW/SSB
	25/26	CQ WW WPX Contest	CW

I'm certain any contest operator will appreciate it. Remember the exchange for this one is simply 599 and power output used so an example would be 599 100 or 599 5 or 599 150 or 599 400.

The next big domestic contest in March is the John Moyle Field Day is on the 16th and 17th of March. The contest goes from 0100 UTC on Saturday to 0059 UTC on Sunday, that is, 24 hours. It is perfect for going camping during the weekend and making some great contacts. I usually go out with the Redcliffe club to a Scout camp and set up field portable. Not only is it a good way to test our emergency communication skills, it is a chance to operate on Friday night as well making good contacts on the 40 and 80 metre bands under one's own callsign before the contest starts. There are many different entry categories broken down into single operator portable or multi-operator portable. Within each are three sub-categories, based on time: six hours or 24 hours, mode: CW, digital, phone, or all modes and bands: HF, VHF/UHF, or all bands.

Home and SWL entries can only be all bands and all modes however can operate either 24 hours or six hours. HF stations score two points per QSO and double that for CW. On VHF and UHF the longer the distance your contact is the more points you get. The way I see it is that you stand more of a chance getting a nice certificate if you go out portable, if only for six hours. There is no advantage to working DX and no sub classes in power, nor any extra points for any particular HF band. So I reckon the best thing would be to set up a dipole at your favourite camp site and have fun. Bring along a computer for logging with the VKCL logging program (or one of your choice) and just email your log to the WIA when done. And for those who are not doing the contest, please, any contact is a great contact! If you are mobile, at home, or just on the radio for an hour during the weekend just drop a signal report and number. For more details of the rules, check out the WIA webpage: *http://www.wia.org.au/members/contests/johnmoyle/* And don't forget to clear your work roster for a fun filled weekend of camping, radio, BBQing, ham radio friendship, and plenty of contacts.

COQC QRP Hours Contest 2013

Mike Dower VK2IG

Sponsored by the CW Operators' QRP Club (COQC), the aim of the QRP Hours Contest is to make as many contacts as possible within a one hour period using your choice of mode. While it is hoped that the event will be strongly supported by COQC members, it is open to all licensed amateur radio operators.

The contest is divided into two (2) one-hour periods. Modes and frequency sub-bands are allocated to each hour as shown in the table below.

Date/Time:	Saturday, 6th April 2013, from 1000-1159 UTC.
Frequency band:	80 metres – see frequency/mode table below.
Category:	Single operator.
Modes:	CW or PSK31 or RTTY/SSB – see frequency/mode table below.
Power:	Preferably five watts, but not more than 10 watts average (CW/PSK31/RTTY) or PEP (SSB) at the transmitter output – this is to stress the QRP nature of the event.
Exchange:	A three-digit serial number starting at 001 and incrementing by one for each new contact.
Repeat contacts:	No repeats – only one contact per mode per hour.

Frequency/Mode table

Hour	Time (UTC)	Mode	Frequency (MHz)
First hour	1000-1059	CW or PSK31 or RTTY	3.500-3.535 (CW) 3.620-3.630 (PSK31/RTTY)
Second hour	1100-1159	SSB	3.550-3.590

Scoring

- Score one (1) point per contact regardless of mode.
- No multipliers apply.
- QRP stations can count contacts with QRO stations towards their final score.

Logs

- Logs must show full details for each QSO, namely time (UTC), station worked, mode, exchange serial sent, and exchange serial received.
- A Summary Sheet showing operator's callsign, name, address and total points claimed must accompany the log.
- The preferred method of sending the log is email, but entrants must still include their postal address as per the Summary Sheet.
- Send logs and Summary Sheet to the Contest Manager, Mike Dower VK2IG at email: *qrphours@exemail.com.au* or snail mail to Box 8013, Gundaroo, NSW, 2620.
- Emailed logs must be postmarked no later than 2359 AEST on Wednesday, 24th April, 2013; snail mailed logs must be postmarked no later than Wednesday, 24th April, 2013.
- Feel free to include information about your station and band conditions, and any comments on what you liked, what you'd like to see included or improved.

Certificates will be awarded to the highest scorers in each mode in each VK state or territory and ZL.

These rules can also be found at *http://vkqrpclub.org/contest_page.php*

GippsTech 2013

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

vk3pf@wia.org.au

Peter VK3PF
Conference Chair

It is time to again plan ahead: GippsTech 2013 will be happening on the weekend of 13 and 14 July, at Monash University Gippsland Campus in Churchill, Victoria, about 170 km east of Melbourne

GippsTech has a well-recognised reputation as a premier amateur radio technical conference, with its focus primarily on techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts. Even if you are new to these areas of amateur radio, you will learn a great deal of information during the weekend.

A Partner's Tour will be conducted, together with an informal social gathering for dinner on Friday and a Conference Dinner on Saturday.

Details of the conference are available from the Eastern Zone Amateur Radio Club website: ***http://www.vk3bez.org/***

Registration forms will be available from the website in the future.

Summer VHF-UHF Field Day 2013: Results

Contest manager: John Martin VK3KM

The last Field Day was a mixed bag. There was very hot weather and high fire danger in VK1,2 and 4, and this prevented some stations from going portable - although some operated as home stations instead. But further west, reports from VK5 indicated cool weather and rain.

According to the rules, the winner of a 24 hour section is excluded from the corresponding 8 hour section. Once that was done, the total number of logs was 68, representing 102 operators.

Results Summary

Section	A	B	C	D	E	F
Top scoring stations (all bands)	VK2DAG	VK3DJ	VK3UHF	VK2GG	VK3MY	VK2CU
Top scoring stations (VHF-UHF bands only)	VK4OE	VK3DJ	VK3UHF	VK3ER	VK3MY	VK2CU
Top Scoring F Call Stations	-	-	-	-	VK3FJEN	-

Call	Name	Location	VHF - UHF Bands					Microwave Bands						ALL
			50 MHz	144 MHz.	432 MHz	1296 MHz	SUB TOTAL	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	47 GHz	BAND TOTAL
Section A: Single Operator, 24 Hours														
VK2DAG	Matt Hetherington	QF57, QF58	79	249	400	632	1360	790	790	790	530	760	780	5600
VK5KK	David Minchin	PF94, PF95	50	216	330	472	1068	550	540	540	380	230	-	3308
VK4OE	Doug Friend	QG61	59	387	495	592	1533	360	320	340	460	-	-	3013
VK5KBJ	Barry Bates	PF94	76	363	530	400	1371	230	230	220	360	-	-	2411
VK5TE	Simon Brandenburg	PF94	63	348	480	416	1307	240	230	240	360	-	-	2377
VK5MK	Mark Hutchinson	PF94, PF95	76	291	455	344	1166	230	230	230	210	-	-	2066
VK3KQ	Damian Ayers	QF22	-	63	170	384	267	260	-	210	230	-	-	1317
VK5NI	John Ross	PF95	-	168	340	168	676	-	-	220	-	-	-	896
VK3AHT	Geoff Cooper	QF33	-	288	175	-	463	-	-	-	-	-	-	463
VK3ZHQ	Eric Warren-Smith	QF22	-	210	-	-	210	-	-	-	-	-	-	210
Section B: Single Operator, 8 Hours														
VK3DJ	Dallas Jones	QF11, QF12	32	273	435	552	1292	430	430	320	320	-	-	2792
VK5ZD	Iain Crawford	PF95	-	168	205	328	701	380	380	390	380	230	-	2461
VK5KK	David Minchin	PF94, PF95	34	156	210	336	736	420	410	410	250	220	-	2446
VK4OE	Doug Friend	QG61	52	336	445	416	1249	250	210	220	330	-	-	2259
VK4ADC	Doug Hunter	QG61	174	192	295	408	1069	320	320	210	210	-	-	2129
VK3APW	Peter Westgarth	QF21	22	192	315	464	993	-	320	-	330	210	210	2063
VK5TE	Simon Brandenburg	PF94	51	240	290	344	925	240	230	240	320	-	-	1955
VK5MK	Mark Hutchinson	PF94, PF95	55	216	340	344	955	230	230	230	210	-	-	1855
VK5ZT	Tim Dixon	PF95	-	69	130	184	383	240	230	240	220	210	-	1523
VK3YFL	Bryon Dunkley-Smith	QF22	39	270	325	448	1082	-	-	-	390	-	-	1472
VK3WRE	Ralph Edgar	QF31	-	252	350	368	970	210	-	-	210	-	-	1390
VK3HY	Gavin Brain	QF11	43	354	395	288	1080	-	-	-	210	-	-	1290
VK5OQ	Keith Gooley	PF95	51	117	215	192	575	-	210	210	210	-	-	1205
VK3UBM	Michael Borthwick	QF22	-	201	260	376	837	340	-	-	-	-	-	1177
VK5AR	Alan Raftery	PF96	-	360	550	-	910	-	-	-	-	-	-	910
VK5NI	John Ross	PF95	-	153	255	168	576	-	-	220	-	-	-	796
VK3KAN	Rik Head	QF22	-	150	175	-	325	-	-	-	-	-	-	325

Call	Name	Location	VHF - UHF Bands					Microwave Bands						ALL BAND TOTAL
			50 MHz	144 MHz.	432 MHz	1296 MHz	SUB TOTAL	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	47 GHz	
Section C: Multi Operator, 24 Hours														
VK3UHF		QF21	193	786	1130	1048	3157	960	780	700	930	340	210	7077
VK2SMC		QF43	88	645	770	648	2151	-	-	-	-	-	-	2151
VK4WIS	SCARC	QG63	303	465	540	832	2140	-	-	-	-	-	-	2140
VK4WIE	CBRS	QG63	250	543	455	464	1712	-	-	-	220	-	-	1932
Section D: Multi Operator, 8 Hours														
VK2GG		QF67, QF68	56	168	280	448	952	560	560	560	540	560	560	4292
VK3XPD		QF21	79	219	430	488	1216	340	330	330	350	330	-	2896
VK3ER	EMDRC	QF22	-	360	435	440	1235	490	220	330	370	220	-	2865
VK5SR	SERG	QF02	32	273	345	264	914	320	210	210	210	-	-	1884
VK2MA	HADARC	QF56	86	351	275	-	396	-	-	-	-	-	-	396
VK2MB	MWRS	QF56	22	114	175	80	391	-	-	-	-	-	-	391
Section E: Home Station, 24 Hours														
VK3MY	Ross Keogh	QF22	93	600	770	744	2207	450	-	-	440	-	-	3097
VK5AKM	Keith Minchin	PF95	42	225	275	360	902	370	390	370	360	210	-	2602
VK3ES	Andy Sayers	QF22	45	549	750	608	1952	350	-	-	-	-	-	2302
VK3JTM	Tim Morgan	QF12	-	186	315	456	957	350	-	240	230	-	-	1777
VK4NA	Alan Wills	QG62	123	339	395	616	1473	-	-	-	-	-	-	1473
VK4KLC	Ron Melton	QG62	214	342	420	336	1312	-	-	-	-	-	-	1312
VK3FJEN	Jenni Blasco	QF21	-	516	720	-	1226	-	-	-	-	-	-	1226
VK4AMG	George McLucas	QG62	121	303	335	432	1191	-	-	-	-	-	-	1191
VK4VDX	Roland Lang	QG62	53	330	365	432	1180	-	-	-	-	-	-	1180
VK3FASW	Andre Walker	QF21	-	507	600	-	1107	-	-	-	-	-	-	1107
VK5SFA	Steve Adler	PF95	72	246	345	416	1079	-	-	-	-	-	-	1079
VK2EI	Neil Sandford	QF68	26	372	260	192	850	220	-	-	-	-	-	1070
VK4JAM	Andrew Mason	QG62	56	213	265	464	998	-	-	-	-	-	-	998
VK3NFI	Dean Webster	QF31	-	234	375	376	985	-	-	-	-	-	-	985
VK5DMC	David Carwana	PF96	33	316	325	184	857	-	-	-	-	-	-	857
VK5ALX	Alex Glinski	PF86	43	219	310	272	844	-	-	-	-	-	-	844
VK5ZD	Iain Crawford	PF95	21	138	165	264	588	-	210	-	-	-	-	798
VK3KIS	Andrew Kayton	QF22	42	195	240	248	725	-	-	-	-	-	-	725
VK2MER	Kirk Mercer	QF55	-	282	255	168	705	-	-	-	-	-	-	705
VK2XTT	Tim Tuck	QF56	36	213	255	176	680	-	-	-	-	-	-	680
VK3VL	David Harms	QF33	-	300	285	-	585	-	-	-	-	-	-	585
VK4HBO	James Kop	QG62	-	135	220	-	355	-	-	220	-	-	-	575
VK3FMCA	Steve McEwan	QF21	-	219	345	-	564	-	-	-	-	-	-	564
VK5HP	Paul Hughes	PF95	38	183	285	-	506	-	-	-	-	-	-	506
VK1RX	Al Long	QF44	104	150	215	-	469	-	-	-	-	-	-	469
VK2YW	John Eyles	QF34	-	459	-	-	459	-	-	-	-	-	-	459
VK4MHZ	Brendan Cannon	QG61	22	144	115	-	281	-	-	-	-	-	-	281
VK2AFY	CCARC	QF56	39	219	-	-	258	-	-	-	-	-	-	258
ZL1TPH	Stephen Hayman	RF73	-	96	-	-	96	-	-	-	-	-	-	96
Section F: Rover Station, 24 Hours														
VK2CU	Justin Lavery	QF56, QF57, QF68, QF58, QF67												
			113	345	505	808	2229	1010	1010	1010	630	980	1000	7412
VK2YJS	Julian Sortland	QF45, QF46, QF55, QF56												
			34	297	340	-	671	-	-	-	-	-	-	671

Notes	
VK2GG	Dan VK2GG, Peter VK2GFE
VK2MA	Hornsby & District ARC: vk2pow, vk2ttp, vk2jcc, vk2mca, vk2bmu, vk2teq
VK2MB	Manly Warringah Radio Society: Nicholas Perrott VK2FS, Geoff Van der Wagen VK2MIA, Matt Maguire VK2RQ
VK2AFY	Central Coast Amateur Radio Club: Doug Crowhurst VK2MDC, Rod Jarman VK2LAX, Ed Durrant VK2JI
VK2SMC	Rod Collman VK2TWR, David Moore VK2NC, Andrew Hurst VK2XDG
VK3ER	Eastern & Mountain District Radio Club: VK3AVV Mike, VK3QI Peter, VK3VF Jonas, VK3WT Max, VK3WWW Jack
VK3UHF	VK3AMZ Arie Groen, VK3BCL Carlo Leone, VK3NW Ken Jewell, VK3NX Charlie Kahwagi, VK3PY Chas Gnaccarini, VK3QM David Learmonth
VK3XPD	Alan Devlin VK3XPD, Michael Coleman VK3KH
VK4WIE	City of Brisbane Radio Society: John VK4MJF, David VK4KSY, Colin VK4MIL, Ron VK4CRO
VK4WIS	Sunshine Coast Amateur Radio Club: VK4AHW Harvey Wickes, VK4ALH Leicester Hibbert, VK4FAAR Don Hampton, VK4FMOZ Cec Tysoe, VK4FSCC Glen Campbell, VK4RY Richard Philp, VK4YFL Mike Little, May Hampton, Brendan MacRae
VK5SR	South East Radio Group: Colin VK5DK, Trevor VK5NC, Colin VK5HCF, Andrew VK5KET, Owen VK5HOS, John VK5DJ, Tom VK5EE

Volunteer radio amateur honoured

Jim Linton VK3PC

Congratulations go to Peter Mill VK3APO who has been recognised through the Australia Day Honours.

Receiving the Medal (OAM) in the General Division, he was given the honour on Australia Day, 26 January for service to the community, particularly in the field of radio communications.

Peter VK3APO said, *The honour caught me by total surprise. I never dreamt of being rewarded in such a way for something I enjoy doing and contributes in a small way to the efficient use of the radio spectrum.*

He earned the honour after decades of voluntary service in the field that saw his early involvement with the planning of the first amateur radio repeaters in Australia.

Following an interest in shortwave listening, he gained an amateur licence, VK3ZPP, in 1969 while attending the PMG training school to become a telecommunications technician. His interest grew in the field leading to attendance at the meeting in Albury in July, 1972 where it was decided that a 600 Hz shift between the transmitter and frequency be adopted for repeaters on the two metre band.

Other voluntary involvement included WICEN that saw him at the police headquarters in Russell Street, Melbourne during the aftermath of Cyclone Tracy in December 1974.

He then joined Victoria Police in 1981 and soon after became a technician at the Radio Electronics Division in Wellington Street, Collingwood. In 1992 a decision was made to no longer have police technicians in charge. Peter VK3APO returned to normal police work as a Sergeant at a suburban station where he still works.

The lure of radio and his knowledge resulted in his spare time being used to look after the vast repeater and beacon network of Amateur Radio Victoria including holding several state and federal roles. During the years he has had a lot of input on frequency assignments in consultation with users, including those for state-wide or national emergency use and the deployment of new transmission modes.

His association with St John Ambulance Australia grew into an involvement with the maintenance, enhancement and submissions related to communications. St John Ambulance attendance at major sports, civic events and emergencies saw him plan and assist them including at the Grand Prix, World Youth Day, and during disasters.

He continues to be the WIA Repeater and Beacon Coordinator responsible for all ACMA applications.

Peter VK3APO, a WIA life member, has a respect and understanding with the staff of the ACMA, both at a state and federal level.

No matter what the role he listens to other viewpoints before making a decision, can be seen as a representative in many forums, and readily shares his knowledge, skill and experience.

He said, *Volunteers are wired differently, we all work together as a team, get the job done and have some fun along the way through a good camaraderie.*

Although being very modest about the award, he is quick to credit the work of other volunteers in amateur radio and St John, and his very supportive family that includes his three daughters.

VK7news

Justin Giles-Clark VK7TW
e *vk7tw@wia.org.au*
w *groups.yahoo.com/group/vk7regionalnews/*

Emcomm News – VK7 Fires

The big news in VK7 over the first month of 2013 was the bushfire activity and the WICEN activation that saw twenty continuous days of operation. The two major fires were controlled from the Incident Management Centre (IMC) at Cambridge, near Hobart airport. Each day there were radio operators covering aircraft flight following and fire-ground traffic for the two major fires to/from the IMC. Early in the incident the coverage was 24 hours which was scaled back to 12 hours in two shifts. Rod VK7TRF (WICEN Tasmania (South) Operations Coordinator) let us know there was a total of 666 hours of operation by 24 amateurs over the 20 days. Roger VK7ARN (Secretary WICEN Tasmania (South)) said *'a key learning issue was knowledge of the working of, and roles within, an Incident Management Team made up of Fire, Parks and Forestry personnel'*. At the time of writing there was still a couple of months of high risk fire danger and although WICEN Tasmania (South) are never wishing for an activation, there is now a large group of experienced operators ready for such an event.

Photo 1: LtoR – Deputy Operations Manager (red tabard), Herman VK7HW and Brian VK7HSB consulting fire-ground maps. Photo courtesy of VK7HW.

VK3-VK7 records news – 23 cm ATV

Tuesday, 6-8th January saw a record set between Rod VK3BQJ and Winston VK7EM on 23 cm analogue ATV. The contact is around 400 km, which almost doubles the existing National record. Thanks to tropospheric ducting across Bass Strait, a strong P5 signal was received both ways to set the record. Conditions continued and about a week later Winston and Rod repeated the contact. Congratulations to Winston and Rod.

Australian Scout Jamboree 2013 - VK7 Report

The following report comes from our very own Scout Leader and Foundation Licence holder Nicole VK7FNJS who attended the 23rd Australian Scout Jamboree held in Maryborough, Queensland on 2-12th January, 2013. It was 10 days of rolling around in mud, getting wet, finding Wally (From Where's Wally) in Queens Park, visiting the War Museum and meeting a Victoria Cross Medallist, the Australia Zoo and beaches. There was abseiling, crate stacking, the flying fox, billy carts, nerf gun wars, laser tag, a giant water slide and much more. The night time activities were in the main arena with some of Australia's best music artists, comedians and magicians performing.

Photo 2: Winston's photo of the picture received from Rod VK3BQJ via 23 cm ATV. Photo courtesy of VK7EM.

The amateur radio station on site gave Scouts a chance to use and experience radio and Nicole made many contacts – thanks to Ray VK4TPT for running the station. Nicole's troop was Highlands 15 made up from Tasmanians and New Zealanders. It was a great 16 days that was enjoyed by all!

Cradle Coast Amateur Radio Club

CCARC held its first meeting of 2013 and from that meeting a working group of Steve VK7BI, Dion VK7DB, Dave VK7DC, Dick VK7DIK, Peter VK7LCW and Dick VK7LDK have already replaced the concrete base of the tower at the Lonah repeater site (VK7RNW). CCARC certainly doesn't sit still...HIHI.

During January Steve VK7BI has also been experimenting with 23 cm ATV with Winston VK7EM on the NW coast. Steve has been successfully received along the coast but unfortunately not across Bass Strait yet. This experimentation saw Steve trek up Mt Montgomery with his ATV gear that included a transmitter, 18 element Yagi, mounting pole, camera, tripod and battery. After some initial azimuth and polarisation issues being resolved a perfect

picture was received by Winston. Trekking back down wasn't without dramas with Steve narrowly avoiding stepping on a small black snake!

Northern Tasmania Amateur Radio Club

Congratulations to Ian Wells, son of Geoff VK7GW and XYL Jennifer. Ian resides in VK6 and on a recent trip to see his folks he took the plunge and sat his Standard assessment. Ian has requested the call of VK6HAX. I suspect that NTARC assessors Peter VK7PD and Idris VK7ZIR were eager for the assessment field trip to the east coast as Geoff and Jennifer run the winery – Sterling Heights....HIHI.

North West Tasmanian Amateur TV Group

Amateur related ATV broadcasts are aired by VK7AX on Monday, Wednesday and Friday nights at 2000 local. This includes Ham Radio Now and AmateurLogic.TV and the broadcasts go out on the VK7RTV 70 cm ATV repeater and streamed via **batc.tv - Member's Stream (VK7AX)**. As reported last month the Packet Wormhole Gateway and FBB BBS is now fully operational. To access, Telnet to JNOS 203.24.120.6 port 23 or http to JNOS 203.24.120.6 port 10000 or Telnet to FBB BBS 203.24.120.5 port 6300.

Radio and Electronics Association of Southern Tasmania

We congratulate our five most recent Foundation candidates - Gerwyn, Jack, Kathryn, Michelle and Matt. At the time of writing callsigns had not appeared in the RadComm database but I am sure as soon as they do, the OM's rig will be hot! Stay tuned for some new F-calls on the air in the very near future. Thanks to all involved with the Australia Day weekend National WIA Broadcast. REAST hosted this broadcast and it was a lot of fun to put together. We combined the recording with our DATV Experimenter's night and broadcast the recording session. We had many amused viewers on RF and streaming (**batc.tv member stream VK7OTC**) who got a foretaste of the WIA broadcast.

Whilst many of us were out at radio operator shifts at Cambridge, we had two bush fires around our clubrooms on the Queen's Domain. Fortunately there was no damage and the police are 'pursuing lines of enquiry!' Both fires were quickly brought under control and have cleaned out the undergrowth of the surrounding bush which hopefully will lessen the risk of any future fire.

Silent Key — Wynne Graham VK7YW

It is with sadness that I have to tell all that Wynne Graham VK7YW passed away on Tuesday, 8 January, 2013. Wynne grew up in the Lachlan area, and with wife Gene moved to New Norfolk then, in the mid-1990s, they moved to Somerset on the NW coast of VK7.

In war time, Wynne was with the army and trained as a paratrooper. In 1945 this was cut short due to his parachute failing to open completely. Wynne said it was a 1220 metre free fall, landing on hard ground. Wynne said his training at the time helped him survive the fall, although recovery was long and drawn out.

Dave VK7OB recounts that Wynne VK7YW, Charles VK7PP, Baden VK7BRY and himself all commenced study for their novice licence in 1986 at the old Newtown WIA club rooms. There was a regular net on 28.5 MHz for many years, joined by Bill VK7KBG and Allan VK7NWS.

Those who spoke to Wynne would always be greeted by the classic emphasis on the 'Y' of his call sign. Wynne was a true gentleman in every sense of the word and had a mischievous sense of humour and I consider it a privilege to have enjoyed his company and Genes, both personally and on air, for many years.

Wynne had a full and busy life of 91 years. He was a man that worked hard, was honest, a true gentleman and a mate for many years.

Vale Wynne VY7YYYYYY (emphasis on Y) W.

Contributed by Dale Harper VK7NDH and Dave O'Brien VK7OB.

Silent Key — Russ Pitman ex VK7ZRP

Russ and Barry VK7RS were involved as state councillors in the old WIA Tasmanian state divisional organisation from about 1985 and they did many trips to the various locations around the state in which the WIA Divisional Council met.

Russ was not a person who was trained in electronics, but was a very capable 'amateur'.

He was a most practically oriented person, and could work with virtually any tools to produce amazing results in whatever discipline he found required. He had a fantastically equipped workshop under his home in Taroona, and could build virtually anything. He had the biggest sanding machine that Barry had ever seen, which Barry thinks he built himself, and as he used to say 'could remove all sorts of mistakes from the work in hand.' HIHI.

He was probably one of, if not the, major driving force in the construction of the rooms used by the WIA at 105 New Town Road, Newtown.

Within the WIA, he had a keen sense of the organisation to act in the best interests of all Tasmanian amateurs and was totally intolerant of any of the parochial interests which rose from time to time within the organisation, and also had strong views on the need for re-grading amateur licence arrangements to encourage young people to be attracted into the hobby.

Vale Russ, a good and very sincere bloke, who truly epitomised what being an amateur is all about.

Contributed by Barry Riseley VK7RS.

VK6news

Keith Bainbridge VK6RK
e *vk6xh@arach.net.au*

Greetings one and all. The Ides of March have indeed shown themselves this month, with little input other than from three of the State's groups so off we go.

First, this month's update from the Hills Amateur Radio Group (HARG).

Our 30th Anniversary Luncheon at the club rooms on Saturday 12th January was a great success with nearly 40 current and former members coming together to help us celebrate and renew old acquaintances. Special thanks to Allan VK6AN for cleaning up around the building and organising the cold drinks, to Monique VK6FMON for a brilliant job of catering, to Richard VK6BMW for identifying and welcoming former members and producing a historical timeline for the club and to Lyn, Richard's XYL, for manning the tea and coffee stand. My contribution was to contact as many former members as possible and to produce name tags for everyone. We were honoured to welcome John Hawkins VK6AU, one of the founding members of the club from 1983. John officially cut our birthday cake which Monique baked complete with club logo printed on edible rice paper.

During January we have been operating our special event callsign, VI6AHR30. Most of this work has been done on HF by Steve VK6IR and Miles VK6MAB. Between the two of them, by 26 January, they had made nearly 3000 contacts from 87 countries with one third on CW and RTTY. Well done lads! DXCC here we come!

Our President, Martin VK6ZMS, has foreshadowed some of our plans for early 2013. We plan to participate in the John Moyle Field Day in March, to hold our annual 'HARGfest' swap meet on the 11th May, to participate in The International Museums Weekend in June by setting up a field station at the Kalamunda History Museum, to arrange visits to various Emergency Communications Organisations and to hold a Fox Hunt. We will also hold our usual technical talks on various subjects including satellite and ISS communication. We extend a warm welcome to visitors and new members to our meetings on the second and last Saturday of each month. For more information please visit our website at *www.harg.org.au.*

Photo 1: John VK6AU cuts the HARG 30th anniversary cake.

73 from Bill VK6WJ for the Hills Amateur Radio Group.

Thanks for the latest news Bill, unfortunately I was away in the UK on 12 January or I would have attended the celebrations (well, I was a member back in 1987)!

Our newest contributing group, the **Bunbury Radio Club** (BRC) has once again come up with their latest activities, and they have been busy!

Barry VK6WF reports from Kellerberrin that the BRC has procured another IRLP node. The equipment was sent out to Barry, to put it on air in Kellerberrin. The node number is 6845 and it is on a simplex frequency of 145.125 MHz. This node was purchased from Chris VK5CP and was originally situated at Younghusband on the Murray. It is using an Icom IC-207 as a transceiver and is running into a 6 dB collinear antenna at eight metres above ground. This node has had quite some use since being put on air. Barry says that he is looking forward to hearing you in Kellerberrin.

The BRC also operates IRLP Node 6232, which links to the BRC 70 cm repeater (VK6RBY) located near Harvey in the south west of WA.

The club is also contemplating a future project to put a 70 cm repeater in Kellerberrin. The repeater antenna would be mounted on a 30 metre tower, and located on a hill 60 metres higher than Barry's home location. The new repeater would give very good coverage across the WA wheat belt. For travellers in the area, the BRC expects the new repeater would give excellent coverage to the

Great Eastern Highway, both east and west of Kellerberrin. Following installation of the new repeater, IRLP Node 6845 would be linked to it.

73, Brian VK6TGQ - *vk6tgq@gmail.com*

Many thanks Brian, we look forward to hearing of your progress with these projects.

Finally, the **NCRG** news.

The club has been very busy of late. The 80 metre four square antenna has proved to be both a mental and physical challenge to which members, led by the intrepid Arthur VK6CY, have risen.

Just the sheer size and difficulty in handling each vertical while frantically keeping an eye out for Roo ticks climbing up your legs has been very stressing! Things are progressing well now with Arthur convinced he has all the dimensions correct and ready for the final configuration. Fingers crossed.

Work also took place on the 24 metre tower as the 40 metre Yagi had moved down the support mast and stretched the strongback wires to their limits. Stu VK6LSB, Eric VK6FEDS and Onno VK6FLAB spent some considerable time up on top sorting it all out. Next we have a problem with the 20 metre beam but that's easy! The guys took some excellent pictures from the top of the tower and I've included a couple here, amazing views of the city. This work is taking place frantically as the contest season is nearly upon us, we have to be ready to win.

Photo 2: Stu VK6LSB up top on the 40 metre tower.

The club now has two new fully fitted out desktop computers with dual monitors thanks to Zeljko VK6VY, and his efforts in getting us another grant, well done Zeljko!

There was a BBQ held on Saturday 2nd February at the club, as we felt all the hard work deserved a good feast and a great time was had by all.

That's it from the NCRG.

And that's it for this month as well so please remember your input is appreciated and most needed. Have fun and see you in the contests.

73. Keith VK6RK.

Photo 3: The Perth skyline from the NCRG.

VK2 news

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

ARNSW wishes to remind members that nominations for the 2013/2014 committee close at 12 noon on Saturday, 9 March, 2013 at 63 Quarry Road, Dural. Refer to the home page of ***www.arnsw.org.au*** for forms. The AGM will be held on Saturday, 20 April, 2013 at the VK2WI site.

The ARNSW upgrade class for this year commences Monday evening, 4 March at the VK2WI site. Classes will continue each Monday except public holidays until year's end. The next Foundation weekend is on 23/24 March. All license grade assessments on Sunday, 24 March at 0900. Registrations required to *education@arnsw.org.au* or telephone 02 9651 1490 and leave contact details. The March Trash & Treasure will be on Sunday, 31st. An anniversary BBQ has been scheduled for Sunday, 10 March. It should be noted that license assessments are no longer conducted on Trash & Treasure days. They will be on the Sunday before the T&T in the odd numbered months.

The NSW trader Amateur Radio Transceiver Centre at Girraween ceased operations early this year.

During January transmission tests of FreeDV were conducted by Ed VK2JI on the central coast using the VK2WI news session as the signal source. The tests were on 40 metres, first in the morning and later in the month in the evening. The January Home Brew meeting had a talk by Peter VK2TPM on FreeDV. The tests helped some gain an understanding of this new mode.

With Easter at the end of the month it is the annual Urunga Convention on the NSW mid north coast. Starting Friday evening, the event is across Saturday and Sunday in the Senior Citizens Hall in Bowra Street. Ken VK2DGT has the details. It is billed as the longest running fox hunt event in the country.

In late January the Tamworth Radio Club was involved in assisting to locate a group of young persons on a bike hike in the Guy Fawkes National Park, advised John VK2YGV. A locating system known as SPOT was used in conjunction with other rescue services.

Lord Howe Island is a popular spot for both holidays and amateurs to set up DX operations.

Photo 1: L to R - Shozo Nishimura JA3HJI, Masumi Nakede JA3AVO, Des Thompson VK9FLHI, Tatsuo Ogushi JA3ARJ, Hiroko Nakade JH3PBL, Dick Hoffman VK9LH (seated), Kunio Miyagawa JA1CJA and Takeo Lida JA3BZO.

The island has two resident amateurs, Dick VK9LH and Des VK9FLHI. In January a group of JA amateurs used the accommodation facilities at Des's Blue Lagoon Lodge to spend a week of operation and enjoying the island.

Lord Howe Island was also the last Australian location that used telegrams. While they stopped on the mainland in 1962 they continued on the island until about 1974. In those early days LHI had very limited communication systems. Telegrams were sent to and from the island via the DCA network using Morse code. They then gained an HF independant sideband circuit with a telex on one sideband and a telephone on the other. The telex produced telegrams. The island only had two telephones, one public and the other with the Administrator. These days there is an automatic telephone network but no mobile service.

The Oxley Region ARC has started the year with a series of lectures about Software Defined Radio (SDR) using the DVB-T USB and FUNcube dongles. It is not too early to remind readers that the annual Oxley Region field day will be held on Saturday and Sunday of the June long weekend. The venue will again be the Tacking Point Surf Lifesaving hall at the southern end of Port Macquarie township.

St. George ARS resumed meetings last month with the AGM. They have also set up a range of digital nets on Monday nights that will give amateur radio operators in the Sydney region, both new and experienced, the opportunity to experiment with various digital modes. Net control is Cameron VK2CKP using the club call VK2LE, advises Peter VK2EMU.

To partake, you need to have a 'Standard' or 'Advanced' licence, a computer running Windows, an appropriate audio interface between the PC sound card and the rig and appropriate software (Ham Radio Deluxe and FLdigi are recommended). Check in on VK2RLE 146.800 before moving to a simplex frequency, which will be dependent on band conditions and the mode. The most likely bands are two metres and 20 metres. In January they looked at PSK and last month it was Hellschreiber. 73 – Tim VK2ZTM.

JA amateurs activate Lord Howe Island on a fun holiday

A group of six Japanese amateurs spent an enjoyable week on Lord Howe Island from the 11th to the 18th of January, 2013. They made in excess of 1000 contacts on all HF bands and six metres. They are pictured with local amateurs Des VK9FLHI and Dick VK9LH.

Thanks to Henry VK2ZHE for the above information.

Silent Key — Phil Derbyshire VK2FIL

Phil Derbyshire passed away in late December 2012. Phil had been suffering from oesophageal cancer for some time.

I first met Phil through the NSW Rural Fire Service in the early 1980s when we were both Field Officers in our respective fire brigades in the Blue Mountains. It was from there that we began a friendship that was to last until his untimely death. Phil was a life member of Faulconbridge Rural Fire Brigade.

At the time, I had no idea he also held an amateur operator's licence. He was later to become a member and ultimately President of the Blue Mountains Amateur Radio Club, a post he held for some five years. Under Phil's guidance, this club was very active with some 80 plus members. Phil instigated the Rex Black Memorial Trophy, which is given to non-committee members who have given their time and efforts to the betterment of the Club.

What will also be missed is Phil's gentle nature, his knowledge, and his confidence in his fellow man. He was of immense support to me when my XYL Dianne passed away from mesothelioma in early 2012. Just to have that support was appreciated, but, that was Phil.

Phil, we will continue the tradition of the good quality port at John Moyle Field Days in your memory, and to Liz and family our thoughts are with you.

Vale Phil.

Contributed by Daniel Clift VK2DC.

Silent Key — Ross Laurence Harvey

Ex VK2 AIH

Ross was born in Hobart Tasmania and, with his parents moved to Penshurst/Canterbury. He was educated at Canterbury Primary School and later attended Ashfield Technical High School.

Ross completed an AWA Radio Operators course at Mt Eva, South Australia and joined the then Department Of Civil Aviation.

In 1947 Ross was transferred to Lord Howe Island as Relief Radio Operator, where he remained for four years.

After his resignation from DCA, Ross worked as Radio Operator for Trans Oceanic Airlines on their flying boats plying between Sydney and Lord Howe until joining his father and two brothers in the operation of a service station at Revesby.

Ross had two periods of service in the Antarctic: the first at Wilkes base, near the current Casey base, in 1959 as radio operator and dog handler, and again in 1962 at Mawson in a similar position. He made several field trips accompanying geologists during his service at Mawson.

Ross and family returned to Lord Howe Island in 2001, allowing his amateur radio licence to lapse.

Ross is survived by his wife, Dianna, daughters Karen, Fiona and Simone and son Warren and their children.

Des Thompson VK9FLHI.

VK3news

Tony Collis VK3JGC

Geelong Amateur Radio Club - The GARC

A YL Foundation licensee goes solo on a VHF/UHF Field Day.

Jenni VK3FJEN is both the Secretary and Training Administrator for the Geelong Amateur Radio Club (GARC).

Regular participants in the VHF/UHF Field Day would be well aware of Jenni, who normally works as part of the VK3ALB team, fielded by the GARC. This summer, however, the team took a break so Jenni decided to go it alone, in the VHF/UHF Field Day. She entered the *24 hour home station category* and was in the thick of it from the very start and was still making contacts up to the very last seconds of the contest.

Her personal target was to achieve 100 contacts in the first 12 hours of the contest, to which she came very close, managing 99 contacts at the 11 hour and 59 minute mark. Unfortunately pretty well everyone had retired by that stage so she closed down; but was back on line at 0700 the following day to join the fray and was rewarded within five minutes by a contact with VK3UHF for her 100th contact.

Conditions during the contest were far from ideal, but with persistence at both ends and a few periods when propagation was favourable, she was able to work some good DX. Jenni's best DX contacts were to VK5SR at 354 km and VK2KRR at 393 km on both two metres and 70 cm. In all she made 144 contacts in the 24 hour period and worked 42 different call signs. Jenni used VKCL to log her contacts and stayed in touch with other contestants using VK Logger.

Photo 1: Jenni VK3FJEN. Photo courtesy of VK3ALB.

Jenni would like to thank all those who worked her and in particular those that persisted through difficult conditions including noise and QSB to complete their contacts with her. She went on to say that she had a wonderful time and that everyone was very supportive and patient and she would recommend the field day to anyone.

The above content was kindly provided by Lou VK3ALB.

A new 47 GHz VK DX record

On Thursday, 24 January, 2013 Charlie VK3NX and David VK3QM extended their VK 47 GHz record to 107.4 km.

The equipment they used was the same as for the previous record, a Kuhne mixer with a two cavity filter and a LNA-PA generating +13 dBm (20 mW) SSB on 47,088.1 MHz with a 25 dB horn antenna at each end. Dishes were available, but on this occasion were not needed!

The location used by VK3NX was 'Bayview' circa 15 km west of Geelong, and the location used by VK3QM was Mount Dandenong, 'Sky High.'

Reports exchanged on the same day, at 1008Z, on the same frequency and mode were VK3NX/P 5/1 and the same for VK3QM, with QSB on a 10-30 second cycle. They also had 24 GHz contacts before and after this contact.

Further 47 GHz contacts were made at 1026Z onwards with reports of 5/1-9 at VK3QM's end and 5/5-9 at VK3NX's end.

Photo 2: The photo shows the 24 GHz unit on the tripod at Dandenong. Photo courtesy of VK3QM.

The QSB they experienced was more severe after dark. The temperature at 0945Z was 36° C at Croydon and 26° C on the hill, and cooler by 1030Z. A lot of the transmission path was across water, both Corio Bay and Port Phillip Bay, which was approximately 57 km. This path has caused 'interesting' results on both microwave and VHF signals in the past.

It was interesting to compare signals from the previous long over land path of 91 km with signals 5/5 both ways. This was in July, with fog at the Mt Macedon end that cleared after half an hour, but did not alter signals to any noticeable extent.

Thanks go to David VK3QM who kindly provided the information about this successful 47 GHz distance record attempt.

Silent Key

Graeme Waldron VK4KML

Graeme Waldron VK4KML sadly passed away on Wednesday, 14th November, 2012 after a long battle with cancer. He was 78 years young.

Graeme obtained his amateur radio licence around the year 2000 in Victoria where he was an active member of the Southern Peninsula Radio Club. But his interest in communications wasn't something he took up in retirement. Graeme also had a long term interest in short wave listening and over many years sent off reception reports and collected many QSL cards from SW broadcasting stations worldwide.

His career choice and his interest in communications, and eventual decision to join the ranks of amateur radio, were probably driven by his younger days with the Victorian Fire Service. He spoke often of times during his early years as a member of the fire service and how he operated old military radios mounted on the back of the fire truck.

Both these passions, the fire service and radio communications, carried on into his working life and at one stage he was both Fire Safety Officer and also Radio Operator on oil and gas rigs in Bass Strait, where he apparently gained the nickname 'Marconi'. He proudly boasted of one of the highlights of this career choice: that of having met that famous oil well fire-fighter 'Red Adair'.

He and his wife Dianne moved to Laidley in Queensland in 2003 and he joined the Lockyer Valley Radio and Electronics Club (now known as the Lockyer Valley Amateur Radio Club Inc).

Graeme also had a long association with the Pacific Inter Island Net. This net has provided long distance emergency communication and medical assistance to remote islands and small cruising yachts for over 70 years. Graeme was proud to be an active long term participant and also President of that group from 2005 to 2006.

He was also a long term President of our club, a task he performed flawlessly for many years and which he still held at the time of his passing. As President he oversaw many milestones for the club, including the commissioning and erection of a two metre repeater servicing the area between Ipswich and Toowoomba; he instrumented the movement of our monthly meetings to a more suitable venue and ran a weekly Friday night 80 metre net for members and others.

He will be sadly missed by all that knew him.

Contributed by Peter Nilon VK4MN, on behalf of the Lockyer Valley Amateur Radio Club Inc.

Hamads

WANTED – VIC

A circuit drawing for Yaesu FT7 please. I will pay any costs involved.

Contact Laurie VK3BV or email to *shirlau@netbay.com.au*
Phone is 03 5975 0306.

Kenwood KP 202 two metre FM HH - owner's manual or handbook and service manual, or copies.

Alinco ELH 230E linear amplifier – relay.

Call Brewster VK3YBW on 03 9527 2661 after 6 pm – if no answer please leave a message.

WANTED – NSW

Schematic for Standard SR-F21 radio made in Japan in 1957.

Contact Seppo Ahlstedt VK2SMA on *ahlstedt@acslink.net.au* or mobile 04 2524 1973.

FOR SALE-QLD

30 metres of eight core rotator cable. Used but in good condition. Genuine rotator cable.

Reply to Mervyn VK4DV, phone 07 4928 5537 nights, QTHR.

WANTED – WA

Yaesu FT-77 manual. I will reimburse postage and copying expenses. If not a digital copy I would like to borrow for scanning. I have tried several websites and only the User Manual and schematics have been located.

Contact Bruce VK5HN, QTHR 08 86425930.

13000 Mobile ham shack $13,000

This is a light weight caravan fitted out with HF ham radio equipment enabling you to enjoy both touring and HF radio.

The caravan is a 12 ft pop-top with rear door access. It is easy to tow by a small car and is fitted with caravan movers. The movers enable you to move the van without it being connected to a car making it very easy to couple up. The van can be easily moved into small spaces.

The van was completely overhauled last year; new brakes, backing plates and bearings were fitted.

Inclusions are, awnings, side boots, tent pole storage, solar panel, deep cycle battery, gas bottle, fire extinguisher, cook top and grill, 3 way fridge, microwave oven, internal blinds, 240 v inverter and portapotty.

Radio equipment comprises a Kenwood TS50 transceiver, Tokyo HL-700B, 600 w linear amplifier, a 60 amp regulated 12 v supply, an extendable pole to about 20 ft and a 20 metre moxon antenna.

Ill health forces sale, contact phone 0409601238, email *mbays@bigpond.com* John VK2SB

WANTED – NATIONAL

The WIA Archive continues to seek copies of early Australian radio magazines containing aspects of our history and in particular those which were associated with the Institute.

Radio Experimenter, Experimental Radio & Broadcast News and **Radio Broadcast** were monthly magazines produced during the mid 1920s.

H.K. Love and Ross Hull were responsible for their production, initially from Melbourne, but moved to Sydney in October 1925.

Please contact Peter VK3RV via email *vk3rv@wia.org.au* or c/o the National Office in Bayswater if you can help us locate copies of the above magazines.

Contributions to Amateur Radio

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

Your contribution and feedback is welcomed.

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

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

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**Denotes Committee Chairman*

***Denotes nominated by the WIA Board ("Nominated Member")*

THE WIRELESS INSTITUTE OF AUSTRALIA

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Notice of Annual General Meeting

Business

1. To receive and consider the Annual Financial Statements, Directors Report and Independent Auditor's Review Report for the year ended 31 December 2012.
2. To announce the results of the nomination for the election of Directors.
3. To transact any other business that may be brought before the meeting in accordance with the Institute's Constitution.

Notice is hereby given that the Annual General Meeting of The Wireless Institute of Australia will be held at The Tradewinds Hotel, 59 Canning Highway, East Fremantle WA 6158 on

Saturday 25th May 2013 at 9.00 am

By Order of the Board

David Williams
Secretary

16 February 2013

Note A Member is entitled to appoint one proxy only, who must be another Member or a representative of another Member, and that proxy is entitled to vote on a show of hands or on a poll. A form of Proxy accompanies this Notice of Annual General Meeting.

While non members of The Wireless Institute of Australia are welcome to attend the Annual General Meeting and the Open Forum, only members are entitled to vote, and will be identified by a coloured card. Members should register and receive a coloured card at the registration table which will be open outside the meeting room from 8.00 a.m.

Section 250S of the Corporations Act provides that the chair of an AGM must allow a reasonable opportunity for the members as a whole at the meeting to ask questions about or make comments on the management of the company.

Open Forum Immediately following the formal Annual General Meeting an Open Forum will be conducted. An additional detailed report will be submitted on behalf of the Board, and the Institute's coordinators and those responsible for particular aspects of the Institute's activities will be asked to submit a written report which will be available for those attending the Forum. Any major issues affecting each area of responsibility will be identified and the author of each report who is present will be given the opportunity to briefly comment.

Members are encouraged to discuss any matter arising from any of the reports, and to raise any other matter affecting amateur radio or the Institute.

This format will avoid any restriction arising from the requirement to give notice of business to be formally raised at the AGM.

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