

# Amateur Radio

Volume 85  
Number 6  
June 2017  
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E-mail: [yaesu@vkradio.com.au](mailto:yaesu@vkradio.com.au)



# Amateur Radio

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## Editorial

### Editor

Peter Freeman VK3PF  
editor@wia.org.au

### Technical Editor

Peter Gibson VK3AZL

### Publications Committee

Peter Hartfield VK3PH  
John Morrissey VK3ZRX  
Ewen Templeton VK3OW  
Kaye Wright VK3FKDW (Secretary)  
WIA Office Bruce Deetholts VK3FBLD

### All circulation matters

nationaloffice@wia.org.au

### How to submit material

Secretary  
AR Publications Committee  
PO Box 2042  
BAYSWATER VIC 3153  
or armag@wia.org.au

### Letters to Editor

Editor AR Magazine  
PO Box 273  
Churchill Vic 3842  
or editor@wia.org.au

### Hamads

'Hamads'  
PO Box 2042  
BAYSWATER VIC 3153  
hamads@wia.org.au

### Advertising

All enquiries to  
Advertising Manager  
AR Publications Committee  
PO Box 2042  
BAYSWATER VIC 3153  
or admanager@wia.org.au

### Registered Office

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

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*This month's cover:*  
Nick VK3ANL during his activation of Mt Beckworth VK3VC-024 on his way to achieving Mountain Goat. See the SOTA and Parks column starting on page 33 for accounts of the recent VK amateurs to achieve Mountain Goat status. Photo courtesy Nick Lock VK3ANL.

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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.

## Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at \$8.00 each (including postage within Australia) to members.

## Photostat copies

If back issues are unavailable, photocopies of articles are available to members at \$2.50 each (plus an additional \$2 for each additional issue in which the article appears).

## Disclaimer

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.



## Amateur Radio Service

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

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#### Registered Office of the WIA

Andersson House  
Unit 20, 11 Havelock Road  
Bayswater, Victoria, 3153  
Tel: (03) 9729 0400 Fax (03) 9729 7325  
email: [nationaloffice@wia.org.au](mailto:nationaloffice@wia.org.au)  
<http://www.wia.org.au>

All mail to

**PO Box 2042 BAYSWATER VIC 3153**

Business hours: 10am – 4pm weekdays

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## Editorial

Peter Freeman VK3PF

### Road trips

As I reported in my *Editorial* last month, I purchased a new vehicle. It spent the week immediately prior to Easter having some extra "goodies" fitted. I picked the vehicle up late on Thursday afternoon. A road trip coming up soon, so it would be an opportunity to give the new vehicle a good run.

Easter was time to attempt to fit some radios and antennas. But that had some extra challenges: a couple of public holidays and several local suppliers were taking a long weekend! On top of that, there was the issue of proof reading the May issue of *AR!*

At least I had arranged with the organisation doing the supply and fit out of the extra goodies to run some lengths of coaxial cable to the new bull bar at the front – one task that I did not need to complete.

I installed a couple of antenna mounts on the bull bar and terminated the coax runs. Then there was the task of considering how to mount the radio bodies and remote heads...

Saturday morning was spent visiting the local aluminium supplier – closed, of course! I compromised with some 2 mm plate from a well-known hardware warehouse operation.

The next challenge was to decide on how to do the job! Step 1: measure and consider options. Step 2: mark out the selected material and then cut, file edges smooth, bend and drill in preparation to installation. I do not have access to sheet metal tools, so resorted to rather simple techniques, but achieved an acceptable outcome.

By Sunday evening, I had the

radio bodies mounted on the newly fabricated custom frame and fitted into the allocated space.

Sunday evening and Monday were devoted to proof reading, with some small allocation to fit the radio control heads with the assistance of some windscreen vacuum mounts. Any spare time in the afternoon was devoted to organising other bits and pieces, in preparation for departure the following morning.

Monday evening and the May issue of the magazine was sent to the printer. Tuesday morning was spent loading gear into the vehicle for the first trip: a short trip to Traralgon for a long chat over coffee with a visiting amateur. Then the real trip began: off to north of Brisbane to attend Redfest and to present at Q-Tech about portable operations, including SOTA and Parks operating.

Such a road trip presents too many possible activation sites, so I needed to be selective. Four days for the trip north. Saturday devoted to the Q-Tech conference. Sunday was spent activating three summits on the D'Aguilar Range. Monday was the start of the trip towards home, with the requirement to be back by Sunday evening.

The results: almost 6000 km covered; 23 SOTA summits activated; eight WWFF references activated; plus some time spent with family once back in Victoria.

So here we are, finalising the June issue of *AR* magazine and only a week to go until the AGM in Hahndorf... Which will require another road trip!

Until next month,  
Cheers,  
Peter VK3PF



# WIA comment

Phil Wait VK2ASD

## Handing over the reins

This President's Comment will be read after the AGM in Hahndorf, so you will now have a new Board of Directors with a new President and new Vice-President.

So, this Comment is both a farewell from the old Board, and a summary of Board activities up to May, so members can be informed about the status of major issues on which your WIA Board of 2016 was working.

## ACMA

The Board and Spectrum Strategy Committee have spent considerable effort over recent years to "prepare the ground" with key people in the ACMA on the proposed changes to Amateur licence conditions and the principles underlying the proposals set out in several submissions, in particular, the submission of April 2016. Those efforts continued through 2016, and early 2017.

The key principle is that future licence conditions should not unnecessarily limit the breadth and depth of experimentation amateurs can explore and the technologies capable amateurs may wish to adapt and exploit. Additionally, the limitations and anachronisms inherent in the three licence grades, particularly those affecting the Foundation licence, have been raised with the ACMA to engender some awareness of them so that these issues are addressed in the next licence conditions determination. The 'standout' issue is Foundation licensee callsigns – planning for three-letter, rather than four-letter, suffixes while enabling the callsign to identify that the operator has a Foundation licence.

Amateur licensing must not only "move with the times", it must move

ahead if it is to remain relevant in our increasingly digital, always-on society. The proposals being advocated by the WIA have been gauged to create a framework to do just that. The consultation program, for members and the Amateur community, currently under way is to provide the ACMA with further evidential support for the proposed changes to the Amateur licence conditions.

A number of regulatory and operational issues have been resolved with the ACMA over recent months. Licensing for repeaters and beacons has been streamlined, smoothing the process and improving interaction with the ACMA's SPECTRA licensing database. The ACMA conducted stakeholder consultation on the matter of reciprocal licensing, to which the Board responded. The ACMA subsequently changed the Table of Equivalent Qualifications and Licences.

As advocacy is a major object of the WIA's existence, this part of the Institute's work must continue with what has been established, and build on it for the future of Amateur radio in Australia and for the future of the WIA.

## Spectrum Review

The federal government's Spectrum Review continues apace, albeit rather slower and well behind the timetable originally envisaged. It will bring in a new Radiocommunications Act – an exposure draft will be published shortly – along with new regulations and a new, single, licensing regime known as parameters-based licensing.

But, many amateurs are keen to see the release of the new band at 5.3 MHz, or 60 metres, allocated by the ITU back in late 2015. The ACMA updated the Australian Radiofrequency Spectrum Plan, which came into effect on 1 January 2017, but made only minimal changes, to the disappointment of many amateurs. The Spectrum Strategy Committee

has committed to work with the ACMA and the primary service currently occupying the segment at 5.3 MHz to enable access for Australian amateurs. Perhaps it may be of some comfort to know that Australia isn't the "last one off the block" in releasing the new 60 m band.

The telecommunications industry, globally, has a tremendous thirst for spectrum to provide mobile communications for consumers and to build "the Internet of Things" – wireless-based internet connectivity for commercial and industrial services. There will be ongoing pressure for spectrum that will have an impact on a variety of our bands in different parts of the spectrum, particularly those bands where Amateurs are the secondary service. Vigilance of the Spectrum Strategy Committee has proved its worth in responding to ACMA consultation programs recently.

The beachheads established by the Spectrum Strategy Committee need to be maintained and built-on as the federal government's new radiocommunications regime comes into being.

## AR magazine

Producing AR magazine is the primary tangible benefit of membership and the Institute's greatest expenditure item. Its cost is offset to a small amount by advertising revenue and non-member sales through magazine retailers, but it still represents the largest single expense to the WIA, ahead of running the Bayswater office.

In 2016, the Board asked the Publications Committee to look at options for cutting the cost of producing AR magazine by at least 25%. Late last year, the Publications Committee forwarded an options paper to the Board which gave a number of options for cost reduction including, amongst other things, more use of digital distribution and/or less frequent publications. The Publications Committee's report has

Continued on page 5



## WIA Open Forum Reports

Once again we have decided to publish the 2016-2017 WIA Open Forum Reports prior to the upcoming AGM and Conference weekend at Hahndorf.

Very often we hear the question, "what does the WIA do for me?", and I'm sure after reading the Open Forum Reports for this year, that question will be well and truly answered.

Publishing the Open Forum reports on the website also gives non-members the opportunity to see what the WIA has also done for them over the past year, so hopefully they may reconsider and become a member.

I hope you enjoy reading the Open Forum Reports. I would like to sincerely thank everyone who has contributed to the WIA over the past year.

Regards  
Phil Wait VK2ASD  
President

## The WIA 2016 Financial Reports

As is the normal custom, the WIA Board is pleased to release the Financial Statement, Directors Report, and the Auditors Report for the 2016 Year.

This year the WIA Board decided that it was in the best interests of members to have the Financial Report audited, rather than reviewed.

The Board wishes to answer members' questions that relate to the Financial Report as fully as possible. Members are encouraged to submit questions that relate to this Financial Report by Monday 8 May, so those questions can then be forwarded to the WIA's accountants for their response. Questions received at the AGM relating to the Financial Report will be taken on notice.

The Financial Statement, Directors Report, and Auditors Report for the 2016 Year is available

as a WIA Member download on the WIA Information Web page accessible the link on the WIA web site.

## National Volunteers Week 2017

National Volunteer Week, May 8-14 is an annual celebration to acknowledge the generous voluntary contributions being made throughout Australia. Its theme, 'Give Happy, Live Happy', reflects research that shows volunteers live happier and healthier lives. Volunteering Australia estimates that more than six million people are volunteers.

The Wireless Institute of Australia (WIA) has about 100 key volunteers and there are many more helping out, including those in radio clubs. Recently the WIA consulted with its 10 committees, and then with the membership, on a Charter for Volunteers. The aim of that document is to set out the expectations of the volunteer, and that of the WIA.

Volunteers contribute so much to the running of Amateur Radio, spending countless hours on delivering member services, which are mostly taken for granted. A little of the work being done by our volunteers can be read in the annual reports of committees for 2016 – these will shortly be provided to members.

The WIA Board of Directors are all volunteers who work hard for the membership throughout the year and prepare for the WIA annual general meeting in Hahndorf this month. Volunteers are the mainstay of the not-for-profit WIA through its operations and services in advocacy, education and support for the Amateur Radio community.

To all our volunteers who through dedication and support continue to make it happen – a very big thank you.

## The ACMA's approach to spectrum reform

The Radiocommunications Act that has served Australia for 25 years is to be replaced by a

modern approach to spectrum control and licensing. Australian Communications and Media Authority (ACMA) Acting Chairman Richard Bean has given a little insight on what is ahead, during a CommsDay Summit 2017 speech in Sydney. Mr Bean said the radiofrequency spectrum can only increase in importance for economic and social activity, and a source of competitive commercial advantage.

His speech on April 11 told of the ACMA's approach to the important reforms to better respond to pressures already building and developing approaches robust enough to support future innovation and growth. Mr Bean confirmed that a new legislative and policy framework is being developed by the government to open up significant reform opportunities, and the ACMA has been preparing for the journey ahead. Already known is that the Radiocommunications Act will be replaced to make Australia's spectrum framework simpler, more efficient and flexible to use.

While the new Act will be the work of the Department of Communications and the government, implementation of it will fall to the ACMA. First to come will be an Exposure Draft by the Department with the ACMA asked to contribute material to reflect some preliminary observations about how key aspects of the Bill may operate. Mr Bean assured that a staged transition will ensure the rights of existing licence-holders are not diminished. The ACMA will consult with spectrum user groups on the proposed changes and their timing. More information on this is expected at the RadComms conference on November 1-2 this year. It will also announce consultation with interested parties in coming months. The ACMA's next Five-year spectrum outlook later this year will be an early opportunity to consult with industry on how best to build spectrum review implementation into its work program.

While a lot of his speech was of particular interest to other spectrum

users, the new Act will have an impact of the Amateur Service and is being watched by the Wireless Institute of Australia who looks after our interests.

## ACMA Reviews Licence Equivalency Table

Visiting Amateurs, and overseas Amateurs who are residents in Australia, are granted an Australian licence based on their overseas qualification in accordance with the "Table of Equivalent Qualifications and Licences", which is published on

the ACMA website.

Previously, a holder of a US General Class operator licence was generally granted an Australian Advanced Licence.

The ACMA has advised the WIA that the equivalency of a US General Class operator licence to an Australian Advanced amateur licence is now under review. Applications for Advanced amateur licences, or for transfers of such licences, received by the ACMA after 26 April 2017, and applications for amateur certificates of proficiency or callsign

recommendations received by the WIA after 26 April 2017, made on the basis of the equivalence of a US General Class operator licence to an Australian Advanced amateur licence, may be affected by the outcomes of this review.

Any person considering making such an application is invited to make submissions to the ACMA on whether a US General Class operator licence ought to continue to be treated as equivalent to an Australian Advanced amateur licence.

## WIA comment

Continued from page 3

been forwarded to the new Board for consideration.

As highlighted above, for most members, the print edition of *AR* magazine is the *one tangible benefit* of membership. Reducing the frequency of publication will likely create a feeling among members that this particular benefit of belonging is diminished and some members, perhaps many, will 'vote with their wallets' and not renew. Likewise, moving to digital-only publication in or over the near future is seen to be a high risk strategy as it removes that tangible membership benefit and a solid link with members and the affiliated clubs. There is evidence aplenty where publications, specialist technical publications included, have lost readership dramatically after moving to digital-only publication. The take-up by members of digital-only *AR* subscription is low at present, unfortunately.

## Publications and the Bookshop

The WIA bookshop has been very successful for many years but, like most other book sellers, is coming under extreme price pressure from on-line re-sellers. Many people have said that they can save 20-30% of a

book's cover price using an on-line overseas re-seller. That makes the WIA Bookshop un-viable when it comes to selling books such as the ARRL and RSGB publications. The Board has been aware of this for some time and has entered discussions with a local seller of amateur radio publications, and has been negotiating an MOU whereby the WIA would act as a shop-front only, and pass all orders on to the other bookseller for a small commission.

The WIA would then concentrate on producing, publishing and selling its own publications, such as the Foundation licence manual, the callbook, and "one-shots" like the new historical publication *Wireless Men and Women at War*, for example.

## Youth and STE(A)M

The outgoing Board was very supportive of the STEM initiative, and originated some STEM activities, such as the STEM conference held in Canberra last year. I expect the new Board will continue and build on that initiative, which generated a strong, positive reaction.

## Office and Accounting

The office continues to be under a great deal of pressure with too much work for too few staff. However, the

realities are that the WIA cannot commit to additional staff costs at this time. The use of a contracted book-keeper and temporary staff has relieved the pressure somewhat and has allowed us to bring the WIA's accounts up to date after a difficult period during 2016. Our recommendation to the new Board is that they continue to simplify processes as much as possible and continue to use 2-peas for the bookkeeping services.

There are many other new initiatives and "works in progress", such as the Volunteers Charter and the new Member Consultation portal on the website. One other initiative worth mentioning is a new voucher system that will provide a period of free digital download of *AR* magazine. The vouchers could be given to all new radio amateurs, or used as a general promotional tool, and will hopefully encourage more new radio amateurs to join the WIA.

No doubt the new Board will set its own initiatives and priorities, but the ground work has been done on many important issues.

On behalf of the 2016 Board of Directors

Phil Wait VK2ASD

## WIA Contest Website



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



# International Open Source at its Best!

## High Performance Software Defined Radio

Justin Giles-Clark VK7TW

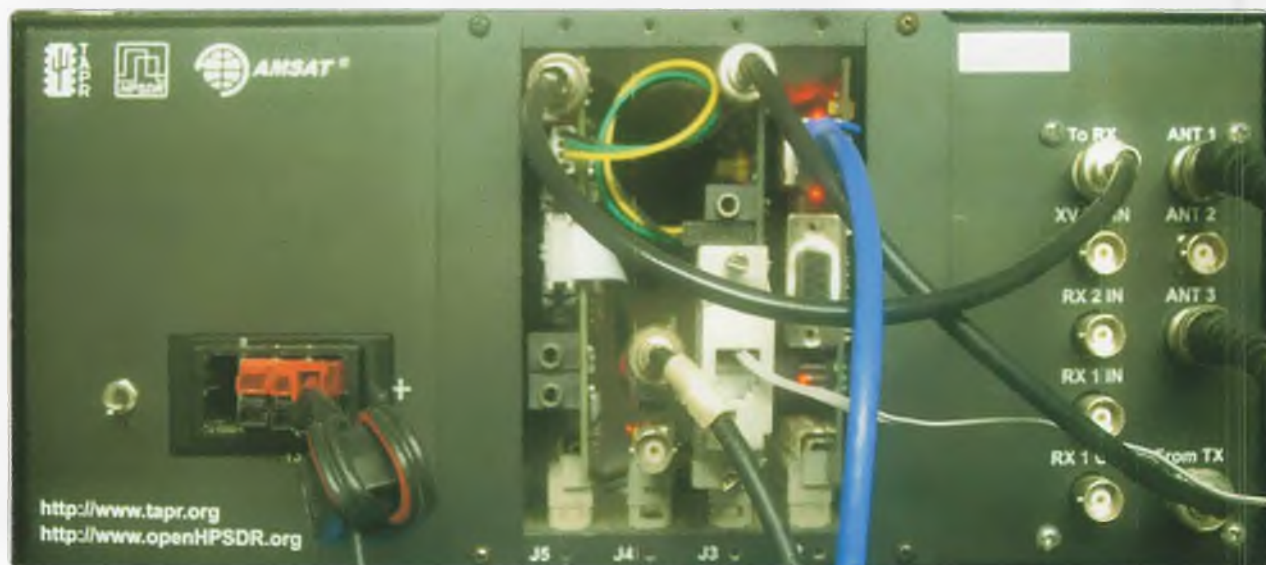


Photo 1: The original HPSDR.

### Introduction

Wikipedia states that:

*"The open-source model is a decentralized development model that encourages open collaboration"* [1]. This started mainly with software development but has expanded to include hardware, manufacturing and engineering.

The key principles involve freely sharing software, plans and files providing universal access, redistribution, free licencing, peer development and production.

Many amateur radio operators will be aware of the various strains of the operating system Linux. This is an excellent example of open source software development.

This article uses the open source development of the High Performance Software Defined Radio (HPSDR) and the piHPSDR control surface as amateur radio related examples.

### HPSDR Historical Summary

The HPSDR journey was started back in October, 2005 with

Phil Covington (N3VB). This development attracted a group of SDR enthusiasts from around the world: Ray Anderson WB6TPU, Steve Bible N7HPR, Rick Hambly W2GPS, Phil Harman VK6APH, Lyle Johnson KK7P, Ulrich Rohde N1UL and Bill Tracey KD5TFD – all amateurs contributing their respective skills sets to the project.

Initially the project split the design work into modules that were put together and connected by a common buss system (Atlas).

Each module had Eurocard hardware and firmware for the Field Programmable Gate Arrays (FPGA) associated with them:

- Mercury - Receiver
- Penelope - Transmitter
- Janus - High performance sound card
- Ozymandias - USB interface
- Metis - 10/100/1000 Ethernet interface
- Excalibur - GPS Disciplined Oscillator (no FPGA)

This project was a great success and lead to the development of a single board HPSDR - Hermes which included all the above on a Eurocard sized multilayer PCB.

All the design specifications, engineering drawings, bill of materials, firmware and multi-platform software is freely available on the internet.

<http://openhpsdr.org/> and 27 Repositories (at time of writing) on <https://github.com/>

The objective of the project was to build a cutting edge software defined radio that took SDRs to the next level and there are a series of talks given by Phil Harman VK6APH at the ARRL & TAPR 2008 Digital Communications Conference on the engineering challenges faced by the team and how they were overcome. It was all about balancing cost and performance to create a modular, flexible, experimental and, at the time, bleeding edge SDR platform.

Tucson Amateur Packet Radio (TAPR) Corporation in June 2006



saw the project as the next generation SDR for Radio Amateurs and formed an alliance with Amateur Satellite Corp (AMSAT) to manufacture the modules. This is when the author became interested and committed to this project.

This was 10 years ago and the SDR designs we are seeing today are basically the same architecture indicating that the HPSDR was well ahead of its time!

Apache-Labs of India have commercialised the HPSDR architecture into their ANAN range and taken it to the next level by employing the next generation of analog to digital converters and FPGAs to provide more processing power. However they have maintained the open source philosophy with the software and hardware.

<https://apache-labs.com/>

## Amateur Radio - the Original Open Source hobby

Amateur Radio for well over 100 years has been an international Open Source hacking hobby!

By hacking, what I am meaning is the "adherence of the technology and/or subculture" [2], not the unethical back room programmers who steal your bank details!

Amateur radio also has fantastic alignment with the maker movements [3] that have sprung up all over the world. The premise of this culture is a technology based extension of the DIY movement.

In the 1920s, it was interested people who took (hacked) the published designs of experimenter's and build their own transmitters and receivers. They improved the designs and in some cases went on to create companies that commercialised these designs. Post WWII there was abundant surplus equipment that was re-purposed (hacked) onto the amateur bands and these were the work-horses of many shacks in that era.

The hobby by its very nature is experimental - we design, build, operate and modify equipment. We communicate using radio and to do that we use the international radio spectrum resource which is internationally governed and recognised in ITU regulations (section 25).

Our hobby is non-commercial supporting the sharing and collaboration aspect, we self-educate to gain our licence and improve ourselves. It's all about the challenge of getting something working - satellites, EME or that novel contact using QRP or an interesting propagation mode. We share information with like-minded individuals locally and internationally and have done so far longer than the Internet has existed. Our hobby has made valuable contributions to the fields of science, technology and engineering. We also provide skilled personnel for emergencies & community service (Fire Season, Jamboree on the Air (JOTA) and Safety Communications).

If that not an international open source hacking hobby, I don't know what is!

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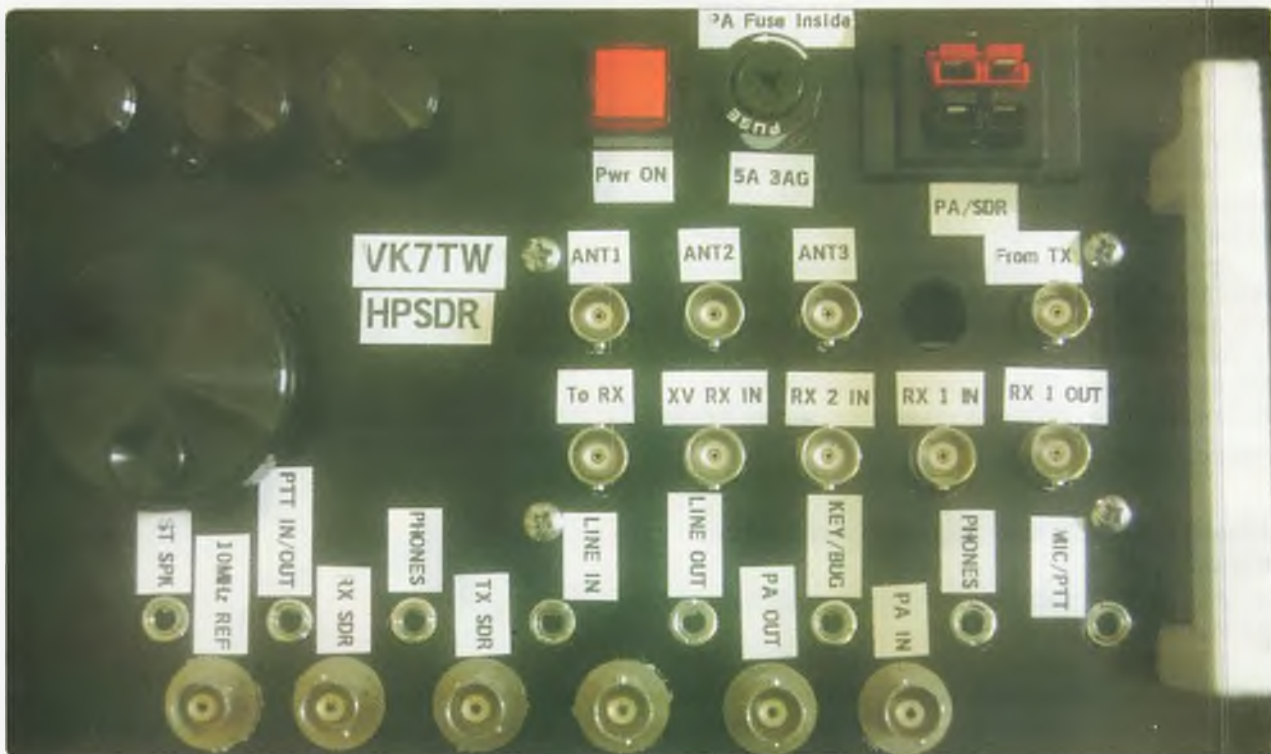


Photo 2: RF Audio and Control panel.

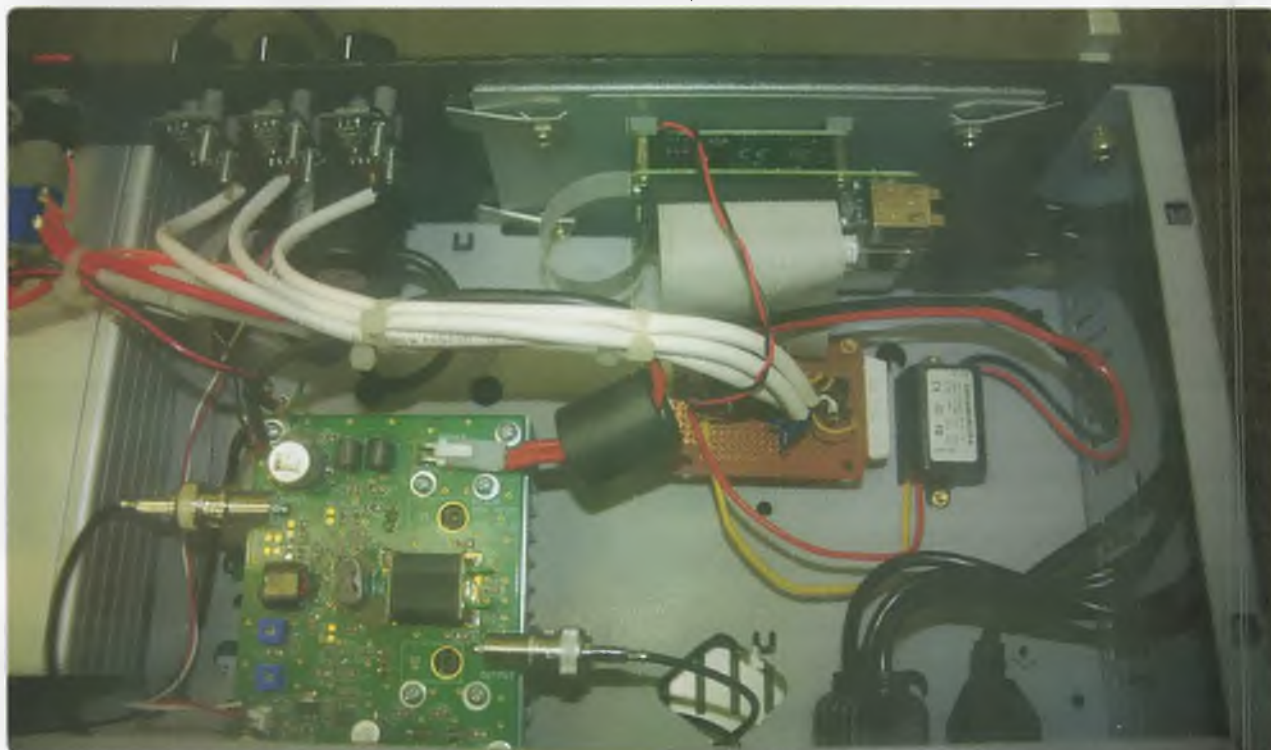
### HPSDR/piHPSDR Example

The author as a devotee of the HPSDR philosophy (I only have three

though!) was delighted to see the recent open source development by John Melton G0ORX/N6LYT of a

RaspberryPi3 based touch screen control surface (piHPSDR) for the HPSDR/ANAN platforms.

Photo 3: RaspberryPi Display, GPIO/Encoder connections and Penny Whistle PA.





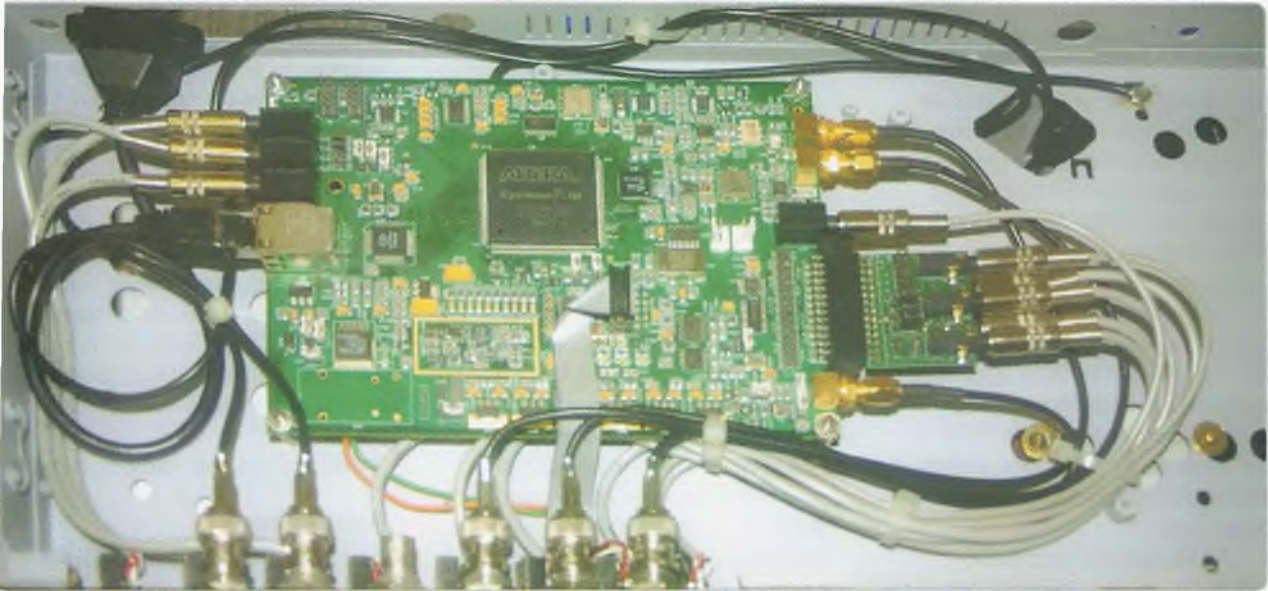


Photo 4: Hermes HPSDR PCB.

<https://github.com/g0orx>  
<http://g0orx.blogspot.com.au/>

John presented at the SDR Academy at Friedrichshafen in 2016 on his development of an open source SDR front end using

WDSP by Warren Pratt, NR0V's which is a DSP library originally written for Windows and ported to Linux and Android. John included using a RaspberryPi 3 and the accompanying 7" Touch screen

to create a control surface for the HPSDR/ANAN platform. Apache Labs have worked with John to develop and release a commercial version (see author's review in AR March 2017).

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This gives even greater flexibility to the HPSDR platform by providing a portable low voltage control surface that is fully open source and under active development at the moment. The piHPSDR moves the platform from a generation 2/3 SDR into a generation 4 SDR - see Dr Howard White KY6LA's presentation at SDR Academy at Friedrichshafen in 2016.

The author has combined his Hermes single board HPSDR, a homebrewed piHPSDR, Alexiars band pass filters, Pennywhistle PA into a repurposed Philips TX-815 19" rack case to produce a state of the art HPSDR 0-60 MHz all mode 20W radio.

All RF, control, and audio connections were brought out to the front panel. However due to a lack real estate on the front panel, the two ethernet connections and four USB ports were brought out on the back panel.

John Melton publishes the GPIO pins to optical encoders, switch configuration and also has built into the software start-up sequence the ability to reconfigure GPIO connections through software.

I used the original case barrier

to split the RF and computer control circuitry and to try and limit interference between the two.

## Conclusion

Amateur radio has always operated with an international "Open-Source" philosophy. We as amateur radio operators share, collaborate and have experimented with radio technology for over 100 years.

The Open Source hacking community is continuing this tradition in the software domain using software defined radios tools like GNU Radio. Through collaboration, new open-source digital modes like WSJT and FreeDV are being compiled into SDRs along with the common AM, CW, SSB etc. modes.

The HPSDR along with many SDRs being developed include the ability to lock their clocks to a GPS disciplined oscillators to provide high level of frequency stability for the open-source digital weak signal modes.

The author hopes he has been able to show that the term "Hacker" and "Maker" can apply to amateur radio and doesn't necessarily mean those unethical

programmers in dark back rooms in foreign countries but may actually be amateur radio operators making some electronics, building that antenna, re-purposing that hardware or writing software to implement that latest DSP noise filter.

Open source philosophy aligns perfectly with the Amateur Radio philosophy and it could be argued that the Amateur Radio community has been using the Open Source philosophy for well over a 100 years!

Happy amateur radio hacking!

## References

- [1] [https://en.wikipedia.org/wiki/Open-source\\_model](https://en.wikipedia.org/wiki/Open-source_model)
- [2] [https://en.wikipedia.org/wiki/Hacker\\_culture](https://en.wikipedia.org/wiki/Hacker_culture)
- [3] [https://en.wikipedia.org/wiki/Maker\\_culture](https://en.wikipedia.org/wiki/Maker_culture)  
<http://openhpsdr.org/>  
<https://github.com/>  
<https://apache-labs.com/>  
<https://github.com/g0orx>  
<http://g0orx.blogspot.com.au/>

Photo 5: 40 m CW/Digital segment on the JMFD 2017.





# Two transistor inductor-less ceramic resonator regenerative receiver

Peter Parker VK3YE

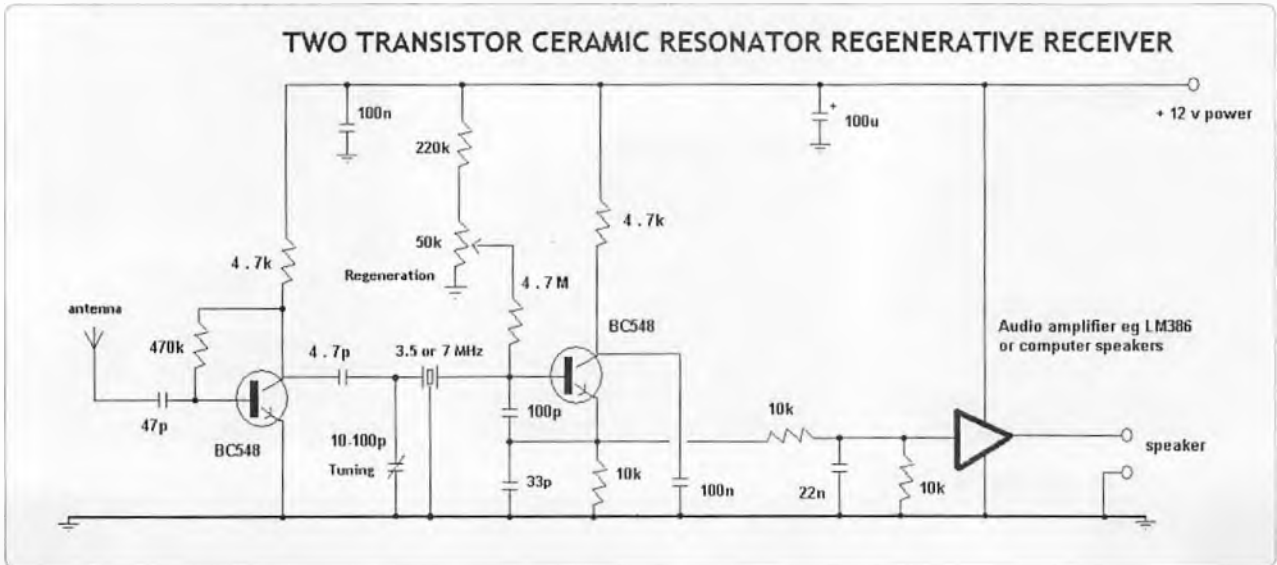


Figure 1: Schematic of the regenerative receiver.

Regenerative receivers are widely thought of as novelty projects, perhaps more for casual listening than as part of a transmitting station. Their role for the latter has largely been taken over by direct conversion receivers. Although popular in the early days of radio, they acquired a reputation for being difficult to get going, ear-splitting oscillations, hand-capacity, frequency drift and pulling on strong signals.

Nevertheless there is something to be said for listening on a set with a handful of active devices between the antenna and your ears. A regen receiver remains almost unrivalled in simplicity and can be built in a couple of hours. And, as you'll read later, modern components can overcome many problems and make the receiver a well-behaved joy to use.

The receiver described is both simple and stable. Oscillation is

gentle and there is no warm-up drift. In fact you can tune in to an SSB signal, switch it off and on, yet still be tuned in correctly. Neither is there significant frequency pulling on strong signals or when you adjust the regeneration.

Regeneration can be set so fine that the receiver is oscillating when tuned to one side of a CW signal but not when tuned to the other side. You can even tune across a 100 kHz segment and not have to reset the regeneration, making

Photo 1: Front of the regenerative receiver.



the receiver handle like a direct conversion set.

The receiver's stability and simplicity comes from the absence of inductors. With not a single L-C tuned circuit there are no coils to wind or a need to correctly connect a feedback winding or optimise a tap position. It's possibly the nearest to a 'works first time' regenerative receiver you are ever likely to see.

A three-legged ceramic resonator is used instead of an inductor. A variable capacitor between one end of the resonator and earth allows useful frequency agility range below the resonator's frequency, much like a crystal VXO. The circuit is basically F5LVG's 'New High Performance Regenerative Receiver' (described at <http://oerst.f5lvg.free.fr/rx/1v2-tran-2013/rx-1v1-2013-en.html>) but with the

ceramic resonator substituted.

The tuning range can be changed by substituting another ceramic resonator. Because this is limited by resonators' pulling range, coverage is limited to frequencies just below those which you can buy ceramic resonators for. Luckily a good selection covering some active parts of 80 and 40 metres is cheaply and locally available at the time of writing (February 2016).

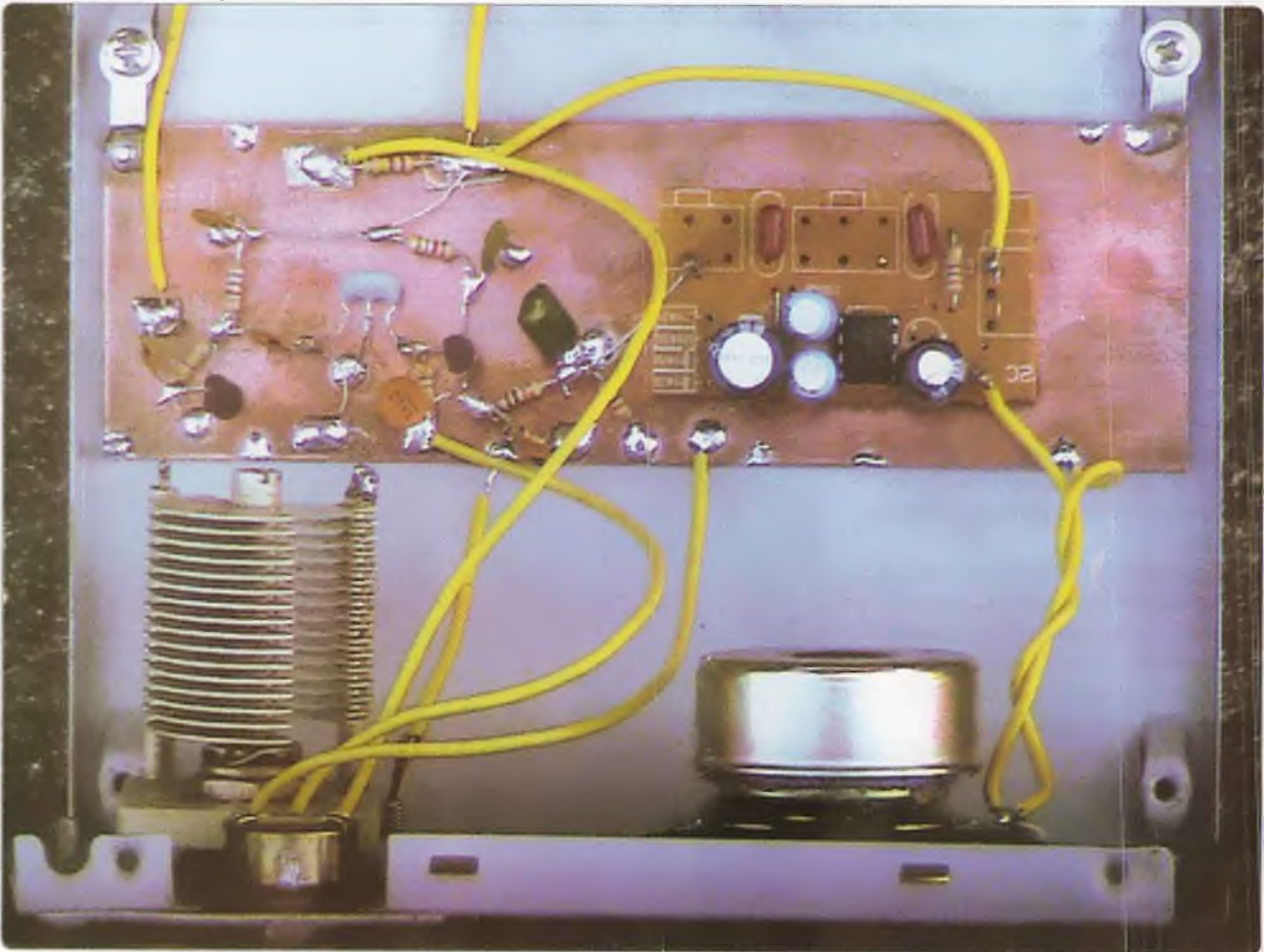
### Circuit description

Signals enter the receiver via a small coupling capacitor and RF preamplifier. An even smaller capacitor couples it to the regenerative detector via a ceramic resonator. Depending on its value the variable capacitor allows about 40 to 120 kHz of tuning range below the ceramic resonator's frequency.

The ceramic resonator allows the regenerative detector to oscillate when sufficient current is presented to the base via the regeneration control which sets the level of positive feedback. More feedback increases gain and selectivity until the receiver starts to oscillate. Like with all regenerative receivers the regeneration control is set just before the point of oscillation when receiving an AM signal and lightly oscillating when CW or SSB reception is desired. Reception on strong signals is improved when the set is more heavily oscillating but before the point where a squeal is heard.

Audio is tapped off the regenerative detector's emitter and sent to the audio amplifier. This can be a standard LM386 IC stage (available in kit form as the 'Champ') or similar, such as an

Photo 2: Inside the regenerative receiver.





amplified computer speaker which can either be kept in its case or taken apart for the circuit board. Current consumption when quietly driving a speaker is less than 10 milliamps, making it an ideal portable receiver.

An exercise which illustrates the current gluttony of commercial equipment, is to reduce current draw even further while still having a practical receiver. To do this use a single transistor audio stage instead of the IC audio amplifier and listen with a sensitive high impedance crystal earpiece. Current usage with such a three transistor receiver should drop to a miserly 2 to 3 milliamps, permitting hundreds of hours operation with a dry cell battery pack.

### Parts availability

Common parts are mostly used. Many can be salvaged from old pieces of electronic gear. VK5EME's MiniKits sell the three legged ceramic resonators. I would suggest buying at least one of 3.58, 3.64, 3.68, 7.16 and 7.2 MHz. This will give a good choice of tuning ranges. I recommend starting with a 7.16 MHz resonator which in the prototype covers 7.020 to 7.135 MHz, allowing reception of CW and SSB signals.

The only other part which you may have trouble with is the variable capacitor. A plastic dielectric type, as available from Jaycar or a discarded broadcast receiver is suitable. Or you can use an air spaced variety as commonly seen at hamfests. Its maximum value can be anywhere between 50 and 400 pF though the higher value will give a wider tuning range. A Vernier reduction driver is a nice touch but is not essential since the tuning ranges provided are quite narrow.

If you like to tune with a potentiometer you could even experiment with several parallel power diodes since these can form effective varactors. I haven't tried it on this receiver. However the tuning range will be narrower than with a variable capacitor due to

diodes' lower maximum/minimum capacitance ratio.

### Construction

Despite only having two transistors and one IC, the receiver's gain is high. Metal shielding is recommended to keep out hum. I used a case from a computer power supply. There is ample spare room, with space for a companion CW or AM transmitter and battery if desired.

Too few parts are needed to justify the effort of etching a printed circuit board. Instead components were simply mounted dead-bug style. Leads must be kept short, particularly around the ceramic resonator. Use an 8 pin IC socket if you wish to be able to change resonators and obtain several tuning ranges.

If your IC audio amplifier is on a small printed circuit board this can be soldered to the main board. Photo 2 shows the interior construction.

### Testing and operation

Use of a coax fed resonant dipole or open wire feed antenna with antenna coupler is recommended for best results. Connect this and power. Advancing the regeneration control so that more voltage is put on the regenerative detector's base should first give a gentle hiss, then possibly a squeal near the end of its travel. Its correct setting is just before it oscillates (for strong AM signals) or when it is gently oscillating (for CW, SSB and weak AM signals).

Band noise should be audible and it should be possible to tune in stations. Even interstate and DX stations should be readily audible, especially on 7 MHz CW. Reset the regeneration control if you change the tuning for best reception.

### Improvements

The main improvement suggested is an RF gain control. This can be a 500 ohm to 5 kohm potentiometer inserted in the antenna connection. The wiper goes to 47 pF capacitor,

one end is earthed while the other goes to the antenna. This allows distortion-free reception of very strong signals and doubles as a volume control. A salvaged potentiometer is suitable and may even come with an inbuilt on-off switch which can be wired in the positive lead.

Some builders may prefer a different frequency range, e.g. to cover on the CW portion of the band or more SSB frequencies. Increasing the base-emitter and emitter-ground capacitors in the regenerative detector will allow reception of lower frequencies while reducing their value will give reception of higher frequencies. Experiment with capacitor values anywhere between about 22 and 420 pF. In the prototype changing the emitter-ground capacitor from 47 to 33 pF extended coverage down to 7 MHz at the sacrifice of frequencies above 7.1 MHz.

You might be curious if the circuit works with crystals instead of ceramic resonators. The answer is it does but gain seems to be very low. However this could be worth further work if you want a simple switch tuned receiver for WWV on 5, 10 and 15 MHz. The receiver was more lively with a 10 MHz ceramic resonator, with reception of several stations in the 31 metre broadcast band. However you will need smaller capacitor values to get reception of exactly 10 MHz.

This receiver is frequency stable and works particularly well on CW. A companion 1 to 2 watt VXO CW transmitter is a good addition and will provide regular interstate contacts up to about 1000 km distance. A double pole double throw switch can be used to change power and antenna connections between transmitter and receiver. Also desirable is a 'spot' function which applies power to the transmitter's crystal oscillator while in receive mode. This is good for setting the receiver to the transmit frequency so you're listening in the right place for replies to CQ calls.

Crystal control will soon be found a limitation, especially at low power levels. A wider range 'super VXO' using two crystals in parallel can provide a wider tuning range. Pulling a 7.16 MHz ceramic resonator into the CW portion also works though frequency stability may be less. Another approach is to accept less agility but add a FET power amplifier stage to attract more replies to CQ calls. An increase in power to the 30 or 40 watt region should provide regular DX contacts that demonstrate how good this receiver can be.

Because this set provides good AM reception a transmitter section for this mode is another possibility, made more attractive by its coverage of the popular 7.125 MHz net frequency with either a 7.16 or 7.2 MHz resonator. Cheaply available 7.122 MHz crystals can be

pulled up to 7.125 MHz if used in a low capacitance crystal oscillator circuit. Alternatively 7.16 or 7.2 MHz ceramic resonators can be pulled down if some extra buffering is provided.

If you used one half of a stereo audio amplifier IC (e.g. TDA2822) in the receiver it may be possible to use the spare section as a transmitter microphone amplifier or even as the entire modulator if modulating a lower level stage and linearly amplifying the generated signal.

While there is little point in this due to the cheapness of components, the ingenious designer might even make use of the receiver's regenerative detector as the transmitter local oscillator by driving it into oscillation by applying increased current to its base on transmit only. The RF output could be tapped off the emitter via a

low value capacitor and fed to a transistor buffer which could drive a power amplifier whose collector is modulated by an audio amplifier.

Less than about 5 watts of AM must be considered a novelty mode since it is less efficient than the same power of DSB or SSB. Nevertheless contacts made can be highly satisfying with the use of a regenerative receiver adding further novelty.

### Conclusion

A regenerative receiver capable of excellent reception has been described. It's simple yet lacks many of the vices of other designs. Recommended for the builder seeking reception of a segment of 40 or 80 metres, a video of it operating can be found at [youtube.com/vk3ye](http://youtube.com/vk3ye)



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# 20 m WSPR Beacon

Richard Burden VK6TT

Recently I became fascinated by the WSPR protocol. However, there is some irony in the transmission side of the protocol. The PC used to generate the audio tones used to modulate the 0.1 to 5 watt transmission might itself use over 100 W of energy. And this energy inefficiency is compounded when a 100 watt transceiver is used to transmit the low power signal. However, the timing which underpins the protocol has to be synchronized to UTC and the PC performs that task as well as generating the precise audio tones being transmitted.

Here is a part of my low energy solution to running a WSPR beacon. One part of the solution consisted of a small PCB generating the audio tones and a GPS to synchronize the timing. Contact me directly for further information on that project. This article addresses constructing a transmitter for 20 m, though a similar circuit on 40 m was also very successful.

This project was put together with the goal that you could replicate it. I have avoided using a microcontroller to broaden the appeal of this project. Three prototypes have been built to confirm it can be replicated and each has performed as expected. One prototype was assembled by my almost 12 year old son. Not only did he get a kick out of seeing how far "his" transmitter went. It also revealed where changes to the documentation were needed to remove confusion.

In a sign of the times I used surface mount parts where I could. I recommend the approach to you because:

1. If you are buying the parts, the through hole PLL chip is very expensive in a one off quantity.

2. You will have to find a suitable single supply op-amp for the loop filter in a dip package. One that preferably is rail to rail on the input and output. The op-amp I used is only made in a surface mount package.
3. The MMICs I use would be awkward to solder deadbug style and are not available in a through hole package. However, it would be easy to replace the MMICs with transistor stages or perhaps one of the Mmicircuits offerings would suit but I never looked into this closely because I am extremely happy with the Philips device I use, and
4. If my 12 year old son can solder this with on the job training from me then anyone who has held a soldering iron has absolutely no excuse.

The whole project so far has taken 6 months. I am learning first-hand about the joys of sourcing parts from China. All too often inferior, wrong or even fake parts arrive and the shipping delays drive you mad when you have to re-order because the parts are not fit for purpose. Still, you get what you pay for and as I moved along this learning curve things improved.

## Approach

There are two challenges in building a transmitter for WSPR; being on frequency and having no frequency drift while transmitting the 110 second message. These challenges rule out a free running oscillator. You can see on the WSPR log who is using a boat anchor to transmit their signal. The drift is obvious.

My first approach was to see what crystals might be suitable for directly generating the RF frequency. Unfortunately, despite

having a large box of crystals, only a few crystals could be used either in fundamental, multiplied or overtone approaches. Clearly that approach was going nowhere.

Having ruled out VFOs and crystal oscillators I compared the two remaining approaches I was familiar with: DDS or PLL. I have enjoyed using a DDS in several homebrew transceivers and they certainly work. You could even program the DDS to generate the WSPR signal directly then simply amplify it. A number of kits already exist that do this. However, using a microcontroller would narrow the appeal of this project still further given it already discourages some people by using surface mount parts.

The other approach is the PLL technique. Lots of very nice PLL chips exist. However, most are serially programmed and this adds complexity to the circuit. In an attempt to make the project as simple as possible I looked at the parallel loaded Motorola PLL chips. I reasoned that if I could make one of these fit the task then the need for a microcontroller or other method of serially loading the data could be avoided.

One spreadsheet later and I had confirmed that for every band there was a crystal available off the shelf that could be pressed into service. My first attempt was on 40 m where I enjoyed immediate success. My second attempt was on 20 m and again I enjoyed immediate success. Having satisfied myself that the approach was valid I built a third transmitter which I will describe in detail below. Should you wish to replicate this I still have, at the time of writing, some commercially made PCBs, semiconductors and passive components left over.

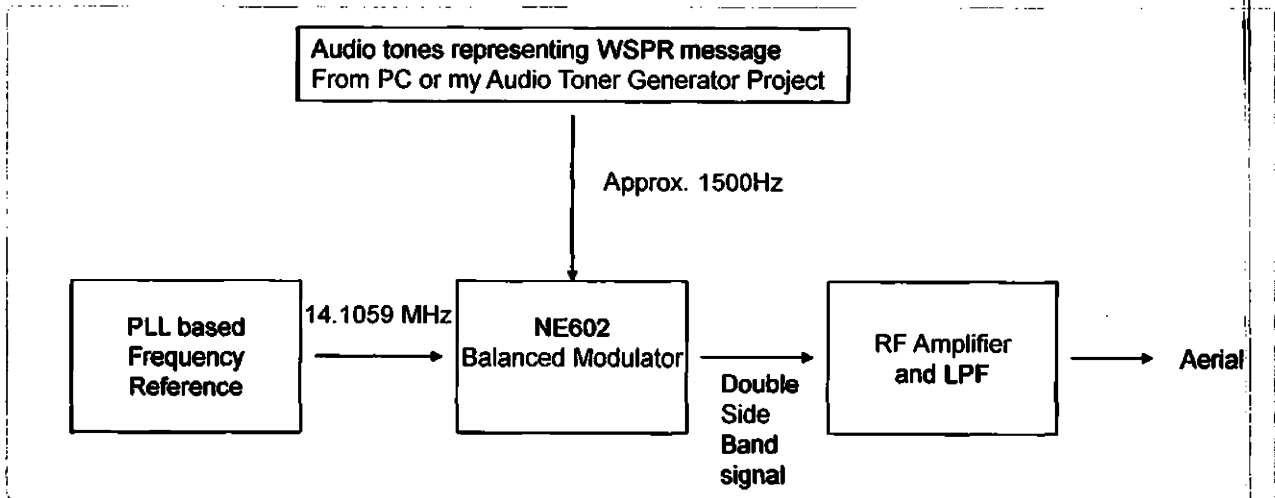


Figure 1: Overall block diagram.

### Circuit Overview

Figure 1 shows a block diagram of the overall approach I used. A PLL synthesiser and WSPR audio tones are the two inputs to a NE602 used as a balanced modulator. The audio input to the balanced modulator could come from your PC's soundcard. However, I am using a GPS engine

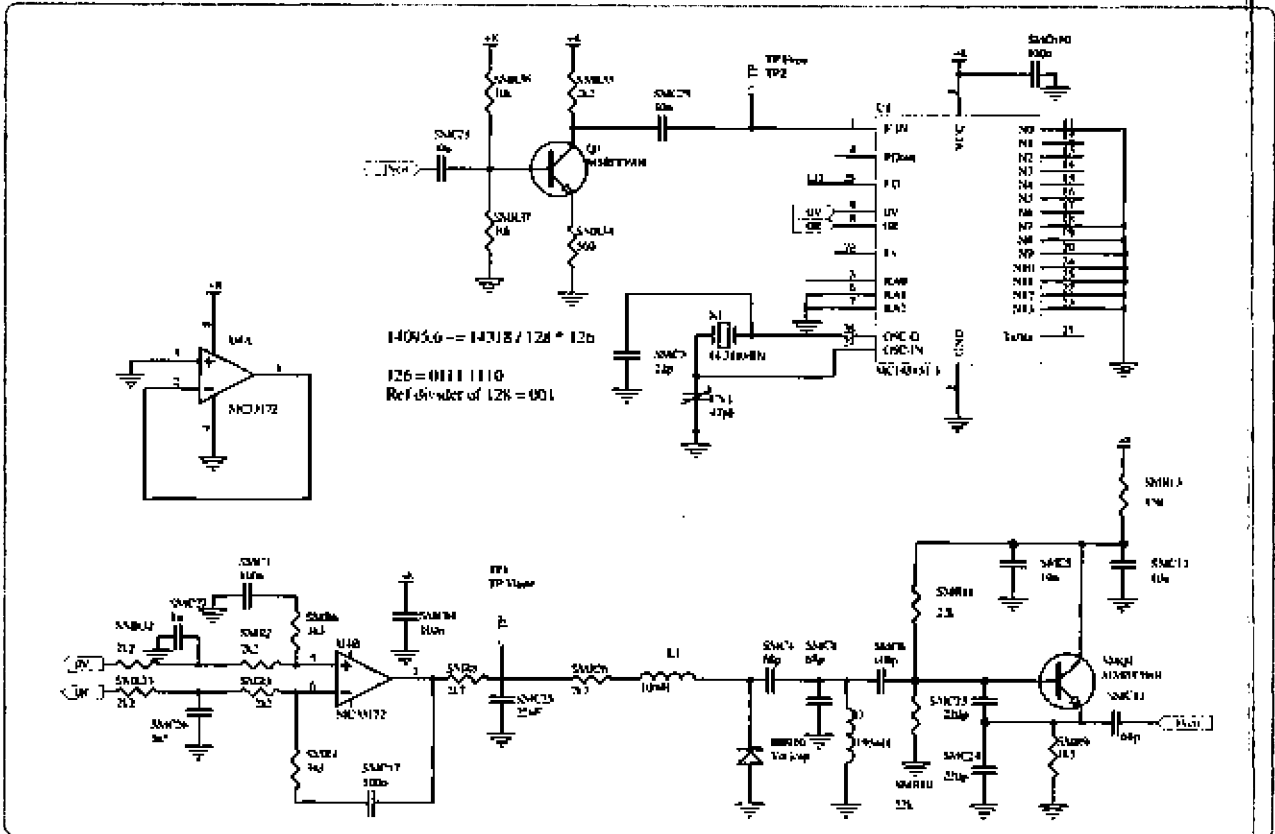
and a microcontroller programmed to generate the audio tones at the required timing. I call this a WSPR tone generator. The double sideband signal then passes to an amplifier and LPF before reaching the aerial.

### PLL Based Local Oscillator

Referring to Figure 2, the PLL circuitry

is conventional. I wrote a spreadsheet to firstly calculate the oscillator components. From this I calculated the likely voltage sensitivity of the oscillator with the chosen varicap. Finally, with the estimated voltage sensitivity I was able to calculate the loop filter values and to verify there was a suitable phase margin.

Figure 2: PLL Based Local Oscillator.





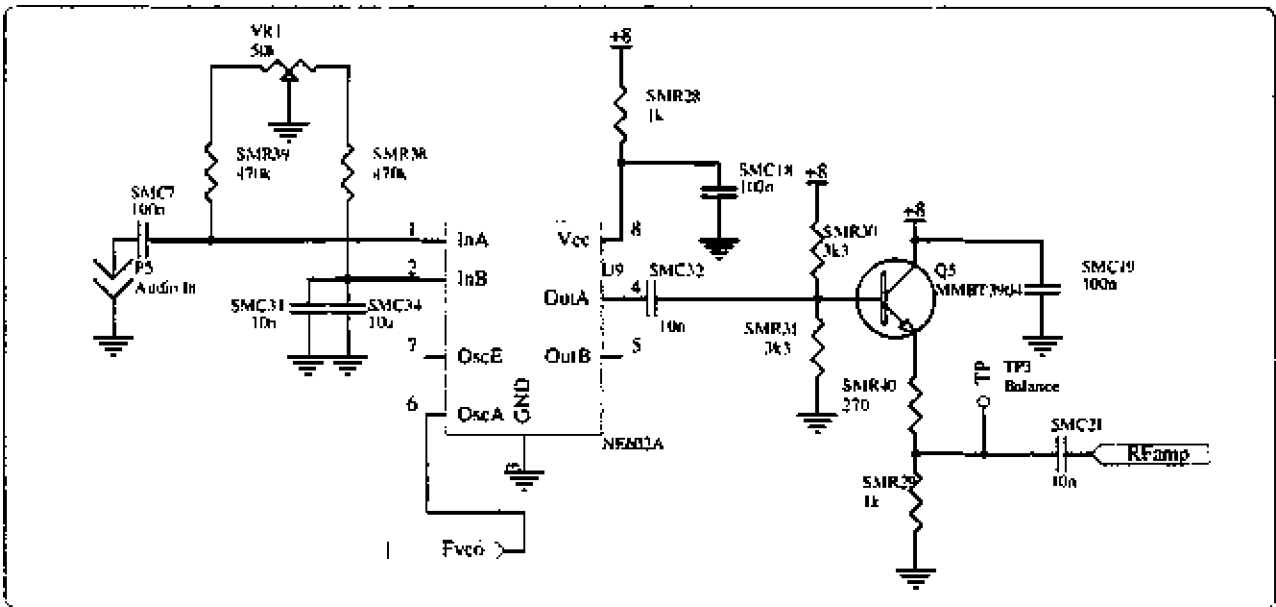


Figure 3: Balanced Modulator.

Judicious selection of the crystal and reference divider value allowed the phase detector to run at 112 kHz. This is far higher than usually encountered. Since this is a fixed frequency PLL any step size considerations do not apply. Running the phase detector at this frequency allows the loop filter to reduce the close in noise of the oscillator. The result appears to be entirely satisfactory.

While a crystal of 14318.1 kHz is shown, it must actually oscillate at 14319.34 kHz. It was unknown at the prototype stage if the crystal could actually be trimmed to this frequency. Murphy was elsewhere that day since it proved to be readily achieved.

The local oscillator is buffered before feeding the PLL chip. The local oscillator is also injected into a NE602 mixer (refer Figure 3) via the pin which is the base of an internal transistor.

### NE602 Balanced Modulator and Buffers

Again, nothing exotic is used and pretty much straight from the datasheet. I looked at the chart of the third-order intercept and decided that I would dimension the RF amplifier chain for an output of around -30 dBm from the NE602. This left me a comfortable margin to adjust the level

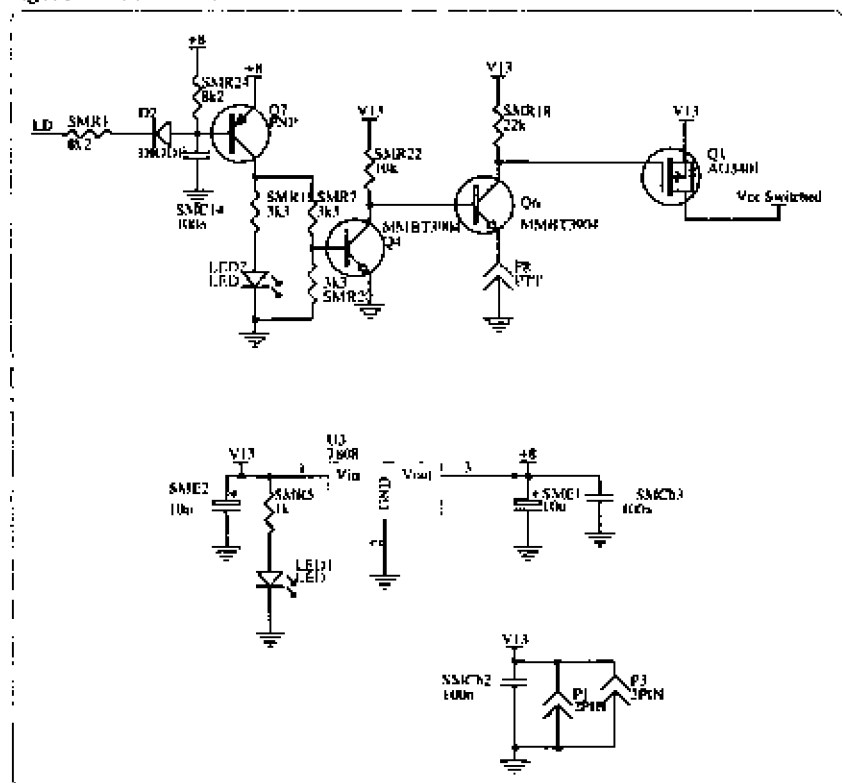
up or down as needed while keeping a low level of intermodulation products.

### PTT and Lock Detect

The PTT enables the transmitter by pulling the PTT pin to ground. A

lock detect circuit only allows the small mosfet to be activated to pass current in the event the PLL is still in a locked condition. The lock detect output from the PLL chip was used and the circuit ensures the PTT

Figure 4: Lock Detect.



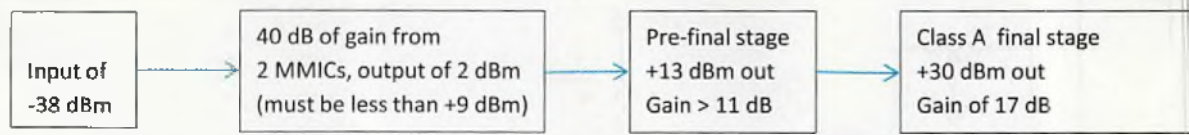


Figure 5: Outline of the RF amplifier chain.

is disabled in the event an out of lock condition occurs. I believe this could be simplified and if you have a more elegant solution I'd welcome hearing it.

I made provision for daisy chaining the power delivered to this board to the WSPR Tone Generator Board since that is what I use to generate the WSPR audio tones.

### RF Amplifier Chain

My standard approach in this area is to start with the output required and then work backwards. My goal was to transmit 250 mW in each sideband. Since each sideband is transmitting a single tone the RF output can be viewed as a conventional two tone test signal for the purpose of working out that a 1 W PEP output stage was needed.

My initial prototyping showed that the NE602 was not as linear as my interpretation of the datasheet suggested. I therefore reduced the output requirement from the buffer of the NE602 to -38 dBm. Thus a total gain required from this point to the output is 68 dB.

My copy of Solid State Design is getting well-worn but it had a nice discussion of transmitters in this power range. I have a spreadsheet I use to calculate the component values and expected performance based on the material in this book. The best I could expect from a single transistor output stage was a gain of 17 dB unless I used transformer in the collector. I find ferrite cores considerably over priced for what they are and sourcing them can be a problem. Hence I avoid them when the alternative, another amplifier stage, is so much cheaper. The required drive for this stage was therefore 13 dB, since 1 Watt equals 30 dBm from which we subtract the expected 17 dB of gain giving 13 dBm, or 20 mW.

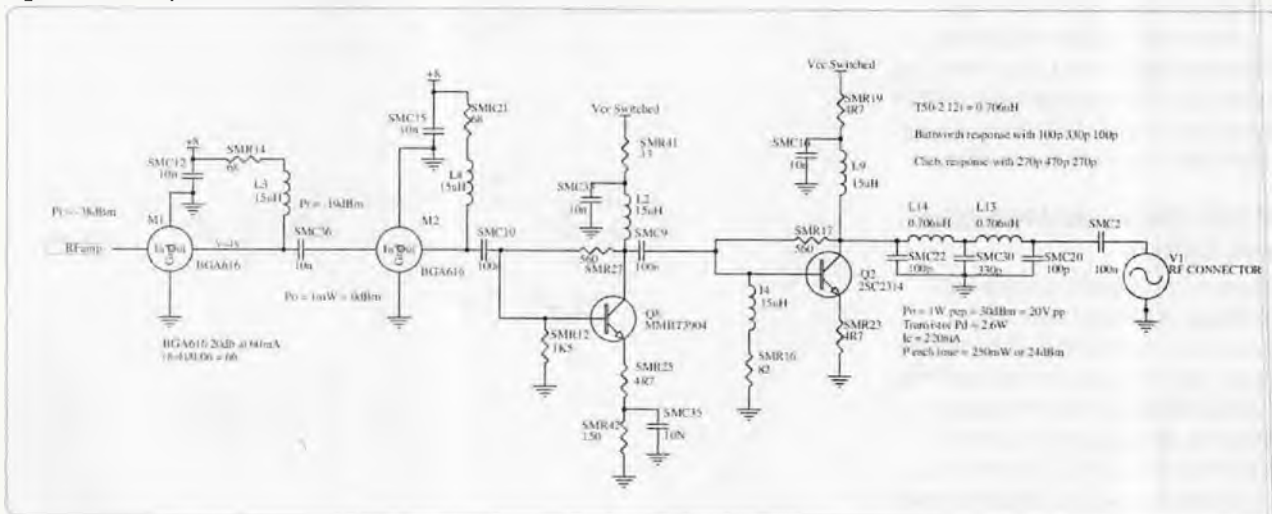
A 1 W PEP output was achievable however good linearity meant I had an expected DC power dissipation of 2.1 W. After much to and fro with Chinese vendors I obtained a quantity of 2SC2314 transistors. You might find something suitable, or even this transistor, in an old CB. I was, given my past experience with

Chinese RF transistors, amazed that this transistor worked. I doubt that it is genuine but thanks to the class A operation and feedback used it worked every bit as well as the recovered 2N4427 RF transistor and genuine 2SC2314 I tried. This final stage is biased for 220 mA of collector current so a small heatsink will be needed to keep the case temperature below 80 degrees and therefore remain in the safe operating area. I used a small piece of aluminium right angle and the usual heatsink compound and insulation material.

To get from the mixer output level of -38 dBm to 13 dBm requires a gain of 51 dB. In the past I have used broadband transistor stages with a gain of 10 dB each. This would require five stages. Even with adjustment I would need four stages if a broadband approach was pursued. Since I wanted to use this amplifier circuit for other projects I looked at how I could reduce the parts count.

My "go-to" MMIC is the BGA616. Two of these cascaded would give me around 40 dB of gain

Figure 6: RF Amplifier Chain schematic.





at 14 MHz. However, my experience with MMICs is that unless you stay 20 dB or more below the third order intercept point the linearity suffers regardless of the specified compression point. This works out to be +9 dBm for the BGA616.

The RF amplifier chain is shown in Figure 5.

Referring to Solid State Design a simple pre-final stage with an emitter resistor of 4.7 ohms would satisfy the requirements. I biased this stage for 50 mA to ensure I had some flexibility for more drive in the event the final stage was not delivering 17 dB of gain.

## Construction and Alignment

Construction is straightforward especially after building several prototypes and ordering commercial boards. I have relied on surface mount components for the following reasons:

1. A smaller board costs less and the board is the single most expensive item,
2. The MMICs and op-amp are only available as a surface mount part, and
3. Personal preference.

For those that prefer thru-hole parts please contact me and if there is sufficient interest I will look at sourcing a commercial thru-hole board.

The suggested order for assembly on the commercial board is:

1. MMICs, since these are the smallest,
2. 100 nF capacitors, a handy reference point to the parts around them,
3. remaining 1206 parts except the 1 nF capacitor in the loop filter marked as 1n\*,
4. transistors and ICs, and finally
5. Thru-hole parts.
6. Heatsinks on regulator and final transistor.

The filter inductors are 12 turns on a T50-2 toroid.

I went to some effort to get the silkscreen on the bottom layer easy to follow. In the event it is unclear I strived to put the leading digit

closest to the corresponding pad of the component.

Once all parts are soldered and visual checks complete apply power with a dummy load connected. Led1 should be lit indicating power is applied. Adjust I3, the local oscillator inductor, and confirm Led2 turns on and off. Adjust I3 until Led2 is unlit.

With a frequency counter attached to Test point 1 adjust the variable capacitor until the frequency at test point 1 is 14095.6 kHz. Led2 should still be unlit and if necessary tweak I3 until it is unlit. When the frequency at test point 1 is 14095.6 kHz and Led2 is unlit you can move to the next step. If this cannot be achieved then some fault finding is needed.

With a voltmeter attached to test point 2 adjust I3 until the voltmeter reads approximately 5V.

At this point fit the 1n capacitor marked 1n\* on the silkscreen. The reason for this cautious approach is that despite all the maths to the contrary, sometimes the loop fails to lock with the capacitor marked 1n\* fitted. I haven't got the bottom of this despite hours of mathematics. I am still struggling with this and any advice would be appreciated. With the capacitor marked 1n\* excluded there should be no issues. If the loop fails to lock and you have an oscilloscope you should see a substantial before and after difference in the voltages at test point 2. Remove this capacitor if you have trouble or simply leave it out to begin with.

Attach an oscilloscope or RF probe to Test Point 3 and adjust the trimpot VR1 for minimum reading. This is the point of greatest carrier suppression. This is not as straightforward as it sounds. I found leakage of the local oscillator signal confuses the readings and some shielding should improve matters.

With an oscilloscope preferably, or power meter if not, put a jumper across the PTT pins and apply a 1.5 kHz signal to connector P5. You should see a classic two-tone waveform on the oscilloscope. Adjust the audio level until you have 20 V

peak to peak across the dummy load. There should be no evidence of distortion such as flat topping. If there is then you will either have to reduce the audio level or find the fault. You should be able to achieve 20V pp across the dummy load, or 1 W pep.

If you get stuck then I suggest joining the google group "wsprbuilders" so I can help you out and others may learn from the solution.

## Results

I ran an earlier prototype for 24 hours with an output of 500 mW pep. The 125 mW in the upper sideband was heard in several European countries, the US, Japan and the east coast of VK and ZL in that period. Drift was not an issue despite the 15 degree ambient temperature range and the unit operating in a box with no lid.

## What's next

The present circuit, with some alternative components in the oscillator and loop filter, should work on all WSPR allocations from 160 m to 15 m. For 12 m and higher some changes are needed mostly in the form of a prescaler in the PLL.

At this time I still have a couple of boards and all the parts needed. Once these have gone there will only be short form kits available which will probably include everything except the resistors and capacitors. I can happily organise a short form kit for thru-hole construction with a commercial board if there is sufficient interest. I also still have a few of the WSPR audio tone generators and GPS units left.

I'm happy to help so please contact me for further details as needed.

## References / Links

Solid State Design for the Radio Amateur by Wes Hayward and Doug DeMaw.

<https://groups.google.com/forum/#!forum/wsprbuilders>



# They will never die!

Steve Mahony VK5AIM

The pictures of the AVO 8 Multimeter in the May 2016 issue of *Amateur Radio* magazine brought back happy memories of long ago.

When I commenced my training in about 1950 this type of multimeter (MM) was used for instruction. Later, when I went to Woomera as a "Radio Tradesman", it was again used. Transferring back to WRE, DSTO at Salisbury or whatever name it is now known by, the AVO was the MM of the time. The heritage of the UK organisation almost made it mandatory. Digital meters were expensive and only used in laboratories, not out in the rough and tumble of workshops where the Australian made analogue MMs, PATON or UNIVERSITY were used. On moving to TAFE Elizabeth, in the 1970s the AVOS were used, mainly by teachers in demonstrations. The students had to use some of the Japanese analogue MMs. These could be easily damaged, destroyed or wilfully damaged by careless, yes, students.

The marvellous over range automatic cut-out built into the AVO is I believe responsible for the long-life of the AVOS.

Yes they have been tripped by careless students, experienced technicians and even engineers in the past.

The AVO 7 I own I obtained as the result of a clean-up of the deceased estate of a local amateur. Read my story "The Silent Key" published in *AR*. The widow being very pleased about my successful disposal of all of her husband's amateur station asked me if there was a piece of equipment I might like to have. I declined, saying I have enough stuff of my own. After sorting out and removing all the radio equipment we found the AVO



AVO Multimeter.

7 MM. It was all dusty; you know how the crinkle finish of the front panel holds the dust. I must have commented on this, saying that I believed it could be 60 years old. The widow then asked if I would like

it. "Yes" I replied and explained how I had used a similar meter during my technical training. "It's yours," she said.

It had no proper test leads, the battery cover was missing and the



leather carrying strap was in a poor state.

At home at a later date I checked it out to see if it still worked. Yes, with an adjustable DC power supply the DC ranges worked from the lowest range up to 300 V. With a couple of resistors the Amps ranges were checked and worked. I did not try the 10 A Range. The AC Volts were checked with a PSU using a Variac. Yes, all OK right up to 250 V AC. With the same resistors the AC Amps were checked and worked. It looked like a good unit. With a 1.5 V D cell temporarily connected the Low Ohms range appeared to work but readings appeared questionable. With the lack of a 15V Battery, I did not try the Meg Ohms range.

The operating instructions printed on the back were unreadable, scratched and abraded.

The front panel: that dirt holding crinkle finish required a good clean up. Spray and Wipe kitchen cleaner and an old tooth brush then some clean water removed the dirt, along with some of the designations, i.e. Volts/ Amps etc., dried off with a soft cloth and a rub over with one of the car vinyl plastic treatment and it looked as good as new.

The designations were filled in with the white corrector fluid. When thoroughly, dried the excess was removed gently with a finger nail. The panel looks as good as new!

The aluminium case was in poor condition. With the works removed, it was cleaned up. The back plate instructions were masked up and the case was given a coat of grey under coat. Next day when thoroughly dry it was given a coat of Grey Hammertone paint. Pressure packs of paint are ideal for small paint jobs. Next day with the paint thoroughly dry, the works were placed back in the case. A leather craft person, a friend of my wife, made me a new carry strap based on the original. It now looks as good as the day it was bought.

Sometime later I checked it out for working and calibration with a Beckman digital MM and an older good quality analogue meter. All ranges were up to standard and the overload trip functioned. Not bad for a 60 year old meter.

You can connect it up to the 240 V AC mains, on the correct range of course; it reads 230 V. You can then see the pointer just move around a couple of volts as the mains fluctuates locally with loads.

I left it connected for an hour or so while doing something else in the radio shack and kept an eye on it: you could see the needle kick with small changes with the local load. No jumping digital numbers!

Well-made electrical equipment lasts for many years.

At a club members Buy and Sell, I was looking through a cardboard

box of miscellaneous wires and cables. Someone's rubbish can be another person's treasure, when I came across a pair of Red and Black AVO Test Leads, in excellent condition complete with the spade lugs for the AVO terminals along with two Red and Black Test Prods! I don't think they had ever been used, because of the spade lugs for the AVO did not connect to the banana type plugs/ sockets on most modern MMs. I quickly dropped 50 c into the box as asked for on a note on the box of wire. I had myself a set of genuine AVO test leads. As I also have a pair of the different style of connecting clips as supplied with an AVO I now have a complete AVO 7 Test MM.

I use the AVO when I require a meter to read/measure voltage or mA on some type of equipment that requires you to see a Peak or Dip in the readings as you make adjustments with a trim pot or trimmer capacitor. Just watch the needle, its peak or minimum dip. With such a lovely big scale it is so easy. A lot better than watching number digits jump around.

Many of the young F calls have never seen an AVO MM!

Steve MAHONY VK5AIM

PS. My wife Sue says she will put the AVO in my box when I go, as we are both OLD!

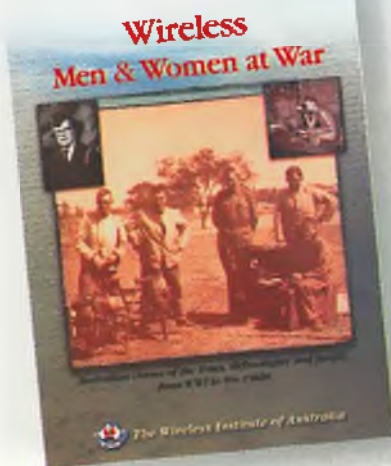


## Wireless Men & Women at War

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

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

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# Contests

Trent Sampson VK4TS  
e vk4ts@wia.org.au

## Contest priorities for June 2017

Contest	Date (UTC)	Rules	Difficulty	Software	Modes
All Asian DX Contest, CW	6 & 7 June	<a href="https://www.jarl.org/English/4_Library/A-4-3_Contests/2017AA_rule.htm">https://www.jarl.org/English/4_Library/A-4-3_Contests/2017AA_rule.htm</a>	Easy	Any Logger	CW
VK Shires QSO Party	10 & 11 June	<a href="http://www.wia.org.au/members/contests/wavks/">http://www.wia.org.au/members/contests/wavks/</a>	Easy	VKCL, any generic logger	CW SSB
Winter VHF/UHF Field Day	24 & 25 June	<a href="http://www.wia.org.au/members/contests/vhfuhf/">http://www.wia.org.au/members/contests/vhfuhf/</a>	Easy	VKCL	All modes

### Don't be frightened off by RTTY

RTTY Contesting is gaining popularity in Australia as more and more are seeing how simple the interfacing is - But is an audio AFSK Interface the best option or are there even better alternatives?

Personally, for contests I have only ever used a FSK interface; the advantages are considerable - including, in most cases, better filter options available and cleaner transmission and the ability to run high power out puts without over driving the radio.

The most common RTTY Decoding software is MMANA and this is now over 10 years old - backing up MMTTY is Two Tone and Gritty.

One very popular format is to run MMTTY with two different filter settings and either Two Tone or Gritty as a second format. Writlog and N1MM can handle this type of operating. Goes without saying that Monitor space is important around the shack!

You will need at least two monitors to handle that form of operating but the difference is an

approximately 15-25% on the number of QSOs possible in a contest owing to the decoding efficiency.

### Contester(s) of the Month Northern Corridor Radio Group Perth VK6NC VK6ANC VK6NE

Northern Corridor Radio Group has been a stalwart in VK6 Contests for decades - Some of Australia's top contesters have been members of the group and operated the Station.

Certainly worth a visit and consider the benefits of membership of NCRG if you are

Photo 1: RR1 Main operating position.





Perth based - Many thanks to Zeljko VK6VY for the photos and quizzing the membership for the answers to the survey.

**What is your favourite Contest?**

*We are very enthusiastic about Oceania DX Contest, one of the oldest running DX contest in the world. We also like CQWW.*

**What is your favourite Rig?**

*Last year the Club purchased the Kenwood TS-990 and we have been impressed with its performance.*

**What modes do you contest in?**

*Mainly SSB. They also hold many VK Records in CW mode with Guests ops VK2IA and N6AA amongst others.*

**What is your favourite contest band and why?**

*When 10 m is open, it is an excellent band with a great potential.*

**What is your preferred Contesting Software?**

*Win-Test works well for us.*

**What is your preferred Mic and Key?**

*We use Heil Pro-Set Elite as this set makes it is easy to customise Tx audio and is very comfortable.*

**What is your "not so secret" weapon?**

*Our contesters enjoy excellent performance enhancing food and drinks during contesting time. Our 'Zone 29 Burgers' are very famous.*

**What is your best tip to a newbie contesteer?**

*Train you ears to do filtering for you; they are the most effective signal processing tool available. Learn how to create the sense of*



Photo 2: View from SE.



Photo 3: Control Room-work in progress.

*urgency when you run a pile-up. Be patient and persistent when contacts slow down.*

**What are your aspirations in contesting?**

*To promote VK6NC to the world and to win.*

**What would you like to improve in your skills and/or station?**

*In terms of our skills, there is some space for improvements when it comes to the best ways of utilising multipliers. As to the station, we are on improving our antennas for 80 and 160 m.*

**Contest Terms**

**M2:** Multiple operators Two Transmitters.

**MM:** Multiple operators Multiple Transmitters.

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

Trent VK4TS is the admin of VK Contest Club (VKCC) web ([www.vkcc.com](http://www.vkcc.com)) and Facebook pages and has been an active contesteer since the 1970s.

Emails can be sent to [vk4ts@wia.org.au](mailto:vk4ts@wia.org.au)

# VK Shires QSO Party

VK Shires Contest Committee - Contest Manager

## Contest Introduction

ALL HF Bands available to Standard licensees.

Modes are SSB and CW and stations can be worked once on each mode.

## Aim of the Contest

The objectives of this contest are for amateurs around the world to contact as many VK shires as possible in the contest period.

VK amateurs are to work the world including VK, whilst the rest of the world can only work VK. ROVER stations as well as portable entries make up part of the character of the VK Shires as well as the timing to take place over an East Coast Long Weekend (Queen's Birthday).

## Upcoming Contest Date & Time

The VK SHIRES is held the weekend prior to the second Monday of June each year.

## Contest Rules

### VK SHIRES QSO PARTY

**Starts:** 0600 UTC Saturday, June 10, 2017

**Ends:** 0600 UTC Sunday, June 11, 2017

- I. Contest Period: 24 hours for all stations, all categories.
- II. Objectives: The objectives of this contest are for amateurs around the world to contact as many VK shires as possible in the contest period ie. VK amateurs are to work the world including VK, whilst the rest of the world can only work VK.
- III. A) Bands:
  - 80 metres 3.500 – 3.700 MHz,
  - 40 metres 7.000 – 7.250 MHz,
  - 20 metres 14.000 – 14.300 MHz,
  - 15 metres 21.000 – 21.350 MHz,
  - 10 metres 28.000 – 28.600 MHz.



Photo 1: Catherine VK4GH operating.

Please note there is no 75 m DX window permitted for VK stations which means the rest of the world can operate above 3.700 MHz i.e. split operation.

- III. B) Modes: SSB and CW only.
- IV. Class of Competition:  
For all categories:  
Transmitters and receivers for a fixed station must be located



Photo 2: The portable Spiderbeam setup by Catherine VK4GH.





Photo 3: Ken VK2BBQ in the caravan.

within a 500 metre diameter circle or within the property limits of the station licensee's address, whichever is greater. If you are a member of a multi-op team you cannot partake in the contest as an individual in any way. Please note that you are permitted to have up to two transmitted signals going simultaneously.

All contest operation must be within operator's licence restrictions and conditions, e.g. power output, bands used, etc. Single OP stations are only permitted one transmitted signal at a time.

No operator is permitted to use more than one callsign for the entirety of the contest.

A Rover station is a VK station that goes either portable or mobile for the entirety of the contest and activates more than one shire.

To be considered as a roving station you must activate a minimum of 2 shires.

Please note that all portable equipment cannot be set up prior to the Friday preceding the contest and no earlier than at 0001 utc.

The Rover who moves into a new SHIRE may count the same

**MULTIPLIER** more than once per band as long as the Rover is in a new SHIRE location. Such change in location must be clearly indicated in the log: i.e. A Rover station becomes a new QSO to the stations working them when that STATION changes SHIRE locator.

**Please note** that in all categories below you may change band and mode as often as you like. You may also work the same station

multiple consecutive bands/modes one behind the other: e.g. work VK4XX on 20 m SSB then qsy to 15 m CW then qsy to 80 m CW then qsy to 40 m SSB etc.

1. VK Single – OP All Band Rover: Single operator(s) must do all contest related things by themselves.
2. VK Multi – Two All Band Rover is 2 or more operators with maximum of two transmitted signals at any one time. This category **MUST USE Software CONTEST LOGGERS**. All operators must be fully listed when the log is submitted.
3. VK Single Op All Band - same conditions as number 1 above
4. VK Multi – Two All Band - same conditions as number 2 above
5. VK Single Op Foundation: Is a VK foundation licensee who must do all contest related things by themselves.
6. DX Single Op—All Band - is a single op who must do all contest related things by themselves.
- V. Exchange: All VK operators to exchange callsign, RST followed by the VK shire abbreviation as per the official list provided. E.g. K4XX 59BU4 or 599BU4



Photo 4: Radio gear set up for Ken VK2BBQ.

Stations outside VK to exchange callsign, RST followed by CQ ZONE eg. ZL1AMO 5932 or 59932

- VI. Multipliers: For stations outside VK: The multiplier is the number of different VK shires worked per band. A "VK Shire" is counted once per band per mode. ie. If you work it on SSB it can be counted again on CW. To enter the contest you must have worked at least one VK Shire.
- VII. For VK Stations: The multiplier is each VK shire worked per band and mode as above as well as each CQ Zone worked per band and mode.
- VIII. NB. VARIATION FOR ROVER STATIONS: ROVERS CAN REWORK FROM MULTIPLE LOCATIONS

### Contest Scoring

One (1) point per QSO: Phone and CW can be worked on each band with the same station.

Multiply total QSO points times total number of multipliers worked (i.e. If you worked 33 on 80 m, 43 on 40 m, 16 on 20 m, 21 on 15 m

and 5 on 10 m that would be a total of 118)

**Example 1:** VK4XX works stations as follows:  
600 qsos x 1 point = 600 points  
118 vk shires worked + 35 cq zones worked = 153  
600 x 153 = 91,800  
VK4XX final score is 91,800

**Example 2:** ZL1AMO works stations as follows:  
700 QSOs with VK amateurs x 1 point = 700  
118 VK shires work  
700 x 118 = 82,600  
ZL1AMO final score is 82,600

### Submitting Your Log

#### Log Submissions

Log entries must be submitted by July 1st 2017 to be eligible for awards. Submit your electronic log in the Cabrillo format created by all major logging programs.

Send via e-mail attachment to:  
[vkshires-logs@outlook.com](mailto:vkshires-logs@outlook.com)

You will receive an auto reply, which will save confusion as to whether logs have been sent and received.

### Subject line

Callsign [used in the contest] only. VK entrants are reminded to be sure their log indicates their VK shire location. If you go portable or mobile the log must clearly define where you changed location.

If you have a paper log you wish to submit simply go to this website:

[http://www.b4h.net/cabforms/vkshires\\_cab.php](http://www.b4h.net/cabforms/vkshires_cab.php)

Computer-generated logs must be e-submitted. Callsigns of electronic logs received are posted and updated regularly on the website.

### Contest Results

Results will be published the first week of October every year.

### Logging Software

VKCL <http://web.aanet.com.au/mnds/>

W3KM [http://www.qsl.net/w3km/gen\\_log.htm](http://www.qsl.net/w3km/gen_log.htm)

SD Logger <http://www.ei5di.com/>

Ensure that you have the latest version of the logging software.

## VK5news Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

### Monthly Meeting

March, for AHARS, is a relatively quiet month. Our monthly meeting is a member's buy and sell, so it is mostly a social evening. Lots of goodies went from one shack to another including some from deceased estates. On that topic; is there anyone with a bit of space in their shed and some time to take over from Barry VK5BW - the task of collecting and arranging the sale

of items from deceased estates? Barry would like to pass on this task to someone else.

### The Shack

The shack in Blackwood is still being used regularly for technical talks and as a social centre. Please watch for emails with information about the topics. The improvement in the security as well as the employment of a security patrol seems to have

alleviated the problems. Thanks to those who helped with the work.

### Mid-Year Dinner

This will be held at the Uraidla Hotel in the hills. John VK5EMI is organising it and would like you to message him by email with the number attending. The date is 16 July for lunch at 12.00 noon.

73

Christine VK5CTY

### Plan ahead

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



# John Moyle Memorial Field Day 2017

Denis Johnstone VK4AE

## 24 Hour Portable Operation – Multiple Operator

Call Sign	Operators	Mode	Band	Contacts	Score	Locator	Place / Award	Cert.
VK3YVG	Multi	All	All	186	1,278	QF22RL	1 / *	1
VK3ER	Multi	Phone	All	752	6,860	QF22DM	1 / *	2
VK2WG	Multi	Phone	All	408	2,886	QF34RR	2 / *	3
VK3CMZ	Multi	Phone	All	323	1,270	QF22DX	3 / *	4
VK5ARC	Multi	Phone	All	157	919	PF64GQ	4 / *	5
VK6NC	Multi	Phone	All	237	898	OF88BH	5 / *	6
VK6AHR	Multi	Phone	All	193	640	OF87DU	6 / *	7
VK6ARN	Multi	Phone	All	174	551	OF88AH	7 / *	8
VK5LZ	Multi	Phone	All	134	517	PF95HS	8 / *	9
VK4WT	Multi	Phone	All	66	154	QG39EX	9 / *	10
VK4CHB	Multi	Phone	All	68	146	QG64HR	10 / *	11
VK3KQ	Multi	Phone	VHF	259	3,424	QF12VG	1 / *	12
VK4QD	Multi	Phone	HF	684	1,368	QG62LV	1 / *	13
VK4IZ	Multi	Phone	HF	577	1,150	QG62LS	2 / *	14
VK4WD	Multi	Phone	HF	444	888	QG52UB	3 / *	15
VK5KDK	Multi	Phone	HF	217	434	QF44WO	4 / *	16
VK2RT	Multi	Phone	HF	195	390	QF44WO	5 / *	17
VK8DA	Multi	Phone	HF	133	262	PH57IM	6 / *	18
VK3BEZ	Multi	Phone	HF	93	184	QF31IS	7 / *	19
VK6KO	Multi	Phone	HF	64	128	OF86AB	8 / *	20
VK2SCJ	Multi	Phone	HF	36	72	QF55JS	9 / *	21
VK5AR	Multi	Phone	HF	33	66	PF95KC	10 / *	22

## Six Hour Portable Operation – Multiple Operator

Call Sign	Operators	Mode	Band	Contacts	Score	Locator	Place / Award	Cert.
VK2BV	Multi	All	All	165	382	QF48MM	1 / *	23
VK4GYM	Multi	All	HF	78	170	QG63KT	1 / *	24
VK2CLR	Multi	Phone	All	133	403	QG60NK	1 / *	25
VK2LE	Multi	Phone	All	142	318	QF55GX	2 / *	26
VK3BSP	Multi	Phone	All	41	136	QF21MQ	3 / *	27
VK2EWC	Multi	Phone	All	60	130	QF34IA	4 / *	28
VK6VP	Multi	Phone	All	15	64	QF77VW	5 / *	29
VK5SR	Multi	Phone	VHF	22	519	QF62GG	1 / *	30
VK2SF	Multi	Phone	HF	99	198	QF55FQ	1 / *	31
VK4BRC	Multi	Phone	HF	85	170	QG51XH	2 / *	32

/\* Certificate Awarded

\*\* President's Cup

/\* Participation Certificate

## 24 Hour Portable Operation – Single Operator

Call Sign	Operators	Mode	Band	Contacts	Score	Locator	Place / Award	Cert.
VK5GR	Single	All	HF	271	542	PF83UF	1 / *	33
VK5WTF	Single	Digital	All	10	20	PF96NH	1 / *	34
VK2FAAD	Single	Phone	All	155	1,635	QF69FU	1 / *	35
VK3ND	Single	Phone	All	40	654	QF21QL	2 / *	36
VK2QJ	Single	Phone	VHF	177	2,669	QF69FU	1 / *	37
VK5TE	Single	Phone	VHF	105	906	PF94GQ	2 / *	38
VK6FBJW	Single	Phone	VHF	38	121	QF87AV	3 / *	39
VK6MM	Single	Phone	VHF	6	42	QF77VK	4 / *	40
VK2RR	Single	Phone	HF	726	1,436	QF59AL	1 / *	41
VK2BBQ	Single	Phone	HF	248	496	QF45QT	2 / *	42
VK3VTK	Single	Phone	HF	232	464	QF21IU	3 / *	43
VK2HBG	Single	Phone	HF	229	458	QF55FG	4 / *	44
VK2SS	Single	Phone	HF	150	300	QF46VO	5 / *	45
VK7JGD	Single	Phone	HF	95	190	QE36PW	6 / *	46
VK6XL	Single	Phone	HF	74	148	QF77XB	7 / *	47
VK5FFAU	Single	Phone	HF	57	114	PF96NH	8 / *	48
G3WJGK2	Single	Phone	HF	20	40	QF59SI	9 / *	49

/\* Certificate Awarded

/\* Participation Certificate

## Comments on John Moyle Memorial National Field Day 2017

This year's entries came from every Australian call area (except VK0) with several from New Zealand. The total number of eligible logs submitted was 160. This was a slight increase (3.8%) from the 154 logs received last year.

Well done to all who took part and took the effort to submit a log. This year there was only one YL or XYL that entered a log. More were listed as taking part with a club station.

I have included in the results, all of the logs that I received and if any are missing, they are completely lost. I can only offer my apologies to anyone so affected. If your log is missing, it did not get it to me, for it looks like the WIA Mail forwarding system was for a time blocked or delayed all e-mails sent via that path. Some logs were resubmitted and those are all included.

Based upon submitted logs, there were some 15,902 contacts, (a 10.8% decrease from 2016) accumulating some 54,494 points claimed, (a 23.8% decrease from 2016). This was successful contesting for an Australian

field day contest resulting from 160 logs being received. More than 1,189 Australian individual call signs were logged during the contest.

## Six Hour Portable Operation – Single Operator

Call Sign	Operators	Mode	Band	Contacts	Score	Locator	Award	Cert.
ZL3VZ	Single	All	HF	93	194	RE68XL	1*	50
VK3YE	Single	All	HF	68	144	QF21NW	2*	51
VK3XCJ	Single	All	HF	44	94	QF05TT	3*	52
VK5CZ	Single	All	HF	30	78	PF96HA	4*	53
VK1AT	Single	Phone	All	31	352	OF44FB	1*	54
VK6PCB	Single	Phone	All	28	106	OG9TUP	2*	55
VK2AWJ	Single	Phone	All	18	38	QF14TN	3*	56
VK7PC	Single	Phone	All	6	12	QE37RX	4*	57
VK5ZT	Single	Phone	VHF	44	466	RE58XL	1*	58
VK3SG	Single	Phone	VHF	43	332	QF22OL	2*	59
VK5KK	Single	Phone	VHF	35	307	PF94AW	3*	60
VK5FANA	Single	Phone	VHF	25	295	PF65VR	4*	61
VK5FBAA	Single	Phone	VHF	29	190	PF96JC	5*	62
VK3WF	Single	Phone	VHF	10	130	QF21IQ	6*	63
VK6KCH	Single	Phone	VHF	4	88	OF86AB	7*	64
VK4JAZ	Single	Phone	VHF	5	23	QG62NB	8*	65
VK5PAS	Single	Phone	HF	241	482	PF94KW	1*	66
VK5AFZ	Single	Phone	HF	95	190	PF95JL	2*	67
VK2FRKO	Single	Phone	HF	85	170	QF67AG	3*	68
VK5MTM	Single	Phone	HF	77	154	PF95IC	4*	69
VK5MH	Single	Phone	HF	68	136	PF94IP	5*	70
VK7LTD	Single	Phone	HF	54	108	QE38HU	6*	71
VK2PML	Single	Phone	HF	36	72	QF58LF	7*	72
VK5IX	Single	Phone	HF	31	82	QF05ER	8*	73
VK7FREU	Single	Phone	HF	25	50	QE37RX	9*	74
VK5YX	Single	Phone	HF	15	30	PF94GW	10*	75
VK7TW	Single	Phone	HF	14	28	QE37RX	11*	76
VK9VKL	Single	Phone	HF	2	4	OH29UN	12*	77
ZL2GVA	Single	Phone	HF	2	4	RE68XM	12*	78

\* Certificate Awarded

\* Participation Certificate

Unfortunately, the number of Club Stations who took part in the contest and then not submitting a log as an entry is still a disappointment. Barely 45% of club stations that have participated in recent contests, though many were logged as active in the contest, have bothered to submit a log. Some multiple operator stations did get very big scores and this simply reflects the great and varied planning and implementation efforts required to assemble and operate a multi operator station.

Activity was carried out on all bands permitted under the rules. There was a decrease in activity on HF, and there was less activity on the all HF frequencies as would be expected by the decreasing sunspot cycle. This sunspot cycle is decreasing rapidly to a minimum at the moment and conditions on some bands did appear to change in line with the decrease. The other lower bands seemed to be only marginally affected by the QRM.

## Home Station – 24 Hour (Part 1)

Call Sign	Operators	Mode	Band	Contacts	Score	Locator	Award	Cert.
VK2ARL	Home	All	All	27	128	QG61MH	1*	79
VK2BFC	Home	All	All	23	37	QF33LW	2	
VK2AGC	Home	All	VHF	98	590	QG61MD	1*	80
VK2IUW	Home	All	HF	305	499	QF56IF	1*	81
VK4SC	Home	All	HF	127	226	QG62OF	2	
VK2ACD	Home	Phone	All	286	604	QG60QU	1*	82
VK3AV	Home	Phone	All	181	531	QF22PL	2*	83
VK5DT	Home	Phone	All	146	300	PF95IK	3	
VK2WJ	Home	Phone	All	67	259	QG61TD	4	
VK5BAR	Home	Phone	All	88	195	PF94HX	5	
VK3VLY	Home	Phone	All	166	185	QF12VL	6	
VK6ZIC	Home	Phone	All	64	148	OF78VC	7	
VK6ZMS	Home	Phone	All	48	119	OF78WC	8	
VK3PZ	Home	Phone	All	37	117	QF22ND	9	
VK3FRAB	Home	Phone	All	58	110	QF22LF	10/\$	84
VK6FMTG	Home	Phone	All	31	63	OF78VF	11/\$	85
VK5NAQ	Home	Phone	All	19	62	PF95EU	12	
VK2FAHO	Home	Phone	All	26	60	QG60LG	13/\$	86
VK2ASE	Home	Phone	All	8	13	QF56LH	14	
VK3MY	Home	Phone	VHF	213	885	QF22PD	1*	87
VK3DIP	Home	Phone	VHF	73	657	QF11SI	2	
VK2BBR	Home	Phone	VHF	100	529	QG61QE	3	
VK2WDD	Home	Phone	VHF	93	453	QG61QE	4	
VK3CG	Home	Phone	VHF	97	438	QF22OF	5	
VK6ZKO	Home	Phone	VHF	93	271	OF88AA	6	
VK5LA	Home	Phone	VHF	14	194	QF05GQ	7	
VK3KRD	Home	Phone	VHF	35	118	QF22KM	8	
VK3FIX	Home	Phone	VHF	24	113	QF21PW	9	
VK3FCEK	Home	Phone	VHF	18	67	QF22NC	10/\$	88

\* Certificate Awarded

\* Participation Certificate

In the higher UHF and Microwave bands there was a big decrease in activity; since it obviously follows a weather cycle, rather than the solar cycle? The weather in VK/3/7 was reasonable but with windy conditions, while in VK2/4 they had very heavy rain, so there was decreased portable activity. Activity overall was somewhat decreased as many fewer portable stations were out in the field.

The scoring in the VHF range was about the same compared to last year. The scoring as a ratio of contacts per station was the same as for 2016. The absence of many club stations, because of the miserable weather in some parts of VK certainly reduced activity, with most stations making such comments.

The other major change noticed this year was the decrease in Portable Station operation as seen by the submitted logs.

The '10 Contact Rule' was devised to facilitate the checking and verifying of submitted logs. It was



## Home Station – 24 Hour (Part 2)

Call Sign	Operators	Mode	Band	Contacts	Score	Locstar	Award	Cert.
VK3SIM	Home	Phone	HF	375	544	QF22NI	1/*	89
VK2QN	Home	Phone	HF	260	407	QF56HF	2/*	90
VK1MT	Home	Phone	HF	205	298	QF44NM	3/*	91
VK2FDJB	Home	Phone	HF	109	181	QG40WM	4/\$	92
VK2ZCM	Home	Phone	HF	102	168	QF68JN	5	
VK3TNL	Home	Phone	HF	79	134	QF31AU	6	
VK2ZMT	Home	Phone	HF	80	130	QF57UA	7	
VK2MTM	Home	Phone	HF	65	105	QF46BC	8/\$	93
VK1MTM	Home	Phone	HF	61	100	QF44QQ	9	
VK4FNQT	Home	Phone	HF	58	97	QH30IR	10/\$	94
VK4NDX	Home	Phone	HF	67	97	QG62NM	10	
VK3ASU	Home	Phone	HF	51	87	QF22KD	12	
VK2KS	Home	Phone	HF	47	87	QF55JC	12	
VK5JGM	Home	Phone	HF	43	72	PF95HE	14	
VK6VAX	Home	Phone	HF	43	71	QF77VQ	15	
VK1HW	Home	Phone	HF	41	87	QF44MM	16	
VK5DC	Home	Phone	HF	37	55	PF95KW	17	
VK7DW	Home	Phone	HF	33	55	QE38ND	17	
VK4PD	Home	Phone	HF	23	44	QH30IP	19	
VK40E	Home	Phone	HF	23	42	QG62ML	20	
VK4HG	Home	Phone	HF	23	37	QG62LO	21	
VK5DP	Home	Phone	HF	20	33	PF95IE	22	
VK6WK	Home	Phone	HF	17	31	QF88CD	23	
VK3ZIB	Home	Phone	HF	16	30	QF21HT	24	
VK2JCC	Home	Phone	HF	20	25	QF56MG	25	
VK4FPDG	Home	Phone	HF	14	24	QG64EC	26/\$	95

/\* Certificate Awarded

/\$ Participation Certificate

## Home Station – 6 Hour

Call Sign	Operators	Mode	Band	Contacts	Score	Locstar	Award	Cert.
VK3MEG	Home	All	HF	12	27	QF22GG	1/*	96
VK4ADC	Home	Phone	All	144	352	QG62LG	1/*	97
VK2TTL	Home	Phone	All	85	148	QG60NR	2	
VK3KTO	Home	Phone	All	43	86	QF21WV	3	
VK4IAA	Home	Phone	All	24	31	QG62ML	4	
VK3FMPW	Home	Phone	All	6	12	QF22PE	5/\$	98
VK3CWF	Home	Phone	VHF	23	104	QF22KE	1/*	99
VK3AXH	Home	Phone	VHF	18	54	QF12WI	2	
VK2PR	Home	Phone	HF	237	336	QF55JS	1/*	100
VK2ND	Home	Phone	HF	226	323	QF55MB	2/*	101
VK2IE	Home	Phone	HF	145	197	QF55MW	3	
VK4PDX	Home	Phone	HF	51	85	QG62NH	4	
VK7VH	Home	Phone	HF	51	69	QE37PD	5	
VK2NP	Home	Phone	HF	30	50	QF56MA	6	
VK2VOL	Home	Phone	HF	29	46	QF56ND	7	
VK4JRO	Home	Phone	HF	25	43	QG66DC	8	
VK2SVN	Home	Phone	HF	23	35	QF56NH	9	
VK2KOP	Home	Phone	HF	25	35	QF55KW	9	
VK5LOL	Home	Phone	HF	15	21	PF94GW	11	
VK6MAB	Home	Phone	HF	10	20	QF78XB	12	
VK2XIC	Home	Phone	HF	11	14	QF55JM	13	
VK5FAJH	Home	Phone	HF	7	11	PF86XT	14/\$	102
VK4PLY	Home	Phone	HF	5	9	QG62PK	15	
VK2ZZ	Home	Phone	HF	4	8	QF56PN	16	
VK4PB	Home	Phone	HF	3	6	QG62PK	17	

/\* Certificate Awarded

/\$ Participation Certificate

not devised to irritate and anger people who chose, for whatever reason, not to submit a log, but it was designed to encourage those who in the past did not see the need to submit their log – ‘as they were not going to win anything’. Submitting their log is really being able to help others as well as themselves.

The participation across the various call areas was patchy. There was a decrease in Portable stations in most areas with only VK7 showing an increase. Home Station logs were increased from last year in most call areas with the exception of VK3, VK6, & VK7.

All of the portable stations that went to the effort to send in a log will get a certificate. The WIA believes that those who make the effort to set up and operate a portable station should be acknowledged. In line with previous years, the Foundation License logs who did not achieve a placing were instead awarded a Participation Certificate for encouragement.

There were seventeen Foundation Licensed operators who submitted a log (five from VK2, three from VK3, two from VK4, four from VK5 two from VK6 and one from VK7.) There were many more foundation calls stations were operating and who were logged during the contest, but they chose not to submit a log. All logs

submitted by foundation operators were awarded a participation certificate. Logs from club stations did also show that a few ‘F’ Calls also took part as part of the club station effort, well done.

This year, the rules again stated that EXCEL is the preferred submission format. A sample linked EXCEL logging report was prepared and was available on the WIA Contest website. (Contact me at [vk4ae@wia.org.au](mailto:vk4ae@wia.org.au) if you would like a copy of my linked spreadsheet in EXCEL for next year.) Other suitable file submission formats are WORD, or LogToSubmit.txt output file from VKCL (VK Contest Log).

PDF format is not acceptable, nor are JPG and TIFF or any other image type, as though a picture might be worth a 1,000 words to you or I, an image file of your log contains no more information readable by a computer than a picture of a flower, thus the file is unreadable and unusable for the contest. Hence the contest manager has to manually enter your file into the database. This is particularly unpalatable when an image is sent of the file that can be used and the operator declines after repeated requests to send that file without any sensible reason. Sure, a copy of the signed front page of the log is perfectly acceptable but the rest of the log has to be electronically

Band	S/UHF		VHF		HF	
	Points	Contacts	Points	Contacts	Points	Contacts
47GHz	86 (0)	8 (0)				
24 GHz	238 (2,179)	28 (97)				
10 GHz	577 (2,644)	66 (148)				
5.7 GHz	380 (2,155)	45 (101)				
3.4 GHz	427 (2,528)	53 (140)				
2.4 GHz	677 (2,438)	107 (132)				
23 cm	1,885 (4,737)	221 (423)				
70 cm	7,671 (8,120)	894 (770)				
2 m			14,560 (13,453)	1,650 (1,379)		
6 m			5,572 (6,796)	681 (692)		
10 m					30 (49)	17 (28)
15 m					90 (717)	44 (359)
20 m					2,538 (3,373)	1,287 (1,597)
40 m					16,044 (18,135)	8,807 (9,735)
80 m					3,639 (4,106)	1,953 (2,184)
160 m					80 (96)	41 (58)
<b>Total</b>	<b>11,941 (24,801)</b>	<b>1,422 (1,811)</b>	<b>20,132 (20,249)</b>	<b>2,331 (2,071)</b>	<b>22,421 (26,461)</b>	<b>12,149 (13,954)</b>

Table should be read – 2017 results in bold (with (2016 results) in brackets)

readable.

The majority of other logs submitted in an electronic form this year, were usually fully readable, but a few stations had to resubmit their log in an acceptable format. I thank them for their speedy cooperation.

There were still only 95% of logs submitted electronically this year, similar to last year. This has been due largely to the excellent work by Mike Subocz (VK3AVV) and his worthy program VKCL (VK Contest Log). Those that submitted a log in the VKCL export format were as usual very easy to work with. Those that simply forwarded the text output file of VKCL were also rather simpler to work with than any form of posted paper log or a log completed by hand.

Paper logs may continue to be used. A small log from an individual operator is, and will remain, completely acceptable. Large paper logs require a very considerable manual work on the part the contest manager to input the data into the contest database and hence are not permitted. It is so much better to forward the computer files used to print the paper log, as part of

an e-mail, for the data can then be most easily extracted and used for checking purposes.

**A note for all HF Stations; - All HF contacts are valid HF scoring contacts, whether they are from VK ZL or P2 stations or stations from overseas.**

Overseas stations cannot submit a log to the contest, but can exchange numbers with stations participating in the Field Day Contest. They are to be scored as a Portable station contact.

### Comments Regarding this Year's Contest

#### 1. The comparative difference in score and scoring between HF and VHF/UHF contacts

In fact, within the John Moyle Contest, the rules allow for some 60 possible alternative categories as shown below. Each category is actually completely independent from every other category and so there are in fact 60 parallel contests. In this way, it is completely different from any other contest presently in Australia. This year only 28 of the different categories were contested.

For this reason it is not possible

to have an overall winner in this contest, as scores from any category, especially between different bands and different modes are not directly comparable. Only scores within the same category are correctly comparable. To reduce the number of certificates awarded to Home Stations – the contest is a Field Day after all – only 1 certificate for every 10 logs received in each category will be awarded again this year.

The award of the Presidents Cup is a further parallel contest. It is awarded to the highest score from a Club Station, affiliated with the WIA, in any category. This year it was awarded to VK3ER.

#### 2. The number of logs submitted to the contest is down compared with previous years

The number of logs entered in this year's contest is significantly decreased compared to the last few years of the contest. The number individual stations taking part in the contest and the number of their contacts seems about the same as for last few years, it is just that the number of logs submitted in 2017 was well down compared to 2015



Call Area	Portable			Home			Total	
	24 hr	6 hr	Tot	24 hr	6 hr	Tot	Tot	Tot
VK1	0	1	3	3	0	3	4	6
VK2	10	8	21	17	11	21	46	42
VK3	7	5	15	14	5	17	31	32
VK4	5	3	13	7	6	11	21	24
VK5	8	12	15	7	2	6	29	21
VK6	7	4	10	6	1	10	18	20
VK7	1	4	1	1	1	4	7	5
VK8	1	0	2	0	0	0	1	2
VK9	0	1	0	0	0	0	1	0
P2	0	0	0	0	0	0	0	0
ZL	0	2	2	0	0	0	2	2
Tot	39	40	82	55	26	72	160	154
	2017	2017	2016	2017	2017	2016	2017	2016

### Comparison between 2017 and Earlier Years

Year	Logs	Contacts	Points
2017	159	15,902	54,494
2016	154	17,836	71,511
2015	184	21,405	73,796
2014	179	23,799	74,172
2013	111	18,047	61,213
2012	140	22,173	88,270
2011	129	20,857	71,736
2010	122	23,573	80,087
2009	124	20,773	71,041
2008	104	17,258	98,940
2007	76	12,535	64,028
2006	78	10,865	61,387
2005	67	8,423	44,080
2004	66	8,602	49,855

### Table of Existing categories

Operators	Time	Modes				Bands		
		Phone	CW	Digital	All	HF	VHF	All
Multi	24	Phone	CW	Digital	All	HF	VHF	All
Multi	6	Phone	CW	Digital	All	HF	VHF	All
Single	24	Phone	CW	Digital	All	HF	VHF	All
Single	6	Phone	CW	Digital	All	HF	VHF	All
Home	24	Phone	CW	Digital	All	HF	VHF	All
Home	6	Phone	CW	Digital	All	HF	VHF	All

and this reversed the trend seen over the last 10 years where the number of stations has continued to steadily rise. This drop was reversed by the introduction of the 10 Contact rule but has not continued and the rule will be used again for next year. The additional logs increased the percentage of verified contacts during the contest, making the contest manager's task of checking the logs just a little bit easier.

In 2017, a total of 160 logs were submitted from 79 portable stations and 81 home stations.

In 2016, a total of 154 logs were submitted from 82 portable stations and 72 home stations.

In 2015, a total of 184 logs were submitted from 94 portable stations and 90 home stations.

In 2014, a total of 179 logs were submitted from 88 portable stations and 91 home stations.

In 2013, a total of 111 logs were submitted from 67 portable stations and 44 home stations.

In 2012, a total of 140 logs were submitted from 77 portable stations and 63 home stations.

In 2011, a total of 129 logs were submitted from 83 portable stations and 46 home stations.

In 2010, a total of 122 logs were submitted from 73 portable stations and 49 home stations.

In 2009, a total of 124 logs were submitted from 63 portable stations and 61 home stations.

In 2008, a total of 104 logs were submitted from 59 portable stations and 45 home stations.

In 2007, a total of 76 logs were submitted from 48 portable stations and 18 home stations.

### 3. The issue of scoring for CW contacts.

The number of All Mode contacts

was significantly higher than in the recent past. A good sign!

While CW is no longer a precondition for obtaining an Amateur licence, it is a skill that is still widely distributed among existing operators and a skill that should be nurtured among the newer licence holders as communication is still possible under very trying conditions.

The rules were adjusted in the past to allow doubling the score for a contact on CW. For HF this was simple. However, for VHF contacts where there is a significant score already for the distance involved, the rules were amended for scoring VHF contacts on CW.

However, the use of computer generated/decoded CW is prevalent and it is felt that hand generated code that is decoded by ear only should qualify as true CW. This has caused some concern among the contest aficionados, but as this is a field day contest and so the emphasis on hand sent and ear decoded CW is seen to be preferred and computer sent and decoded CW is not endorsed. This is hard to police however, and it requires the cooperation of the operator to indicate in their log if the CW is hand keyed or not.

Any computer method is simply just another digital mode and so should not score the same as hand CW, but only the same as any of the other many digital modes.

#### **4. The number of people who submitted logs claiming 'All Modes' and only logging contacts using SSB or FM.**

The Modes allowed in the rules are PHONE (SSB or FM), Morse (CW) (Manual) and DIGITAL (Computer) Mode.

The PHONE (Voice) only Modes are SSB, DSB, FM, PM or AM. That is the modulation is an audio signal derived in the first instance from a microphone.

The alternative is hand CW Mode, which is one where the operator simply turns the carrier on and off according to the Morse code. Digital CW by a computer is still not acceptable as CW and is only another digital mode.

DIGITAL mode is one which uses a computer to control the transmitter and to decode the information to allow the operator to complete the contact. The total number of digital contacts this year was only 31.

ALL MODE, is any combination of the above modes.

#### **5. Club Stations**

Club Stations were well operated and made some very big scores as a result of their combined efforts. Well done! Many stations had 'F' calls involved their effort. One club reported that their second youngest member (aged 9) operated one band for the whole 24 hours and reported that he did not imagine you could have so much fun.

The absence of a more than 34 club Stations (54%) was noted for this year. Many of the missing clubs had their club call sign used during the contest and probably would have achieved significant scores. However, the clubs involved chose not take the time to submit their log. This is a sad reflection upon the efforts made by some, not being

fully supported by other members of their club.

One issue that occurred prior to the contest was that a couple of Club Stations said that they could not find sufficient people to man their portable station. This may have been as a result of a number of reasons, including the forecast atrocious weather in some areas, however, these stations wanted to operate as Multi-Operator Home stations. The rules do not allow this.

On one occasion in the past, Multi-operator Home Stations were permitted, but there were so many complaints made by others about the very predatory and aggressive operating practices of these stations. In addition, there was the very obvious advantage of permanent antennas and mains power and hence this practice is no longer allowed.

A Home station is only permitted to have a single operator. Of course, a Club Station can operate with a single transmitter and a single operator at any time, this is encouraged, as it provides very good training for the newer operators as they can be readily helped and supervised during the contest.

The purpose of the Field Day is to promote field operation and the Home Station is encouraged to provide contacts for portable stations. There are plenty of all singing and dancing Multi-Operator and Multi-station contests during the year, so it is not felt to be in the spirit of the JMMFD contest to have club stations with Multi-operators and multiple High Power transmitters dominating the contest in a Home Station contest.

#### **6. Low Power Contest**

The suggestion was again made by a few stations that a QRP category could be allowed. The suggestion was that only a station that can be carried in a backpack should be allowed for this proposed section. There were only 2 logs entered indicating that all of their operation

was on low power. They are acknowledged on their certificate. It is still thought not to be necessary to create another category just yet (see above) but if interest grows and it may soon require a rule change.

It is interesting to note, the scores produced by some of the Foundation licences that submitted a log, does indicate that plenty of contacts were made on the restricted lower power permitted by their LCD.

#### **7. The Future**

Now it is over to you. There are always ways to improve anything, but scrapping something because it does not suit you is not possible. But if benefits are shown to be available, further changes can be made to the contest to better serve the amateur community. But changes to force the majority to follow what suits a small minority is definitely not a good idea.

If you have any contribution to these topics, the Rules for this contest are available at the WIA web site at <http://www.wia.org.au/members/contests/johnmoyler/> which already contains my contact information and please feel free to contact me with your submission for further consideration.

Well done to all of those stations that participated in the contest and well done those who bothered to submit a log. It is hoped that the number of logs to be submitted next year will continue its increase from this year's log numbers.

I wish to thank those who did send in photographs of their equipment set-up and personnel involved for inclusion in the AR magazine. These have been submitted to AR along with this report, so please give Peter Freeman via e-mail at ([editor@wia.org.au](mailto:editor@wia.org.au)) anything else you have for later use for the magazine.

Denis Johnstone VK4AE  
Contest Manager, JMMFD 2017



# SOTA & Parks

Allen Harvie VK3ARH

As the weather turns, chasers set-up heaters in shacks and activators thoughts go to access opportunities and winter bonuses. We welcome two new Mountain Goats this month, both who will be out in the coming harsher months:

Compton VK2HRX and Nick VK3ANL

So, here are their stories of the journey to Goat hood.

## First over to Compton

I have always been interested in portable operation and am a keen bushwalker/camper/4WDer, so

SOTA has become a natural way to combine all of those activities. My first activation was on Davies High Plain in VK3 High Country when I was there one Christmas on a 4WD touring holiday with VK2HSL and our wives. I'd heard of SOTA, had checked out the rules and thought I'd give it a go as we were passing by a few summits. We set up the FT-857D with a G5RV Junior and tuner with a slab battery and called CQ on 40 m. I was stunned with the response; chasers came out of the woodwork everywhere. I had my very own little pile up; this seemed

like fun. I was hooked.

Back home I checked the SOTA database and there were (and still are) summits everywhere. So I started doing a few along the way when other things – work, on holidays, with friends, out with WICEN plus did a few specific ones that seemed like a bit of fun to get to. I was really hooked.

For activations I have now settled on an FT-857D as being able to get out 100 W at times is helpful for chasers in high noise urban environments and, in one case, another activator on a summit

Photo 1: Compton VK2HRX



in the UK. I typically run it at 20 W. I have a homemade linked dipole as the antenna for 80, 40, 20, 15, 10 and 6 m so I don't need to carry a separate tuner and 7 m of RG58 as the feed line. I'll also usually put up a 2 m Slim Jim made from 300 ohm ribbon for any local or AE contacts. To get the antenna up, I use a length of flouro brickies twine and a weight or a 7 m squid pole if there are no trees. For power I now use a 4.2 AH LiFe battery.

My current interest is activating on 23 cm. Best so far is 202 km with 1 W of FM. There's nothing like height and take off to get things going on 23 cm.

I've driven up a few, walked up plenty, climbed up the final rock scramble on Yulludunida, crawled up Mt Frome on a three steps forward two steps back basis, been out driving and walking in the snow for quite a few, winched the 4WD up three, got sort of lost on forestry road mazes a few times, chain sawed my way down a few roads, driven up to locked gates a couple of times and spoken with a couple of land owners who thought I was crazy wanting to go up their hill but happily let me. I have met a great bunch of amateurs as activators and chasers in person and on air along the way and of course seen some stunning views from so many summits in VK7, 3, 5, 1, 2 & 4.

As a chaser at home on a typical suburban block in Sydney, I use an FT-2000D with a 40 m loop.

SOTA really is a great part of the hobby. I'm still hooked.

Compton VK2HRX

### And now to Nick VK3ANL

**My Journey to SOTA Goat-Hood**  
SOTA first caught my attention in early 2013 – I could get into this! That March, the old, worse-for-wear, TS-130S was exhumed from the garage and tasted RF again for the first time in more than a decade. I started accumulating chaser points from home and thinking about how I could become an activator.

One of the great things about

the SOTA award program is how it delivers an easy start and an early win through progressively more difficult targets thereafter. It is highly adaptable to the home-based chaser, the Sunday-afternoon drive-up activator and the hard-core hilltop hiker driven by the "because it is there" challenge.

Little did I realise how SOTA would come to define my leisure-time for the next few years. Thanks especially to my wonderful wife, activation buddy, travelling companion and event photographer – Rita – who has accompanied me on most of the 224 activations, on 108 unique summits in six states and three countries that make up my log to date.

SOTA has been very good to us, reviving my interest in the hobby of my teens, giving us a focal point for healthy outdoor activity, earning lots of Jaycar Nerd perks and Kathmandu loyalty points, taking us to places that we have never visited and joining a great fraternity of the like-minded.

A few weeks later, the TS-130S returned to its rest; a new FT-857D representing, in my opinion, the best available compromise for both home and portable. A few months later, an FT-817ND became and remains my primary portable radio. This light, robust, versatile shack-in-a-box travels with me most places, including overseas and I have used it /P on all bands 160 m – 70 cm, at various times on SSB, CW, FM, AM, Digital and including satellite.

My first activation was a Sunday afternoon drive to Mt Macedon in July 2013, with the FT-60R handheld and a hastily prepared J-Pole for 2 m. It took me an hour to make the minimum 4 contacts required to 'qualify' the summit activation and start my Activator tally with 6 points and I was hooked.

Over the next few weeks there was lots of internet research and I put together a portable HF station; a home-brew tuner, end-fed half wave antenna, LiPo battery, and telescopic support. We started visiting the easily accessible summits around Melbourne. Over time, we've gone further afield and most long weekends will see us in an area with a few summits within reach.

SOTA is a team sport, with a great fraternity of chasers and activators spanning the full range of amateur radio – age, license class and operating interests. It's fun to hike to and activate a summit with another. More than once there has been an unplanned meeting at the top: "Oh – you're about to activate this summit too!"

One of my SOTA highlights was on an English midlands summit in 2015. As I parked another car & bicycle arrived and we were joined by Richard G3CWI, Tom M1EYP and Jimmy M0HGY – all highly experienced activators – on a surprise visit. They had seen my activation 'alert' for the summit near their home and had come out to meet us.

Thanks SOTA, and thanks to all who have joined me on the journey.

Nick VK3ANL

Congratulations to both Compton and Nick for reaching the 100 point milestone and to all those who continue on the SOTA journey.

73 & 44

Allen VK3ARH



Photo 2: VK3ANL





# VK3news Geelong Amateur Radio Club

Tony Collis VK3JGC

## Show and Tell Night at the GARC

GARC Show and Tell night, organised by Cal VK3ZPK, is intended to encourage home construction.

Some of the projects displayed and described on that night were:

Lou VK3AGH demonstrated a home built Arduino controlled DDS (RF Sig. Generator) DC to 50 MHz. The nicely built unit featured quick selected Frequency by Thumbwheel Switches and Manual Tune Knob driving a home built opto interrupter.

Dennis VK3BQZ showed some of his home built ARDF devices and answered many questions from the floor on the subject. Perhaps his nicest piece of construction was the X Axis adapter for his printer/mill purely electro mechanical and made from the contents of his "junk box".

Chris VK3FRJD took us through the building of his newly acquired VK5JST Antenna Analyser and the assembly of his Ultra-beam antenna, also newly acquired.

Calvin VK3ZPK had three recent projects to present; two simple FET timers for industrial applications and a Tee Match, Antenna Matching Unit built into the salvaged case of a failed switch mode power supply.

Don VK3BIG told us of how he recently saved a microwave oven from the scrap heap and talked a little about the fault and the control/interlock circuitry etc. Don is very qualified in HV matters and advised against "inexperienced persons" getting involved in similar matters of this nature.

Finally, Gerhard VK3HQ gave a presentation on his recently designed Multi Band Loop Antenna



Photo 1: Lou VK3AGH's Arduino Signal Generator.

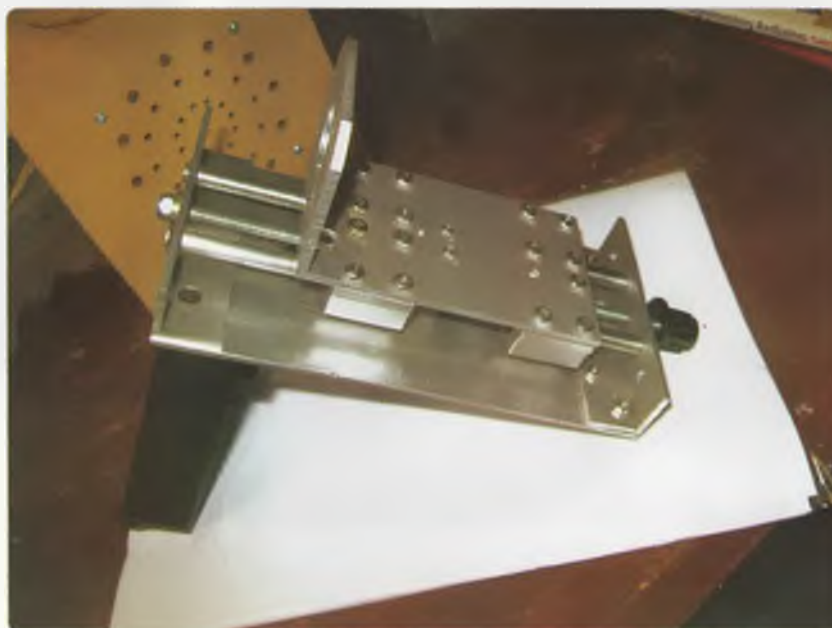


Photo 2: Dennis VK3BQZ's X Axis adapter.

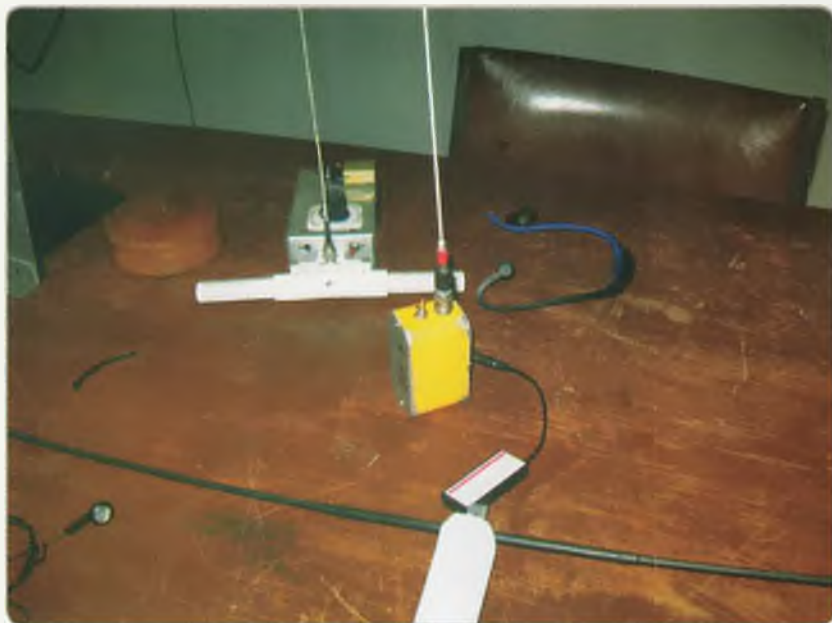


Photo 3: Dennis VK3BQZ's 80 m ARDF equipment.

describing a really compact antenna being a derivative of the Delta Loop.

Once again Calvin VK3ZPK orchestrated both an interesting and informative night for the members.

### The GARC Wednesday Group

The GARC meets twice a week at

the Storrer Street Club House. The Friday session is late evening for monthly general meetings and in between focuses primarily on club syllabus presentation items such as the *Show and Tell Night* above and occasionally BBQs followed by the auctioning of donated items of

interest to club members.

The Wednesday Group meets at circa 1:30 pm each week and in addition to its well-established social activities, it deals with the maintenance and support matters at the Club House that cannot be practically dealt with at the Friday evening sessions. These have included the complete refurbishment of the Club Workshop, the re-upholstery of all the club chairs in the presentation room, the repair and upgrading of the Club's East Tower as well as re-cabling the antenna systems as was featured in a previous VK3 article in November 2015. There was an antenna building workshop in February 2014. Also, the Wednesday Group was directly involved with the re-roofing of both ends of the Club House and the installation of two air conditioning units.

The monthly general meeting report on the Group's activities and progress is provided by Bruce VK3HAV.



Photo 4: Nine of the regular attendees at Wednesday meetings. Top Row: Rex VK3ARG, Nik VK3TY, Ian VK3ZIB. Middle Row: Gavan VK3NTU, Craig VK3CRG, Bruce VK3HAV. Bottom Row: Barry VK3SY, Alan VK3LCD and Colin Stokes.



Photo 5: Chris VK3ZPK's Antenna Matching Unit.





# ALARA

Diane Main VK4DI

## ENIAC Programmers Project

*The first Coders were Women!*

In 1946, six brilliant young women programmed the first all-electronic, programmable computer, the ENIAC, a project run by the US Army in Philadelphia as part of a secret World War II project. They learned to program without programming languages or tools (for none existed) - only logical diagrams. By the time they were finished, ENIAC ran a ballistics trajectory - a differential calculus equation - in seconds! Yet when the ENIAC was unveiled to the press and the public in 1946, the women were never introduced; they remained invisible.

The ENIAC Programmers Project has been devoted, for nearly two decades, to researching their work, recording their stories and seeking honours for the ENIAC Six - the great women of ENIAC.

For more information go to: <http://eniacprogrammers.org/>

Another brilliant part of hidden history of female coders was showcased in the movie "Hidden Figures", where the African American women who were called "computers", gave NASA the edge they needed to propel their space program.

## Congratulations

Tess, who was VK4FDDC, has now upgraded to the Advanced Licence and a new callsign VK4TES. Tess is getting her station set up so she can become more active on the HF bands as well.

## Special Event Station VI4ALARA

The Special Event station VI4ALARA will be active on as many bands as possible

## Current ALARA Nets:

Net	Day	Time	Frequency
Official ALARA	Mondays	1030 UTC (1000 UTC during daylight saving)	3.570
YL 222 DX	Monday	0530 UTC	14.222
YL Activity Day	6th of each month	Listen on the hour and call "CQ YL"	14.288, 21.188 or 28.588
Birthday Net	4th Saturday in July	1000-1200 UTC	3.570

from 1 July to 31 Sept 2017. The coordinator for the call is Diane VK4DI.

The callsign will be on air to publicise the ALARAMeet in Cairns in September. We also aim to encourage more YLs to get on air and enjoy the hobby.

A commemorative QSL card will be available and will be sent after the event finishes. These can be requested via ClubLog and OQRS. (No cards need to be sent).

## ALARAMeet 2017

What's included in the Meet Programme?

As well as fun, fellowship and making new friends, we are including some interesting sessions on subjects such as Computer Logging, how to do a holiday style DXpedition, displays of member's ham radio projects, a mini foxhunt and more. Tours to tropical North Queensland tourist destinations are included. We have three great evening meals including the Sunday Night Gala dinner with a Pirate Theme and a fun Giant Crossword puzzle.

This is a Meet like no other and we'd love to see newly licensed YLs and YLs, who have been active for many years, meet and exchange ideas, knowledge and cement further friendships.

**The \$500 registration fee covers all meals, tours, sessions etc. and is being hosted at the Cairns Colonial Club. Registrations need to be made before 14 July 2017.**

The Registration form and the provisional program can be found on our website: <http://www.alara.org.au/alarameet/index.html>

## 37<sup>th</sup> ALARA Contest

The 2017 ALARA Contest takes place on the weekend of 26/27 August. Once

again this is a 24 hour Contest and the rules remain the same as last year <http://www.alara.org.au/contests/>

If you are new to contesting then this is a great one to cut your teeth on.

Electronic logging is preferred and is easy using VK Contest Log. Mike VK3AVV updated the program last year to the current rules. <http://www.mnds.com.au/vkcl/>

**The aim is for YLs to contact other YLs and for the OMs to get a chance to work some YLs. All Contacts made can be also used to qualify for the ALARA Award.**

**VI4ALARA will be active as an allowable contact but will not be eligible to win any awards.**

## VK6News

Our VK6 State Rep Bev VK6DE tells us she is no longer very active as she has no radios she is able to use. She is active on EchoLink. Bev lives in Geraldton and doesn't get to meet many YL operators these days.

I remember working Bev and her late husband Brian from their farm "Hilltop" just outside of Geraldton in the late 70s and early 80s and, in fact, have many fond memories of our conversations. Bill and I stayed on the farm for a short while on a trip we took from our home base of Kalgoorlie to Koolan Island in 1980.

The VK6 ladies hold a lunch on the last Wednesday of the month at the Bayswater Hotel. Any YLs visiting VK6 would be more than welcome to meet for lunch. Phone Poppy VK6YF on 08 6278 4339 for further information.

Any more recently licensed VK6 YLs who would like to meet these amazing pioneering YLs in amateur radio in WA are welcome to attend.

33  
Diane VK4DI





## VK2news

Tim Mills VK2ZTM  
e vk2ztm@wia.org.au

Time for a spell of winter and that's when the Oxley Region ARC conducts their annual Port Macquarie Field Day, again this year at the Tacking Point Surf Lifesaving Club Hall. Held over Saturday and Sunday of the June long weekend with a wide range of activities, some details are to be found in the May issue of *AR* magazine.

ARNSW held their AGM at the end of April and details to follow in future notes. There has been some work carried out at the VK2WI site when steel pipe bollards were installed in front of the Centenary Building veranda to protect the support poles from reversing vehicles. Late last year the entry into the property had a concrete slab installed to improve the gutter crossing angle. There was still a strip of dirt between the slab and the sealed portion of Quarry Road which was starting to develop pot holes. At the end of April this strip was replaced with an asphalt surface.

ARNSW is planning another in the Talk Fest series on Sunday

2 July. VK2WI News will carry the details. Consideration is being given for a trade display later in the year at the Dural site. The next Foundation weekend at ARNSW is 15 / 16 July. Bookings can be made by email to [education@arnsw.org.au](mailto:education@arnsw.org.au)

It is eleven years since ARNSW sold its property in Wigram Street, Harris Park. The last event there was an evening Experimenters and Home Brew gathering. These gatherings continued at various locations but in recent times attendance had dropped off and have now been terminated. These days they have a meeting at VK2WI after the bi-monthly Trash & Treasure on Sundays. They have an on air net on first VHF followed on HF on the third Tuesday evening each month. The next days for both these activities will be at the end of July.

Some Foundation weekends this month are with the Blue Mountains ARC on 11 / 12 June and Waverley ARS on 17 / 18 June. WICEN have events in June with a Memory Walk

and Jog for Alzheimer Australia NSW at Port Macquarie on 4 June. True Grit at Lower Portland over the weekend of 11 / 12 and Nav Shield on 24 / 25. The BWRS have changed their name to BSAR – Bush Search and Rescue New South Wales Incorporated. They have resumed first aid training and details at [bwrs.org.au](http://bwrs.org.au)

Waverley ARS and HADARC ARC have recently had their AGMs. Waverley has a Shack Night on the first Wednesday. HADARC provided operation in the annual International Marconi Day in April with their call sign VK2IMD. Manly Warringah RS has a lecture on Fox Hunting on Wednesday 21 June. Fishers Ghost ARC at Campbelltown has their meeting on the last Wednesday of the month. Near to Campbelltown is Camden where a local antenna manufacturer – Mobile One – was located. It is understood that they recently ceased production.

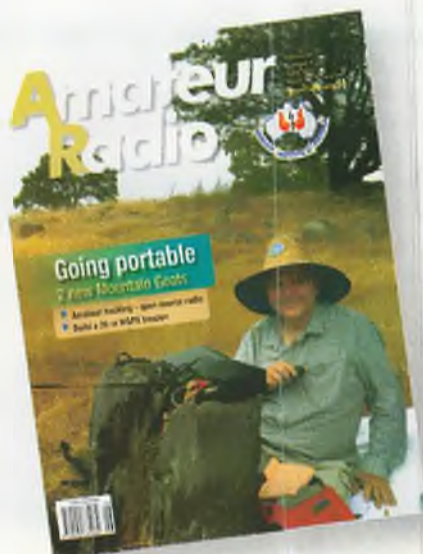
73

Tim VK2ZTM.

### Wanted

## Articles and high quality photographs for *Amateur Radio and Callbook*.

See <http://www.wia.org.au/members/armag/contributing/>







# VHF/UHF - An Expanding World

David K Minchin VK5KK

## Introduction

This month we have a report from Leigh VK2KRR on WSPR activity on 50 and 144 MHz in VK/ZL as well as a report from Peter VK5PJ on autumn inland Tropo. Stephen ZL1TPH outlines his plans for 3.4 GHz the next season for the Trans-Tasman path and we have the final part in the Digital Antenna Controller series. And we have Kevin VK4UH's regular Meteor Scatter Column.

## WSPR April 2017 Propagation Report

Leigh Rainbird VK2KRR reports on WSPR activity for April 2017:

*"I find that in the transition period of the sun moving from the southern hemisphere back to the northern hemisphere, the associated Tropospheric and Ionospheric weather conditions provide few opportunities for any propagation with Tropospheric Ducting or Sporadic E.*

*As we know, the months around the Summer Solstice seem to provide us the best conditions for both Tropospheric and Sporadic E propagation but looking ahead, and from previous years, I have been observing that there is also another propagation peak in the months around the Winter Solstice.*

*Tropospheric propagation can be very strong during some winter openings, even into the microwave bands. Though usually confined to 1500 km or so, I have (rarely) had some Tropospheric openings across the Bight path in winter, in excess of 2000 km. Using 2 m WSPR will make these rare paths much easier to identify. It's a shame there are not more stations set up for 2 m WSPR*

*the southern areas of VK6.*

*Sporadic E MUF, from what I have observed, has never been usable at 144 MHz in winter, but I have seen an increase in the E-MUF to the 50 MHz band, so keep a look out.*

**50 MHz WSPR:** *A bit of activity, focusing on VK4TVL's data from Townsville.*

*1 to 2 April, afternoon TEP opening, VK4TVL with JH1GYE & JT1KBF, 6200 km range.*

*April 4, a brief afternoon E opening; VK4TVL with VK5RM, VK5KAA, 1900 km range.*

*April 9, afternoon TEP opening; VK4TVL with JI4UEN, JH1GYE, JT1KBF, 6200 km range.*

*April 24, afternoon E opening, VK4TVL with VK2ZMT, VK2EFM, VK2KRR, 1596 to 1775 km range.*

*April 28, afternoon TEP and E opening; VK4TVL with JH6LAV @ 6138 km and VK2KRR @ 1775 km.*

*April 30, afternoon E opening, VK2EFM with ZL3TKI @ 2162 km.*

**144 MHz WSPR:** *April was relatively quiet except for the last few days where some people in the south east got a taste of some early winter style Tropo.*

*28 - 30 April: A check of the Hepburn Tropo charts gave an indication that we could have some winter style inland Tropo ducting building up. Paths between VK5GF, VK5BC, VK5PJ and VK5ACY across to Mark VK2EMA near Dubbo were relatively easy out to 888 km. These were peaking in excess of +10 dB from only 10 Watts at times.*

*Rob VK1KW gave the VK5 boys a surprise when his signal was being heard quite easily by everyone out*



Photo 1: 144 MHz early morning WSPR on 29/4/2017.



to 945 km with reports easily into +dB territory at times; this gave Rob some excellent SSB contacts, not an easy feat out of Canberra, but it does happen sometimes, especially this time of year.

Some of the very strong path indications between VK1KW and the VK5s also lead to some VK5s being able to make contact with VK2FLR in Sydney and VK2ZT in Newcastle.

On the Saturday morning, we were very pleased to see that the efforts of Wayne VK2XN near Narrabri didn't go to waste when we discovered during the very early hours that WSPR had recorded a 1216 km two-way path with Jeff VK5GF. Later, VK2XN also recorded paths between Bill VK5ACY @ 1111 km and with Peter VK5PJ @ 1137 km.

Despite having others listening further afield, such as VK4KAY, VK4CZ and VK4KJJ, no DX paths could be achieved to the south.

**432 MHz WSPR:** The WSPR beacon at the KH6HME site, Hawaii, is proving to work extremely well. Another great period of ducting occurring from around 3 to 5 April with the WSPR beacon being decoded by a number of stations along the Californian coast with distances ranging from 3739 km to 4074 km."

All contributions on propagation and WSPR is welcome, just email Leigh VK2KRR at vk2krr@wia.org.au

## WSPR April 2017 Propagation Report

Conditions in late April 2017 would seem to be following a similar trend as 2016 approaching winter with large almost stationary High pressure cells sitting over the central to eastern part of Australia. Peter Sumner VK5PJ reports ...

"Over the last weekend in April there was a slow moving high pressure system over eastern VK (1030 hPa) which gave some outstanding contacts for the Tropo starved hams. Now, I must give credit to Mark VK2EMA for relating



Photo 2: 432 MHz KH6HME WSPR on 4/4/2017.

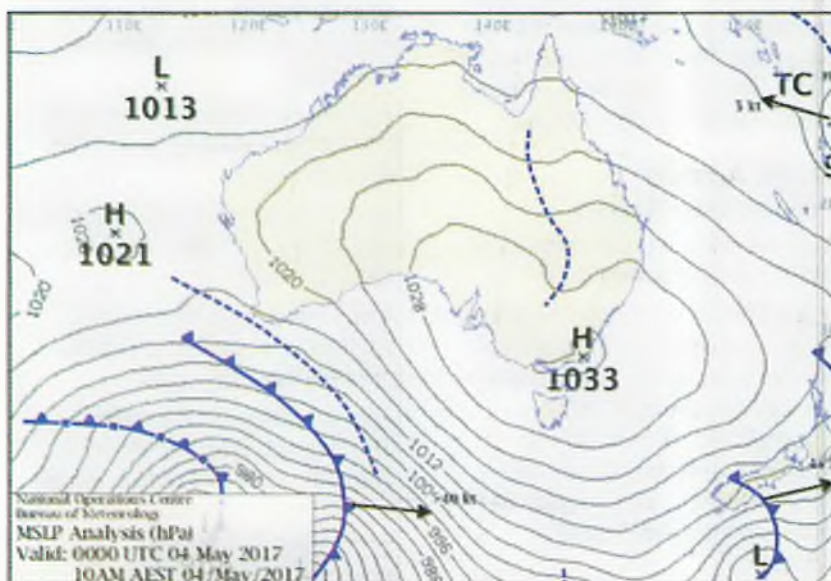


Photo 3: Stable High pressure over Australia 4/5/2017.

his observations about these high pressure systems over the land mass; it would seem that once they get to 1030, inland Tropo is a very good chance for the areas they cover.

Starting from the Thursday 27 April, things started to look up throughout the day with contacts to Rod VK2TWR on SSB and WSPR reports that were regularly above 0 dB from VK5ACY's signals into VK1KW and VK2EMA. On the 28<sup>th</sup> Bill VK5ACY was working into VK1 on 432 and Brian VK5BC had found a way to get a signal past the

Barossa ranges to make contacts into VK1 on 144. On the 28<sup>th</sup> things kept getting better with contacts on 144, 432 and 1296 between PF95 and the hardy souls in VK1. Moving onto the 29<sup>th</sup>, the day started out with beacons and more beacons being heard in PF95; we had VK1RSB, VK2RSF and VK2RSY all at audible levels. Both 2RSF and 1RSB peaked at S5 during different parts of the morning. It would seem that the improvements at VK2RSF have gone well with it being heard in PF95 continuously for 36 hours, thanks Rod (VK2TWR) for this work.

*For me personally the stand out contact on Saturday was with Mike VK2FLR in central Sydney on 144.20. I had thought that the Blue Mountains would never let me get a signal into Sydney but Mike proved me wrong. Not long after that we started to hear Steve VK2ZT on 144.200 and ended up with a 5x2 exchange. Mike made a return a while later and we were able to do a very scratchy 432 contact so my already radiant grin was an extra bit brighter.*

*Not to be out done, a few minutes later Brian VK5BC made contact with Mike VK2FLR on 144.190 CW to stretch out the distance to 1146 km: great work Brian.*

*In closing, my thanks go out to the people who maintain and upgrade VHF/UHF beacons; you are our unsung heroes and those in the hobby who are willing to share their insights into it."*

### **3.4 GHz New Zealand to Australia**

No it hasn't happened yet but could very well be a different story next season! Stephen Hayman ZL1TPH has recently shifted to the Northern part of the New Zealand and reports:

*"I thought I would share my intentions for the 2007/2018 season operating on 3.4 GHz from Cape Reinga at the very top of New Zealand. Last year's Tropo season was dismal; hopefully this will be a one off! We have had years like this before and the next year is back to normal.*

*The path from Cape Reinga to VK4 Brisbane is around 2000 odd km. Previously from Orewa (2.4 GHz) the distance was around 2300 km and so I'm thinking 300 km less will be an advantage on 3.4 GHz. I plan to operate from Cape Reinga on 144.100 MHz running 100 watts with an IC-9100. When signals are good I will QSY to 3398.100 MHz. Output power on 9 cm will be 20 watts into a 1 metre dish, the same dish used to work VK on 2.4 GHz*

*previously. My system is powered with a 1000 Honda generator and associated switch mode power supply. I will use a CW keyer initially and can run JT65 modes if required. Taking in path loss calculations along with added dish gain on 9 cm, 9 cm will still be down on 2.4 GHz but not by much.*

*To this point of time, nobody has attempted this crossing so I'd like to! All it requires is a good opening with a loud signal on 144 and the CW keyer will be up and running on 3.4 GHz! I'll be watching the charts from the 1st of September and normally open to VK from 1st October on-wards".*

### **Digital Antenna Rotator Controllers Part Three**

This month we will have a look at position sensors and some mechanical considerations when setting up a Digital antenna controller, whether that be for terrestrial or EME use. I have tried to cover as many as possible types of sensors available, most of which can be interfaced with the K3NG, VK5DJ, etc. type controllers.

The simplest form of position sensor is a linear potentiometer that produces an analogue voltage that can be interpreted by the controller. This scheme has been used for years in normal Ham type rotators and is OK if you only need 2 - 5 degree position accuracy. A large wire-wound pot is the best choice to get down to a few degrees of resolution; carbon pots are less desirable and will wear out in your favourite direction. The biggest challenge is that conventional pots only cover 300 degrees so you need to introduce some gearing to cover 360 degrees. For elevation this is no issue of course. You could use a multi-turn pot but unless you are lucky enough to get a large format type the resolution tends to be a bit "grainy" and there is usually some inherent backlash in the driving screw.

The next step is some sort of rotary encoder. In early days, a

slotted or printed disk was used with a LED/photo diode to create a rotary sensor. Now there are quite a few off the shelf types with resolutions down to less than 1 degree. Most are photo electric devices with a standard 6.4 mm (1/4") shaft much like a potentiometer. These are usually incremental encoders with two outputs 90 degrees out of phase so the direction of rotation can be determined.

One very good example is the type commonly used on CNC machines with 600 pulses per revolution (0.6 degrees) and two phase output (open NPN collectors). You will find these on eBay for around AUD\$20, just search for "600P/R Photoelectric Incremental Rotary Encoder". These are the same sensors mentioned in the SDR series to tune DDS VFO's. The only drawback of these encoders is that they do not provide actual direction information, only left/right or up/down change. Most controllers do not remember where the sensors were last so the system needs to be calibrated "North" and to the "Horizon" each time the system is powered up to be absolutely sure you are still pointing in the right direction.

A similar scheme to a rotary encoder is a pulse type encoder. These are popular in the satellite industry with screw jacks used for elevation. There are a set number of pulses from a cam activated microswitch; a calibration factor is used to convert the pulses to degrees. While a cam gets around the issue of coupling to a shaft concentrically the limitation is still the absolute position. Also the pulse readout is limited by the number of lobes on the cam and tends not quite linear at the extremities of the range to due drive geometry.

That brings us to absolute rotary encoders that provide actual position information. There are several types available; for Amateur use the HH-10 and HH-12 encoders are probably the first to look at,



based on the AS5040/5045 chips from Austria Microsystems. These have been developed by Georg DF1SR, the HH10 has 10 bits (0.4 Deg.) resolution and the HH12 has 12 bits (0.1 Deg.) resolution. Both are in potentiometer style housings with 6.4mm drive shafts; there is not much difference in price between the two types so most seem to opt for the HH-12. The chip sits on a small PCB and a 2 pole magnet connected to the drive shaft simply rotates above the chip to give position information! For more information Google "DF1SR HH-12".

Another type to look out for is the US Digital A2 encoder. This is a commercial 12 bit encoder intended for a wide range of uses; it has the ability to be programmed with various parameters. Absolute encoders will give you the actual position when you turn them on; the only remaining thing then is to get the stability of the coupling to your rotating shaft(s) down to the same level.

There are a couple of other options to look at including digital compasses (HMC5883L or LSM303) or accelerometers (ADXL345) which are useful for elevation readout. Accelerometer chips are used in digital spirit levels and will give a resolution of a degree or so. For portable use a digital spirit level is great for elevation readout! The problem with digital compasses however is resolution and the effect of other metallic objects around it. If you get better than 5 degrees accuracy that is repeatable you are doing (very) well!

We have spoken about mechanical backlash in the rotator assembly before being a limiting factor; however the connection between the sensor and the antenna azimuth/elevation "rotating element" is even more important. Using most of the sensors above is a bit of challenge for azimuth as it is normally impossible to locate them concentrically with the motor/gearbox rotating shaft connected to

the antenna. In many cases the only option is for the sensor to be driven from this shaft using gears, pulley/belts or cogs/chains as coupling.

If you look at some other applications where sensors are used elsewhere requiring good accuracy you will find a few ideas on how to couple a sensor in that you can borrow. For example, the toothed belts and pulleys used with small engraving machines and 3D printers are a good start. You will find a wide variety of belts/pulleys available on eBay as well as small bearings to take the side thrust away from the sensor (very important). Just how you use these is up to your imagination. Of course gearing and cogs can be used for coupling to a sensor; just remember not to put any side load on the sensor.

For elevation the answer is fairly easy, a weighted pendulum running on a shaft (I use 8 mm) running through two bearings connected to the encoder through a flexible coupling. There are a number of flexible couplings; I find the best are the 3 part type with a synthetic middle spider the best. Just search eBay or AliExpress for "CNC Flexible Plum coupling".

### In closing

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

73

David VK5KK.

## Meteor Scatter Report

*Dr Kevin Johnston VK4UH*

In April the Redcliffe and Districts Radio Club, my own local radio group, ran "Q-Tech" a one-day technical conference here in Queensland. A range of topics "around the edges of our hobby" were presented by speakers with

a special interest in each subject. I prepared an "Introduction to VHF Meteor Scatter" which was focused towards an audience who had no previous exposure in this area rather than as a Master-Class for experienced MS operators. Joe Taylor K1JT released WSJT version 1.0, which included FSK441 mode for the first time in 2001 and the mode has remained the kingpin of digital MS operation ever since. Putting the presentation together was a stark reminder of how steep the learning curve was when I started MS operation and also reinforced how rapid the development in MS modes and practice has been particularly in the last two years.

In last month's column, the main subject was a discussion of the place of MSK144, the new Forward Error Correcting (FEC) mode under development for 144 MHz MS in VK and ZL. Also discussed was the release of the complete software operating platform MSHV for Meteor Scatter operation, which went through two new version updates during the preparation of the last column. During April, a further version to MSHV (ver. 1.39) has been released. As before the new version is freeware for the amateur community and is available from the LZ2HV Amateur Radio Website: - [www.lz2hv.org/mshv](http://www.lz2hv.org/mshv). The changes in the new version are outline on the LZ2HV website. Adequate documentation is provided in English for both the mode and the software and I would encourage anyone interested in trying MSHV to read this through before going to air.

The pros and cons of the MSK144 mode compared to FSK441, the current mainstay of operation, were outlined last month and there has been much discussion on this topic in the VK-ZL Meteor Scatter Facebook forum. In short MSK144 makes use of FEC and a much higher data transmission rate. The result of this is an impressive improvement in accurate decoding of message



strings when conditions are poor and particularly when pings are short (<120 ms) where FSK441 mode starts to struggle. The MSHV platform also provides the operator with a very attractive user interface to use and allows continuous decoding and individual identification of all decodable pings during the receive periods rather than a single automatic decode of the strongest ping at the end of each sweep.

The "cost" to the operator is the loss of much of the flexibility of FSK441 in terms of the format of acceptable message strings. Thoughtful use of FSK441, which permits the use of any 23-character message in the string, using protocols developed here in VK, has allowed us to effectively run QSOs with two or sometimes more stations at the same time. This of course is not how the mode was originally intended or how the rest of Europe or USA use FSK441. Our local protocols have been very effective in keeping operating sessions moving as we add new callsigns to the composite message string as QSOs are completed. We have just accepted the trade-off between the length of the message strings and the time taken to get it through when conditions are poor.

By contrast, in MSK144 there is minimal flexibility in the message format, only the format provided in the TX windows will work, and attempts to transmit other messages lead to corruption and the transmission of unintelligible garbage. In effect this limits QSOs to only one station at a time. This leads to issues regarding which station to call and how long to keep repeating messages when replies are not forthcoming. This

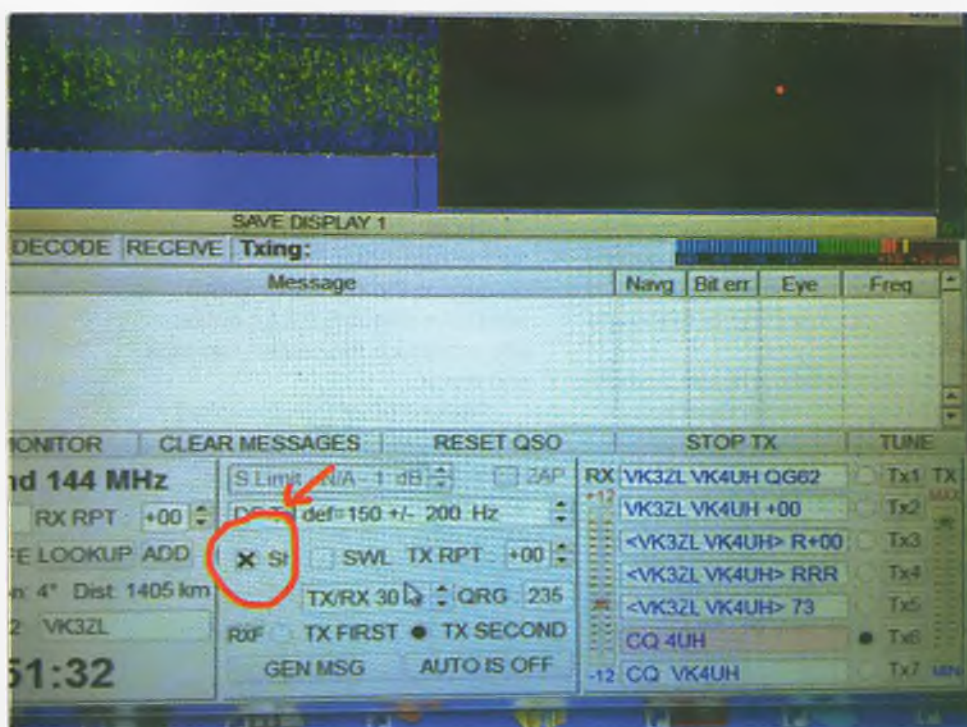


Figure 1: Identifying Short Reporting (Sh) Mode.

sometimes means dropping contacts off the "dance-card" before completion of QSOs, an action which causes frustration to the partner station and which was not required with the FSK441 VK-protocol.

As this column was being prepared it seems that the community was "voting with its feet" as for the last few weekend operating sessions the majority of operation has been occurring with MSK144 on 2 m and alternation of both modes on 6 m. Clearly not everyone is happy with this move, as judged by the feedback on the live Facebook discussions. The two modes are not inter-compatible on the same frequency as we do not have a single programme that will decode both modes at the same time. Even though MSHV supports both modes they do not work concurrently. As a group we basically have to run the same mode when we are sharing a frequency especially during the weekend activity sessions. There is nothing more frustrating in MS operation than receiving strong

pings that cannot be decoded. We could of course decide to use one mode on the primary frequency 144.230 MHz and the other on the secondary frequency 144.330 MHz but this divides the pack and hence reduces the number of possible contacts.

From my own perspective, I liked the flexibility of multi-QSO operating protocol in FSK441. I am impressed however by the performance of MSK144 on 2 m, particularly when conditions are poor. On balance, due to the longer and stronger pings seen on 6 m MS, I feel that FSK441 retains the advantage and a secure place as the preferred mode for MS operation on that band. Eventually the market will decide where we go.

Most experienced MS operators will be familiar with the ST (Single Tone, Short Text) sub-mode in FSK441. Use of this mode has been described in detail in earlier articles. In essence once initial contact has been made in standard FSK441 and callsigns have been exchanged then the remaining steps to complete an MS QSO can be achieved in

ST by the use of each of the four component tones, transmitted constantly, to represent the R26, R27, RRR and 73 reports. As only a single tone is used at any one time then only the shortest of ping is required to receive each report. No source or destination information is transmitted of course, just a code for the report so only one pair of stations can make use of this mode at a time.

In MSK144 there is also a Short Reporting (Sh) mode. Selection of this mode changes the audible character of the transmitted signal. Documentation on SH-mode is sketchy and so, having initially been confused, a series of local tests were conducted with VK4MIL to work out how best to use this sub-mode. Both paired stations must select the Sh mode as in Figure 1. Selecting Sh on transmit appears to shorten the highly formatted FEC string rather than changing the baud rate. Like ST mode in FSK441, initial contact must already have occurred and so callsigns exchanged. Selection of Sh appears to remove the source and destination callsigns

from the standard transmitted string but appears to interleave the callsign in some way into the shorter transmit string since the software can still identify the source.

Received by other stations sharing the frequency, the Sh strings are not decoded. The stations already in contact however do decode the strings, provided both have selected the Sh option and reproduce the correct message and report.

Stations other than the linked pair can however decode something of the Sh pings by selecting the SWL (Listener) function. In this mode a Sh ping will decode as "<unknown call 4567> RRR" for example. The four-digit number appears to be related to the source callsign. During local tests, it was apparent that if the callsign of the Sh transmitting station had already been received then the SWL mode decoded the correct originating callsign and the transmitted report.

Another interesting observation was that, unlike FSK441 which does not decode properly on constant strength or prolonged local signals,

MSK144 decodes perfectly even on continuous signals suggesting that this mode would also work on other propagation modes like Es or Tropo as well as for local reception.

The Lyrids meteor shower came and went during April, peaking around the 22<sup>nd</sup> UTC day. The general opinion was of a "Complete Fizzer" this year with conditions indistinguishable from background. The Eta Aquaridids are expected next week, before this article will be in print. It will be interesting next month to report how conditions were.

## Meteor Showers

The next major Meteor Shower event for 2107 will be the Perseids Shower expected to peak around 13 August.

Contributions for this column are as always welcome. Please e-mail to [vk4uh@via.or.au](mailto:vk4uh@via.or.au)

It is hoped that complete video compilations of all of the recent Q-Tech presentations, including "Introduction to Meteor Scatter" will become available later in the year.

Kevin Johnston VK4UH  
Brisbane

## Silent Key

Bob Brodie ex VK2EJK

Robert John "Bob" Brodie passed away on Tuesday 28 March 2017 at Macksville, NSW. He was aged 93 years.

Bob was born on 25 February 1924 at Auburn, NSW. In 1940 he obtained his Intermediate Certificate and began work as an electrical fitter at Australian General Electric in Auburn. Bob obtained his Industrial Management Diploma in 1955. He then held various senior engineering positions in the printing, textile and metal industries.

In 1947 Bob married Josephine Thomas. In 1950 Bob built a kit home at Merrylands with the help of his brother and friends. The Brodie family was the first in their street to have television when Bob built the black and white TV described in *Radio, Television and Hobbies* magazine. Bob was a keen sailor and built his first yacht, a Hartley Trailer Sailor.

On moving to Port Macquarie in 1975,



Bob started a dog obedience school and opened the first pet shop in the town.

Amongst his many retirement activities Bob was a very keen DX chaser with a DXCC Honour Roll listing of 195 countries confirmed. His station overlooking Lighthouse Beach was the envy of many

Amateurs. Bob was an active member of the Oxley Region Amateur Radio Club and was a Life Member.

Bob raced his yacht Jacana with the Port Macquarie Yacht Club almost every week until only a few years ago. Bob was kept active walking his own Labrador dog as well as raising and training Guide Dog pups.

His wife Josie predeceased Bob and in the last few years of his life he lived with his daughter and her family at Eungai near Macksville. Sadly, with advancing ill health preventing him getting on air, Bob reluctantly let his long-time call sign VK2EJK lapse two years ago.

Bob is survived by his daughter Jennifer and her family and by his brother Don.

Vale: Bob Brodie ex VK2EJK.

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



# DXTalk

Luke Steele VK3HJ



April was a fairly quiet month for DX, with only a handful of DXpedition activations. Heard or worked at your author's station were 4W/N1YC Timor Leste, 3D2SE Fiji, 3D2AG/P Rotuma and A25UK Botswana.

A surprise unannounced activation in Libya appeared in late April. Dima RA9USU was on air from Tripoli as 5A5A from 19 - 23 April. He was worked by some VK stations.

Active throughout 2017 will be VX3100, a Canadian Special Event Callsign commemorating the centenary of the Battle of Vimy Ridge, France, 9 - 12 April 1917. The battle was the first occasion where all four divisions of the Canadian Expeditionary Force participated in battle together, and is marked as a symbol of national achievement and sacrifice. The Canadian Corps, the main combatants captured the ridge from German forces, which retreated to the Oppy-Méricourt line.

Solar conditions were again very quiet, with a few short periods of moderate activity, but no significant flares. Some geomagnetic storms resulted from a recurrent coronal hole high-speed solar wind stream around 23 April.

## Upcoming DX

DXpedition activity scheduled for June includes the following:

**ZA Albania**, 10 - 20 June. IK7JWX, I0SNY, I8LWL and IK8GQY will be on air as ZA/IK7JWX from Sazan Island (EU-169) on SSB and digital modes on HF. QSL via IK7JWX or Club Log.

**TX5EG French Polynesia**, 11 - 19 June. F6BCW, F6DTZ, F6IPT,

F1MNO and F1TCV plan operation from King George Island (OC-131). They will be on CW and SSB, 80 - 12 m. QSL via LotW or F6BCW bureau or direct, Club Log and eQSL.

**TX5EG French Polynesia** will then continue from Huahine Island (OC-067) between 29 June and 17 July.

**VK9AA Christmas Island** (OC-002) 24 June - 1 July. Kun HL1AHS will be on 80 - 6 m, CW, SSB, RTTY and PSK31, using a vertical dipole array and G5RV. QSL via LotW or HL1AHS direct.

## Other news

### Kure and Midway Islands Deleted

In an announcement by ARRL on 31 March, Kure (KH7K) and Midway (KH4) have been placed on the list of Deleted Entities, effective 26 August 2016. This came about as a consequence of former president Barack Obama's declaration of the expansion of the Papahānaumokuākea Marine National Monument to include the north-western Hawaiian Islands west of Ni'ihau Island. The timing of the announcement was rather unfortunate, many reading this it as an April Fools' Joke. The announcement was verified by ARRL as valid, and the full text can be read at their website, including a detailed description of why these two entities no longer qualify. <http://www.arrl.org/news/midway-and-kure-islands-are-now-deleted-dxcc-entities>

Of course, this deletion caused much discussion on the Internet forums, with opinions both for and

against the deletion, not to mention the comments about the timing of the announcement. Bill K5FUV has posted a very detailed argument as to why these deletions should not have been made, and that can be read at Bernie W3UR's "Daily DX" website. <http://www.dailydx.com/unfortunate-deletion-kh4-k5fuv-bill-kennamer/>

The deletion of these two entities brings the Current List total to 337, and Honour Roll now requires 328 to qualify.

## US Fish and Wildlife Service Seeks Comments on Baker Island DXpedition Compatibility

Baker and Howland Islands (KH1) has not been activated for 15 years, and has now risen to fourth most-wanted DXCC Entity on Club Log's DXCC Most Wanted List. The US Fish and Wildlife Service (FWS), on 24 April released a Draft Compatibility Determination for Amateur Radio Operation for review and comment. The opportunity for comment has now passed (it concluded 8 May). Let's hope we can hear KH1 on air again before too long. It should be a nice easy shot from Australia. In March, there was a maritime mobile station in the area, on a mission to search for the missing aircraft of Amelia Earhart, and it was an easy QSO from this station on 40 m. To view the Draft Plan, see [https://www.fws.gov/refuge/Baker\\_island/News/CD\\_Radio\\_Operators.html](https://www.fws.gov/refuge/Baker_island/News/CD_Radio_Operators.html)

## Bouvet News

The vessel that will take the DXpedition team from the tip of



South America to Bouvet Island has been identified and a contract is being drawn up. The Chilean maritime and aviation company DAP, which took DXpeditioners to Peter I Island in 2006 has recently acquired a new vessel that is considered perfect for the transport requirements to Bouvet Island. This vessel is larger than Nigel Jolly's "Braveheart" and can carry two helicopters to transport equipment and people from the ship to and from the island. The vessel's crew and captain have sailed the vessel

for many years and will be retained by DAP.

Departure is planned for mid-January 2018, with a 9 - 11 day voyage to Bouvet. When the weather allows, they will land by helicopter, inspect the terrain and establish a camp. When this has been secured, the team will bring ashore equipment and commence radio operations as soon as possible. The team expects to be at Bouvet for 21 days, and weather permitting, be on air for 14 - 16 days.

As this will be a very expensive undertaking, the team is seeking support from the Amateur Radio community. To view progress on this project and fund-raising, visit the website <http://www.bouvetdx.org/>

Please email me with any DX related news for inclusion in this column. I am particularly interested in hearing about DX worked or heard in other states. [vk3hj@wia.org.au](mailto:vk3hj@wia.org.au)

73 and good DX,  
Luke VK3HJ.



## South East Radio Group Amateur Radio Club 53<sup>rd</sup> Convention and Foxhunting Weekend

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

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

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

Entry fee is \$5 for the weekend and this includes the lucky door prize raffle. For table bookings contact our Secretary on [vk5sr@wia.org.au](mailto:vk5sr@wia.org.au)

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

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



## Don't forget to register for MEMNET.

## AMSAT-VK



AMSAT Co-ordinator  
Paul Paradigm VK2TXT  
email: [coordinator@amsat-vk.org](mailto:coordinator@amsat-vk.org)

Group Moderator  
Judy Williams VK2TJU  
email: [secretary@amsat-vk.org](mailto:secretary@amsat-vk.org)

Website:  
[www.amsat-vk.org](http://www.amsat-vk.org)

Group site:  
[group.amsat-vk.org](http://group.amsat-vk.org)

### About AMSAT-VK

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

### AMSAT-VK monthly net Australian National Satellite net

The Australian National Satellite Net is held on the second Tuesday of the month (except January) at 8.30 pm eastern, that's either 9.30 or 10.30Z depending on daylight saving. Please note we will be taking check-ins from 8.20pm-ish. Check-in starts 10 minutes prior to the start time. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. Operators may join the net via EchoLink by connecting to either the 'AMSAT' or 'VK3JED' conferences. Past experience has shown that the VK3JED server

offers clearer audio. The net is also available via IRLP reflector numbers 9558. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

**In New South Wales**  
VK2R8M Blue Mountains repeater on 147.050 MHz

**In Queensland**  
VK4RRC Redcliffe 146.925 MHz -ve offset IRLP node 6404 EchoLink 44666

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

**In Tasmania**  
VK7RTV 2 m. Repeater Stowport 146.775 MHz IRLP 6616

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

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

### Become involved

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

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



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

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

[vk3pf@wia.org.au](mailto:vk3pf@wia.org.au)

Peter VK3PF

Conference Chair

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

### Call for papers

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

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

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





## VK7news

Justin Giles-Clark VK7TW

e [vk7tw@wia.org.au](mailto:vk7tw@wia.org.au)

w <https://groups.yahoo.com/neo/groups/vk7regionalnews/info>

### Amateurs helping Amateurs

The following comes thanks to Peter VK7PL.

Over a recent cup of coffee in Launceston it became apparent that one of our more senior Amateurs, Frank VK7BC, was having trouble getting some wire into the air. A decision was quickly made to offer him a hand. The problem was to get a lanyard into the upper regions of a rather large Monterey Cypress growing in Frank's yard.

The following Tuesday, a motley crew of three (Allen VK7AN, Ross VK7ALH and Pete VK7PL) turned up on Frank's doorstep to solve the issue. Ross produced his secret weapon, a pneumatic launcher, borrowed from Cliff VK7CH. This contraption fashioned from high pressure PVC pipe is charged up

with a compressor and can easily launch a tennis ball attached to a length of fishing line to a height of 30 metres or so.

After two or three attempts a line was securely in place and shortly after that a heavier lanyard had been hauled up ready for the antenna to be attached at a later date. In less than an hour the chore was completed and we were enjoying a hot cup of coffee, proving that what can be a difficult issue for one person, can be easily accomplished with a little help from friends.

### VK7 Microwave News

Peter VK7PD let the author know of his recent 155 km North-South 10 GHz Contacts in VK7. Testing his 10 GHz rig, Peter setup his

surveyor's tripod supporting a 600 mm dish antenna connected to a Kuhne transverter and Down East Microwave linear amplifier using an FT-817 as the tuneable IF. Unfortunately, results were less than satisfactory and inspection of the transverter discovered a solder bridged strip line filter following a recent SMA connector repair. This problem solved and tested, it was decided to attempt a North-South contact. The contact was made from White Hills between Peter VK7PD and Joe VK7JG near Launceston and Rex VK7MO in the Southern suburb of Tolman's Hill over a distance of 155 km with S5 and S9 reports on SSB. Some Bass Strait contacts are currently being planned. Thanks Peter.

Photo 1: L to R: Pete VK7PL, Frank VK7BC and Ross VK7ALH holding the PVC launcher. (Photo courtesy of Allen VK7AN.)





Photo 2: Joe VK7JG with Peter VK7PD's 10 GHz rig at White Hills. (Photo courtesy of Peter VK7PD.)

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

<http://www.vk7ax.id.au/atvgroup>  
 NWTR&TVG welcomes Phil Dickinson VK2FILL who will soon become VK7FILL. A general meeting was held in April with a focus on equipment, antennas and towers for use during JOTA 2017 at Paton Park. 2 m and 70 cm beams are covered along with a tri-band HF beam so signals should be booming out of the NW this 2017 JOTA/JOTI weekend. Thanks to Lucas VK7LSB and Steve VK7BI who have taken a lead on this. Aaron VK7AGR and Matt VK7ML have been working on a D-STAR repeater for Table Cape and this is very close.

## Northern News - Lilydale Falls BBQ

31 March 2017 saw the annual autumnal BBQ to end daylight

savings at the picturesque Lilydale Falls Park with 28 attendees. There was plenty of local food and wine enjoyed by all along with homemade goodies of all types. The cameras got a good work out as the sun and the temperature fell. This is an annual event at the start (October) and end of daylight savings (March/April). Thanks to Peter VK7PL and Al VK7AN for the report.

## Northern Tasmanian Amateur Radio Club (NTARC)

<http://www.ntarc.net/>  
 Wednesday 12 April 2017 saw 34 NTARC Inc members attend the Special General Meeting to consider a number of rule changes; many questions were answered and the rules changes accepted. The group then moved to some fascinating show and tell by Kevin VK7HKN

and Bill VK7MX's who presented their BITX projects. A PowerPoint took the group through the history and development by Arshar Farhan VU3ESE and the addition of the uBITX multiband transceiver. This utilises a Si5315A based, Arduino controlled Raduino with a combination digital VFO and LCD display module. This unit was then demonstrated to the group. This is a very cost-effective transceiver and the presentation was followed by the usual sumptuous supper.

Over the Easter weekend NTARC participated in the safety communications for the Easter Equine Endurance Marathon at Scottsdale's Santarena Park. Thanks to the following people - Rotary Volunteers Rowena Pooley, Glen Moore, Bob Bush and Robin Thompson; NTARC members - Bill VK7MX, Yvonne VK7FYM, Peter





Photo 3: L to R: Sean VK7FAZE and Richard VK7ZBX next to the trailer mounted 1.8 m 10 GHz dish. (Photo courtesy of Ben VK7BEN.)

VK7KPC and Kay, Ron VK7RB and Vicenta, Ken VK7KKV supported by Bett, Wayne and Meg, Idris VK7ZIR, André VK7ZAB, Peter VK7FPWS, Bill VK7AWT, Norm VK7KTN and Lorraine, Duncan VK7FLAK, Madison and Danielle. The support drew great praise from the organiser Graham Bucknell (NEEEC President) with congratulations on a job well done. The RFID readers, data links, database and reporting all performed seamlessly.

### Radio and Electronics Association of Southern Tasmania (REAST)

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

REAST's April presentation night was a Dish Mounts and Controllers Forum. The night was all about sharing people's experiences. We started with Rex VK7MO who

took us on a picture journey of his adventures in dish mounts starting with 1296 EME through to 10 and 24 GHz telescope mounts. Scott VK7LXX then showed his progress on his open source design SatNOGs az-el mount with all parts being 3D printed. Murray VK7ZMS and Richard VK7ZBX then showed a presentation of the evolution of the 1.8 m az-el mount. This was also demonstrated with the trailer mounted dish.

Justin VK7TW then showed his novel Az-El mount along with his 1.8 m back yard az-el mount. Kim VK7KB took the audience through a 4WD hub mounting for azimuth control and the satellite control systems that are used on the Aurora Australis for tracking whilst they are moving. Thanks to all who contributed and came along. The forum is available from the REAST YouTube channel.

The 23 cm QSO Party each Sunday morning is still attracting an average of six people each Sunday with local Hobart contacts and North-South WSJT and SSB contacts. Another regular net that has sprung up is the Friday FSQ Net - initially on 145.225 MHz USB on Friday from 8:00 pm then 7.105 kHz USB at 8:30 pm and this is attracting quite a group each Friday night.

The REAST Satellite Experimenter's nights has seen satellite contacts; 10 GHz EME horns and a Yagi (yes Yagi!) from Rex VK7MO, Halo antennas, beacon controllers, lasers, GPredict satellite tracking and doppler shift control, satellite QSL cards from a while ago and much more. Keep an eye on the REASTTAS Facebook page for more details: <http://www.facebook.com/reasttas>

# VK4news Caboolture Radio Club

John Arnfield VK4JR

The Caboolture Radio Club has been very active over the last few months.

A number of members participated in the John Moyle Field Day contest working from the Caboolture Boy Scout grounds. Most HF frequencies were worked using either beams erected on the Friday afternoon or dipoles that were raised high into the trees around the camp ground.

A great dinner was produced by Gordon (VK4FO) the Club President, using his Weber BBQ to cook a leg of pork and accompanying vegetables.

The Club also competed in the Harry Angel Sprint.

Roger (VK4YB) better known as "Yogi" has been having huge success with VLF equipment he has built. He can currently be heard on both 2200 metres and 630 metres.

He builds transverters for the 630 metre band, one of which was reviewed in AR last year.

The Club Rooms are situated in Smiths Road, Caboolture, and the Club rooms are open on Monday and Saturday from about 0830 Hrs local time.

The Club repeater VK4QD operates on 146.625 negative offset of 600Kc.

Anyone interested in either visiting or joining the Club will be made very welcome.

The Club also conducts an 80 metre net each Friday night on 3610 MHz + or - QRM.

The highlight of each net is Yogi's conundrums which can be very tricky.

Call-ins are very welcome, especially if you think you can solve the puzzles.

Hugh VK4BM attached the tower used in the John Moyle Contest to a disused lamp post in the camp grounds. We used this tower to

support a 15 metre beam at about 12 metres off the ground.

The tent provided cover for the operators and a 3KVA generator supplied power for the transceiver and linear amplifier.

The Club is going from strength to strength and John (VK4JR) the Club Hon. Secretary, now produces a monthly newsletter called "Snake Bytes": the snake being the aboriginal name for Caboolture which means "carpet snake"



Photo 1: a group of Club members watching preparations to attach the antenna to the tower for the 15 metre beam.

Should you wish a copy of the newsletter, email John at [dofgelly@tpg.com.au](mailto:dofgelly@tpg.com.au)  
73 John VK4JR



Photo 2: The tent used for the portable operations at John Moyle Contest.



# DX Awards

Marc Hillman VK3OHM/VK3IP

Below are the results for the 2016 DX Leaderboard.

Places in category are coloured **First** **Second** **Third**

Year:

**All grades DX Leader Board for 2016 (Top 30)**

Call	Name	DXCC	Open	Phone	CW	Digital
VK3GA	Graham Alston	257	491	161	319	175
VK3NM	Simon Keane	212	623	120	277	437
VK7CW	Steven Sahla	199	708	89	674	70
VK3EW	David McAulay	185	500	129	280	229
VK3VT	Greg Williams	176	323	70	107	139
VK5BC	Brian Cleland	156	412	136	125	235
VK5ZK	Garry Herden	156	465	99	182	286
VK6JR	Stephen Chamberlain	155	617	172	344	405
VK3AWG	Christopher Belmont	151	309	83	59	217
VK0DW	Ian Cook	151	550	179	177	420
VK2RT	Bruce Beresford	129	220	72	1	203
VK0KT	Richard Hill	123	380	22	30	339
VK2FR	John Sharpe	122	221	91	168	0
VK2CA	A Meredith	122	247	67	75	142
VK2BN	Christopher Fredericks	120	193	30	0	134
VK3HU	Luke Steele	117	254	42	230	15
VK3JLS	John Seamons	113	157	149	0	33
VK6WX	Wesley Beck	108	181	89	89	42
VK4CAG	Graeme Doose	108	182	63	122	38
VK5GR	Grant Willis	108	251	16	1	245
VK4BRT	Benjamin Beresford	107	207	82	0	175
VK3MEG	Steven Barr	103	160	100	83	10
VK3SX	Bob Robinson	97	149	140	15	0
VK3JL	David Rolfe	86	199	39	41	168
VK6BNV	Richard Grocott	85	261	7	23	240
VK3VH	Shaun Stoddart	82	173	57	102	45
VK5DG	David Giles	85	232	5	0	228
VK6SMK	Steven Koncz	82	148	87	89	12
VK3EY	Robert Puse	75	148	91	13	84
VK49N	Alan Shannon	73	146	2	145	0

**Foundation DX Leader Board for 2016 (Top 10)**

Call	Name	DXCC	Open	Phone	CW	Digital
VK4FFAB	Rob Powell	38	52	19	42	0
VK6FCJB	Carsten Bauer	2	2	2	0	0

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

## New awards

### DXCC Multi-band (1)

#	Call	Name	Mode	Band	Count
163	VK4BRT	Benjamin Beresford	Digital	20m	100
164	VK5BC	Brian Cleland	Digital	20m	120
165	VK5GR	Grant Willis	Open	20m	105
166	VK3FZ	Roger Stafford	Open	10m	195
167	VK3FZ	Roger Stafford	Phone	10m	163
168	VK3FZ	Roger Stafford	CW	10m	115

### DXCC Multi-band (3)

#	Call	Name	Mode	Band	Count
101	VK5ZK	Garry Herden	Digital	30-20-15m	401
102	VK3FZ	Roger Stafford	Open	20-15-10m	538
103	VK3FZ	Roger Stafford	Phone	20-15-10m	433

### DXCC Multi-band (5)

#	Call	Name	Mode	Band	Count
71	VK5ZK	Garry Herden	CW	30-20-17-15-12m	613
72	VK3FZ	Roger Stafford	Open	40-20-15-12-10m	796

### DXCC Multi-band (7)

#	Call	Name	Mode	Band	Count
35	VK3FZ	Roger Stafford	Open	40-30-20-17-15-12-10m	1010

### DXCC Multi-mode (Digital)

#	Call	Name	Count
35	VK3FZ	Roger Stafford	Open

### DXCC Multi-mode (Open)

#	Call	Name	Count
449	VK7YUM	David Potter	117
450	VK3SQ	Geoff Cooper	107

### Grid Square

#	Call	Name	Mode	Band
272	VK9VKL	Clifford Tindall	Open	HF
273	VK9VKL	Clifford Tindall	Phone	HF
274	VK3WE	Rhett Donnan	Digital	HF
275	VK5GR	Grant Willis	Open	HF
276	VK5GR	Grant Willis	Digital	HF
277	VK2NP	Clifford Hynds	Open	HF
278	VK2NP	Clifford Hynds	Digital	HF

### Norfolk Island

#	Call	Name
29	VK5BC	Brian Cleland

### Worked All States VHF

#	Call	Name	Mode	Band
212	VK5BC	Brian Cleland	Open	6m
213	VK5BC	Brian Cleland	Phone	6m
214	VK5ZK	Garry Herden	Open	6m
215	VK5ZK	Garry Herden	Phone	6m

### Worked All VK Call Areas HF

#	Call	Name	Mode
2371	VK3EW	David McAulay	Open
2372	VK3EW	David McAulay	Phone

## CC updates

### C Multi-band (1)

Call	Name	Mode	Band	Count
VK5ZK	Garry Herden	CW	17m	138
VK6WX	Wesley Beck	CW	20m	122
VK5ZK	Garry Herden	Digital	20m	163
VK3OHM	Marc Hillman	Digital	20m	122
VK2RT	Bruce Beresford	Digital	20m	118
VK3OHM	Marc Hillman	Open	20m	197
VK6WX	Wesley Beck	Open	20m	199
VK4TJF	James Fleming	Open	20m	183
VK3MEG	Steven Barr	Open	20m	219
VK5BC	Brian Cleland	Open	20m	246
VK5ZK	Garry Herden	Open	20m	279
VK3AWG	Christopher Belmont	Open	20m	178
VK2RT	Bruce Beresford	Open	20m	135
VK4BRT	Benjamin Beresford	Open	20m	125
VK4TJF	James Fleming	Phone	20m	137
VK5BC	Brian Cleland	Phone	20m	208
VK6WX	Wesley Beck	Phone	20m	159
VK3OHM	Marc Hillman	Phone	20m	164
VK5ZK	Garry Herden	Phone	20m	217
VK3AWG	Christopher Belmont	Phone	20m	131

### C Multi-band (3)

Call	Name	Mode	Band	Count
VK5ZK	Garry Herden	CW	30-20-17m	406
VK3EW	David McAulay	Digital	30-20-15m	469
VK3SX	Bob Robinson	Open	20-15-10m	675
VK5DG	David Giles	Open	20-15-10m	375
VK5BC	Brian Cleland	Open	20-17-15m	689
VK5ZK	Garry Herden	Open	20-17-15m	713
VK3MEG	Steven Barr	Open	20-15-10m	525
VK3OHM	Marc Hillman	Open	20-15-10m	459
VK3SX	Bob Robinson	Phone	20-15-10m	668
VK5BC	Brian Cleland	Phone	20-15-10m	593
VK5ZK	Garry Herden	Phone	20-15-10m	497
VK3MEG	Steven Barr	Phone	20-15-10m	493

### C Multi-mode (Phone)

Call	Name	Count
VK4TJF	James Fleming	152
VK3OHM	Marc Hillman	222
VK2TTP	Peter Pratt	155
VK6WX	Wesley Beck	212
VK5ZK	Garry Herden	264
VK5BC	Brian Cleland	284
VK3JLS	John Seamons	218
VK3AWG	Christopher Belmont	169
VK4BRT	Benjamin Beresford	115

### DXCC Multi-band (7)

#	Call	Name	Mode	Band	Count
14	VK7CW	Steven Salvia	CW	40-30-20-17-15-12-10m	1463
22	VK5ZK	Garry Herden	Open	40-30-20-17-15-12-10m	1441
24	VK5BC	Brian Cleland	Open	40-30-20-17-15-12-10m	1455

### DXCC Multi-mode (CW)

#	Call	Name	Count
221	VK5ZK	Garry Herden	249
222	VK5BC	Brian Cleland	180
223	VK6WX	Wesley Beck	180
234	VK3MEG	Steven Barr	134
247	VK2FR	John Sharpe	127

### DXCC Multi-mode (Digital)

#	Call	Name	Count
20	VK3EW	David McAulay	275
25	VK3OHM	Marc Hillman	145
28	VK5ZK	Garry Herden	215
29	VK5BC	Brian Cleland	198
47	VK3AWG	Christopher Belmont	140
58	VK2RT	Bruce Beresford	131
59	VK4BRT	Benjamin Beresford	117
62	VK5GR	Grant Willis	126

### DXCC Multi-mode (Open)

#	Call	Name	Count
345	VK4TJF	James Fleming	201
363	VK3OHM	Marc Hillman	240
370	VK3MEG	Steven Barr	260
375	VK2TTP	Peter Pratt	155
376	VK6WX	Wesley Beck	246
381	VK3VT	Greg Williams	316
387	VK5ZK	Garry Herden	302
388	VK5BC	Brian Cleland	299
394	VK3JLS	John Seamons	225
397	VK3AWG	Christopher Belmont	222
403	VK2KDP	Craig Valosin	200
415	VK3VH	Shaun Stoddart	296
421	VK4BRT	Benjamin Beresford	148
431	VK2RT	Bruce Beresford	148
444	VK5GR	Grant Willis	136

### DXCC Multi-band (5)

#	Call	Name	Mode	Band	Count
35	VK7CW	Steven Salvia	CW	40-30-20-17-15m	1115
31	VK5BC	Brian Cleland	Open	20-17-15-12-10m	1101
32	VK5ZK	Garry Herden	Open	40-30-20-17-15m	1090
47	VK3SX	Bob Robinson	Open	40-20-17-15-10m	929
33	VK5BC	Brian Cleland	Phone	20-17-15-12-10m	921
52	VK3SX	Bob Robinson	Phone	40-20-17-15-10m	909

Marc Hillman VK3OHM/VK3IP



# Summer 2017 VHF-UHF Field Day Results

Roger Harrison VK2ZRH

*A Summer haiku  
Summer burns bright  
in memory  
High ambition stirs  
Oh Nirvana!*



Doug VK2XLJ operated on a hilltop near Orange, at 1250 m ASL, working on 6 m and 2 m SSB, and 70 cm FM.

And so, the “changing of the guard”, having begun, moves on; nor all the piety and wit shall lure it to reverse, nor all the protestations wash out its march (with apologies to poet, Omar Kayyam).

Congratulations to all the section / sub-section winners in each Division, set out in the Results Summary here.

As noted in my reporting of the Spring 2016 results, once again, new entrants were scattered among the olds hands and Field Day habitués for this event. Notably, operators from VK6 and VK7

appeared among the submitted logs (rare, indeed!) – VK6AKR and VK6KCH in the west, plus VK7HH, VK7JG and VK7PD in the Apple Isle. However, I wouldn't call it a “trend”.

That said, it seems to me that there is a trend in that the differential between Division 1 log entries versus Division 2 log entries was the closest to even-stevens for the first time. A total of 54 stations submitted logs for Division 1, against 50 stations entering logs for Division 2. The “weight” of support for Division 1-only log entries lay with VK3, with 11 operators

entering logs just for Division 1, while support for Division 2-only was more evenly scattered across the call areas. A total of 32 stations submitted logs for both Divisions – 44% of the total! 72 stations who sent logs. We live in interesting times.

As with the Spring 2016 event, four Foundation operators entered logs, one VK3 (VK3FCEK – again!) and three VK5s – VK5FBAA (again), VK5FFAU and VK5PPAW – the latter two being newcomers. Christine Kaucner VK3FCEK took out the Top Scoring Foundation Station going in

both Divisions – a first for her. Well done, Christine. Persistence and strategy pays off.

With support for digital operation still patchy, the log entry from Hilary VK2IUW for the 24 hour Home Station Single-band Digital scored him gongs in both Divisions, once again.

The Single-band category proved a winning strategy for Home stations for this event, as well as for one stalwart who entered a log in the Portable, single operator 24 hours section. Lawrence VK1LWW took up the cudgels on 144 MHz SSB, which proved a winning strategy for him. Likewise, in the Home station Single-band stakes, Michael VK3GGG hit a home run in the 24 hours section in Division 1, with Ralph VK3ZZC leading in the 8 hours section. In Division 2, Hayden

VK7HH took out the top spot in the 8 hours section.

The number of participating stations for this event totalled 230, up 12.4% on the Spring 2016 Field Day. Submitted logs totalled 72 this time, which compares favourably with the 52 logs entered in the Spring 2016 event – so, an increase of 38.4%.

I can't leave this without commending Dave VK2JDS – who didn't enter a log, but was working stations and giving out serial numbers until a local bushfire required his attendance. Such is life.

Thanks

Sincere thanks from me to Mike Subocz VK3AVV for his ever-sterling efforts in checking logs and producing the tables of results. Mike is the developer of the VKCL logging application as well as the

Field Day log checking software that he and we depend on for accurate results. In addition, my thanks go to Michael Binz VK3ALZ and Colin Hutchesson VK5DK for their efforts in reviewing draft results and aiding in the adjudication of "entries with issues".

### Next steps

Consultation on rules and scoring should be looming – or under way – by the time you read this. The VHF-UHF Field Days website is your primary resource for the exercise, as well as dates for future events. See [www.wia.org.au/members/contests/vhfuhf/](http://www.wia.org.au/members/contests/vhfuhf/)

The full table of all entries and scores, in addition to the summary published here, are also on the website.



# 2017 Summer VHF-UHF Field Day Results Summary

## Division 1

Section A1. Portable station, single operator 24 hrs		
Four-bands:	Al Long VK1RX	1409 points
All-bands:	Simon Brandenburg VK5TE	2255 points
Section A2. Portable station, single operator 8 hrs		
Four-bands:	David Timms VK3GP	507 points
All-bands:	Gavin Brain VK3HY	3487 points
Section B1. Portable station, multi-operator 24 hrs		
Four-bands:	Dale Hughes VK1DSH	963 points
All-bands:	Eastern & Mountain District RC VK3ER	7950 points
Section B2. Portable station, multi-operator 8 hrs		
All-bands:	Damian Ayers VK3KQ	4105 points
Section C1. Home station 24 hrs		
Single-band:	Michael Geraghty VK3GGG	504 points
Single-band Digital:	Hilary Bridel VK2IUW	45 points
Four-bands:	Andrew Kayler-Thomson VK3VKT	1466 points
All-bands:	Ross Keogh VK3MY	4746 points

Section C2. Home station 8 hrs		
Single-band:	Ralph Klimek VK3ZZC	135 points
Four-bands:	Mark Hutchinson VK5MK	1007 points
All-bands:	Ian McDonald VK3AXH	1124 points
Section D1. Rover station 24 hrs		
All-bands:	Tim Dixon VK5ZT	3308 points
Section D2. Rover station. 8 hrs		
Four-bands:	Denis Brown VK6AKR	325 points
Top-scoring Foundation station operator:		
Christine Kaucner VK3FCEK, Division 1, Section C1 Home station 24 hrs, Four-bands:		472 points.

Participate

Winter VHF/UHF Field Day

24-25 June



## Division 2

Section A1. Portable station, single operator 24 hrs		
Single-band:	Lawrence Wilson VK1LWW	367 points
Four-bands:	Andrew Davis VK1DA	54,468 points
All-bands:	Barry Bates VK5KBJ	34,038 points
Section A2. Portable station, single operator 8 hrs		
Four-bands:	Gerard Hill VK2IO	6130 points
All-bands:	Gavin Brain VK3HY	36,296 points
Section B1. Portable station, multi-operator 24 hrs		
Four-bands:	Greg Smith VK3ND	14,331 points
All-bands:	Eastern & Mntrn District RC VK3ER	220,312 points
Section B2. Portable station, multi-operator 8 hrs		
Four-bands:	Whyalla AR Club VK5BWR	2506 points
All-bands:	Damian Ayers VK3KQ	67,908 points
Section C1. Home station 24 hrs		
Single-band Digital:	Hilary Bridel VK2IUW	3668 points
Four-bands:	Geoff Rozenberg VK2UL	19,273 points
All-bands:	Ross Keogh VK3MY	98,590 points
Section C2. Home station 8 hrs		
Single-band:	Hayden Honeywood VK7HH	283 points
Four-bands:	Mark Hutchinson VK5MK	5786 points
All-bands:	Doug Hunter VK4ADC	13,241 points
Section D1. Rover station 24 hrs		
All-bands:	Tim Dixon VK5ZT	21,272 points
Section D2. Rover station. 8 hrs		
Four-bands:	Nicholas Lock VK3ANL	952 points

## VK6news

Steve Kennedy VK6SJ

### Ham College

The College is pleased to report that the six students on the Standard course have now all sat for and been passed as competent in the Regulations assessment. A full Foundation course took place in April and assessments were in early May.

The College runs an information beacon on 145.175 MHz thanks to the WA VHF group for space in one of their equipment racks and room on the tower for an antenna. You may be aware that the beacon fell silent recently but all is now well and thanks to a donated PC and hard work of some committee members, information is now being transmitted again. Next project is replacement of the 35 year old transmitter!

The next Foundation course for 2017 is 17 and 18 June with assessments a week later on 24 June. There

### Top-scoring Foundation station operator:

Christine Kaucner VK3FCEK. Division 2, Section C1 Home station 24 hrs, Four-bands: 4116 points.

Multi-operator stations' listed operators

VK1DSH: Dale VK1DSH, Russel VK1JRM

VK3ER: not supplied

VK3KQ: Damian VK3KQ, Matt VK3PP, Ralph VK3LL

VK3ND: Greg VK3ND, Michael VK3MHY

VK3UHF: Arie VK3AMZ, Carlo VK3BCL, Chas VK3PY, David VK3QM

VK4RC: not supplied

VK5BWR: Les VK5KLV, Peter VK5KPR

are a few places vacant for the course and if you want to enrol or to sit an assessment, express interest via the College web site [hamcollege.com.au](http://hamcollege.com.au)

Thanks to Andrew VK6AS,  
Enrolments Officer

### Northern Corridor Radio Group (NCRG)

Work continues at NCRG on the new equipment and training room. It is now looking very professional with ceiling mounted cable trays, good quality earthing, completely refurbished walls and a separate room for battery backup. In the end, this is an equipment room I would compare against the best in the commercial radio sector so great job to all who have contributed.

Testing of the 23 cm repeater from our Gngangara site commenced in the later part of April.

Planning is now well in progress to augment Ham College's training capability at the club (with great support also from Ham College).

Some info on NCRG:

NCRG owns and maintains the Neil Penfold State Amateur Radio Centre; a world class station in the northern suburbs of Perth. We have separate masts for the following antennas; 160 m vertical, 5 element wide spaced Yagi on 15 m, 6 element Yagi on 10 m, 5 element Yagi on 20 m, 3 element SteppiR, 3 element Yagi on 40 m and during May, we will be completing a 4-square array for 80 m. In addition, we have dipoles for 80 m (used for the Sunday broadcast) and a number of other wire antennas as backup for our Yagis and we have Yagis for 6 m and 2 m co-located with our HF Yagis.

The SteppiR is used primarily for our remote station set aside for operation from the homes of our members.

## Hills Amateur Radio Group (HARG)

It's been a busy time at the club with the running of this year's HARGfest, our annual buy, sell & swap day. The hall was full of sellers and more than 150 amateurs took advantage of some great bargains. The guys on the barbecues were kept busy all day making the famous HARGburgers for the hungry masses. The breakfast of champions as one member puts it. The ladies in the kitchen were busy with tea & coffee and some great cakes.

It was a great day and apart from the bargains it is good to chat with fellow hams, face to face.

I would like to thank Mark from Tet-Emtron, who again made the trip to attend. It is great to have such quality antennas and associated hardware. Steve from Future Systems, the FlexRadio distributors in VK, was represented as well. Thanks Steve. It is great to have the support of some quality suppliers.

The raffle this year was again popular. There were some smiling faces when the prizes were drawn. This year the first prize, a Yaesu FT-7900, donated by Ian VK6EA and Kylea VK6XYL Garnet, was won by Kevin VK6FKAP. The power supply, donated by Altronics was won by Stuart VK6BG; the Electronics Toolkit, donated by Altronics was won by Ben VK6LVI; the \$100 TET Emtron voucher was picked up by Philippe VK6UJ and the Cordless

Drill Set, donated by Stuart VK6BG, was won by Harry VK6BB. The door prize, a multimeter donated by Altronics was won by Richard VK6TT.

The club is planning to operate in the Harry Angel Contest and has some trips planned in the next few months. We will be visiting a high power AM broadcast site as well as a visit to a television and FM radio transmission site. It will be great to see some big transmitters in action.

HARG Meetings are held twice a month at their club rooms at the Paxhill Guide Hall near the corner of Brady and Sanderson Roads in Lesmurdie. The social and practical meeting is held on the second Saturday of the month and the last Saturday of the month has the general meeting, often with a technical talk or demonstration. Doors open at 1.00 pm for a sausage sizzle and the meeting starts at 2.00 pm. More information at [www.harg.org.au](http://www.harg.org.au)

73

Ray VK6ZRW

## Bunbury Radio Club

The next monthly meeting of the Bunbury Radio Club will be held on Saturday, 10 June 2017 from 2:00 pm. at 21 Halsey Street, Bunbury. In addition to our regular meeting, Brian VK6HBS will be talking about his experience with the Yaesu FT-1200. At the April meeting Bob VK6TJ spoke about the history and politics of commercial AM radio.

It was very interesting to hear an insider's view. Visitors to our meetings are very welcome. For those who need to plan months ahead, the long-range program of technical talks is as follows:

### July The AGM

**August** Steve, VK6HSB – Antenna developments at the Boak QTH

**September** Nick, VK6FSEA – TBA

The Bunbury 2 metre repeater VK6RBY is now back on the air at long last, following storm damage to the shack. Rx sensitivity is approximately 0.4  $\mu$ V with a Tx power output of 48 W. Morse ident is VK6RBY at 25 wpm. There were some parts that had to be replaced including the front end transistor that was making the repeater deaf and the repeater had to be thoroughly cleaned as well. A hole that mice had used for their R&R has also been sealed with a metal grill. The door has also been fixed and is now waterproof. Thanks to Bob VK6TJ, Alek VL6AP and Neville VK6JDW for their hard work in reinstalling the repeater and weatherproofing the shack.

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

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

Photo 1: A view of part of the crowd at HARGfest.





## **PRAWNHEADS (Perth Radio Amateur and Wireless Noodle House Eating and Discussion Society)**

Prawnheads is a small group of hams who get together weekly on Wednesday lunchtimes at various places but often at Chutney Mary's Indian restaurant on the corner of Hay and Rokeby St in Subiaco. It's a great little gathering of hams with a few stalwarts attending regularly and a whole bunch of itinerants (like me) who just go along when they get a chance. In addition, visitors to Perth often turn up here and it is a good opportunity to get a feel for the VK6 ham community with this very friendly group.

## **Amateur Radio Society of Northwest Australia**

The following is taken from the website of ARSNWA <http://arsna.webs.com/>

The Amateur Radio Society of Northwest Australia is a small group of hams either living permanently in the Pilbara or flying in and out (FIFO) for work. The club runs active repeaters in Tom Price (VK6RTP 146.625 MHz), Wickham (VK6RWR 146.700 MHz) and Exmouth (VK6REX 146.850 MHz). The club is quite small with only five members, so is hitting way above its weight maintaining three repeaters in some of the most remote parts of the country. Also in the area are two beacons (50.304 MHz and 144.576 MHz) of which the licenses are held by the West Australian VHF Group.

A couple of activities in progress are:

New repeater being configured for VK6RWR in Wickham

WSPR Ultimate3S 5-band beacon under construction.

73s

Jono VK6DF

## **Southern Electronics Group (SEG)**

The article below is directly from SEG's web site <http://www.hamradio.org.au/>

Southern Electronics Group is one of the more active radio groups in the beautiful South West and Great Southern regions of WA.

Through 2016, SEG held the Katanning Ham Feast with 35 attendees and the Mt Barker All-star node was installed & commissioned. In June, two more All-star nodes were installed and commissioned at Manjimup and the 2 m APRS digipeater at Albany was recommissioned. In September, we had the Manjimup Ham Feast at the Quininup Tavern with 45 attendees and a donated equipment auction. The Manjimup 2 m repeater was also given some TLC. In November, the new Albany 70 cm repeater went on air and in December the Mt Barker 2 m repeater was resurrected and two new power supplies purchased & installed.

In 2017, SEG are planning to refurbish the 2 m repeater antennas and install a web based IP switch to control/reboot 12 V DC power at Mt Barker and linking the Albany 70 cm repeater into the All-star VK6 south-west network. We are also looking into the possibility of an amateur repeater in the Denmark area, with

a connection into the All-Star VK6 south west network and 2 m APRS digipeater.

If anyone has any ideas for projects or activities/events that SEG can undertake as a club, encourage participation and diversify from repeaters and All-Star nodes, please post your ideas to the SEG mailing list.

Some ideas might be taking part in field day events such as RD Contest – somewhere like Lake Towerinning, Bluff Knoll carpark or Lake Nunijup camping out overnight or one of the VHF/UHF Contests, organising our sprint style contest over 2-4 hours. We could run an on-air Net once a week/fortnight/month on the All-Star linked repeaters, we could launch a high altitude weather balloon equipped with APRS (like Project HORUS in VK5), have an antenna building day or a car boot sale.

SEG runs repeaters in Mount Barker (VK6RAA on 439.950 and 146.825) and in Albany (VK6RAL 438.025). These repeaters are also linked to repeaters in Manjimup, Katanning, Boddington and Perth via All-Star.



Photo 2: A view of the hamfest.

# A Touch of Spice

Phil Wait VK2ASD

I was cleaning out the shack last Christmas and I stumbled across some old radio logs, a stack of QSL cards, some newspaper cuttings, a *Modern Boating* article and a coffee table book *To Beat the Clipper Ships, the Story of the Nedlloyd Spice Race*, (ISBN 0.85174.394.3). It took me back to the mid 1970's in a collection of run-down artisans sheds in Sydney's Glebe, on the shores of Blackwattle Bay which, despite a wave of gentrification, was still an affordable haven for students, left-leaning poets and artists, and three Dutch boatbuilding brothers, Jos, Henry and Arnold Maasakkers.

The Maasakkers brothers had sold a Sydney printing business and decided to invest the proceeds in yacht building, naturally! They specialised in building tough 36 foot steel hulled cruising yachts, and they also built some of the famous racing yachts of the time, like *Ballyhoo* and *Challenge*. In the process they also collected a rag-tag army of tradesman, artisans and craftsmen who willingly lent their skills for a not too occasional beer, and good times. I was working as Project Manager for ETI magazine, under Roger Harrison as Editor, and in my spare time I lent the brothers a hand installing their marine electronics and instrumentation.

Somehow, over the next couple of years, this collection of misfits produced a spectacularly beautiful yacht - a 78 foot Joe Adams designed round-bilge ketch of 45 tons displacement, with a main mast height of 105 feet, based on the famed American yacht *Ticonderoga*. When I became involved *Batavier* had been launched and was in the process of fit-out, moored alongside two large wooden piles about 100 meters off a small sandy beach in Blackwattle Bay.



Photo 1: Quick passage - averaging 250 nautical miles per day in the Trade Winds on way to Cape Town.

I lived on the boat for a while, using a dingy on a pulley arrangement to commute to shore. Strangely, and usually after late night a expedition to the one of the Glebe drinking establishments, the dingy would sink: never by accident, but that's definitely a story for another time.

We found a live builders-pole on shore and ran some waterproof 3-phase cable down over a vacant lot, across the sand, over the rocks, and out to the boat. We also found a working phone line and gave it the same treatment. I still don't know who paid for the power, and the telephone was always pretty hummy, but *Batavier* was party central. The guy from the Sydney County Council saw it one day and made us cut it off, so we buried it after that.

At that time the Nedlloyd Shipping Company was organising a yacht race intended to mimic the 20,000 km route of the old spice and tea traders from the Dutch East Indies (now Indonesia) to Europe. By the mid 1800's, tea had become so popular in England that prices had skyrocketed, and the fashion was not only to drink the freshest tea, but to drink the first crop of the season, fetching almost triple the normal price at market. The Tea clippers, like the *Kelso* and the *Cutty Sark*, were very fast boats and also fiercely competitive, racing each other to be first into port to off-load their precious cargos of tea and spices and achieve the highest price.

The "Spice Race", starting in March 1980, aimed to beat the record of 65 days, set 120 years earlier by the spice trader *Kelso*, but would require an average speed of 7.81 knots over the 12,000 nautical mile course - quite achievable in a fast modern racing yacht with favourable weather conditions, but still a mammoth challenge. There were to be two divisions, non-stop and two-leg, with the non-stop yachts rounding Robben Island off Cape Town, (where Nelson Mandela was imprisoned), and the others having a stop in Cape Town. The Brothers, who were keen to sail back to Holland and prove their relatives wrong, decided to enter *Batavier* in the non-stop division.

The race rules required yachts to report their position via the fleet of passing Nedlloyd cargo vessels, which would then relay the position reports back to race headquarters in Holland. Competitors were required



to carry HF radios capable of operating on the full range of frequencies used by Nedlloyd vessels, from 500 kHz up to at least 16 MHz, but in those days that type of marine transceiver was large, expensive, and nigh-on impossible to scrounge. Run-of-the-mill marine HF transceivers of the time, such as Stingray and Wagner, were all limited to about 12 MHz maximum frequency.

About that time the Drake TR7, appeared on the amateur market. The TR7 was one of the first frequency synthesized amateur transceivers, and it could also be fitted with fixed channels on any frequency up to 30 MHz. Most importantly for us, it was also about a quarter the price and a fraction the size of the equivalent marine transceiver.

After a string of telegrams to and from race headquarters in Holland we finally managed to convince the race committee that we knew what we were doing, and that an amateur transceiver would work reliably at sea. A manual antenna tuner and a simple wire antenna from a feed-through insulator on the deck to the lower set of spreaders, (you think twice about breaking a backstay for inserting insulators when it's holding up a 105 foot mast), and we were set.

### Yachts arrive in Jakarta

*Batavier* arrived in Tanjung Priok, the port of Jakarta, with a crew of 11, about two weeks before the start. We were joined by yachts such as *Flyer*, the previous winner of the Round the World Whitbread Race; *Gypsy Moth V*, formerly owned by Sir Francis Chichester; *Lexington*, named after a cigarette company with hopes it would do better than its American aircraft carrier namesake sunk by Japanese during WWII; *Prodent* named after a toothpaste company; *Wesbank*; *Gauloises 3*, named after its



Photo 2: Blowing about 40 knots at this stage, but still racing.

cigarette company sponsor and the second across the line in the previous *Parmelia* race from Plymouth UK to Perth Australia; and the ill-fated *Kaleo*.

*Vetus*, the smallest yacht in the race, a very unconventional cat rigged 35 foot schooner with twin asymmetric keels and un-stayed masts, which were designed to bend in sympathy with the wind (year right!), solved the radio problem by mounting a huge radio, more suitable for an ocean freighter, right in the middle of the cabin with the hapless crew tightly crammed in all around it, (a Sailor brand, I think).

Amusingly, when *Vetus* arrived the huge radio wouldn't work, and with no repair facilities in Jakarta a specialist had to be called-in from Singapore. Also, in the haste of preparing *Gypsy Moth* back in England, their crew forgot to order the required frequency crystals. Naturally they weren't available at short notice in Jakarta, and it was seriously looking like their race wasn't happening until, after a lot of frantic activity, the race committee finally agreed to allow us on *Batavier*, with our fancy Drake TR7, to relay *Gypsy Moth's* twice-weekly position reports. To everyone's amazement we pulled the TR7 apart dockside and performed the modifications required to install *Gypsy Moth's* frequencies. We relayed their position throughout the entire race.

The least prepared yacht was

*Kaleo*, a hastily built, (still being built actually), 44 foot yacht from Singapore with a New Zealand crew. In fact off-cuts of plywood from a makeshift interior still littered her deck on race-day, and her prop-shaft failed just as the yacht was leaving dockside to start the race. They should have stayed there!

### The Race Starts

A dingy sailor would have been proud. *Flyer's* tactics

forced at least two yachts to miss the start line altogether, and having to Jibe around the start line again making them looking like a goose on television. We also messed up the start, ending up becalmed in the lee of the large starting vessel, but soon settled down to some fluky sailing through the Sunda Strait which links Jakarta with the Indian Ocean, a notoriously difficult area to navigate with sandbanks, very strong tidal flows, and man-made obstructions such as oil platforms. It's amazing how those things jump out at you. The Dutch East India Company used the Sundra Strait as the gateway to the Spice Islands, but for those reasons most large ships now use the Strait of Malacca.

After about two weeks or so the winds started to strengthen and swing around to the south east, signaling the commencement of the SE Trades, and we spent the next few weeks power-reaching at about 12-14 knots boat speed in 25-30 knots of wind, making quick passage of about 250 nautical miles per day, passing near Cocos Island and barreling down towards Mauritius.

All yachts were regularly broadcasting their positions, and we were relaying *Gypsy Moth's*. On April 1<sup>st</sup> we invited their crew over for a formal dinner, black tie naturally, but they couldn't make it so we held the party on the radio instead.

By that stage many of the yachts were having problems; *Kaleo*, had

developed a leaking bolt hole in the cockpit which allowed salt water to drip onto the final (valve) stage of their transmitter. They were only radiating flea-power, probably leakage from the driver stage to the antenna, but still able to get some signal out to us on 12 MHz; *Protent* had continuing problems with rigging, and a familiar smell from their radio transmitter put an end to their appearances on the 'inter-yacht radio show' for about 12 days, no doubt also caused by water entering the transmitter which must have eventually dried out; *Vetus* had a very unpleasant motion through the rough seas and their crew suffered from severe seasickness. One crew member suffered very badly.

Kaleo also developed rigging and steering problems and was forced to run under emergency steering until a broken inner shroud forced them into Mauritius for repairs. They should have stayed there too!

Daily life on board *Hotel Batavier* as we became known, due to all the food and Bintang beer we took on in Jakarta, was luxurious by comparison. However, all that extra food and drink, not to mention Jos' cigars, made us a little heavy and slow in light weather and delayed our arrival at the trade winds by a full 2 days compared to the race leaders, something that would put us in a very fateful position later on.

While the strengthening trade winds were welcomed by the

leaders and the larger boats like us, it brought more troubles for *Vetus*. Their main mast (*Vetus* had two equal size free standing masts) had come adrift from its mast-step, and both masts were cracking and creaking in a most alarming manner. One of the two booms snapped-off and the full-length sail battens were breaking apart inside the sail, with their sharp edges tearing the sails to pieces from the inside out. If that wasn't enough, a cyclone was predicted to cross their path! They persevered, but life was to take a turn for the worse, if that's possible, when an air leak in the fuel line put the engine out of action and a serious leak developed in the hull.

With no way to charge batteries and little power left, a damaged transmitter unable to make contact with Nedlloyd ships or any shore station, and a still chronically ill crew member, they were in a heap of trouble. At the regular position reporting radio sked the TR7 was just able to detect a very weak signal, and by narrowing down the bandwidth and fiddling pass-band tuning (nice new feature in those days on the TR7) I just managed to decipher the following message:

31<sup>st</sup> March, 1980, 0500GMT  
POSITION 25DEG. 17 MIN. SOUTH  
76 DEG. 30 MIN. EAST. SAIL BOOM  
ENGINE RADIO OUT OF ORDER  
STOP FORWARD PART OF BOAT  
LEAKING STOP ONE MAN  
ILL STOP WIND WEST STOP  
OTHERWISE EVERYTHING OK  
STOP NO PUBLICITY STOP

Passing the message through the official Nedlloyd race channels, and then through the nearest coastal station - Durban Radio - all proved impossible, so I tuned the TR7 to the 14 MHz amateur band where you could be pretty much assured of making contact with someone, somewhere. Bert, VK6ZY (now VK6ARV), answered the call and passed the message to Marine Operations in Canberra who must have contacted the owners of *Vetus*, and probably also informed the South African authorities. I have since learned that Bert had message handling experience, being in the Royal Australian Army Signal Corps in the 1960's, (I have recently contacted Bert who remembers the incident well).

We admired *Vetus's* optimism in not calling for assistance, and we continued to monitor their situation over the next few days by making contact every 4 hours, using a calling procedure which involved stepping through 8, 12 and 16 MHz channels to find a working frequency, but their race finally ended when the mast eventually came down, and without a motor drifted at the mercy of the wind and current. They finally made it to Durban and pulled out of that leg of the race.

### Then the Wind Hit

The two lead boats, *Flyer* and *Gauloises*, were already happily racing around the Cape of Good Hope heading up the coast towards West Africa, and a record was still possible.

The rest of us were left well behind, and what followed decimated the remainder of the fleet. There have been a number of yacht races around the Cape of Good Hope, but this was the first to sail in a westerly direction, against the prevailing wind, and the first to see the Cape in full force. Yachts towards the rear of the fleet, where we were, were hit by the full force of the Cape with wind speeds at least 40 knots for days, and freak waves.

Photo 3: A shot from the navigator's cabin showing the Drake TR7 mounted in a cradle hastily made from aluminum angle.





We were still racing in those conditions until we finally broached on a wave, broke the steering mechanism from the rudder post, and had to make a run for Port Elizabeth on emergency steering. After hearing of our troubles on one of our regular amateur radio skeds, I think it was Coos ZS5ZN who organized a local engineering company in Port Elizabeth to patch us up in record time. Keen to regain lost time we ventured out to sea again, somewhat prematurely.

Not too long out from Port Elizabeth we found ourselves in 60-80 knot winds, 60 foot or higher seas, (I remember watching waves stacking up on top of each other), and horizontally lashing hail. I remember holding onto the wheel happily surfing this 80 foot Ketch down the backs of these huge waves, until one mighty 80 knot-plus gust ripped the hanks from the storm-jib in what sounded like machine gun fire. Now, with torn storm sails, the only option was to again turn back to Port Elizabeth, which took only 12 hours under "bare poles" after two full days fighting for only 100 nautical miles progress towards Cape Town.

The storm raged for five days and four nights, apparently the worst in the Cape for at least 5 years. Nearby two freighters were severely damaged, one sunk. The weather maps for this period show the yachts were caught in a series of "deep depressions sweeping in from the South Atlantic which, working against the mighty Aghulas current, produced enormous waves. With the possible exception of the Gulf Stream, Aghulas is the world's most powerful current that can produce vertical walls of water some 5 stories high topped with wild foaming crests which appear from nowhere, rolling forward at about 30 knots" (Pickthall, 1980). I can certainly vouch for that.

Also in the middle of the maelstrom was the hastily built yacht *Kaleo*, now without sail or engine power. I'm sure they were



*Photo 4: Below decks on Hotel Batavier was luxurious. Doctor Jim prepares a tuna caught in a quieter moment.*

wishing they had decided to stay in Mauritius (which is said to have the most beautiful women). They only just managed to get a Mayday call through to Durban Radio before the full force of the storm hit, and in response the South African Navy dispatched a 120 foot "strike craft"; a vessel built handle the atrocious conditions with a top speed of 30 knots and able to achieve a much faster rescue than any civilian craft. The original plan was to only rescue the crew, however, without knowing that conditions would worsen, (or that the tow vessel had a minimum speed of 10 knots - a dangerous speed to tow any yacht in the best of conditions), a decision was made to also save the yacht and tow it back to port. The tow didn't go well: the yacht rammed the tow vessel twice and at one stage disappeared into the tube of a huge wave until the tow rope whipped taut and pulled them out. White knuckle stuff indeed!

The crew had taken a VHF radio up on deck in a plastic bag to make it easier to communicate

with the tow vessel, but salt spray soon put that out of action and they were left to using code flags, with the aid of a rapidly consulted code-book. Imagine the scene: frantically looking up a code book to work out which code-flag to show while all hell is breaking loose and you're being tossed around like a cork washing machine.

At one point the yacht surged over its own tow-line which then became wrapped around its keel and rudder, rolling the yacht over past 90 degrees and scattering crew and equipment everywhere. Luckily everyone was still onboard. The tow was finally abandoned when the tow-line whiplashed across the chest of a crew member who ended up lying across the deck clutching his chest in agony, luckily with only a broken rib.

*Kaleo's* final rescue was affected many hours later by a large South African anti-pollution vessel which was able to tow the yacht to Durban at a more sedate speed. Amazingly, all of *Kaleo's* crew survived, and the injured crew member only suffered a broken rib. It's amazing nobody died and the event called into question the suitability of lightweight yachts for long ocean races.

To cut a very long story short, for us the remainder of our race up the West African coast was just glorious and uneventful. We became becalmed in the doldrums and later got stuck again for 7 days in the Azores high, a large stationary high-pressure cell with no wind. We sailed through swarms of turtles so thick you could use them as stepping stones across the ocean, and on another day we sailed through Portuguese Man-O-War (blue bottles) so thick they completely covered the water. As we neared the English Channel the water became dirtier, with floating telegraph poles and partly submerged containers, as much a danger to the yacht as any storm.

Believe it or not, *Kaleo* was patched up and trucked across South Africa ready to compete in the second leg from Cape town to Rotterdam. Flyer won the race in 65 days, but failed to smash the 120 year old record by only 16 hours – that must have been disappointing! They did however manage to beat the *Cutty Sark* by more than a week. We took a leisurely 89 days, but at least we made it in one piece, and we did win the Lloyds of London prize for the best kept radio log, a trophy which still resides somewhere in Holland.

Throughout the race I was in regular contact with Steve VK2BGL,

mostly on 14.140 MHz. Steve was invaluable, passing messages to and from home and keeping everyone informed about what was or wasn't going on. The race was big news in Holland and South Africa, and an amateur radio net had formed on 14.140 to monitor the race progress on a daily basis. Apparently the amateur radio grape vine was somewhat speedier than the official race network, and position information passed along by local hams was appearing in Dutch newspapers the very next morning. In fact, I heard later that the Nedlloyd race committee would buy the local newspapers each

morning to see where their racing yachts were.

There is no way all this could happen again. There is no way a bunch of misfits could do anything like we did, given the regulation, constraints and "sameness" of modern society, and I've only told a very small part of the story! There's no-way under-prepared yachts and crews, without the correct equipment, would ever be allowed to enter a race today – even a short one - but luckily for us things we all survived to tell the tale.

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Rodney VK2CN. 0249448393 or [rprout@idl.net.au](mailto:rprout@idl.net.au)

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





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