Amateur Radio

Volume 82
Number 12
December 2014
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WIRELESS INSTITUTE OF AUSTRALIA

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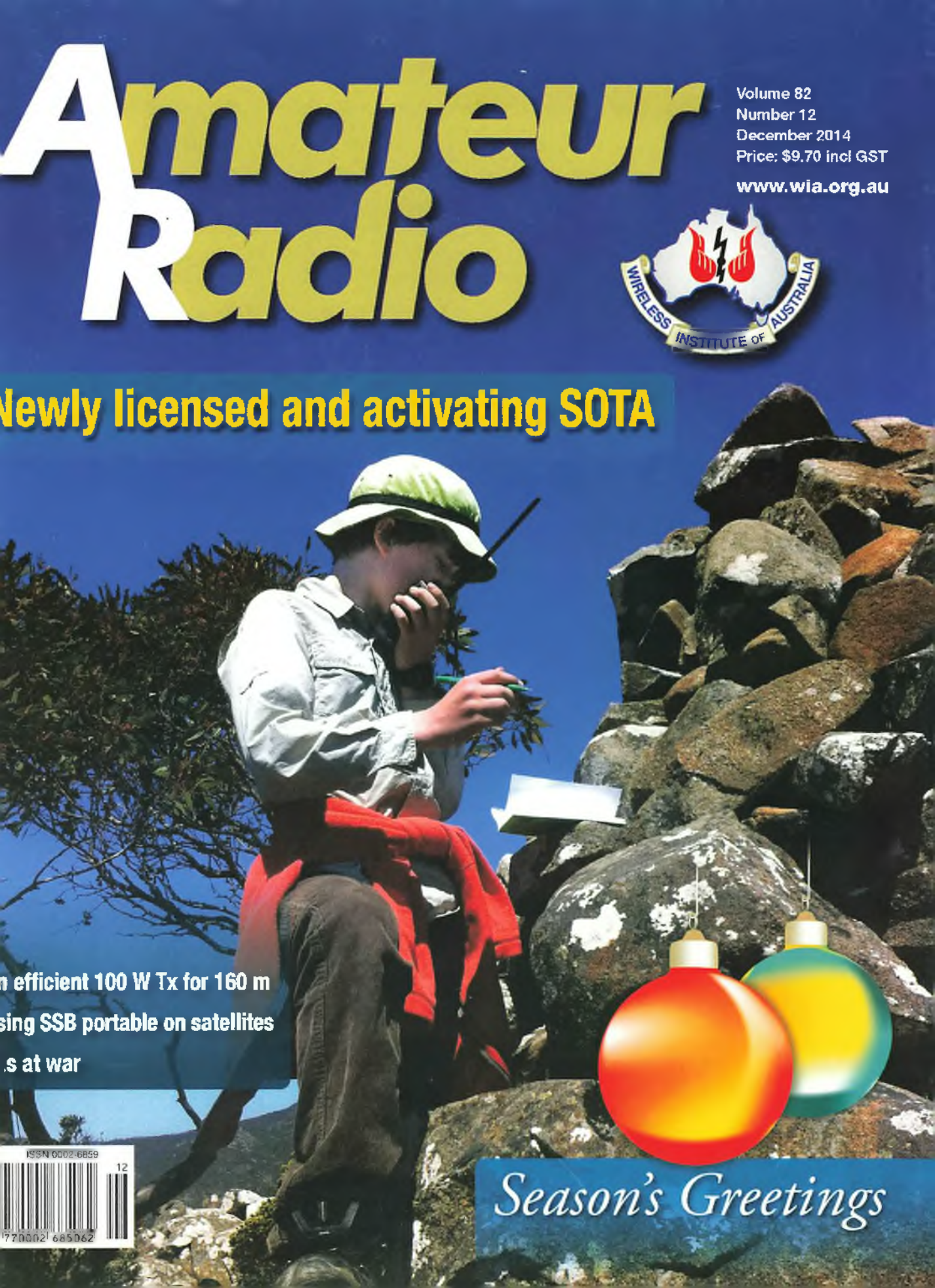

Season's Greetings

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System Fusion is designed to enable seamless intercommunication between conventional FM and C4FM Digital using a single unified platform, without manually switching between the communication modes.

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Amateur Radio

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General

Technical

Columns

This month's cover

Our cover this month shows a newly-licensed Reuben Giles-Clark VK7FREU activating his first SOTA summit as a licensed amateur. Reuben was activating the summit together with his father, Justin VK7TW, our VK7 columnist. Congratulations on gaining your licence Reuben! Whilst the VK7 column only gives passing mention to the activation, the image was the best candidate for the cover this month! Photograph by Justin Giles-Clark VK7TW.

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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Member of the International Amateur Radio Union

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Editorial

Peter Freeman VK3PF

Another year almost done

Christmas is fast approaching, with the end of year following shortly afterwards. Is it just me, or is everything speeding up?

On the radio front, things seem to have been reasonably busy for me. The production of this magazine takes a significant time commitment. I have made no progress towards approval and installation of my mast at home. I guess I have had little incentive, as my SOTA activities have been most satisfying: if one is busy at the computer at home, I can chase any activation by a quick move from one side of the room to the radio desk on the opposite side. Of course, I have made some time to get out onto some summits myself. I really do find activating summits pleasurable: out in the open air on a hill top (or mountain top) after having had a walk to gain the summit, followed by a pleasant walk back off the summit. Well, at least that is the theory, provided the weather is reasonable and the scrub is not too thick!

Many of the WIA team have also been busy with internal WIA issues and preparing responses to issues raised by the ACMA. News of all these can be found on the WIA website, some under the News items, and others under ***WIA Hot Issues***. Planning is progressing with the commemorations associated with the centenary of World War I and especially of the Gallipoli landings in April 2015.

We have had some changes in the Publications Committee, the most notable being the retirement of Ernie Walls VK3FM from the role of Secretary. In addition, we are now producing a digital edition each month, which members can download from our server on the day that the magazine arrives in letter boxes in greater Melbourne. This issue also sees the last DX News column prepared by Luke VK3HJ – many thanks for your efforts Luke! We have a volunteer to replace Luke, but I will leave the details until the next issue.

Articles and photographs needed

Our pool of articles for publication is slowly dwindling. We have had a couple of articles in recent issues about how to work amateur satellites – excellent articles for someone new to this area, regardless of how long they have been licensed! More articles of a similar style (i.e. written for beginners to the subject matter) on other topics are sought. Perhaps topics like:

- An introduction to digital modes (perhaps start with PSK?)
- How to set up APRS
- Simple antenna ideas (yes, we have had many of these in the past)
- Amateur television.

These are just some topics. I am aware that we cannot possibly cover everything here, but perhaps we could start with a short descriptive item with guides as to where on the internet readers can find additional **introductory** information?

The other thing that is needed along with more articles is well-composed, well exposed high resolution images that may be

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WIA comment

Phil Wait VK2ASD

Christmas, again?

Christmas is always a good time to reflect on the achievements of the past year, and possibly the disappointments, so let's look at what the WIA has achieved during the year, compared to what we said we would achieve.

It seems like only yesterday - not last December - when I reflected that 2013 had *"largely been a year of consolidation"* and that the new year (this year) would be one of working towards "improving the social/community relevance and accessibility of amateur radio, bedding down the new WIA Volunteer Committees and turning around the finances".

In 2014, the Federal Governments Spectrum Review process gave us a once in a generation opportunity to promote the value of amateur radio to government and policy makers, and to highlight how spectrum allocated to amateur radio can be used to greater public benefit for education and research, emergency response, and as a "spectrum park".

The Department of Communications has recently released the "Spectrum Review – Potential Reform Directions" paper for public comment, containing a number of proposals of interest to amateur radio, such as: a single licensing framework in place of the current spectrum apparatus and class licences; delegation of spectrum management and licensing functions to other entities; strengthened interference protection resolution and enforcement tools; greater transparency in radio communications policy formation and application; and strengthening available ACMA enforcement measures. Many of the proposals contained in the Directions Paper are consistent with the recommendations in the WIA submission.

The Spectrum Review coincides with the scheduled "remake" of the Amateur Licence Conditions Determination, the LCD. The WIA has submitted to the ACMA a list of recommended changes to the amateur LCD, such as digital modes for Foundation licensees, new frequency bands, a minimum 5-year licence term which would reduce the administrative component of the licence fees, higher power for all amateur licence grades, and transmission restriction by bandwidth rather than mode (technical neutrality). We believe all these initiatives would make the hobby more attractive to newcomers, especially the "makers" and experimenters.

The WIA's pro-active participation in the Spectrum Review, and to the recommendations to the remake of the Amateur LCD, all serve to improve the social/community relevance and accessibility of amateur radio.

I also said last December that *"by far the greatest challenge facing the WIA right now is financial, with another loss projected for this year."* In February this year the WIA raised membership fees by about 18% - quite a large increase in percentage terms. Commentary at the time was pretty mixed, especially on social media with some people shouting the WIA was going to hell in a hand-basket, and that we were all doomed (many of these types of comments were from non-members anyway), and others suggesting the increase was justified under the circumstances.

I can now happily tell you that the WIA is on track to show a small profit this year, and the current membership is running about 4550, only very slightly down on last year and about on trend for the last few years. Inevitably, some members did not renew for a variety of reasons including the membership fee increase, and some had no choice due to age..., but it was very pleasing to see a strong number of new members and many lapsed members re-joining.

So, at this early stage we appear to have turned the finances of the WIA around without too much long-term pain, and there are further (though more difficult) opportunities for operational savings if required in the future, and we have some ideas to boost membership.

The third strategic target for 2014 was the WIA Committee system. WIA committees are currently operating mostly on an ad-hoc, issues driven, basis. Committees become very active when there is an important issue to address. In particular the Spectrum and Administrative committees have been very busy this year, as have others such as Radio Activities (contesting and awards), Marketing and Publicity. I would certainly like to see the committee system strengthened next year, but we must remember that volunteer time is precious and we don't want to waste it on following process rather than solving important issues.

Continued on page 5

WIA news

Government's Spectrum Review proposes a single licensing framework

The foreshadowed consultation on the Radiocommunications Spectrum Review has opened, the announcement being made by the Minister for Communications on 11 November 2014. The Department of Communications has released the "Spectrum Review – Potential Reform Directions" paper for public comment.

The Minister for Communications, the Hon Malcolm Turnbull MP, announced the release of the Spectrum Review – Potential Reform Directions paper for public comment.

The Directions paper is available from the Department of Communications' website.

Among the 11 potential reform proposals, of interest to the amateur radio community are:

Introducing a single licensing framework, which does away with apparatus, class and spectrum licensing, in favour of licences being issued based on a set of parameters that cover frequency bands, power limits, licence terms and other specifications. This is otherwise known as "parameter-based licensing".

ACMA delegation of spectrum management functions to other entities. Functions to be devolved could include licensing, fee collection, interference management and dispute resolution, among other things.

Developing more principles-based regulation of the supply of electronic and radiocommunications devices. The idea being to increase incentives for device suppliers and users to to manage risk and resolve interference, as well as disputes in the device supply market.

Extending enforcement measures available to the ACMA, enabling it to impose civil penalties, issue remedial directions and formal warnings to manage and control interference, along with related powers.

Feedback on the Directions paper has to be lodged with the Department of Communications by 2 December 2014.

The 9 cm band is safe, for now

Use of the 3400-3600 MHz band, including Amateur access, will remain 'business as usual' for the time being.

This has been the fortuitous outcome following the recent consultation on future arrangements in the band, conducted by the Australian Communications and Media Authority (ACMA).

The consultation process began when the ACMA released a discussion paper, *Transitioning the 3.5 GHz band for future opportunities*, on 18 June 2014. The ACMA sought to identify licensing arrangements in the band that might *". . . maximise regulatory flexibility for both licensees and the ACMA"*. The 3400-3600 MHz band had a mix of Apparatus and Spectrum licensees at the time, and the ACMA proposed extending Apparatus licensing across the band for the future.

Responses to the discussion paper closed on 30 July, the ACMA receiving 24 submissions. Eight were from individual amateurs along with one from the WIA. The ACMA notes that there was lack of consensus on the best way forward for the 3.5 GHz band among the 24 submissions received.

On 30 October, the ACMA wrote to all those who made submissions, explaining its decision: *". . . to retain the existing mix of apparatus and spectrum licensing arrangements in the 3.5 GHz band. The current embargoes will also remain in place, at least in the short term, although we intend to review those arrangements as use of the band develops."* The ACMA added that it *"no longer considers that increasing the extent of apparatus licensing is appropriate."*

The 9 cm band landscape took a dramatic turn on 22 August 2014 when the Minister for Communications, the Hon. Malcolm Turnbull MP, issued a Draft Direction to use 3.5 GHz band spectrum for the NBN spectrum gap, with submissions in response to be received by the Department of Communications no later than 22 September.

The Direction called for the ACMA to complete arrangements by 30 April 2015 to licence two spectrum blocks – 50 MHz at 3400-3425 MHz, and 25 MHz at 3492.5-3542.5 MHz – for NBN purposes under Apparatus licensing. The Direction was registered on 24 October 2014 and expires on 24 October 2015 (*www.comlaw.gov.au/Details/F2014L01399*). The two spectrum blocks are currently embargoed to the issue of new licences.

The Department of Communications received ten submissions. Three were from individual amateurs along with one from the WIA.

The ACMA's letter of 30 October advises that: *"In line with the ACMA's decision to maintain existing licensing arrangements in the band, the ACMA will soon commence reissue considerations for the 3.4 GHz spectrum licences, which expire on 13 December 2015."* Further, some sections of the 3400-3600 MHz band that remained unsold in a spectrum licensing round previously, have "lapsed" and become available for reallocation. The ACMA advises that it expects to commence consultation on a proposal to the Minister that this unallocated spectrum be designated for spectrum licensing.

So, amateur access to the 9 cm band remains "as is" for the time being, but we're not out of the woods.

Further details and links to relevant documents can be found on the WIA website – look in News for November.

WIA comment

Continued from page 3

Detailed information on all these and the many other hot issues such as the band plan review, the WIA repeater and beacon policy review, our work with the ITU on the proposal for a new band at 5 MHz, and all the various spectrum issues such as 2.3 and 3.5 GHz, can be found in the Hot Issues section of the WIA website. Oh, and I hope you are all enjoying your digital *AR* magazine.

So, did we meet our objectives for 2014? I'll let you decide. The most important thing the WIA does is advocacy, and next year looks to be largely be a continuation of the Spectrum Review process and following-up on the WIA's proposals for the remake of the Amateur LCD, and importantly the 100 year celebrations for ANZAC.

Finally, I would like to sincerely thank our two staff members Mal and Dianne, our team of dedicated volunteers, my fellow WIA Directors and all WIA members for supporting us through a fairly difficult year.

Have a safe and happy Christmas and see you all in 2015.

Phil Wait VK2ASD

PS: Please do make sure you have registered for MEMNET. Go to www.wia.org.au click on 'For Members', then click on 'Log into MEMNET', and register... it's very simple. If you are changing your email address, please remember to update your information in MEMNET.

Editorial

Continued from page 2

suitable for use on the cover of this magazine. Be sure to only send in images at around 1 MB file size for jpg files, but do try to set your digital camera to record at its highest resolution so that the best quality image is available if we think that the image is possibly cover material.

You can find information on how to contribute on the WIA website:

http://www.wia.org.au/members/armag/contributing/

Please do all take care over the coming couple of months. This can become hectic, especially on roads during the festive season.

I look forward to catching at least some readers on air, perhaps from a summit or a national park. Enjoy the seasonal celebrations and I trust all have a prosperous and healthy New Year.

Until next month,

Cheers,

Peter VK3PF

The Wireless Institute of Australia ACN 004 920 745

Election of Directors - Call for Nominations

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

Four directors retire at the conclusion of the next Annual General Meeting which will be held in Canberra, 9th May 2015, namely Ewan McLeod, Fred Swainston, Robert Broomhead and Roger Harrison. Each is eligible for re-election and Ewan McLeod, Fred Swainston, Robert Broomhead and Roger Harrison have offered themselves for re-election to four of the four vacancies.

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

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

Any person wishing to nominate as a candidate for election as director of the WIA must deliver or cause to be delivered to the Returning Officer by not later than 31 January 2015:

A statement signed by the candidate signifying his or her willingness to be a candidate for election as a director together with;

the full name, age, occupation and callsign of the candidate, and

such other biographical details or other information as the candidate wishes to accompany the ballot papers, but in all not exceeding 250 words.

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

Unit 20
11-13 Havelock Road
Bayswater
Victoria 3153

or by mail to:
PO Box 2042
Bayswater
Victoria 3153

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

Geoffrey Atkinson VK3AFA
Returning Officer

Titan Missile Museum discone antenna, Arizona

Geoff Atkinson VK3TL

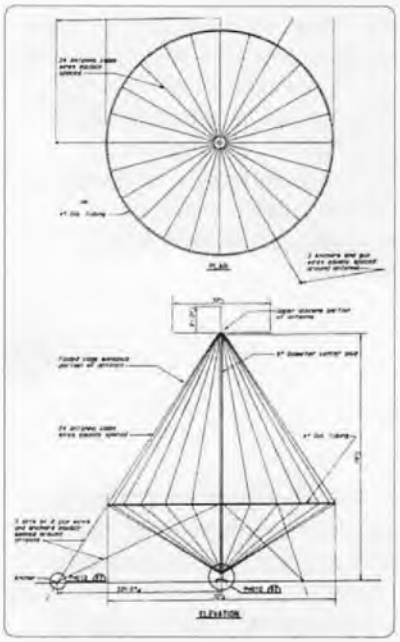

Figure 1: A drawing of the Titan discone giving key construction details.

An aviation themed trip to the USA took me to Tucson, Arizona after a week at Oshkosh, Wisconsin, where I was overawed by 10,000+ airplanes that gathered for the world's largest airshow and celebration of the 60th anniversary of EAA (Experimental Aircraft Association).

The Fox Cities Amateur Radio Club Inc had radio station W9ZL set up at Kid Venture in the Oshkosh grounds, to promote AR to young members of the crowd, as part of a week-long activities program. There is a lot of synergy between amateur radio and aeroplanes.

After a tour of the Davis-Monthan Air Force facility, more commonly known as the 'Boneyard', the home of redundant or surplus aircraft, where hundreds of planes are lined up in class type, waiting stripping for spares or total destruction for scrap, we went to the Pima Air and Space Museum, to view the large selection of aircraft. Some in pristine fully restored condition, others showing the signs associated with outdoor exposure. Even a GAF Nomad was in the display lot, after service with the Civil Air Patrol.

Following the Pima experience we went to the Titan Missile Museum and the basis of this short article. It's not about the missile in particular but the very large discone antenna that is part of the site.

Officially known as complex 571-7, it was one of 54 Titan II missile sites in use from 1963 to 1987. The Titan could carry a nine megaton nuclear warhead 10,000 km in 30 minutes. Various tours of the facility are available of the site, which is made up of three sections interconnected by spring suspended walkways. The Launch control, Access and blast lock area and missile silo.

Photo 1: The Titan discone antenna itself – imposing, to say the least.

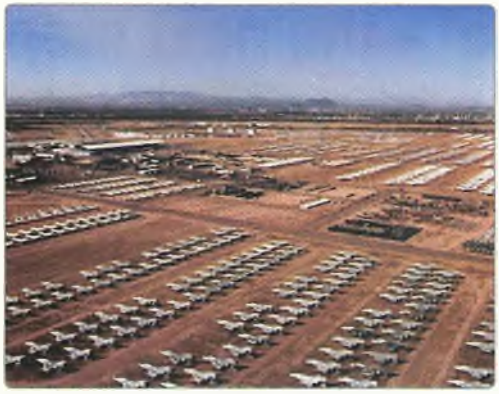

Photo 2: Davis-Monthan Air Force facility.

Several scenes in the 1996 film Star Trek First Contact were shot at the site. The missile itself was depicted as the launch vehicle for the film's Phoenix spacecraft.

Making enquiries of the tour guide, I learnt that I could have had access to one very large antenna system. It dominates the area adjacent to the car park. Sadly I didn't have an HF radio in my backpack!

The 24 metre plus (80 feet) tall discone was built by the Collins Radio Company in the early 1960s and installed at its present location, becoming operational on 15 July, 1963 by the USAF until the site was deactivated in 1982. The antenna, since then, has been used by the Green Valley Amateur Radio Club for special events. They are the custodians of the antenna. Each year GVARC support a number of events held by the Museum as well as BBQ's and other special event activities. Listen out for WE7GV, the club call.

The simple procedure is to produce the appropriate evidence of qualification, sign in at the reception desk and receive the key to the box where the connecting cable interfaces to the antenna. Connect your radio and start calling.

The SWR of the antenna is below 1.5:1 on most bands except 15 metres where it registers 2.37, easily compensated for with an external tuner. No maintenance has been done in over 23 years and probably none was done during its active life. The silos were designed to be used ONCE!

The antenna is 884 metres (2900 feet) above sea level, and would look great in any amateur's antenna farm. The centre pole is 225 mm (9 inches) in diameter and 24 antenna cables are spaced equally around the circumference, held by a 100 mm (4 inch) tube formed in a 21.34 metre (70 foot) diameter frame. The antenna is supported by three sets of two guy wires spaced equally around the antenna. The top-hat assembly is 9.15 metres (30 feet) in diameter.

I'm now looking for a similar disused defence antenna in Australia that could provide a great contest venue and opportunity to add some 'grunt' to a signal.

'Ham satellites SSB portable' - the next step after working the satellites with your HT!

Malcolm Pizzey VK2MAL

Amateur radio satellites have been my main interest ever since I first became licensed as a ham. I became hooked after reading an article out of *Practical Wireless* magazine from England. It was titled 'Going QRP on Satellites'. The whole idea of talking through a satellite into space sounded really exciting.

I started out operating a portable FM station using a dual band HT (handheld radio) and a home brew antenna. Nowadays I have a well-equipped base station, computer controlled, tracking antennas, full duplex all mode radio and all of that stuff, yet I still like to get outside and operate handheld!

An upcoming family trip planned to Port Stephens north of Newcastle gave me the perfect opportunity to break out my portable station for a bit of fun. When I checked the prediction schedule for SO-50 I found it was only available in the middle of the night and middle of the day! I needed to look for another bird that came early evening when my kids were in bed.

I checked the schedule and found VO-52 came usually between 7 pm and 9 pm at night. The evening passes of VO-52 over Australia usually had activity, so this was the perfect opportunity. This was something new for me and I decided to have a go and work the 'SSB satellites portable.'

I have experimented in the past with a FT-817ND and a laptop to control it. You can find a video of me online using this setup at the 2013 Wyong Field Day, but let me stress this - it is not the most ideal setup as you cannot hear your own downlink when transmitting. This style of operation is termed half duplex. In Australia you might be lucky using this setup but if you live in an area where there is high satellite traffic, like the USA or Europe, you will not have much success and may even disrupt other QSOs. Also to work the satellites half duplex you really need an experienced operator on the other side who can track your signal when you drift on the transponder. In saying all that it is a place that some people start out.

For those who don't know much about the amateur satellites the FM satellites act just like a cross band repeater. For example the uplink frequency to SO-50 for FM voice is 145.850 MHz and the downlink frequency from SO-50 is 436.795 MHz. The linear transponder or SSB transponder satellites are similar but different. You can have multiple QSO's happening at the same time through one transponder. VO-52 you can uplink anywhere between 435.220 MHz and 435.280 MHz LSB. The downlink from the satellite would then be between 145.870 MHz to 145.930 MHz USB. They call these bands where the QSO happened the 'pass band'.

On Youtube I have seen a number of videos of Patrick WD9EWK and his setup. I've personally experienced talking to Patrick on air when he visited Australia in May 2011. This inspired me to give it a go. His setup uses a Kenwood TH-F6A for a receiver and the Yaesu FT-817ND as the transmit radio. The antenna being an ELK log periodic dual band covering 145 MHz/436 MHz. Both radios were being controlled manually, no computer control needed.

Having worked the FM satellite in the past you would have already experienced Doppler. Well here we are talking SSB signals not FM, and so Doppler adjustment is just as crucial on uplink as well as downlink. There can be up to 3 kHz shift plus or minus on the two metre band and up to 9 kHz shift plus or minus on the 70 cm band.

Unlike a lot of the American YouTube demos on line, in Australia it is normal practice for a round table approach to QSOs on the satellites. This is mainly because of the low number of operators that work the satellites here. On the SSB satellites most operators listen and talk around the centre of the transponder pass band.

I used an application on my IPhone called 'GoSatWatch' to monitor the progress of the satellite prior to AOS (acquisition of satellite). For satellite tracking there is a myriad of different software packages you could use. I am not going into too much detail here and I am guessing you may have already worked it all out if you have already worked a FM satellite in the past. Key thing you will need to know is when the satellite will arrive and where the satellite is travelling throughout the pass.

My downlink (RX) radio is a Kenwood TH-F7E preset to listen around 145.902 MHz USB. This would be about the middle of the pass band plus two kHz for Doppler correction. Once I acquired the satellite signal I could usually hear the QSO's that were already taking place on the bird. If the voices sounded a little off frequency I simply fine tuned the radio a little until the voices became clear. Sometimes you may need to search a little at the start but you should be close.

As the pass progressed I continued to adjust the receive radio for Doppler by listening to the

other stations and adjusting the radio to compensate. I also peaked the antenna direction by listening and peaking the audio levels. You know when you are off direction because the signal levels start to drop off into the noise floor. Unlike a clunky rotator you can quickly compensate when holding the antenna in your hand. The antenna I use is an 'Arrow' dual band satellite antenna. Any two or three element VHF Yagi would be sufficient to hear the downlink of VO-52.

Here comes the tricky bit. My uplink radio is a Yaesu FT-817ND which I had pre tuned eight kHz below the centre of the pass band which would be around 435.142 MHz LSB. On 70 cm there is normally around plus or minus eight kHz Doppler shift. Counting into the microphone, I would quickly adjust the FT-817ND to tune my uplink till I could hear myself clearly. Once on frequency I would have a brief QSO with the other operators.

Now I was using the FT-817ND with the internal batteries so the power may only have been set to about 2.5 watts. I had enough power that I was fully quieting through the transponder of the satellite because I would always have line of site with the satellite. If there were trees or other vegetation between the satellite and me they would drastically reduce the readability of the satellite.

A key to this setup I found was to keep the overs short. If I spoke too long I would drift too much in the pass band, which would make it harder for the other operators to track me. The good thing was I could still hear my own downlink when transmitting and make some adjustment to my uplink radio to compensate for Doppler.

It was amazing the performance from this simple setup. With this style of radio setup I remained very portable and was still successful in making contacts. Most operators that I spoke to on air thought I was on the home station because my uplink audio was so good. Over that weekend I managed to make a lot of contacts and in fact at one stage I think we may have had four operators on one satellite pass.

You could use this same formula on the other satellites as well but I would suggest you start out with VO-52 as it has a nice strong downlink and is easy to hear for the newcomer. If you are not confident then have a go at listening for the downlink signal first. This is a good starting point, and you will get to know who the other operators are and how things work. You can also have a go at listening to the VO-52 CW beacon on 145.860 MHz. This is great if there aren't other operators around and you need a reference to tell you that you are receiving the downlink OK.

I found the above method worked great as well on AO-7 but it became a bit tricky on FO-29. The 70 cm downlink makes it a lot more difficult to track and have a QSO at the same time.

If you want more information about the satellites then join the AMSAT-VK Yahoo group. You will find a wealth of information in the files section of the website and plenty of members who can give you advice.

Once you have done all you can with your portable FM satellite setup and you want to progress to the next step grab the portable antenna that you are using for the FM station and connect it to a SSB radio and have a listen. You will be amazed by what you can hear and it is a lot of fun along the way. Good luck with it and look forward to a possible QSO with you on the birds.

Notes

Amsat-VK: *au.groups.yahoo.com/group/amsatvk*

Patr ck WD9EWK/VA7EWK Youtube: *http://www.youtube.com/va7ewk*

My Youtube: *www.youtube.com/user/vk2mal*

ELK antenna go to: *www.elkantennas.com/*

Arrow 146/437 antenna go to: *www.arrowantennas.com/arrowii/146-437.html*

GoSatWatch for IOS go to: *www.gosoftworks.com/GoSatWatch/GoSatWatch.html*

Stalwart takes leave from top ARISS job

Jim Linton VK3PC

A mainstay of Amateur Radio on the Space Station (ARISS) program, Tony Hutchison VK5ZAI, is taking a well-earned break from the daily grid to enjoy spending more time with his family and some travel.

His involvement so far spans 21 years and includes being the ARISS Coordinator for the Asia Pacific Region.

After 46 years farming, Tony and his wife Jill moved to Kingston to retire, but they had responded to many challenges to be a very busy couple indeed.

Tony VK5ZAI said: "I don't intend to retire completely, will still stay on as a telebridge operator when at home, but need a break from all the paperwork and setting up contacts for schools."

Up to 20 hours a week was spent setting up the many contacts with International Space Station astronauts and mentoring schools under the ARISS arrangement.

Tony VK5ZAI completed a four-year term on the Kingston District Council which serves the Limestone Coast of South Australia's south-east at its final meeting on November 4.

The Councillor has also been very active as a committee member helping assess building applications among other things, on the Town Improvement Committee and the Kingston Tourism Committee.

His home for some 12 years has been part of the coastal base station network of the Volunteer Coast Guard.

Tony's efforts have been acknowledged by NASA, AMSAT and the WIA. Tony and his space work featured in newspaper articles, *Amateur Radio* magazine and on television.

The ARISS program will continue in 2015 with Shane Lynd VK4KHZ, who has already done a fantastic job as a telebridge station.

Tony VK5ZAI and Jill will now take a break of 12 months to enjoy their family and travel. Jill has been on the local hospital auxiliary and is always seen cooking or raising money for the cause.

"While travelling we hope to activate some of the Conservation Parks in South Australia," he said, inviting all to contact him during the trips on 40 m.

YLs at War

Jennifer Wardrop VK5ANW/VK3WQ (ALARA Historian)

Perhaps the earliest suggestion that women should be encouraged to be involved in defence related war-time communication activities, comes in this extract from *Wireless World*, August 1915, page 334, entitled, *Wireless Telegraphy and the "Fair Sex"*:

"It is a somewhat curious thing that up to the present the practice and study of wireless telegraphy does not appear to have attracted much attention from women - Their energies have in the past been mainly directed in a certain few well-defined directions. Whatever else it may be doing, the war is undoubtedly exercising an influence in the direction of practicality, and some of our contemporaries have been recently chronicling the activities of the Women Signallers' Territorial Corps, who have placed themselves under the Commandant-in-Chiefship of Mrs. E. J. Parker, sister of Lord Kitchener.

They invite any woman of good education, who is prepared to devote a certain number of hours daily to learning the art of signalling, to apply at their headquarters, 184a Oxford Street. Their activities are apparently intended to cover every branch of the occupation, and to include the methods of flags, air-line, buzzer, cable, wireless, whistle, lamp, and heliograph signalling. Most of these form exceedingly interesting subjects in themselves; and wireless telegraphy, which forms the most modern and most scientific, should make a strong appeal to feminine intelligence." (1)

This, of course, was in England and the English experience was very different to Australia's. Women there had been involved with Voluntary Aid Detachment services, the Red Cross and the replacement of men in Industry since August 1914, although they still wanted to do more to *"Help Beat the Huns!"* Early in 1917, fourteen cooks and a waitress from England crossed the Channel to France as volunteers in Queen Mary's Army Auxiliary Corps. By 1918, 57,000 women had joined that corps (2).

Photo 1: Florence Violet McKenzie OBE A2GA/VK2FV/VK2GA.

Information about this corps was sent to Australia, and although many Australian women wanted to go and help in whatever capacity, they were denied passports.

Their frustration resulted in the formation of the Australian Women's Service Corps. Even with their "strength in numbers" they could not change the Government's mind and the only careers available to women in connection with the Australian Imperial Force were those of Army Nursing or Wardsmaids, and for the former, three years' experience in a general hospital was necessary (2).

At the start of the Second World War things were not much better here. A public meeting for a proposed Women's Australian National Service, in the Sydney Town Hall on June 25th 1940, attracted 10,000 women even though it was a cold, wet night. When the centre for the WANS was opened in July 1940 by Lady Wakehurst, 4,431 members joined immediately. Although there were many societies that women could join, the question of admitting women to the Services was still being ignored in October 1941 (2).

While we do not know of any Australian lady amateur operators who were involved in the First World War, there were certainly some in the Second World War.

Florence Violet McKenzie OBE (nee Wallace) A2GA/ VK2FV/VK2GA

Probably the best known of these was Florence Wallace. Born in 1891, she became Australia's first tertiary educated female electrical engineer, and opened a wireless/electrical shop in Royal Arcade Sydney in 1921. It was the conversations she had with the wireless enthusiasts who came into the shop, which led her to become interested in amateur radio. Although reports exist of her having "a licence" in 1921, call sign listings do not reflect

this. It could be that she held some form of licence for her wireless shop business, or it was held under another name. However, she did become the first known licenced lady amateur operator in Australia, as during 1925 she obtained her AOCP and became A2GA. This is included in the 1926 call sign listing.

The 1948 call book shows her as VK2FV which lapsed about 1959. Regaining interest in amateur radio in 1979, she again became 2GA this time VK2GA which she held until her death in 1982. During 1922 Florence was involved with starting the *Wireless Weekly* magazine, along with three others. This magazine later morphed into *Radio and Hobbies* and later still, *Electronics Australia.*

In the mid 1930s Florence established the *Electrical Association for Women* which appears to have been formed mainly to teach women how to use electrical appliances in the home; she also wrote a cookery book for electric stoves, when none were available.

When she realised that war was imminent, "Mrs. Mac" as she was fondly known, became acutely aware of the need for radio communications as part of our defence, and the need for people trained in Morse code. She established a no-charge training school in a loft near her shop and started teaching. Her students were predominantly women and the school became known as the *Women's Emergency Signalling Corps*. In 1940, in response to a newspaper advertisement by the Navy, appealing for trained amateurs to enlist as telegraphists, she offered her trainees. The naval Director of Signals and Communications recommended to the Naval Board that they be employed at shore establishments and fourteen selected applicants took up their duties at the Harman Wireless Station. From this beginning the WRANS (Women's Royal Australian Naval Service), established in 1941, grew to a peak wartime establishment of 105 officers and 2,518 ratings.

Photo 2: Austine Henry VK3YL.

Over the years Florence trained the women to teach the thousands of men who wanted a skill to offer the Services. She could also see that if there were women in the services, who were competent in communication, it would free the men for other duties. In her valedictory published in *Ditty Box*, the ex WRANS magazine for June 1982, she was reported as being *"eventually responsible for training more than 12000 servicemen"*! American servicemen who were based in Australia were sent to Mrs. Mac for a refresher course. Initially sceptical, they were soon won over by her methods of training. Likewise, after the war she trained many QANTAS pilots. She became very interested in experimenting with television and also *"intended to establish a Women's Radio College"* although it is not known whether that actually happened. Florence was awarded an OBE in 1950. (3, 4, 5, 7)

Both **Moira Millgate VK8NW** (Alice Springs) and **Margaret VK2AHD** were *"Mrs. Mac's girls."* Moira left Mrs. Mac in May 1943 to join the WRANS, she was a 22 wpm operator, so had no problem later gaining her AOCP. Margaret spent decades in the WAAF, making this her career. They kept in touch through WRAN reunions until Mrs. Mac became a Silent Key in 1982. (6, 7)

Austine Henry (nee Marshall) VK3YL

Another well-known Amateur who trained operators during the war was Austine Henry (nee Marshall) VK3YL. She was born Mary Austine on 11th June 1913, in Brighton, Victoria. We are told that she received her first crystal set as a small child, and promptly pulled it apart to see how it worked! She later graduated to valve sets which she built.

Tutored by her then boyfriend, later husband, Bill Henry, Austine passed her experimental licence exam and was issued with an Amateur Operator's Certificate of Proficiency number 619, dated May 14th 1930 and signed by J. Malone, Chief Inspector (Wireless). An interesting side-line is that Mr. Malone hand wrote the words *"with congratulations"* above the typed *"Yours faithfully"* and his signature. But then, perhaps "Jim" always had a soft spot for the YLs. While addressing the 40th Anniversary Dinner for the WIA in NSW during 1951, he reflected on one XYL who requested that her OM's licence be revoked on the grounds of him neglecting his home duties! We are still not sure what action was taken! (19)

Austine duly received her licence, number 697 on the 21st May 1930 which allowed her to use a maximum power of 25 watts on seven bands from 1200 kc to 60,000 kc. Only the third woman to obtain an amateur licence in Australia, she became a very active VK3 operator and a great ambassador for amateur radio world-wide (20).

Austine continued to build much of her own equipment. A very large, full-power, crystal controlled transmitter which was completely home brew, won first prize in its class at the Victorian WIA display in the Melbourne Lower Town Hall in 1933.

On September 6th 1933 she became the first woman admitted to the Royal Australian Air Force Reserve and was enrolled as *No. R.20 A.C.2 Marshall M.A.* in the Wireless Section. Austine was most upset that they would not send her to the war zone as a radio operator, just because she was a woman! Despite her official commitments during WWII, she spent a lot of her spare time at the WIA on a voluntary basis, teaching Morse code to service personnel and others. Austine was discharged from the Reserve on September 6th 1938 (21).

A life member of the Society of Wireless Pioneers, and a member of the WIA for 54 years (in 1985), Austine had the distinction of having the longest YL membership to that date. Other achievements included, her entry to the DXCC Honour Roll as the first Australian YL, using CW. She was the first to gain the WAC-YL; certificate number 22 for the YL-DXCC from Canada (hand printed in gold) and the first VK YL to gain the ALARA award. Austine became a member of the ARRL on April 14th 1930, had over 30 years of membership in the RSGB, and was a foundation member of YASME winning certificate no.7 in the prestigious YASME Award. Other organisations to which she belonged included, NZART, RAOTC USA, RAOTC Australia, YLRL (Young Ladies Relay League) (USA), YLISSB (Young Ladies International SSB net), WARO (Women Amateur Radio Operators) (NZ) [11] and of course ALARA.

One of her more interesting contacts was in 1957 with Michael FO8AP/MM operating on the ill-fated Tahiti Nui raft expedition, attempting to float from Tahiti to Chile. After six months at sea, the expedition ended when the raft broke apart some 600 miles short of Chile after a week of storms.

Sadly, Austine died unexpectedly, at the age of 81, on September 9th 1994; the words "Silent Key" being most fitting for this internationally known YL ambassador (8, 9, 10, 11).

Despite searching old Call Books and various other sources, I have been unable to discover a call sign for Austine's husband, Bill Henry. I should be delighted to hear from anyone who can enlighten me.

Photo 3: The QSL card of Marjorie Williamson VK3HQ.

Marjorie Williamson VK3HQ (nee Hutchings)

Marjorie was one of the famous Hutchings family. They lived on a property called Bryn Avon at Callawadda, 18 miles north of Stawell, in the Wimmera district of Victoria.

Brother Alan's interest in radio went back to the early 1920s, when he experimented with a "spark coil" transmitter and his call sign was 3HL, later to become VK3HL. Their mother,

Elizabeth VK3HM, became interested through helping Alan (holding bits and pieces for the transmitters he built) and became the first licenced lady operator to transmit in Victoria: she is included in the 1930 Call book, so it would appear that she was licenced as early as 1929.

Marjorie quickly followed her mother and obtained her AOCP in 1932 and is included in the 1933 call sign listings. She shared a rig with her mother *"and used to chase DX at all hours"*. In 1939 radio equipment was sealed under Government orders until the end of WWII in 1945. During this time they were all shocked by Elizabeth's sudden death in Dec. 1943 at the age of 66. During the war Marjorie served in the RAAF nursing service in Japan, where she met and married Clive Williamson in 1947. They returned to Victoria in 1949, although she never set up another radio station she became an ardent member of ALARA. Alan continued his amateur radio activities and regular skeds right up to the time of his death in 1973 (7, 12).

Vicki Harris, later Vicki Page VK6YL (nee Longley)

Ruth Victoria (Vicki) Longley was first licenced in 1936; the first woman operator in VK6. Later married to VH (Vic) Harris VK6NL, one of her claims to fame was that she *"beat Walter Lindrum at Billiards by 31 points"* (but he had given her 750 points to help her!). During the war Vicki was the first WA woman to join the WAAAF (Women's Auxiliary Australian Air Force) once the service was started in 1941. She gained her commission as an Aircraft Woman in 1942 and was in Melbourne receiving signals from Darwin, when Darwin was bombed. The message she allegedly received was:

"Hold it! I'm just ducking under the table. The Japs are bombing us!"

(The punctuation may not have been sent quite like that but the message was no doubt accurate!)

Back in Perth, Vicki was the first WA woman to teach Morse code to Air Training Corps Cadets there. After the war other interests occupied her, so she did not continue with amateur radio (4, 7).

Madeline Mackenzie VK4YL

Madeline was not old enough to be involved in war time activities as she was only 12 when she sat and passed the full ticket at her first attempt in 1935 (the youngest YL in the British Empire at that time). However, she assisted *"on the home front"*. In the February 1942 issue of *Amateur Radio* magazine, a brief paragraph on wartime activities states: *"I believe Miss 4YL has to help dad (Mac VK4GK) with the Women's Fire Fighting Auxiliary"*. This came as no surprise after discovering that her address in the 1938 Callbook was "Fire Station, Wynnum" (13, 14).

Other YL Operators who gained their amateur licences after the war.

Heather Pike VK2HD was a wireless telegraphist in the Women's Auxiliary Australian Air Force during WW11 from 1942 – 1945 (15).

Poppy Ellen Bradshaw VK6YF (nee Petersen) – 113447 ACW WAAAF

Poppy enlisted on the 20th December 1944 and was discharged on the 18th June 1946. She trained as a Flight Mechanic at Ascot Vale, Victoria and served at Port Pirie, SA, Pearce and Wemley, WA. Flight Mechanics worked on aircraft engines; however, as the war was "slowing down" by the time Poppy enlisted, she worked in the Technical Library where her technical knowledge was needed. She also worked in Maintenance doing clerical work (15).

Freda Leaver VK2SU (nee Hazzard) – NF 410446

Freda's interest in radio may have been *"in the blood."* Her father, CT Hazzard, callsign XNT, was granted a licence to experiment on a wavelength of 200 metres, power 50 watts, in March 1913, at Brighton, Victoria.

Freda gained considerable experience in radio during the war as part of the Army's Special Wireless Section. After three months training at Bonegilla, she was posted to Western Australia as an operator, telephony only. Freda said "To earn my 5 shillings a day

Photo 4: Poppy Ellen Bradshaw VK6YF.

(50 cents), I managed to pass radio operators' test of plain language at 25 wpm; Kana (the Japanese Morse code) at 20 wpm; and code at 20 wpm, promoting me to signaller." After the war Freda acquired some Disposals equipment, an AR88D receiver with which she could hear the world, even airline traffic and Pedal Wireless. She sent for the correspondence course from the WIA and gained her amateur licence in 1961. As an amateur operator, she preferred to use CW and had regular skeds with other YLs. Her OM was Stan VK2DZP (2, 7, 16).

Gwenneth Hilda Petrich VK4AZC (nee Hanson)

She served in the WAAAF (Women's Auxiliary Australian Air Force) from 1942–1945 as a telegraphist. In 1946 she married Ron VK2CZ, (later VK4ACZ), who was a RAAF Wireless Operator. An excellent CW operator, Gwen obtained her Novice Licence in 1978 and the full licence in 1980. Gwen died on 28th May 1992 (17, 18).

Heather VK2HD and Poppy VK6YF were two of the first YL DXers I met on air when I obtained my Full Call in 1980. Along with Gill VK6YL, they were on several International YL nets, and were always welcoming to new YLs on the bands. Heather and Poppy are current ALARA members and I still keep in touch with Poppy.

My thanks to Andy Mitchell VK2RM for locating the 3/4/1931 copy of Wireless Weekly for me.

I would be very pleased to hear of, or from, any other YLs who were involved in war-time activities. Were there ladies involved in code-breaking in Australia? I'm sure there probably were, in the same way that some of the English girls who were very good wireless operators eventually found themselves at Bletchley Park. The story of the first intake of the Australian Women's Army Service (AWAS) personnel into the Australian Special Wireless Group (ASWG) is told in the book "No Medals in This Unit" by Jean Hillier. They trained at the Signals training camp at Bonegilla in Victoria, near the border with NSW. Apart from the normal telegraphist's training, they had to learn the 70 characters of the Japanese Morse code, known as Kana, and their activities remained top secret for many, many years after the war.

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A class-D 100 W AM transmitter for 1.8 MHz

Drew Diamond VK3XU

There is a particular attraction for cross-town working on 160 m using AM, which provides a favourable band for social and technical exchange with like-minded fellows. Certainly in and around Melbourne the venerable 11 am 'coffee-break net' remains a popular venue for round-table gatherings.

The main limiting factors for urban 'top-band' communication are a sometimes less than ideal area and/or height accessibility for an effective ground-wave antenna, and the usually high levels of man-made interfering noise. In practice, a 100% modulated carrier power of 50 or 100 W into an effective antenna is found necessary to overcome the 'S9' noise levels at most distant receivers. Unfortunately, the real AM signal 'talk-power' generated by many commercial transceivers is often less than required, in that the amplitude modulated power may be limited to about 25 W, and perhaps only carrier and one side-band is radiated.

Offered here are plans for a relatively simple, yet robust AM transmitter capable of a fully modulated, potent, efficient output power of at least 100 W (400 W PEP).

Circuit

As most AM activity seems to occur on 1.825 MHz (around Melbourne, daytime) and/or 1.843 MHz day or night, simplicity and reliability is had by using crystal frequency control - see Figure 1. The continuous sine-wave signal generated by the 2N5485 FET oscillator is applied to one gate of a 74HC04 CMOS hex inverter chip at pin 1, where a 1N914 signal diode operates as a dc restorer in order to move the input signal into the positive region, thus fully driving the gate. A 50 k trim pot is included to provide some fine adjustment on the symmetry so that the high/low on-off periods can be made equal (essential for driving the power output devices).

One gate of the '04 inverts the phase to provide our 180 degrees out-of-phase square-wave signals, which are applied to a pair of TC4422 driver chips. These handy high input/low output impedance devices are specifically designed to affect fast transition on-off switching of power MOSFET gates – see Reference 1. The TC4422s do a splendid job of sourcing and sinking the rather high gate input capacitance (typically 1350 pF) of the output MOSFETs at 1.8 MHz.

One admirable characteristic of class-D (and class-E, see Reference 2) RF power amplifiers is that output power exactly follows drain supply voltage, in that for each doubling of the voltage, power goes up by a factor of 4, or 6 dB, which results in 'text-book' amplitude modulation.

A pair of W20NM50 (or equivalent - see Reference 3) power MOSFETs are arranged in 'push-pull', and coupled to the output resonator through broadband ferrite transformer T1, six turns primary (P) and secondary (S). Note that the centre tap (ct) of the output transformer is not by-passed for RF, but rather, the output pair are fed through a 15 µH choke to provide a constant current supply. Essential transient voltage suppressors are connected between drain and source of each output MOSFET to absorb the energy released by (mainly) collapse of flux in the modulation transformer during the transmit to receive transition.

It was found experimentally that a series tank tuned somewhat below operating frequency, 1600 pF and 9 µH, results in best power efficiency (about 95% for the prototype). The carrier signal at this point is only approximately sinusoidal, so it must be passed through a 7-pole low-pass filter to reduce harmonics to an acceptable degree. For the prototype model, these are greater than 60 dB down.

Modulating signal is provided in this instance by a *Silicon Chip* (S.C.) Mk 3 audio power amplifier kit, which supplies more than adequate quality modulation power to the MOSFET PA, applied through an ordinary 40-0-40 V AC power transformer winding, configured as a one to two voltage step-up auto transformer.

Construction

The home-made 'panel and square rod' style chassis/case shown in Photo 1 measures 100 x 350 x 270 mm HWD. Heat sink for the S.C. Mk 3 amplifier/modulator module is mounted upon the rear panel with fins arranged vertically for best ventilation. My amplifier was built according to the detailed instructions provided in the kit with the exception that circuit board pins have been soldered into the board where the audio power device pins are, thus permitting easier replacement of these transistors in the unlikely event they are 'blown' in service.

RF components are accommodated upon a 'paddyboard' (Reference 4) circuit board measuring 95 x 260 mm. Components are soldered to suitably sized circuit board pads which are first tacked upon the copper side of the main board, as illustrated in Figure 2.

Microphone pre-amplifier components are mounted paddyboard fashion upon a board measuring 90 x 50 mm, as illustrated in Figure 3.

Construction method for the power supply is uncritical. Mine is

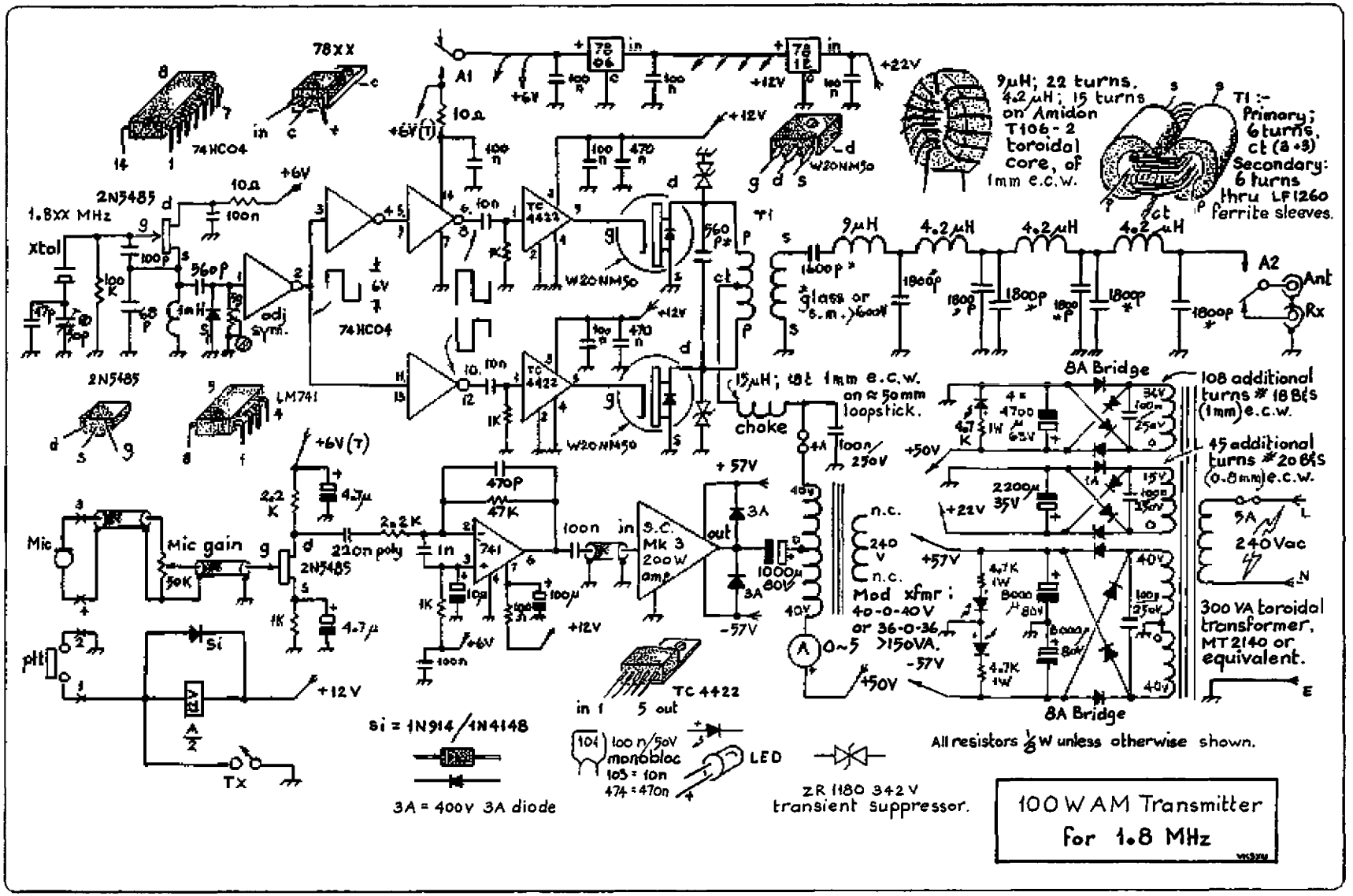


Figure 1: The schematic of the 100 W class-D AM transmitter for 1.8 MHz.

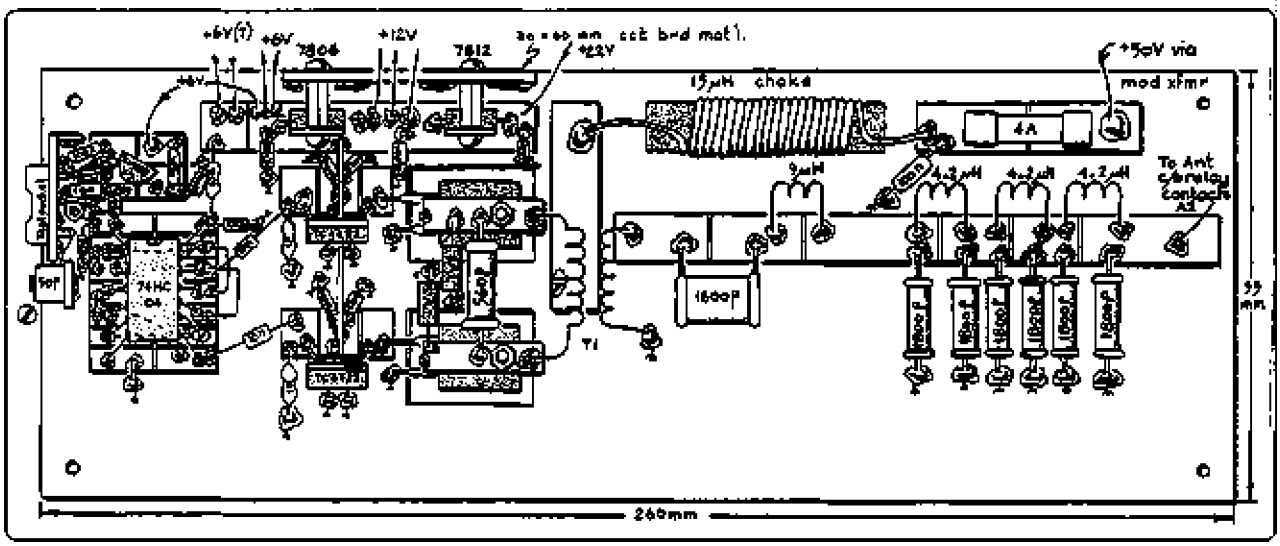
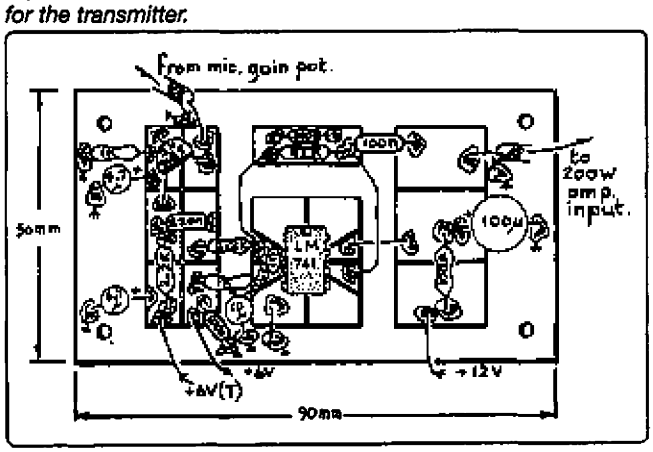


Figure 2: 'Paddyboard' layout of the RF board for the 100 W 1.8 MHz transmitter.

built chunky paddyboard (larger pads, strips and substrates for the diode bridges) style upon the copper side of the board. Power supply dimensions rather depend upon the physical size of your filter capacitors. You may have some computer-grade varieties, or parts perhaps salvaged from switch-mode PSUs. Later types have higher voltage and capacity for their size, so I have used new ones here to save space.

The nominal +50 V DC source for the MOSFET PA should be supplied from a separate winding on the main power transformer. In this model, 108 turns of one mm enamelled copper wire (ecw) has been evenly wound upon a stock 300 VA toroidal transformer (Reference 5) to produce about 36 V AC which, when rectified and filtered gives a no-load voltage of about 50 V DC. Your wire ends may be clamped upon the transformer with plastic cable ties. A similarly made extra winding, 45 turns/0.8 mm ecw, is wound on for a 15 V AC winding to supply +22 V DC which sources our regulated +12 and +6 V DC supplies. Use diodes or bridges rated at 400 V >8 A for the +/-57 V and +50 V supplies. Ordinary 1 A diodes will serve for the 22 V. LED lamps should be installed on the PSU board to indicate that the +/-57 V DC and +50 V DC supplies are working – and/or that a charge is held in the filter capacitor(s).

Figure 3: 'Paddyboard' layout of the microphone preamplifier for the transmitter.



The power MOSFETs do not produce a lot of waste heat. Nevertheless, they must be fitted so that they shall sink heat into the bottom chassis panel where they occupy suitably sized holes in the main RF board. Connection to the drain is made with a drilled rectangle of circuit board material held under the device fixing nut as shown in Figure 2. Remember to include a mica or silicone insulating washer at the MOSFET/chassis interface.

RF output transformer T1 has six turns on the primary (three turns each side of centre tap) and six secondary turns wound through the holes of two ferrite sleeves (the kind often used to decouple computer cables and leads). Use Teflon coated wire if you have it, or ordinary insulated hook-up wire.

The +12 V supply for the drivers must be a 'stiff' low impedance one. To this end, a length of double-sided circuit board strip is soldered between the pin 3 pads of the '4422s and the output of the +12 V regulator, as shown in Figure 2. The drivers do work rather hard so they should have a flag type heat-sink attached.

For best efficiency, tank and filter capacitors shown asterisked in Figure 1 must be glass or silver mica types of 600 V or greater working voltage.

Various ordinary power transformers were tested for modulation duty and it was found that any conventional or toroidal

with a low resistance 'secondary' of 36-0-36 or 40-0-40 or 50-0-50 V AC of at least 150 VA will work satisfactorily.

Operation

Check all your wiring and components again for accuracy and correct orientation. Look particularly for any solder bridges between substrate pads. Remove the 4 A fuse from the PA's 50 V supply. Apply mains power and confirm that all voltages, including the +12 and +6 V DC rails, are substantially correct.

If you have chosen to employ the S.C. amplifier, test it as a 'stand-alone' component from the +/-57 V DC supplies in accordance with the kit instructions using a suitably rated four Ω dummy load.

Close the PTT line whereupon relay A should pull in. Hook an X10 oscilloscope probe to pin 2 of the 74HC04 and observe a five or six V P-P square wave, thus proving the oscillator. Carefully adjust the 50 k trim pot for equal high/low periods.

If your 'scope has two channels, observe the signals emerging from the '4422 drivers and confirm that they are equal in amplitude and period of opposite phase.

Photo 1: The 100 W class-D AM transmitter for 1.8 MHz.

Connect a suitably rated 50 Ω dummy load/RF power meter to the transmitter's output. Replace the four ampere fuse, then close the PTT line. Drain current, indicated by the 0 ~ 5 A meter, should be about three ampere for a carrier output power of 100 ~ 110 W (the nominal +50 V supply may fall to about 40 V under load).

Apply a modulating signal from the microphone, or preferably from an adjustable sine-wave signal source set to (say) one kHz. Hook the oscilloscope probe on to the output connector, then carefully increase the audio signal level and observe a 'classic' undistorted amplitude modulated signal.

Photo 2: Inside the case of the 100 W 1.8 MHz AM transmitter.

Parts

No rare or unobtainable parts are required, and the bulk of the ordinary items may be purchased from our usual electronics parts suppliers. The *Silicon Chip* Mk 3 200 W audio amplifier kit may be bought at Altronics and Jaycar (heat sink extra), and who can also supply toroidal power transformer(s). Ferrite sleeves, loop-stick rod and ZR1180/342 V transient suppressors are Jaycar parts. My glass capacitors and some magnetic materials were obtained from Paul of PK antennas, who may also have 1.825 MHz crystals (1.843 MHz crystals are available generally from many vendors). TTS Systems also supply Amidon cores. W20NM50 (or W12NK90Z) power MOSFETs, and TC4422 (or MIC 4452ZT – same pin outs), may be mail-ordered from Element 14 or RS Components.

Acknowledgement

My thanks to the Melbourne area 160 metre AM fraternity, particularly Laurie VK3SJ, Paul VK3KHZ, Bob VK3AIC and Donald VK3IT for their gifts of parts, sage technical advice and signal reports during the prolonged development and testing of this project.

References and further reading

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An introduction to amateur radio

Rob Norman VK5SW

The fact that you are reading this magazine means that you need no introduction to the hobby, but if you know someone who does, perhaps you may like to show them this article.

The hobby of amateur radio, also known as ham radio has been around for well over 100 years. This hobby basically involves qualified people communicating with each other using their amateur radios. Amateur radio operators, also known as 'hams' come from all walks of life. From engineers and doctors to bricklayers and teachers, Hams now number about three million people, worldwide. Ages range from about eight years to people well into their 90's. There are more women hams these days than ever before.

Photo 1: Working the satellites, from 'somewhere'.

Amateur radio attracts people for a number of reasons. For most people, I believe, the appeal is the technical aspects of the hobby. As their involvement in the hobby deepens, their interests within it can and often do change. For me and I think a lot of people, the mystery and fascination of being able to communicate with someone wirelessly, who is some distance away, is something which excites the imagination and curiosity. The desire to understand how this phenomenon works is a driving force. Hams are able to communicate with each other in a variety of ways and over long distances using their radios. Around the world communication is the priority for a lot of hams, while for others it may be chatting to someone close by or even to a ham radio operator on board the International Space Station. Outdoor antennas are needed to transmit and receive the radio signals.

Photo 2: The ubiquitous QSL card.

Ham radios are able to be used in a wide variety of ways. Of course, using a microphone to chat to someone and hearing their voice coming in from possibly thousands of kilometres away is always a thrill. Morse code is still used today by thousands of Hams around the world. With the coming of computers, various forms of digital communications are now wide spread within the ham radio community. For example, you can communicate using your computer keyboard by typing a message. Remote operating is now becoming popular. This means that even though you may be thousands of kilometres away from your equipment, using an internet connection to it, you can still operate your ham radio station. Various internet related modes are also used. Pictures can be sent via radio using slow scan television (SSTV). Ham radio signals are able to be sent to the moon and reflected back to earth so that operators on the other side of the earth are able to receive the reflected signals. This is known as 'Moonbounce'. Many satellites made by amateurs are in earth orbit. These 'birds' receive amateur signals directed at them and retransmit the signals back to earth so that the signals are able to travel further. An amateur radio station is located on board the International Space Station and contacts from there are often made to classes of school children on earth.

Ham radios are also used while operating mobile. From push bikes, motor bikes, motor cars and boats to aeroplanes. They are also operated by hams in hard to get to places. From islands around the world to inhospitable locations like Antarctica. Public service is at the forefront of ham radio too. Hams often provide valuable help in times of need. It may be relaying information about the advances of a bush fire in central Australia or the well-being of people in an earthquake in Chile, South America. There are many other facets to the hobby as well. There are many other facets to the hobby as well.

Ham radio clubs are wide spread throughout the world. Regular meetings are held where licensed amateurs and aspiring hams come together to share their common interest. Lessons are given and different grades of license examinations can be taken here to qualify for your ham radio license. A basic knowledge in radio theory and operating is all that is needed to acquire the basic foundation license. Young children, eight years old or so are able to pass this test and become licensed ham radio operators. Each licensed ham radio operator is given a callsign to identify him or her. The callsign also indicates the country in which they live.

Amateur radio operators include Nobel prize winners, singer/songwriters, musicians, Hollywood movie producers/directors, actors, composers, authors, politicians, professors, astronauts and scientists. Well known ham radio personalities include country and western singers Patty Loveless KD4WUJ and Chet Atkins W4CGP SK, singer Donnie Osmond WD4SKT, The Eagles band member Joe Walsh WB6ACU, newsreader Walter Cronkite KB2GSD SK, actor Marlon Brando FO5GJ SK, Priscilla Presley NY6YOS, King Hussein of Jordan JY1 SK and Australian Dick Smith VK2DIK.

Ham radio is enjoyed by all kinds of people. If you have an interest in this hobby, I encourage you to take the first step towards a rewarding past time and contact the Wireless Institute of Australia. Their website address is *www.wia.org.au* This may lead you to a hobby which enables you to make friends around the world and change your life for the better.

Over to you

When all else fails

As the Contest columnist, I believe that contesting is important to the hobby of amateur radio. It prepares an amateur operator to operate for sustained periods without rest in adverse conditions. We must authenticate a message between two distant stations in an efficient and reliable manner. The content of the message must be accurate.

Many of the contest operators have excellent engineering skills to put together stations that must hold up to the rigors of contesting. The station must be ergonomic and user friendly. These are only some of the attributes of a good contest station and operator.

As amateurs radio operators there are many facets to amateur radio and contesting only being one. As ambassadors it is important to be able to explain the many of the things that we hear on the radio to others eloquently with meaning and excitement. From SSTV signals to CW signals to PSK 31, to contesting, to nets, to field days.

It is vital to explain to the public that amateur radio operators, and contest stations in particular including the operators provide a valuable public service.

When all else fails there is amateur radio.

I cannot fathom why there is such a debate about why two events cannot coexist at the same time. We live in a great country where there are not many amateur radio operators compared to the United States. Our bands are not busy; it is not difficult to find room on the band to operate.

Contest stations want contact with only other contest stations. There is precious little time to spend engaging non-contest stations.

If one has negative feelings towards a particular part of amateur radio then it will invite negativity to those that you are showing.

It saddens me that we do not push that amateur radio is a public service and needed in times of difficulty such as floods and bushfires and those same contest operators that you hear are there to help and pass the message along.

If we do not acknowledge this in our own hobby, how can inform the public about it?

Do we need these people in the neighbourhood with antennas? Yes we do, because when all else fails there is amateur radio.

James Fleming VK4TJF

Season's Greetings from the WIA. Office re-opens 19 January 2015.

VHF UHF band plans – are they working?

Grant Willis VK5GR

Editor's Note: This series of three articles represent the personal opinion of the author and not the position of the WIA. I am sure that these contributions will be taken into consideration by the committee approved by the WIA Board to consider the revision of the Band Plans. However, the committee will make its final recommendations to the Board, who will approve release of the final plans.

Readers should also note that some of the suggestions made in this part of the series are inconsistent with our current licensing arrangements, particularly with respect to the 440-450 MHz segment, which is currently unavailable to new amateur service allocations during the reorganisation of commercial services in the 400 MHz band. Furthermore, the ACMA has never permitted repeaters (i.e. user access frequencies, as distinct from links) to operate outside the 430 - 440 MHz band.

Part 3 – The Australian 70 cm band plan

Introduction

In this final part of this series examining band plan design, I now will take a look at the state of the amateur service 70 cm (430-450 MHz) band in Australia and how we use it today.

This band has faced many challenges in recent years both from Class Licensed (not so) Low Interference Potential Devices (LIPD) on 434 MHz as well as the loss of the 420-430 MHz band segment to government land mobile users in 2013. At the end of this discussion I will present a plan for reorganizing the 70 cm band to accommodate future digital repeater requirements, remove the interference problems currently experienced by LIPDs, address the repeater channel capacity issues currently faced in high density markets and re-establish a wider experimental modes segment within the band.

Assessment of the existing 70 cm band plan

The Australian 70 cm band plan was most recently reviewed when access to the 420-430 MHz band segment was revoked by ACMA.

The key decisions in the revised plan were:

a) Relocation of existing link allocations between 420-422 MHz almost channel for channel into the 430-432 MHz band segment.
b) Continued endorsement of using a 5.4 MHz offset to overcome LIPD interference into repeater receivers in the 438.075-438.400 MHz segment (providing 31 clean 12.5 kHz or 16 clean 25 kHz channels excluding incumbent repeater downlink use of the same channels.
c) Continued provision of only 10 clean 70 cm analogue repeater channels (438.025-438.05 + 439.800-439.975).
d) Loss of the General use – experimental segments to repeater link systems.
e) Loss of ATV Channel 1 completely, signalling the end of 70 cm in-band ATV repeaters.

While it was necessary to make some of those decisions, there still was the fundamental issue of LIPD interference free repeater channel requirements. The relatively knee-jerk decision to just shift all existing link assignments from 420-422 up 10 MHz without considering re-planning them also has led to spectrum waste.

Rather than try to 'fiddle around the edges' with the existing plan let's take the principles from part 1 of this series and apply them fresh to the 70 cm band from the beginning.

Designing a new 70 cm band plan – input considerations

As I did for two metres, I will start by setting out what the uses of the 70 cm band are. One of these is obviously repeaters. Others include satellite, narrowband weak signal, ATV and repeater links. This band has an unfortunate encumbrance to consider, being the presence of LIPD Class license equipment in the 433.05-434.79 MHz band. ACMA also placed restrictions on amateur fixed repeaters in that segment too, with a condition in the amateur LCDs that states that the amateur service cannot claim harmful interference from these Class License devices.

So, before any allocation of channels begins, let's take a look at the peak capacity requirements that we have for each major activity in the band today, so that the parameters around the amount of spectrum required per activity can be established.

Repeater channel capacity requirements

As I did for two metres, I am basing this assessment on one of the most dense repeater service areas in the country, the greater Sydney basin. Results for Melbourne and the greater Brisbane/Gold Coast area are similar and set a benchmark for the rest of the nation.

The current 70 cm band plan allows for the following:

- 10 x 25 kHz analogue -5 MHz offset LIPD free channels and
- 46 x 25 kHz analogue -5 MHz LIPD shared channels.
- 31 x 12.5 kHz digital -5.4 MHz offset LIPD free channels sharing output channels with existing analogue repeaters.
- 8 x 12.5 kHz digital -5 MHz offset LIPD free channels interleaved with analogue systems in the 439.8125-439.9875 MHz band.

The first and major observation I make of this is how few repeater channels are available that are free from interference from LIPD sources on their uplinks.

How many repeater channels are being used?

I then took a count of the number of repeaters licensed within the following re-use distances in the Greater Sydney area:

Distance between available repeaters	Number of 70 cm repeaters in an area: 56 channels
<150 km	45
<200 km	46
<300 km	52
<500 km	61

If I just count the 10 LIPD free -5 MHz analogue channels, we have 11 repeaters within 200 km occupying eight of the 10 available channels in Sydney. Even in other markets like Adelaide, we have all channels from 438.800-439.975 + 438.025 occupied with 70 cm repeaters that all had to vacate the LIPD co-channel frequencies due to interference.

In short, there is a space crisis in the 70 cm amateur band, particularly if you try and dodge the LIPD interference between 433.05-434.79 MHz.

Repeater channel capacity required

If you take into account the number of fixed repeaters above within 200 km (46) and then add to that the portable repeaters that exist (another 4-5) and then further add channels for systems not yet on air but which are in the planning phase (another 4-5 in the Sydney area), we rapidly find that we need around 57 channels just to cope with today's existing systems. We only have 56 channels if you use all of the LIPD affected ones, so something has got to give.

What to do about it is the challenge at hand. Firstly, some hard decisions need to be made around how many repeater channels we think we will need into the future (considering that eventually digital will hopefully cannibalize analogue systems, but recognizing that such a migration is probably still another five to ten years away).

As for two metres, the following are the main reasons to operate a repeater:

1. Extend coverage to stations who otherwise don't have access to one.
2. Extending coverage to stations of a particular capability (that is, extend handheld coverage as opposed to 50 W fixed stations with 10 metre high antennas).
3. Add a channel to an area due to usage of the existing systems.
4. Add a channel to an area for special interest purposes or alternate operating modes such as digital systems.
5. In addition I would, on 70 cm, suggest the following is not an unreasonable justification for a repeater:
6. Club based local congregation channels/club or private projects.

Unlike two metres, I believe that on 70 cm there should be sufficient room to support channels for repeaters that may duplicate existing services, but which are built anyway as a focal point for a club project or group of amateurs just to learn about repeater construction and operation. The band is, after all, five times wider than two metres.

These systems perhaps don't justify receiving the same co-channel interference protection that those which satisfy justifications 1, 2 and 4 do, but none the less we should try very hard not to be saying no to developments such as these. Even if they are not technologically ground breaking, they are none the less radio experiments in the eyes of those brave enough to try and build one.

So, back to the question, how many repeater channels do we actually need in Australia on 70 cm for, say, the next 10 years? Allowing for further growth and noting the popularity in some regions of things like P25, it is not unreasonable to suggest 65-70 channels will be needed. Now the question comes, how are we going to achieve that?

70 cm general spectrum requirements

To fit more repeater channels in, and also deal with the LIPD interference issue, it becomes necessary to rethink the band plan from scratch.

First, let's list down the band segments that can't be moved:

- 431.9-432.6 MHz – Narrowband and weak signal modes.
- 433.05-434.79 MHz – LIPD interference.
- 435-438 MHz – satellite.
- 443-450 MHz – ATV (as it is the only slot currently large enough to accommodate it).

Next consider what options exist for managing repeater technologies on the band. The key requirement is for a duplex pair to be assigned. However with that comes the challenge of filtering at the repeater site.

Some might say 'but CB repeaters on 477 MHz use a 750 kHz split' and indeed they do, however their filters are *very* lossy and often don't work all that well. This is the extreme case.

Some may also say why don't we just move to a +5 MHz offset and put the repeater outputs in the LIPD band. On the face of it

this seems like the ideal solution. However, ACMA in the past have reacted negatively to the suggestion, despite this being the solution advocated across Europe and even by our Kiwi cousins.

So, if 750 kHz is inefficient, and +5 MHz is off the table due to the regulator, what other options do we have? The following are common repeater offsets used either around the world in the amateur service, or used commercially in Australia:

- +750 kHz (Australian UHF CB).
- +/-1.6 MHz (UK and Europe).
- -5.0 MHz (USA/Canada/ Australia/NZ).
- -5.2 MHz (Australian commercial land mobile).
- -5.4 MHz (Australian D-STAR).
- -7.6 MHz (UK and Europe).
- -9.0 MHz (previous commercial land mobile).
- -9.45 MHz (Australian commercial land mobile).
- -10.0 MHz (Australian commercial land mobile).

Splits over 5 MHz are more practical, and clearly the wider they are, the easier it is to construct systems to use them. Let's not discount the smaller splits just yet however.

Next, taking into account all of the different ways of designing the repeater offset plan, I calculated the maximum number of repeater channels I could extract out of 430-440 MHz for each option.

Split	Segment - MHz	Capacity
+1.6 MHz	431.025 - 431.450	16 Clear 32 LIPD
-5 MHz	438.025 - 438.725 439.275 - 439.975	10 Clear 46 LIPD
-5.2 MHz	438.025 - 438.725 439.275 - 439.975	11 Clean 47 LIPD
-5.4 MHz	438.025 - 438.400	16 Clean 42 LIPD
-7.6 MHz	438.075 - 439.475	57 Clean
-9.0 MHz	441.625 - 442.000	16 Clean
-9.45 MHz	439.475 - 439.975	21 Clean (1)
-10 MHz	440.025 - 441.875	76 Clean (2)
-10 MHz	442.625 - 442.975	15 Clean

When you look at the results here, and consider the desirable 65-70 channel capacity requirement, it becomes clear that several options can be discounted immediately:

1. +1.6 MHz offset/-9.45 MHz offset - these options have a significant impact on link allocations (since the majority of link frequencies are assigned in the 430-430.45 segment). They also don't provide the required additional channel capacity.
2. -10 MHz - This would prove challenging at least for analogue systems considering most amateur FM radios in Australia don't have easy access to channels above 440 MHz (unlike their US counterparts who have all of their 5 MHz offset repeaters above 440 MHz and commercial amateur radios enabled for transmit above 440 MHz.). The first segment of -10 MHz offsets also completely overlaps the busiest part of the link band.

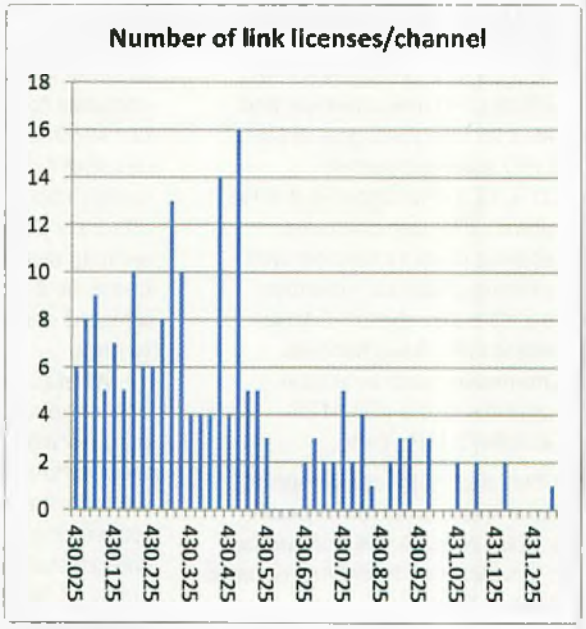


Table 1: 70 cm link licenses per channel.

New repeater offset recommendation

The best option it turns out is to start moving repeaters to a -7.6 MHz offset. Previously this wasn't viable as it put repeater receivers into the lower ATV channel. Since the loss of 420-430 MHz, however, that problem has evaporated.

A -7.6 MHz offset also required several other considerations to be made:

a) the simplex call channel segment would need to move up from 438.8-439.1 to 439.5-439.8 in order to achieve the channel capacity we are looking for.

b) AX.25 Packet would also need be discontinued in the 439.05-439.10 segment and be migrated to 439.575-439.600 (with APRS on 439.600). This could be on a slow migration basis, with relocations only required only once the channels are required for repeater services in an area.

c) It also requires a slow migration of a lot of existing legacy repeaters to the new -7.6MHz inputs, although it has the advantage that only the repeater receivers need to move. This also means repeaters only need to move when they are ready to do so (although the LIPD interference in many cases will provide an incentive to do so earlier rather than later).

d) Links between 430.475-431.900 MHz are also impacted, but a program of allocating around them where they exist, with a slow migration as channel space for repeaters is required could be enacted. It still leaves over 2/3rd of the link allocations untouched, and preserves a 10 MHz offset link band.

The next observation to be made is that even the -7.6 MHz split doesn't provide in one pass the channel capacity we were looking for, but it does remove the LIPD uplink interference issue completely. To actually address the capacity issue, I would also propose retaining the existing LIPD interference free -5 MHz offset channels (438.025-050 + 439.800-439.975). This then takes the total repeater channel capacity up to 67 x 25 kHz channels, and puts us into the desired 65-70 channel range (or 133 x 12.5 kHz bandwidth channels if you discount the receiver interference management issues).

The final part of the repeater channel capacity search then comes by considering the D*STAR systems already using a -5.4 MHz offset in the 432.625-432.975 MHz band. The issue with these 'Digital' repeater pairs is that they still suffer from the downlink channel capacity and end user adjacent channel receiver performance issues in the 438.025-438.400 band.

While I am still an advocate for continuing with interleaving digital and analogue repeater channels, there are times when it simply won't work. Therefore, just as I did for two metres, I am also proposing a new greenfield repeater downlink band. My proposal is that a second -9 MHz offset channel set (441.625-441.975) be assigned to repeaters on a digital primary basis, providing digital repeater constructors with the choice of either -7.6 MHz offsets interleaved with primary analogue systems, or primary digital channels with -9 MHz offset.

The main reasoning here is that the increasing interest in adapting commercial digital systems like P25 and others into the amateur band is likely to see amateurs using radios that don't have the same 430-440 MHz constraint as radios specifically targeted at the amateur market. Making this allocation and tagging it as mostly intended for digital repeaters means that the repeater channel capacity issue on 70 cm is well and truly solved, all without drastically impacting existing users of the band.

Other general repeater planning guidelines

Digital and analogue can share

Just as with the two metre band plan proposal, I again want to see the position adopted that digital and analogue repeaters can in principle share the same channels. The same reasons apply, although with emerging interest in networks such as P25 (there are at least half a dozen P25 repeaters in Sydney alone) the policy of sharing repeater channels needs to again be on a primary basis for each modulation type. If we do this, it becomes much easier to allocate spectrum.

Again I wish to re-iterate, this is the amateur service, not a telecommunications network. A little bit of interference from time to time during DX can surely be tolerated, in fact could be welcomed! What better way to discover a DX opening than to find two-three repeaters on, say, 439.9 all audible at once. One of my own more memorable 70 cm contacts came about this way in 2013 while portable on the eastern edge of the Mt Lofty Ranges outside Adelaide. I was surprised to hear a second tail under the local Summertown 439.9 system. Imagine my and their surprise and subsequent fun when I then made contacts with friends in Melbourne via their Glen Waverley repeater 700 km away!

Consider two metre 3rd harmonics when planning repeaters

Another side consideration for any plan (and this impacts many of these plans) is that it would be good to avoid having repeater downlinks in the segment 438.075-439.200 to solve the two metre repeater input 3rd harmonic problem in the 146.025-146.400 band segment. This fact makes co-locating two repeaters in the same region on the 'wrong' pair unattractive from an end user viewpoint. The solution I see is to preserve some repeater channels outside that 70 cm sub-band slot so that enough frequency agility is provided to deal with this issue when it arises.

Can all radios use splits other than 5.0 MHz?

The last consideration is how many radios in fact can operate with a repeater split of other than 5 MHz? Today most modern handhelds and mobile radios can do it, and most base stations have dual VFOs, such that if they don't directly support 5 MHz, they probably can be operated in split mode. Is it ideal? No, not completely. Can we stay with 5 MHz offset, clearly considering the problems to hand? Probably not. Those old Yaesu's that had fixed offset may just finally have to be retired!

Repeater link allocations - improving management

To achieve the changes needed to support the 70 cm repeater service in Australia it is necessary to re-think how we assign repeater link channels. The expansion of the link segments to 2 MHz bandwidth at the bottom and top of the band many years ago, back when the amateur service still had 30 MHz of spectrum, today seems wasteful. This is particularly so when you look at how many channels are used in any given geographic area. 2 x 2 MHz of space allows for up to 80 linked frequency pairs or 160 simplex channels.

However, when you look at the link band site frequency allocations, it is also clear that we have managed to spread out enough to use all of the channels available, even though many channels are only used once or twice nationally! This means that when trying to compress these allocations and make room for other activities, there will inevitably be some pain for those involved.

Dealing with the link band compression however can be handled if the following policies are adopted:

a) Existing links can remain in a geographic area until that is the last free repeater channel available, at which time the new incoming repeater and the link system operator need to work together to relocate the link to an alternate channel.
b) No new links to be allocated in the segment 430.45-431.9 MHz
c) No new links to be allocated in the segment 441.625-441.975 MHz
d) New links should be encouraged as far as possible to use higher bands such as 1.2 GHz (which is becoming more accessible these days compared to 10 years ago).

Finally, early new analogue repeater adopters of -7.6 MHz can begin using the segment 438.825-439.250 on day one and avoid all existing links currently assigned. This means that it may be many years before existing links really need to start moving to new channels.

Retention of all mode sections not individual mode call channels

As with many of the band plans in recent years, all mode segments have been slowly gobbled up by special interest groups. It is, I believe, time that this trend was reversed.

There are new wideband modes on the horizon that could in fact restore some of the lost activity on the band provided space is reserved for them, such as 'narrowband' D-ATV (using modulation bandwidths of 1-2 MHz to transmit one FSTV SD channel). While such modes are still very experimental, they could provide a way to re-establish in-band 70 cm ATV repeaters in the future (considering ATV has been hardest hit in the last 40 years with the loss of the original 288 MHz band, then the loss of 576 MHz and now 426 MHz and the potential loss of even more space in the 2-4 GHz band in the future).

70 cm Australian band plan proposal

430.000 – 430.450 REPEATER LINKS DUPLEX – BAND A

430.475 – 431.875 REPEATER INPUTS – Analogue Primary Group A

Note: Existing links can remain until repeater capacity exhausted

431.900 - 432.600 NARROW BAND MODES

431.900 - 432.100 EME
432.100 - 432.400 CW/SSB
432.100 - Calling frequency: national primary
432.200 - Calling frequency: national secondary
432.220 - 432.240 digital DX modes
432.240 - 432.300 guard band: New Zealand beacons
432.300 - SSB chat frequency
432.320 - 432.340 digital DX modes

432.400 - 432.600 Beacons

432.625 – 433.000 - REPEATER INPUTS

432.625 – 433.000 - Digital Primary Group F & G
433.025 – 433.050 - Analogue Primary Group B
433.075 – 433.725 - Legacy Analogue Group C
434.275 – 434.775 - Legacy Analogue Group D
434.800 – 434.975 - Analogue Primary Group E

433.050 – 434.790 – Low Interference Potential Device Class License Band

433.075 – 434.775 – EXPERIMENTAL ALL MODES – Digital Primary

435.000 – 438.000 – AMATEUR SATELLITE SERVICE

438.025 – 438.050 – REPEATER OUTPUTS

438.025 – 438.400 – Legacy Digital Primary Group F (-5.4 MHz)
438.025 – 438.050 – Analogue Primary Group B (-5.0 MHz)
438.075 – 439.475 – Analogue Primary Group A (-7.6 MHz)
438.075 – 438.725 – Legacy Analogue Group C (-5.0 MHz)
439.275 – 439.775 – Legacy Analogue Group D (-5.0 MHz)

438.800 – 439.250 – SIMPLEX FM & AX.25 – Legacy Band

439.500 – 439.800 – SIMPLEX FM & AX.25 – Analogue Primary

439.500 – National FM Simplex Call Channel
439.600 – WICEN Call Chanel
439.750 – 439.775 – AX.25 Packet
439.775 – APRS AX.25

439.800 – 439.975 – REPEATER OUTPUTS

439.800 – 439.975 – Analogue primary group E (-5.0 MHz)

440.000 – 440.450 – REPEATER LINKS DUPLEX – BAND A

440.475 – 441.625 – REPEATER LINKS – BAND B

440.475 – 442.600– EXPERIMENTAL ALL MODES – Digital Primary

441.625 – 442.000 – REPEATER OUTPUTS

442.625 – 442.000 – Digital primary Group G (-9 MHz)

442.025 – 443.000 – REPEATER LINKS – BAND C

443.000 – 450.000 – ATV (Maximum bandwidth 7 MHz)

Table 2: The proposed 70 cm band plan.

Why mention ATV here? It sounds like just another special interest mode – and it is. The point is I am not looking to assign a narrowband D-ATV FSTV channel, but rather want to make sure that there is enough space to operate one in an experimental segment should it take someone's fancy. There may be other spread spectrum modes that people may want to play with - I wonder how an IS-95 type CDMA transmission would go on 70 cm?

In short, I argue that it is against the experimental and self-training nature of the amateur service to not provide some space for general and experimental uses that was wide enough to cope with the unexpected.

Proposed 70 cm band plan

So now we come to the proposal itself. What do we get from this plan, considering all of the inputs outlined above?

The positives

- A weak signal segment that is untouched in and of itself, and no high powered repeater outputs near the weak signal segment.
- The satellite segment is preserved untouched.
- Duplex 10 MHz link pairs preserved, while simplex links are encouraged to move into the 440.5-443 sub-band.
- 57 x -7.6 MHz and 10 x -5 MHz offset 25 kHz repeater channels for primary use by analogue systems – giving a total of 67 repeater channels that are LIPD interference free
- 16 x -9 MHz offset 25 kHz digital primary repeater channels (or 32 x 12.5 kHz channels) re-using the existing digital repeater input frequencies.
- All legacy systems can remain in place until they either want to move, or are collaboratively given help to move when a new entrant needs to use one of the new repeater channels in a region because other options have been exhausted
- Restoration of an *all modes experimental* segment in the LIPD sub-band of eventually 1.6 MHz bandwidth.

The impacts

- The existing FM call channel and simplex segment needs to move from 438.8-439.25 up to 439.5-439.775 MHz.
- The existing repeaters between 439.500-439.775 MHz to be encouraged to move early - this affects five repeaters in NSW, 13 in Victoria, five in Queensland and one in WA.
- The lower link band is reduced to only 450 kHz from its original 1.9 MHz. An option here for individual links needing duplex pairs and not having room might be for the occasional link to slip into the 433.05-434.79 band segment if they can co-habit with LIPDs.
- Existing radios that can only operate with a 5 MHz split will lose access to 70 cm repeaters.

The amateur service in Australia will need to consider if it can wear those compromises in order to fix our 70 cm band plan woes.

My opinion is that this proposal offers the best opportunity for the amateur service to support the widest range of amateur activity in this band into the next decade. I have designed this plan with a 10 year outlook in the hope that the pain of moving to the new plan is not something that needs to be repeated again anytime soon. Is it unorthodox? Yes it is, but considering the cards we have been dealt, it is pleasing to see that such a solution to the problems was indeed possible.

Conclusion

I hope over the last three months I have been able to provoke some thought amongst the amateur community as to where we want to go with the band planning of our service on our VHF and UHF spectrum. I don't see this as being absolutely prescriptive by any means, and indeed if you have thoughts on the proposals, why not write into *Amateur Radio* and share your views as well. In that way, we can collectively agree on the best way forward into the future.

Editor's note: Grant Willis VK5GR, ex VK5ZWI is a past WIA SANTTAC co-ordinator, past WIA IARU representative and past WIA SA/NT federal councillor.

70 cm band plan notes

- Existing 5.4 MHz offset digital repeaters can remain where downlink interference isn't an issue in the region. Alternatively they can migrate to either 7.6 MHz or 10 MHz offsets.
- No new systems licensed in legacy spectrum – existing can remain or migrate to 7.6 MHz offset.
- In the future this will widen out to 433.075-434.790 MHz when enough repeaters migrate to -7.6 MHz offset.
- D-STAR and P25 simplex encouraged to use this segment.
- Existing 5.0 MHz offset analogue repeaters can remain where downlink interference isn't an issue in the region. Alternatively they can migrate to either 7.6 MHz or 10 MHz offsets.
- Repeaters operating in 439.500 – 439.775 MHz will be encouraged to obtain new allocations early to clear the segment for the new FM simplex band.
- Activity encouraged to move to 439.500-439.775 MHz segment early.
- 440.475-442.600 MHz link band is shared with experimental – *general use* activity – experimenters should make themselves aware of links in that sub-band in their respective areas and ensure that they do not cause interference to those links.
- Repeater uplink and downlink bands can be used for simplex activity wherever there isn't a local repeater service.

Foundation success story

Ted Thrift VK2ARA

Let me introduce Daniel Demaagd VK2FDSD. Daniel is a very special young man, married with two young children but he has special employment needs. He works at Greenacres Enterprises, a supported industry in Wollongong.

About five years ago another local "F" call who had been one of my students asked if I might be able to help one of his friends to get a Foundation licence. I agreed to try but when I found out that he worked at Greenacres, the same place as my disabled daughter, I had my reservations.

Anyway we made a start, a little slowly at first but very soon it became evident how determined he was to succeed. He does have reading comprehension problems and had to commit every one of my words to memory, instead of reading and reviewing the manual. His work place has a motto of *"Reaching Goals Together"* and Daniel embodies that motto.

His training did take longer than some others but progress he did. Quite a surprise package in how much he could remember. We stepped around the reading/writing problem and made good use of his past CB radio experience. I could see him light up when he discovered why things happen. He knew that it happened but now he knew why. Maybe I should have paid more attention to his other hobbies where he runs a model railway in his man shed at home and helps to run a light rail museum in his spare time.

Photo 1: Daniel in yellow safety shirt.

When it came time to try for an assessment, I suggested to Daniel that he asked his doctor for a certificate confirming his special needs. This was sent to Dianne at WIA and very soon his special assessment was scheduled and Eric VK2VE came to my QTH. It went very well and I clearly recall Eric's favourable comments about his theory knowledge. His Practical was no different, but then Daniel does enjoy showing what he can do. Don't we all!

Photo 2: Daniel at the studio desk.

The restrictions of the Foundation licence were a bit limiting at first but then Daniel discovered IRLP. Before long he had established friendships all round the world and QSLs started to flow needless to say, he was now hooked on amateur radio.

A little over 12 months ago Daniel

mentioned to me that Greenacres had started a series of sessions on VOX FM, a local community radio station. Naturally it caught Daniel's interest and he started listening and asking me questions about it. One day he asked me if I thought he would be able to become a presenter on community radio. Knowing his potential to learn I agreed and suggested he go in and ask if he could watch how it is done.

After a time of sitting in at VOX he progressed to some late night co-hosting sessions. His skill developed very quickly and he was soon on his own, playing his own style of music. The phone in started and all he got were accolades for his efforts.

Well, VOX and Greenacres must think he is a capable radio host: I was able to listen to his first assisted program for the Greenacres hour and he did not put a foot wrong. He and his work mates from the workshop had a ball. I think his friends were blown away over Daniel running their program.

I have been advised just recently that in addition to his evening sessions, Daniel is now the assigned presenter for all of the Greenacres community radio programs covering four or five different services. I listen when I can and he sounds very professional and very much at home in the job.

Who knows where it will lead but Daniel is an excellent example of "Giving it a go". My best wishes to Daniel and his family for a future in amateur and community radio. If you hear VK2FDSD on air, please say G'Day and give him a pat on the back.

Perhaps one day, move over Allan Jones or John Laws!

Who knows?

An education role for amateur radio

Jim Linton VK3PC

For many decades amateur radio has been described as helping spread technological awareness in the community, with some lately saying there is no better hobby for those wanting a technological vocation.

There are a few examples to support those aims, but are we missing the opportunities that are open to a modern amateur radio.

Before the introduction of the Foundation licence and earlier abolition of the Morse code requirement about five years ago, we had a few school clubs. They relied mostly on amateurs who were also willing teachers.

The teachers seemed to struggle with more being crammed into the syllabus, teachers either not being qualified themselves or not wanting to take on something extra.

Capturing a lot of community attention has been the Internet and mobile phones, and it has done us a lot of good to respond positively to this technology. Likewise social media is not unlike what radio amateurs have done for 100 years, but without the entry barrier of examinations.

There have been a few outstanding examples where youngsters are exposed to amateur radio. These have included the Sherbrooke Community Radio Club VK3KID and some groups similar to Scout Radio & Electronics Service Unit in Victoria.

The Australian Ladies Amateur Radio Association (ALARA) has been recording and lifting the involvement of women in amateur radio. It embraces the Foundation licence, which has helped to increase its membership and activity.

The WIA with the help of a few radio amateurs had working displays at the Maker Faire type events in Melbourne and Sydney aimed at hobbyists – those who tinker, experiment and build things. Hey, isn't that what we do?

The audience were mostly involved with building things and were eager to learn more. Two startling things became evident to those at the well-attended WIA stands.

Most of them were into electronics and users of communications, but had not heard of modern amateur radio, and those who had been radio amateurs had let their licence lapse years ago. Also attracted to the events were many younger people.

The WIA has a challenge ahead of it to connect the two hobbyist pursuits together, and show that amateur radio can have a role in what they do.

Now also evident in Europe is the Youngsters On The Air (YOTA) program. It has been steadily enticing more young people to give amateur radio a try.

YOTA has included camps so they can be exposed to what we enjoy, very much part of our education role, but is yet to gain traction elsewhere.

Another development is a simulation software package Hamsphere, promising a hands-on opportunity to try amateur radio, while otherwise being busy with study, not yet able to sit a licence assessment or to invest in actual equipment.

Recently Australia's Chief Scientist, Professor Ian Chubb, unveiled an ambitious agenda for change to increase the focus on science, technology, engineering and maths skills to help secure the country's future prosperity.

In a speech he has outlined national science strategy recommendations to the Federal Government to build a more competitive economy. Australia does not have a focus on science.

In summary Professor Chubb said: *"If we've got young people coming through the system who are interested in science, fascinated by science and understand how awesome science can be, then we'll be better off for it."*

Launching the strategy proposal Industry Minister Ian Macfarlane said that the Federal Government is *"very conscious of that fact that science is essential to building the future of Australia"*.

Further he said: *"We are focused on building the connections between business and science... right at the heart of our industry policy is science and research."*

This line of thought is backed by the Federal Communications Minister, Malcolm Turnbull, who is pushing hard for innovation as a way to raise national productivity.

The Federal Government is also on record as supporting greatly reduced administrative red tape and more freedom for the individual.

The concept of 'spectrum sandpits for research' referred to by the WIA in its Spectrum Review submission, was first mentioned by various speakers from industry, academia and the ACMA at the Radcomm 2013 conference, and repeated at the conference in 2014.

The WIA took the opportunity to open the discussion seeking a paradigm shift on the way amateur radio is seen as a modern educational tool.

In the WIA submission to the Spectrum Review by the Department of Communications, it rightly spells out the many achievements and attributes of radio amateurs, both here and overseas.

Additionally, the WIA believes that *"given the correct policy and regulatory settings, there could be an expanding role for amateur radio to play in Australian education and research."*

The WIA further said: *"If the licensing conditions permitted, amateur radio spectrum could be used to a much greater degree by educational organisations for teaching and research purposes - the so-called 'sand-pit' concept."*

No doubt that the Foundation licence has dramatically improved the access to amateur radio, but unlike CB radio or the LIPD spectrum, it still has a fairly high entry barrier.

The Foundation licence, and many other actions resulting from the Australian Communications Authority (ACA) 'Big Review' of the Amateur Service in 2004, gave us a majo. lift in making the hobby making it more readily accessible to a wider range of people.

However these days, compared to the nation's total population, the uptake is not great. A key thing that amateur radio must do is to show that its existence, and its access to spectrum, is of benefit to the wider community.

WIA President, Phil Wait VK2ASD, acknowledges that spectrum is allocated in Australia to the greatest public benefit.

Although we benefit from international treaties, the work of the International Telecommunication Union and the International Amateur Radio Union, Phil VK2ASD said, *"At the end of the day, to preserve our spectrum we must demonstrate public benefit."*

What does that mean in terms of the future direction and stance of amateur radio? The WIA has hit the nail on the head when it identifies two main areas.

These are public access to spectrum, and community involvement through emergency and community support communications and manpower.

Some may already argue that amateur radio supports a hobby and acts as a focus for a community of like-minded people, and also provides an educational or training resource.

These are good aims, but in reality they are pretty limited as shown by our relevantly stable licence numbers.

WICEN does a very good job in preparing for disasters, and when needed, can respond. However since 1983, the emergency services in Australia have gained better communications tools, and telcos are now able to quickly restore communications using their Cells on Wheels (CoW).

The role of amateur radio in emergency communications has been greatly reduced to one of manpower provision, or as an opportunistic first responder, or as a back-up communications system if all else fails.

So we need a new long-term justification for amateur radio, and one that leverages off what we have now.

A look at the ITU definition of amateur radio contains the words 'self-learning and experimentation', and these are at the very roots of our being - technological research and development.

The thinking is that this may be the way to step forward. Although upholding the not-for-profit nature of amateur radio with fairly strict conditions, our spectrum could be used to benefit the community through education research and innovation.

It could roll together the 'spectrum sandpits for research' concept and also provide a modern educational tool.

How could it possibly work without the actual presence of radio amateurs? Giving community access and therefore benefit from our spectrum? One option is to confine radio signals within a campus or laboratory environment, yet give access to the spectrum.

Or, would it be too much to ask that at least one person on a research project hold an appropriate amateur radio licence?

However the major task that immediately faces Australia is the re-making of the Amateur Radio Licence Condition Determination (LCD) – our regulations.

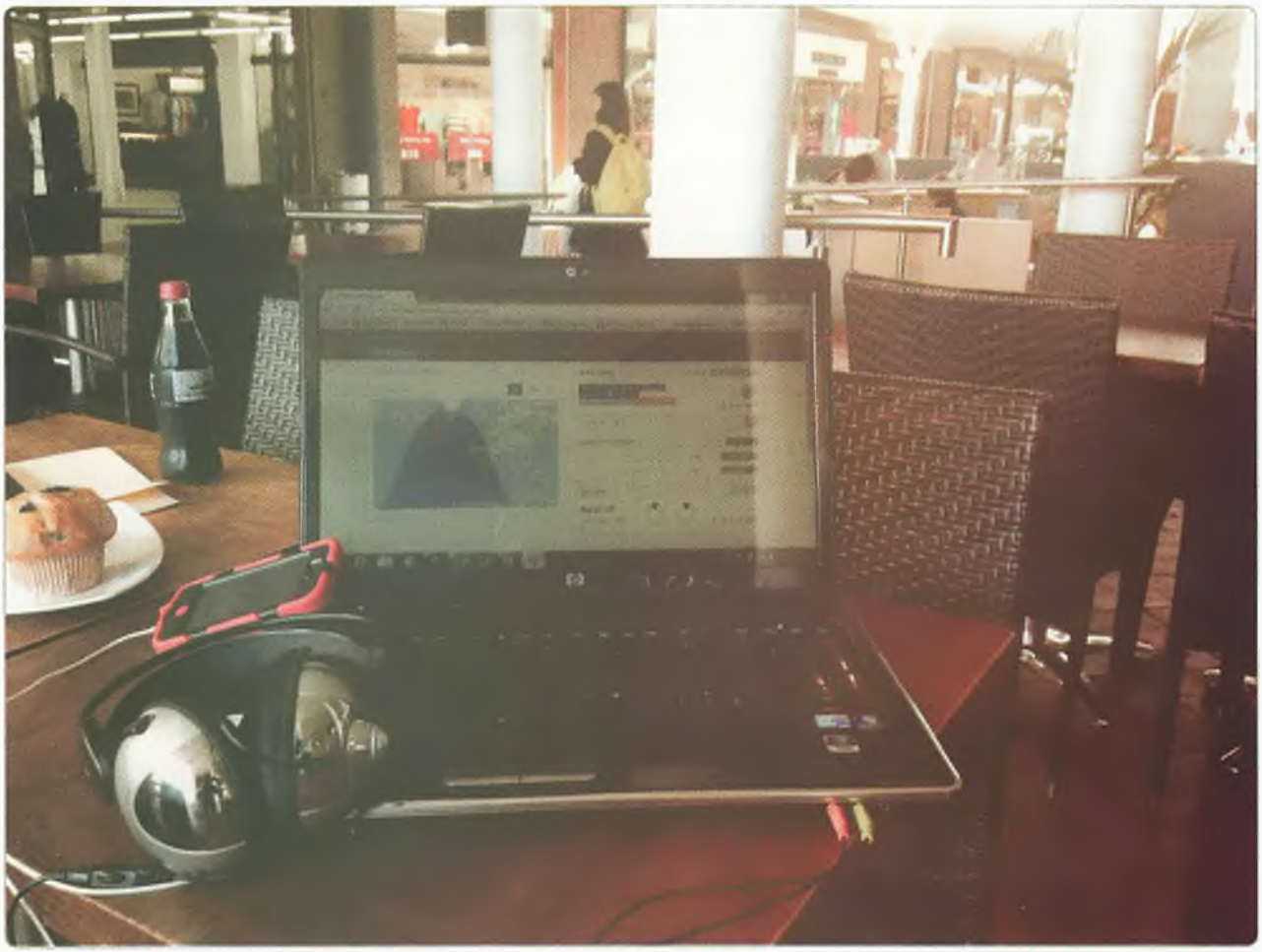
Working through clubs the WIA has begun the process it hopes will free up amateur radio, set the course for its future, and make us more attractive.

There are many issues to face as spectrum pressure grows: the need to demonstrate a clear community benefit, encourage further innovation and research in communication technology, and lift our educational credentials higher.

The old maxim 'if you can't beat them, join them' may be applicable to amateur radio in the case of Maker Faire, and our education role. The LCD re-make has opened up lots of opportunities - all it takes is a little thinking outside the box.

Remote Ham Radio: A dream station from a suburban lot

Craig Valosin VK2KDP/KB2KDP



Remote DX from a Sydney shopping centre.

Earlier this year the NSW government passed a law that classed 10 metre towers as exempt developments. Hopefully this should make it much easier and help more hams to get some aluminium up in the air to improve transmit and receive signals.

But what do we do when we want a tower higher than 10 metres? Or when the neighbours or 'significant other' complains? What about if we want a fully loaded Elecraft K3 rig, a few towers with stacked monobanders 30 metres in the air, a kW of power? Or if we want a beverage for 80/160 metres? Or even better, a stack of 3 - 3 element beams for 80 m and a full size ground plane for 160 m? Or maybe you would just be happy to have a multi band dipole 20 metres in the air or a tribander and wires for 40, 80 and 160.

Well my wife, council and neighbours have allowed me to get all of this on my suburban Sydney lot... Oh wait, as the title says, it is a 'dream'. But can it be a possibility? What about being able to operate from multiple stations in various locations to take advantage of the local propagation?

I know many people have remote control stations set up on property that gives them the ability to operate a station from their suburban lot. However, some of us (like me) are not fortunate enough to have property, or a friend with property that will allow us to set up a remote station, but we still desire

to operate a dream station. So how can it be done?

This past year I found a service called Remote Ham Radio - *www.remotehamradio.com*

Remote Ham Radio currently offers two services: Premium DX and Web DX.

Premium DX gives you an authentic radio experience with access to 'big gun' stations using an Elecraft K3 or K3 mini, internet/4G access, computer and a Remote Rig interface. It allows the user to operate powerhouse four-squares on the low bands and big Yagi stacks on the high bands – all at full power. Premium DX has been described as 'being given the keys to a high performance sports car.'

Web DX gives access to more moderate stations with wire antennas, tribanders and monobanders, running 100 watts or a kW. The only equipment needed for this is a computer/laptop running Google Chrome and internet access. Web DX even works using a 3G mobile phone connection so it is truly portable; see the photo taken while I was doing remote operating at a Sydney Shopping Centre.

Using Premium DX or Web DX gives me the opportunity to operate one of 11 stations - more stations are in the process of development - across two continents. Stations are currently on the east and west coast of USA and Italy. Remote Ham Radio gives the ability to control amplifiers, switch and rotate antennas and have full control of the K3.

As I am originally from upstate New York, the thing I like the best about Remote Ham Radio is that I can sit in my Sydney QTH and operate a station 18 km from my parent's home QTH. Although operating remotely from VK to W2 does not currently count for DXCC, I can enjoy the benefit of operating even when the band is dead here and working new DX or a new US state.

Like any aspect of ham radio this does cost money. However, if you were to think about the money involved with buying a property, setting up multiple towers, antennas, radios, amplifiers and the amount of persuasion it would take to get your neighbours and your spouse's approval, this option is very cost effective.

I know some people reading this may be sceptical about remote operation from another country (from a 'legal aspect' the USA, Italy and Australia have a reciprocal *'bilateral' operating agreement so operating a remote station in the USA or Italy from Australia is legitimate)* or the cost of it, but that is the wonderful thing about ham radio. It has so many facets that some people like while others may not. Not everyone operates microwave, satellites, rag chews or operates in contests. Not everyone will think that Remote Ham Radio is a good fit for them.

But for me and those that may be severely limited with what they can set up, Remote Ham Radio may be a Dream Come True.

Gridsquare Standings at 17 October 2014

Guy Fletcher VK2KU

144 MHz	Terrestrial	
VK2FLR	Mike	120
VK3NX	Charlie	107
VK2KU	Guy	102
VK3HZ	David	93
VK3PF	Peter	90
VK2ZT	Steve	88 SSB
VK5AKK	Phil	87 SSB
VK3PY	Chas	82 SSB
VK2DVZ	Ross	80 SSB
VK2ZAB	Gordon	78 SSB
VK3BDL	Mike	77 SSB
VK2AMS	Mark	75
VK3BJM	Barry	70 SSB
VK3QM	David	69 SSB
VK7MO	Rex	69
VK3AKK	Ken	64 SSB
VK2TK	John	62
VK3HY	Gavin	61
VK3WRE	Ralph	60 SSB
VK3PF	Peter	56 SSB
VK3KH	Michael	55 SSB
VK4CDI	Phil	53
VK2MER	Kirk	52 SSB
VK3ZLS	Les	51 SSB
VK7MO	Rex	49 SSB
VK4CDI	Phil	48 SSB
VK7MO	Rex	48 Digi
ZL3TY	Bob	46
VK2TG	Bob	40 SSB
VK3EJ	Gordon	40 SSB
VK3PF	Peter	40 Digi
VK3UH	Ken	40
VK2TK	John	35 SSB
VK3ZUX	Denis	33 SSB
VK3DXE	Alan	32
VK1DA/p	Andrew	31
VK3DXE	Alan	31 SSB
VK1WJ	Waldis	29
VK2TK	John	27 Digi
VK3KH	Michael	26 Digi
VK4CDI	Phil	26 Digi
VK1WJ	Waldis	25 Digi
VK3ES	Andy	24 SSB
VK4EME	Allan	23
VK3ALB/p	GARC Team	22 SSB
VK6KZ	Wally	20
VK2ZT	Steve	19 Digi
VK4EME	Allan	19 SSB
VK3AL	Alan	18 SSB
VK2AMS	Mark	16 Digi
VK6KZ/p	Wally	16
VK2DVZ	Ross	15 Digi
ZL3TY	Bob	15 Digi
VK4EME	Allan	13 Digi
VK5APN	Wayne	13
ZL1UJG	Kevin	10 Digi
VK1WJ	Waldis	7 SSB
VK5APN	Wayne	7 Digi
VK5APN	Wayne	7 SSB
ZL3TY	Bob	7 CW
VK1WJ	Waldis	5 CW
VK3DXE	Alan	5 Digi
ZL1UJG	Kevin	5 SSB
VK3DXE	Alan	4 CW
VK3QM	David	1 Digi

144 MHz	EME	
VK2KU	Guy	494
VK2KU	Guy	480 Digi
ZL3TY	Bob	424
VK3AXH	Ian	390 Digi
VK4CDI	Phil	330 Digi
VK5APN	Wayne	253
VK5APN	Wayne	248 Digi
VK7MO	Rex	157 Digi
VK2DVZ	Ross	123 Digi
VK2FLR	Mike	120
VK3BJM	Barry	111 Digi
VK3KH	Michael	62 Digi
VK2KU	Guy	44 CW
VK2ZT	Steve	28 Digi
VK3HZ	David	19
VK5APN	Wayne	17 CW
VK3DXE	Alan	16 Digi
VK3NX	Charlie	5 CW
VK4EME	Allan	5 Digi
VK3AXH	Ian	4 CW
VK2DVZ	Ross	2 CW
VK3AXH	Ian	1 SSB

432 MHz	Terrestrial	
VK2ZAB	Gordon	57 SSB
VK3PY	Chas	53 SSB
VK3QM	David	52 SSB
VK3NX	Charlie	50 SSB
VK3HZ	David	42
VK3ZLS	Les	40 SSB
VK3BJM	Barry	39 SSB
VK5AKK	Phil	39 SSB
VK2KU	Guy	38
VK2ZT	Steve	38 SSB
VK3BDL	Mike	37 SSB
VK2DVZ	Ross	35 SSB
VK3AKK	Ken	34 SSB
VK3WRE	Ralph	34 SSB
VK3PF	Peter	32
VK3PF	Peter	30 SSB
VK1DA/p	Andrew	24
VK3KH	Michael	22 SSB
VK7MO	Rex	22
VK3ES	Andy	21 SSB
VK7MO	Rex	21 SSB
VK2AMS	Mark	20
VK2TK	John	18
VK3ALB/p	GARC Team	18 SSB
VK4CDI	Phil	18
VK2TK	John	17 SSB
VK4CDI	Phil	17 SSB
VK3HY	Gavin	16
VK3ZUX	Denis	15 SSB
VK2MER	Kirk	13 SSB
VK6KZ	Wally	13
VK2TG	Bob	12 SSB
VK3AL	Alan	10 SSB
VK3KH	Michael	8 Digi
VK3UH	Ken	8
VK4CDI	Phil	8 Digi
VK6KZ/p	Wally	8
VK7MO	Rex	8 Digi
ZL3TY	Bob	8
VK2DVZ	Ross	6 Digi
VK4EME	Allan	6 SSB
VK1WJ	Waldis	5 SSB
VK2ZT	Steve	4 Digi
VK3PF	Peter	4 Digi
VK3PY	Chas	4 Digi
VK3QM	David	4 Digi

VK2AMS	Mark	3 Digi
VK3DXE	Alan	3 SSB
VK2TK	John	1 Digi

432 MHz	EME	
VK4EME	Allan	83
VK4EME	Allan	78 Digi
VK4CDI	Phil	59
VK4CDI	Phil	59 Digi
VK4EME	Allan	13 CW
VK7MO	Rex	10
VK7MO	Rex	9 Digi
VK3NX	Charlie	5 CW
VK3AXH	Ian	4 Digi
VK3HZ	David	4
VK3KH	Michael	3 Digi
VK3NX	Charlie	3 Digi
VK2ZT	Steve	2 Digi
ZL3TY	Bob	2 Digi
VK4CDI	Phil	1 CW

1296 MHz	Terrestrial	
VK3PY	Chas	42 SSB
VK3QM	David	42 SSB
VK3NX	Charlie	40 SSB
VK2ZAB	Gordon	29 SSB
VK3AKK	Ken	28 SSB
VK2DVZ	Ross	27 SSB
VK3ZLS	Les	26 SSB
VK5AKK	Phil	26 SSB
VK2KU	Guy	25
VK3BJM	Barry	23 SSB
VK3PF	Peter	22
VK3BDL	Mike	21 SSB
VK3WRE	Ralph	21 SSB
VK3PF	Peter	20 SSB
VK3HZ	David	19
VK3KWA	John	19
VK3KH	Michael	17 SSB
VK2ZT	Steve	16 SSB
VK3ALB/p	GARC Team	16 SSB
VK3ES	Andy	13 SSB
VK7MO	Rex	12 SSB
VK1DA/p	Andrew	10
VK2TK	John	10 SSB
VK2AMS	Mark	9
VK3HY	Gavin	8
VK3AL	Alan	7 SSB
VK3UH	Ken	7
VK2MER	Kirk	6 SSB
VK3ZUX	Denis	5 SSB

VK4CDI	Phil	5
VK4CDI	Phil	5 SSB
VK6KZ/p	Wally	5
VK2DVZ	Ross	4 Digi
VK3KH	Michael	4 Digi
VK6KZ	Wally	4
VK2TG	Bob	3 SSB
VK4EME	Allan	3 SSB
VK7MO	Rex	3 Digi
VK3PF	Peter	2 Digi
VK3QM	David	2 Digi
VK4CDI	Phil	2 Digi
VK2ZT	Steve	1 Digi
ZL3TY	Bob	1 SSB

1296 MHz	EME	
VK4CDI	Phil	111
VK4CDI	Phil	94 Digi
VK3NX	Charlie	66 CW
VK7MO	Rex	41
VK2AMS	Mark	40 Digi
VK3AXH	Ian	39 Digi
VK4CDI	Phil	39 CW
VK2DVZ	Ross	37 Digi
VK7MO	Rex	36 Digi
VK3NX	Charlie	4 SSB
VK4CDI	Phil	4 SSB
VK2MER	Kirk	3 Digi
VK3AXH	Ian	3 CW
VK2AMS	Mark	1 SSB
VK2DVZ	Ross	1 SSB
VK3AXH	Ian	1 SSB

2.4 GHz	Terrestrial	
VK3NX	Charlie	28 SSB
VK3PY	Chas	28 SSB
VK3QM	David	28 SSB
VK3AKK	Ken	25 SSB
VK3WRE	Ralph	12 SSB
VK3ES	Andy	8 SSB
VK3ALB/p	GARC Team	7 SSB
VK3BJM	Barry	7 SSB
VK3PF	Peter	7 SSB
VK3KH	Michael	6 SSB
VK3HZ	David	5
VK6KZ	Wally	4
VK3KH	Michael	3 Digi
VK3ZUX	Denis	3 SSB
VK1DA/p	Andrew	2
VK2AMS	Mark	2
VK3PF	Peter	2 Digi
VK2DVZ	Ross	1 SSB
VK4EME	Allan	1 SSB

2.4 GHz	EME	
VK3NX	Charlie	49 CW
VK7MO	Rex	14
VK7MO	Rex	10 Digi
VK3NX	Charlie	8 SSB

3.4 GHz	Terrestrial	
VK3NX	Charlie	26 SSB
VK3QM	David	26 SSB
VK3AKK	Ken	22 SSB
VK3PY	Chas	22 SSB
VK3WRE	Ralph	8 SSB
VK3PF	Peter	6 SSB
VK6KZ	Wally	4
VK2AMS	Mark	3
VK4CDI	Phil	3 SSB
VK2AMS	Mark	1 Digi
VK2EM	Bruce	1 SSB

3.4 GHz	EME	
VK3NX	Charlie	30 CW
VK4CDI	Phil	8
VK4CDI	Phil	7 CW
VK3NX	Charlie	5 SSB
VK3NX	Charlie	2 Digi
VK4CDI	Phil	1 Digi

5.7 GHz	Terrestrial	
VK3NX	Charlie	25 SSB
VK3QM	David	25 SSB
VK3AKK	Ken	23SSB
VK3PY	Chas	23 SSB
VK3WRE	Ralph	9 SSB
VK3PF	Peter	7 SSB
VK3ALB/p	GARC Team	6 SSB
VK3KH	Michael	4 SSB
VK6KZ	Wally	4
VK2AMS	Mark	2
VK3BJM	Barry	2 SSB
VK3PF	Peter	2 Digi
VK3ZUX	Denis	1 SSB

5.7 GHz	EME	
VK3NX	Charlie	42 CW
VK3NX	Charlie	5 SSB
VK3NX	Charlie	1 Digi

10 GHz	Terrestrial	
VK3HZ	David	82
VK3HZ	David	38 SSB
VK3NX	Charlie	31 SSB
VK3PY	Chas	30 SSB
VK3QM	David	29 SSB
VK3AKK	Ken	26 SSB
VK6DZ	Derek	25 Digi
VK3HY	Gavin	14
VK3PF	Peter	13 SSB
VK3WRE	Ralph	12 SSB
VK6DZ	Derek	12 SSB
VK3ES	Andy	10 SSB
VK3ALB/p	GARC Team	7 SSB
VK7MO	Rex	7
VK3KH	Michael	6 SSB
VK7MO	Rex	6 SSB
VK6KZ	Wally	5
VK2AMS	Mark	3
VK2EM	Bruce	3 SSB
VK3KH	Michael	3 Digi
VK1DA/p	Andrew	2
VK3BJM	Barry	2 SSB
VK3UH	Ken	2
VK3ZUX	Denis	2 SSB
VK7MO	Rex	2 Digi
VK3NX	Charlie	1 Digi

10 GHz	EME	
VK3NX	Charlie	37
VK3NX	Charlie	32 CW
VK7MO	Rex	7 Digi
VK3NX	Charlie	5 Digi
VK3NX	Charlie	2 SSB

24 GHz	Terrestrial	
VK3HZ	David	23
VK3HZ	David	12 SSB
VK3QM	David	6 SSB
VK3AKK	Ken	5 SSB
VK3NX	Charlie	5 SSB
VK7MO	Rex	3 SSB
VK6KZ	Wally	2
VK3WRE	Ralph	1 SSB

24 GHz	EME	
VK3NX	Charlie	6
VK3NX	Charlie	4 Digi
VK3NX	Charlie	3 CW
VK7MO	Rex	3 Digi

47 GHz	Terrestrial	
VK3AKK	Ken	4 SSB
VK3NX	Charlie	4 SSB
VK3QM	David	4 SSB

76 GHz	Terrestrial	
VK3HZ	David	3 SSB
VK3KH	Michael	1 SSB

122 GHz	Terrestrial	
VK3KH	Michael	1 SSB

474 THz		
VK3WRE	Ralph	3 AM
VK3HZ	David	2
VK7MO	Rex	2
VK7MO	Rex	2 Digi
VK7TW	Justin	2
VK7TW	Justin	1 Digi

Additions, updates and requests for the guidelines to Guy VK2KU.

The guidelines (and the latest League Table) are also available on the VK VHF DX Site a *http://vhfdx.radiocorner.net* - click on Gridsquares.

Next update of this table will close on or about 13 February 2015.

Stations who do not confirm their status for more than 12 months may be dropped from the table.

AMSAT-VK

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Group Moderator
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Website:
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Group site:
group.amsat-vk.org

About AMSAT-VK

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

AMSAT-VK monthly net

Australian National Satellite net

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

In New South Wales
VK2RBM Blue Mountains repeater on 147.050 MHz

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

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

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

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

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

Become involved

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

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

VHF/UHF - An Expanding World

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

Weak Signal

Conditions are picking up a little from winter but there's still a way to go to the best time of year. The period from Christmas to New Year and beyond usually brings some excellent propagation – both Tropo and Sporadic E. So, after you've read this, go and check that your VHF/UHF equipment is operating correctly. Have a listen for beacons near and far and check there is RF coming out of the radios – there are still a few weeks to sort out any problems.

One area of the country that can provide good openings and is often overlooked (by me, at least) is the Queensland coast from Brisbane to Cairns and beyond. Perhaps that's because many of the contacts reported are intra-state – VK4 to VK4 – and so don't stand out as much.

The period from October 31st to November 1st was very good up the VK4 coast. The Hepburn Tropo Index was showing a band of yellow/orange enhancement hugging the coast from the eastern tip of Victoria up to New Guinea and beyond.

On the morning of the 31st at 2024Z, Adrian VK4OX in the Sunshine Coast hinterland worked Ian VK4AFC near Cairns on 2 m at 5x7 – a distance of just over 1300 km. They then switched to 70 cm and had another 5x7 contact. Adrian then worked Nick VK4FMAG near Townsville (1050 km) on 2 m with a 5x1 report – very creditable given the power limitation.

The following day (November 1st) at 2005Z, Adrian and Ian repeated their contacts of the previous day but this time with a 5x9 report of 70 cm – even stronger than the 2 m signal. Phil VK4CDI near Toowoomba then worked Ian on 70 cm also at 5x9 over a distance of 1330 km. Meanwhile, Adrian made contact with John VK4FNQ in Charters Towers (1000 km) on 70 cm with a report of 5x7. Finally, Adrian and Ian repeated their contact on 70 cm, but this time signals were dropping and the report was only 5x3.

Aircraft Enhancement Activity

Activity during the morning Aircraft Enhancement activity session seems to be picking up. On a recent morning, Gordon VK3EJ in Cobram reported that 21 stations were known to be active, with 19 heard by him and 15 worked.

The session, primarily on 144.2, runs nominally between 8 am and 9 am. The activity also takes place on 70 cm and 23 cm.

Stations in the Melbourne, Sydney and Brisbane areas (and beyond) take advantage of lift produced by the large number of aircraft flying at that time of morning. If everything is lined up, signals from a distant station can rise markedly as an aircraft moves across the path between you, from barely readable to 5x7. You do need to be fairly quick though – the enhancement doesn't last too long so there's usually not enough time for the local weather report.

If you're looking for activity on 2 m, try 144.2 MHz between 8am and 9am.

3.5 GHz band

As reported a few months ago, the ACMA announced a review of the 3.5 GHz spectrum and asked for submissions from interested parties. The WIA and eight individual Amateurs responded and recently received a response in turn from the ACMA. The response said that the ACMA have decided *"... to retain the existing mix of apparatus and spectrum licensing arrangements in the 3.5 GHz band."* However, they will be reviewing existing spectrum licences as they expire.

So, for the moment, the existing Amateur allocation remains as-is. However, the question of the NBN's requested for 50MHz of spectrum from 3400 MHz to 3450 MHz – the weak signal area of our band – remains up in the air.

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

Digital DX Modes

Rex Moncur VK7MO

Manfred Memorial Moon Mission (4M)

On 23 October a 144 MHz beacon - callsign LX0OHB - running JT65b was launched on the last stage of a Chinese Long March rocket. The mission was aimed at a flyby of the Moon and return to Earth. The beacon was running 1.5 watts to a tape measure 1/4 wave monopole on a nominal frequency of 145.980 MHz. The mission was organised by a group of Luxembourg amateurs and staff working for the company

Luxspace, a subsidiary of the OHB company founded by Manfred Fuchs, and was designed to celebrate his life as a pioneer in the construction of equipment for use in space.

The path favoured reception from Australia rather than the Northern Hemisphere and many VK operators were able to get decodes all the way to the Moon and part of the way back. Decodes were still being copied on 1 November although the tracking data was by this time too far out to be useful and alignment was hit and miss. There was considerable QSB which may have been due to polarization changes with spacecraft rotation or the null on the antenna pointing to the Earth. On the first pass the spacecraft was at around 70,000 km and gave good copy most of the time. As it passed around the Moon at about 390,000 km signals did drop off but still 4-Yagi EME stations which could track in Azimuth and Elevation could get good copy on at least half of the periods. Single Yagi stations without elevation also had success as the signal strength appeared to be stronger when the spacecraft was below about 30 degrees elevation.

Small station to Small station EME on 10 GHz

On 3 October Rex VK7MO, worked Mirek OK2AQ, on 10 GHz EME, using JT4f. OK2AQ was running only 20 watts to a 1.8 metre dish while VK7MO was running 50 watts to a 0.77 metre dish. VK7MO used automatic Doppler correction for both TX and RX using Glen VK1XX's program which meant that OK2AQ did not need to tune for Doppler. The timing of the attempt was designed to take advantage of very low spreading (15 Hz) and low degradation (0.5 dB). VK7MO operated portable from Mt Wellington to get a good take-off and gain the maximum moon window – but this did mean operating outside at 2 to 3 am at close to zero degrees and with winds gusting to around 50 km/hr - so not at all pleasant. OK2AQ achieved single line copy while VK7MO had to use averaging to achieve a decode from the lower power at OK2AQ. This appears to be the first EME QSO with such small dishes at each end.

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

Meteor Scatter

Dr Kevin Johnston VK4UH

Well we are not having a great season so far! The Orionid Meteor Shower, which was predicted to peak around the 22nd October, has come and gone with most operators agreeing it was an "underwhelming event" this year with the ZHR never achieving the peak values seen in previous showers. For the third consecutive year I was away in Sydney coordinating professional exams, whose date consistently clashes with this shower, and was unable to operate at the predicted peak. I was operational (QG62kp) on 2 m FSK441/JTMS MS and 6 m FSK441/ISCAT-B MS over the preceding weekend 17/18 UTC and thought conditions were better than background for late Spring. Successful two-way QSOs were completed with VK3AMZ, VK3II, VK3HY and VK5PJ on 144MHz and VK2BLS on 50MHz. The predicted peak fell during the working week for many operators, which inevitably limits the number of stations on-air, but the level of MS activity over the weekend activity sessions, according to the VK-Logger at least, also appeared low.

Robert VK4LHD (QF63ng) forwarded the following report.

"With the arrival of the Orionids Meteor Shower and its expected peak in Meteor Scatter, a couple of us started monitoring a few days in advance looking for signs of an early arrival of the shower. The peak of the shower was expected to arrive on the Friday morning but we were disappointed as there were no signs of any early shower with conditions well below average. I worked FSK441 on the Monday and only managed the one completed contact with Jim VK3II with very weak pings and most of them very difficult to decode. Tuesday morning didn't produce anything better with most of the pings being very short and weak but I did manage to complete with Gavin VK3HY after a very hard slog. I didn't work FSK441 on the Wednesday as that was our Radio Club opening day and I was the one opening the door that morning but I was on for the Thursday morning session and there was still no sign of any Orionids Shower with pings still very weak, few and far between. I did manage to complete with Jim VK3II and although Gavin VK3HY was on I didn't see any sign of him at all although he did see six pings from me. At this point it was pretty clear that there was going to be no early start to the Orionids shower and our hopes for any real boost in conditions lay with the peak expected on the Friday morning. The Friday morning for me was a complete disaster. After a slightly late night Thursday working 23 cm and 2.4 GHz with our monthly 23 on 23, the morning got even worse when I found my power supply would not fire up. After a quick change to a small power supply and battery backup I was finally calling CQ. The morning produced nothing for me with no completes at all. A good 90% of the pings I got were either too weak or just too short to decode and anything that was decoded didn't contain my call sign so just went back to bed and caught up on the sleep I had lost. The weekend session didn't fare any better with only the one complete on the Saturday and one on the Sunday morning. There was a small improvement to the strength of the pings but still a lot were weak and short still making decoding a nightmare. All in all I would say from my end that The Orionids Shower

was a bit of a disappointment in not really bringing any boost in pings and completed QSOs. Some others were doing ok and others having just as bad a time as I but Meteor Scatter is a bit like a box of chocolates - you never know what you're going to get."
From Arie VK3AMZ (QF22FE)
"Unfortunately I was just too busy to get on air this year. The ZHR never even looked like it was going to get above 10 little alone 30! It was as they say "Not worth getting outta bed for". This is the flip side of the ETA (Eta Aquariids) shower in June which and was an excellent shower."

So let's hope the Leonids Shower, expected to peak around the 18th November, will give us something to write about. Next month I intend to discuss some strategies for improving performance on digital MS when conditions are poor and very poor, including some suggestions on how to still get results when meteor pings are very short and weak.

Please send any reports, questions or enquiries about Meteor Scatter in general or the digital modes used to Kevin VK4UH at *vk4uh@wia.org.au*

Band Plan Notes

John Martin VK3KM - Technical Advisory Committee

Band planning - more isn't always better

From time to time there are suggestions that the band plans should include recommended frequencies for specific modes. It sounds like a good idea, and in some cases it is. But it depends on a number of factors like the popularity of the particular mode, the amount of interference protection it needs, and so on.

For example, it is very helpful for weak signal operators to have designated frequencies for signals that are often far too weak to be heard.

But it is possible to go too far, especially with digital modes. New modes are coming along all the time, and if we set aside a spot for each one, it would not be long before our band plans would look like a patchwork quilt of frequencies with "keep clear" signs on them. And digital modes sometimes disappear almost as quickly as they arrive, and it would be very wasteful to set aside spectrum for modes that were receiving little or no use.

So over time, special purpose channels in the band plans will come and go. As an example, years ago there used to be separate 2 metre channels for RTTY, SSTV and fax. Some time ago they were combined into a single channel for any and all non-voice modes, and this channel is not exactly busy! It may be that it should be dropped so that the frequency can be used more freely for other purposes.

The classic "rise and fall" story in band planning was packet radio. It became extremely popular and, at its peak, it occupied a 500 kHz slice of the 2 metre band. But the tide turned, and now we are finding new uses for former packet channels.

With such a variety of different modes in use today, our best course is to avoid over-planning. Nobody likes to see the band plans changing too much or too often. And what we add to the band plan this year may need to come out a year or two down the track. So we need to keep as many frequencies as possible clear for multiple uses. There is no need for every possible type of activity to have its own assigned frequencies. That would be far too restrictive for everybody.

There is of course one group of channels that need to be clearly distinguished in the band plans regardless of their level of use. These are the channels that are assigned to beacons, repeaters and some simplex IRLP nodes that are operating under repeater licences. These channels need to be clearly identified because the frequencies have been assigned by ACMA.

More on 630 metres

Two recommended SSB frequencies have been suggested. One is 476 kHz LSB, which has already been receiving some use. The other is 479.3 kHz - i.e. suppressed carrier frequency 479.3 and, with an audio passband of 300 - 2400 Hz, an actual occupied bandwidth of 476.9 - 479.0 kHz. This one would cut across frequencies that are in use in Region I and elsewhere for ROS, QRSS, WSJT-X and Opera. The 476 kHz option would clash only with WSPR. However it does appear that WSPR is the most used digital mode in this band.

Bearing in mind the comments above, we need to be very careful in allocating spectrum on a band that is only 7 kHz wide. And we have the complication that it is impossible to find any frequency that can be used for SSB without clashing with other modes. It may be best to acknowledge the two SSB options as both being equally legal according to the LCD, but both also needing careful and considerate use so as to cause the least possible conflict with stations using other modes.

DX-News & Views

Luke Steele VK3HJ
e *vk3hj@wia.org.au*

October on the bands

During the first half of the month, solar activity declined, however, in the third week AR2192 made its presence felt. This huge sunspot, the largest of the current cycle, reached a size in excess of 2700 millionths of the visible solar disc, and many times the size of the Earth. Several M-class flares and a couple of X-class flares were produced by this very active area, but no significant coronal mass ejections resulted.

Many DXpeditions and interesting DX were active during October, including T30D Western Kiribati, YJ0X Vanuatu, C21GC Nauru, ZK3E and ZK3Q Tokelau, TX7G Marquesas, E6RQ Niue, VK9XSP Christmas I, VK9DLX Lord Howe I, and A35RT Tonga. Also on air in our region were a couple of activations in Timor Leste, 4W/G3ZEM and 4W/K7CO, and Macau XX9R. Active in the Caribbean were Saba & St Eustatius, Turks & Caicos, Haiti, and a new IOTA NA-247 Guana Key of Pelikan with the callsign PJ7PK. XR2T was Damau I, a Chilean IOTA. S79KB was Kasimir DL2SBY in Seychelles. FT4TA put Tromelin I on air for the first time in over a decade.

There was quite a lot of activity from Antarctica, with KC4AAA at the Amundsen-Scott South Pole Station, 8J1RL the Japanese Syowa Station, RI1ANT the Russian Mirny Base. A station purporting to be on the South African Union Island Base, with callsign ZU1A, operator "Henk" has been on a couple of times, with a very strong signal on 30 m CW. No other information seems to back this up.

Some upcoming DX operations

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

Date	Call	QSL via	Information
1 – 6 Dec	E6XG	JA1XGI	Niue (OC-040). JA1XGI, HF, mainly CW but some SSB and digital.
11 – 14 Dec	7P8NH	G3RWF	Lesotho. G3RWF, HF, CW.
12 Dec – 8 Jan	D44TWO	M0OXO	Cape Verde I, Praia, Santiago I (AF-005). DF2WO, HF, CW, SSB.
12 Dec – 1 Jan	VK9N/G7VJR	M0OXO	Norfolk I (OC-005). G7VJR, high bands, CW.
1 – 31 Jan	C6ATS	LotW	Bahamas (NA-001, NA-113, NA-054, NA-048). 9H5G, 160 – 10 m.
Late Jan	K1N	N2OO	Navassa I (NA-098). Team of 15, HF, CW, SSB, RTTY.
5 – 11 Jan	TX5W		Austral I, Raivavae I (OC-114). 40 – 10 m, SSB.
6 – 13 Jan	V5/G3RWF	G3RWF	Namibia. G3RWF, HF, CW.
9 – 17 Jan	XR0YJ		Easter I (SA-001). Team of 7 Japanese operators, 80 – 6 m, CW, SSB, digital.
10 – 25 Jan	5R8DX	JA8BMK	Madagascar, Antananarivo (AF-013). HF with focus on 160 and 80 m.
11 Jan – 3 Feb	HH5/KC0W	KC0W	Haiti (NA-096). KC0W, 160 – 40 m, CW.
15 – 26 Jan	C5X	LotW	Gambia. Team of four British operators, HF.
16 – 31 Jan	EP6T		Iran, Kish I (AS-166). Ten member team, 160 – 10 m, CW, SSB, RTTY.

GB2NZ and 2SZ in the United Kingdom, and ZL4AA and ZM90DX in New Zealand were very active, commemorating the 90th anniversary of the first radio communication between the UK and New Zealand.

VK0MH cancelled: Rod VK6MH, who was preparing for his posting to Macquarie Island, was given the news that a mole cut from his arm was a melanoma. As a consequence, he was unable to go to Macquarie.

E6XG, **Niue**. Haru JA1XGI is travelling to Niue this time, operating on HF, with a focus on Low Bands, mainly CW but some SSB and digital. QSL direct, or LotW. For more information see http://e6xg.yolasite.com/

7P8NH, **Lesotho** and V5/G3RWF **Namibia**. Nick G3RWH will be on the HF bands in December from Lesotho, then in January from Namibia. Nick prefers CW. QSL via his home call.

D44TWO, **Cape Verde**. Harald DF2WO is returning to Praia on Santiago Island. He'll be on HF bands, using CW and SSB. QSL via M0OXO.

VK9N/G7VJR, **Norfolk I**. Michael G7VJR plans to operate on the higher HF bands using CW. He

will be using a K3/100 and vertical antennas. QSL via ClubLog OQRS or M0OXO.

C6ATS, **Bahamas.** John 9H5G plans to activate four IOTA groups in the Bahamas, including NA-001 Great Bahama Bank group, NA-113 South Bahamas group, NA-054 Berry Islands, and NA-048 Bimini Islands. He will be operating on the higher HF bands.

K1N, **Navassa Island**. The last major activation of this entity was in 1993, and now it has moved to the top of the Most Wanted List. The group who activated Desecheo Island in 2009 has been working for many years to see amateur radio activity on Navassa again. Fifteen operators will be manning up to eight stations for two weeks starting in late January. Make sure you get this one if you need it, as it may be more than ten years until another activity is permitted. For more information see *http://www.navassadx.com/*

XR0YJ, **Easter Island**. A group of seven Japanese operators will be visiting Easter Island in January. They plan to be on 80 – 6 m, using CW, SSB and digital modes.

5R8DX, **Madagascar**. Toshi JA8BMK plans to operate on HF, with a focus on 160 and 80 m.

HH5/KC0W, **Haiti**. Tom KC0W plans activity from the somewhat rare entity with a focus on 160, 80 and 40 m, using CW.

C5X, **Gambia**. Steve G3VMW, Alan G3XAQ, Don G3XTT and Iain M0PCB will be operating on the HF bands from Brufut, on the coast south west of Banjul.

EP6T, **Iran**. A 10 member team will be operating from Kish Island, 160 – 10 m, CW, SSB and RTTY. Whilst there has been some activity from Iran lately, getting contacts confirmed has been either expensive (due to high postal charges) or not possible at all. The Rockall DX Group will be working with some local radio amateurs and the Communication Regulatory Authority to cultivate further activity, and to train and examine candidates for their amateur licence. For more information see *http://www.rockall.be/*

Special thanks to the authors of The Daily DX, 425 DX News, DX World, NG3K's Announced DX Operations, and QRZ.DX for information appearing in this month's column. Interested readers can obtain a free two week trial of The Daily DX from *www.dailydx.com/trial.htm*

This is the last DX News column prepared by Luke VK3HJ – many thanks for your efforts Luke! We have a volunteer to replace Luke, but I will leave the announcement of the details until the next issue, when the new contributor's first column will appear.

VK5news Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

The talk at the October meeting was given by two ex-PMG employees: they both joined as 17 year-olds. Both attended the PMG School to learn Morse code and both used it for a time even though it was in the process of being replaced by teletype.

Although most of their later careers with the PMG did not involve the use of Morse code they retained an interest it this method of communication.

In retirement both became members of the Morsecodians. To demonstrate the technique of sending messages by Morse code they have travelled all over Australia.

On the night we were shown a number of different types of Morse keyers including a genuine PMG sounder. Apart from old PMG employees and sounder users we all agreed it was easier to "hear" a tone than a sounder.

It was interesting to have these men, Ian and Bernie talking about telegrams - sent and received - and to hear some of their adventures as telegraph boys, delivering telegrams.

Ian did not ever become an amateur but Bernie holds the callsign VK5NBN.

It was a thoroughly enjoyable talk.

Early in November it will be the AHARS Buy and Sell and our November meeting will be one of the interesting and challenging construction nights run by Graham VK5ZBZ.

Christine VK5CTY in Canberra.

Help us

Contribute to the Weekly WIA News Broadcast. See our website for details.
www.wia.org.au/members/broadcast/contribute/

SOTA News

Allen Harvie VK3HRA

It has been a busy 2014. The year started with great enthusiasm for SOTA and only continued. Our ranks have grown with over 150 activators and 220 chasers now registered and participating across all states of Australia. The year's highlights include:

- 3 new Associations
- 2 new Mountain Goats
- 1 Super Sloth and 25 new Shack Sloths

New associations

VK8 came online in March, VK6 in September and much anticipated VK7, in October 2014. SOTA is now fully operational in Australia. Each state has its own association, which defines the recognised SOTA summits within that Association.

Mountain Goats

The title of Mountain Goat is a prestigious award in SOTA for activators who achieve 1000 points. The award recognises the dedication and effort of the SOTA activator to reach the peak of many distant summits usually only to spend 30 minutes or less on the air activating and then returning home.

2014 saw two more mountain goats with several in the wings,

Peter VK3PF qualified for Mountain Goat in April 2014 has been with SOTA since near the beginning of VK3. Not just activating, he also supported the mapping process for other associations and is an active NP participant. Peter also gained 10000 chaser points to be VK's first 'Super Sloth'.

Rod VK2TWR has taken just over 12 months to gain Mountain Goat status. Rod lives in the Monaro region of NSW, which many activators believe is SOTA heaven. Despite the proximity, it has to be stated the level of effort and dedication given the Alpine conditions to complete 120 activations in such a short time is commended.

Keep an eye on Rob VK2QR. Rob works in the Snowy Mountains and is likely to achieve Mountain Goat status before the anniversary of his first activation in February 2014.

Shack Sloths

It is not just the Mountain Goats who are challenging the time required to gain awards. Of the 25 new Shack Sloths this year, there were two who took less than nine months to log the thousand points required to claim Sloth status: John VK2YK and Amanda VK3FQSO. This just shows the strength and levels of SOTA activity in VK and proving all licence classes are equal in this activity.

With each association hosting activation days to celebrate their joining SOTA, it was VK1 when celebrating their 18 months in July that resulted in what can be only described as a SOTA frenzy. Of the 130 activations for the month, 32 were on this day. All associations turned out to participate with several National Park activations thrown into the mix. The run up to UTC rollover was bedlam with the band full of activators managing small pileups of "summit to summit" calls coming back from other activators, and chasers seeking every window to gain contacts. Once the dust had settled, typical reports were claiming between 60 to 100 QSOs across at least six states and up to 32 S2S contacts.

40 m SSB is still the dominant mode and band but with the poor propagation (X class flares resulting in HF radio black outs) and additional associations coming on-line, we are seeing increased use of 20 m and CW to make the contacts. It's not all HF and SSB, with some 23 cm activations and even some SSTV by Mark VK3ASC.

CW activations increased due to the number of operators who wish to venture deep into the forests with reduced weight to activate remote summits. The weekly CW net hosted by Ron VK3AFW and Tony VK3CAT has encouraged some old dogs to review their skills and is bringing new activators and chasers alike up to speed with CW.

DX interest in VK contacts remains quite high, as a SOTA contact with VK is still a highly prized achievement in Europe. Conditions on 20 m are currently supporting long path contacts and we are also seeing VK amateurs exploiting SOTA and WWFF to support activations whilst abroad.

Roundup

VK1 continues to be a hive of activity from a small band of dedicated activators (are they all Andrews?) and chasers, not surprising given the location of summits and proximity to VK2. There has become a practice of activators after a day at work to pop out and pick up a summit.

VK2 gained an additional 230 summits, a Mountain Goat and a total of 12 Sloths. Not a bad effort for their first 12 months of activity.

VK3 celebrated two years of SOTA with additional Goats and total of 27 Sloths. Despite this level of activity, we are only just over half way through the available summits.

VK4 celebrated its first year by gaining an additional 10 regions. VK4 is still quiet and given its size, this is not surprising. Given the practice of southern states amateurs to travel north on holidays, it is becoming the practice of activators on holidays to take the radio for a couple of quick summits.

VK5 celebrated two years of SOTA with eight Sloths. This does not reflect the level of activity as VK5 has an abundance of National Parks but not a lot of high point summits.

VK6: Whilst new, VK6 is presenting DX opportunities for both VK and the rest of the world.

VK7: With the bush walking opportunities Tasmania presents, we now have SOTA peaks to add to the attractions.

VK8 was also off to a solid start with Greg VK8GM completing six activations to date allowing DX stations and the rest of us to get VK8 summits into the log.

VK9 holds all of the offshore islands other than VK0 and continues to attract attention when operators from DXpeditions are active.

Thank you to those of you who have given up so much of your time to help put it all together: not just the activators and chasers, but also the families who tolerate our behaviour that make SOTA the dynamic activity it is today.

Silent Key

Keith Alder VK2AXN

Keith Frederick Alder MSc, AM VK2AXN was a wonderful man, a leader in the nuclear industry, who lived to the maximum and served his country with distinction. He died suddenly at age 93, following a heart attack, on the evening of 24 September 2014. He was getting ready to be driven to Queensland the next day for a reunion with yachting friends.

Professionally, KFA was a metallurgist, a 1942 graduate of Melbourne University. With his particular skills he gravitated almost inevitably to the nuclear power industry; and ultimately, from 1976-1982, to General Manager of the Lucas Heights Research Establishment of the Australian Atomic Energy Commission. Widely travelled, he was prominent in the nuclear fraternity; a member of the international Old Boy's Club of nuclear physicists and engineers.

With his wife Pauline, he spent considerable time visiting the UK between the years 1946 to 1957. He was engaged as a senior scientific officer at Woolwich Arsenal, and later at the Atomic Energy Research Establishment in Harwell as a staff member of the Australian Atomic Energy Commission which he had joined in 1954. Between times, he lectured on metallurgy at Australian universities, but academic life was not for him. On returning from Harwell he took up at Lucas Heights as head of metallurgy and became Director in 1962. He saw it very much in the national interest to persuade the political powers that Australia, with its immense uranium resources, should embrace the atom as did other, albeit less-endowed, countries. The first step would be generation of base-load power through an overseas-designed reactor; a "lead

station" on Commonwealth property to be followed by further reactors under state control. He drove to establish a 600 MW power station at Jervis Bay and was vastly unimpressed when the project was cancelled at the very last minute. He has a book on the subject.

Keith was also a yachtie, a blue-water sailor in races from Sydney to Queensland ports and beyond; especially in his beloved Windrush which he shared with one or two notables. An expert navigator, he exchanged cutting-edge physics for the ageless appeal of wind, sextant and compass. And, of course, the insulated back-stay with its sea-water ground plane.

He dabbled with radio as a hobby from a very young age, experimenting, as one did, with super-regenerative receivers and their doubtfully legal ability to radiate interference. He acquired an amateur licence before WWII and was promptly shut down for the duration. After the war, though not known exactly when, he started from scratch and obtained the call VK2AXN. Given his nuclear involvement, this was probably not before 1960.

In recent years, the writer knew Keith as a rag chewer on VHF and 40/80 metres, but this is not how it was in earlier times. He owned a large two-storey house and grounds in Turramurra; a good site for DX. With a 20-metre beam on the roof, he pursued DX contacts with passion. He rapidly worked all continents and obtained the DXCC award. He loved amateur radio, and was an ardent home brewer of linear amplifiers, antenna tuners and other serious bits of gear.

Keith was a long-time member of the Hornsby and District Amateur Radio Club and served as President in the mid-1980s. Many recall his memorable talks and demonstrations on nuclear energy and related matters. Knowing, as he did, most eminent scientists in Australia, he was able, for example, to arrange a series of talks on war-time radar development in the UK by the renowned Welsh physicist, Dr E G (Taffy) Bowen. Dr Bowen was then Chief of the Division of Radio-Physics at CSIR (later CSIRO).

Keith Alder was an engaging man who enjoyed the company of people from all walks – especially if they were amateur radio operators or yachties, or both. He loved to come out for dinner bringing a bottle of good red. Musically he liked Verdi, Beethoven, the Seekers and traditional jazz bands; a catholic taste indeed.

KFA had, as they say, a good innings, but his passing does leave a gap. He will be well remembered.

Best wishes are sent to his sons, Andrew, Robert and Graeme and their families. Keith was a good and valued friend of the writer, Kevin VK2JS, and many others.

Spotlight on **SWLing**

Robin L Harwood VK7RH
vk7rh@wia.org.au

2014 is rapidly coming to a close. Fewer broadcasters are now using shortwave, opting to either use local FM relays or stream their fare over the Internet. I did see a reference that over 50,000 stations now utilise web streaming. However I am also aware that there are fewer Australian stations actually participating in this due to a ruling that broadcasting stations must be licensed by the ACMA to broadcast via the web, due to copyright (Australasian Performing Right Association). I know my local commercial station no longer streams.

In mid-October, REE in Madrid closed down their senders at Noblejas and departed shortwave. It has been replaced by a continuous web stream. There was an outcry both within the Spanish public broadcaster and the Hispanic diaspora yet the decision was not overturned. Radio Romania International in Bucharest and Radio Vaticana from Rome still remain on shortwave. The senders within Germany and in Austria are still operating on behalf of clandestine or religious organizations. The Wooferton (UK) senders remain with BBC programming towards Africa, although the Ascension relay station seems to take up the bulk of BBC World Service programming to Africa.

I believe that there is another attempt is being made to bring commercial programming over shortwave. As many of you may be aware, this concept never took off. When I started listening to shortwave in the mid-50s, only government stations (VOA/RL/RFE) were operational and that had been the case since America entered World War II. WNYW/WRUL based in New York and KGEI in San Francisco were the only non-governmental stations on air. I believe that all pre-war shortwave broadcasters from the USA were commercial. This new venture is via WRMI in Okeechobee Florida and will be 24/7 and on a single frequency in the 31 metre broadcasting allocation.

In October, there were several HF Blackouts caused by coronal mass ejections. One severe disturbance occurred during the "CQ" worldwide contest. It was odd seeing swathes of spectrum vacant on the Twente University webSDR with only activity on the amateur bands. There were stations calling repeatedly and not hearing replies, although I could. I tried to look outside to see if there was any visible auroral phenomenon here but there was nothing due to heavy cloud cover and rain.

I am hoping that I can get my RTL SDR going shortly. A software glitch is holding me up and by the time this goes into print, it should be up and running.

I also have heard another Over the Horizon radar (OHTR) on shortwave. This one is 20 to 30 kHz wide and does not seem to be bothered where it plops down. I have heard it on 15 and 20 metres. It is said that this new system is based in Iran and sounds very similar to the infamous Woodpecker" in the 70s and 80s.

I wonder what 2015 will bring. We shall see. Have fun over the holiday season and be careful.

My Season's Greetings to you from Tasmania – de VK7RH.

Contests

James Fleming VK4TJF
vk4tjf@wia.org.au

Well the year is just about over. All that is left is the month of December.

The contest for this month is the ARRL 10 meter contest that runs for 48 hours on the second full weekend of December starting 0000 UTC Saturday going till 2359 UTC Sunday. That is around 10:00 a.m. here in Queensland on a Monday, December 13-14th. However you can only operate up to 36 hours. Off times must be at least 30 minutes in duration, plenty of time to have some BBQ. There are multiple modes: High, Low and QRP power. And you can do either phone, CW or mixed. You can also team up with other amateurs and run a multi-operator station. DX stations give their RST and serial number and stations from W/VE give RST and province or state abbreviation. Mexican stations give their RST and state. Scoring is two points for phone and four points for CW. Multipliers are many: each US state, Canadian province, Mexican state, ITU region and DXCC country. The easiest way to log the contest is the VKCL logging program and sending in your log electronically, via email.

Contest Calendar for December 2014 - February 2015

Month	Date	Starts at	Spans	Name	Mode
December	5th - 7th	2200 UTC	42 hours	ARRL 160 metre contest	CW
	7th	0000 UTC	24 hours	Ten-metre contest	RTTY
	13th - 145th	0000 UTC	48 hours	ARRL 10 metre contest	CW / SSB
	20st	0000 UTC	24 hours	OK DX RTTY contest	RTTY
	20th - 21st	1400 UTC	24 hours	Croatian CW contest	CW
	27th - 28th	0000 UTC	24 hours	RAC Winter contest	CW / SSB
January	**1st - 31st**	**0000 UTC**	**Month**	**Ross Hull Memorial VHF-UHF**	**ALL**
	3rd - 4th	1800 UTC	30 hours	ARRL RTTY Roundup	RTTY
	10th - 11th	**0100 UTC**	**24 hours**	**Summer VHF/UHF Field Day**	**SSB / CW / FM**
	17th - 18th	1200 UTC	24 hours	Hungarian DX contest	CW / SSB
	24th - 25th	0600 UTC	36 hours	REF contest	CW
	24th - 25th	1200 UTC	24 hours	BARTG RTTY Sprint contest	RTTY
February	14th - 15th	0000 UTC	48 hours	CQ WW RTTY WPX contest	RTTY
	21st - 22nd	0000 UTC	48 hours	ARRL International DX contest	CW
	21st - 22nd	0600 UTC	36 hours	REF contest	SSB
	28th - 29th	1300 UTC	24 hours	UBA (Belgian) DX contest	CW

Rules for most contests may be found at *www.hornucopia.com*, courtesy of WA7BNM.

So that is the contest in a nut shell.

It may help some people to get Monday morning off work to make more contacts to North America. It may also help to know that during this time of year trans-equatorial propagation with signals from Japan to New Zealand is common.

Band conditions as of late have been very good and promising with high sun spot activity. I hope to hear everyone on the 10 metre contest.

I wish everyone a merry Christmas and a happy new year! And hope that this year has brought everyone lots of fun contesting. I for one I'm looking forward to next year.

Cheers.

Participate

Summer VHF/UHF Field Day

10 & 11 January 2015

Check the rules for the Spring VHF/UHF Field Day for the Rules other than the dates – either in the October issue of *AR*, or on the WIA website. Participants should keep an eye on the WIA website *www.wia.org.au/members/contests/vhfuhf/* for updates.

One contact per UTC day made on the Summer VHF/UHF Field Day is also eligible contacts for the Ross Hull Contest – check the Ross Hull Rules for details.

Ross Hull Memorial VHF-UHF Contest 2015

Contest Manager: John Martin VK3KM

The next Ross Hull Contest will run through the month of January 2015. Logs will be due by Monday, February 16.

If you participate in the Summer VHF-UHF Field Day, remember that you can count Field Day contacts (one per station per band per day) in your Ross Hull Contest log. There is no need to exchange separate serial numbers for the two contests.

The Contest

The WIA maintains a perpetual trophy in honour of the late Ross A. Hull and his pioneering achievements in VHF and UHF operation. The name of each year's contest winner is engraved on the trophy, and other awards may be made in the various divisions of the contest. The contest is open to all amateurs.

Duration

0000 UTC January 1, 2015 to 2400 UTC January 31, 2015.
In Eastern Summer Time, that is 11 a.m. on January 1 to 11 a.m. on February 1.

Sections

A: Best 7 days, analog modes.
B: Best 7 days, digital modes.
C: Best 2 days, analog modes.
D: Best 2 days, digital modes.

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

Entrants may submit logs for more than one section.

General Rules

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

Contest Exchange

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

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

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

Logs

Logs must contain the following for each contact:

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

Separate scoring columns for each band would be helpful.

Scoring

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

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

Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher
x1	x3	x5	x8	x10

Then total the scores for all bands.

Cover Sheet

Logs must be supplied with a cover sheet containing:

- Operator's callsign, name and address.
- Station location (if different from the postal address).
- Section(s) entered.
- A scoring table set out as the example below.
- A signed declaration that the station has been operated in accordance with the rules and spirit of the contest, and that the contest manager's ruling will be accepted as final.

Please use the following format for your scoring table on page 48. If you wish you can cross-check by adding the daily totals across the table, but please make sure that you include the separate band totals.

A cover sheet and scoring table has been included in the postings on the WIA web site. Copies can also be obtained from the e-mail address given below.

Penalties

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

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

Entries

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

Logs must be received by **February 16, 2015.** Early logs would be appreciated.

Note on Calculating Distances

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

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

34th ALARA Contest 2014 results

Lesley R. Smit VK5LOL ALARA Contest Manager

(This contest always held on the last full weekend in August.)

This contest was a difficult one for all concerned due to poor radio conditions and a lack of YLs and OMs. A big thank you goes to all of you who did participate.

It was wonderful to see the competition between two of our F calls, Amanda VK3FQSO and Julie VK3FOWL. It is a pity there can only be one winner and that is Amanda who has won both trophies: Top overall and Top ALARA Foundation licensee. Congratulations Amanda!

Lyn VK4SWE inspired some interest in CW with a few overseas CW operators coming out of the woodwork including a YL Marija 9A5SM from Croatia. Lyn is our top CW YL with a score of 518.

EchoLink is great for those who no longer have access to big antennas and also helps when radio conditions are not so good. Bev VK6DE is our top YL in the EchoLink section. Good on you, Bev!

Unfortunately I was the only VK5 participant. The rest of our YLs were too busy gadding around the world! Christine VK5CTY, represented us at the 75th YLRL meet in USA; Jeanne VK5JQ spent time in England and Norway; Meg VK5YG was cruising around the world and Shirley VK5YL was a bit closer to home on Lord Howe Island.

Let's hope radio conditions are perfect and the Australian dollar is low so we can have more participants next year.

Amanda	VK3FQSO	1002	Top Overall Top ALARA Foundation licensee Top VK3 ALARA member
Julie	VK3FOWL	789	
Lyn	VK4SWE	518	Top YL CW (CW score – 518) Top VK4 ALARA member
June	VK4SJ	287	
Jenny	VK3WQ	261	
Pam	VK4ON	175	
Mike	VK3JV	115	Top VK3 OM
John	VK7XX	105	Top VK7 OM (CW score - 80)
Lesley	VK5LOL	96	Check Log (EchoLink – 27)
Sally	VK2FBND	84	Top VK2 ALARA Member
Hal	VK7HAL	80	
Col	VK4CC	70	Top VK4 OM
Catherine	VK4GH	66	
Bev	VK6DE	65	Top YL EchoLink (EchoLink – 65) Top VK6 ALARA member
Nicholas	VK3ANL	60	
Suzanne	VE7IM	54	Top DX YL (EchoLink - 39)
Marija	9A5SM	52	Top DX YL CW (CW score – 52)
Doug	VK2ODD	50	Top VK2 OM
Elizabeth	VE7YL	47	Top Canadian ALARA member (EchoLink – 33)
James	VK2ZMC	45	Check Log
Ngaire	ZL2UJT	36	Top ZL ALARA member
Paul	VK1ATP	35	Top VK1 OM
Dot	VK2DB	35	
Chris	VK2ACD	30	
Akihito	JA0VTK	10	(CW score – 10)
Yuri	UA9JLL	10	Check log (CW score – 10)
Lars	SE4E	8	(CW score - 8)

VK3 news Amateur Radio Victoria

Jim Linton VK3PC
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End of Year

Another busy year is rapidly drawing to a close and soon we will be heralding in the New Year 2015.

On behalf of President, Barry Robinson VK3PV, Treasurer/ Secretary, Ross Pittard VK3CE, Peter Mill VK3APO, Terry Murphy VK3UP, Tony Hambling VK3VTH, Peter Cossins VK3BFG, and Jim Linton VK3PC, all the best for the festive season.

The office at 40g Victory Boulevard Ashburton closes for the Christmas-New Year holiday break at 1 pm 16 December, and reopens on 3 February 2015.

The hard working volunteers keep the office going as a point for membership inquiries, questions from the public and general postal and banking duties.

They will join other volunteers for the state-wide organisation at the annual Christmas lunch.

Only urgent matters will be handled during the closure while there is a stocktake, and financial reports prepared.

The WIA Victoria Amateur Radio Victoria annual general meeting will be at 8 pm, in the office at Ashburton on Tuesday 19 May, 2015. Notices of Motion for the AGM must be signed by at least three members and in the hands of the Secretary by 10 February 2015.

Callbook 2015 stock

This ever popular release is available through mail order from our online facility *http://shop.amateurradio.com.au* or over the counter.

It has the latest Australian callsign lists, information from the ACMA and material that is used every day by radio amateurs.

Included is a CD full of detail including 2013 editions of the WIA journal *Amateur Radio* magazine. Whether for your own use or as a gift, the latest Callbook is certain to be a big seller.

The secure online bookshop also includes logbooks, Foundation Licence Manuals, awards and plaques, and memberships.

ANZAC 100 commemoration

As part of the marking of the centenary of the landing at Gallipoli, planning is underway to be involved with a special ANZAC callsign in April.

This follows success over many years of participating in major events, including the use of AX3GAMES and AX3MCG for the Commonwealth Games in March 2006.

The ANZAC milestone and World War I are now in the minds of many around Australia and overseas interest is growing.

A lot of thought is going into how best to maximise this opportunity and how to have more members actively involved.

The ANZAC callsign is to be activated to support ANZAC 100 event by Amateur Radio Victoria and certain to be well sought after on air, both locally and DX stations.

Membership is very affordable

Throughout the year both new and returning members have joined Amateur Radio Victoria.

What has been surprising is that the low cost of supporting the statewide organisation is not widely known.

Members have compared the membership subscription, which is for two years, to others available and we come in far less than half the cost.

They have access to membership services, contribute towards the licences and maintenance of the voice and digital repeater and beacon network, numerous activities, the special interest homebrew constructors group, and online modern web-based services.

Rather than look at personal benefits alone, please consider all unique activity and the community benefit of an organisation.

We continue to provide a public face for amateur radio and consistently run Foundation and bridging upgrade courses - keeping an eye on the future of our hobby.

The well-being of amateur radio has also seen the re-building of the strategic Mt Stanley site that was destroyed in the Black Friday bushfires in 2009. and the upgrading of automated weekly Sunday broadcasts and news and information.

It all takes voluntary time, the use of modern software and some expense. For the individual it still costs less than five cents a day.

The subscription, unchanged for at least a decade and available online for new members and renewals, is very affordable at $30 ($25 Concession) for two-years Full or Associate membership.

Don't forget **Don't forget to register for MEMNET.**

ALARA

Margaret Blight VK3FMAB – Publicity Officer

Some time ago an email was sent out from Dot VK2DB requesting assistance from her many radio friends. She asked "How do you explain radio in a few points to 8-10 yr olds? We are racking our brains here and you may have a better solution. Using plain simple language and not engineer speak please."

The explanation for the enquiry became clearer when Dot told us of a request from a young ABC listener who wanted to know how radio worked. This in turn led to a projected segment on a morning program in which experts were asked to tackle the issue. She has kindly set out the details in order for us to perhaps learn how to face one of the challenges of explaining our hobby to a broad audience.

Photo 1: HADARC President John VK2ZOI as he was being interviewed by Linda Mottram on ABC 702 Thursday morning, 18 September.

How does radio work: Explain to a 5 year old in plain English

Dot Bishop VK2DB

This story started several months ago when Jimmy, a four year going on five year old Hornsby boy, and an avid listener of Linda Mottram's morning show, asked the question: How does radio work? Because of his interest, the ABC team gave him a tour of their studios but were unable to answer his question particularly in a language that a five-year old understood.

So they thought about this and invited a number of astrophysicists, Science Educators and experts to help answer Jimmy and, because he was a Hornsby boy, they decided to set-up an Outside Broadcast unit in the Hornsby Mall. In addition, they invited the WIA to contribute and they asked HADARC President John VK2ZOI to be the 'man on the spot'. John had only a day to prepare his response and initially was told that the lad was 8-10 years old. It was only on the day that he found Jimmy was yet to turn five.

The first expert was astrophysicist Professor Bryan Gaensler who talked about waves but didn't quite hit the mark as far as a five year old is concerned. Other experts included Dr Karl Kruszelnicki, Dr Katie Mack and Nobel Prize winner Dr Brian Schmidt. They also talked about waves, one spoke about light being a radio wave and how the different colours are different frequencies of light, suggesting the analogy that a radio could tune into different stations by tuning into different colours. But this all seemed to be more than Jimmy would understand.

The Curator of Information Technology from the Power House Museum, Campbell Bickerstaff gave his answer, but again probably not in words that a five year old would understand. He did say though that it was a difficult enough task to explain radio to an adult let alone a five year old child.

When John was introduced, he didn't need to talk about waves again so had a great opportunity to talk about and promote amateur radio. He explained what we do in our hobby and why it is different to the Internet and telephones - because we use natural phenomena and our own resources without having to rely on an Internet service provider or a Telco. He also spoke of the pleasure and self education benefits we get out of our hobby.

He emphasised that it was not all play, we can support our community during times of disaster and other emergencies and it's because of the skills and experience we have gained from using our radios that we can do this. Also that during disasters the telephones and

internet often 'go down' but radio amateurs can keep in contact by using other power supplies.

Very importantly John was able to explain about the amateur licence structure and the introduction of the Foundation licence that is aimed at bringing young people into the hobby and hopefully encourage them to go on to a career in the science, technology and related fields. He told of the success of the Foundation licence training and the fact that many young people are licensed now. He agreed with Linda Mottram that Jimmy could be a possible candidate in a few years time.

After the 30 minute segment closed, I think John was glad to step down from the hot seat and I shouted him a well deserved cup of coffee at our favourite coffee shop. And, of course, we discussed the event and worked out what should have been said — hindsight is a wonderful teacher. Overall, I think it was a good exposure of our hobby.

Tony VK2BTL, Barry VK2AAB and I (Dot VK2DB) were there, standing on the sidelines giving moral support.

VK3 News

On Saturday 27th September, The ALARA lunch was organised by Kaye VK3FKDW and was held at the Granary Cafe Sunshine in the Western Suburbs. Sixteen people attended and everyone agreed it was a great success.

Given that Sunshine has played an important part in the development of the Combine Harvester in early Australian agriculture, Kaye VK3FKDW has set out a few historical facts to remind us of a time when Australia was at the forefront of innovative ideas:

History Snippet: Kaye VK3FKDW

In the 1880s, HV McKay created an agricultural manufacturing enterprise in Ballarat.

In 1884-1885, he designed and developed a stripper harvester that revolutionised the collection of wheat and was a significant contributor to the mechanisation of agriculture across Australia and around the world. This later was developed into the Sunshine Harvester which was the first combine harvester in Australia.

In 1906 he started moving the Ballarat-based Sunshine Harvester Works to Braybrook Junction which later became known as Sunshine. This was to take advantage of Sunshine Station and its proximity to the Ports. The factory manufactured agricultural implements and machinery until the 1980s when Massey Ferguson, Iseki and Agco absorbed the company. In 1992 the factory was demolished to make way for redevelopment – including Sunshine Marketplace.

The Braybrook factory land was purchased along with land that became a housing project for his workers with cheap loans, pensions, retirement allowances, a sick pay scheme and a mortuary fund. He also built a Presbyterian Church in Sunshine, laying the foundation stone days before his death in 1926.

McKay also provided land for a technical school, Albion Railway Station, and electric lighting. He also helped to establish a bank and a Coffee Palace and was partly involved in the development of the minimum wage.

Site where we had lunch

This building was formerly the Bulk Store of the Sunshine Harvester Works. Built in 1924, this is the only part of the factory still standing. The Bulk Store housed many of the raw materials used in the factory.

Goods were delivered to the building by an internal railway line that ran alongside the site. Once the goods were off-loaded, a large gantry crane was used to move them into place, ready to be distributed to other factory departments. Tools, nuts and bolts, chains for machines and castings were all manufactured on-site by Sunshine factory workers.

On top of the Bulk Store, a dovecot housed the factory siren. Workers and locals used it to tell the time and organise their days. They became so used to the sound of the siren that when it was removed many people complained.

The Bulk Store was actually one of the smaller buildings on

Photo 2: L-R. ALARA Members Naree, Susan VK3UMM, Jenny VK3WQ, Kaye VK3FKDW, Jean VK3VIP, Julie VK3FOWL, Judy VK3FJAG, Pat VK3OZ, and Donna VK3FRET.

the site. By the 1920s the factory was considered to be the largest agricultural implement factory in the southern hemisphere, and it eventually covered 30.4 hectares (76 acres).

Many thanks for the information Kaye. We need to be reminded of the importance of our early technical development.

As this is the final magazine for the year, I would like to take the opportunity to wish you all a very Happy and Peaceful Christmas and holiday season.

Photo 3: Christine VK5TMC participating in the ALARA Net.

ALARAMeet 2014

The ALARAMEET this year was held in beautiful Nelson Bay which is a suburb of Port Stephens located on the Tomaree Peninsula in NSW. There were 44 enthusiastic participants, including some OMs who enjoyed beautiful weather for the entire four days of the meet. A number stayed on afterwards to explore the area further.

Proceedings began on Friday 24th October and a full program was planned for the next few days. It was an opportunity for old friends to meet up again and to form new friendships. Bev. VK6DE, an ALARA committee member, travelled from Geraldton WA to attend. She certainly travelled the furthest in Australia to participate but there was also a contingent from New Zealand representing WARO the women operators' organisation there. In addition were other YLs from NSW, VIC, QLD and SA. The last ALARAMEET was held in Ulverston Tasmania in 2008 and everyone was looking forward to enjoying this year's event.

Congratulations must go to the organisers who developed a comprehensive program that fulfilled everyone's expectations. Anjes VK2GWI, Dot VK2DB and Elwyn VK2DLT worked hard to accomplish their success. The official photographer for the Meet was Henk VK2GWK, Anjes OM, who also played a large part in proceedings. The official program ended on Monday 27th October.

That evening there was a rather special ALARA Net broadcast from the resort car park providing an opportunity for a number of YLs who normally are unable to participate owing to the distance of their location, to speak on the Net. Further details of the activities held during the Meet will be given in later editions.

VALE Muriel May

Muriel May sadly passed away on 5th October, 2014. She was a long-time member of ALARA for over thirty years and was an active participant in social events. She will be greatly missed.

WWII Tidbits

FIRST INTO HONG KONG AUGUST 1945

We arrived off Hong Kong on the 30th August and commenced sweeping operations. The following day we swept right to the boom. Having cleared a passage of all mines, the lead was taken by a couple of destroyers and a cruiser – just in case heavy guns were needed as we entered the harbour. The State of Victoria and the City of Mildura in particular will be pleased to know that H.M.A.S. Mildura was the first Australian ship to enter Hong Kong for over three years.

As we entered the harbour, Marines were put ashore and after a few skirmishes, the dock yard was taken possession of. On board the only Japanese ship afloat, a couple of Japanese attempted to use their main armament, but a Marine planted a heavy boot just where it does the most good and the other Jap threw his hand in, as did the rest of the crew. It was strange to pass within a few feet of the Japs and carefully ignore 'em. They were not there and neither were we.

There's good material for a yarn to the boys when I'm next in Melbourne, so I'll keep the rest, hoping to hear you all on the air soon.

[AR October 1945, p12, Hams on Service by Jim VK2YC]

VK2 news

Tim Mills VK2ZTM
vk2ztm@wia.org.au

Another year is almost over and a brand new one coming up. Many clubs take a break with their meetings which they resume in January or February. A request to clubs: please make use of VK2WI News to advise members and visitors of your activities. An email to *news@arnsw.org.au* will get that publicity. VK2WI News over the holiday period on December 28th and January 4th and 11th will be morning only sessions.

The first of the ARNSW Foundation courses for 2015 will be the 17th and 18th January and then at two monthly intervals on the odd numbered months. On Sunday the 18th there are assessments for all license upgrades. The numbers that can be handled are limited and bookings are required by email at *education@arnsw.org.au* The next Trash & Treasure at the VK2WI site will be on Sunday the 25th January from 0930 hours followed at 1200 by the Radio Homebrew and Experimenters Group gathering. For major equipment items available, check the ARNSW web site *www.arnsw.org.au* The upgrade course for 2015 is scheduled to commence on Monday the 2nd March and continue, except for public holidays, until mid-November.

The VK2RSY beacons on 2 metres and 70 cm were recently restored on new antennas. However some reports so far have indicated that the range is limited like there is down tilt on the signal. Remote stations have advised of lower than previous signals from the old antennas.

The Oxley Region ARC has their annual Christmas function as part of the December meeting on Saturday the 6th. The annual Central Coast Field Day at Wyong Racecourse is only weeks away on Sunday the 22nd February. Operational times were listed in the October issue of *AR*. The HADARC club had their last formal meeting for the year in November and will resume in February. They have a lunch planned for 14th December. The Hunter Radio Group have their end of year function on Thursday evening 4th December.

Some clubs have on their committee a Historian to maintain records of their past great activities. Knowing what has gone on the past is important for the hobby and the club as with the turn over of office bearers most facts are soon forgotten. What unfortunately happens sometime with a change of officer bearers is for records not being passed on and often dumped. In a similar way old records in a deceased estate are often sent to land fill in the clean out of all that 'radio junk'.

ARNSW has been fortunate with their former Librarian – Aub VK2AXT, now retired – assembling a considerable collection of historic material which is being checked over as the library collection is catalogued and displayed at the Dural site. One find has been a circular letter sent out to the Experimenters in 1926 inviting them to take part in the Trans Pacific tests in May and June of that year. This was a concerted effort to make regular contact with America and to see how the new [useless] short wave frequencies would work – those the commercial interests did not want at that time. For those taking part in the test there was a 500 word message to be sent in CW along with listening periods and detailed log keeping.

Next month (January) will be the annual Ross Hull contest in memory of Ross Hull, an early Australian Experimenter. Ross is better known for his time in the USA and his involvement with the ARRL. In 1926 however Ross was back in Australia and was the Hon. Federal Secretary of the recently formed Wireless Institute of Australia – Federal Executive Council, located at that time in Sydney. The letter that ARNSW has contains an original signature of Ross A. Hull.

73 - Tim VK2ZTM.

VK3 news Eastern & Mountain District Radio Club

Andrew Scott VK3BQ

Calling CQ for a century of aviation.....VI3RVAC

Well that's exactly what we did, on the 18th and 19th October 2014, what a worthy event. Special Event callsigns are rare and only allocated or supported by the Wireless Institute of Australia, and the ACMA, for rare and notable events. Celebrating 100 years of aviation for an aero club met the criteria.

I floated the idea with Carl a member of the East Mountain District Radio Club, some weeks back. Carl agreed that it was a worthy event, and worth persuing. He contacted the WIA, then followed up with the ACMA as the deadline narrowed. I looked after getting approval from AirServices and Moorabbin Airport Corporation.

Then we needed a fitting venue from which to operate, none better than the Australian Aviation Museum, Moorabbin's own time capsule of aviation. The museum has undergone some change and redevelopment of displays, certainly the improvement is there to be seen. A visit is highly recommended. The museum President Ashley was very obliging and welcomed the event.

So Saturday 18th October we descended on the museum, along with a few regulars, Jack, Joe, Damian, Carl, and myself were the core, along with a few visitors. We established two HF stations, working 10, 15, 20 m, and also broadcast amateur TV from the site. Plus an attempted satellite bounce, more chance of catching fish. The satellite was missed by minutes while the antenna was realigned, and the satellite committee convened. The next pass I think was 1 am, so we let that one go.

The unknown regarding operating from the museum was the impact of the NDB 398 kHz, nearby,

Photo 1: The Centenary QSL.

along with normal VHF aviation radio comms. But fortunately there was no interference either way, so we were good to operate.

While conditions on HF were relatively quiet during most of the day, there was improvement in the afternoons. Over 100 contacts were made, notable countries, Cook Islands, USA, Bosnia, Slovenia, Russia, Netherlands, Wales, England, Germany, New Zealand, Italy, Finland, Austria, Romania, and numerous Australian stations. It was interesting some Australian stations were aware of RVAC, one

Peter VK3PH at the operator's desk watched by Ken Cusack, a long standing member of RVAC. Photo by John Longayroux VK3PZ.

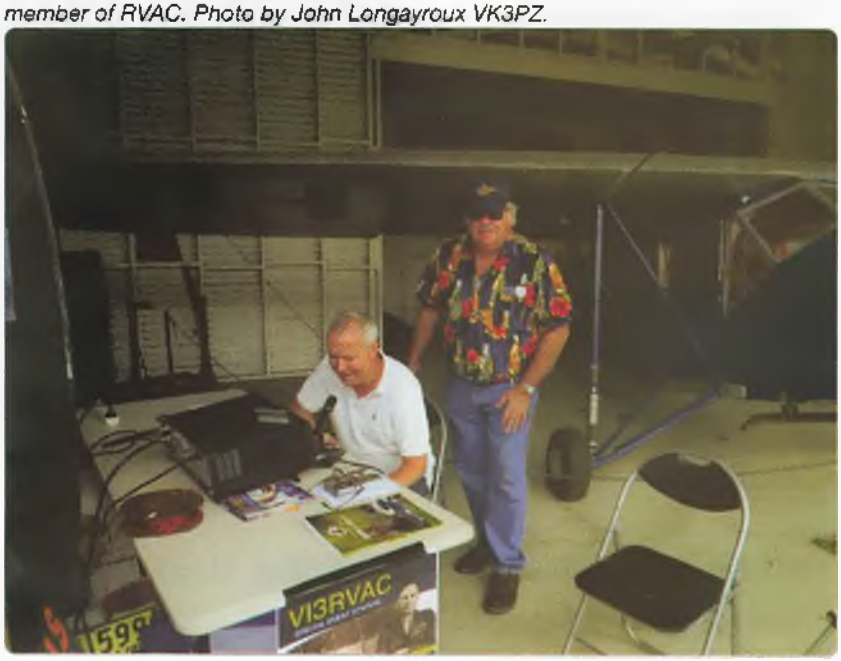


Photo 3: L to R: Greg VK3VT, Jack VK3WWW and Ewen VK3OW on the podium at the World ARDF Championships. Photo by Bruce Paterson VK3TJN.

had actually trained there. One New Zealand station was also a pilot, so he was delighted to make the contact.

It was a very successful special event call, so good I have asked Carl to have it extended for a few more weeks, and operate from the EMDRC club and home QTH's. The callsign was also used in the recent CQWW SSB Contest, and what a mouthful of a callsign it was!

All stations contacted will receive the VI3RVAC Centenary QSL card, which also contains a brief history of the club. These cards are highly sought after and may become a collector's item in years to come. The artwork and content is excellent.

Thanks to Carl, who did a lot of leg work, the members of the Eastern Mountain District Radio Club that assisted, MAC and AirServices. We especially thank the Australia Aviation Museum, the gem of Moorabbin and a must visit. Thanks, Glenn VK3CAM.

World ARDF Championships

Our October Clubroom meeting saw an interesting talk from Jack VK3WWW, who had recently returned from the recent World ARDF Championships in Kazakhstan. Jack talked about the event and an interesting couple of weeks in an interesting part of the world. If you are interested in ARDF, and for more stories on the trip have a look at *http://www.ardf.org.au/*

JOTA

The club was able to offer our facilities to a number of Cub and Scout Groups in the local area and we were able to assist 20 keen operators in obtaining their JOTA badge. While pairs of Scouts operated the radio, the remaining Scouts explored Morse code using a hand key and writing secret messages to each other. They all had a great time and we look forward to JOTA 2015.

Christmas Family BBQ

The Club's annual Christmas Family BBQ lunch will be held on Saturday 6th December from 10 am at the club rooms in Burwood. We look forward to seeing members and family at the lunch.

Photo 4: The author's son Nathan having fun operating at JOTA, having earned his JOTA badge. Photo by Andrew Scott VK3BQ.

VK6news

Keith Bainbridge VK6RK

Greetings and welcome to the December edition of VK6 notes.

I had hoped to be able to publicise the various groups Christmas functions but information has not been forthcoming I'm afraid.

In fact information has not been forthcoming from many of the usual sources this month with contributions from the Bunbury Club, Hills Group and the NCRG being all that I've received.

So I'll start with the news from the south west.

News from Bunbury Radio Club

Although the Club was not directly involved in JOTA, some members, Shaun VK6PAL, Steve VK6FSSB and Michael VK6MMB helped out with various Scout groups. Other members wanted to help, but as Foundation licensees they were limited in what they could do. There was some discussion about the Club becoming more involved next year.

The next major activity is licence assessments on 29/30 November. At this stage we have one sitting to upgrade to the Advanced level and three members going for their Standard licence. We also have five potential amateurs sitting for the Foundation licence. It's good to see the number of potential hams showing interest in getting their licences. One of our members, Dicko VK6FSDU will be sitting his exam over the telephone via a Nominated Assessor. Dicko is a blind operator with a Foundation licence and is planning to upgrade to Standard and eventually Advanced.

At our last monthly meeting, Bob VK6TJ gave a very interesting talk on power supplies. Bob, who is a technician with one of the local radio stations and was able to talk about the nuts and bolts of power supplies. Because of his in-depth experience as a practitioner we learnt much about supplies that would not be available in most sources of information.

Our November meeting on 8 November will be held at the Manjimup SES HQ at 2 p.m. Any amateur in that area is more than welcome to join us.

Any South West based amateur is more than welcome to join and participate in our activities. The annual fee is only $25.00. Amateurs wishing to join can contact the Club via our Secretary, Brian Andrews, on 0403 975 953 or vk6brc@wia.org.au. Also if passing through put out a call on our repeaters 146.650 or 438.650.

Thanks to Norm VK6GOM for this month's update and best of luck to those seeking to upgrade their licences.

Now an update on the **VK6 NewsWest** news service from Onno VK6FLAB.

The amateur radio news in Western Australia is produced by an informal group of volunteers, commonly referred to as NewsWest. This group is not a legal entity and cannot own broadcasting or recording equipment, apply for grants, pay for services, like domain names, hosting or insurance or conduct itself in anything other than an unofficial capacity.

On Thursday October 9th this changed when a new Amateur Radio Association was formed around our informal group. In many ways the association is like other specific purpose clubs in amateur radio, for the provision of training, the maintenance of repeaters, the pursuit of specific bands or other amateur activities like scouting or fox hunting.

The purposes of this association are:

- to provide Amateur Radio News,
- increase public awareness of the Amateur Radio Service,
- raise awareness of the Science and Technology of radio communications,
- conduct activities that educate, support, develop and promote amateur radio, communications and electronics, and to
- facilitate interaction between amateur radio clubs.

The founding committee was elected with Bob VK6POP as President, Neil VK6BDO as Vice President, myself Andrew VK6PDQ as Secretary, Onno VK6FLAB as Treasurer, with Alan VK6PWD and Doug VK6DB as committee members.

We'll start the work of incorporation shortly. Our working name is WA Amateur Radio News, but in normal day-to-day operation, we're likely to continue to use NewsWest as our on-air identity.

The contact address for the association will continue to be *newswest@vk6.net*. The website will continue to be *vk6.net*. We'll still be the same group of people providing you with the news, only now we'll have a formal framework to do that with.

If you have questions, comments, suggestions or feedback, you know the address, *newswest@vk6.net*.

News from HARG

The Hills Amateur Radio Group

Note: Christmas Barbecue at 12.30 pm on Saturday 13 December at the Club Rooms. All welcome.

This month we have some very sad and dispiriting news. After fund raising and spending six years building up our shack with state of the art transceivers, a linear

amplifier and a beautiful Palstar antenna tuner, HARG has been robbed on Sunday 26th or Monday 27th October. The thieves broke through the wire mesh perimeter fence, security screens on the window and a solid door. They took every piece of valuable equipment, including two desk top computers and a brand new laptop. We will have to start from scratch with the first item to be purchased probably being a large safe bolted to the floor. We were not insured because the cost of insurance for a building that is normally unoccupied was prohibitive. We had an alarm which was triggered but at the time it had been disconnected from our APRS monitoring system. This break-in comes only weeks after thieves raided the Peter Hughes Scout Communications Centre in East Cannington. Other radio clubs please be vigilant and look at your security and insurance.

The items stolen are as follows. Please look out for them on eBay and at your local Cash Converters. WA Police Incident Number 271014170188349. Contact *secretary@harg.org.au* or WA Police on 131 444 or crime stoppers on 1800 333 000 if you see something but don't put yourself at risk.

Yaesu FT-1000MP MkV Field HF Transceiver. Serial No. 2C010066.

ICOM IC-7400 HF/6 m/2 m Transceiver. Serial No. 0303142.

Yaesu FT-757GX HF Transceiver No Serial No.

Yaesu FC-757AT Antenna Tuner. No Serial No.

Uniden UBC780XLT Radio Scanner. No Serial No.

ICOM SM20 Desk Microphone and Yaesu MD-100 Desk Microphone

Motorola GM338 AZM25KHF9AA5 VHF Transceiver. Serial No. 103TJEE489.

Ameritron AL811 HF Linear Amplifier. Serial No. 18452.

Palstar AT500 HF Antenna Tuner 500 Watt. Serial No. 12592.

Desktop Computer

Samsung Computer LCD Monitor

HP248 14" i5 Wndows7/8 Pro Notebook. Serial No. 5CG3521NGH

TP-LINK TL-MR3420 3G/4G Wireless N Router. Serial No. 12081700275

Digimaster PRO 3 Computer/Radio Interface. Serial No. 39574480

Kenwood PS50 13.8V 25A Power Supply. No Serial No.

RG213 coaxial cable and wire dipole.

HARG Meetings are held twice a month at our club rooms near the corner of Brady and Sanderson Roads in Lesmurdie. Our Social and Practical meeting is held on the second Saturday of the month and our General Meeting, often with a technical talk, on the last Saturday of the month. Doors open at 12.30 pm for a barbecue lunch and the meeting starts at 2.00 pm. More information at *www.harg.org.au*

Cheers until next time from Bill VK6WJ Publicity Manager for HARG.

This news is really disheartening for members and WA amateurs alike. The Hills Group has become a very active station on the air and in contests and I'm sure many locals will rally around to help them get back on the air as soon as possible.

This brings up the topic of insurance and security of our local Radio Clubs.

I suggest all members of the WA radio clubs give serious thought to insurance and protection of their valuable assets.

With the recent two break-ins at the Peter Hughes Scout Headquarters and the one at the Hills Group, it almost appears that amateur clubs are being targeted, though the market for the equipment is surely severely limited?

Who knows the mentality of these rogues?

The NCRG has given serious thought to the security at Ham Heaven, where the system at present is an alarm system, several video cameras monitoring and recording activity, and a video output to our 2 m repeater, with further upgrades in the pipeline.

As for activity at the NCRG, there is now a different format to our meetings. For many years we met on the second and fourth Tuesdays of the month with a business meeting and a social meeting. We have always met on a Sunday morning every week and it was decided to change the format to a business meeting on the first Sunday morning of each month and the two Tuesday night meetings becoming social and activity nights. We will still meet informally on the other Sunday mornings of course. Projects are slowly progressing but there has been good news on our VK6RIO 2 m beacon project. While liaising with ZS amateurs and now their national society SARL, this news was received from Mike ZS2FM:

Proposal for an amateur radio science research project to detect chirp beacon signals from Australia on 144 MHz

Radio amateurs made their greatest contribution to radio science and left their mark on history, when they established two-way radio communication across the Atlantic Ocean on MF and the HF bands. The US military bounced the first radio signals off the Moon and a few years later radio amateurs duplicated it, but it was the most difficult mode in amateur radio that only a few high power amateurs could accomplish. Thanks to modern digital communications many radio amateurs can now regularly make EME contacts with 100 Watts and a single Yagi beam antenna, even on 50 MHz.

Today the biggest terrestrial challenge that remains for VHF amateurs is to bridge the Atlantic and Indian Oceans on 144 MHz via tropospheric ducting. Many unsuccessful attempts have

been made, and more recently the Canadian DXpedition VC1T conducted tests for a week from Newfoundland across the cold and harsh Atlantic, but only a few traces of digital signals were received in Europe, over a distance around 4000 km.

Now the Northern Corridor Radio Group based in Perth are planning to conquer the 8000 km sea path between Perth and Port Elizabeth with our help. They intend to use chirp signals based on Chirp Modulated Radar principles with an EME type Yagi beam antenna, which will permit extremely weak signals to be detected as far down as –50 dB below the receiver noise floor. The principle of Chirp Modulation is based on a sweep frequency pulse of 0 to 2000 Hertz that is repeated every second, and requires a special synchronized type receiver. Digital signals could be sent by designating an up-chirp sweep pulse as binary 1 and a down-chirp sweep pulse as binary 0. Furthermore, the William Hepburn's Worldwide Tropospheric Ducting Forecasts have on occasions predicted conditions across part of the Indian Ocean that could favour the propagation of 144 MHz signals.

First stage of the research project

The first stage will call for a high power transmitter with Chirp modulator and 4 x 7 element Yagi EME array, sponsored by G0KSC, InnovAntennas to be erected at Perth. The system will operate as a beacon, VK6RIO, on a frequency of 144.950 MHz and beaming at South Africa. All the equipment is already on hand just waiting to be erected when they get a nod from us. Then they will ship to Port Elizabeth the complete Chirp receiver, but on our side we must provide a 4 x 7 element EME type Yagi array, and PC linked 24/7 to the Internet. This will permit all those who have subscribed to the research project to monitor reception in Australia and South Africa in real time.

Second stage of the research project

Reception of the beacon signals will provide a lot of scientific information such as (a) the time of day, the month etc. of openings, (b) the tropospheric conditions that could make this possible, (c) the signal strength, (d) how well the results correlate with the Hepburn Indian Ocean Forecasts, and (e) whether it would be feasible to make two-way contacts with simpler equipment with a digital mode such as JT65b. Once we have all the above data then we can plan skeds with the VKs and once again make amateur radio history.

I have liaised with Phil Harman VK6PH and Keith Bainbridge VK6RK, spokesman for the Northern Corridor Radio Group, for the past year or two, and posted items of this project on the SARL VHF Forum. I will co-ordinate this research in Port Elizabeth and hopefully with the assistance from some local VHF amateurs. The Australians developed and tested the Chirp modulator and synchronized chirp receiver at a cost of AU$3500 and will provide us with a chirp receiver at AU$1000 plus shipping costs. The first step is to import the receiver, and then we will only need the antenna array and a PC with Internet connection.

If successful, this amateur radio science research project on 144 MHz will be reminiscent of the first amateur radio transatlantic test, when Paul Godley received US amateur signals on 160 metres in Scotland.

Mike Bosch ZS2FM

Hopefully Mike will be successful in obtaining the funding and support from SARL sooner rather than later!

I should like to point out that the WIA started the project off some years ago with a $1000 donation and the NCRG, Phil VK6PH and yours truly have spent much time and hard earned cash behind the scenes trying to get this project to air.

I've been harassing the ZS guys for nearly three years and with Mike ZS2FM's help, it looks as though we may be ready to go soon.

The NCRG held its car boot sale on Saturday 15th November and a report will follow in the next edition of VK6 Notes.

That's it for now, so Seasons Greetings to you all and may you and your family have a safe and happy Festive season, and all the best for 2015.

See you all again next year for the continuing saga of amateur radio in Western Australia :)

73 Keith VK6RK.

VK7news

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

A farewell and thanks to Geoff Osbourne VK7HAL - VK5HAL/7 who was our 10 m rebroadcaster for the VK7 Regional News each Sunday morning. Geoff and XYL are moving back to VK5 and we wish them good luck in VK5.

Repeater & IRLP Node News

The GPS locking unit on the VK7RAE beacons failed and was replaced along with some modifications. The 6 m beacon now uses a VK3XDK Agile PLL oscillator for the exciter into the KL150 PA unit. At the time of writing there were some issues with locking the 432 MHz beacon, however I suspect these may have been resolved by time this report is published. Thanks to Joe VK7JG for that information.

Cradle Coast Amateur Radio Club

In the North West of VK7 the Cradle Coast ARC provided a JOTA and JOTI station at the 1st Burnie Scout Hall. Internet chat, EchoLink on computer via a radio hand mic and PTT was provided along with the local 2 m and 70 cm repeaters and a HF station. Scott VK7NWT ran a competition to win a UHF CB radio, PSU and antenna where competitors had to name all the electronic components attached to a display board plus complete a phonetics challenge. Thanks to Scott VK7NWT, Dion VK7DB, Lucas VK7FLSB and David VK7DC.

North West Tasmania ATV Group

The North West ATV Group provided a JOTA station at Paton Park utilising HF and VHF for IRLP and EchoLink contacts with Burnie Scouts and Guides. This was a successful activation and thanks to Ross VK7WP, Graham VK7NGA and Tony VK7AX for their efforts on the day.

Northern Tasmania Amateur Radio Club

The Northern Tasmanian ARC established and ran a JOTA station from their clubrooms which are shared with the Rocherlea Scout group. EchoLink, VHF, UHF and HF was utilised along with activity tables for Morse code, battleship and word-search sheets. There was also a Morse key display thanks to Lewis VK7FLPL. 80 m foxhunting was popular as well. The JOTI internet computers were also popular. A total number of 100 Scouts and Guides went through the facility over the weekend. Thanks to organiser Peter VK7KPC, Phil VK7JJ, Lyn VK7FLYN, Lewis, Lewis' XYL Liz, Bill VK7MX, Lyn VK7FROG, Brendan VK7VIP and Anne, Wayne VK7XGW, Kevin VK7FKJL, Duncan VK7FLAK and visitor KerryVK7PAK.

NTARC's October meeting was a BBQ meeting followed by a presentation by Joe VK7JG on the proposed new repeater site for VK7RAA on Mt Arthur. The pictures of the site excited those who attended and highlighted that the site can only be accessed on foot or helicopter, so planning is underway for the move to the new site.

WICEN Tasmania (South)

WICEN Tasmania (South) provided a VHF, UHF and HF maritime station aboard the MV Cartela, moored in Franklin. The vessel provided a scenic view of the river and some amusement for passing rowers who witnessed blind folded navigation and Simon says on the banks of the Huon River. Operation over the weekend gave new F-call operators Jackson VK7FJAX, Lawson VK7FLFG and Scout Leader Dale VK7FNED an opportunity to play radio! Thanks to our new F-calls along with Nicole VK7FNJS, Hayden VK7HA, Rod VK7TRF & Michael VK7FMRS over the weekend.

Radio and Electronics Association of Southern Tasmania

Congratulations to our new F-calls: Reuben VK7FREU, Lawson VK7FLFG, Jackson VK7FJAX, Dale VK7FNED and Craig VK7FAAY who successfully passed their assessment in time for the JOTA weekend. A huge thank you to the WIA and ACMA for getting these assessments processed.

Photo 1: Reuben VK7FREU operating his first SOTA summit activation on VK7/SC-006. (Photo courtesy of Justin VK7TW.)

Photo 2: Rod VK7TRF taking the audience through WICEN Activities. (Photo courtesy of Justin, VK7TW.)

The REAST October presentation was given by Rod VK7TRF. Rod presented an outline of the many activities in which WICEN Tasmania (South) are involved. These included Targa Tasmania, Targa Wrest Point, Subaru Safari, Equine Endurance events, Support for Tas Fire Service Incident Management Radio Operations, Run the Bridge and JOTA/JOTI. Rod outlined how the organisation has evolved into a Community Communications provider that can in emergency situations also provide a service. Garry VK7JGD brought along some of the impressive equipment that is in the WICEN "kit bag". Many thanks to Rod and Garry for putting on this memorable presentation night.

Our DATV Experimenters Nights for October focused on extreme outback Microwave DXpeditioning thanks to Rex VK7MO. Over two nights Rex took the audience through his recent five state grid square and EME chasing trip on both 10 GHz aircraft enhancement and 24 GHz EME. Rex presented the trials and tribulations of operating in remote regions and trying to establish communications using infrequent aircraft and Joe Taylor's ISCAT A & B modes. A huge thank you to Rex VK7MO and David VK3HZ.

WWII Tidbits

POW VK2AKE SAFE IN SYDNEY

Flt/Sg. Jim Edwards, VK2AKE is another Prisoner of War reported in Australia. Jim was in Italy first then in Germany and ended up as he put it "a bit weak on it" and so is having three weeks rest at Jervis Bay. While in England he was guest of Clarry G6CL and the RSGB, [John Clarricoats, Secretary of the RSGB who helped many POWs and was associated with training of personnel for the RAF], and with luck Jim, you might strike Bill Moore where you are now, Hi! I think with Jim's arrival makes all the European Ham POWs safely home.

[AR December 1945, p10, Hams on Service by Jim VK2YC]

Hamads

WANTED – QLD

One TS-130S dead or alive. Mainly for spares VK4DV phone (nights) 07 4928 5537 QTHR

WANTED – NSW

Instruction Manual or copy for Uni Volt Multimeter Type DT- 4500. Malcolm Sinclair VK2BMS. QTHR. Telephone: 02 9958 1114.
Email: *vk2bms@bigpond.com*

Camcorder Video 8 in full working order: this is the type that uses small cassettes 8 mm video format (NOT the type that fits a VHS cassette adaptor).

Also wanted: a home for a disassembled 4 section 40 ft Southern Cross Galvanised Steel Aerial Tower. The tower's steel work is complete; installation instructions are included but needs some more nuts and bolts.

Pick up at QTH - Springwood NSW. Contact David VK2IX QTHR 04 4751 6124.

WANTED – TAS

Tellurometer CA 1000 Remote Unit. Working, not working or parts. Contact Tony VK7TU Phone 03 6227 8983 Email *carterab@internode.on.net*

FOR SALE – VIC

I'm disposing of my excess technical books, many others not advertised yet. Postage is extra on all books. The very low priced books are best combined in a group for a better negotiated price. HC = hard cover.

Encyclopedia of Electronic Circuits Volume 7 1999 McGraw Hill 1128 pages $10. Electronic Data Handbook (Radio Shack) 1982 128 pages $4. Electronics Reliability – Calculation and Design Drummer & Griffin 1966 238 pages $5. Standard Handbook for Electrical Engineers 7th Edition A.E. Knowlton McGraw Hill 1941 2303 pages HC $30. Radio Installations their design and maintenance – W.E. Pannett (Marconi) 1951 Commercial, 454 pages HC $15. Technical Instruction for Marine Radio Officers. 9th Edition, Dowsett & Walker. 1950 Iliffe 699 pages HC $15. The Services Textbook of Radio – The Services Textbook of Electrical Engineering, Vol 1 – Electrical Fundamentals. Edited by Wireless World 1956 645 pages HC $15. Transistor Audio & Radio Circuits. 2nd Edition Mullard 281 pages HC 1972 $10. Integrated Circuit Pocket Book R.G. Hibberd Newnes-Butterworths 1972 74 pages HC $10. Analog Electronics – Analysis and Design Malcolm Goodge MacMillan 1990 508 pages $10. Radiotron Designer's Handbook (1st edition) 40 pages 1934 *.

Radiotron Designer's Handbook (2nd edition) Amalgamated Wireless Valve Company Pty Ltd 58 pages 1935 *. Radiotron Designer's Handbook (3rd edition) Edited by F. Langsford-Smith Amalgamated Wireless Valve Company Pty Ltd 352 pages 1940 (2 copies)* 2nd copy $20. Radiotron Designer's Handbook 4th Edition Edited by F Langsford-Smith Amalgamated Wireless Valve Company Pty Ltd 1474 pages 1952 HC with Addenda 1953 24 pages. *

(* the four editions as a set, not including the 2nd copy of the 3rd edition = $120).

Audels Electrical Power Calculations by E. P. Anderson 443 pages1953 HC $10. Microprocessor Technology by David Terrell, Reston 562 pages 1983 HC $10. Beginner's Guide to Transistors, 2nd edition. Sinclair Newnes 1976 162 pages HC $5. Digital Electronic Circuits & Systems Noel Morris Macmillan 1974 143 pages. $5. Practical Electronics Troubleshooting James Perozzo Delmar Publishers 1985 350 pages $10.

The seven below $2 each or the seven for $10:

Digital Integrated Circuits National Semi-Conductors 1974 $2. Linear Integrated Circuits National Semi-Conductors 1975 $2. Engineer's Mini-Notebook (Radio Shack) 1970s Formulas, Tables and Basic Circuits. 48 pages $2. Engineer's Mini-Notebook (Radio Shack) 1987s Basic Semiconductor Circuits. (X2) 48 pages $2. Engineer's Mini-Notebook (Radio Shack) 1988 Communications Projects 48 pages $2. Engineer's Min-Notebook (Radio Shack) 1990 Schematic Symbols, Device Packages, Design and Testing. 48 pages $2. Special Function Analog and Digital Circuits National Semi-Conductors $2.

Rodney VK3UG, QTHR and *rodlynn6@bigpond.com*

ANNOUNCEMENT – WA

Advertisement of Intended application for Incorporation of WA Amateur Radio News Inc.

Notice is hereby given that: Andrew Smith (VK6PDQ) of 13 Vigors Avenue BULL CREEK WA 6149 (Oral and Maxillofacial Surgeon) Being duly authorised by the above named association intends to apply to the Commissioner for Consumer Protection on or after 2-Jan-2015 for incorporation of WA Amateur Radio News Inc. The association is formed for the purpose of providing Amateur Radio News.

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

ADVERTISERS INDEX

Contributions to *Amateur Radio*

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

Your contribution and feedback is welcomed.

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

Email the Editor:
editor@wia.org.au

About Hamads

- Submit by **email (MUCH PREFERRED)** or if written and mailed please print carefully and clearly, use upper AND lower case.
- Deceased estates Hamads will be published in full, even if some items are not radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from those who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising on these pages Contact admanager@wia.org.au
- Copy to be received by the deadlines on page 1 of each issue of Amateur Radio.
- Separate forms for For Sale and Wanted items. Include name, address STD telephone number and WIA membership number.

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

WIA Functional Committees

The WIA is a membership organisation with a very wide range of complex functions and member services. Core functions and services are administrative in nature (general administrative functions, membership services, examination and callsign management, financial etc...) and are performed by salaried staff.

Volunteers perform a diverse range of highly specialist functions (ACMA liaison, Frequency Co-ordination, Standards liaison, Interference issues, technical support and training and assessment etc.). These volunteers provide the majority of member services, however they have been loosely organised and often overstretched.

The new committee system attempts to structure the WIA's non-core activities into 10 broad functional areas, each comprising a team of volunteers under the direction of the WIA Board. This structure is intended to spread the workload on our volunteers, improve communications between members and the WIA Board, improve services to members, and encourage more people to become involved in the WIA.

WIA Committee Charters

Spectrum Committee

(Regulatory, ACMA, ITU, IARU, Repeaters & Beacons, Standards, Interference & EME, Monitoring Service)
Geoff VK3AFA, Phil VK2ASD (Director), Peter VK3MV, Roger VK2ZRH (Director), Brian VK3MI, Dale VK1DSH, Peter VK3APO, Richard VK2AAH, Gilbert VK1GH, Rob VK1KRM, Noel VK3NH, Doug VK3UM

- Perform all ITU and IARU liaison activities.
- Liaise with, and act as the 1st point of contact for, the ACMA.
- Advise the Board, and enact Board policy in relation to all radio communications regulatory issues and the LCD.
- Represent the WIA to State and Local Government
- Represent the WIA to Standards Australia
- Provide specialist technical advice and coordinate repeater and beacon licence applications and frequency allocation.
- Develop responses to significant and prolonged harmful interference issues affecting amateur radio operations.
- Provide an information resource for EMC/EMR issues.
- Administer the IARU Monitoring Service in Australia
- Provide a technical resource to other committees and the WIA Office.

Technical Advisory sub-Committee (Tech support, Band plans etc.)

John VK3KM, Doug VK3UM, Rex VK7MO, Paul VK5BX, Walter VK6KZ, Barry VK2AAB, Bill VK4XZ, Peter VK3PF, Paul VK2TXT, Peter VK1NPW, John VK1ET, Peter VK3BFG, Eddie VK6ZSE, Peter VK3APO

Administrative Committee

John VK3PZ (Treasurer), Greg VK2SM (Assistant Treasurer), David VK3RU (Secretary), Mal VK3FDSL (Office Manager), Phil VK2ASD (President), Chris VK5CP (Vice President)

- Responsible for the efficient and correct operation of the WIA office.
- Responsible for staffing and workplace safety.
- Provide a specialist administrative resource to the WIA office as required.
- Manage contractual agreements.
- Manage business relationships.
- Ensure compliance with the ACMA Business Rules
- Prepare yearly budgets
- Prepare quarterly financial reports for the Board
- Prepare independently reviewed YE financial reports and balance sheets for circulation to the membership prior to each Annual General Meeting.
- Manage insurances and to be responsible for currency of insurance policies.
- Maintain a complaints register.
- Ensure complaints are handled in accordance with WIA policy and any contractual agreements.

Affiliated Clubs Committee

Ted VK2ARA, Mal VK3FDSL (Office Manager), John VK3PZ (Treasurer), Phil VK2ASD (Director)

Communications, Marketing, Publications and AGM Committee

Robert VK3DN (Director), Phil VK2ASD (Director), Jim VK3PC, Graham VK3BB (Broadcast), Roger VK2ZRH (Director) Publications sub-Committee (AR Magazine, Callbook etc): Peter VK3PF (Editor AR), Peter VK3PH (Editor Callbook), John VK3PZ (Treasurer), Ernie VK3FM, Peter VK3AZL, Evan VK3ANI, Ewan VK3OW, Bill VK3BR

- Communication with members and the public:
- Communicate with the membership.
- Publicise WIA activities and initiatives.
- Develop strategies and resources for the promotion of Amateur radio to the public.
- Develop strategies and resources for the promotion of WIA membership to the Amateur community.
- Supervise and/or perform promotional activities.
- Co-ordinate the yearly AGM activities

Education Committee

Fred VK3DAC (Director), Owen VK2AEJ, Ron VK2DQ, Mal VK3FDSL (Office Manager)

- In association with the WIA's RTO and affiliated clubs offering training services, develop and administer the WIA's training and assessment systems.
- In association with the Spectrum Strategy Committee, develop and maintain the various licence syllabi and associated question banks.
- In association with the Community Support Committee and the RTO, develop and maintain the Emergency Communications Operator scheme.
- Ensure the confidentiality and security of all personal information, question banks and examination papers.

Radio Activities Committee

Chris VK5CP (Director), Geoff VK3TL

Contests sub-Committee

Alan VK4SN, Denis VK4AE/3ZUX, John VK3KM, Tony VK3TZ, Kevin VK4UH, Colin VK5DK, James Fleming VK4TJF

Awards sub-Committee

Bob VK3SX, Marc VK3OHM, Laurie VK7ZE, Alan VK2CA, Alek VK6APK, David VK3EW, Paul VK5PAS, ARDF sub-Committee: Jack VK3WWW, ARISS sub-Committee: Tony VK5ZA

- All activities associated with actual radio operation, such as: contests, awards, distance records, QSL services, ARISS, AMSAT, ARDF etc.

QSL Card sub-Committee

Geoff VK3TL, Alex VK2ZM, John VK1CJ, Max VK3WT, June VK4SJ, Stephan VK5RZ, Alek VK6APK, John VK7RT, Craig VK8AS

Historical and Archive Committee

Peter VK3RV, WIA Historian, (Leader), Drew VK3XU, Linda VK7QP, Martin VK7GN, Ian VK3IFM, Will VK6UU, David VK3ADW, Jennifer VK3WQ/VK5ANW, Roger VK2ZRH (Director)

- Develop, maintain and preserve the WIA's historical and archive collection
- Encourage access to the collection by WIA members and those seeking historical material for publication.

IT Services

Robert VK3DN (Director), Tim VK3KTB

- Provide an IT resource to other committees and the WIA Board.
- Be responsible for the off-site data back-up of all IT systems information.
- To update and maintain the WIA website as required.
- Advise the Administrative / Financial committee in relation to the MEMNET Cloud Service contract.

Community Service Committee

Fred VK3DAC (Director), Greg VK2SM (Assistant Treasurer), Ewan VK4ERM (Director), Paul VK5PH

- Develop, promote and co-ordinate all WIA community support activities

New Initiatives

Phil VK2ASD (Director), Robert VK3DN (Director), Roger VK2ZRH (Director), David VK3RU (Company Secretary)

- Think-tank ideas and initiatives to advance amateur radio and WIA membership.
- On approval by the Board, run proof of concept trials.

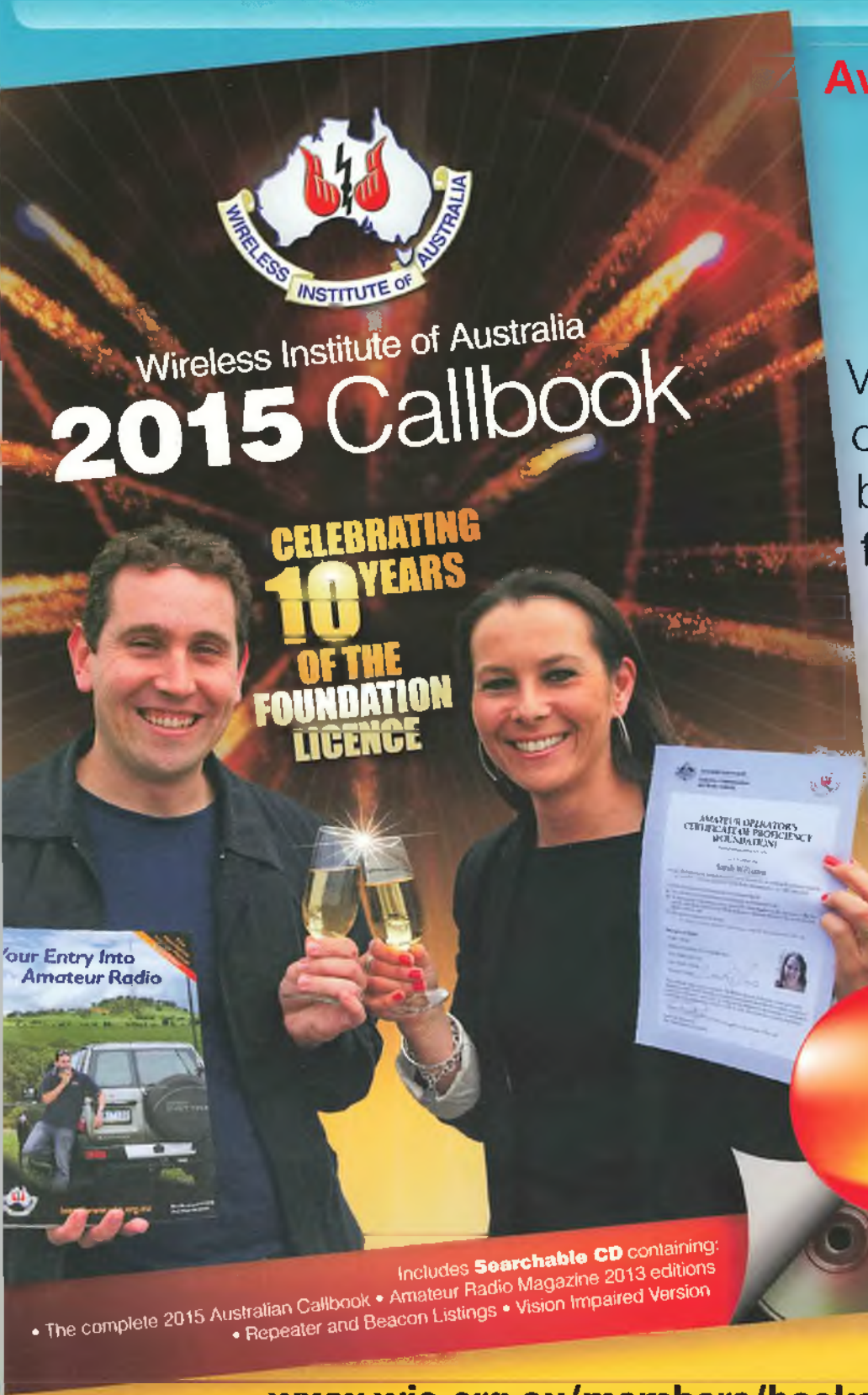
Club Grants sub-Committee

Reg VK7KK, Peter VK3KCD, Bill VK4ZD

- Manage all arrangements between the WIA and WIA Affiliated Clubs
- In cooperation with the Administrative / Financial committee, manage the Club Insurance Scheme
- Encourage stronger relationships and communications flow between the WIA and WIA Affiliated Clubs
- Encourage increasing WIA membership ratios in Affiliated Clubs
- Manage the Club Grants Scheme
- Identify and bring regional Affiliated Club issues to the attention of the WIA Board.

WIA 2015 Callbook

Available now



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www.wia.org.au/members/bookshop/about/

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