Amateur Radio

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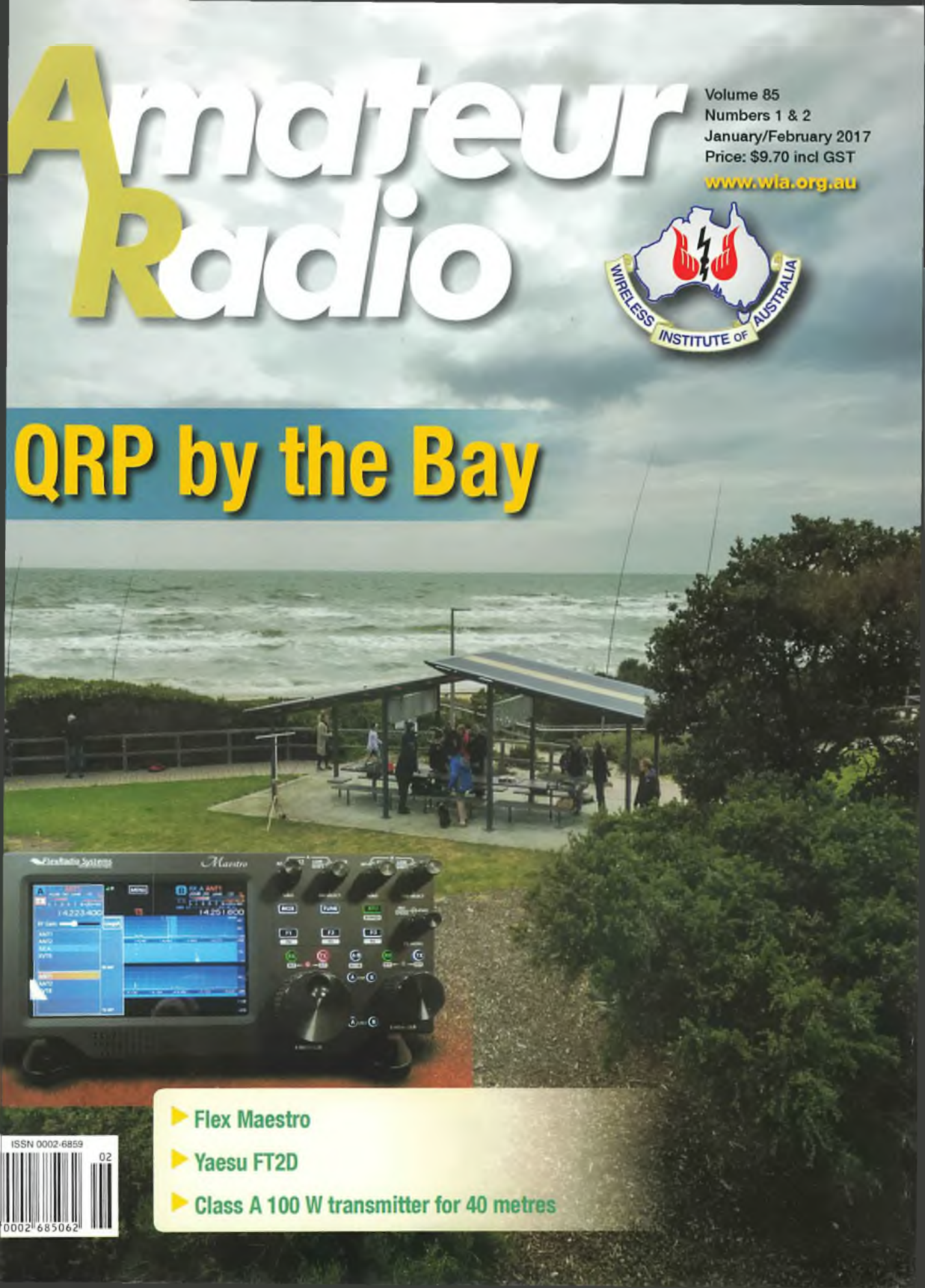
WIRELESS INSTITUTE OF AUSTRALIA

QRP by the Bay



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VK Radio Repairs
347 Settlement Rd, Thomastown Victoria 3074
Tel: +61-3-9465-9399, Fax: +61-3-8682-8748
E-mail: yaesu@vkradio.com.au

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Technical

General

Columns

This month's cover:

*An overview of the venue for the **QRP by the Bay** event held in early November 2016. See the report on page 23. Inset shows the FlexRadio Systems Maestro control console for the FLEX-6000 series transceivers. A brief review appears on page 19. Main photo by Andrew Scott VK3BQ, inset photo by Brian Morgan VK7RR/4.*

Editorial

Editor
Peter Freeman VK3PF
editor@wia.org.au

Technical Editor
Peter Gibson VK3AZL

Publications Committee
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All circulation matters
nationaloffice@wia.org.au

How to submit material
Secretary
AR Publications Committee
PO Box 2042
BAYSWATER VIC 3153
or *armag@wia.org.au*

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

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

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

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

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Contributions to Amateur Radio

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

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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

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

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

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Editorial

Peter Freeman VK3PF

Interesting times

The last few months of 2016 were very interesting for anyone interested in the running of the WIA. Much of the main items of interest have appeared in News releases posted to the WIA website. The News releases have reflected the views of the majority of Board members.

Many others have sought to air differing views, especially via social media. I received several emails requesting views to be published as "Over to You" items. Virtually all of these were unacceptable due to the content. A small number I thought could be published with alterations, but the authors were unwilling to accept my suggested changes, so these items were not published.

WIA Directors Paul VK5PAS and Andrew VK6AS spent a considerable amount of time (and I expect many dollars from their own pockets) visiting Clubs to explain the issues that they saw as of concern for all WIA members. I attended one such briefing in Melbourne in mid-November.

The newly appointed Treasurer and Assistant Treasurer spent considerable effort in attempting to sort out the details of the financial situation of our organisation and presented a report to the Board. The text of that report was subsequently published to the Internet. It is not clear as to how the report was published.

A strong campaign was mounted on social media, seeking to obtain the signatures of at least 100 members to a document that called for the WIA to call a General Meeting. The call for the meeting included motions for four of the current Board members to be removed from office. The documentation for this call for a General Meeting was submitted to the National Office on 29 November. As reported on the WIA website and addressed in the President's Comment in this issue, the Board received legal advice that a number of the individual documents were incomplete, and thus the required 100 member signatures was deemed to have not been met.

Shortly after this decision was reached, several resignations were tendered in a short time frame: the Treasurer Chris Hendry VK3PAT, Assistant Treasurer Jeff Tubbenhauer VK5IU and Directors Paul Simmonds VK5PAS and Andrew Smith VK6AS all departed.

The Board decided to not appoint additional Directors to the resulting vacant Board positions. In addition, President Phil Wait VK2ASD announced that he would stand down effective the end of the AGM in May.

With four Board members at the end of their two-year term at the end of the AGM, the result is that the already announced election process will determine the composition of a new Board. The term of that new Board commences after the conclusion of the AGM in May.

Nominations for the election close on 31 January 2017. The call for nominations appeared on page 23 of the December issue of *AR*. Note that nominations must be in hard copy and received by the office by the closing date.

Continued on page 5

WIA comment

Phil Wait VK2ASD

Clearing the Air

The WIA Board has changed dramatically since my last President's Comment. At the end of November, the WIA Secretary received letters from just over 100 members calling for a general meeting for the removal of four serving Directors, myself included. This followed a lengthy, concerted campaign on social media, and on-air.

Shortly after, the Secretary received additional motions to be put to the same meeting calling for the removal of the three other Directors, and the appointment of two new Directors.

The Board was unsure of the validity of the second motions, or if they could be put to the same meeting, and agreed unanimously to seek legal opinion. The WIA's solicitor referred the matter to a Melbourne-based barrister.

In the meantime, the WIA Board was busy organising the venue, and working out how letters could be sent to members over the Christmas period, giving the required notice under the WIA's Constitution.

The barrister made a number of determinations that have been published on the WIA website, but his most important determination was that the call for the general meeting by 100 members was not valid due to fact that a number of applications were incomplete.

This took the WIA Board by surprise. It was not the outcome we were expecting, but to proceed with the general meeting would leave the outcome of any motion open for challenge - a very expensive waste of time and effort for everyone.

Subsequently, two WIA Directors and the Treasurer and Assistant Treasurer resigned their positions. The WIA Board now comprises five Directors and a Secretary. This is the minimum number of Directors allowed under the Constitution.

Four of the remaining Director positions are due for re-election in May this year, as the Constitution provides. I have made a decision to end my term this year also, in order to allow a full Board election. It would be possible for the Board to appoint new Directors to those positions not up for re-election this year, but the Board's view is that, under the circumstances, a proper democratic election process, where all members can vote on all Board positions, is the best way to proceed.

In the short-term, the Board will be using an external firm of accountants to provide financial guidance to the WIA. Interestingly, one firm approached does a lot of work for other voluntary not-for-profit organisations that choose to use external accountants rather than rely on their own members for this function. Maybe it's a general sign of the times.

The Board has also decided to upgrade the yearly financial Review to a financial Audit. We believe this will give members confidence that the WIA accounts are in order. The WIA's Auditor was appointed at the last AGM, and upgrading the yearly Review to an Audit is the most cost effective way to proceed, rather than appointing an additional Auditing firm.

Hopefully, all that is behind us now, and we can all get on with what we are supposed to be doing for members, and there is a lot to do. The current work program includes; working to reverse, or at least slow down, the declining WIA membership trend; preparing for the yearly financial Audit and the subsequent reporting to the ACMA on last year's examinations and callsign business activity (this is required under the Deed with the Commonwealth); continuing to negotiate with the ACMA on improvements to the Amateur Licence Conditions, including the proposed new 60 metre amateur allocation gained at WRC-15; the completion of the new volunteer charter designed to improve how the WIA's army of volunteers works with the Board and stakeholders; implement a formal means of consultation with members and the wider radio amateur community; devising additional revenue streams to reduce reliance on membership income, and so on.

The most important of these activities right now is reversing the downward trend in WIA membership. After a period of relative stability in 2014 and 2015, membership numbers have fallen by almost 300 in 2016. Although there are probably a multitude of contributing factors, including the age profile of the membership and the current low returns from superannuation accounts relied on by self-funded retirees, I believe events over the past year and the constant negative sentiments about the WIA aired on social media and elsewhere are a major contributing factor.

If you are one of those who feel disenchanted by recent events and have let your membership lapse, or are considering doing so, please reconsider in the interests of your hobby, if for no other reason. You might also take a look at many recent news releases on the WIA website and weekly VK1WIA broadcast that address issues raised and correct much of the misinformation going around.

Remember, size matters. Only a strong WIA can properly represent the interests of radio amateurs to government and industry, continue our role in licensing new amateurs and in supporting the radio amateur community in many diverse ways.

WIA news

60 metres not ready for amateur occupation in VK

The new amateur band at 5.3 MHz allocated world-wide to the Amateur Service in late 2015 has been incorporated into the Australian Radiofrequency Spectrum Plan (ARSP) 2017, but a number of further steps have to be taken before Australian amateurs can occupy the band.

ARSP 2017 was registered by the Australian Communications and Media Authority (ACMA) on 20 December 2016 and came into effect the next day, with a commencement date of 1 January 2017.

The purpose of the ARSP is to guide the ACMA in making decisions on use of radiofrequency spectrum. The key feature of the ARSP is its Table of Frequency Allocations from 8.3 kHz to 420 Terahertz (THz) that divides-up the spectrum to show the general purpose of each band, to which services the bands are allocated, and associated footnotes relevant to particular allocations. The ACMA updates the ARSP following each World Radiocommunication Conference (WRC), organised by the International Telecommunications Union (ITU) and held about every three years.

As many amateurs are aware, the last Conference was WRC-15, held in November 2015, which approved the word-wide allocation of 5351.5 to 5366.5 kHz to the Amateur Service on a secondary basis, with different power specifications applying in different regions and countries, ranging from 15 watts effective isotropic radiated power (eirp) to 25 watts (eirp). In Australia the ARSP specifies 15 watts (eirp). Specifying 'eirp' takes account of the efficiency of different antenna systems, which are not particularly efficient at these frequencies.

Generally known as the 60 metre band, access to this 15 kHz allocation in Australia has been keenly awaited by many HF enthusiasts. Consistent with previous outcomes of WRCs which impacted Australian frequency allocations, the next step is amending the Amateur licence conditions which provides more definite technical parameters than in the ARSP.

The Amateur Service is not the only one affected, and many other radiocommunications stakeholders have to wait for the administrative and regulatory details to be updated before the provisions of ARSP 2017 can take effect.

The WIA's Spectrum Strategy Committee is working with the ACMA to determine when access to 60 metres for Australian amateurs will become available.

An article on why and how long we have to wait is in the 'WIA current Hot Issues'.

You can download the Australian Radiofrequency Spectrum Plan 2017 and its accompanying Explanatory Statement from the WIA website.

WIA moves ahead STEM involvement

The Wireless Institute of Australia (WIA) is developing a plan for the involvement of radio amateurs in the Federal Government promoted Science, Technology, Engineering and Maths (STEM) program. This follows the successful WIA STEM symposium in Canberra on November 19, that had 24 people attend to discuss seven presentations and a further 12 papers of suggestions, ideas and concepts. It confirmed that the target audience where contribution would have greatest impact was at the secondary schools level Years 7 to 10, and fit in with the school curriculum.

The WIA believes that through the existing networks, projects and programs can be developed that fit with and enhance schools STEM programs. There are a number of existing projects and activities that should also be supported by the WIA STEM network. A basic thrust of the event was to consider specialised talents through mentoring and coordinating interesting leading-edge activities. The symposium also thought how to promote and market the STEM initiative. Within Amateur Radio there are talented people including many who can develop educational programs and others having vast hands-on technical experience.

The plan being considered is to access a very broad range of skills and knowledge that exist in some radio amateurs, and develop with teachers STEM educational programs for young people. This will need a coordination role across all States and Territories and the setting up of teams of interested radio amateurs to carry out identified projects. Now being considered is having a National STEM program Coordinator who can lead it and State and Territory Coordinators, a STEM Wiki website that explains the resource available and a directory of the volunteers. The Wiki facility for STEM related projects and activities would be made public and promoted, but its content moderated by the coordination team. The outcomes of the WIA symposium and a possible STEM plan for the future will be considered in 2017 after further consultation takes place with interested parties and the broader Amateur Radio community.

Licences for repeaters & beacons are now streamlined

Australian Communications and Media Authority licence applications

for Amateur Radio repeaters and beacons are now handled differently to speed up issuing and reduce errors that may occur. The ACMA was having a problem with such licences under its SPECTRA system. All applications for Amateur Radio repeaters and beacons had caused a problem in its software, due to the unique nature of the applications.

At a meeting in Canberra the ACMA explained the problem it had to two WIA representatives. It was then mutually agreed that the ACMA would receive from the WIA a spreadsheet that had suitable formatting, to make the processing and issuing of licences run very smoothly.

WIA Merit Awards Now Open

The Wireless Institute of Australia makes awards to radio amateurs to recognise for their worthy contribution to Amateur Radio. The actual award is at the discretion of the WIA Board and announced by it at the Annual Conference held in May. The Merit Awards recognise them for the work done within the hobby. The criteria plus a Nomination Form are on the WIA awards page on the WIA website.

When completing a nomination form, you are not required to suggest which award should be made. Each nomination is assessed to see if deserves an award and then which type of award. To help, please include as much information as you can. Try to keep it in some sort of chronological order. Include any information about other awards the nominee may have received.

Nominations close on 31 March, announced and where possible presented, at the WIA AGM and Conference at Hahndorf South Australia on 19-21 May.

Editorial

Continued from page 2

The roles to be filled are significantly more onerous than undertaking a Committee or Officer role in a Club, having requirements under Company law.

Under normal circumstances, it is expected that voting papers should be included with the March issue of *Amateur Radio*.

One theme that has appeared in many places is the importance for the WIA to continue. Most of those who have contributed to various discussions, including Paul VK5PAS and Andrew VK6AS, stress the importance of amateurs being members of OUR organisation. The most effective manner to have any influence over the running of the WIA is to be a member.

Some members will nominate for the Board vacancies. The election process will proceed in due course. When the time to vote comes, I urge every member to consider carefully how you allocate your votes. Be sure to vote and have your say in the process.

Until next month.

Cheers,

Peter VK3PF

WIA Fact Sheets

Some WIA members have noted accusations and criticisms on social media and elsewhere, and asked that the WIA Board make detailed responses to these issues. The Board has decided to produce this series of Fact Sheets to address the various issues raised.

In the Board's view, many issues are either exaggerated, misrepresented, or without foundation. Some statements are totally inaccurate.

This unprecedented action has become necessary to ensure that all WIA members have the relevant facts and explanations.

The Fact Sheets can be read at: *www.wia.org.au/joinwia/wia/factsheets/index.php*

Product Review: **FT2D 144/430 MHz Dual Band Handheld Transceiver**

Peter Hartfield VK3PH

The FT2D 144/430 MHz dual band handheld transceiver is one of Yaesu's latest in the System Fusion range. Complete with GPS, APRS, WIRES-X, C4FM digital and a large 160 x 160 dot LCD screen and touch panel, there is not much more you would want from such a compact handheld transceiver.

Features

- Digital communication with C4FM (Quaternary FSK), FDMA system
- Equipped with AMS (Automatic Mode Select) function – 144/430 MHz dual band transceiver with automatic detection of FM/C4FM digital communication mode
- External power supply connection
- Simultaneous reception on two different bands or within the same band
- Wide band receiver in the 500 kHz to 999.900 MHz range
- Independent switching keys for A-band and B-band with TX/BUSY display
- Waterproof design equivalent to IPX5, which protects transceiver from rain and splashes
- Large 160 x 160 dot LCD screen and touch panel
- WIRES-X connection support
- Equipped with GM (Group Monitor) function
- Large capacity 1266 channels with 24 memory banks
- Displays memory tags of up to 16 characters
- A wide variety of scan functions
- Built in GPS unit allowing display of your current location and heading information
- Ready for APRS communication using the world standard 1200 / 9600 bps AX25 modem
- High resolution band scope function (will display up to 35 channels)
- Equipped with the smart navigation function
- A variety of individual selective calling functions such as CTCSS and DCS
- Vibrator to alert you of signal reception in addition to the audible bell
- New pager function for calling only specific stations
- LED backlight for easy viewing of the LCD outdoors
- Battery save function to extend battery operating time
- Data terminal for communication with external equipment and firmware updates
- Compatible with microSD cards
- Snapshot function (with optional MH-85A 11U camera microphone)
- Transmit power of 5 W (@ 7.2 VDC or EXT DC) – in addition 3 low power options are selectable to save battery life.

In the box

- The main unit / handheld transceiver
- Standard flexible rubber dual band antenna
- Long life lithium ion battery pack (7.2 V 2,200 mAh)

Photo 1: The FT2D transceiver.

- Battery charger
- Belt clip and battery pack protective cap
- Hand strap
- USB cable (for firmware updates only – it is not a programming cable)
- Quick manual, operating manual and warranty card.

Installation

Not much installation is required out of the box. Carefully install the antenna on top of the transceiver. Be sure to hold the thick base of the antenna while installing it to avoid damage to the SMA connector.

Next, either install the protective cap supplied to the back of the battery or attach the belt clip to the battery. Attach the hand strap to the transceiver then install the battery.

Make sure the transceiver is turned off. Insert the charging cable and power on the charger. The manual says that it takes about 9 hours to fully charge a flat battery however the battery supplied typically takes about 6 hours to charge from flat. As the battery is a lithium ion type, you don't need to wait for the battery to be fully discharged before charging.

Once the battery is charged, power on the transceiver. The battery will typically last about 10 hours with normal use before recharging. The transceiver can be run from a 12-14 V power supply using the optional E-DC-6 cable.

Operation

Programming software is not required to configure the transceiver although I would highly recommend using it due to the many features available and their complexity. The programming cable is NOT provided although the software is downloadable for free from the Yaesu web site. The microSD card can be used for programming the device (see later). When the transceiver is first powered on, you will be asked to enter your Callsign. The LCD screen will basically guide you through this process using the touch screen to select the required letters. Up to 10 alphanumeric characters can be entered including a hyphen.

To turn the transceiver on, press the power button for 2 seconds and the LCD screen comes to life. To turn the transceiver off, press the power button again for over 2 seconds or you can configure the auto power off feature to turn the transceiver off after an interval of inactivity. This feature is very useful for a portable situation to avoid draining the battery if the transceiver is accidentally left on.

The power button also doubles as a lock key to stop any accidental operation of the transceiver. Press the power key momentarily to lock and again to unlock. The FT2D is a true dual band receiver therefore can receive signals on two frequencies at the same time (either on the same band or on different bands). The screen is split in two showing the details of each frequency

being received. The active or the current transmitting frequency is shown in bold, the other is greyed out. Changing between transmit frequencies is as easy as touching the required active frequency on the screen.

The volume can be set independently using the volume ring on top of the transceiver for each band while it's the active band. The dial above the volume ring is used for adjusting the frequency, selecting a memory channel or picking a function. The touch screen is used for most other functions in combination with the dial.

Photo 2: Dual Band Display.

The other buttons on the front panel provide the following functions:

- BACK – press to return to the previous function or back to operation
- DISP – press to show the GPS / compass display or hold to show the setup menu

Photo 3: Function Display.

- BAND – press to change band in VFO mode or bank in memory mode
- X – press to activate the WIRES-X function (transceiver must be in digital mode)
- GM – press to activate the group monitor function
- A/B – press to switch between band A and band B
- V/M – press to switch between VFO and memory operation.

In addition to the physical buttons, there are three soft function keys displayed on the lower segment of the touch screen. They are:

- FMW – press to show the operating menus
- TXM – press to fix the communication mode on the transmission side
- MODE – press to toggle between FM, AMS (Automatic Mode Select), DN (Digital Narrow band C4FM), VW (Digital Wide band) modes.

Photo 4: GPS Compass Display.

Built in GPS

The GPS reception antenna is located at the top centre of the transceiver. The GPS icon (looks like a satellite) can be found at the top near middle of the screen which indicates a GPS lock (flashing means finding the GPS signal and stable means GPS locked).

Activating the GPS function enables the transceiver to automatically obtain the internal clock setting and your location information from received GPS data. When transmitting in C4FM mode, the GPS position is transmitted simultaneously with the voice signals. This enables the transceiver to display the distance and direction to the receiving station while communicating.

The GPS position can be automatically saved onto the microSD card for later retrieval using commercially available mapping software to display your trip.

On the move

I took the radio away with me on a cruise ship in August to test it out on the move. It proved to be a very useful device as we cruised from Sydney, up the east coast stopping at Airlie Beach, Yorkeys Knob, Port Douglas, Willis Island and back to Sydney via Brisbane. Most of time we cruised about 30 to 40 km from the coast and I could access most available repeaters in various cities along the way. Where mobile phone reception was a bit flaky, accessing a repeater from up on deck was a breeze.

Photo 5: GPS Display Willis Island.

The GPS would report accurate position and heading data when compared to the mobile phone. Where the radio excelled was

out at Willis Island where there was no mobile phone reception. Unfortunately, there are no repeaters out there either, although I could capture the position data (see image), input that into maps on the mobile phone and see exactly where we were.

Programming the transceiver

There are a few options available for programming the transceiver. The most basic option is via the front panel. You will probably want to load it with a large list of local repeaters therefore I would highly recommend using programming software. The transceiver does NOT come with a programming cable although the Yaesu software can be downloaded from their web site for free (using the microSD card).

I use RT Systems software for programming all my transceivers, therefore to complete the set I downloaded a copy of the FT2D radio programmer which cost me $25 USD (~$35 AUD). The RT Systems software will work with the optional Yaesu supplied cable or a microSD card. The FT2D is not yet listed on the CHIRP web site although I'm sure it will appear soon given the popularity of this software. The FT1D is listed on CHIRP and given these transceivers are identical except the touch screen, it should work.

The best place to get the latest repeater files is from the WIA web site. There is a CSV file available that can be massaged and imported directly into the programmer. When you run the programmer, you will notice that there are two bands available (Band A and Band B). There are 24 banks available for grouping your favourite channels and repeaters.

In addition to the band A and band B memories, there are nine pairs of limit memories that can be programmed for each band, five home channels and the initial VFO frequencies can be set. All the other functions can be set via tabs on the menu settings window. There are too many functions to go through here. Once you have saved the transceiver configuration, you have the option of communicating with it via the optional programming cable or saving the configuration to a microSD card.

Photo 6: Setup Menu.

Photo 7: Config Menu.

microSD card

The microSD memory card slot is located at the side of the main body. The letters SD are displayed on the front panel when a card is detected in the transceiver. Note that a microSD card is not supplied with the transceiver. The microSD card can be used for the following functions:

- Backing up the information and settings of the transceiver
- Saving GPS log data for use in a personal computer
- Saving data downloaded using the GM and WIRES-X functions
- Exchanging data with other transceivers

The transceiver supports microSD cards from 2 GB to 32 GB in size. Per the manual, not all commercial microSD cards will work and the card must be initialised in the transceiver to ensure proper operation. I used an 8 GB SanDisk Ultra without a problem. The transceiver supports the FAT32 file system. Note that if you format the card in the transceiver per the initialisation procedure, all data on the card will be lost.

C4FM digital mode

As you can see, this transceiver is packed with features, but the main attraction is the C4FM digital mode. The FT2D transceiver is equipped with an Automatic Mode Select (AMS) function which automatically selects one of four transmission modes depending on the signal received. If AMS is off, the mode can be set manually.

- DN (voice / data simultaneous transmission mode) – This is the standard mode for C4FM digital. Transmission is less prone to interruptions due to detection and correction of voice signals. GPS data (if available) is transmitted along with the voice data and the transmitting stations Callsign. The LCD screen will display the Callsign and distance to the received station (if GPS data is available).
- VW (voice full rate mode) – digital voice data is transmitted using the full 12.5 kHz bandwidth which enables high quality voice communication
- DW (high speed data communication mode) – data is transmitted using the full 12.5 kHz bandwidth for image and message transmission
- FM (analogue FM mode) – standard FM mode of transmission which supports communications with stations not able to transmit using a digital mode.

Compared to other digital modulations within FDMA, C4FM has excellent communication quality, Bit Error Rate (BER) characteristics. Presently, C4FM is the standard method for professional communication devices in FDMA, and is therefore expected to continue to be the main stream digital communication in the future.

On air, the number of repeaters and users of C4FM devices is starting to grow. I have had many contacts while testing this transceiver and I can say that the audio quality certainly lives up to expectation both through the local repeaters and via simplex communications. The ability of the transceiver to drop back to conventional FM mode when it hears one of these signals is simply amazing.

The current group of C4FM repeaters published in the 2017 Callbook include:

Output	Input	Callsign	Location	Service area
438.1125	432.7125	VK2RBV	Sydney	Sydney
146.675	146.075	VK2REE	Mt Ganghat	Taree-Glou
438.325	433.325	VK2REE	Mt Ganghat	Taree-Glou
146.800	146.200	VK2RSC	Parrots Nest	Lismore
144.9375	145.5375	VK3RDQ	Outer Eastern Suburbs	Melbourne
438.400	433.400	VK3RFY	Hillside	Melbourne
438.500	433.500	VK3RGW	Grovedale	Geelong West
439.600	434.600	VK3RDX	Mt Waverley	Melbourne
438.225	432.825	VK4RPH	Mt Haren	Kuranda
147.300	147.900	VK4RCN	Manoora	Cairns
438.325	432.925	VK4RCN	Manoora	Cairns
439.825	434.825	VK5RSC	Mt Terrible	Adelaide

enabled me to add my position.

The configuration options for APRS are quite extensive therefore I won't go through them here. Suffice to say Yaesu provides a separate instruction manual for APRS that is available for download from their web site.

WIRES-X feature

The WIRES-X feature is a system that links to other users via the internet which enables communication world-wide regardless of the distance between stations. To establish a WIRES-X node, the WIRES-X connection kit (HRI-200) and an internet connected PC is required. Yaesu provide separate instruction manuals for WIRES-X setup (HRI-200) and operation (for each model transceiver). For more details see my previous review in the August 2016 edition of *AR* magazine.

From your handheld or other transceiver, you can access the local node by tuning to the node frequency and pressing the X button (or using DTMF for the FM node). Once connected to the node, you can now have a normal conversation with the remote station or group of stations connected to the room. There is a regular net conducted in the Americas room at 11 am Sunday morning EST if you would like to join in.

		144 – 148 MHz 430 – 450 MHz
		520 – 1710 kHz 1.8 – 30 MHz 30 – 88 MHz 88 – 108 MHz 108 – 137 MHz 137 – 134 MHz 174 – 222 MHz 222 – 420 MHz 420 – 800 MHz 800 – 999 MHz
		108 – 137 MHz (Air Band) 137 – 174 MHz (Incl. Ham) 174 – 222 MHz 222 – 420 MHz 420 – 470 MHz (Incl. Ham) 470 – 580 MHz
Channel steps		5, 6.25, 8.33, 10, 12.5, 15, 20, 25, 50, 100 kHz
Emission type		F1D, F2D, F3E, F7W
Frequency stability		+2.5 ppm -20°C to +60°C
Antenna Impedance		50 Ω
Supply voltage		Nominal 7.2 V DC negative ground 11 – 16 V DC negative ground with optional EXP DC jack
Current consumption		180 mA dual band receive 1.6 A transmit (5 W TX 144 MHz) 1.8 A transmit (5 W TX 430 MHz)
Operating temperature		-20oC to +60oC
Case size		Radio unit: 63 x 110 x 32.5 mm
Mass		310 g total with antenna

Specifications – Transmitter

RF power output	5 W @ 7.2 V DC or EXT DC
Modulation type	F1D, F2D, F3E: variable reactance modulation, F7W: 4FSK (C4FM)
Spurious emission	At least 60 dB below

Specifications – Receiver

Circuit type	Double conversion super-heterodyne Direct conversion (AM / FM radio)
Intermediate frequencies	A Band 1st 47.25 MHz, 2nd 450 kHz B Band 1st 46.35 MHz, 2nd 450 kHz
Sensitivity (for 12 dB SINAD)	3 µV (0.5 – 30 MHz AM) 0.35 µV (30 – 54 MHz NFM) 1 µV (54 – 76 MHz NFM) 1.5 µV (76 – 108 MHz WFM) 1.5 µV (108 – 137 MHz AM) 0.2 µV (137 – 140 MHz NFM) 0.16 µV (140 – 150 MHz NFM) 0.2 µV (150 – 174 MHz NFM) 1 µV (174 – 222 MHz NFM) 0.5 µV (300 – 350 MHz NFM) 0.2 µV (350 – 400 MHz NFM) 0.18 µV (400 – 470 MHz NFM) 1.5 µV (470 – 450 MHz NFM) 3 µV (540 – 800 MHz NFM) 1.5 µV (800 – 999 MHz NFM) 0.19 µV TYP for BER 1% (digital mode)
Selectivity	FM, AM 12 kHz / 35 kHz (-6 dB / -60 dB)
AF output	700 mW (8 Ω, THD 10%, 13.8 V) internal speaker 300 mW (8 Ω, THD 10%, 13.8 V) optional MLS-200-M10
AF output impedance	4 – 16 Ω

Conclusion

The FT2D 144/430 MHz dual band handheld transceiver is a compact mobile device that manages to pack a huge amount of functionality into a very flexible package. In addition to the normal functions you would expect from an amateur handheld transceiver of this nature, it supports digital (C4FM) mode, APRS, GM (group monitor), WIRES-X and comes equipped with built in GPS.

Acknowledgements

I would like to thank Ross Keogh from Strictly Ham in Bayswater and Yaesu for the supply of all equipment for the review.

A Class-D 100 W AM Transmitter for 7 MHz

Drew Diamond VK3XU

There is a particular attraction for working on our lower bands using AM, which provides a favourable mode for social and technical exchange with like-minded fellows. Certainly around the Eastern states the venerable 7.125 MHz spot remains a popular frequency for friendly gatherings.

The main limiting factor for urban HF communication is the sometimes high level of man-made interfering noise. In practice, a 100%-modulated carrier power of perhaps 50 or 100 W into an effective antenna is usually found necessary to overcome noise at 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.

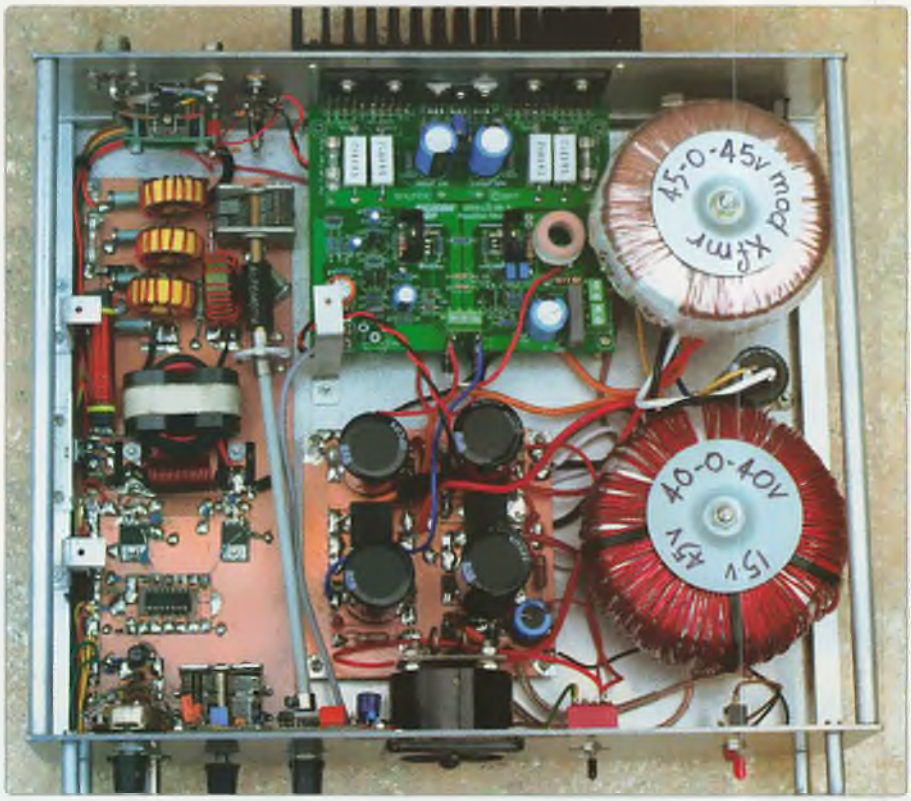


Photo 1: Top view of 100 W AM transmitter. Note the home-made 'panel and rod' style chassis/case.

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 40 m AM activity seems to occur on and around 7.125 MHz, simplicity and reliability is had by using crystal frequency control *(see Figure 1)*. The continuous sine-wave signal generated by the 2N5485 FET variable crystal oscillator (VXO) 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. Two paralleled stock 7122 kHz crystals will easily 'rubber' up to 7125 kHz in this circuit.

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 IGBT gates (Ref 1). The TC4422s do a splendid job of sourcing and sinking the rather high gate input capacitance (typically 1350 pF) of the output IGBTs at 7 MHz.

One admirable characteristic of class-D (and class-E – see Ref. 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 four, or 6 dB, which results in 'text-book' amplitude modulation.

A pair of W20NM50 (or equivalent - see Ref. 3) power IGBTs are arranged in 'push-pull', and coupled to the output resonator through broadband ferrite transformer T1, four 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 is fed through a 15 µH choke to provide a constant current supply. A 1.5 µH solenoid coil is connected between the PA collectors to resonate with, and thus cancel, the rather large C to E capacitance of the IGBTs. This dodge also greatly improves the stability of the amplifier.

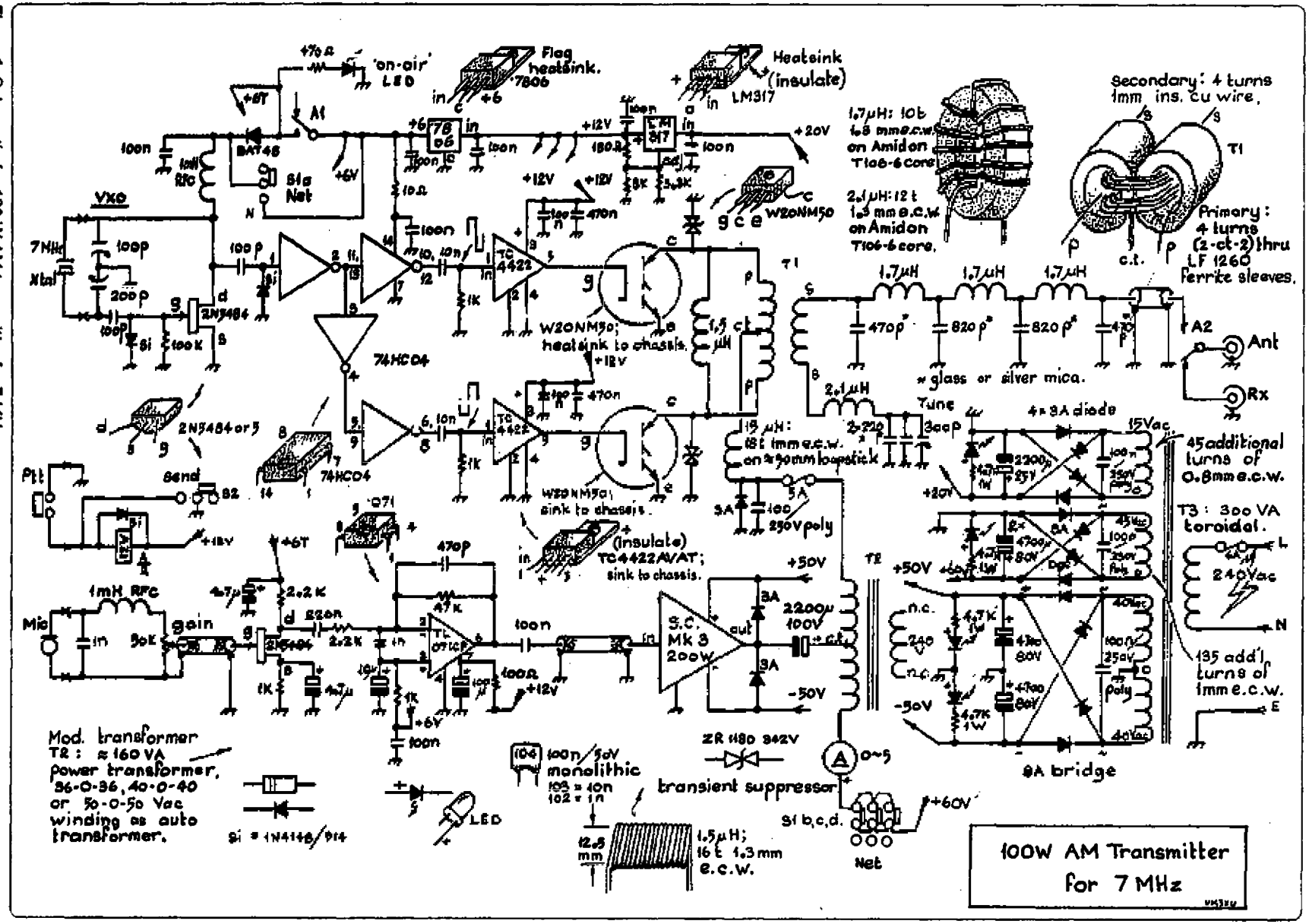


Figure 1: Schematic for 100 W AM transmitter for 7 MHz.

Essential transient voltage suppressors are connected between the collector and emitter of each output device to absorb the energy released by (mainly) collapse of flux in the modulation transformer during the transmission to receive transition.

It was found experimentally that a series tank tuned somewhat below the operating frequency, where 500 pF and 2.1 µH, results in best power efficiency (about 90% for the prototype). The 300 pF variable capacitor is adjusted for optimum efficiency rather than for maximum output power. The carrier signal waveform 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 50 dB down.

Modulating signal is provided in this instance by a Silicon Chip (SC) Mk 3 audio power amplifier kit, which supplies more than adequate quality modulation power to the IGBT PA, applied through an ordinary 45-0-45 Vac power transformer winding, configured as a 1 to 2 voltage step-up auto transformer.

Construction

The home-made 'panel and rod' style chassis/case shown in Photo 1 measures 105 x 350 x 295 mm HWD. The heat sink for the SC 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 the circuit board pins have been soldered into the board where the audio power device pins are, thus permitting easier replacement of these transistors should they be unlikely to be 'blown' in service.

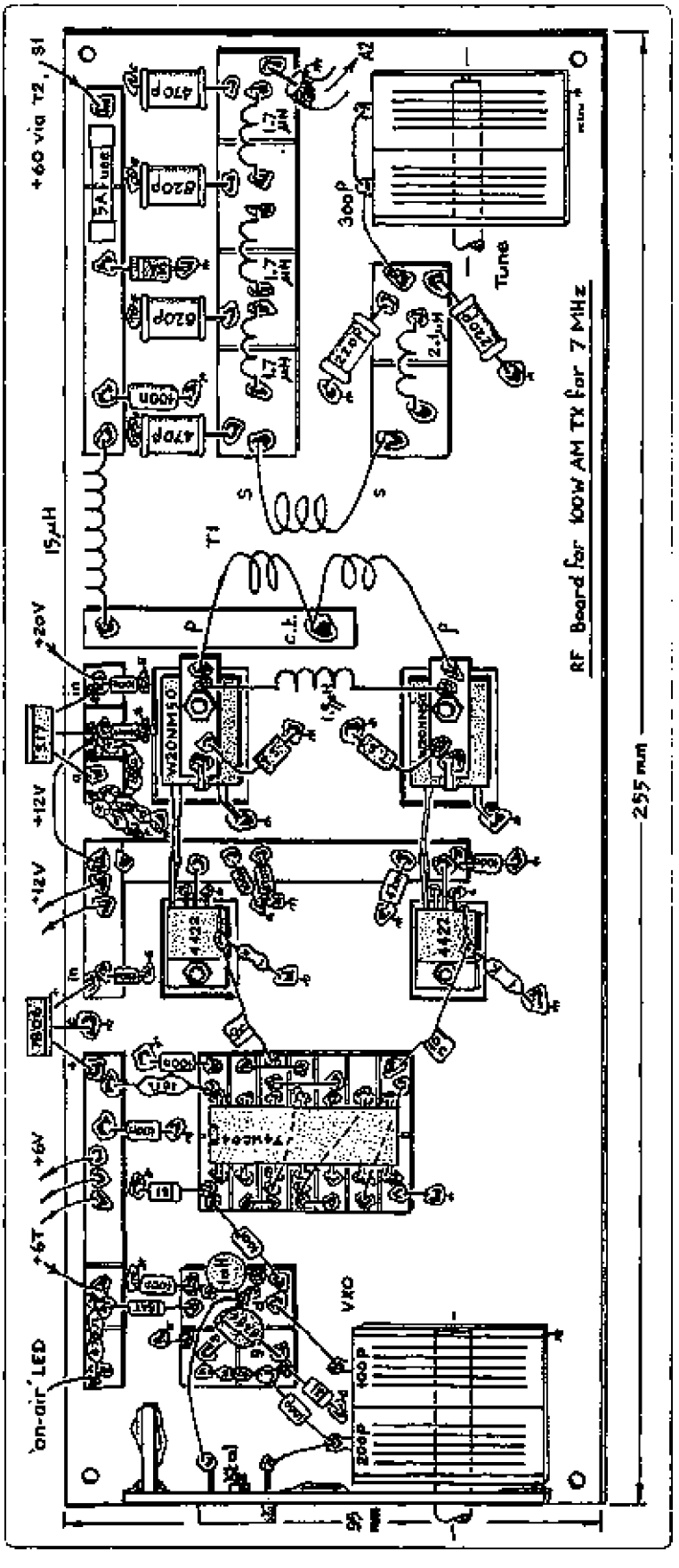


Figure 2: Parts layout on RF board for 100 W AM transmitter for 7 MHz.

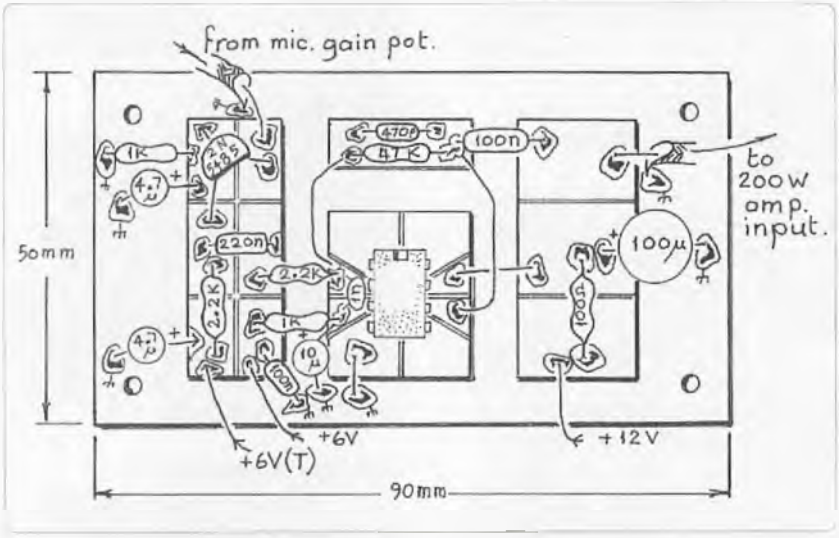


Figure 3: Microphone pre-amp board layout for 100 W AM transmitter for 7 MHz.

RF components are accommodated upon a 'paddyboard' (Ref. 4) circuit board measuring 95 x 255 mm. Components are soldered to suitably sized circuit board pads which are first soldered 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. It is fixed upon the back of the front panel, adjacent to the mic gain pot, visible edge-on in Photo 2.

Construction method for the power supply is uncritical. Mine is built chunky paddyboard (larger pads, strips and substrates for the diode bridges) style upon the copper side of the board. Power supply dimensions 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 +60 Vdc supply for the IGBT PA should be powered from a separate winding on the main power transformer. In this model, 135 turns of 1 mm enamelled copper wire (ecw) has been evenly wound upon a stock 300 VA toroidal transformer (Ref. 5) to produce about 45 Vac which, when rectified and filtered, gives a no-load voltage of about 60 Vdc. 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 Vac winding to supply +20 Vdc which sources our regulated +12 and +6 Vdc supplies. Use diodes or bridges rated at 400 V >8 A for the +/-50 V and +60 V supplies. Ordinary 3 A diodes will serve for the 20 V. LED lamps should be installed on the PSU board to indicate that the +/-50 Vdc and +60 Vdc supplies are working – and/or that a charge is held in the filter capacitor(s).

Photo 2: Front panel view of 100 W AM transmitter.

The power IGBTs 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 (c)ollector is made with a 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 each IGBT/chassis interface. To improve long-term reliability, installation of a computer type fan, fitted so as to draw air into and through the case, is highly recommended.

RF output transformer T1 has four turns on the primary (two turns each side of centre tap), and four 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 electric-light wire.

The +12 V supply for the drivers must be a 'stiff' low impedance one. To this end, an LM317 supplies the (approximately) 1.4 A for the driver chips, which must be by-passed

right at their + supply pins with a 100 and a 470 nF monolithic capacitor per device. The drivers do work rather hard, so they must be heat-sunk to chassis in similar style to the output IGBTs.

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 45-0-45 or 50-0-50 Vac of at least 150 VA will work satisfactorily.

To more efficiently use the space available, my toroidal transformers are mounted upon appropriately sized wood discs.

Operation

Check all your wiring and components again for accuracy and correct orientation. Look particularly for any solder bridges between substrate pads. Remove the 5 A fuse from the PA's 60 V supply. Apply mains power and confirm that all voltages, including the +12 and +6 Vdc rails, are substantially correct.

If you have chosen to employ the SC amplifier, test it as a 'stand-alone' assembly from the +/-50 Vdc supplies in accordance with the kit instructions using a suitably rated 4 ohm dummy load.

Close the PTT line whereupon relay A should pull in. Hook a X10 oscilloscope probe to pin 2 of the 74HC04 and observe a 5 or 6 V p-p square wave, thus proving the oscillator.

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

Connect a suitably rated 50 ohm dummy load/RF power meter to the transmitter's output. Replace the 5 A fuse, then close the PTT line. Drain current, indicated by the 0 ~ 5 A meter should be about 3 A for a carrier output power of 100 ~ 110 W (the nominal +60 V supply may fall to about 50 V under load).

Apply a modulating signal from the microphone, or preferably from an adjustable sine-wave signal source set to (say) 1 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.

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 SC Mk 3 200 W audio amplifier kit may be bought at Altronics and Jaycar (heat sink extra). Altronics can also supply toroidal power transformer(s).

Ferrite sleeves, loop-stick rod and ZR1180/342 V transient suppressors are Jaycar parts. The 100 + 200 pF air-spaced variable capacitors were salvaged from 1960s' era transistor radios. My glass capacitors and some magnetic materials were obtained from Paul of PK antennas. TTS Systems also supply Amidon cores. W20NM50 (or W12NK90Z) power IGBTs, and TC4422 (or IXD-614s), may be mail-ordered from Element 14 or RS Components.

Acknowledgement

My thanks to the Melbourne area 160 m and 40 m AM fraternity, particularly Laurie VK3SJ, for his gifts of parts and technical advice during the prolonged development and testing of this project. My son Andrew took the photos.

References and Further Reading

1. Micrel data sheet for MIC4451/4454 MOSFET driver, or Microchip TC4421/4422A.
2. LF Today; RSGB Publications (available from WIA Bookshop).
3. Data sheet for STW20NM50FD 500 V 20 A Power MOSFET.
4. "Paddyboard" Circuit Construction - Revised; *Amateur Radio*, May 2005.
5. Adding extra windings to toroidal transformers; *Amateur Radio*, Nov. 2007.

Over to you

Callbook

The WIA has printed the 2017 Callbook which is now available via the WIA on-line bookshop. Eight hundred (800) copies were printed this year as that matches about the number of books that were sold last year. The CD has been dispensed with and a PDF file is available to download for people that purchase a copy on-line via this method. In previous years, the PDF file was supplied on the CD.

I have been the Editor of the Callbook for the past four years. During this time, I have only received two emails providing feedback from people about the value of the printed document, its contents or the form in which it is produced. The Callbook is a very profitable publication for the WIA in its present form and I would like to hear any current feedback you may have about this publication.

The NZART stopped printing Callbooks a couple of years ago, and only provide a PDF version to those that want one. We provided a copy of the NZART Callbook on our CD. Please let me know what you think via *callbook@wia.org.au* and I will provide a summary of your responses in next month's AR magazine.

Cheers,
Peter VK3PH
Callbook Editor

Flex Maestro

The bar is raised even further

Brian Morgan VK7RR/4

This article was written in the immediate aftermath of the 2016 Dayton Hamvention.

From comparing the number of people at the various radio manufacturers' displays, it is quite evident that FlexRadio is now one of the major players.

I have been a fan of the Flex Software Defined Radio since experiencing it at the Visalia DX Convention in 2006. At that time, having seen the prototype Flex 5000, I was one of the first VK amateurs to purchase one, which was quickly followed by a Flex 3000 for portable use and then, a couple of years later, the Flex 6500.

Flex owners and those who read *Amateur Radio* magazine will have been aware, for a couple of years now, that the Flex 6000 series radios were going to be joined by an operating console, which would enable the user to remote his or her Flex radio within their own home and in time, from anywhere that the user has access to Wi-Fi.

And now, the Maestro is with us. Many were smart enough to realise the potential of the Maestro and placed their order prior to the official release. Over the past couple of months many of these people have received a nice parcel from their postal company and are busy enjoying their new purchase. For the rest of us, those who were fortunate enough to make Dayton will have had the opportunity of not only seeing it close up, but also, have had the chance to see first-hand what it does and how intuitively easy it is to use. For those who were not so fortunate, this is a quick description of the Flex Maestro console.

This is not a technical article. It is intended to explain what you can achieve with a combination of a Flex 6000 series radio (that is, the 6300, 6500 or 6700) and a Maestro and to make some suggestions as to how this could fit in with today's shack operating and for that matter, with DXpeditions.

Photo 1: Author's photo of a Maestro set up at Dayton 2016.

If you know nothing about terms such as "Slice" then parts of this article need a little explaining. One major benefit of the Flex radios is that, depending on your model, you have the ability to open more than one slice at a time, which means that you can monitor more than one part of a band or two or more bands at the one time. Think of "slices" as representing distinct parts of the radio frequency spectrum, be it that they might both be on the same "band" or on separate "bands". I will mention the concept of "slices" later in this article.

With all the pre-release publicity, I had thought that the Maestro was going to be too small to be of interest to me. My shack consists of 3 large monitors, such that the thought of replacing three 26 inch screens with a very small screen, made me think that Maestro was not for me. However in the flesh it is much bigger than I had imagined. The dimensions are a height of 17.1 cm, width 35.6 cm and depth 4.5 cm. It is extremely light, weighing in at 1.8 kg which I think is the mass without an optional battery which fits neatly inside the rear of the case. The screen is 8 inches (20.3 cm) in size. From using it, particularly with the touch screen facility, it is big enough for its intended uses.

I have used remote radios since the late 90s, at which time I had a Yaesu transceiver allowing me to operate in a primitive way from anywhere that I had Internet access.

Over the years, having become more and more interested in 6 metres, and with less travel than

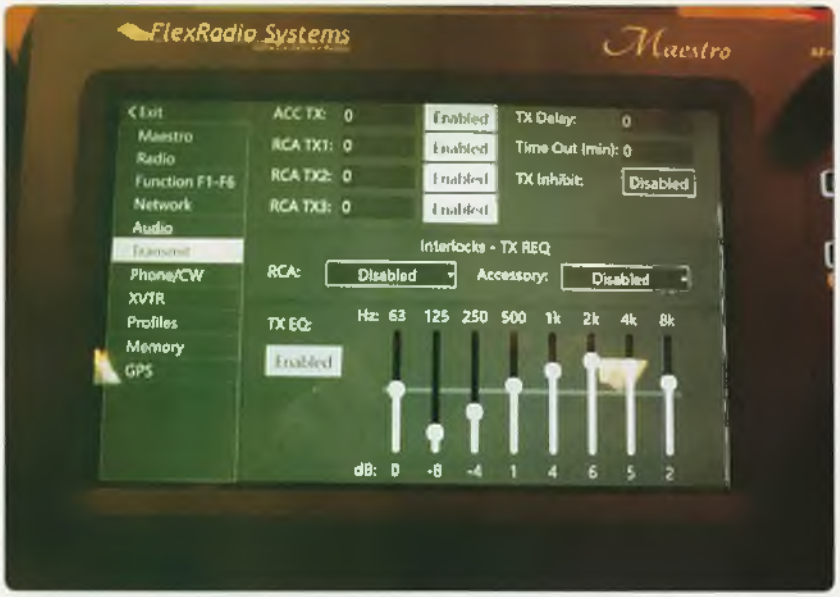


Photo 2: Example of drop down menu available on the touch screen.

I used to do, remoting is not as important to me as it was in those days, so I did not stop to think of the value of Maestro for portable operation.

I now realise the error of my ways as I can see it being used around the house or garden, when I am at my weekend cabin in the country or when I am in another Country on business.

Most functions can be accessed by touching the appropriate part of the screen and engaging drop down menus (see one of them in Photo 2). But if you want to use buttons for changing band, mode, filter width etc., these are all available on the right hand side of the Maestro.

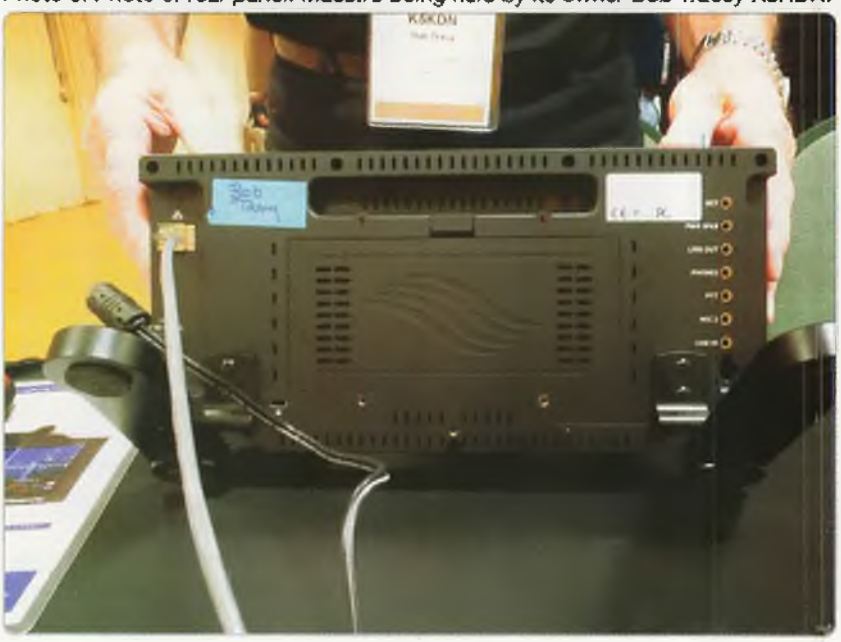
There seem to be two types of amateur these days: those who want knobs and buttons and those like me, who are perfectly happy without them. For those who want a tuning knob, on the bottom right hand side of Photo 1 you will see two large knobs. These enable you to independently tune Slice A or Slice B, there only being the option of viewing two slices at any one time. You will also see that there are lots of knobs and buttons (which are a good size) which offer a different way of changing a parameter that you could otherwise have done with the touch screen and the various menus that it offers. Functions such as audio level are available either in a menu accessible from the touch screen, or via the dedicated volume control at the top right hand side of the Maestro.

If you have ever tried remoting a conventional radio, you will probably have been frustrated by the delay or latency experienced, in that you move your virtual dial on your remote computer, the radio does not change in real time, but has a delay or drag on it, meaning that often, trying to tune a CW station with narrow filtering on your receiver becomes a frustrating exercise as you first miss to one side and then to the other. Or worse, if you try to do too many things at once, the remote system will simply crash as it can't multi task.

Playing with Maestro over the Dayton weekend, it was immediately obvious that there was no such delay and no problem changing multi functions simultaneously. I used 100 Hertz on CW and intentionally ran up and down through various QSOs to see whether the console was as easy to tune as if I was changing frequency with the actual radio. There was no discernible difference between the two. At the same time I cheated by changing the audio, using the menu to change filters, modes and anything else I could think of, to see if Maestro would complain. There was no problem at all.

By now, having had a Flex 6500 since day one of their release, I have many hours of use in contests and massive openings on 6 metres, my preferred band. It would have been

Photo 3: Photo of rear panel. Maestro being held by its owner Bob Tracey K5KDN.



immediately very obvious to me if there was any difference between using the radio direct or via the Maestro but there was none that I could detect.

Maestro comes with a built in speaker which is efficient enough for a quiet room environment but in the noise of the Hara Arena it was only just adequate.

There are several options available to the user in order to increase audio out. On the back panel is a headphones jack, a line out jack and a powered speaker jack so increasing the audio out is only a matter of your choice of how you do it.

The "feel" of the tuning dial is nice and smooth and reminded me of the old Eddystone dials which you could move slowly from station to station, or, with a little more of a twist, you could set them winding from one end of the band to another. I was often too lazy to change the tuning speed, which on the Maestro that I was playing on, was set to a very low number. Rather, I just gave the dial a good tweak and it quickly took me up or down the band I was exploring.

So, let us look a little at what the Maestro can do.

Flex have a history of producing updates to their software at regular intervals. To some people this attitude has been interpreted as their "right" to regular upgrades, but as we all know there is no such thing as a free meal. When I purchased my Flex 6500 I was given the opportunity of paying an additional amount for upgrades of the software, something that I was more than happy to do, and which I remain more than happy to do into the future.

At the Flex banquet on the Friday of Hamvention, President of Flex, Gerald Youngblood K5SDR gave an informative speech in which he pointed out that Flex offered upgrades of their software, rather than frequent new models, the effect of which of course is that, rather than having to trade our radio for a new model, we effectively receive a new radio every time we upgrade our software.

Flex have made it clear that intercommunication between a 6000 series radio and Maestro is not going to be limited to our own Wi-Fi connection (local area network) but will be extended to enable us to communicate with our rig, wherever the Flex radio and the Maestro can be connected to the Internet. Thus, in the future, we can expect *true WAN (wide area network)* connectivity to allow us to place our Flex radio in a convenient, quiet, remote place and have complete access to it from our home. Or, alternatively, if we are travelling, we can pack our Maestro and have the same access to our Flex as if we were in our shack.

Maestro comes with a number of attractive options. The one which most appealed to me is a small, compact soft case, somewhat like a laptop bag, but designed specifically for the Maestro, which enables it to be carried with us, in the same way as we have grown used to carrying a laptop or Tablet.

Maestro has the option of an internal user supplied 5 volt battery which can be installed in a rear compartment, increasing our *flex*ibility (pun intended) when we lose power or are in a non-powered location. Another useful one is a set of feet which enables the user to adjust the angle of the Maestro as it sits on the table or bench.

Connection to our local area network can be via an Ethernet cable or a Wi-Fi connection.

Flex recommends that where possible, this connection should be by Ethernet cable when we are intending to use CW because there are fewer issues on wired networks.

On the subject of CW, one can use a conventional key or a paddle. A drop down menu provides for us to set which type of key we intend to use, swap the dot and dash on the paddle, adjust the pitch and the level of side tone and enable break in. As well, Maestro has a Delay slider which holds the PTT break in time for up to 2 seconds (adjustable by a slider which is found in the TX Menu). Alternatively the user can provide for using an external keyer such as the K1EL Winkeyer which is particularly useful for contesting. Thus the user has the option of transmitting with either the built in iambic keyer or an external device both of which can remain connected and used, as required.

So with CW, so also with voice modes.

There are in fact three types of audio inputs available on the rear, which are selectable in the TX control panel, as Mic-1, Mic-2 or M-Line, i.e. the third is a line input.

The most convenient ways to operate the PTT function are via pin 6 of the Mic-1 plug (when grounded to pin 7), by a separate PTT socket also on the rear panel, by the MOX option on the screen or by using VOX, thus maintaining the flexibility which is available on the Flex 6000 radios themselves.

The future offers great scope for the combination of a Maestro and a Flex 6000 radio to be increasingly the rig of choice for DXpeditions, not only because of the excellent performance and renowned reliability of the radios, but because it will now be possible for the rigs to be placed close to antennas and then to be operated via an Ethernet cable from any more salubrious operating position.

In the past, the antennas have had to be mounted to suit the operating position but Flex and Maestro mean this is no longer the case.

At the home station, the same situation applies. The operator can, if he or she wants, mount the Flex transceiver in the most convenient place in the house, and rely on the Maestro to control it. Many hams do not have the luxury of their own shack in which case they can use the Maestro in the comfort of their lounge, in their den or the bedroom. Provided they are within Wi-Fi range of their router, the Maestro does not care.

Maestro is in its early days yet and there is therefore a sense of excitement at what the software designers at Flex can provide into the future. Flex have shown they are willing to accept ideas from the amateur community. In fact, following Dayton, they have proposed a working group to further develop the requirements of Maestro for DXpeditions.

Flex has been described as a family. This description fits them accurately. As such, all owners are encouraged to contribute to one or other of their online forums which are an excellent source of information, plus an easy way of giving feedback to Flex, about wish lists for future upgrades to their products.

Maestro was immensely popular at Dayton. At one stage on the Friday, I counted 37 people either using one or waiting their turn to use one. Flex provided enough of their expert staffers that each operator must have felt that they were getting personal service.

Photo 4: Author using Maestro in the Maestro den at Dayton. (Photo taken by Bob Tracey K5KDN.)

Indeed they were.

Maestro is a major step forward in the development and ease of use of the Software Defined Radio concept. It resolves the problem for hams who want to access controls via knobs and switches, whilst continuing to satisfy those who, like me, prefer all controls to be available on the screen.

AMSAT-VK

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

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

Website:
www.amsat-vk.org

Group site:
group.amsat-vk.org

About AMSAT-VK

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

AMSAT-VK monthly net

Australian National Satellite net

The 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.

Melbourne QRP by the Bay gathering a success

Peter Parker VK3YE

Melbourne QRP by the Bay is a twice-yearly event that brings QRPers and homebrewers together at Chelsea beach. While timed for the warmer months, the weather does not always oblige. Nevertheless a good time is always had by all.

The most recent gathering took place on Saturday 5 November 2016. About 25 were present including newcomers, old timers and those in between. The scheduled start was 3 pm but some set up earlier to work stations after the 11 am 'Coffee break' on 160 m AM.

First to arrive was Chris VK3AML followed shortly after by Dan VK3FAJO. This was the first test of Chris' trolley carried 160 metre AM station designed to be readily taken on buses. High waves and howling winds precluded operation on Chelsea Pier but the 10 watt converted Seacom gave good results just back from the water.

After a café lunch and detour via VK3YE's place, 3 pm rolled around in no time. Joe VK3YSP and Julie VK3FOWL were already at Victory Park with their remote controlled HF mobile station. Also set up was Tony VK3CAB with his collapsible coax cable magnetic loop, 40 metre QRP station and elegant homebrew Morse paddle.

VU2ESE's new pre-assembled low-cost BitX 40 m SSB transceiver module has proved popular worldwide. Stephen VK3SL brought along his example, boxed in the

Photo 1: Homebrew and kit transceivers built by Paul VK3HN on display. (Photo by Chris Long VK3AML.)

small hours of the previous morning. It is already shaping up to be an 'experimenters delight' with varied solutions suggested for the VFO frequency drift that sometimes occurs.

Paul VK3HN brought various projects include a small SOTA-suitable 40 m SSB transceiver with digital readout. DDS is the fashion but Paul's VXO offered a 100 mA current saving that allows extended operation with lightweight batteries. A truly professional job that puts my own efforts to shame.

Other items brought along included an OzQRP MST transceiver, magnificent homebrew Class E AM transmitter, old military set, balanced antenna coupler (AR November 2016), solar CW beacon and an MF receiving loop.

An overhead view always gives a new perspective on things. VK3BQ's drone provided some great pictures, one of which appears here. "A forest of squid poles" is how one attendee described it.

Photo 2: Melbourne QRP by the Bay venue. (Photo: Andrew Scott VK3BQ.)

As well as chatting around the table, we were also on air. A SOTA Beams link dipole provided excellent results to most stations on 40 m and VK6 on 20 m. The capabilities of 1825 kHz AM portable and mobile impressed everyone who gathered around Chris' Seacom and quarter wavelength inverted-L station.

Those working us included several home stations (up to 100 km distant) and two mobiles. These were Doug VK3YQS near Victory Park and Dave VK3ASE who remained within contact during an impromptu drive down the Mornington Peninsula as far as Red Hill and Arthurs Seat. Nearly all HF rigs do 160 metres AM, so all that is required is an antenna to work a band that's almost immune from the solar cycle variations about which people complain.

As things got cooler we called it a day, satisfied that this was one of our biggest and best Melbourne QRP by the Bay events. Eight of us adjourned to Chelsea's Peruvian restaurant with the last attendee leaving nearly ten hours after they arrived.

If you missed out on November's event or wish to do it again, make a note. The next **Melbourne QRP by the Bay** will be held on Saturday 4 February, 2017 from 3 pm. The venue will once again be Victory Park, near the lifesaving club in Chelsea.

Photo 3: Chris VK3AML on 1825 kHz AM speaking far and wide with a 10 watt converted Seacom. (Photo: Stephen Langley VK3SL.)

The Norfolk Island Microwave Jaunt 2016

Keith Gooley VK5OQ and Roger Harrison VK2ZRH

This is the story of how activity on two microwave bands came to be added to the DXpedition of members attending the 2016 WIA AGM and Open Forum on Norfolk Island. A new 10 GHz DX Record for VK9N was the surprise result!

Keith VK5OQ

Several years ago, I was visiting the Blue Mountains west of Sydney and arranged with my good friend of many years standing, WIA Board member Roger Harrison VK2ZRH, to attempt a contact from the mountains to Sydney on the 10 GHz band (3 cm). This was quite successful and contact was made between a prominent hill in the Katoomba area and the top of a building in Parramatta, a distance just shy of 70 km.

When the trip to Norfolk Island was arranged, I subsequently suggested to Roger that we try a contact again on 10 GHz while on the island. Roger readily agreed and asked if I could provide two transverters for 10 GHz, adding that he would bring two transverters on 3.4 GHz (9 cm) to add to the activity.

I am a member of the Elizabeth Amateur Radio Club which has quite a few active microwave enthusiasts amongst its ranks and it was not hard to find someone who would lend a transverter for this activity. Iain VK5ZD offered a very neat box comprising a panel antenna, a 10 GHz transverter with a few 100 milliwatts output and a 70 cm-band IF for the transceiver complete with a 10 MHz reference. This unit was designed to be carried as carry-on airline luggage. It was ideal for the task.

My own transverter is not as compact and portable as Iain's, as it had to be extracted from the 5-band microwave system that I use for field portable operation. The transverter, 10 MHz reference and antenna are separate items. My transverter consists of a Stellex PLL local oscillator on 9936 MHz locked to a 10 MHz oven-controlled crystal oscillator. The transverter RF board is from VK3XDK and puts out something like 10 mW on transmit. A power amplifier recycled from some commercial gear raises the RF level to about 0.5 watt, but the PA is a multi-stage device and has too much gain, so I put a 15 dB attenuator before it. Antenna switching is taken care of by a Mini-Circuits 18 GHz SMA relay. Sequencing the Tx/Rx switching is done by a home-brew microcontroller using a Picaxe 14 M device. The antenna I had brought was an 18 dB gain horn, folded-up out of tin-plated steel. It is quite small and light weight, which is of course highly desirable in our travelling situation. The transverter has worked reasonably reliably over several VHF/UHF field days and hopes were high that this would continue.

Figure 1: Map of Norfolk Island, showing the two DXpedition locations, at Mount Pitt and the old gaol forecourt at Kingston.

All the gear fitted in my carry-on and checked luggage and no awkward questions were asked when we passed through security at the Adelaide or Brisbane airports en route to Norfolk Island. The batteries were two lithium polymer types of 5 Ah, one a 3-cell and the other a 4-cell. According to airline regulations, batteries carried separately from the equipment must have power less than 100 watt-hours capacity and must be carried in carry-on luggage. This was reasonably easy to comply with and spreading the gear amongst my luggage and that of my XYL, Jeanne VK5JQ, we kept the mass of the bags below the required limits. Well, almost.

Roger VK2ZRH

Energised by Keith's suggestion about arranging to 'play microwaves' during the Norfolk Island AGM activities, early in the year I made arrangements with Gavin VK3HY to buy a pair of 3.5 GHz Wi-Fi transceivers panels being sold by the Geelong Amateur Radio Club (GARC), suited for conversion to the 3.4 GHz amateur band. Gavin planned to visit the Central Coast ARC Field Day at Wyong on 28 February, which was ideal as I would be there manning the WIA stand and acting as convenor of the annual VHF-UHF, microwave and weak signal gang get-together.

I duly acquired the pair of panels from Gavin at Wyong, and carried them home in a large garbage bag to figure out how I was going to arrange the time to carry out their conversion to 3.4 GHz, given my work in progress with the WIA Spectrum Strategy Committee in preparing submissions to the ACMA and the Department of Communications, among other WIA work. As I still work full-time, I was considering how to get by on a little less sleep on weekends. I couldn't consider less sleep on weekdays because falling asleep at your workstation with your forehead on the keyboard space bar is not a good look.

I experienced a foretaste of the fun that can be had in the 3.4 GHz band when I participated in the First National 3.4 GHz QSO Party, organised and promoted by Lou Blasco VK3ALB, President of the Geelong ARC. This was held on Sunday 21 February with participation by enthusiasts across VK2, VK3, VK4 and VK5. Justin VK2CU and I went to an apartment block roof in Parramatta (the same one mentioned by Keith earlier) with a bunch of transverters and antennas for 3.4 GHz. You can follow the progress and the reports on the VK Logger Forum (www.vklogger.com/forum) under *General – Contests, Field Days, Portable Operation, JOTA, SOTA – 3.4 GHz QSO Party*. Note that the Logger Forums have been archived.

Meanwhile, Dave Scott VK2JDS at Gowan, out west of Bathurst, was beavering away converting some Geelong panels, having devised an ingenious way to convert a panel into a complete transverter, whereas the original conversion procedure required three panels to make two transverters. I proposed to arrange a day one weekend to gather VK2 enthusiasts possessing panels and hold a workshop to have them all converted. However, Dave VK2JDS scuttled my plan (on the grounds it would be like pushing string uphill) and suggested completing a pair of panels for me if I purchased sequencer kits and other hardware, and he would then swap the completed panels for my two virgin panels. And so it was.

A couple of weeks before the scheduled flight to Norfolk Island, Dave drove to my Sydney QTH from his hilltop home at Gowan with the two completed panels. They were set up on my back patio with a pair of portable transceivers for testing. The panels came through with flying colours. Dave drove back home that afternoon, completing an 8-hour round trip!

To transport the two 3.4 GHz panels to Norfolk Island, I had dug out an old overnight bag that was designed as carry-on luggage for passenger aircraft. I managed to pack into this bag the two panels with aluminium right angle brackets to support them upright, a few coax 'tails', fly-leads for panel power connections, a small 12 volt SLA battery and a charger for it, battery pack for my FT-817, my Dell laptop, it's charger and a mouse, plus a few small hand tools. All batteries met airline regulations for carry-on luggage. My FT-817 transceiver went into our checked baggage.

The overnight bag was a little overweight (OK, a *lot*), but it passed muster at Sydney International Air Terminal without question. My wife, Val's, carry-on luggage didn't do as well; airport security asked to examine her carry-on luggage (much smaller than mine) and they confiscated a 300 ml plastic bottle of micellar water (makeup remover). The limit for such things is 100 ml. All luggage arrived on Norfolk Island in good order and condition, thank you Air New Zealand.

Keith VK5OQ

The allotted day for the microwave activity was the Sunday afternoon of the WIA AGM weekend. Roger had arrived on the island with his wife Val on the Friday and was booked to fly out on the Monday, so there wasn't a great amount of time. This was particularly so because we had to be back at the Paradise Hotel by 4:30 pm in time to get the bus to the evening "fish fry" on a cliff-top on the western side of the island.

Roger and I agreed to meet at the Paradise Hotel after lunch. First,

Photo 1: View of Kingston. The old goal walls are seen in the left foreground, Sydney Bay in the centre of the picture, with Emily Bay and Point Hunter at right.

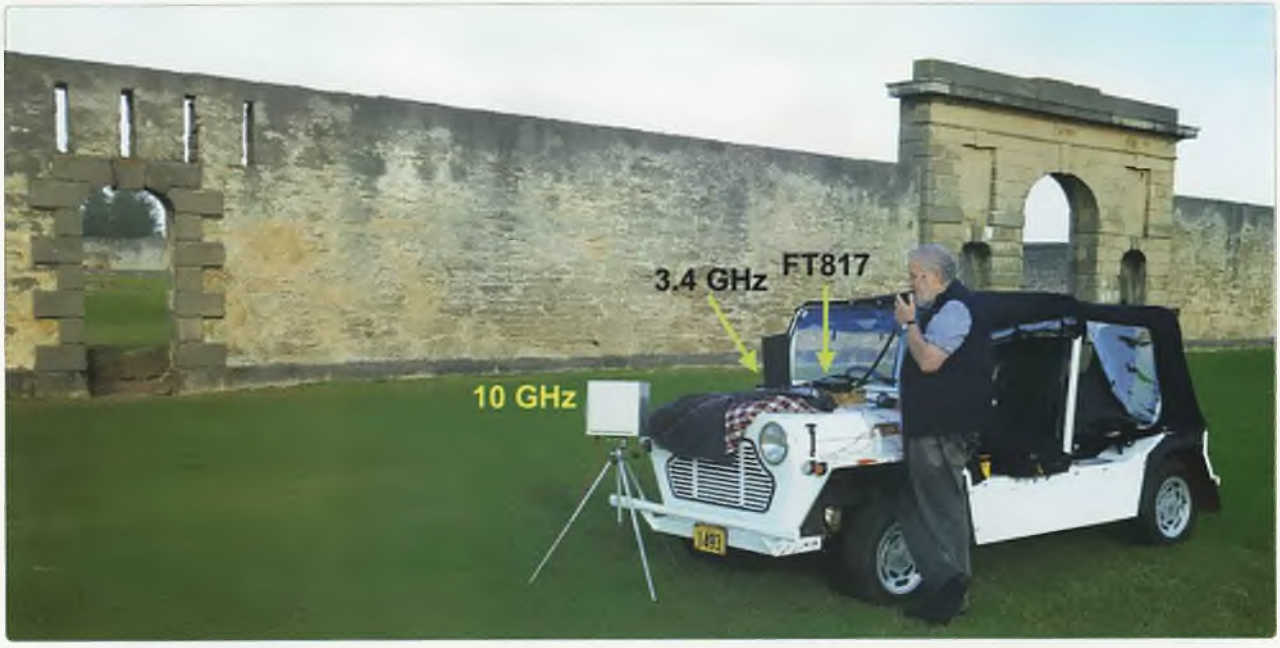


Photo 2: The VK9NJ end of the microwave jaunt, at Kingston, Roger VK2ZRH at the microphone. Photo by Ross VK2VVV.

we had to test the transverters.

Before Roger arrived at the Paradise, the two 10 GHz transverters were tested with the assistance of Hans VK5YX and Peter VK5APR on the lawns of the hotel. With about 50 metres spacing, the two stations were in contact with hugely strong signals, as you would expect. These two helpers, plus Ross VK2VVV, Les VK5KLD and David VK5DMC, all had their first experience of microwave QSOs on the 3 cm band.

Roger arrived soon after and, following a small amount of effort completing the power wiring for the two 3.4 GHz transverters, we did a quick test with the units only about a metre or two apart. All seemed to be well, so we packed the gear into the two hired cars and set off. Roger and Ross in one car set off for Kingston, the old penal settlement area on the island's south coast, while Peter VK3PF, Peter VK5APR and I in the other, headed for Mt. Pitt which, at 316 m ASL, is the highest point on the island accessible by car. *See Figure 1.*

It was a mild sunny afternoon with a strong westerly wind making things interesting. There were a couple of picnic tables set up on the summit and one was selected having a clear view of one end of the Kingston area about 5 km away. We had liaison comms on 2 m FM so that Peter VK3PF could guide the Kingston party to the spot where they could see Mt Pitt.

Roger VK2ZRH: Ross VK2VVV had hired a Mini Moke for the day and had earlier scouted-out likely locations having received advice from others who'd explored the island's vantage points. Ross and I piled all the microwave gear into the Moke and set off for Point Hunter (Figure 1), overlooking Emily Bay and near Captain Cook's pine.

The wind at this location was blowing-in from the south-east and was so strong and blustery Ross was all but blown off his feet at one point! After some liaison on 2 m, made difficult by the wind noise, we decided to find a location less exposed to the wind and took the short drive around to the Kingston village area and the remains of the old Kingston Gaol. See Photo 1. The area was not so exposed to the wind as was Point Hunter, making things rather more tolerable.

After a short reconnoitre, Ross found a place off the road on the grass verge near the old gaol's entrance. This afforded a good view to Mount Pitt and we set about getting the transverters into position, aimed at Keith's location and powered-up. See Photo 2.

Keith VK5OQ. The 3.4 GHz band was tried first. The equipment at each end was virtually identical, with Roger's flat panel transverters fed by FT-817 transceivers on 444 MHz. Roger had supplied an aluminium right angle bracket to be fixed to the rear of the panel enabling it to be stood upright on the table, held in place by a rock scrounged from the garden nearby. SSB was the mode of choice and as soon as the two systems were switched on and a transmission attempted, contact was made with "rock" solid signals.

By the time contact had been established, quite of crowd of people had gathered around the Mt Pitt picnic table. After myself and Peter VK3PF had logged contacts with Roger (VK2ZRH) using his VK9NJ callsign on 3.4 GHz, the microphone was passed around. WIA president Phil Wait VK2ASD, Peter VK5APR, Shirley VK5YL, Luke VK3HJ who had cycled up the

Photo 3: The Mount Pitt location, with WIA President Phil Wait VK2ASD on the microphone, working VK9NJ on 3.4 GHz for his first contact on a band above 70 cm. Photo by Peter VK3PF.

mountain, Ewan VK4ERM and Bob VK2ZRE all had contacts – mostly first-time QSOs on this band! See Photo 3. Phil said it was the first time he had had a contact on any band above 70 cm. Since we were using SSB, frequency corrections were required each over due to the transverter reference frequencies warming up.

We then made the QSY to 10 GHz still using SSB and this caused the only minor hiccup. The transverter I had borrowed from Iain VK5ZD uses RF sensed switching for the PTT, or a DC voltage on the coax line from the IF radio to the transverter. I hadn't made any provision for using the DC switching, so relying on the RF sensing meant that SSB would not work. This is because of the intermittent nature of the RF in an SSB signal. When Roger first tried it, all I could hear were short bursts of speech with gaps between. When I realised, I let him know and the switch was made to FM. Iain had warned me about this point but in the activity getting it all set up, I had forgotten.

So the 10 GHz contact was logged. Seasoned microwavers will realise of course that a five km line-of-sight path is not a demanding challenge but never-the-less we were delighted that after all the preparations, transporting the equipment to the island, testing, hiring cars and setting up, the equipment for the two bands worked faultlessly.

Roger VK2ZRH: As it transpired, the 10 GHz contact over 4.8 km was the first recorded instance for this band in the VK9N call area, so Keith and I completed the application paperwork for a 10 GHz DX record. After due adjudication by John Martin VK3KM, Chairman of the WIA Technical Advisory Committee, we received the handsome certificate you see here in Figure 2, and an entry in the VK VHF-UHF DX Records. A modest achievement, but such things have to start somewhere.

A claim for 3.4 GHz was not submitted because, back in 2011, the famous VK9NA VHF-UHF DXpedition to Norfolk Island, comprising Alan VK3XPD, Andrew VK1DA, Kevin VK4UH and Michael VK3KH, worked ZL1TPH on this band, claiming a DX record of 747.5 km. See *http://vk1da.net/blog/2011/03/18/vk9na-expedition/*

Thanks are due in particular to Dave VK2JDS, Iain VK5ZD, Peter VK3PF and Ross VK2VW, who gave support in various ways to ensure the success of The Norfolk Island Microwave Jaunt.

Figure 2: The 10 GHz DX record certificate.


Wireless Institute of Australia

Certificate of Achievement

This Certificate is awarded to **Roger Harrison, VK9NJ**

Your contact with VK5OQ/9 on 29 May 2016 set a new

VK9N Call Area Record for the **10 GHz** band

Distance: 4.8 km

29 August 2016
Date

Records Manager

WIA National President

Marconi Hut Mast gets WIA Grant

Jim Linton VK3PC

Photo 1: GARC President Chris VK3ACG (right) receives the WIA Grant from Director Robert VK3DN.

The Wireless Institute of Australia (WIA) through a Special-Purpose Grant has acknowledged the work being done by the Geelong Amateur Radio Club (GARC) at the Queenscliffe Maritime Museum.

The GARC successfully applied for a Grant in 2016 to help fund the erection of a permanent aluminium mast alongside the re-created Marconi Hut at the Queenscliffe Maritime Museum. The mast was donated by the family of John Pile VK3ZPO (SK) a club member.

The Museum obtained the building and planning permits from the Greater Geelong City Council. It has now described the permanent mast as adding to the facility and making the environment safer for visitors.

An application was made by GARC to the Grants Committee, who found that the proposal was 'a good fit', meeting the guidelines and goals of the scheme.

The Committee then recommended that it be fully funded, which was endorsed at a meeting of the WIA Board of Directors.

Before the $770 payment could be made, the club had to follow up with receipts and other documents showing the expenditure had occurred. GARC had also contributed an equal amount to the project.

There has been a long history of GARC involvement in the local area, including marking the centenary of the first radio transmission between Tasmania and mainland Australia by the Marconi Company from Point Lonsdale in 1906.

On that anniversary the first wireless transmissions over open water in the Southern Hemisphere occurred, involving also the North-west Tasmanian Amateur Radio Interest Group.

Although the Marconi Company successfully conducted the Bass Strait trial in July, via spark-gap Morse code, the Australian Government could not see the advantage in this new-fangled technology and after three months the stations were dismantled.

Following that centenary event, GARC installed the re-created Marconi Hut as a permanent exhibit at the Queenscliffe Maritime Museum and in doing so cemented a bond between the two organisations.

The Hut, with historical radio equipment, is open to schools as an educational resource and adult tour groups showing the radio heritage context of communication with ships. The club found that the Hut was the major interest to visitors.

The latest development is the erection of the mast, with a multi-band HF antenna and those for VHF/UHF hoisted by a halyard: when it is activated, the Museum is happy that the structure can fly its own flag.

GARC will use the mast particularly during WIA field days, contests and special events including the International Lighthouse and Lightship Weekend in August.

Mindful that all of its activities expose Amateur Radio to the public, the club is aiming to set up an Educational Feature at the Museum to provide even more mutual promotion.

There would not be a Special-Purpose Grant program for the 2017 year, but it anticipated that the WIA Board for 2017-18 will review it in late 2017.

The first was awarded to support the GPS-Locking of VHF-UHF Beacons under a project proposed by Alan Devlin VK3XPD and run jointly by Alan and the WIA over 2014-15.

That project added GPS-locking to an additional 23 beacons on the 2 m, 70 cm, 23 cm, 13 cm, 9 cm and 3 cm bands across VK3, VK4, VK5 and VK6 ensuring frequency accuracy and stability to within a few Hertz.

Photo 2: The mast and re-created Marconi hut.

2017 AGM Hahndorf, South Australia

David Clegg VK5KC

Inspiring leadership, the future of Amateur Radio

The historic town of Hahndorf near Adelaide has been chosen as the venue for the 2017 WIA AGM and Technical forum which will be held over the weekend of 19 21 May 2017.

Hahndorf was first settled in 1839 and is classified as Australia's oldest surviving German settlement. It is only half an hour from Adelaide along the South Eastern Freeway. The WIA website and registration page has more details of the town and accommodation options.

The planning group, made up of representatives of most Adelaide Clubs, will showcase the best of innovation and technology in the Amateur service in South Australia. The core theme of the conference is to stimulate visitors to explore the boundaries of this diverse hobby.

Friday night will feature a social gathering at the Haus restaurant from early evening. Registration lanyards can be collected here, a separate room is available with all you can eat gourmet pizza selection. Drinks at your own cost.

Saturday we move to the other end of town to the Adelaide Hills Convention Centre. This is a large modern centre on 32 acres, with caravan and cabin accommodation on site. The Three Gums Bistro provides on-site dining.

The AGM commences at 9 am followed by an open forum. Morning, afternoon tea and lunch will be provided to registered participants. The afternoon will be taken up with a series of short presentations and demonstrations on the latest facets of Amateur Radio in South Australia, followed by a question and answer session including a discussion on engaging new converts to the hobby.

A choice of two partners' tours will be offered for those not wishing to attend the Saturday AGM and Technical presentations. Details of these can be found on the WIA web page.

An informal drinks and social session will be followed by the gala dinner and guest speaker.

Sunday, visitors will have several options. Firstly a visit to the National Motor Museum at Birdwood. Lunch at your own cost in the town. Carpooling will be used for transport.

Several local amateurs will be available to provide transport or location details of Parks and Peaks for the intrepid Parks and Peaks operators.

Should neither of these be to your liking, a walk along the main street of Hahndorf will surely occupy you for many hours.

Sunday night the Adelaide Hills Amateur Radio Society will host a BBQ at the Hahndorf Football Club nearby. This will be a fitting finale to the weekend.

By prior arrangement, pickup from the Adelaide Airport can be organised. However this will only be up to midday Friday. Hire cars are of course available at the Airport. Public buses travel from the city to Hahndorf. More travel details available on the WIA website. Communication for the weekend can be on VK5RAD repeater, 147.000 MHz, minus 600 kHz, no CTSS.

I urge all amateurs to consider attending the weekend. All are welcome, but financial members only can vote at the AGM. Come and enjoy a social weekend with those of similar interest.

Any special requests should be sent to the WIA office. We will attempt to meet all needs.

Further details and registration are available on the WIA website.

https://www.wia.org.au/joinwia/wia/2017agm/

Photos by Paul Simmonds VK5PAS.

VK5news Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

Buy and Sell

Again, this was a very successful event. Amateurs from all over the state and from interstate came to sell/buy or just to meet their friends. There were a few problems while the sellers were setting up their stalls because the Goodwood Community Centre was in the midst of some electrical upgrades. This meant that the sellers had to work in semi-darkness until the mobile generator was up and running. Until then we could not start the mercury vapour lamps that normally light the selling room.

However, all was fixed in plenty of time for the actual opening. The photo was not taken at the beginning of the rush but sometime later and the crowd was as large as ever. The traders were happy with their sales and there were lots of happy faces as people were leaving the centre.

The ALARA food stall was well patronised, as was the Sausage Sizzle run by NERC (North East Radio Club). What is more it was a lovely day; not too cold and not too hot.

Photo1: A view of the AHARS Buy and Sell.

November meeting

Graham VK5ZFZ took the meeting as he has often done in November. Instead of a construction night, Graham told us about some long term studying he has been undertaking. This studying has led to him developing what he calls a Valvetron amplifier.

Graham has studied in detail the behaviour of thermionic valves. He has discovered that, by fiddling with the parameters, it is possible to make use of the sections of the performance characteristics to make amplifiers with a perfectly flat response over a wide range of voltage and current values. This is what a good amplifier needs.

The classical amplifier with which to compare any own-built amplifier is a Lindsay Hood Amplifier and Graham claims his Valvetron amplifier meets this standard. It is a single IF stage amplifier with a 40 dB gain and a flat response over the full audio range.

If you are interested in the details of the Lindsay Hood

Photo 2: The front of the Valvetron amplifier.

Photo 3: Inside the Valvetron amplifier.

amplifier, Graham refers you to the June 1967 "Wireless World".

To show that the Valvetron amplifier is not a one-off, Graham also brought along a guitar amplifier he built for his sons.

Watch for more info in the next year or so. It was a very interesting talk with some excellent research behind it.

Christmas Dinner and New Year Picnic

As usual AHARS has a social break during the Festive season. The bookings for our Christmas Dinner at the Belair Hotel are very good and the number who have promised to be at the Picnic in January both show that the Society is active and interesting.

Annual General Meeting for AHARS

This will be the first meeting for the year. If you are interested in making a contribution to the club please send in your nominations for the Committee. New blood is always welcome and there are several long time committee members retiring.

Annual General Meeting for the WIA

This will be held in May next year and details about registering and booking accommodation are all now on the WIA website.

AHARS has been involved in planning the activities and it promises to be a thoroughly enjoyable weekend. If you have not attended an AGM before or if you have done so you will find it a very good place to meet other amateurs and to find out how the WIA functions.

Having local amateur clubs arrange our AGMs has been a very successful idea. It has also taken the AGM to many different locales and introduced amateur radio to the general public in a way few other activities can do. Come along and enjoy the atmosphere.

LMARC

A very special AGM of the Lower Murray Amateur Radio Club

As usual, the LMARC held its AGM and Christmas dinner in the Murray Bridge Hotel.

A number of members of AHARS were present as usual. The LMARC has been a 'protégée' of the AHARS for many years. The club became associated with

Photo 4: Guitar amplifier.

AHARS at a time when they only had about eight members.

They have the permanent use of a clubroom at the local Football Oval and a little help does not go astray. The LMARC has a representative on the management committee of the Oval.

The membership has doubled with some recent promising enquiries, which supports the idea that the little bit of help is a good idea.

Photo 5: LMARC Christmas Dinner.

Photo 6: David VK5DB receiving his Life Membership from President Geoff VK5HEL.

The club members meet at the clubrooms at least once a week and have constructed a number of 70 cm/2 m antennas to a design modified from an AHARS project of some years ago. Some of these and a quantity of components accumulated at the clubrooms were taken to the AHARS Buy and Sell this year with some success.

For the last 17 years, David VK5DB had been the President but he has decided it is time to pass the position to someone else so this AGM was to be his last.

After the voting at the AGM the new President will be Geoff VK5HEL and we wish him well.

To David's surprise he was then presented with an Honorary Life membership of the club in appreciation for his years of service by new President Geoff VK5HEL. He was certainly surprised and suitably grateful.

Photo 7: David's Life Membership Award.

Over to you

WIA Board Elections

The recent "WIA News" article announcing the entire WIA Board of Directors is standing down, with some offering themselves for re-election, is a two-edged sword.

Firstly, I commend the Board members for their decision, given the recent spate of divisive social media hysteria and misinformation.

Whilst the intention of the original postings was undoubtedly well intentioned, if possibly a little misguided, social media being what it is, the whole thing has got out of hand and become destructively toxic.

So when it comes time to vote for the new WIA Directors in 2017, please consider the following attributes of the candidates very carefully before "ticking the boxes".

1. Respect the fact that all the candidates have put themselves forward for election.
2. What contribution has the candidate made to the betterment of Amateur Radio, either locally or nationally?
3. What contribution has the candidate made to the WIA, either directly or behind the scenes?
4. Do you consider the candidate to be a team player?
5. If you have had dealings with any of the candidates directly, or in an official WIA capacity, were you satisfied with the outcome?
6. Are you choosing the candidate just because you know their name?
7. Did you discount any candidate just because you don't know their name?
8. Are you choosing the candidate just because they have held a position as a WIA Director in the past?
9. Did you discount the candidate just because they have held a position as a WIA Director in the past?

Historically, only about 30% of Australian amateurs belong to the WIA and of those, only about 25-30% of WIA members bother to take the time to vote in elections. Often those non-members and non-voting members are the most vocal about what a poor job the directors are doing. If you are not prepared to vote and are not happy with the way the WIA is being run, then perhaps you should either consider standing for election or resigning your membership.

Amateur Radio in Australia needs a strong WIA membership and competent WIA Directors. The WIA is your voice in dealings with the ACMA in Australia and the IARU Internationally.

I have my own personal opinion as to who, amongst the current Directors, I believe are doing a good job and those that have reached their "use by date". I will also be considering the capabilities of the new candidates very carefully before "ticking the boxes". I urge all WIA members to do the same.

Bob Ecclestone VK2ZRE

ALARA

Diane Main VK4DI

ALARAMeet 2017

The excitement is mounting for the 2017 ALARAMeet in Cairns from Friday 7 to Sunday 9 September at the beautiful Cairns Colonial Club. Lyn VK4SWE has been the motivating force behind the meet.

The program is still being finalised but it will be a varied and interesting one full of social activities, tours, a foxhunt, interesting displays by members of projects they have undertaken, a few short breakout sessions for those interested in something a bit more technical and a Gala dinner on the Sunday night with a fun Pirate Theme.

Lyn has negotiated excellent discounts for the venue and tours. The Cairns Colonial Club has also given us very competitive rates so you can stay on site and not need to worry about travelling to and from the Meet.

There is a link to the pre-registration page on the ALARA website: *www.alara.org.au*

Registering your interest gives the Meet team an early indication of attendee numbers and also allows them to send you the updates and information as they happen.

The program outline will be on a dedicated ALARAMeet page on the website shortly.

There is also a dedicated ALARAMeet Facebook page *https://www.facebook.com/alarameet2017/* and a general ALARA Facebook page. *https://www.facebook.com/groups/alararadio/*. Ladies, you don't have to be an ALARA member to join the ALARA Facebook page.

Photo 1: MV Trim at Low Isles with a batfish checking out the dinghy.

The posts on the ALARA page are YL oriented and anyone who joins the group is encouraged to post information about their AR related activities.

Lyn VK4EI's IOTA Activation

Lyn VK4EI once again managed to squeeze some radio time into her and her OM's annual boating trip, cruising north from Townsville on board MV Trim, among the Great Barrier Reef islands.

The first few transmissions from the boat were fine, but as it is an aluminium-hulled motor catamaran, it is a very forgiving ground plane! Once she took radio and antenna ashore onto Low Isles, it was quite a different story. Lyn has been using an old 'Moonraker' helical wound whip antenna which is resonant on the 20 m band, making DX mini-activations relatively simple but it does take some logistics to load a heavy 12 V car battery, radio pack, folding stool, water bottle, sunscreen, sand spike and 5-metre antenna into a small 2-man dinghy and up the beach. So it was bitterly disappointing to be all set up on the picturesque Low Isles, complete with interested onlookers from the day-tripper boats out of Port Douglas and only receive signal reports of 'four by two', can't activate an IOTA with that, so everything had to be piled back into the dinghy....

However, we are amateurs and trained to troubleshoot - a quick plug in to a dummy load back on board showed perfect SWR from the radio indicating that the problem was with the antenna or feedlines (which were new). Lyn had tested the antenna prior to sailing, with help from local Club member Gavin VK4ZZ whose spectrum analyser had shown it woefully off tune and definitely not resonant on the 20 m band. Gavin had lent Lyn a tuner but it wasn't helping, something was seriously wrong with the antenna. Thus began a lot of checking with the Multimeter, testing continuity along the whip, eventually isolating a spot where salt water had got under the wrapping and corroded the wire to thread-thin.

Then began the fun of soldering a jumper wire on a rocking boat.

Photo 2: Antenna with broken wire.

Photo 3: MV Trim's workbench – note the soldering iron holder.

Photo 4: Justine as second-op with Lyn VK4EI portable on Dunk Island.

With limited storage space on board, every item has to earn its place and multitask. The metal whisk from the cutlery drawer became an excellent soldering iron holder!

Next stop was Dunk Island, off Mission Beach, with a lovely sand spit, ideal for setting up the portable operation. Visiting yachty Justine acted as Second Operator and her husband Glen loaned Lyn his lightweight Lithium Ion Polymer battery which has now gone onto Lyn's shopping list! OC-171 was on the air with great saltwater take-off to VK, Solomon Islands and Japan.

Next day, MV Trim anchored off Garden Island to the south, and another fine sand spit at low tide enabled a pileup to Japan including contacts with VK, Russia, USA and South Korea.

The next and final day saw MV Trim tied alongside Yanks Jetty and Lyn and OM carried the gear across the brand new walkway to the beach, with another fine pileup to VK and Japan, including contacts with Russia and Poland. 116 contacts were made in total, with OC-171 activated for the Islands On The Air (IOTA) program and also several National Parks for the VKFF Program, as well as new Shires and Grid Squares for some collectors. It just goes to show that even a short activation is worth setting up, with so many different award schemes to partake in. Lyn received many emails thanking her for the "new one" and would like to thank everyone who helped her get on the air, with a special thanks to OM Tex!

Catherine's Travels

Catherine VK4GH

We joined the marine HF radio and participated most days and one day a week I was net controller. Marine nets are a little different than amateur ones and most of the operators are the ladies on the boat and a lot more casual. There used to be a 3-minute silence period after the hour and half hour but that has gone by the board. The net controller starts with emergency and priority traffic, then calls for boats under way, then boats at anchor. Each boat calls in just the once and if they want to contact another boat, a note is made and they talk after the net. Finally there is an information section at the end where information regarding anchorages or items of interest are exchanged. No calls signs are used, only boat names.

In Indonesia we had a lot of trouble getting a frequency that most people could hear on most days. We also found that only the operators that were also hams with some experience had any idea about radios and propagation. Several times we did trials of different frequencies on different bands, but eventually settled on an 8 MHz frequency, although this was plagued with Asian broadcasting at times and we would have to change to our back up one. Also, the organiser of the net at first had a lot of distortion in her voice and after going through all her wiring and connections, the other ham in our group went over to her boat to have a look. The distortion turned out to be her talking directly into the microphone, very closely. Once she started talking across the microphone, the distortion went away.

Between the boats on the rally we had a chat VHF channel to use between the boats, so that we did not

have to use the emergency channel. We also had to change channels there, as when we arrived in the Lombok-Bali area our chosen frequency had constant chatting and music playing the whole time. There is no enforcement of any rules in Asia, as you all may realise now.

ALARA at the VK5 Buy and Sell

Each November AHARS has a buy and sell to which amateurs from all over the state come to buy or sell, and catch up with friends.

By the time the doors open at 9.00 am there is a queue going round the corner. Having been standing waiting for so long they are hungry. ALARA ladies assuage that hunger with hot egg and bacon sandwiches and with tea and coffee and a variety of soft drinks. This is followed by pies and pasties or freshly made sandwiches.

For the ALARA YLs it is also a time to meet up. Occasionally they have enough time to encourage some of the XYLs who have come along with their OMs, to help 'man' the selling-tables, to join ALARA and to generally promote ALARA. This year there were so many tables ordered that a display table wasn't possible but ALARA was very much in evidence anyway with the 'goodies'. Tina VK5TMC is especially welcome in the selling hall as she carries around a tray of food on offer.

It is a long day but they usually have the 'many hands' that make light work as well.

The Christmas Kris Kringle luncheon

We met at the Police Club in Carrington Street in the city as we have done for most of this year and we had a table of 11. It was a thoroughly enjoyable lunch with some very good friends.

While we are lunching in the City many of the OMs meet at the Blackwood RSL with others from AHARS. Almost all the members of ALARA in VK5 are also members of AHARS as it happens.

Please send any reports and pictures for the ALARA column to *publicity@alara.org.au*

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Diane VK4DI.

Photo 5: In the picture from theVK5 BUY and SELL we have l-r Christine VK5CTY, Lesley VK5LOL, Myrna VK5YW, Shirley VK5YL, Tina VK5TMC, Marilyn VK5DMS previously VK3DMS, Jenny VK3WQ/VK5ANW, Jenny VK5FJAY, and Jean VK5TSX.

Photo 6: Standing: Tina VK5TMC, Lesley VK5LOL, Jenny VK5FJAY, Myrna VK5YW & Christine VK5CTY. Sitting: Jeanne VK5JQ, Deidre VK5-A, Marilyn VK5DMS, Shirley VK5YL, Jean VK5TSX & MegVK5YG.

Silent Key

Edvins Penikis VK1VP

We believe Edvins (or Ed as most knew him) was born in Latvia in 1929. He passed away in September 2015.

During WWII his family was fractured and he eventually travelled via Germany to Australia in the post war period, finally settling to live with his mother in a flat in Canberra. While in Germany as a young man he had met Biruta, a woman who was to remain a lifelong friend and eventually his partner in a house they shared in O'Connor from the 80s, after his mother passed away.

I first got to know Ed via a common interest in operating portable on VHF and UHF bands in the mountains west of Canberra in the field day contests and other events. He had operated a 2 m AM mobile station from his Vanguard and could tell us all whereabouts around Canberra he had worked some amazing contacts on 2 m. He described driving the Vanguard up to the summit of Mt Kosciuszko for a field operation (the road is now closed to the public). His approach was to be on the air as much as possible as otherwise you would miss out on those rare contacts.

His field station evolved during the 60s to 80s and was always highly effective. His field station would have been one of the first to move to SSB on 2 m. His standard field setup in those years was a pair of horizontal 10 element Yagis on 2 m, with a pair of vertically polarised 6 element Yagis for FM use and an array of 4 Yagis on 432. He left 6 m to others on field days but at other times he would use a 3 or 4 element Yagi on that band too. His 2 m Tx produced about 90 watts of output. It was a very effective signal!

I got to know his station well enough that on one field day when he had an event to attend in Sydney on the Saturday of the contest weekend, we swapped cars and I drove his Land Rover up to Mt Ginini, set up his station and operated it until Sunday morning when he arrived in my car. At home and even in the field he used a Collins 75S2 receiver, using 21 MHz as the IF because he found that worked better than using 28.

Ed was active on 2 m AM before those days and when FM came along he joined in the activity, probably hoping that an interest in 2 m SSB would develop in some of those operators. Well it did in some cases. In the 70s I recall he had a weekly sked with Alex VK2AAK (SK) at Kulnura on 144.1 SSB using 80 m for liaison.

Until retiring in the late 1980s he was the head of an electronics lab in the Australian National University, School of Earth Sciences. He often worked in the lab during weekends but had a radio running on the 2 m simplex calling frequency in the background and could sometimes be heard answering a caller, after the radio had warmed up. On one occasion there was an Es opening to VK4 on 2 m FM, Ed made the contact but everyone else just heard about it afterwards.

Ed played an active and important role in the local radio club. In the late 50s or early 60s he built the AM station that was operated by VK1ACA at Riverside, took committee positions, and when it came time for the radio club to become a division of the WIA, took on the Federal Councillor role very effectively. Many delegates to WIA Federal conventions will recall his participation in those conferences.

Starting around the late 90s, he gravitated towards the repair of test equipment. He had become renowned for his abilities and apparently had a steady stream of faulty equipment to repair. His personal collection of test equipment was impressive.

However in recent years the health of his partner deteriorated and he was increasingly diverted by the need to support and care for her. When I met him at the WIA AGM in Canberra, May 2015, he told me that Biruta had recently passed away, adding matter-of-factly "that is the only reason I can be here". However I am glad to have had that short time with him last year at the AGM dinner to chat about field days and other matters.

It transpired that later in the year his own health deteriorated greatly and he was hospitalised with a lung infection from which he never recovered. He did not have any children and his sister had passed away years before.

Ed was a good friend who had gradually dropped out of contact with all of us. It was sad to find that someone we knew so well had become distant and that we could have been so unaware of his situation.

RIP Ed.

Andrew Davis VK1DA/VK2UH

Silent Key

Daniel (John) Bisgrove VK4ZJB

John aged 73 passed away on 3 December 2016 after ill health.

John will be remembered as a dedicated 6 m DX enthusiast with many years of achievements on that band.

His interests in radio at an early age lead to a traineeship with the Department of Civil Aviation. On graduation, John worked in DCA Brisbane workshops refurbishing transmitters. He then worked in various communications and TV repair roles in Brisbane before retiring to Gympie.

VK4ZJB was issued in May 1960, just after John turned 17 years old. He also operated as VK4KK for about 10 years from 1988. This call allowed HF SSB liaison on 10 m for 6 m contacts. He operated voice modes and CW. John proudly stated his CW was all key and phones. He shunned EME and digital modes. He was proud that all his equipment other than the transceiver was home-brew.

John operated from Dayboro Mountain, 25 km north of Brisbane, for some 35 years. The distance from Brisbane and a vertically polarised array allowed QRO operation in the difficult "CH0 - Brisbane" days and beyond. John was one of the first operators in Brisbane to operate on the 50 MHz segment on the closing of CH0 Darling Downs.

John was awarded 6m DXCC (Mixed, No. 267 and Phone, No. 32309) for his operations from QG62. His most interesting contact was on 3rd Apr 2001, long path across Ireland to LU8MB Argentina FF57, a distance of over 28 thousand kilometres. John recorded a final 6 m tally from the Dayboro site of mixed 115 and phone 105 (ARRL accredited).

While John was also a keen 2 m operator, 6 m was his passion.

After his "retirement" to Gympie, John continued his 6 m operation albeit with a more modest station. His characteristic CW calls were heard from early in most 6 m band opening. During local rag-chews, John would comment on the ever degrading sunspot cycles and reminisce on the past adventures when conditions were better.

John will be sadly missed.

George VK4AMG

SOTA & Parks

Allen Harvie VK3ARH

Congratulations to Warren VK3BYD who has become our first CW Mountain Goat.

Warren was bitten by the hiking and portable radio bug many years ago. With KRMNPA activations in the local area, he was ready to go when SOTA first arrived in VK (2012).

Photo 1: VK3BYD, a Mountain Goat.

This was early days for SOTA in VK. In 2012, CW chasers were not as plentiful as SSB. The decision to activate CW only was a brave one. His first activations took two hours to gain the required four contacts. This did not put Warren off.

Now it is a lot easier, depending on band choices, as you can generally get the four with one spot on SOTA Watch and average of about seven stations per activation. Persistence has paid dividends: after for years, 143 activations and a total of 53 different call signs appearing in the SOTA log book. Warren was qualified as SOTA Mountain Goat. With only two broken squid poles during this period, clearly he has not tried hard enough.

Equipment has changed little. Warren has built two KD1JV radios (ATS4 and MTR). The MTR and the ATS have been on plenty of activations each, the ratio would be 70/30 to the ATS because of the five bands. Lightweight antennas are deployed fitting the low weight requirements for remote activations. Starting with an end fed for 40/20 then moving onto the L match to increase band flexibility. For the L match either a 20 m or 14 m length of wire is used.

Warren's decision to pursue CW only activations and the selection of remote high value summits has helped shape VK SOTA. This approach has allowed chasers who prefer CW to participate and those of us with poor CW skills had to practice to gain the desirable summits. Real credit goes for dragging other activators (myself include) into the CW world.

Warren has maintained a blog of activations *https://vk3byd.wordpress.com/* worth a read for any activators looking at remote activations.

Activations of note include:

Nov 2014. Evening activation successfully working 16 EU CW contacts from The Hump (VK3/VE-019).

March 2015. Four summits on the AAWT in Alpine NP.

This activation was with Wayne VK3WAM and Allen VK3HRA. This area is challenging country requiring long walking and remote camping to achieve four high value summits. Having three operators on the same summit can make things interesting especially when two are avid CW operators. This is a beautiful area of the Victorian Alps and I would recommend anyone who has the legs to visit these summits.

November 2015. For the KRMNPA weekend, he headed off to the Burrowa Pine Mountain NP; this park has four valid SOTA summits

Photo 2: VK3BYD and VK3WAM on Mt Despair (VK3/VE-043).

Saturday 26 and **Sunday 27 November 2016** was the 2016 VKFF Activation Weekend for the World Wide Flora Fauna program.

There was activator representation from all States and Territories around Australia, except for the Northern Territory (VK8). Logs are still being processed but early results suggest there were around 40 different parks activated on Saturday and another 40 or so on Sunday.

including Mt Burrowa (VK3/VE-072) & Black Mountain (VK3/VE-093). Warren describes this as his toughest activation. Mt Burrowa was a 12 km around trip through rough trackless scrub that cost a watch.

Congratulations again to Warren VK3BYD, it has been a pleasure to work you on many summits and to activate with you. Keep up the great work.

Activation weekends

November saw two Park activation weekends. The purpose of each of these weekends is to provide a condensed weekend of portable activity. It allow as many Hunters and Activators to consolidate contacts as they work towards their Award goals.

The extended weekend of Friday 11 to Monday 14 November 2016 was the annual Keith Roget Memorial National Parks Award (KRMNPA) activity weekend – the fifth occurrence of the event. The event is coordinated by Tony VK3XV / VK3VTH on behalf of Amateur Radio Victoria and provides opportunities for Chasers to hunt out Parks.

23 dedicated and enthusiastic Amateur Radio operators activated 43 unique VK3 National Parks. Once again in 2016, we have much welcomed Activators making the journey from VK2 and VK5: John VK2AWJ/3, Col VK5HCF/3, Tom VK5EE/3, Paul VK5PAS/3, David VK3TUN (also VK5DG) & Tim VK5AV/3 were on air at some point across the period.

Of course, there were many of the regular VK3 Portable activators on the air waves: Allen VK3ARH, Warren VK3BYD, Peter VK3PF, Peter VK3TKK, Hiro VK3EHG, Peter VK3ZPF, Mick VK3PMG, Norm VK3XCI, Rex VK3OF, Greg VKBRQ, Bernard VK3AV, Joe VK3SRC, Johnno VK3FMPB, Julie VK3SRC, Leigh VK3SG, Tim VK3MTB & Tony VK3XV.

VK7 Update

The first of November 2016 saw the first major update of the VK7 Association and 101 newly identified summits went live, making the total summit count 796. There is also an updated Association Reference Manual which has a range of updates and the new summits listed. A huge thank you to Andrew Ryan VK3ARR - Asia-Pacific member of the Management Team - who provided some very nice and easy to use GIS tools for summit checking.

Thanks Andrew.

VK4news BARC

Les Neilson VK4FAEB

Silent Key

Don Johnman VK4DS

Donald Graham JOHNMAN, late of Chelmer.

Don passed away peacefully on 28/10/2016 aged 87 years and beloved husband of Ellen and cherished father and father-in-law of Neil and Julie and Julie and Ward. He was a much loved 'Poppa' to Daniel, Christopher, Aaron, Melissa and David and his three great-grandchildren. A Private Family Gathering was held.

Don became a life member of BARC after long years of serving as President and Treasurer for the club. He was always an active member in the clubs 2 m and 10 m nets and a keen DXer in SW and MW using his home brew crystal sets and loop antennas.

He also experimented with Slow Scan TV among the members and around the world too.

Don was a friendly, softly spoken member but a little hard of hearing too in his later years; he used to sit up front in all meetings to better hear the speaker.

But that didn't stop Don as he was a keen participant in the club activities for as long as he physically could while Peter VK4COZ happily chauffeured him to and from meetings.

We remember you Don.

Have a great Day

Les Neilson VK4FAEB

Rochedale Sth Qld

BARC President.

DX Awards

Marc Hillman VK3OHM

Below are listed all New awards issued in Nov/Dec 2016, plus all updates to DXCC awards. Go to *http://www.wia.org.au/members/wiadxawards/about/* to use the online award system.

New awards

Antarctic

#	Call	Name	Mode
94	VK2FR	John Sharpe	Open

DXCC Multi-band (1)

#	Call	Name	Mode	Band	Count
146	VK2RT	Bruce Beresford	Digital	20m	108
147	VK4BRT	Benjamin Beresford	Open	20m	109
148	VK3GA	Graham Alston	CW	20m	114
149	VK3GA	Graham Alston	Digital	20m	113
150	VK3TZ	Tony Burt	Phone	20m	270
151	VK6DW	Ian Cook	Phone	20m	105
152	VK6DW	Ian Cook	Digital	20m	103

DXCC Multi-band (3)

#	Call	Name	Mode	Band	Count
97	VK6DW	Ian Cook	Open	40-20-15m	389

DXCC Multi-band (5)

#	Call	Name	Mode	Band	Count
67	VK3WH	Shaun Stoddart	Open	40-30-20-15-10m	834

DXCC Multi-band (7)

#	Call	Name	Mode	Band	Count
32	VK6IR	Stephen Chamberlain	Digital	40-30-20-17-15-12-10m	892

DXCC Multi-mode (CW)

#	Call	Name	Count
246	VK6DW	Ian Cook	108
247	VK2FR	John Sharpe	100

DXCC Multi-mode (Digital)

#	Call	Name	Count
59	VK4BRT	Benjamin Beresford	102
60	VK6BMW	Richard Grocott	101
61	VK4CC	Colin Clark	100

DXCC Multi-mode (Open)

#	Call	Name	Count
442	VK3JL	David Rolfe	103
443	VK5PAS	Paul Simmonds	242

DXCC Multi-mode (Phone)

#	Call	Name	Count
614	VK4BRT	Benjamin Beresford	102

Grid Square

#	Call	Name	Mode	Band
259	VK4YMB	Andrew Burns	Digital	HF
260	VK6AS	Andrew Smith	Open	HF
261	VK6AS	Andrew Smith	Digital	HF
262	VK3JL	David Rolfe	Phone	HF

IARU Worked All Continents (Basic)

#	Call	Name	Mode	Band
68	VK8GM	Gregory Mair	Open	
69	VK8GM	Gregory Mair	CW	
70	VK8GM	Gregory Mair	Phone	
74	VK7CW	Steven Salvia	Digital	

Worked All VK Call Areas HF

#	Call	Name	Mode
2365	VK6WE	Daniel Bedo	Phone

DXCC updates

DXCC Multi-band (1)

#	Call	Name	Mode	Band	Co
43	VK7CW	Steven Salvia	CW	20m	26
83	VK6APK	Aleksandar Petkovic	CW	30m	20
95	VK3VH	Shaun Stoddart	CW	20m	13
97	VK6WX	Wesley Beck	CW	20m	11
110	VK3TZ	Tony Burt	CW	30m	14
54	VK3EW	David McAulay	Digital	20m	18
146	VK2RT	Bruce Beresford	Digital	20m	10
152	VK6DW	Ian Cook	Digital	20m	10
15	VK5PAS	Paul Simmonds	Open	20m	21
17	VK6WX	Wesley Beck	Open	20m	19
29	VK3HJ	Luke Steele	Open	20m	30
55	VK5BC	Brian Cleland	Open	20m	23
61	VK4CC	Colin Clark	Open	20m	22
75	VK2TTP	Peter Pratt	Open	20m	12
76	VK3JLS	John Seamons	Open	20m	17
90	VK6DW	Ian Cook	Open	20m	15
96	VK3VH	Shaun Stoddart	Open	20m	22
145	VK2RT	Bruce Beresford	Open	20m	12
16	VK5PAS	Paul Simmonds	Phone	20m	21
37	VK5BC	Brian Cleland	Phone	20m	20
39	VK6WX	Wesley Beck	Phone	20m	15
62	VK4CC	Colin Clark	Phone	20m	17
98	VK3VH	Shaun Stoddart	Phone	20m	17
151	VK6DW	Ian Cook	Phone	20m	10

CC Multi-band (3)

Call	Name	Mode	Band	Count
VK3EW	David McAulay	CW	30-20-17m	860
VK3HJ	Luke Steele	CW	30-20-17m	754
VK6IR	Stephen Chamberlain	CW	40-20-15m	600
VK7CW	Steven Salvia	CW	30-20-17m	722
VK3VH	Shaun Stoddart	CW	40-20-15m	380
VK3TZ	Tony Burt	CW	40-30-15m	382
VK6IR	Stephen Chamberlain	Digital	40-20-15m	452
VK3EW	David McAulay	Digital	30-20-15m	449
VK7CW	Steven Salvia	Open	30-20-17m	767
VK5BC	Brian Cleland	Open	20-17-15m	667
VK3TZ	Tony Burt	Open	20-15-10m	734
VK6APK	Aleksandar Petkovic	Open	40-30-20m	695
VK3VH	Shaun Stoddart	Open	40-20-15m	593
VK3HJ	Luke Steele	Phone	40-20-15m	524
VK5BC	Brian Cleland	Phone	20-15-10m	585
VK3TZ	Tony Burt	Phone	20-15-10m	667
VK7CW	Steven Salvia	Phone	20-15-10m	500
OH8LXT	Veikko Pennala	Phone	20-17-15m	465

CC Multi-band (5)

Call	Name	Mode	Band	Count
VK3EW	David McAulay	CW	40-30-20-17-12m	1330
VK7CW	Steven Salvia	CW	30-20-17-15-12m	1094
VK3TZ	Tony Burt	CW	40-30-20-15-12m	597
OH8LXT	Veikko Pennala	CW	20-17-15-12-10m	816
VK6IR	Stephen Chamberlain	Digital	40-30-20-15-10m	686
OH8LXT	Veikko Pennala	Digital	20-17-15-12-10m	829
VK3TZ	Tony Burt	Open	40-20-15-12-10m	1087
VK3HJ	Luke Steele	Open	40-30-20-17-15m	1337
VK5BC	Brian Cleland	Open	20-17-15-12-10m	1078
VK7CW	Steven Salvia	Open	30-20-17-15-10m	1179
VK6APK	Aleksandar Petkovic	Open	40-30-20-15-10m	942
VK3SX	Bob Robinson	Open	40-20-17-15-10m	913
OH8LXT	Veikko Pennala	Open	20-17-15-12-10m	1204
VK3VH	Shaun Stoddart	Open	40-30-20-15-10m	834
VK5BC	Brian Cleland	Phone	20-17-15-12-10m	909
VK3SX	Bob Robinson	Phone	40-20-17-15-10m	892

CC Multi-band (7)

Call	Name	Mode	Band	Count
VK3EW	David McAulay	CW	80-40-30-20-17-15-12m	1706
VK3HJ	Luke Steele	CW	40-30-20-17-15-12-10m	1543
VK7CW	Steven Salvia	CW	40-30-20-17-15-12-10m	1441
VK6IR	Stephen Chamberlain	Open	40-30-20-17-15-12-10m	1709
VK3EW	David McAulay	Open	40-30-20-17-15-12-10m	2290
VK3HJ	Luke Steele	Open	40-30-20-17-15-12-10m	1743
VK7CW	Steven Salvia	Open	40-30-20-17-15-12-10m	1537
VK3TZ	Tony Burt	Open	40-30-20-17-15-12-10m	1390
VK6APK	Aleksandar Petkovic	Open	80-40-30-20-17-15-10m	1155
VK5BC	Brian Cleland	Open	40-30-20-17-15-12-10m	1402

DXCC Multi-band (9)

#	Call	Name	Mode	Band	Count
12	VK3EW	David McAulay	CW	160-80-40-30-20-17-15-12-10m	2017
15	VK3HJ	Luke Steele	CW	160-80-40-30-20-17-15-12-10m	1796
1	VK3EW	David McAulay	Open	160-80-40-30-20-17-15-12-10m	2770
13	VK3HJ	Luke Steele	Open	160-80-40-30-20-17-15-12-10m	2016

DXCC Multi-mode (CW)

#	Call	Name	Count
211	VK7CW	Steven Salvia	299
222	VK5BC	Brian Cleland	175
223	VK6WX	Wesley Beck	175
224	VK3TZ	Tony Burt	273
225	VK4CC	Colin Clark	176
231	VK3VH	Shaun Stoddart	248
245	VK4CAG	Graeme Dowse	120
246	VK6DW	Ian Cook	108

DXCC Multi-mode (Digital)

#	Call	Name	Count
20	VK3EW	David McAulay	268
27	VK3HJ	Luke Steele	172
29	VK5BC	Brian Cleland	182
31	VK6XT	Richard Hill	138
33	VK7CW	Steven Salvia	133
41	VK6DW	Ian Cook	127
54	OH8LXT	Veikko Pennala	280
56	VK2BYI	Christopher Fredericks	124
57	VK3VH	Shaun Stoddart	106
58	VK2RT	Bruce Beresford	124

DXCC Multi-mode (Open)

#	Call	Name	Count
62	VK4CC	Colin Clark	275
350	VK4CAG	Graeme Dowse	319
376	VK6WX	Wesley Beck	242
386	VK6XT	Richard Hill	201
388	VK5BC	Brian Cleland	292
392	VK3VTH	Tony Hambling	140
407	VK6DW	Ian Cook	192
413	VK3WE	Rhett Donnan	135
415	VK3VH	Shaun Stoddart	290
421	VK4BRT	Benjamin Beresford	130
431	VK2RT	Bruce Beresford	143
440	VK2BYI	Christopher Fredericks	144

DXCC Multi-mode (Phone)

#	Call	Name	Count
556	VK4CAG	Graeme Dowse	316
573	VK6WX	Wesley Beck	206
582	VK5BC	Brian Cleland	279
591	VK4CC	Colin Clark	215
597	VK3VH	Shaun Stoddart	234
599	VK6DW	Ian Cook	145
613	OH8LXT	Veikko Pennala	250

DX Talk

Luke Steele VK3HJ

The solar cycle continues to decline with very low solar flux indices and a number of days with zero sunspots recorded. The higher bands have been very quiet, apart from the usual summer sporadic E propagation. Even 20 m has not been as reliable as even just a few months ago, but still turns up some good opportunities for the vigilant. Over the past few months, 40 m has probably been the best band for DX with good signals from all over the world reported. Storm static has been significant for the past few months, making low bands difficult, but some good DX is there to be had for those willing to listen through the noise. The most consistent signals on 160 m have been Asian stations, mostly Japan, with some Russian Far East stations, Korea and Taiwan. On 7 December around 1830 - 1900 UTC (sunrise) there was a surprise opening from your author's station on 160 m to Europe. Subsequent mornings revealed no similar openings. Top Band should be opening to Europe again around our sunrise, and sometimes as late as 20 minutes after, through February into March.

DX worked in December includes 3B9HA Olof on Rodriguez Island, and IOTA AF-050 Expedition 5T5TI Tidra Island, Mauritania. XW3DT Alex in Vientiane, Laos is active daily. 7Z1HL Harry in Riyadh, KSA is also on almost daily. A93JA Max is very active from Bahrain. VK9NM was Matt VK1MA operating from Norfolk Island. ZF2WE Jeff made 7711 QSO in around 9 and a half days from Cayman Brac, in the Cayman Islands. 3D2AG Tony now has an 80 m antenna up and is on CW most evenings from Fiji.

Upcoming DX

DXpedition activity scheduled for February includes the following:

ZS8Z, **Prince Edward and Marion Island.** ZS1BCE David arrived at Marion Island at the end of December and plans to be on air as ZS8Z when he has sorted out storm-damaged HF antennas. He will be there for 17 months. QSL via LotW or ZS1LS.

TL8TT, **Central African Republic, 1** - 14 February. The Italian DXpedition Team will be active on 160 - 10 m, CW and SSB, with RTTY restricted to 20 m. They plan a live online log, subject to Internet availability. For more information see *http://www.i2ysb.com/idt/*

FO/a, **Austral Islands** (Raivavae OC-114) 13 February - 3 March. Madison W5MJ, Keith VE7KW, Neil VA7DX, and Bob W5RF will be active 160 - 10 m, CW, SSB, RTTY. See their website at *http://australs2017.com/* for more information.

PY0F/PY2QI, **Fernando de Noronha** (SA-003) 15 - 21 February. Erwin PY2QI plans activation on 40 – 10 m on CW. QSL to PY2QI direct.

VP6EU, **Pitcairn Island** (OC-044) 16 February - 5 March. Uwe DJ9HX, Ernoe DK2AMM, Hans DL6JGN and Ron PA3EWP will be operating on 160 - 10 m, CW, SSB and RTTY. Their operating location will be outside Adamstown on top of the hill near the old radio station, so hopefully we'll hear them on the higher bands too. QSL via LotW, Club Log or direct to DK2AMM.

For more information see their website *http://www.pitcairn2017.de/*

CE0Y/DF8AN, **Easter Island** (SA-001) 10 - 17 February. Michael DF8AN will be operating mainly CW, and RTTY, PSK, MFSK with 100 watts and wire antennas. Michael still likes to receive your QSL card, so QSL direct or bureau to DF8AN.

CE0Z/DF8AN, **Juan Fernandez**, Robinson Crusoe Island (SA-005) 21 - 24 February. After his visit to Easter Island, Michael will travel to the Juan Fernandez Archipelago. He has chosen to focus on CW and digital modes, as he feels SSB has been previously well catered for. Before, in between, and after the island activations, Michael will be operating as CE3/DF8AN. He does not like electronic QSL, so you will need to send him your card for confirmation.

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

Other news

There will be a number of special event activations during the whole of 2017, including:

OZ100DVI, commemorating the 100th Anniversary of the Treaty of the Danish West Indies, sold to the USA, and thereafter named United States Virgin Islands. The callsign will be activated in connection with various events, clubs and portable operations by members of EDR Ham Radio Club of Skanderborg. For further information see *qrz.com* or visit their web page *http://oz100dvi.oz7skb.dk/*

Irish Radio Amateurs will be on air with nine special callsigns EI11WAW through to EI99WAW. Each callsign will be associated with one of the nine counties making up The Wild Atlantic Way (a tourism route on the west coast of Ireland) and will have its own distinctive QSL card depicting a highlight of the county linked to this callsign. For more information The Wild Atlantic Way counties, QSL and Award information, see *qrz.com* for the participating stations or *http://www.irts.ie*

A Brief Review of DXing in 2016

The year started off with some

very highly ranked entities on air. An IOTA expedition to Campbell Island (ZL9A) was a nice start, then Palmyra Atoll (K5P), both of which were very easy to work from our part of the world. Next was South Sandwich (VP8STI), followed by South Georgia (VP8SGI) in early February.

March saw quite a few DXpeditions on air, including Guinea (3XY1T), Marquesas (TX7EU), Eastern Kiribati (T32CO), Equatorial Guinea (3C7A) and Cocos-Keeling (VK9CK). Then the "Big One" Heard Island (VK0EK), not activated since 1997.

In April we had Juan de Nova Island (FT4JA) while VK0EK continued operations, then Iran (EP2A).

Five of the Top Ten Most Wanted entities had been activated: K5P, VP8STI, VP8SGI, VK0EK and FT4JA. The entity of Kingman Reef (KH5) was moved to the Deleted Entities list by the ARRL Awards Committee on 29 March, and now is considered part of the Palmyra/Jarvis entity.

Spratly Islands (9M0Z) was activated in May. It will be interesting to see what happens in this disputed island group, among others in the South China Sea, with the increased presence of China, and their island-building activities.

Not much happened over winter, and it was August before a group of Ukrainians activated Zanzibar Island, Tanzania (5H1XX). Sable Island was back on air (CY9C) and Pitcairn Island (VP6J) was activated by a pair of Japanese operators Nob JF2MBF and Ken JA2FJP, who also operated from S Cook, Niue, Tuvalu and Fiji.

In September, Comoros (D66D) was activated, and Solomon Islands (H44GC). Uli DL2AH continued on Pitcairn Island as VP6AH until November.

October saw activity from Temotu Province (H40GC), Central Kiribati (T31T) and Chatham Island (ZL7G).

In November, all the "Xs" were on air, with Cambodia (XU7MDC), Vietnam (XV1X and XV9NPS), Laos (XW0YO), Macau (XX9TXN and XX9TKB) and Myanmar (XZ1A).

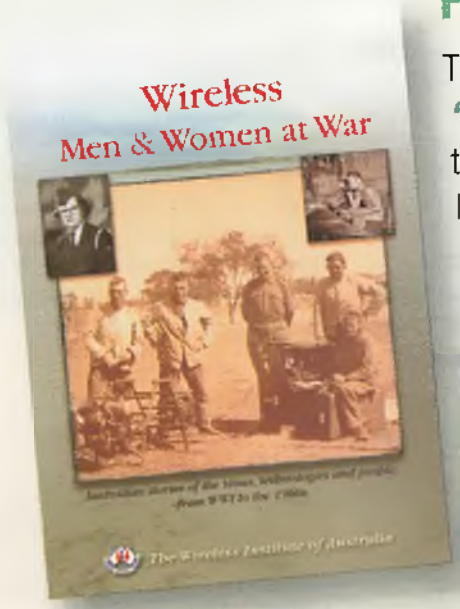
Propagation held on for at least the first half of the year, but western Africa became more difficult to work, compared with the past few years. Solar Cycle 24 is clearly in decline, and we now look to the lower frequencies for our DX.

In 2017, the only announced Top Ten Most Wanted activation is Baker and Howland in September, but there are some hints of a Bouvet activation, other than the early 2018 3Y0Z DXpedition.

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

73 and good DX,
Luke VK3HJ.

Pre-sales of history book begin



The WIA Bookshop is now taking orders for the ***'Wireless Men and Women at War'*** publication that details the history of wireless communications before World War I, and in later years and conflicts.

The price is **$29.95** plus postage *for members* and **$35** for *non-members*, plus postage of $9.

The pre-sale period is now available, with a discount applying to orders received by December 21.

WIA Historian *Peter Wolfenden VK3RV* has fully researched the content. Together with numerous additional contributors, the WIA Board fully supports this timely record of history as a must read volume.

The WIA Publications Committee is proud to make it available and after printing the book will be a mail order item from the WIA Bookshop.

http://www.wia.org.au/members/bookshop/page_data.php?id=258

TAC Notes

John Martin VK3KM

80 metre digimode segments

For many years our 80 metre band plan has included a digital segment at 3620 - 3640 kHz. The original reason for adopting this segment was the licensing restrictions that applied at the time to Novice operators.

These restrictions no longer apply, so the band plan should be updated to bring it into line with accepted operating practices. In particular, we should if possible align our digimode segment with the IARU band plans.

At its last conference in October 2015, IARU Region III adopted 3580 - 3600 kHz as the recommended segment for digital modes. But this is not quite adequate for our needs, and there is already significant digital activity below 3580 kHz. In Regions I and II, and in New Zealand, the digimode segment is a more practical 3570 - 3600 kHz. It would be logical for us to adopt the same segment.

So, the proposal is to align our digimode segment with the rest of the world by moving it to 3570 - 3600 kHz. The existing digital segment at 3620 - 3640 kHz could then revert to SSB use. Existing SSB activity between 3535 and 3570 kHz would be unaffected. There would however be a need for existing SSB activity between 3570 and 3600 kHz to move further up the band.

There is also a need for a small DX window to allow VK - JA digital contacts. The main digital segment in the JA band plan is at 3520 - 3535 kHz. This is used for digital contacts within Japan but is unsuitable for overseas contacts because this segment is used for CW in every other country outside Japan. However the JA band plan also includes a DX window for digital contacts between JA and overseas stations in the segment 3535 - 3575 kHz. This allows for JA - VK digital contacts without eating into the small CW segment at the low end of the band.

Any comments on the above proposal will be gratefully received. *tac@wia.org.au*

30 metre SSB operation

There has been some discussion of interference problems that can occur on narrow bands such as 30 metres. This band is only 50 kHz wide and in most countries, the authorities have restricted the available operating modes to CW and narrow band digital modes.

Australia is a little different because ACMA appears to have the policy that if a mode can be used within the available spectrum of a particular band, it should be permitted. Thus we have, for example, SSB activity permitted in the 630 metre band, even though the whole band is only 7 kHz wide. So the resolution of any interference issues is largely a matter for amateurs to settle amongst themselves. And the best way of doing that is if we can develop band plans that are seen to be fair and deserving of support.

So - to 30 metres. The band is only 50 kHz wide, and Australia is unique in allowing SSB activity. In other countries the only permitted modes are CW and narrow band digital modes. The inevitable result is interference problems.

One way of reducing interference would be to include some recommended voluntary restrictions in the band plan. For example, on 630 metres the band plan recommends that SSB should be used only during daylight hours. This provision could be added to the 30 metre band plan. Another option would be to recommend that SSB only be used within a restricted range of frequencies, for example 10120 - 10130 kHz.

Comments on this issue would be appreciated.

IARU Region III Band Plans Review

Further rationalisation of all HF band plans - not just 80 metres - is also on the agenda. Further details will be available on the Band Plans Data page of the WIA web site. IARU Region III is conducting a review of band plans with a view to harmonisation between Region III and the other two IARU regions. An interim report will be released for discussion by member societies in early 2017, then a final version will be presented to the next Region III conference in Seoul (2018).

Over to you

Fragile Infrastructure

When I worked helping people install VoIP systems on their mobile data supplied internet I often suggested that people could do away with their home phones.

Apart from the fact that the quality of calls was rubbish, many people realised for themselves that their underground copper wire powered hand sets were still good in fire and other emergencies.

They all knew that relying on fragile infrastructure that was surrounded by dense forest was a recipe for disaster.

With the advent of the NBN and the total reliance on the availability of mobile phone signals and Internet for getting help, we have allowed ourselves to be placed more at risk.

Could this be where we come in?

Imagine suggesting to people in this situation that they buy cheap equipment, learn a bit of theory and get licensed to use radio communication for self-training and emergency communication.

Doesn't that sound a bit like a Foundation licence?

Tony Falla VK3KKP
6 Lyttleton Ave
Castlemaine
Vic 3450
0413 690 025

VK3news Geelong Amateur Radio Club

Tony Collis VK3JGC

WIA Grant to the GARC

As part of the WIA 2015 Grant Scheme, the GARC applied for a grant towards the costs involved for the work carried out by the Club at the Queenscliff Maritime Museum on upgrading the facilities on the GARC Marconi Hut, under the project management of Calvin VK3ZPK. Lou VK3ALB, who was President at the time of application and Chris VK3ACG, the current President of the GARC, were pleased to accept the subsequent generous $770 grant from the WIA.

Photo 1: WIA Director Robert VK3DN presenting a cheque to Chris VK3ACG.

A Presentation by Amateur Radio Victoria

Barry VK3PV and Peter VK3ZPP took time out at the GARC club house in Geelong to explain the role that ARV plays within amateur radio in the state of Victoria. This covered the 44 repeater sites throughout Victoria that the ARV pays the licence fees for; involving a 6 metre site, two 10 metre sites and an ATV site, the remainder being VHF and UHF repeaters.

Peter VK3ZPP, who is also a member of the GARC, identified the balance between those Radio Clubs who maintain "their own sites", like the five that the GARC maintains, and those that need assistance from ARV in respect of repeater equipment, antennas and cabling and the installation of same, that the ARV facilitates.

Most of those at the GARC involved in the maintenance of the repeater sites are also members of the ARV, this is necessary so they are covered by the ARV insurance for any accidents that might occur on site.

The presentation covered a wide variety of topics regarding repeater frequency allocation issues and relations with the owners of the repeater sites in both access and costs.

Altogether, an illuminating and very interesting evening was had by all of those present.

Photo 2: Barry VK3PV and Peter VK3ZPP.

VHF/UHF - An Expanding World

David K Minchin VK5KK

Introduction

Happy New Year! This month we have a report on Summer Es including 144 MHz contacts out to 3000 km! We have our first EME report as well as weather radar during Tropo openings and the last in the Microwave Local Oscillator series.

Summer 144 MHz Es including FK8!

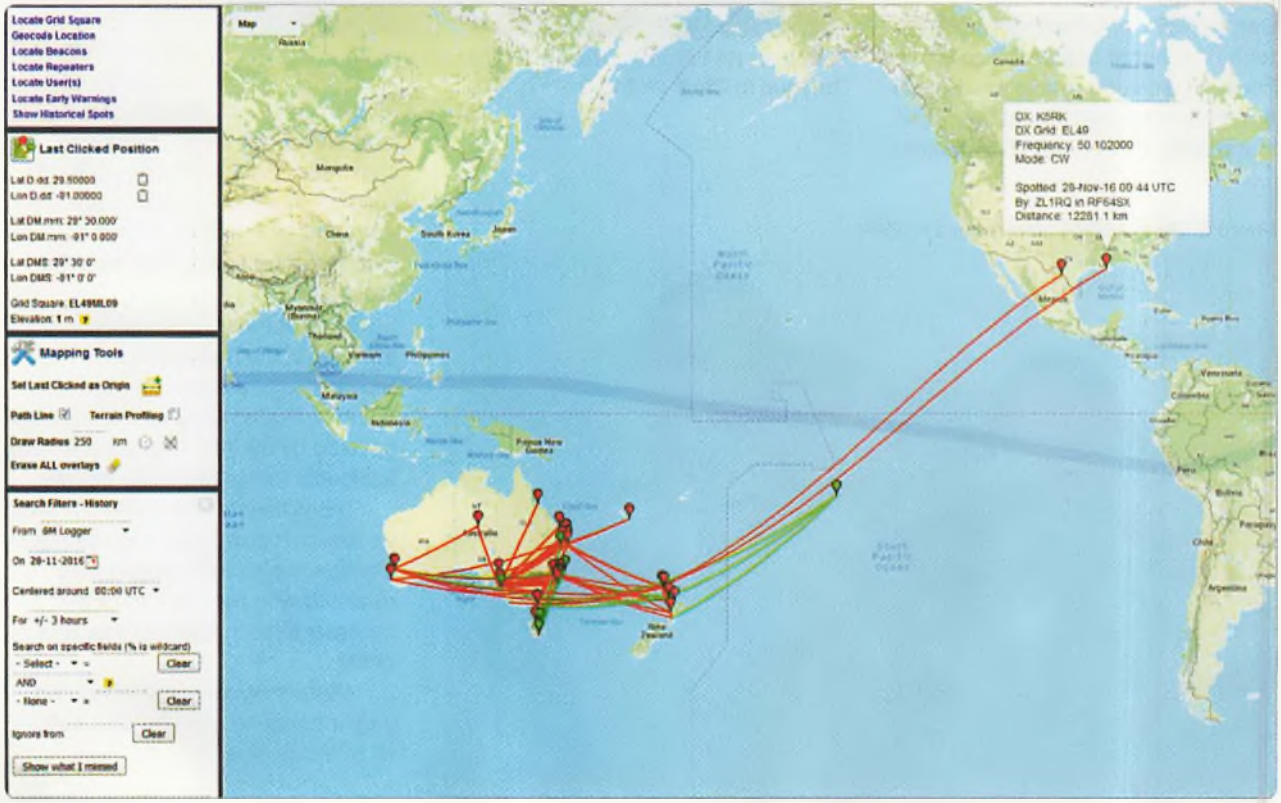
The summer Es season cranked up from mid-November onwards with a variety of long distance including multi-hop Es (and some F layer I suspect).

Colin VK5DK reports ... *"The first opening that I observed here in Mt Gambier on 50 MHz was on 15 November 2016 with a contact to VK4EK followed by a contact with ZL3RC on 16 November 2016 at 0800 UTC. No other contacts were made until 20 November 2016(UTC) with contacts on 50 MHz to VK2YO, VK4AMG, VK4VN, VK4YH and VK5BC on Back Scatter. The signals were very strong so I decided to call towards VK4 on 144 MHz. I was rewarded with contacts with VK4OX, VK4KAY, VK4DH and VK4REX. The opening concluded with 7 more contacts into VK4 on 50 MHz.*

On 24 November 2016, 50 MHz opened into VK4 followed by an opening to ZL North Island with contacts to ZL1AKW & ZL1TBE. Shortly afterwards 144 MHz opened for the second time to VK4 with contacts to VK4EK, VK4BKP, VK4FNQ, VK4OX, VK4ADM, VK4KSY and VK4CDI. Later on 50 MHz opened to Perth with a contact to VK6PKT.

On Saturday morning 26 Nov (2320 UTC 25 Nov) contacts on 50 MHz with VK2FA, VK2BXT and VK3II (Backscatter) gave indication that conditions on 144 MHz may be good again. I was able to contact VK2YO on 144 MHz who is near the VK4 border. At the same time, VK3s from Melbourne and Gippsland had a very good Es opening on 144 MHz to Southern VK4 with many good S9 contacts being made. At around 0100UTC Remi FK8CP starting to make contacts into VK3 on 144 MHz with very strong signals being passed both ways. I was lucky enough to make contact with Remi FK8CP on 144 MHz at 0130 UTC with 5 x 5 reports both ways. Remi's signal did peak up to S8 at times, a

Photo 1: 50 MHz Logger 28/11/2016.



distance of 2999 km."

Reml FK8CP (RG37FR) was worked on 144 MHz by VK5DK (2999 km), VK3AMZ (2719 km), VK3DXE (2686 km), VK3OE (2659 km) and VK3VG (2559 km) between **0120 and 0155 UTC on 26/11/2016**

The pattern of good Es conditions extended from 21/11/2016 till at least 28/11/2016. The 6 m Logger screen grab from 28 November shows the extent of 50 MHz activity just on that day including ZL1RQ spotting Larry K5RK (Texas) on 50.120 MHz CW, a distance of 12281 km. I suspect this one might have had some F layer assistance rather than being Es all the way given the time it occurred but who knows!

The FK8 144 MHz contacts (26/11/2016) occurred just before the Spring Field Day started. Later during the Field day, I heard a number of JA stations on 50 MHz CW whilst portable around 230 UTC just using my ¼ wave whip on the car! Again more likely a combination of strong Es and some F layer, shame I did not have a CW key with me to work them!

EME Report

Phil VK4CDI reports ... *"A short note about my EME activities. I am currently QRV on 144, 432, 1296, 3400 MHz and soon to be 10 GHz.*

On 144 MHz, 4 x 12 element Yagis, WA2ODO preamp and a 500 W SSPA.

On 432 MHz, 4 x 28 element Yagis, WA2ODO preamp and a 500 W GS31 amplifier.

On 1296 MHz, a 4.9 metre dish, G4DDK .22 dB NF preamp and a 250 W SSPA.

On 3400 MHz, a 3.6 metre dish, G4DDK .4dB NF preamp and a 50 W SSPA.

On 10 GHz, a 2.3 metre solid dish, a VK3XDK preamp and a 5 W SSPA.

I have an ACMA high power permit for 144/432/1296 MHz, CW and WSJT. I have tried the 10 GHz equipment with the 3.6 m mesh dish, but did not get the expected results. So far on EME, WIA DXCC #2 on 144MHz and WAC on 144/432/1296 MHz".

Digital JT modes are currently the most popular modes used for EME, the latest release of WSJT-X 1.7.0 occurred just prior to Xmas. Most of the enhancements in this update are for VHF/UHF/EME operation after a 12 month period of development through a number of test builds. Of note for EME, COFM (Constant Frequency on the Moon) and QRA64 are all quite stable now. CAT control is now much improved vs. previous versions that suffered from a few issues with certain transceivers and/or OS platforms. If you use multiple transceivers you can now set up various profiles with specific parameters for CAT control, sound cards or interfaces, transverter offsets, transmitter drive levels, etc. You can name the various profiles by transceiver or band, i.e. if you could name one "10 GHz EME" with the correct LO offset, COFM enabled with split operation, correct TX drive level and CAT control so WSJT-X can display the exact frequency "10368.225 MHz" on its GUI.

The original KV decoder has been replaced by the new FT decoder which now includes the ability for multi pass decoding on JT65 and WSPR. Full JT4 support is now included. The decoder in its current development is most likely no more sensitive on JT4 & JT65 modes than the old KV decoder. Improvements have been made in regard to decoding multiple co channel signals, mostly a bigger problem on HF than EME! From my observations, there is a definite improvement in decoding speed. Doing a side by side comparison with my two DELL E6500 (circa 2010) WSJT-X 1.7.0 on one during deep search decoding is quicker than the other using WSJT 10.

With regard to the new QRA64 mode(s), it is still early days in the development of the algorithms used in the core so it is not yet a mature mode. There some theoretical "expected" gain vs JT modes as a percentage of energy is no longer used to transmit a "pilot" carrier. It does take some time to get used to not having a tone to locate a signal but you can always send a 1270 Hz tone as you would on JT4. Rex VK7MO has been doing a great deal of work comparing QRA64 modes vs. JT4 on both EME and Rain scatter on 10 GHz with a number of the development builds. Little has been done on lower frequencies with QRA64; it will be interesting how QRA64 goes in the next 12 months.

If you use Ubuntu/Linux, WSJT-X 1.7.0 now installs as easy as it does on Windows. Previously KVASD (the KV decoder) had to be separately installed, a sometimes problematic step. Greg KI7MT set up a repository about 12 months ago and has compiled various test builds along the way. You can download the current 1.7.0 build and instructions to install on Ubuntu/Debian, just go to *https://launchpad.net/~ki7mt/+archive/ubuntu/wsjtx* If you want to build a dedicated WSJT-X station using an older Laptop, give Ubuntu or Debian a go instead of recycling the old Windows OS. Install on a SSD drive (64 MB is plenty), it will be faster than the old Windows OS it replaced and almost bullet proof. You don't need to run separate NTP time software as NTP syncing is in the OS build. So if your laptop is like one of mine (loses 4 seconds a day!) your DT will never be a problem.

If you are active on EME, still working towards being active or would like to see something discussed please send me an email and I will include in this section.

Weather Radar and Anomalous propagation

Australia has an extensive network of Weather Radar systems that have been installed by the Bureau of Meteorology over the past 30 years in capital city and strategic regional locations. There are two basic types, either high resolution Doppler or the older weather finding radar. The big Meteor 1500S S-Band Doppler radars are used in Brisbane, Sydney, Melbourne and Adelaide. In

various other regional areas, there are a variety of different types of S Band and C Band Doppler radars. There are also quite a few (16) older WF100 C-Band radars still in operation which are classified as "weather watch". S-Band radars typically operate around 2.7 - 3.0 GHz whilst C-Band radars operate mostly around 5 - 5.65 GHz. All use high gain/slow moving dish antenna with 1 to 2 degree beam width with a design range of up to 200 km at an elevation of 3000 metres.

As with any radar the aim is to track moving objects and not stationary objects like islands, hills, buildings, towers, etc! In the case of weather radar stations, each installation uses a large amount of processing to remove its unique set of "permanent echoes" under normal signal levels. However when a temperature inversion is over the area, the radar signal is contained under the layer closer to the ground increasing reflections from land based objects to the point where it can defeat the processing. More distant objects, that aren't normally line of sight and therefore not factored into processing, will also provide new reflections. The end result is what appears to be a stationary patch of rain or thunderstorm over these areas from these enhanced reflections.

Looking at the Photo you will see an example from the Buckland Park (S Band - Adelaide) radar on 23/12 2016. A quick sanity check of the satellite image on the day showed that there were no rain/ storms in these areas. The various patterns are easy to identify as they do not move, instead they "speckle" in the one spot. The intensity of the patterns peaked around 2300 UTC (as propagation usually does) then faded away as the day progressed. The strength of the reflection can be roughly gauged from the colour scale; black is perhaps the equivalent of 59+ 60 dB! Vertical soundings for the time confirmed a relatively low level inversion (550 metres), signals on the same paths were massive on 144/432 MHz and probably like that well into the GHz region.

At the time there was a moderate opening to Albany to lower VK5/3, this local hot spot was probably the bridge to the main duct. During openings to VK6, the reflection from Kangaroo Island is normally there; it has been one of the observations on the checklist for a while. If the pattern has a few black dots it's a good indication that the local inversion will support >1 GHz for a fair distance into the main duct in the Australian Bight. The black spotted reflection from the coast around Port Lincoln (240 km away) is less common and on this day even small islands in the Gulf showed significant reflections. When an inversion is more inland you will sometimes see specs from the lower Flinders Ranges 150 km north of Adelaide; these are reflections from the various wind farms!

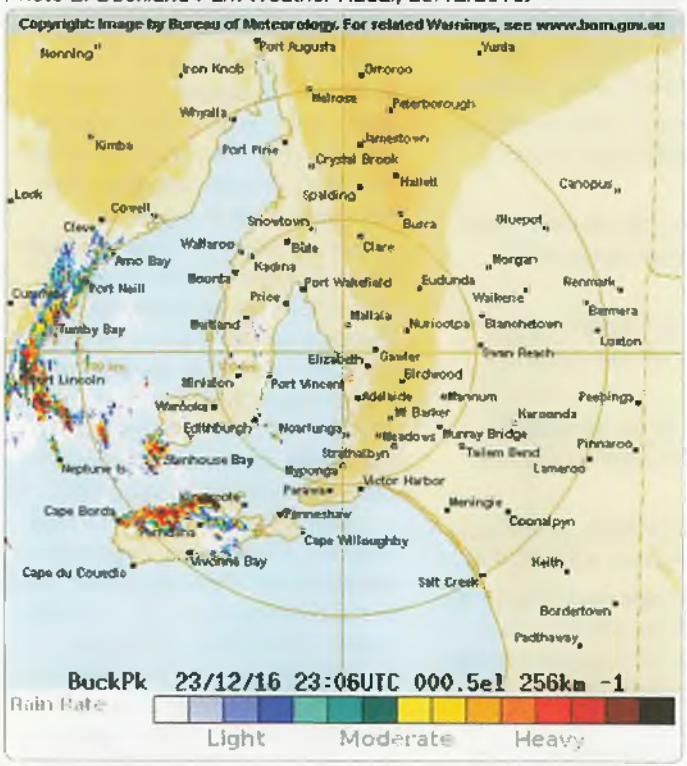
The Adelaide radar is not the only radar where reflections occur with propagation. For example the Ceduna radar sometimes will show white along the coast and south when there is a duct to VK6. The Bureau provides a very detailed assessment of the effects of "Anomalous propagation" for many of the radar sites, just go to this site and click on your state http://www.bom.gov.au/australia/radar/about/radar_coverage_national.shtml

While this isn't a replacement for Hepburn it is a very direct indication of low level ducting on various paths. Worth keeping an eye on!

The Microwave Local Oscillator Part 5

In previous parts we have discussed at length the current ADF4350/1 series (4.4 GHz). This PLL range has been around for 6 - 7 years now, the earlier ADF42** PLL range used in the Elcom PLL is now 15 years old. At the moment, the ADF43** series probably represents the best balance between cost and performance however you will still need multiplication stage(s) to reach your final LO frequency. So what has been released commercially that will go higher to eliminate a stage?

Photo 2: Buckland Park Weather Radar, 23/12/2016.



Analog Devices have recently released the ADF5355, described as a "Microwave" wideband PLL capable of operation to 13.6 GHz. It is the same footprint as the ADF435* series and uses much the same SPI interface and programming options. Phase noise performance is impressive with specs that are closer to that of a PLL with an external VCO than the ADF435* series. It uses a higher resolution 38-bit fractional modulus that means you can have frequency steps down to 36 mHz (milli-Hz) at 10 GHz.

The ADF5355 has an integrated VCO with a fundamental output frequency ranging from 3400 MHz to 6800 MHz. For operation below 6.8 GHz the VCO frequency is connected to a divide by 1, 2, 4, 8, 16, 32, or 64 stage to generate an RF output as low as 54 MHz. Typical output across the range is + 8 dBm to -3 dBm (6.8 GHz). For operation from 6.8 to 13.6 GHz the ADF5355 has an on-board doubler that will produce – 1 dBm at 13.6 GHz. The PLL block diagram gives some detail on how this all fits together.

The ADF5355 has some pin out variations so you can't use it on the same design board that you would use with an ADF435*. You wouldn't want to use FR4 board on 13 GHz anyway! Looking at various commercial design forum discussions, spur issues have been flagged when using across the full range and/or odd ball frequencies. As already discussed (especially for on-board VCO PLLs) use the best single "whole number" frequency you can get away with and optimise all settings for that.

There hasn't been a great deal of amateur experimentation with the PLL so far; the only one found is that published on GitHub by Sebastian DL3YC. Looking at other projects by his group this one would seem to have been intended for 10 GHz ATV. The Circuit has the ADF5355 PLL followed by a NLB310 MMIC to produce +5 – 10 dBm output; a Texas Instruments MSP430 processor provides SPI data to program the PLL at start up. The PCB measures 50 x 25 mm.

The design looks OK but the project is a work in progress and information is a bit sketchy. You will find the Eagle PCB files here *https://github.com/dl3yc/adf5355-eval* and the circuit/parts list here *https://aisler.net/dl3yc/adf5355-eval/adf5355_eval* The PCB has been designed to use 0.5 mm thick R4003 material, so the PCB fab isn't something your average Chinese PCB factory can do. You would probably change the processor to something like a PIC so you don't have to learn "yet another" processor architecture! If you are interested drop me an email.

That's it for the Microwave Local Oscillator series. Next month we should have an "out of the box" review of the Lime-SDR board so long as it dispatched from Crowd Supply in the next week or so!

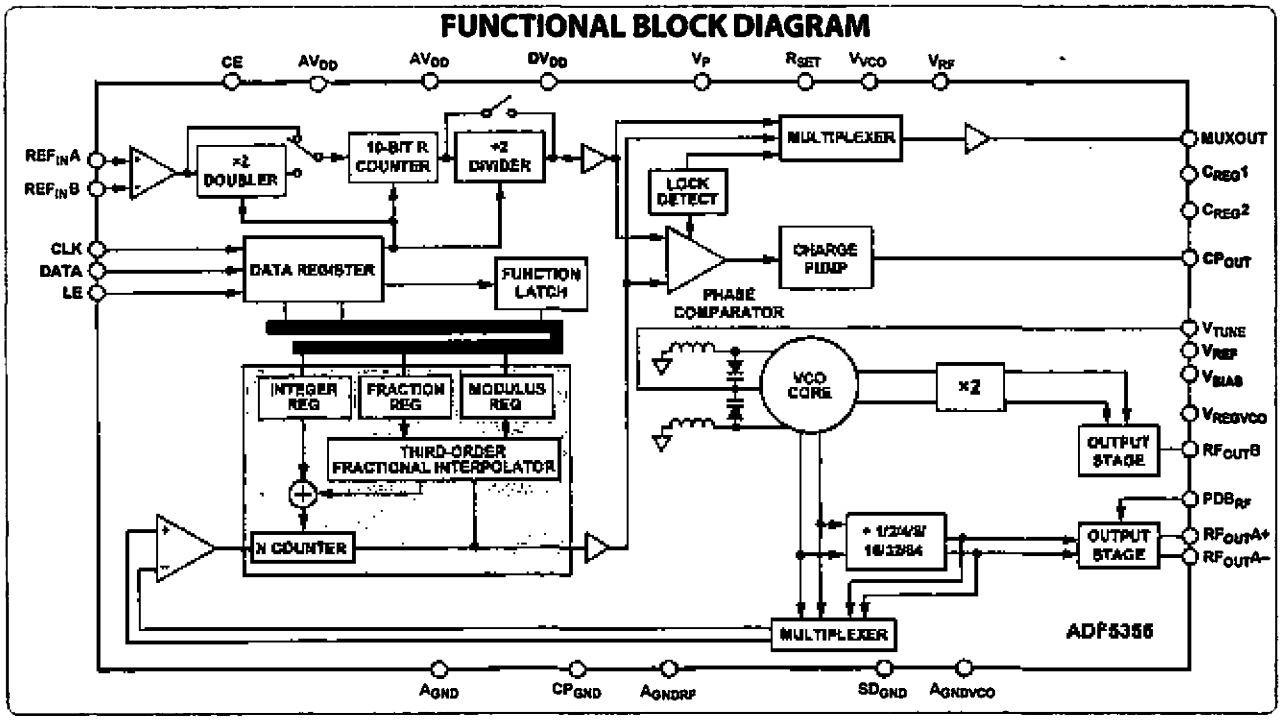
In closing

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

73

David VK5KK

Figure 1: ADF5355 Microwave PLL Block Diagram.



Contests

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

Contest priorities for January 2017

Contest	Date (UTC)	Rules	Difficulty	Software	Modes
Ross Hull	January 2107	www.wia.org.au	Easy	VKCL	ALL
Summer VHF/UHF FD	14 & 15 January 2017	www.wia.org.au	Easy Fun	VKCL	ALL

Contest priorities for February 2017

Contest	Date (UTC)	Rules	Difficulty	Software	Modes
CQWW RTTY WPX	11 & 12 February 2017	www.cqwpxrtty.com	Easy	N1MM/TR4W/Writelog	RTTY
ARRL DX Contest	18 & 19 February 2017	www.arrl.org	Easy Fun	N1MM/VKCL	CW

The CQWW CW is over and at VK4KW we spent the weekend trialling ideas for 2017.

We experimented with MOSR as well as various CW Decoders - Some are surprisingly good with CW GET having the vote but only after a lot of mucking around setting the filters.

We had hoped to try a few 10 m EME experiments but large storms and cloud cover over the moon put that idea on the backburner. We did work East Coast USA on ten metres - this proved the extra punch a CW signal has over SSB but the opening was very short and sharp.

Some ideas on entering the contests

Ross Hull

All of January!!
Who thought this one up?

Actually it is a leveller and does represent who is among the top dogs on VHF/UHF. Keep in mind that the VHF/UHF Field day is in amongst the Ross Hull and logs can be used in both contests. January is a good month for the VHF/UHF Contester.

Old story for Ross Hull: those who put in the hours get the results and for the VHF/UHF find a strategic hill. Remember: highest does not always mean best as it may be blocked on optimum paths.

CQWW RTTY WPX

The WPX RTTY is a fun contest but take the time to get the rig sorted. Multiple screens are a given as optimum performance cannot be expected from one decoder and the guns are typically running three. Most common is MMTTY with two different instances and different filtering as well as either Two Tone or GRITTY. GRITTY is the new kid on the block and so far seems to have the advantage. Two Tone has a new release and as yet I have not compared them.

My preference for RTTY contests is WriteLog - it has many features implemented for RTTY although N1MM certainly is right up there with RTTY features.

Contesters Tricks

Get a good chair in shack - Ergonomics is critical when you are there for 24 and 48 hours.

You will find all sorts of placement items suddenly are a dumb idea and something you have used in rag chew mode becomes annoying when you need to adjust it during a contest multiple times.

Most stations these days are tilting radios so that the operator can see all controls. At VK4KW we use an exotic alignment tool under the radios called a 4X2 and this seems to be optimum to view the controls from the chair - Thank to VK7ZE for the tip - however others may also lay claim to that one.

Contester of the month: VK4KW / VK4BAA

This month's contester of the month is Phil VK4BAA owner of VK4KW – the nearest Australia has seen to a contest superstation.

VK4KW earnt the stripes with a 2014 CQWW effort where 10,000 QSOs were put into the log in one weekend by a crew of excellent (and not so excellent) operators.

Phil, originally from England, was a member of the Windmill VHF group and a regular with the MD4K team from Isle of Man.

What is your favourite Contest?
HF: CQWW SSB & CW, but also ARRL 10 m when the sunspots come out to play.

For VHF, it's got to be Region 1 VHF NFD. Being able to utilise full licence power and large antenna systems from a station in a tent on a hill in EU is great fun. 2 m sounds like 40 m at times and the best DX can be astonishingly far away.

Another favourite is the RSGB CW NFD, although from VK it's a non-starter. It's a simple station setup, 100 W and the antenna system can be simple or more complex according to the section

Photo 2: Phil VK4BAA owner of VK4KW.

you chose to enter. It's a portable station setup and can be a good excuse for a Club get-together and catch-up. The contest is well supported by the rest of EU so there's plenty on the bands to work and the concept of working stations repeatedly after a time gap is not needed.

What is your favourite Rig?
FT-5000 for contesting, FT-980 for rag chewing, FT-1000MP + transverter for VHF/UHF. The 5000 takes a bit of getting used to as regards the complexity of the controls and facilities but it performs very well indeed in a crowded band when operated by someone who knows what they are doing to get the best out of the rig. I've not reached this level of prowess yet though. The 980 has BBC quality audio and is simple to use for those catch-up rag chews on 20 m and 40 m with DX mates.

What modes do you contest in?
Mainly SSB, with the occasional bit of CW. I need to brush up my CW to get it back to what it once was as it used to be my favourite mode. RTTY may well get dabbled in at a later date.

What is your favourite contest band and why?
A dead heat between 6 m and 10 m. You just never know if or when the band might burst open – regardless of what the propagation forecasters think will happen.

What is your preferred Contesting Software?
N1MM+ for general Contest Logging Software. I've tried all-manner of other software but I keep coming back to N1MM's offerings – even though it does have a few shortcomings. Maybe it's the price that keeps me interested.

What is your preferred Mic and Key?
No real preference. I'll use whatever is available – I have a Heil headset which is OK but gets a bit sore on the arms of my glasses getting pushed onto my head. I have a Bencher key which has served me well over the years but I'll be phasing it out for a Kent key very soon as the Bencher is getting a bit long in the tooth and the paddle assemblies keep falling off the little pivots.

What is your "not so secret" weapon?
Antennas: the more and the bigger, the better.

What is your best tip to a newbie contester?
Keep sitting in the operating chair (Bum-In-Seat!), read and understand the rules fully and of course, have fun.

What are your aspirations in contesting?
The next step has got to be improvement in CW prowess. Due to all sorts of reasons CW has taken a bit of a back seat for some years now, so it's time to get back into the mode and set some goals for improvement. There are plenty of software aids for this but there's nothing like getting on the bands and contesting to sharpen the edge. Being able to contend with CW pile-ups without panic setting in is a goal for me. There's no replacement for practise, practise and more practise.

What would you improve in your skills and/or station?
CW skills have already been mentioned, but station improvements are always on the cards. Even the Big Boys with the Super Stations have a list for potential improvements. A contest station simply never stops evolving and is always a work in progress. Even a seemingly small improvement can make a significant difference to the operation of the station. VK4KW has not stopped being revamped for some time now, but there are more plans for antenna systems in the pipeline.

Contest Terms

Run = Call CQ and stay on the same frequency

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

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

Multi = Short for Multiple operator or transmitter

SO2R = Single operator 2 radio

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

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

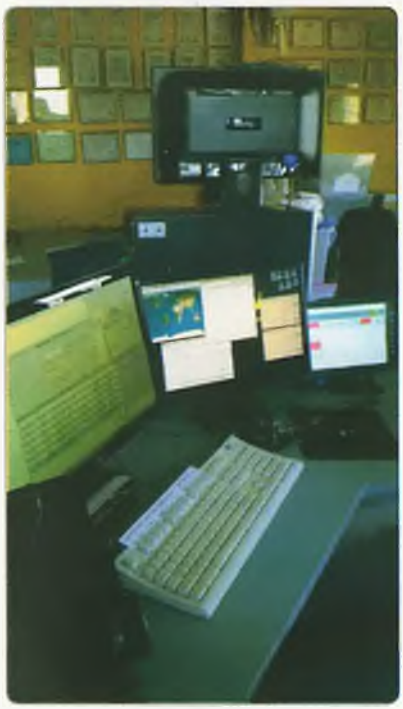


Photo 1: Multiple screens and multiple awards at VK4KW.

80th Commonwealth Contest 2017 (BERU)

RSGB Contest Committee

The 80th event in this long running DX contest will take place over the weekend of March 11/12, 2017. A number of special prizes and awards have been organised to celebrate what is the longest running CW DX contest in amateur radio.

All radio amateurs in the Commonwealth and Mandated Territories are invited to take part and compete for some of the prizes on offer.

Entrants will be entered into a prize draw. Three draws will take place, for Commonwealth entrants from each of the three IARU regions: 1 Europe and Africa, 2 North and South America, and 3 Australia, Asia, New Zealand and Pacific.

The sponsors of the three prizes are Martin Lynch and Sons and Kent Engineering (Region 1) and the RSGB (Regions 2 and 3). For Region 3 the prize will be a RSGB Vibroplex Centenary Key.

For each region the call of every entrant making 10 or more valid QSOs will be entered into the prize draw the number of times they make a valid QSO, up to a maximum of 80 entries. For example an entrant making five QSOs would be not be entered in the draw, an entrant making 15 QSOs would be awarded 15 entries, an entrant making 80 QSOs would be awarded 80 entries, and any entrant making 81 or more valid QSOs would also be awarded 80 entries in the draw. The three regions will be drawn separately. The draws will take place at the RSGB Convention 2017.

A special certificate will be awarded to every entrant making 80 or more QSOs.

Headquarters stations (HQ)

Every year a number of special Headquarters stations (HQ) are available to give bonus points to all entrants. In the 80th contest, headquarters stations will be active from all of the DXCC countries in the UK and Crown Dependencies, a total of seven stations – they will be distinguished by the special calls, Gx80CC, where x is the relevant country identifier. We expect that there will be a number of HQ stations from other parts of the Commonwealth.

Vintage

In keeping with the historic nature of the occasion and if they wish, entrants are encouraged to use vintage radios, something with plenty of valves in it!

Miniatures

Through the generosity of Peter G3LET, and in memory of his brother, we will be offer a miniature to the Open Section (U) winner each year (one per winner).

Abridged Rules

The contest runs from 1000 UTC on 11 March 2017 until 1000 UTC 12 March 2017. It is CW only on 80, 40, 20, 15, 10 m bands. Contacts can be made with any station in the RSGB Commonwealth Call Area List *http://www.rsgbcc.org/hf/information/codes.shtml* except stations in the entrant's own call area. There are a number of sections, Open SOU, /A, Restricted (100 W wire antennas) SOU/A, QRP SOU/A and Multi Op. and 12/24 hours too. Entrants are encouraged to form Teams of five. Log submission in Cabrillo format within five days of the end of the contest. Please read the full rules at *http://www.rsgbcc.org/hf/rules/2017/beru2017.shtml*

Full details and breaking news can be found at *https://berucontest.wordpress.com/*

You are encouraged to keep a close watch on any news, especially DXpeditions. Even if you are not 'into contesting', why not try this one, you might win something, work some good DX and for sure you will have a lot of fun trying!

Plan ahead

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

John Moyle Field Day Contest 2017

Denis Johnstone VK4AE/VK3ZUX

18 - 19 March, 2017

0100 UTC Sat - 0059 Sun

I wish all entrants good luck, and look forward to hearing some of you on air during the contest!

N.B. new email address: *jmfd2017@wia.org.au* will be set up close to the event for entries and you can check out latest info at *http://www.wia.org.au/contests/*

Overview

1 The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field and portable operation.

2. The contest takes place on the third full weekend in March each year, and runs from 0100 UTC Saturday to 0059 UTC Sunday, 18 - 19 March, 2017.
3. The contest is open to all VK, ZL and P2 stations. Other stations are welcome to participate, but can only claim points for contacts with VK, ZL and P2 stations.
4. Single operator portable entries shall consist of ONE choice from each of the following (e.g. 6 hour, portable, phone, VHF/UHF):
   a. 24 or 6 hour;
   b. Phone, CW, Digital or All modes;
   c. HF, VHF/UHF or All Bands.
5. Multi-operator portable entries shall consist of ONE choice from each of the following (e.g. 24 hour, portable, phone, VHF/UHF):
   a. 24 or 6 hour;
   b. Phone, CW, Digital or All modes;
   c. HF, VHF/UHF or All Bands.
6. Home and SWL entries shall consist of ONE choice from each of the following (e.g. 24 hour, portable, phone, VHF/UHF):
   a. 24 or 6 hour;
   b. All modes;
   c. HF, VHF/UHF or All Bands.

   Multi operator stations are not permitted in the Home Category.

   If a Home Station works the same station regularly on any band or any mode they should submit their log to verify those contacts. (See sect. 17 below.)

Scoring

7. Portable HF stations shall score 2 points per QSO. CW only contacts to score 4 points per QSO for contacts with either home or portable stations.
8. On VHF/UHF portable stations for Phone and Digital each contact scores 2 points per contact, and CW contacts score 4 points. In addition the VHF/UHF Portable stations shall add a distance score of the following on 6 m:
   a. 0-49 km, 2 points per QSO;
   b. 50-99 km, 5 points per QSO;
   c. 100-149 km 10 points per QSO;
   d. 150-299 km 20 points per QSO;
   e. 300-499 km 30 points per QSO;
   f. 500 km and greater, 2 points per QSO.
9. Portable stations shall add an additional distance score on 144 MHz and higher:
   a. 0 to 49 km, 2 points per QSO;
   b. 50 to 99 km, 5 points per QSO;
   c. 100 to 149 km, 10 points per QSO;
   d. 150 to 299 km, 20 points per QSO.
   e. 300 km and greater, 30 points per QSO.
10. For each VHF/UHF QSO where more than 2 points are claimed, both the latitude and longitude of the station contacted or other satisfactory proof of distance such as the 6-figure Maidenhead Locator must be supplied.
11. Home stations shall score:
    a. Two points per QSO with each portable station.
    b. One point per QSO with other home stations.
    c. For VHF/UHF QSO Home stations shall add as a distance score on 6 m:
       i. 0-49 km, 1 points per QSO;
       ii. 50-99 km, 2 points per QSO;
       iii. 100-149 km 5 points per QSO;
       iv. 150-299 km 10 points per QSO;
       v. 300-499 km 15 points per QSO;
       vi. 500 km and greater, 2 points per QSO.
    d. Home stations shall add as a distance score on **144 MHz and higher:**
       i. 0 to 49 km, 1 points per QSO;
       ii. 50 to 99 km, 2 points per QSO;
       iii. 100 to 149 km, 5 points per QSO;
       iv. 150 to 299 km, 10 points per QSO.
       v. 300 km and greater, 15 points per QSO.

Log Submission

12. For each contact: UTC time, frequency, station worked, RST/serial numbers sent/received and claimed score. (VHF and above location of other station and distance showing the Lat/Long or Maidenhead Locator to 6 figures for the station worked.)
13. All logs must be accompanied by a summary sheet showing: call sign, name, mailing address, section entered, number of contacts, claimed score, location of the station during the contest, and equipment used, and a signed declaration stating *"I hereby declare that this station was operated in accordance with the rules and spirit of the contest and that the contest manager's decision will be accepted as final"*. For multi-operator stations, the full names and all call signs (legible) of all operators must be listed.

14. The Email address for this year's JMMFD contest should be setup a few days before the contest, and I would suggest to those who will be sending in your Logs electronically, to send in a test email with the words "TEST JMMFD 2017", in subject the line and also set the "READ REQUEST RECEIPT flag. Your call sign can then be added into the database for this year's contest. When actually submitting your log, if you do not receive an e-mail acknowledging receipt, then the log has not been received.
15. Paper logs may be posted to "John Moyle Contest Manager, 27 Laguna Ave, Kirwan 4817 QLD". Alternatively, logs may be e-mailed jmfd2017@wia.org.au, vk4ae@wia.org.au, or snail mailed via the WIA Contest Manager, JMMFD, P.O. Box 2042 Bayswater, VIC 3153. Club stations must forward in the first instance an electronic version of their log. Club Stations who submit only a paper log will have that log returned as unreadable, due to the very large amount of work involved in entering and checking large paper logs.
16. The following formats are acceptable: Microsoft Excel or Word, ASCII text or the print log output file from electronic log programs such as VK Contest Log (VKCL). Logs sent by disc or e-mail must include a summary sheet and declaration, but the operator's full name (legible) is acceptable in lieu of a signature. Logs must be postmarked no later than 26 April 2017.
17. If any station works the same station multiple times on any band or on any mode, both stations should each enter a log to verify those contacts. This rule was introduced to overcome a problem experienced in previous contests where a portable station worked a significant number of home stations, but those home stations did not enter a log, so there were a very large number of unverifiable contacts.

Certificates and Trophy

18. At the discretion of the Contest Manager, certificates will be awarded to the winners of each portable section. Additional certificates may be awarded where operation merits it. Note that entrants in a 24 hour section are ineligible for awards in a 6 hour section.
19. The Australian WIA Affiliated club station, with the highest overall score will be awarded the President's Cup, a perpetual trophy held at the Executive Office, and will receive an individually inscribed wall plaque as permanent recognition.

Disqualification

20. General WIA contest disqualification criteria, as published in Amateur Radio from time to time, applies to entries in this contest. Logs which are illegible or excessively untidy are also liable to be disqualified.

Definitions

21. A portable station comprises field equipment operating from a power source, e.g. batteries, portable generator, solar power, wind power, independent of any permanent facilities, which is not the normal location of any amateur station.
22. All equipment comprising the portable station must be located within an 800 m diameter circle.
23. A single operator station is where one person performs all operating, logging, and spotting functions.
24. A single operator may only use a call-sign of which he/she is the official holder. A single operator may not use a call-sign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multi-operator entry.
25. A multi-operator station is where more than one person operates, checks for duplicates, keeps the log, performs spotting, etc.
26. A multi-operator station may use only one call sign during the contest.
27. Multi-operator stations may only use one transmitter on each band at any one time, regardless of the mode in use.
28. All stations, both Single and Multi-operator stations must submit a separate log for each band.
29. Logs submitted electronically can use a separate Excel worksheet for each band linked to a summary sheet. A typical example is shown at http://www.wia.org.au/contests/ which can be copied and adapted for the individual use of either a single or multi operator station.
30. Any station operated by a club, group, or organisation will be considered to be multi-operator by default.
31. None of the portable field equipment may be erected on the site earlier than 28 hours before the beginning of the contest.
32. Single operator stations may receive moderate assistance prior to and during the contest, except for operating, logging and spotting. The practice of clubs or groups providing massive logistic support to a single operator is, however, totally against the spirit of the contest. Offenders may be disqualified, and at the discretion of the Contest Director, may be banned from further participation in the contest for a period of up to three years.
33. Phone includes SSB, AM, Simplex FM and Simplex D-STAR.
34. CW includes CW hand or computer generated. Fully automatic CW operation is not permitted. CW contacts will score 4 points for HF and 4 points for VHF & UHF contacts plus the distance points.
35. Digital modes such as PSK31, RTTY, and packet may be used in the contest, but if they are, they shall be classed as Digital. Other modes such as ATV may be used and will be classed as Digital for scoring. Digital contacts will score points at the same rate as Phone.
36. All amateur bands may be used except 10, 18 and 24 MHz. VHF/UHF means all amateur bands above 30 MHz. Note: On 50 MHz,

the region below 50.150 has been declared a contest free zone, and contest CQs and exchanges may only take place above this frequency. Stations violating this rule may be disqualified.

37. Cross-band, cross-mode and contacts made via repeaters or satellites are not permitted for contest credit. However, repeaters may be used to arrange a contact on another frequency where a repeater is not used for the actual contact.
38. Stations may make repeat contacts and claim full points for each one. For this purpose, the contest is divided into eight consecutive three-hour blocks: 0100-0359, 0400-0659, 0700-0959, 1000-1259, 1300-1559, 1600-1859, 1900-2159, 2200-0059 UTC. If you work a station at 0359 UTC a repeat contact may be made after the start of a new block providing they are not consecutive, or are separated by at least five minutes, since the previous valid contact with that station on the same band and mode.
39. Stations operating on Phone must exchange ciphers comprising RS plus a 3 digit number commencing at 001 for each band and incrementing by one for each contact.
40. Stations operating on CW must exchange ciphers comprising RST plus a 3 digit number commencing at 001 for each band and incrementing by one for each contact. Where the CW contact is with an overseas station that is unable or unwilling to give a valid serial number, the serial number shall be assumed to be 001.
41. Portable stations shall add the letter "P" to their own cipher, e.g. 59001P.
42. Multi-operator stations are to commence numbering on each band with 001.
43. Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for Home Stations, unless the receiving station is portable.
44. The practice of commencing operation and later selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest, and shall result in disqualification. The period of operation commences with the first contact on any band or mode, and finishes either 6 or 24 hours later.

If anyone wishes to contact me privately to discuss rules etc, my home phone number is (07) 4723 4229, and my snail mail and e-mail address are as shown in the Log Submission section above.

Denis Johnstone VK4AE/VK3ZUX

VK6news

Keith Bainbridge VK6RK
e *vk6rk@wia.org.au*

Welcome to a new year of VK6 Notes, one that will bring changes I'm sure. The first one being that this edition is my last. After quite a few years compiling these notes I feel it's time for a break again. At present, no one has stepped forward to take on the job and hopefully there won't be a break in the column. My interests have changed recently with other hobbies and retirement taking up more of my time, so it's not fair to carry on half-heartedly.

Bunbury Radio Club

To business: first Norm VK6GOM and the Bunbury Radio Club's updates.

The next monthly meeting of the Bunbury Radio Club will be held on Saturday, 14 January 2017 from 2:00 pm. at 21 Halsey Street, Bunbury. The activity for the day is our regular meeting. Visitors are very welcome.

The technical program for the rest of this calendar year is as follows:

February
Bob VK6TJ
AM Broadcasting

March
Shaun VK6PAL
AIIMS

April
Jarrad VK6FFAR
Portable operating

The club's Christmas party was held at the Boyanup Tavern on 19 November 2016. There was a wonderful turnout of members and partners and all had a great time. With our widespread geographical membership, it is not often that we can get together socially and it was great to see so many distant faces. Alek VK6AP donated a Zastone MP-300 dual band mobile transceiver for the raffle which was won by Murray VK6HAL. Following the principle that "what happens at the tavern stays at the tavern" we will not describe the antics of some members. However, I did hear that the Premier, who was dining alone, was accosted by one of our more erudite members who provided Mr Barnett with some useful advice on how to run the state. No doubt the Premier would have been very grateful.

Doug VK6DEW has decided to retire from his role as one of the Club's WIA Assessors after some 10 years in the role. His work over the years is greatly appreciated. Unfortunately, with only one assessor remaining, this means we have to put our licence assessment program on hold until we can get another member qualified. Murray VK6HL and Bob VK6TJ have indicated that they will seek such qualification. The ability to run these assessments have been valuable in many ways, including recruiting new members and providing a convenient service to potential amateurs in the region.

Thanks Norm, best of luck in 2017 with the clubs projects.

WARG

Next on the agenda is WARG's news, and published verbatim, as requested:

Anthony VK6AXB has an update on behalf of WARG, the West Australian Repeater Group.

Firstly, on behalf of the WARG Committee and members, I acknowledge the efforts of Keith VK6RK, as he compiles what will be his final "VK6 Notes" column, having made the decision to step aside. Keith has been a 'quiet achiever', doing a fantastic job of putting together the "Notes" each month, and his diligent reminders to the VK6 community have meant that much more of WARG's story has appeared in these pages than otherwise would have been the case! Thank you Keith for all your work and encouragement over the years, it is much appreciated, and all the best for your future endeavours; you leave the "Notes" in very good shape for someone else to take on.

Returning to repeater matters: on 10 December 2016 WARG were able to carry out some long-awaited work at our main Roleystone site, and as a result the performance of the VK6RAP repeater systems are significantly improved.

Work at this site has been restricted since 2014, due to the site owners updating the access requirements, however with the site owners' support, WARG has now completed an accreditation process to demonstrate we can comply with the access requirements and work procedures. For various reasons, this has taken quite a long time to achieve, but we are now making good progress.

As a result of December's working bee, the background noise level at the site has reduced, and performance of the 6 m repeater is a lot better. We also seem to have solved an intermodulation problem, allowing the 70 cm repeater to be switched back on. This has also brought the 70 cm link to Mt Saddleback repeater VK6RMS into full operation, both for WIA News broadcasts and for general QSOs.

The opportunity was also taken to connect the main VK6RAP two metre repeater to a different antenna, as recent reports of deteriorating coverage were a concern. Based on information received so far, this new antenna seems overall much better, although

we have lost coverage out to the east, with at least one distant country station no longer able to access VK6RAP.

Signal and performance reports would be appreciated - if you need a reminder of the frequencies for VK6RAP, they are as follows:
6 m: output on 53.800 MHz input 52.800 MHz;
2 m: output on 146.700 MHz, input on 146.100 MHz; and
70 cm: output on 439.800 MHz, input 434.800, CTCSS of 123 Hz required.

Further work remains to be done at Roleystone, such as sorting out the erratic VK6RBP HF beacon transceiver; and we also have outstanding work at other sites to be scheduled. However, the progress at Roleystone is pleasing, and thanks are due to Anthony VK6AXB, Bob VK6ZGN, John VK6JAH, Ray VK6ZRW Trevor VK6MS and William VK6KWT.

A reminder that WARG meetings are suspended during January. Our next meeting is on Monday 6 February 2017 and the following one on Monday 13 March 2017. Meetings take place at the usual venue, the Peter Hughes Scout Communications Centre, on the corner of Gibbs St and Welshpool Rd, in East Cannington.

WARG's regular on-air technical and general net continues every Sunday, at 10:30 local time, on VK6RLM, 146.750.

Photo 1: SDR demonstration.

New members are welcome, contact WARG at *secretary@warg.org.au*

73 from Anthony VK6AXB

Thank you for the kind words Anthony, much appreciated.

Now to the Hills, and Ray VK6ZRW's latest update.

News from HARG

It has been a busy end to the year at the club with demonstrations, park activations, Christmas get together and even some time working some HF from the shack. We have been trialling some extra Saturdays at the shack, taking up an offer by our landlords for some extra access. If the interest is there we will look at making it a regular thing.

Photo 2: Dick N6AA and Art W6XD enjoying a meal with VKCC & NCRG members.

At the November meeting we were fortunate to have Steve Kennedy VK6SJ demonstrate the FLEX-6000 SDR transceiver. Steve is the managing director of Future Systems and is the Australian distributor of FLEX Radio products. In what seems like a rarity to those of us involved in communications professionally, Steve's company doesn't hide the fact that they are amateur operators. He has even suggested some of his staff get licenced. Steve did a fantastic job going through SDR in general and with the unit connected to the shack tri-bander, was able to demonstrate it in full swing. Club members were invited to have a go and with minimal effort were able to operate it. I can sadly report that Santa did not leave one under my tree.

We are fortunate to have a few national parks not far from the club. As an activity we will be heading out to activate a few of them. Our first effort, a trial run of sorts, was a quick trip to Helena National Park. The park is the home of Mt Dale which rises about 550 metres above the surrounding forest. A link dipole constructed by Martin VK6ZMS was attached to a squid pole and strapped to the handrail of the lookout car park. A co-ax run to

Marty VK6RC's new mobile shack and calling started. Around 30 contacts were made before the rain came which forced a hasty pack up. Perhaps next time we will get to the 44.

This year members and guests enjoyed some extremely tender steak & tasty salads at our Christmas barbeque. It was a great day with some good story telling and discussion of all things AR. It was great to see some XYLs and harmonics attend. It gives the club a true family feel.

In the New Year we are planning to install some 2 m and 70 cm cross pol Yagis (after we refurbish them) along with an elevation/ azimuth rotator. This will see the club active on a few satellites. We have been busy looking at prospective locations for the John Moyle and hope to have a new location this year; after all, they say a change is as good as a holiday. Plans are progressing for this year's HARGfest, to be held on Sunday 9 April 2017 at the same location as last year.

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

73. De Ray, VK6ZRW

Thanks Ray, HARG is definitely getting more radio-active.

NCRG

Finally the latest from the NCRG starting with a contest update from Richard VK6BEC.

CQWW Contest 2016

Once again the NCRG put together a contest team for the CQWW SSB contest. We received and set up

Photo 3: The Hills Group operating National Park portable.

our new Steppir antenna, Kenwood TS-990 and new Expert SPE Linear Amplifier (part of our remotely operated station currently being designed) just in time to test in the contest. The equipment worked faultlessly.

Operators included VK6BEC, VK6EH, VK6IA, VK6LOL, VK6NU, VK6RK, VK6SJ and VK6VY and Zeljko VK6VY created a magnificent Zone 29 stew along with some homebrew "firewater" which went down very well.

We operated as a multi-single station making 2,707 QSOs, scoring 1,634,830 points with 40 m being the biggest point scoring band.

Lots of fun was had by all.

Thanks Richard.

A few weeks after this operation, the club was visited by Dick N6AA, Director of the ARRL Southwestern Division and Art W6XD, Assistant Director. Both are well travelled operators; Dick has operated every single CQ zone in the world, some more than once. Art has also operated many of the zones. They like to travel and operate contests whenever they can so the chance for them to use the NCRG for CQWW CW was too good to miss. They spent about 15 days here, setting up before hand and then travelling around the south west of WA afterwards. Needless to say they had a massive score in the contest with 47.6 hrs of operation. It was good to meet them and they had a great time.

Considerable progress has been made around the club of late, with a new "donga" in position ready for use as a battery storage and antenna control centre, and office space. Much work has also been carried out setting up remote Wi-Fi access to allow the remote station to function. Also the new repeater site has seen much work and improvements and it's hoped that the new Fusion repeater and 23 cm repeater will be operational by the time you read this report.

Lots going on as usual

There has been a proposal to change the date of the NCRG Hamfest from the first Sunday in August to??? - maybe a little later in the year.

If you have any opinions about this change please contact yours truly VK6RK in the first instance. We will assess this and announce a new date, if there is to be any that is.

Well that's it for this month and for my tenure in this position.

I have been thanked in the past for providing this service, and I have always enjoyed compiling this column, but it is someone else's turn now. Thanks for the kind words, best wishes for 2017 and look out for VK6KB on the bands as I change callsign yet again.

Vy 73

Keith VK6KB.

VK7news

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

HAMFEST news

26 November 2016 was the biennial VK7 Hamfest at Miena in the Central Highlands. We had over 150 people roll up to the Great Lake Community Centre, which is a fantastic facility. I would like to thank NBN Co (Lalla and Dylan VK7NZ) who brought up the Sky Muster truck, answered many questions and provided free WI-FI for the event. Our traders: TET-Emtron - Mark and Kay from VK6, TTS-Systems - Dave, Claureen and Rusty from VK3, Moonraker - Danny VK7HDM, Stirling Heights Vineyard - Geoff VK7GW and Jenny, Eastern Zone ARC with Connectors and Antennas Nick VK3VFO from VK3, LD Antennas - Ken VK7DY. We also had information stands from ALARA - Linda VK7QP, SOTA - Reuben VK7FREU, SDR Special Interest Group - Scott VK7LXX and D-STAR - Clayton VK7ZCR and our popular preloved equipment stands - John VK1CJ & Ronnie, Andrew VK1AW and Liz, and the NTARC team.

We had attendees from VK1, VK2, VK3, VK6 and VK7 along with John K1JD from the US who is a fellow SOTA enthusiast. A huge thank you to all our volunteers in the kitchen, who again excelled and provided wonderful food the whole day. Last but not least an uber thank you to Dave VK7OB and his helpers for a huge day and a fantastic day out in the Central Highlands of Tasmania.

Photo 1: Miena Hamfest in full swing. (Photo courtesy of Justin VK7TW).

NBN news

NBN Co has provided an update on the interference issue with their Wireless Network Termination Devices (WNTD) reported earlier in 2016. In the past, the WNTD was susceptible to two issues:

- Lack of resilience to lightning induced surges
- Inducing interference into End User AM radio and digital TV reception.

The new variant hardware [referred to as rev 2c i.e. still version 2 hardware] has had both the internal IDU [indoor unit] and ODU [outdoor unit] internal circuits changed with improved Electromagnetic Compatibility (EMC) - to suppress unwanted radio noise and increased surge resilience to 5 kV to improve the ability to withstand lightning induced surges.

The rev2c hardware is now a standard hardware build for all new 2.3 GHz hardware, however the initial production run is targeted to the SE QLD region to prove the surge hardening has definitely improved the storm resilience capability. To date, all cases of AM radio and digital TV interference have been solved by installing the new hardware variant. This update has come from the NBN Co.

REPEATER NEWS

Clayton VK7ZCR would like to let you know that his IRLP/EchoLink node 6239 has moved simplex frequency to 439.150 MHz with a CTCSS tone of 91.5 Hz and this node is located in Lenah Valley, Hobart, Southern Tasmania with the callsign VK7RCR.

WICEN Tasmania (South) Inc.

http://wicentas.com/

On Friday 2 December, 2016, Jackson Foggo VK7FJAX received the Scout Medallion. The Australian Scout Medallion is the highest award in the Scout Section. It is considered the pinnacle of Scouting at this stage. To earn the Australian Scout Medallion a Scout must:

- Participate in a Scout Leadership Course at any time after completion of the Pioneer Badge
- Demonstrate an active leadership role in Scouting
- Achieve the Adventurer Cord.

Jackson's certificate stated that he had achieved:

- Badges earned
- Compulsory: Citizenship and Campcraft & Leadership Activity
- Elective: Emergencies
- Proficiency: Communication and Amateur Radio
- Patrol Activity: Organised Radio Licensing Course.

Among the many people who came along for the awards ceremony

Photo 2: The WICEN crew L to R: Garry VK7JGD, Peter VK7TPE, Dale VK7FNED, Jackson VK7FJAX and Justin VK7TW (photo courtesy of Justin VK7TW).

was his fellow WICEN Tasmania (South) colleagues - Peter VK7TPE and xyl Maureen, Garry VK7JGD, Justin VK7TW and of course his VERY proud father and Scout Leader - Dale VK7FNED. Jackson was presented with the medal from Chief Commissioner of Scouts in Tasmania – Michael Hovington. It was also Jackson's birthday and he was only 15! On ya Jax, what a fantastic achievement!

Northern Tasmanian Amateur Radio Club (NTARC)

http://www.ntarc.net/

NTARC provided safety communications for the Tasmanian Equine Endurance Riders Association for their State Championships at Sassafras on 26 November, 2016. There were a 160, 95 and 40 km ride with 5, 3 and 2 checkpoints required respectively. The RFID checkpoint system was used with inputs from the Australian Endurance Riders Association RFID system and the real-time display of results proved popular and will be adopted in future. Thanks to participants: Ken VK7KKV, Ron VK7RB and xyl Vicinta, André VK7ZAB, Peter VK7KPC, Roger VK7ARN, Yvonne VK7FYMX, Bill VK7MX, Peter VK7FPWS, Idris, VK7ZIR and Norm VK7KTN.

The annual Christmas break-up BBQ at Myrtle Park was held on December 10, 2016. There was a great roll-up despite earlier heavy rain however; the Slippery Trout award remained unclaimed even though trout were heard! One surprize on the day was the cream puffs compliments of Wayne along with the usual Rum balls and Jelly Cakes which are always popular!

Radio and Electronics Association of Southern Tasmania (REAST)

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

The weekly 23 cm QSO Party after the WIA and VK7 Broadcasts is still proving popular with up to 10 stations participating in and around Hobart and two from Launceston on WSJT JT65. The group has been experimenting with pointing at different hills and mountains and using them as passive reflectors which has proved interesting.

REAST's end of year tour was through the main telecommunications hub in Hobart and thanks to Andrew Johns VK7AJ for organising the tour. We worked our way from the top to the basement of the building covering all aspects of a modern highly redundant digitally based telecommunications facility. Generators, batteries, mobile phone, data networks, internetworking, ISDN, VOIP, fibre, copper and of course the plain old telephone system (POTS) that is still being used although rapidly diminishing with the advent of the NBN roll-out. It was a great night and I think those who came along now have a better appreciation of the infrastructure that support their internet, mobile and POTS services. Again, a huge thank you to Andrew for his sharing his time and vast knowledge.

Wednesday 21 December, 2016 saw a huge night for our DATV Experimenter's. We enjoyed some Christmas cheer and then packed up our DATV studio for the foreseeable future. This was an historic event as our DATV Experimenter's nights have been running for at least the last 10 years from the Queens Domain studio. We started with analogue transmissions on 444.25 MHz and moved to Digital DVB-S broadcasts and then moved to DVB-T broadcasts on 446.5 MHz for the last 3-4 years. We are making way for the rebuilding of the garage into a larger new facility for Tasmanian Maritime Radio (TMR) who have out-grown the small room in our main building and are extending what is now the garage into a larger building to house their operation. The DATV Studio will return and move into the existing TMR operations room once the building is complete and TMR move into their new building.

A huge thank you to all those who came along to lend a hand packing up the studio and moving racks into the main building for storage. We will continue our Wednesday night

Photo 3: Andrew VK7AJ (third from left) is explaining the data distribution frame to the visiting group at the Davey St Exchange (photo courtesy of Justin VK7TW).

experimenter's groups however our focus will move to Satellite and other experimentation whilst the building is taking place and we will return bigger and brighter in our new DATV Studio. Check the REASTTAS Facebook page for more information: *http://wwww.facebook.com/reasttas*

Photo 4: REAST DATV studio control desk prior to disassembly (photo courtesy of Justin VK7TW).

Silent Key

William (Bill) Ashton DONALD VK7AAW SK

Passed away peacefully on 12 December, 2016 aged 89. Bill Donald appears in the 1988 callbook as VK7NRV and as VK7AAW in 1991. Richard VK7RO remembers him being a very keen CW operator with his quad antenna from his property Rosy Vanyan at Forcett where he hosted the Sewing Circle annual barbecue for many years.

Richard VK7RO once owned a leather man-bag and whenever Bill saw it, he would be reminded of the saddlebags he used in his early days as a jackaroo and start reminiscing. One of his jobs whilst at the cattle station was to go into the local town to pick-up the new governess from the train. The new governess turned out to be a golden haired blonde, who Bill speedily married!

Bill kept turkeys on his property at Rosy Vanyan and they had a habit of roosting in a large mulberry tree. When Bill fancied a turkey for dinner, he went out one evening with his shotgun and fired up into the tree at his chosen bird. Of course, the sound of the shot scared all the other turkeys and they all shat themselves. But they had all been eating mulberries, so it was a colourfully spattered Bill who returned to the house with his trophy.

Vale Bill VK7AAW.

(VK7RO and VK7WR)

IARU Liaison Report

Jim Linton VK3PC
e *iaru@wia.org.au*

IARU continues WRC-19 preparations

The International Amateur Radio Union (IARU) in its lead up work for the World Radiocommunications Conference in 2019 seeks to gain or retain spectrum for the amateur service to ensure that amateur frequency allocations remain available and, as far as possible, free from serious man-made interference.

In meeting these primary roles, the IARU meets with the international standards bodies CISPR (**Special International Committee on Radio Interference**), CENELEC (**European Committee for Electrotechnical Standardisation**) and ETSI (The European Telecommunications Standards Institute).

The IARU also meets with the regional telecommunications organisations of CEPT (Europe),CITEL (Inter-American), APT (Asia-Pacific), ATU (Africa) and with the International Telecommunications Union (ITU), the United Nation's specialised telecommunications agency. Region 3 IARU has a memorandum of understanding with the APT which allows the IARU to have some member privileges.

The ITU website has material and documentation of interest to the amateur service, much of it can be downloaded from *http://www.itu.int*. Go to the Working Party 5A (WP 5A) webpage and look for the *Guide to the use of ITU-R texts relating to the amateur and amateur-satellite services* which lists all ITU reports and recommendations that are relevant to the amateur service.

In November 2016, IARU representatives have attended the CEPT Electronic Communications Committee (ECC) – the policy-making body of CEPT, one of the many CEPT committees at which IARU is present.

IARU was also present at ITU Working Parties under Study Group 5 in Geneva, Switzerland, November 7-17 2016, which studies matters relating to terrestrial radio-communication services, including the amateur service.

The WIA strongly supports the IARU and the work of Dale Hughes VK1DSH as a member of the Australian delegation and chairman of ITU Working Group 5A-1 (WG 5A-1).

During the most recent WP 5A meeting, WG 5A-1 (amateur and amateur satellite services) usually met twice each day and worked on WRC-19 agenda item 1.1 (A new 6 m amateur allocation in ITU Region 1) and other issues related to the amateur service. Overall, WG 5A-1 considered 15 assigned input documents and completed its work.

The WIA as an IARU Member Society is actively in support of its activities which, apart from the 50 - 54 MHz frequency band issue, includes the issues of the increasing level of radio frequency interference, wireless power transmission, wireless LANS at 5.6 GHz, and emergency and disaster communications.

Dale VK1DSH reported that delegates from national administrations and the IARU worked well together. All matters, including contentious issues, were resolved by consensus during the two weeks of meetings.

IARU continues to be active in the ITU and Regional Telecommunications Organisations meetings, in its coordinated preparation for the WRC-19.

Under the auspices of WP 5A, WG 5A-1 is working to prepare for the WRC-19 with a focus on:

- The sharing and compatibility studies required for WRC19 agenda item 1.1 which addresses an amateur allocation in ITU Region 1 in common with those already available in Regions 2 and 3 in the band 50 - 54 MHz. Sharing studies consider the criteria under which spectrum can be shared between differing radio services.
- Other WRC-19 agenda items which could impact the amateur service.

Activities undertaken by WG 5A-1 not directly related to WRC-19 were:

- Updates to the WP 5A webpage information document "Guide to the use of ITU-R texts relating to the amateur and amateur-satellite services".
- A review of liaison statements from other ITU Working parties on topics of relevance to the amateur services. WG 5A-1 generated four liaison statements to other groups. "Liaison statements" are the formal way in which working parties and groups alert each other to matters of common interest.
- Completion of revisions to Recommendation ITU-R M.1732 dealing with parameters for sharing studies regarding the compatibility of amateur service operations with other radio services.

VK2news

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

New Year Greetings and now there is only a month of summer left. From ARNSW, advance notice of the AGM to be held on Saturday 29 April 2017. The nominations for committee will be called soon and the close off will be on Saturday 11 March 2017.

This month there will be the first Talk Fest from ARNSW for 2017 on Sunday 12 February and details will be given in the weekly VK2WI News. As usual there is a call on those planning to attend for catering purposes and this is by an email to *fieldday@arnsw.org.au*

Also on this weekend – 11 / 12 February – the Waverley ARS have the next of their Foundation courses and assessments. Bookings to their web site *education@vk2bv.org* Then on Sunday the 26 th February, it is the 60 th annual Central Coast Field Day at the Wyong Racecourse.

There is the opportunity while at the field day to undertake an exam for a US License. Details can be found on the ARRL web site when you look for 'Find an exam session in your area' or contact Julian VK2YJS at *vk2yjs@gmail.com*

There is more activity in March when the ARNSW Upgrade course commences on Monday evening 6 March and then most Monday's until November. The first of the ARNSW Foundation course weekend and assessments on 18 and 19 and a Trash & Treasure on Sunday 26. All course bookings and inquiries to *education@arnsw.org.au*

It looks like it's hard to give away 'boat anchors' or the columns in *AR* do not get read. There was no interest shown in a Phillips 815 70 cm [working] repeater which was surplus to requirements at VK2RWI. The offer has now closed.

Another offer coming up this year will be some Development Grants from ARNSW. Release date was not known as these notes were prepared towards the end of 2016. Keep an eye on the ARNSW home page *www.arnsw.org.au* for a link.

Lightning is something to be avoided. Early in 2016, Westlakes ARC lost their 2 metre repeater to a strike for most of the year. It is now back in action with some additional services. At the end of 2016 St. George ARS suffered a strike to their 2 metre VK2RYL repeater near Rylstone. ARNSW has been carrying out maintenance to their VK2WI HF antenna farm by renewing all rope halyards. Planning has commenced to replace the aging VHF / UHF tower at VK2WI.

73 – Tim VK2ZTM.

Hamads

FOR SALE – NSW

Kenwood TS-2000 exc. cond, no mods. Inc GAP DX antenna & Diplexer. $2,200.00 Firm. Julian VK2FJCQ. 02 6377 1322 0457021137 Coolah.

BitScope BS-310 DSO Logic Analyzer, acc. & CD. Details at *www.bitscope.com* Good cond: $100 + $15 post. Ron VK2WB (02 4232 1794) *ron.kiama@gmail.com*

FOR SALE – VIC

Two FL2100B Yaesu amps. One modified for WARC bands. Both working but surplus. $900.00 both or $500.00 each. VK3UY QTHR Bob 042585 9158

FOR SALE – QLD

House & land VK4EY. Home on 2.56 acres. 99 Sorensen's Rd, Kuttabul 25 km Nth Mackay 4741 QLD. 3 Bedrm, 2 bathrm (1 with spa & shower) + sep. powder rm & toilet, Master bedrm en-suite. Large kitchen, 2 sep. living rm. Ducted A/C R/C & ceiling fans. Large covered outdoor entertainment area fans & lights, power, 3-bay garage, studio or office & workshop with air-con. Robert 0421211644 or *buyMyplace.com.au vk4ey@live.com.au*

FOR SALE – SA

Yaesu FT-857 in box, never used. HF, VHF & UHF, wide band receiver & standard mike. $900 ONO. Yaesu FL-2000 Linear with instruction manual, very clean. Price $200 ONO. M. Millar VK5MX 08 83467042 or *arvk5mx@gmail.com* QTHR

WANTED – NSW

A 60 to 70 amp 14 volt regulated RF quite power supply at a reasonable price. Reply to VK2YO QTHR 02 66742095

Contributions to *Amateur Radio*

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

Your contribution and feedback is welcomed.

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

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

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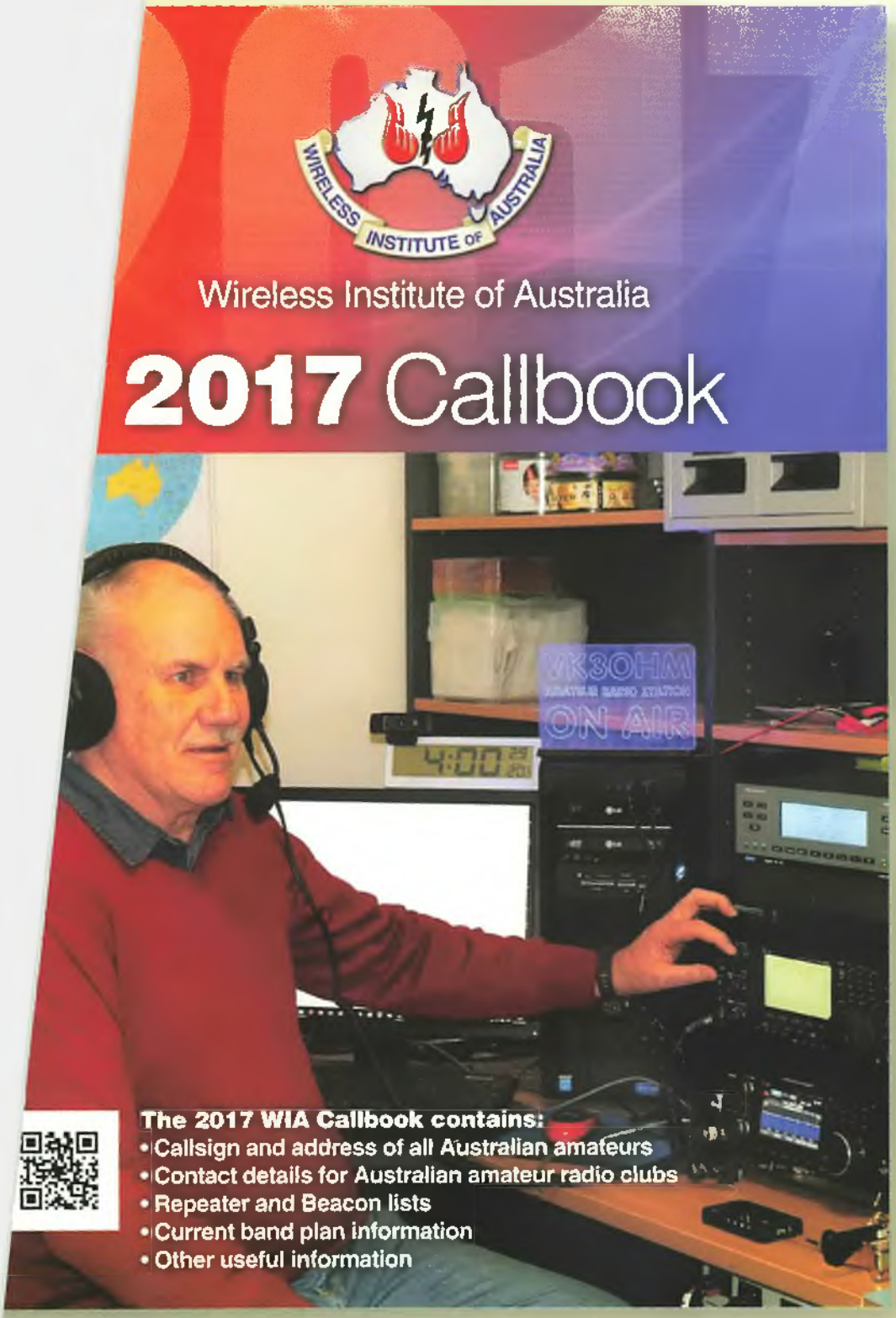

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