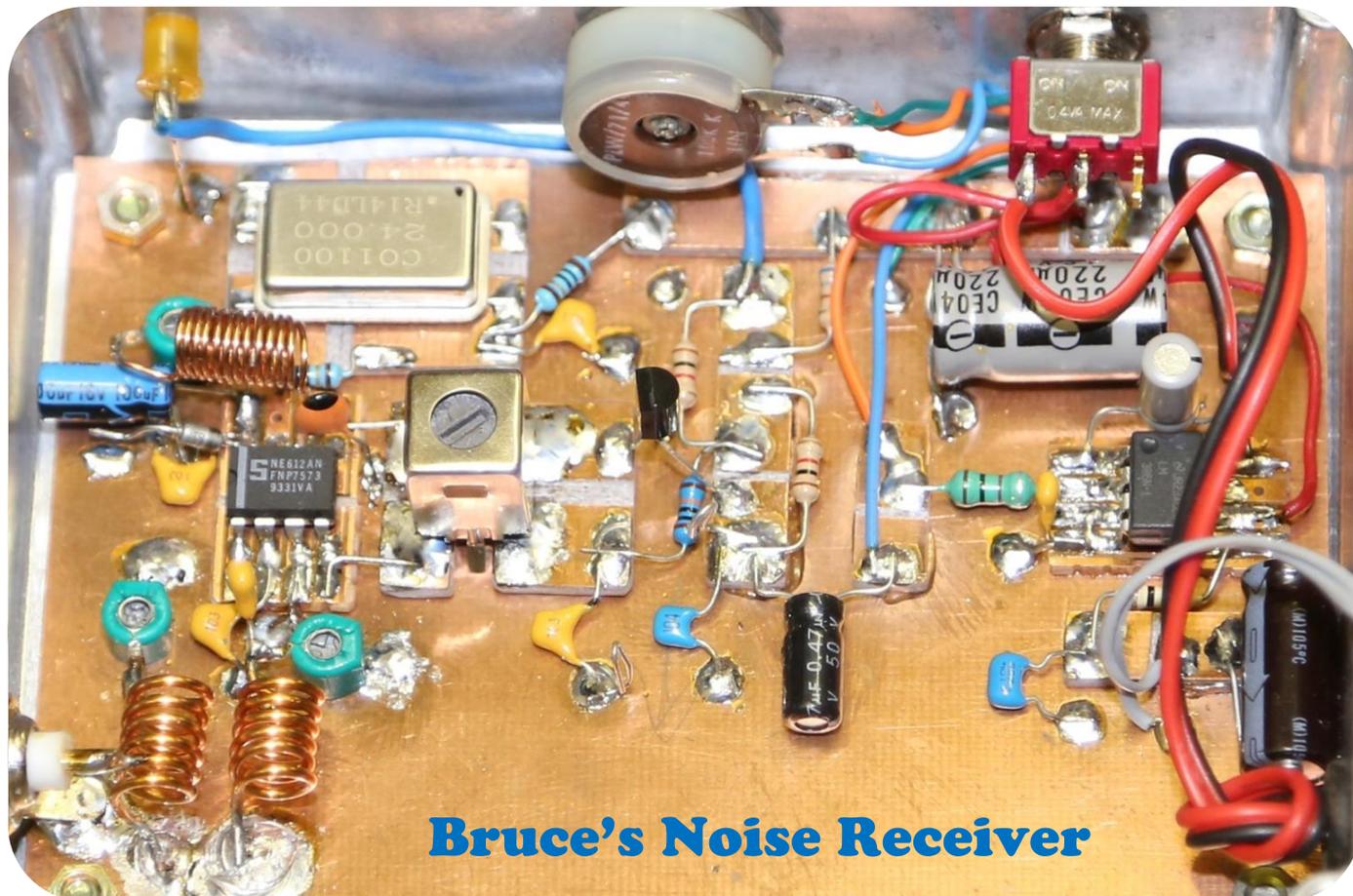




# GATEWAY

The Official Magazine of the Gippsland  
Gate Radio & Electronics Club Inc.

**April 2019**



**Bruce's Noise Receiver**

**Graeme VK3XTA is Sadly Missed**  
**Bad Propagation, Falsehoods**  
**Special Event Callsign VI9NI**  
**And More**

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Note: - club meeting minutes are on the club website

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## Event Queue

### April:

26<sup>th</sup>          General meeting – Guide hall

### May:

3<sup>rd</sup>            Prac Night – Club rooms  
4<sup>th</sup>            20<sup>th</sup> Harry Angel Memorial Sprint  
11<sup>th</sup>          Moorabbin & District Radio Club HamFest  
17<sup>th</sup>          General meeting – Guide hall  
24<sup>th</sup>-26<sup>th</sup>      WIA Annual Conference, Sydney

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## **PRESIDENT'S REPORT APRIL – Bruce Williams VK3BRW**

Hi everyone welcome to the 2019 April addition of the GGREC magazine.

### **LOOSING SOMEONE LIKE GRAEME WHEATLEY (SILENT KEY VK3XTA)**

Many of us turned up to say our last farewells to Graeme and to learn about his life's achievements from others, or to recall our own special memories of Graeme.

We also took the opportunity to pass on our own personal condolences to his family and friends.

At Toni's (Graeme's wife) request, we also thank Ian (VK3BUF) for volunteering to give a speech on behalf of the club.

His speech mainly centered on the type of person Graeme was. In summary he was a kind and loving person who never complained, gave his time freely to the club and its members when it was needed, and who went out of his way to help others. To give a good example of this:

Ian (VK3BUF) pointed out to Graeme that he was building a new house, in Drouin and was now at the stage of putting on a new iron roof. Graeme turned up with his own gear and spent the next three days, helping Ian achieve this.

Those members, who did attend Graeme's funeral, were moved by what Ian had to say about Graeme and so were Graeme's family.

Graeme's family also thanked the club and its members, for all the support the club had given them over this difficult period in their lives and for the large turnout of club members who turned up to pay their last respects.

I'm sure I speak for all the members, who new Graeme when I say:

"Our club was and is better off for having you as a member and friend and even worse off for having lost you under such circumstances.

However all is not lost as your memory will live on every time we use the repeater that's now in your name (VK3 RGW). And all of us can learn from the way you conducted your life and your attitude towards others. I for one won't let this message go unheeded.

### **DSTAR PRESENTATION**

The DSTAR presentation is being held off until the May GM. There will be no presentations this month because of the Annual General Meeting (AGM) being held on the same night.

### **HAMFEST UPDATE**

The hall has been booked and paid for. Dianne (VK3JDI) has again has volunteered to organize and sell our tables. Dianne has been doing this now for 20 odd years, am reliably informed.

"Well done Dianne".

In other updates, we are yet to approach any sponsors, but this will happen closer to the event. I thank those who put their hands up at our last GM to set up tables etc. However, we are still looking for more members to help out on the day.

### **ACMA FREEZE ON USA RECIPROCAL LICENSES**

Early in April the ACMA announced a review of reciprocal license arrangements with the USA. Refer to the Newsletter sent out to the membership.

## **GGREC REPEATERS**

### **70cm Repeater (VK3RGW)**

As per last month this repeater is now up and running under its new name.

### **6m Repeater (RDD)**

After Bruno (VK3BFT) looked at the Transmitter control relay/driver board and replaced its relay, this repeater has continued to remain on air, without any further failures.

However, a wire has been added to the control boards input, to aid any further measurements should it fail again. This will help isolate the problem to either this board, or the circuitry driving it.

### **Repeater IRLP**

The crystal finally arrived from Hy-Q and was dually replaced and the Transmitter re-aligned by Ian (VK3BUF). The IRLP node ~~is now~~ was fully operational again. [\(There currently is storm damage issues, Ed\)](#)

## **SHOW & TELL**

Last month's theme was portable component testers. There will be no Show & tell this month due to the AGM. [\(See page 19 for last month's 'portable component testers', Ed\)](#)

## **WANTS & NEEDS**

Don't forget to think about your wants and needs, prior to the meeting. This is your chance to see if other members can help you out with components, or gear you're having trouble locating, or finding at the right price.

## **PRAC NIGHT**

The purpose built interference tracking Receiver is now well advanced with all the components purchased and or donated, except for the 20MHz crystals which are still on their way from the Czech Republic. I expect them to arrive in the next couple of weeks and Barry is making up some basic PCBs (to simplify things). The cost of the kits currently stands at \$40 (unless the club wants to subsidize them to make them cheaper?).

So for those that couldn't attend the last Prac night and wish to make them let me know that you are interested so I can add you to the list.

Remember this receiver complements our 2m antenna build. [\(See bottom of page 18, Ed\)](#)

## **LIABILITY INSURANCE**

GGREC have completed the application forms for Liability Insurance renewal and await a final notice and invoice from the WIA. Stay tuned for updates. [\(Chris\)](#)

## **GENERAL MEETING & ANNUAL GENERAL MEETING**

Please note the next GM/AGM will be held on the last Friday of the month.

I.E. Friday 26<sup>th</sup> April 2019) not on the 3<sup>rd</sup> Friday.

Regards and 73s

Bruce

## From The Editor



This month saw me get near the end of my Nixie tube clock project.

It could do with a back panel/cover, I'd also like to remove some of the lettering on the front panel. Yes, I could attack it with some wet & dry paper, and take it back to a blank canvas, but no, I'd prefer it kept some of its history. Removing most of the lettering around the switches & the left-overs around the right screw would be nice; however 'selected sanding' would end in a mess. So for now it can stay as it is.

One option, as the panel is symmetrical, it to just flip it over giving me a blank canvas, then if I botch it I can just flip it back to where it is now. The front is made up of two panels, the one you can see is a rather thin 'dress', or Escutcheon Panel, fairly easily removed by just undoing the switch nuts & the two front panel screws (that hold the whole assembly into the wooden sleeve)

One other thought, it's not broken, so don't try to fix it! An old saying, but a good one.

One problem I've been chasing is what to use as a rear panel connector. I was originally going to use an 8 pin Din plug (bigger brother to the 5 pin, seen on old Hi-Fi & old computer keyboards). Years ago I ran a length of 8 core data cable around my house, intending it to make future projects easier. However the only real use its seen is DC power & a real time clock etc. source. At the time I used 8 pin DIN sockets as they were cheap & readily available. These sockets are where I plug my various clock projects into, however using the same socket on the back of this (or any) clock is a problem as it sticks out way too far. They would somewhat restrict where I could place the clock.

So I tried a 3.5 mm 'stereo audio/headphone' plug, cheap, readily available, and small. All was well till I plugged the lead into the back, unfortunately it's all too easy to cause a momentary short as I plugged it in. If we were just talking a small plugpack power supply, no problems. However my wall 12V source is much more capable, making this a definite no-no.

*Paul VK3TGX*

## GRAEME VK3XTA IS SADLY MISSED

Last Wednesday Graeme Wheatley quietly passed away after a progressive illness. He was farewelled at a service in Dandenong where 20 Club members came to pay their respects.

Graeme joined the GGREC in the mid-nineties and was universally liked for his friendly chats, technical skill and support for our Club.

Graeme was there when the Club Shack was being assembled, helping to make the project a reality and went on to install the air-conditioning systems that we still enjoy during our summer and winter temperature extremes.

Graeme was keen try new things and made a great Club presentation one evening back in January 2014 where he shared the experience of his 2013 postie bike challenge from Hobart to Alice Springs.

This was a 3500km event and Graeme was easily identified with his iconic FIGJAM plate on the rear of the bike.

Graeme loved all things mechanical and some of his most revered projects were the restoration of some classic juke boxes, well stocked with favourite '45 singles.



*Graeme (centre) on the 3500 km postie bike challenge*

In addition to his comprehensive skills in electronics and radio, Graeme had the rare distinction of being qualified in three separate trades. Electrician, Air Conditioning and Industrial instrumentation. Graeme served for some years at the Bluescope Steel hot-strip mill at Hastings and even managed to organise a Club tour through the mill while it was still in full production.



*Graeme in China*

Graeme was also a competent mechanic and was contemplating a fourth trade in Diesel engines when his illness forced a change of plan.

In 2006 his work took him to Wuxi in China for a few months to help commission a new production line. Later Graeme worked with large relocatable generator sets, establishing and maintaining field plants in the mining industry large enough to run a small city.

Graeme was diagnosed with a slowly progressing lung cancer, which appeared from nowhere, as he had never been a smoker. He and Toni, his partner for 23 years, fought this condition for three years. They also made the most of this time to experience amazing trips and adventures, including hot air ballooning and high-speed race-car travel.

Graeme was an avid camper and loved to set up a quiet camp in the bush around Swan Hill. He also attended several Antennapalooza events and impressed visitors with his self-contained camping layout. Many newer members to the Club may not have noticed Graeme quietly at the back of the room during meetings, but he was a regular at Club events, contributing to working bees and projects whenever his skills were needed.

Earlier this year Graeme and Toni graciously donated the new Hytera multi-mode 70cm repeater to the Club to replace our aging analog-only system. To honour this legacy, the GGREC committee managed to organise a change of callsign for the repeater to VK3RGW to coincide with its installation. In his final months, Graeme was able to access it from his home and join in on local contacts. Later, he still listened in to stay in touch with the latest action. For many years to come, this repeater will be a lasting reminder of Graeme's contributions and involvement with the GGREC.



*The new VK3RGW 70cm Repeater*

The GGREC Club is now more than 40 years old and undeniably many of its members are slowly feeling the impact of advancing years. Still, as an active 55 year old, Graeme was far too young to leave us in this fashion. Despite the final onset of this affliction Graeme maintained an open house and shared his final weeks with many Club members who would drop in for a chat. This helped those who knew him well to come to terms with this insidious disease and the impending loss of a friend. This too was a parting gift from both he and Toni that was greatly appreciated by the many who knew Graeme and enjoyed his company.



*Graeme at the 2017 GGREC Xmas breakup party*

# **BAD PROPAGATION – THE PROPAGATION OF FALSEHOODS**

**An opinion piece by Ian Jackson VK3BUF**

Last month I visited the Train & Hobby show at Sandown Park, along with six other GGREC members. It would have been good to have more Club members present, but that's all we had. Those that did attend just had to work harder to make up for it. It wasn't an easy thing to do. Dianne and I were going to go camping that weekend, but we called it off to help out. I took a day off work to gather equipment to help set it up. Di and I were there for two long days talking to the crowds, introducing members of the public to both Amateur Radio and the GGREC. Dianne took dozens of kids through Morse Code, getting them to encode their names and send it to an oscillator on a straight key. It took another half day to put our equipment away again upon our return. It had also taken six hours of drive time at our own expense to do this work. It needed to be done.

So it was pretty poor form and fundamentally insulting to attend the GGREC meeting the following Friday and listen to fabricated stories of how we had used the event to 'Spread RASA propaganda'. It was doubly distressing to hear such poor behaviour in a room to which we had been trying so hard to attract new visitors. Any prospective hobbyist attending our meeting would have observed a core of grumpy old guys who complained a lot but appeared to contribute little. At the first opportunity such visitors would have left and not come back. A timely apology is in order to all those who gave up their long weekend to help promote the Club, only to have their efforts undermined within days of the event.

So to put this into perspective, here are some facts that are actually verifiable, and not of the speculative nonsense that was voiced at the last meeting.

I'm a member of both GGREC and RASA. I'm proud to be a member of RASA and for the past 40 years I had been proud to be a member of GGREC. There is no conflict of interest here. Both groups have the same objectives of promoting the hobby of Amateur Radio.

RASA is not a small group. It has over six hundred members nationally and is growing rapidly as its achievements become known. It is doing great work for the hobby. It is a National Association that works closely with clubs around Australia and the ACMA, it will be around for many years to come. This needs to be understood.

I could have been actively promoting RASA at the Train and Hobby show and would have been quite entitled to do so. A listed objective of the GGREC rules is for the Club to support other associations with similar aims. I chose not to on this occasion and focused on GGREC promotion using all available materials. There were no handouts at the show describing the nature of RASA or inviting people to join. The only badges that were worn had GGREC on them.

I should point out that there definitely was a propaganda sheet present. We had over 400 printed and we handed out as many as we could. I know this because I personally wrote this flyer for the event a few days earlier. It was all about what a wonderful Club the GGREC is and why people should come along to our friendly meetings to learn more about what we do. (Mr Editor...please add a copy of that promotional flyer to this magazine)

Other items with branding were present at the show. There were radios with ICOM and YAESU logos on them. There was an Australian Band Plan document with a RASA brand in the corner. This was useful to give visitors a sense of scale of the Amateur Radio spectrum versus CB. It was produced in consultation with the WIA as a useful chart of information. It had not previously been printed by anyone in that form. (At the EMDRC Hamfest, even the AR magazine editor on the WIA table took one home for his wall)

There was a WIA Foundation Manual present. I took my own copy to the event and used it quite a lot to educate visitors as to what would be needed to obtain an Amateur license.

We also had information present about the problems associated with radio interference for Amateur Radio. This is a big issue that lots of people talked about. Indeed our HF demonstration at the show could not operate properly because of S9 electrical noise at the site. Again, there was no information within this material describing the nature of RASA. We had a small pile of stickers with a RASA logo on it that were given to a few of the kids who successfully sent a Morse message. Had GGREC or WIA stickers been present, they would have been handed out too. (The Hobby Show organisers did ask the WIA to attend, but unfortunately they never replied) Our big yellow GGREC banner was central to the display. (This is the same banner that Dianne had hand-stitched for the Club some 32 years earlier.)

RASA does have a lot of promotional material. (As it should.) It has produced banners, shirts, badges, business cards and flyers which explain the aims and achievements of the organisation in great detail. None of this was used at the Train and hobby show.

These are the verifiable facts.

There was an ambush vote at the last meeting intending to discriminate against RASA, based upon false claims. This was despite no rules or even guidelines of the GGREC ever having been broken. Fortunately the GGREC constitution is robust and formally supports similar associations. The Club Rules can't be overturned with a single spontaneous and discriminatory vote at a General Meeting. Some members may never be happy and I accept that, but this broad pillar is embedded within the Club charter. The Club must treat all similar minded clubs and associations supportively. These rules render such contrary votes invalid.

This is a good thing. I haven't kept count, but there would be at least a hundred club events that I have helped organise over the years. More recently I had promoted the 'Antennapalooza' field days and we have received many enquiries about when the next one would be. However, I could never assist the promotion of a club event where any one organisation would be discriminated against, whether it be RASA, the WIA or a National wheelbarrow-restorers Association. I suspect that others in the GGREC would feel the same way. It is true that the GGREC has many more RASA members than WIA members, but this is unimportant in this context as some are in both organisations and that is a perfectly reasonable thing for people to do.

The introduction of any such discriminatory legislation would probably destroy a club that has endured since the 1970's, as the very people who have worked to hold it together are unlikely to continue their efforts within a framework of intolerance.

So, by returning to the original point, I am concerned about this odd bitterness by a small number of members who contribute little, but instead search for any scraps of indignance to which they would launch complaint. It is poor form to offend those who have been prepared to put in the long hours which keeps our association running. I would suggest that such individuals be prepared to make a positive and practical contribution to the Club or look around for a different sort of hobby to invest in.

# For Sale



FOR SALE  
ICOM IC490A All Mode 439MHz Radio

430-439.9999 MHz Coverage  
1 Watt/10Watt TX Power  
SSB/FM/CW

50 Ohm N-Type Connector

This radio is in fair cosmetic condition considering its age and all functions appear to work, I only used it on FM so I do not know if SSB or CW works.

It also includes the fist mic and the mounting bracket

\$80 ono

Please Contact

Mark VK3PKT Clohesy  
Phone 0406417877  
Email [pockets@twistedsouls.com](mailto:pockets@twistedsouls.com)

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# Full Quieting

Straight talk on technical topics.

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## What does "73" mean?

Quite often, even on local repeaters, you will hear operators close out a conversation with somebody else by including the term "73".

The traditional expression "73" goes right back to the beginning of the landline telegraph days. In the original National Telegraph Convention, the numeral represented a greeting, a friendly "word" between operators and it was so used on all wires.

In 1859, the Western Union Company set up the standard "92 Code". A list of numerals from one to 92 was compiled to indicate a series of prepared phrases for use by the operators on the wires. Here, in the 92 Code, 73 changes from a fraternal sign to a very flowery "accept my compliments," which was in keeping with the florid language of that era.

Over the years from 1859 to 1900, the many manuals of telegraphy show variations of this meaning. Dodge's The Telegraph Instructor shows it merely as "compliments." The Twentieth Century Manual of Railway and Commercial Telegraphy defines it two ways, one listing as "my compliments to you;" but in the glossary of abbreviations it is merely "compliments." By 1908, however, a later edition of the Dodge Manual gives us today's definition of "best regards" with a backward look at the older meaning in another part of the work where it also lists it as "compliments."

"Best regards" is the generally accepted meaning of 73 today.

For additional information:

<http://www.arrl.org/ham-radio-history>

# AMATEUR RADIO & ELECTRONICS

This is not just a single hobby. It's a blend of Radio and Electronics used in a hundred different ways.

Amateur Radio has a rich history and a boundless future. It's a social network that has spanned the world a long time before Facebook was thought of.



You can experiment and communicate widely over the spectrum, from the AM broadcast band, up to microwave frequencies. Amateur Band segments are reserved for an astonishing range of activities and transmission technologies.

The person holds the license, not the radio. The path for acquiring an Amateur Radio license will take your knowledge and skills in surprising directions. Maybe it's about the places you can talk to (without a phone), or taking the hobby with you to exotic locations, or perhaps it's about original projects that you quietly build on your own. This is the hobby that has a little of something for everyone.

There are three license types: Foundation, Standard and Advanced. Each level gives you a bit more scope. Operator exams are now carried out by the Australian Maritime College (AMC) through a network of Assessors and clubs.

To Melbourne's South-East you have the Gippsland Gate Radio & Electronics Club, (GGREC) which meets twice a month in Cranbourne. If you want to know more about getting a license, send an email enquiry to: [education@ggrec.org.au](mailto:education@ggrec.org.au).

**Examination events are conducted at regular intervals by the Club.**

If you want to meet people experienced in the hobby, come along to the Girl Guide hall in Grant st. Cranbourne on the 3rd Friday of each month at 8:00pm.

**A wealth of information can be found at the Club website: [ggrec.org.au](http://ggrec.org.au)**

Amateur radio is not one topic. It's the integration of a hundred topics and skills. Antenna design, mountaintop operation, soldering & construction, software, digital transmission, contests, competitions & meeting new people.

**It's anything you want it to be!**

# USA/Australian Licence

Hi Members,

Important News item. Especially those contemplating getting a USA/Australian Licence.

ACMA PLACE A FREEZE ON RECIPROCAL LICENSE ARRANGEMENTS WITH THE USA

Early in April the ACMA announced a review of reciprocal license arrangements with the USA. This means that Australians attempting to gain Australian Amateur licenses based upon a pass from a North American license will not presently be able to have their application processed in Australia until further notice.

The statement on the ACMA website said:

There have been concerns raised about the equivalence of USA/Australian licences. The ACMA is currently reviewing the equivalence of these qualifications. Applications for amateur licences that arrive via the FCC will not be processed in the interim.

As yet there is no indication how long this review will take, or whether non-US citizens will be permitted to apply for Australian Amateur licenses under Australian /USA reciprocal arrangements once the review is completed.

Bruce VK3BRW

GGREC President

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## VK3RDD repeater update

Hi Members,

Over the last couple of months we have been having an issue with VK3RDD failing.

Recently it stopped working again. On Tuesday Bruno cracked open the cabinet and had a look at what might be the issue. He suspected the power control unit. When the power control unit receives a control signal from the repeater controller, the power control unit supplies +14v to the transmitter via a relay. That saves the transmitter from being powered 24/7.

No fault was found with the unit so it was reinstalled back in the cabinet with a diagnostic wire attached. So when it fails again we can narrow down what is at fault.

VK3RDD is now operational but is being monitored to allow fault finding. If you see/hear that RDD isn't working again please let the committee know.

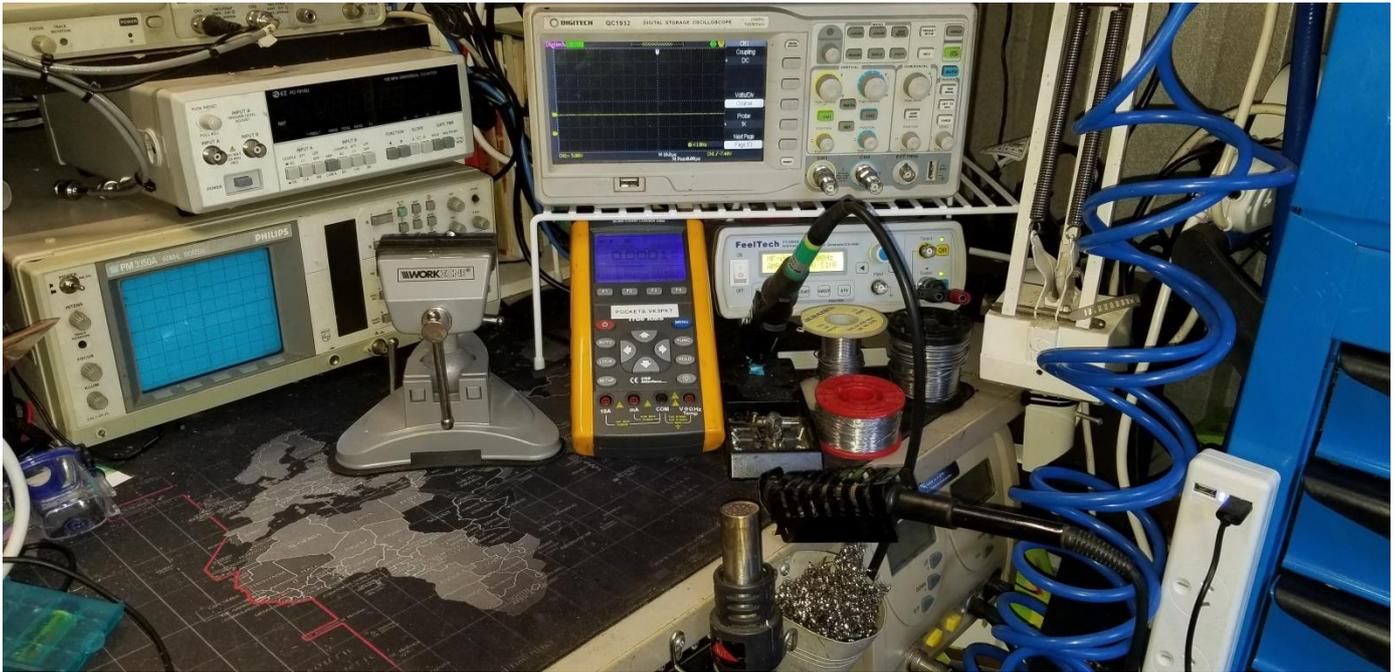
Thanks

Michael

GGREC Admin. Secretary

0407 862 038

# New Soldering/Test station



Here is my latest setup in the twisted shack, I have just set up a control PC for test and measurement and also mounted all my soldering equipment into one area.



There is a Dell PC Optiplex running logging and control software for the Digital Multi Meter, The 2 Channel Digital Storage Oscilloscope and the 2 Channel Arbitrary Function Generator all Located below the portrait monitor to allow easier viewing of long PDF documents.

The specs on the test and measurement equipment are as follows...

- \* 2 Channel 25MHz 500MSa/Sec Digital Scope with PC control
- \* 50,000 Count DMM with internal 120,000 data logging mode with PC control
- \* 2 Channel Arb Function Gen with PC control

On the soldering side of things is an Atten digitally controlled soldering iron used for general soldering and an SMD rework station with a micro soldering iron and hot air reflow. that are both also digitally controlled.

There is also a small vice that can swivel around into different positions a copy of the expensive panavice ones. Also shown are 10 assorted hot air nozzles for the reflow station that are stored in one of my toolbox drawers.

Not shown I also have a stereo optical microscope with 20x magnification that has top and underside lighting, the underside lighting is good for looking into PCB's you can see the shadow cast on a bare PCB from below and this highlights micro-cracks in the trace.

The control sections for the soldering irons have been screwed up under the shack desk to maximise desk space in my small shack, I also have compressed air via a water/oil trap with a regulator for dusting electronics. The filter/trap means that no contaminants from the compressor storage tank end up on the sensitive components.

The air is fed into the shack from the adjacent workshop housing a 2400watt induction belt drive compressor. This is a lot quieter than the direct drive compressors that most people buy for home use. They cost a lot more but I can run it into the early evening before 10 pm and I don't get any complaints from the neighbours.



The new station did not involve the purchase of any new T&M equipment I had all of it already it was just a new layout to integrate all of it into one space by rearranging and mounting, the only thing I bought was the Dell PC and a monitor arm for the monitor

Mark VK3PKT

# Magazine Snippets

While watching an action movie Hunter-Killer the NSA gives the navy a frequency to try, this frequency is supplied as they are trying to get a signal from a team on the ground in Russia however the signal is being jammed on the team's frequency, "the NSA woman says try 2885.5MHz."

A look of bewilderment appears on the navy officers face and she says, We are the NSA we have a few birds in the sky no one knows about, we are on the same team aren't we?"

They try the new frequency and by magic, the static and broken, and choppy image becomes clear, how is it that the receiver can change frequency and a remote transmitter stays on its own frequency? I am guessing it must be a broadband spark gap transmitter to be able to cover that much of the spectrum at once...

From Mark VK3PKT

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From Mark VK3PKT

# SPECIAL EVENT CALLSIGN VI9NI



Four radio amateurs activated Norfolk Island from the 1<sup>st</sup> through 14<sup>th</sup> April 2019.

**The stats:** 9,441 contacts with 4,154 (45%) being on digital mode FT8; and All Time New One contacts (DXCC) for 20% of all contacts. At least two operators reported their contact with VI9NI gave them their DXCC Award!

Two new radio amateurs join the ranks of “Dxpeditioner”. Patrick VK2PN and David VK3BDX made a great contribution and took to the pileups like a duck to water.

## Number of QSOs

Total QSOs: **9441**  
Unique Calls: **4477**

## Operating Time

First QSO: **2019-04-01 09:35:00**  
Last QSO: **2019-04-14 23:08:00**

## DXCC by Band/Mode breakdown

	SSB	CW	FT8	Total
160	2	29	17	34
80	1	20	36	41
40	14	47	38	61
30	0	41	70	75
20	21	28	33	49
17	9	25	14	29
15	8	26	21	32
12	0	0	1	1
<b>Totals</b>	<b>30</b>	<b>75</b>	<b>87</b>	<b>101</b>

## Band/Mode breakdown

Band	SSB	CW	FT8	Total	Total %
160	10	572	139	721	7.6%
80	18	132	488	638	6.8%
40	331	1115	768	2214	23.5%
30	0	566	1339	1905	20.2%
20	255	518	463	1236	13.1%
17	114	973	456	1543	16.3%
15	78	605	498	1181	12.5%
12	0	0	3	3	0.0%
<b>Totals</b>	<b>806</b>	<b>4481</b>	<b>4154</b>	<b>9441</b>	

**The “Cause”:** VI9NI was a Special Event Callsign to commemorate the 40<sup>th</sup> Anniversary of the signing of the Norfolk Island Act, and to recognise the plight of the Norfolk Island people in restoring Self Determination.

*“Abolishing Norfolk Island as an autonomous territory may not seem to matter much in the grand scheme of things, but for an international order that cherishes self-government and proclaims the right of self-determination of people it is a regressive and unimaginative action, an example of the inability to tolerate democracy and difference.”*

– Geoffrey Robertson QC

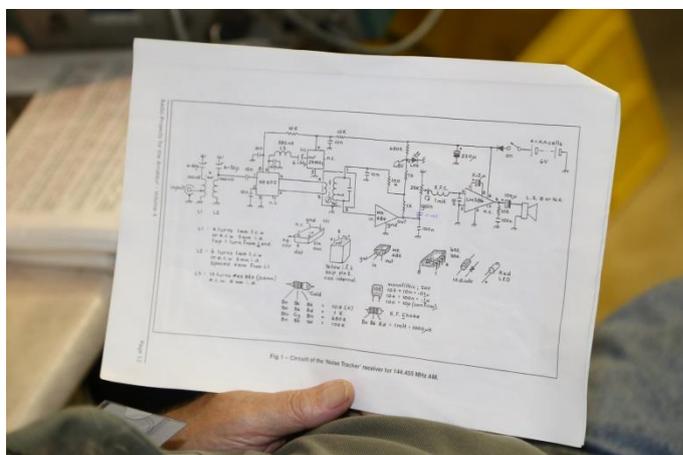
THE NORFOLK ISLAND PEOPLE FOR DEMOCRACY (NIPD) IS A MOVEMENT WITH OVER 1000 SUPPORTERS FIGHTING TO RESTORE THE NORFOLK ISLAND PEOPLE THEIR RIGHTFUL HERITAGE AND TO HAVE NORFOLK ISLAND INSCRIBED ON THE UNITED NATIONS LIST OF NON SELF-GOVERNING TERRITORIES

All excess funds from QSL income and additional donations will be directed to the NIPD. The VI9NI Team support their objectives and thank the people of Norfolk Island for their hospitality and generosity.

The VI9NI team also thanks Gippsland Gate Radio & Electronics Club for their support with the special event callsign.

73, Chris VK3QB on behalf of the VI9NI Team.

## Interference Tracking Receiver



A Prac Night project by Bruce VK3BRW

# Photo's



Portable test equipment night

...and a Heathkit radio at Prac Night

# Bad Power Supplies



Recently I decided to evaluate a 4 channel Digital Video Recorder (DVR), or maybe more accurately, a security video recorder. This unit is now somewhat old, supporting only analogue composite video cameras. These days, if buying a new unit, you would avoid these older style systems as their video quality is now considered quite poor (compared to modern HD TV). Anyway the price was right, free. So I powered it up only to find it was quite noisy, not very stealth, kind of yelling out "Hear I am, smash me" to any intruders. It had a largish case fan & the power supply's fan was shall I say "rather active".

So, how about a quieter supply, something fanless? Thankfully I have a small stash of these from my last employer, they found a better model, with better EMR specs, then promptly threw out all their older, but still brand new units.... It is the small board atop the DVR, next to the original power supply, the new one runs off 12V DC, meaning battery backup will be easy.

Anyway, to get to the main point of this tale, I measured the power consumed before & after the supply swap. Before it was using 48.6W, whereas the new one was drawing 27.48W. quite a lot less, so these figures were implying that the original was not much better than 50% - Yuk, I could probably do better with a linear power supply. (assuming the DVR needed about 26W)

I powered up this supply with no load, it was drawing 12W doing absolutely nothing. For comparison purposes I tried a slightly larger IEI supply, it was drawing 9W. This scenario is not that uncommon with multi output switch-mode supplies, like PC supplies. So if you try and go easy on the supply and use one rated for quite a lot more than needed, then the overall efficiency could be as low as 50%. This supply is rated as being a 200W unit, so it's only running at 15% for this job, a not so uncommon setup, where cheapness and convenience quite often rule when it comes to supply selection. Try buying a PC style supply with a less than 200W rating and you may quite likely fail, or just end up with some third rate rubbish that will be no better, maybe worse.

So if you use one of these to run your amateur radio gear, and leave it on for any extended periods just monitoring the bands, you could be wasting far much more power than the radio would ever use. As this supply is rated at 10A on its 12V rail, it falls into the range needed to run a mobile FM set in the shack. A valid, but extremely poor selection, especially if it is only supplying 100mA 99% of the time. An efficiency of about 8%.

On the other hand, I have a few 7A 12V single rail supplies, these are quite a lot more efficient, especially at no load, drawing only 0.3W. Running the now 12V DVR's 27.48W load (30% of rated capacity) it was pulling 29.8W from the 240V mains, an efficiency of about 92%, now we are talking.

So all up, with my two supplies in place of the original single supply I was quite a bit better off, the saved power could run a fairly decent LED lamp providing some decent illumination, better than a pile of extra heat (and noise getting rid of the extra heat). The original goal was not a power saving one, rather a way to cut the noise, and give me the option for direct battery operation (without using a UPS)

Many years ago the GGREC did a project that entailed connecting two modified PC supplies in series, for 20A supply to run a HF transceiver. The supplies were 'turned up' so that the 5V output was almost 7V, then two were wired in series inside a single enclosure to give 13.8V, I never built one of these, it would be interesting to connect one up to a mains power meter to see what it draws when sitting there doing nothing. If you have one, I'd like to borrow it.....

So why the big difference? Well it all comes down to how they work and the compromises that are generally made in a PC supply. In a switchmode supply, the incoming 240V mains is rectified to produce about 340V DC, this then feeds a pair of chopper transistors that turn it into a row of square wave pulses, which then pass through a transformer that cuts the 340V pulses down to roughly twice the desired output voltage, on a single rail 5V supply these would be about 10V. This square(ish) wave then goes through a filter choke and capacitor which basically averages the square wave down to a steady DC value, in this case, 5V. If it is being loaded down then the controller will adjust the duty cycle of that square wave so it is a bit more on than off, the average of that being a bit more voltage, bringing us back to 5V. This is a never-ending process of the regulator constantly tweaking the waveform to get as near as possible a perfect 5V. In a single rail supply that is about the end of it, to the point that with no load the switching controller will take the pulses back to almost nothing, then enter 'discontinuous mode' where it will stop producing any pulses at all, until the unloaded output capacitors discharge a bit.

<b>AC INPUT</b> 交流输入 <b>100-240V ~ / 4-2A / 60-50Hz</b>						
<b>DC ---</b>	<b>+3.3V</b>	<b>+5V</b>	<b>+12V</b>	<b>-5V</b>	<b>-12V</b>	<b>+5Vsb</b>
	<b>17A</b>	<b>12A</b>	<b>10A</b>	<b>0.3A</b>	<b>0.5A</b>	<b>1.5A</b>
<b>OUTPUT</b>	<b>+3.3V &amp; +5V TOTAL OUTPUT 65W</b> <b>+5V&amp;+3.3V 组合输出最大不超过 65W</b>					

By contrast, in a PC supply there are a dozen outputs, but only one switcher (ignoring the ATX 5V standby supply for now) and one transformer, however that transformer has several output windings to feed all the separate

rails. Usually all these rails are averaged together to form the feedback to the single pulse width controller. And this is where the trouble and compromises stem from, with unknown loads how do you balance the drive so they are all spot on, well in truth you don't. One of the tools they use is dummy loads on the outputs, so a lighter than expected load on one output won't cause it to go sky high. As mentioned earlier, all these compromises are to suit a 200 watt PC, on this 30W load, they are way overdone = lots of waste.

If you have ever taken a PC supply and just used just the 12V output, as soon as you transmit (load up) that rail it will drop alarmingly, this is because the all but unloaded other rails are at their specified voltages so the switcher is unable to up the drive to give you more 12V, for fear of overdriving the other rails. It cannot selectively give you more 12, without touching the others, there is only ONE feedback loop feeding ONE controller to do it all.



I have properly modified these things in the past for 12V only, killing the unwanted rails is easy, rejigging the feedback system not so, often just tracing out what they have done is the hardest part.

Where I used to work, they were all worried about ROHS compliance, or the 'Reduction Of Hazardous Substances' directives (i.e. use lead free solder). If they put that aside and spent their time to design good EFFICIENT equipment then the world would probably be a better place.

The 'WEEE' bit of this label sums up my thoughts. (Only do what is legally needed, great...)

*Paul VK3TGX*



# Club Information



Meetings 20:00hrs on third Friday of the month at the  
 Cranbourne Guide Grant Street Cranbourne  
 Prac nights first Friday in the Peter Pavey Clubrooms Cranbourne 19:30hrs  
 Visitors are always welcome.

## Office bearers

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## Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.  
 6m Repeater Cranbourne VK3RDD, In 52.575 Out 53.575 CTCSS none  
 70cm Repeater Cranbourne VK3RGW, In 434.475MHz Out 439.475MHz CTCSS 91.5Hz  
 VK3RGW Repeater supports Remote Internet access (IRLP), Node 6794.  
 70cm Repeater Seaview VK3RWD, In 433.575MHz Out 438.575MHz CTCSS 91.5Hz  
 Simplex VHF - 145.450MHz FM, Simplex UHF - 438.850MHz FM  
 VK3RLP Beacons 1296.532MHz & 2403.532MHz (currently inactive)

## Membership Fee Schedule

- Pensioner member rate \$40.00 Extra family member \$20.00
- Standard member rate \$50.00 Junior member rate \$25.00
- Fees can be paid by EFT to BSB 633000 - Account 146016746
  - Always identify your EFT payments
- Membership fees are due by each April Annual General Meeting (AGM)

Magazine Articles to [editor@ggrec.org.au](mailto:editor@ggrec.org.au) Cut off, 10<sup>th</sup> of the month  
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