



GATEWAY

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

January 2017



GGREC Committee at work

Paper Tape Reader - Arduino

The Dead Repeater

How are your Nixies?

WIA happenings

And More

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Event Queue

January:

- 20th General Meeting & Talk by Chet Cline on 'AIR CTI'
- 22nd Club Net 8.00 pm - on VK3RLP
- 26th Australia Day BBQ - **** kick off at 11:00am ****
- 29th Club Net 8.00 pm - on VK3RLP

February:

- 3rd Prac Night
- 5th Club Net 8.00 pm - on VK3RLP
- 7th Arduino night, 7pm – Note \$4 hall contribution
- 12th Club Net 8.00 pm - on VK3RLP
- 17th General Meeting & Talk by Peter Brennan VK3TE, on DMR
- 19th Club Net 8.00 pm - on VK3RLP
- 26th Club Net 8.00 pm - on VK3RLP

PRESIDENTS REPORT JANUARY 2017

By Ian Jackson, VK3BUF

Welcome to 2017. It does seem like an extraordinarily high number, but if you are reading this article, then you've made it this far. We are only two years short of the bizarre future mapped out for us in the movie *Blade Runner*. We seem to be a long way short of spaceship travel to nearby stars and robots that don't know that they're robots. Still, after following the politics of 2016, I can't really be sure about that last bit.



I have not long returned from a few weeks away in central Europe, sightseeing by train. It turns the world into a sort of a passing ant farm where I can't help but to see how differently the places I'm seeing are being run and lived in. Each region has a different mindset which affects not just the here and now, but what it will be like five or ten years from now. In Germany and Switzerland I saw that they strive for improvements, but its not about individual advancements that are made at the expense of the poorer members of society. There is a sense that progress is not really progress unless the wellbeing of everyone moves forward at the same time. There are many Western cultures, (our own included) where the elite move as fast as they can and how the rest survive is their own problem. Short term gains for some create long term problems for everyone else. The real measure of success for any society is not how comfortable the wealthy are, but in how the most vulnerable members can live and contribute. As an outside observer, I can see that there are lessons that Australians can benefit from. A candid description of our recent adventures are included in this months Gateway.

Within the microcosm of the GGREC we have been doing well. We have become a forum where we can exercise technical skills and ideas and try to spread them around to all those who would want to know more. This is the best thing our Club has to offer and I hope that we can take these ideas deep into 2017 as well.

Have a think about what you as a GGREC member would like to see happen in 2017. We will raise this at the January General Meeting and explore some options. The committee is not a Club within a Club, it is just a team that has been charged with carrying out the wishes of its members. Tell us what you want.

On area that we did respond to was the series of Arduino training sessions last year at roughly fortnightly intervals. These were well subscribed by our members. There is enthusiasm to continue more sessions in Feb, but exactly what these will look like is still being discussed.



We are looking at registering the domain name antennapalooza.org.au so that we may dedicate a simple web site to details about past and upcoming field weekend events.

2017 is also the 40th year of the GGREC. There will be some celebration of this milestone in the course of this year. More details will come out over the next few months.

This Friday night our guest Speaker, Chet Cline is visiting the GGREC to give a presentation on tyre inflation technology for the trucking industry. Look for the advert in this edition of Gateway. Chet is a great speaker who will keep the whole room fascinated for the duration of the lecture.

What's happening with the WIA?

Over the past few months I have endeavoured to keep GGREC members up to date with developments around the WIA. Sadly, we have been spectators to the slow slide of its operations. The remaining Directors and WIA Secretary seem to be content to run the organisation into the ground if it means they can cling to power. Shortly before Christmas we saw Directors Andrew Smith and Paul Simmonds quit in total dismay over the board's unprofessional behaviour. We also saw the Treasurer and Assistant Treasurer resign because the board refuses to act upon recommendations they agreed to in the Treasurers Report. A binding motion was put forward by one hundred and forty WIA members for a General Meeting to be called on a vote to sack these Directors. The Directors have in turn decided to ignore that requirement, they have snubbed the WIA's constitutional rules and **refuse to call that meeting**. For the WIA, 2016 was a watershed decision year where concerned members tried to fix the issues and turn the organisation around, rather than let it sink into oblivion. It is the oblivion option that we now see being played out.

Several corporate professionals had worked hard to expose the train wreck of WIA management, but they have run out of patience. They now conclude that the organisation is dying and no longer has the support of those who held it together. As a result, we are likely to see massive amounts of non-renewals by WIA members over the next year. The WIA Reform Group have essentially given up trying to reform the organisation that has proven again and again, that it will conceal facts and make up their own rules in order to retain control.

The nearest and slightly bizarre analogy to this situation is a jet plane with four engines on fire while the captain keeps telling the passengers that there is nothing to worry about. It's not hard to figure out how this will turn out.

The present outlook is poor. On average, the WIA is loosing thousands of dollars per month. It has failed to meet the requirements of examination assessments with the ACMA, the financial report delivered at the last AGM was wildly inaccurate. Five treasurers have quit in 18 months. (there are no treasurers now) The only directors that understood corporate diligence have quit. Stark conflicts-of-interest by at least one Director were exposed, but remain unresolved. There is no active consultation with Members and affiliated Clubs taking place. Magazine censorship is rife. The Secretary have ignored lawful representations by members for a General Meeting. Membership records have slid into disrepair with financial members being 'locked out' of web site access. The feedback I hear is that the WIA membership base is about to collapse.

It is a very dark analysis this month, based entirely upon information coming to our door from sources across the country. History will not be kind to those who broke rules and sought to preserve their positions at any cost. Amateur Radio in Australia is now being badly affected by the WIA's failure to respond to its members.

You may well ask, 'what's next? How do we fix this? At this point in time there are no strategies to fix it in progress and no way forward. Just the same platitudes from the same people who brought the organisation to its knees in the first place. In the mean time, all the engines are still on fire, but the Captain still tells us to relax because dinner will be served soon...'



Notice Board

Special guest speaker This Friday Night

Chet Cline owns AIR CTI, the company that has seen more than a thousand trucks across Australia using his tyre management systems. Chet will be visiting the GGREC to describe how this technology is changing the transport industry. His work is leading the way for road trains, logging trucks, agriculture and fire fighting vehicles.

Learn the right way to treat your tyres on the highway and in the bush. It is a rare opportunity to hear from an excellent presenter who is an expert in this industry. It is not a talk to miss!



Free Australia Day barbecue at Club Shack

On Thursday the 26th of January, at **11:00am**, we will celebrate Australia Day at the Club shack with a sausage sizzle. The Club will supply the snags if you can supply the drinks and enthusiasm.



Notice Board

ARDUINO NIGHT ON FEBRUARY 7

For GGREC members who have been participating in the Arduino training sessions, we have reserved the evening of Tuesday, February 7 from 7:00pm onwards for this session. As previously discussed, we ask that each participant kick in \$4 to contribute to the hall hire and refreshments.

On this night there won't be regular training taking place. We are using it as an opportunity to see how the various projects are going. Your project does not have to be completed, but bring what you have with you and we can have a look at how you have been approaching the challenges. The training has been in progress for some time now and all participants should have made some progress towards their target project. See you there!



FEBRUARY GUEST SPEAKER

On February 17, the General Meeting night of *next* month, we shall be visited by Peter Brennan VK3TE, who shall be talking to us about Digital Mobile Radio (DMR) technology for Amateur operations.

This shall be a rare opportunity to find out how this system will shape the future of mobile communications in this country



From The Editor – the dead repeater

Well here we are its 2017 already; Time to get back up to speed after the December magazine break. The only problem is my shack has a backlog of jobs already! Unfortunately time in the shack is nowhere near high enough to catch up – Then the club shack repeater VK3RLP died.

So I wandered over, half suspecting a power fault, or a cooked TX rig. This repeater is basically two Motorola Syntrx mobile radio's wired back to back, via a controller board. One radio is dedicated as a receiver, the other as a transmitter. Which of course places quite a thermal load on the transmitter when we have club nets etc., as it is transmitting about 95% of the time for over half an hour, without a fan. It would be interesting to put a temperature sensor on it to see just how hot it gets.

Anyway, I rolled up there a few days later to have a look, If I used the manual TX switch on the repeater the TX basically 'Motor boated' (pulsing rapidly on and off, all but 'burping'). So I swung the cabinet around and hooked up a multimeter to the power connector, it dropped from 13.80 to about 11V, not good, so for an extra test, I hooked the club's oscilloscope across the supply and observe nice big dips down to approximately 8V.

At the other end of the shack we have an identical power supply running our dual band Yaesu rig, so I reconnected that radio to the big 'HF rig' supply and popped that power supply in behind the repeater – all fixed, it would now perform a decent over with no problems.

Back in my shack, with a 3 ohm dummy load, (4.8A) the supply dropped back to a few volts. These supplies consist of an LM723 regulator driving 4 2N3055 power transistors via a TIP31A transistor. The 4 output transistors seemed to be sharing the load, so all 4 dying in unison seemed unlikely, so that left the driver and regulator IC, I guessed at the TIP31 losing the plot, so I replaced it, however that repair was very short lived. It seemed like the regulator was sensing a current overload, and throttling back, However there was no current sense resistor visible anywhere, so what would be causing it to throttle back? So I downloaded the data sheet for the regulator, in a basic setup, the sense resistor goes between pins 2 & 3, so I traced them – all the way to a 20A fuse on the circuit board. Some galoot had installed a fuse holder & fuse where the current sense resistor should be. I'm not sure what they were trying to achieve, have the regulator protect the fuse?, anyway the sticker on the transformer stated a maximum of 12A for the supply, via a 20A fuse – how does that work – in the end, not very well.

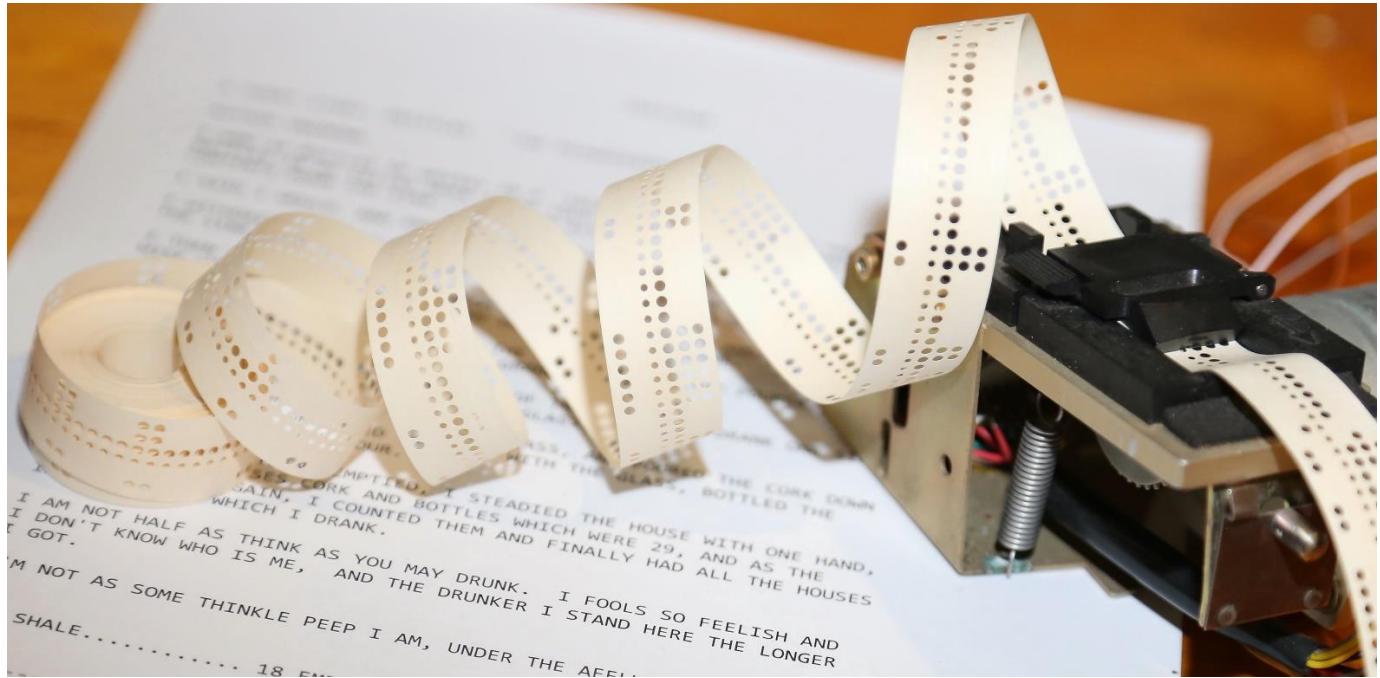
My calculations indicate a resistor of about .05 ohms is needed. Unfortunately that's where it stands at the moment, in need of a resistor & a new fuse holder & 12A fuse. The old holder is looking rather sad & it needs relocating to a place where one can more easily replace it next time. In its current location you have to push the fuse up into the holder mounted on an upside down circuit board with almost no mounting support, a recipe for disaster.

Then the repeater died again! Now it will transmit a steady signal, but with no audio. I suspect a dirty socket or dry solder joint, maybe from all that heat. It will be interesting to try a gently 'drop test', to see if it comes good.

In the meantime there is some talk about buying a new repeater, mention was made of going for a digital one. I originally thought they were talking Icom Dstar or Yaesu Fusion, but no they were talking DMR – another standard again! Have a look at <http://www.vkdmr.info/>

Paul VK3TGX

Paper Tape Reader – An Arduino Project



In the last magazine, I described driving the stepper motor on this Sagem paper tape reader. That worked out quite well, that is until I inserted a tape to read. 12V didn't quite cut it 16V (maximum on the supply I was using) worked much better, even when I reduced the pause time to 10ms – probably the fastest this reader has ever run.

The 5 element code used, has seen many changes over the years, it seems almost everyone who took it on felt compelled to change something. Some, like the Russian version are obviously required, however other changes seem rather petty.

00	01	02	03	04	05	06	07
NUL	E 3	LF	A -	SP	S '	I 8	U 7
08	09	0A	0B	0C	0D	0E	0F
CR	D ENQ	R 4	J BEL	N ,	F !	C :	K <
10	11	12	13	14	15	16	17
T 5	Z +	L >	W 2	H £	Y 6	P 0	Q 1
18	19	1A	1B	1C	1D	1E	1F
0 9	B ?	G &	FIGS	M .	X /	V ;	LTRS
Letters		Figures		Control Chars.			

One of the original driving forces in designing the code was to limit mechanical wear on the punch, to do this they looked at the frequency letters in the alphabet are used, and assigned the most used to single hole codes etc., the downside to this is if you look at the 5 element code in binary number sequence order, the letters and numbers are all over the place.

To convert the easiest way is to use a lookup table, or array, **byte ita2_ascii[32][2]** it has 32 positions for the 32 possible combination from 5 bit binary, by 2 for the two different shift states. The two shift characters are used to toggle what shift we are currently in. I.e., True and False or 1 & 0, the two columns in the lookup table.

```
if (tapechar==B11111) figures=false;
if (tapechar==B11011) figures=true;
asciichar=ita2_ascii[tapechar][figures];
```

If you look at the table, you'll see that the two shift 'characters' get translated to ASCII tildes "˜" Later on in the code where the ASCII is finally sent to the serial port, anything other than tildes is sent, i.e. the shift characters are non-printing, so are 'trapped' and not sent on.

In some cases, it is possible to formulate a formula to translate from one 'set' to another, however when the relationship is almost random, like this, using maths etc. is almost

impossible. Even if there is a way, even an easy one, like a sine wave curve, lookup tables can speed up your code quite considerably, `asciichar=ita2_ascii[tapechar][figures];` etc. is always going to execute faster than `sin(X)` etc. Tables can take up a lot of memory space, but if you're not running short, don't worry, this is not a PC, nothing else is going to use any left-over memory.

For this application I decided to convert the TTY code to ASCII, so it could be fed into a PC in a computer recognisable format. You could just feed the raw tape data into your PC and have it do the conversions, but to me the obvious way was to have an Arduino micro do the work, that way, 'off the shelf' PC terminal software could be used to receive the data from a serial port. These days the most obvious connection is USB, and as most Arduino's come with USB fitted, the obvious way, However you could go for RS232 via a MAX232 IC, if you prefer.

```
{
{ ' ',0 }, // 00000, 0 = nul
{ 'E','3' }, // 00001, 1
{ 0x0A,0x0A}, // 00010, 2 = Line feed
{ 'A','-' }, // 00011, 3
{ ' ',' ' }, // 00100, 4 = Space
{ 'S',0x27}, // 00101, 5 = S, '(comma)'
{ 'I','8' }, // 00110, 6
{ 'U','7' }, // 00111, 7
{ 0x0D,0x0D}, // 01000, 8 = Carriage return
{ 'D','W' }, // 01001, 9 = D, Who are you ($ in US)
{ 'R','4' }, // 01010, 10
{ 'J','b' }, // 01011, 11 = J, bel
{ 'N','.' }, // 01100, 12
{ 'F','!!' }, // 01101, 13
{ 'C',':' }, // 01110, 14
{ 'K','(' }, // 01111, 15
{ 'T','5' }, // 10000, 16
{ 'Z','+' }, // 10001, 17 - " in US
{ 'L',')' }, // 10010, 18
{ 'W','2' }, // 10011, 19
{ 'H','£' }, // 10100, 20 = H, Pound (#-Hash in US)
{ 'Y','6' }, // 10101, 21
{ 'P','0' }, // 10110, 22 = P, Zero
{ 'Q','1' }, // 10111, 23
{ 'O','9' }, // 11000, 24
{ 'B','?' }, // 11001, 25
{ 'G','&' }, // 11010, 26
{ '~,~' }, // 11011, 27 = Fig shift
{ 'M','.' }, // 11100, 28 = M, dot
{ 'X','/' }, // 11101, 29
{ 'V','=' }, // 11110, 30 - simi-colon (; in US)
{ '~,~' } // 11111, 31 = Letters shift
}
```

In earlier versions of Microsoft Windows (XP etc.), a program called Hyperterminal came pre-installed. These days you have to obtain your own. Fortunately there are a few free choices like TeraTerm etc. Another option is to configure the PC to treat input from the serial port as keyboard input. That way the characters from the tape will be 'typed' into whatever program you have open at the time. I.e. your running your favourite RTTY communications software, on air in mid QSO, and you'd like to send a paper tape, just pop it into the reader and it'll go to air just like you had typed it in – without your software having to know anything about paper tape. If you are using one of the newer Arduino Uno's (i.e. the ones the GGRCC obtained) there is another option, the serial to USB chip on them is actually another Atmel micro, an atMega16U2. By default it comes programmed to act as a USB serial adapter, However it can be easily reprogrammed to look like a keyboard to your PC. That way when you plug in your tape reader, the PC will think it's another keyboard, and any

input will be accepted without any changes needed to your computer. This actually can lead to a whole bunch of projects like custom keyboards etc. How about controlling your computer with a CW key?



I saw a cartoon/joke about a one key keyboard years ago, now it would be relatively easy to achieve.

(And outright painful to use!)

International telegraphy alphabet No. 2 (Baudot-Murray code)

Impulse patterns (1=mark, 0=space)		Letter shift		Figure shift		
Code elements: 12-345	Punched marks	ITA2 standard	Russian MTK-2 variant	Russian MTK-2 variant	ITA2 standard	US TTY variant
00-000	0	Null				
00-001	1	T	T		5	
00-010	1	Carriage return				
00-011	2	O	O		9	
00-100	1	Space				
00-101	2	H	X	Щ	£	#
00-110	2	N	H		,	
00-111	3	M	M		:	
01-000	1	Line feed				
01-001	2	L	Л)	
01-010	2	R	Р		4	
01-011	3	G	Г	Ш		&
01-100	2	I	И		8	
01-101	3	P	П		0	
01-110	3	C	Ц		:	
01-111	4	V	Ж	=		:
10-000	1	E	Е		3	
10-001	2	Z	З	+		"
10-010	2	D	Д	WRU?		\$
10-011	3	B	Б		?	
10-100	2	S	С	'		Bell
10-101	3	Y	Ы		6	
10-110	3	F	Ф	Э		!
10-111	4	X	Ь		/	
11-000	2	A	А		-	
11-001	3	W	В		2	
11-010	3	J	Й	Ю	Bell	'
11-011	4	Shift to Figures (FS)		Reserved for figures extension		
11-100	3	U	Ү		7	
11-101	4	Q	Я		1	
11-110	4	K	К		(
11-111	5	Reserved for lettercase extension		Shift to Letters (LS) / Erasure / Delete		

Here is a table of Baudot / Murray / ITA2 codes (from Wikipedia) as you can see there are quite a few variations. It all depends on where the machine that made your tape came from, some changes are minor, other not so. Hopefully you won't stumble on any Russia tapes, they would have you head scratching for quite a while.

And so where to from here?

Well I've been toying with the idea of using an Arduino to kind of do the opposite – No not to drive a punch, I don't have one (Now I'm kicking myself, I didn't save one). I have had thoughts of a project to take in ASCII, translate it, and convert it to tones ready for an SSB transceiver. I.e. with no PC.

I have been having thoughts of being able to remotely interrogate my shack, using a laptop to remotely receive status, info, received signal reports etc.

As in poll the shack on HF, and get back a text report.

I was going to use the Arduino PWM function to synthesize sine waves, however after seeing how they have implemented PWM (in software) with its 490Hz signal, Audio is defiantly out. The PWM signal needs to be several time the frequency of the signal you are trying to create.

Years ago I did just that with a Motorola 68HC11 chip, synthesizing DTMF & sub audible tones, all in sine waves so there was not any harsh square wave harmonics needing filtering, as creating a bad on air signal is not acceptable. I have a feeling the Arduino environment is doing PWM in software, rather than using the Atmel hardware so as to create more analogue outputs. It's a pity they are so limited in their use.

A Telex 'Short Story'

- The 'message' under the tape reader in the title picture

A SHORT STORY, ENTITLED 'THE DISAPPEARING WHISKY'

AUTHOR UNKNOWN

I WON 24 BOTTLES OF WHISKY IN A 'JACKPOT' AT POKER AND I HAD 18 BOTTLES IN MY CELLAR WHEN I WAS TOLD BY MY XYL TO EMPTY THE CONTENTS DOWN THE SINK.....OR ELSE.

I SAID I WOULD, AND PROCEEDED WITH THE UNPLEASANT TASK.

I WITHDREW THE CORK FROM THE FIRST AND POURED THE CONTENTS DOWN THE SINK WITH THE EXCEPTION OF ONE GLASS, WHICH I DRANK.

I THEN EXTRACTED THE CORK FROM THE SECOND BOTTLE, AND DID LIKEWISE WITH THE EXCEPTION OF ONE GLASS, WHICH I DRANK.

I THEN WITHDREW THE CORKS FROM THE THIRD BOTTLE AND POURED THE CONTENTS DOWN THE SINK, WHICH I DRANK.

I PULLED THE BOTTLE FROM THE CORK OF THE NEXT, AND DRANK ONE SINK OF IT, AND THREW THE REST DOWN THE GLASS.

I PULLED THE SINK OUT OF THE NEXT GLASS, AND POURED THE CORK DOWN THE BOTTLE, THEN UNCORKED THE SINK WITH THE GLASS, BOTTLED THE GLASS, AND DRANK THE POUR.

WHEN I HAD EVERYTHING EMPTIED, I STEADIED THE HOUSE WITH ONE HAND, COUNTED THE GLASSES CORK AND BOTTLES WHICH WERE 29, AND AS THE HOUSE CAME BY AGAIN, I COUNTED THEM AND FINALLY HAD ALL THE HOUSES IN ONE BOTTLE WHICH I DRANK.

I AM NOT HALF AS THINK AS YOU MAY DRUNK. I FOOLS SO FEELISH AND I DON'T KNOW WHO IS ME, AND THE DRUNKER I STAND HERE THE LONGER I GOT.

I'M NOT AS SOME THINKLE PEEP I AM, UNDER THE AFFLUENCE OF INCOHOL.

FOR SHALE..... 18 EMPTY SCOTTLES OF BOTCH.

All in glorious upper case – the only option in its day.



Paul VK3TGX

CHAOS TAKES A HOLIDAY

VK3JDI and VK3BUF travel to Europe in December

The world is an unpredictable place. When it comes to travel, we can make plans, study details and hope that things will turn out as intended, but generally, there is a little nagging sensation that something has been forgotten or unforeseen events will cast such plans to the four winds. So with fingers firmly crossed Dianne and I made ambitious travel plans to visit sixteen European cities by train in 21 days. Hotels were booked and seat reservations were made. Then we became slowly astounded when it all worked. No flights were delayed, Every train arrived on time, every hotel had indeed been expecting us and all rooms were ready to receive our travel weary bones with chocolates waiting on pillows. It didn't rain, no buses broke down. Nobody arrested me for anything. It was quite extraordinary. The gods of chaos were looking the other way and left our wish list un-tainted by disaster. I cannot help but feel there will be some kind of divine retribution that will even up the score in other, undefined ways, but until then, I can only think that just the right number of chickens were sacrificed 'somewhere in the world' to ensure our good fortune.

So after around 22 hours in the air, we found ourselves at Munich airport shortly after dark. There we activated our Global rail passes and took a 40 min trip into the heart of the city. We dragged our bags the necessary half-kilometre to our accommodation for the night, wedged snugly between two lap-dancing venues. Still, there's no time for dallying. The following morning we left Munich on a long-haul train to Garmish-Partenkirchen. A charming town nestled between mountains. One of these mountains is Zugspitze, around 3km high with a train that claws its way to the top with a cog drive. A pleasant day was spent on that excursion. Then onwards to Switzerland. A stopover in Zurich was followed by a couple of nights in the old town of Lucern, where a 20 piece brass band puts out Christmas carols just outside our hotel room windows. There's probably an internet chart somewhere that plots curves of ye olde-worlde Christmas quaintness against permanent hearing loss, but I couldn't find it. No matter, the following day we were cruising on the fjord-like serenity of Lake Lucerne to Vitnau, where another



cogwheel train took us to the top of Mt Rigi. Here they have magnificent views, beer and German sausage the size of small fire extinguishers. Moving right along, after a few sub-zero walks around the town, we were back on the tracks to Chur. Another delightful mountainous city, full of Christmas trees, dainty crepe stalls and lots of hot red wine that tastes like boiled sporting goods.

Chur is also the launching place for the picturesque Bernina Express, a century old railway that crosses the snow covered alps, skirts St Moritz and finishes up in Tirano, Italy. Here we swap our inexcusably poor knowledge of German with an equally poor knowledge of Italian. We went shopping at 2pm, gawking at the ornate, plastic coated Franco Cozzo like furniture for sale in shop fronts. But everything was closed. Back at the hotel I asked what public holiday we had encountered, but was told "silly person, of course shops never open before 3pm on weekdays."

The following day Milan was a busier place. We joined a tour that took us through some bigish cathedrals and the site of DaVinci's 'Last supper'. A giant jpg image that spans an entire wall. Milan turns out to be a historic city choc full of culture. It was totally worthwhile spending a second night there, except we were off to the coast to see Genoa next. The hotel room there was five floors above a railway station, served by a century old caged elevator. Because of the way the storm shutters wafted in the wind, the room alternated between light and dark



every few seconds. A makeshift prop assembled from several plastic coat hangers and electrical tape did help for a while, but they eventually disintegrated and I never saw them again. Probably they were run over by trains.

Not a problem. Snappy travel is like pizza. Even when it's bad, it's still pretty good. Speaking of which, Italian pizza is so thin, it only exists in two dimensions. Place a zeroed vernier over any slice of salami and it still shows zero-point-zero mm.

Onwards and down the west coast of Italy, the train skirts the Mediterranean sea until we reach Pisa of leaning tower fame. Only a short journey from the station by local bus, it was still there and still leaning. A HF tribander on the top would be awesome, but the radiation angles could be a bit funky. No matter, we continued to hurl south down to Rome, or 'Wome' as it was called on Life of Brian. We dragged our bags in the dark to a hotel half a 'k' from the central station. Our new base of operations. Lots of stuff to do here. The following morning we were booked into a four hour walking tour of the Colosseum. A grand looking place that will be awesome when they get around to finish it. This also included a gawk at Caesar's Palace. Not as flash as the one in Vegas, but still interesting. We couldn't get into the Sistine Chapel because it was Sunday and apparently it gets used for other secret stuff on Sundays. In the busy day and a half we spent in Rome there were probably one or two things that we missed seeing, but hey, it's best to leave something for next time. Besides Florence was beckoning, with its



Renaissance buildings and the Galileo museum urging us Northward. Galileo was another awesome dude into optics in a big way. Single-handedly, he designed the album cover for Pink Floyd's '*Dark side of the moon*'. Lots more walking was involved here. On a careful diet of pastries, chocolates and ancient marble staircases, our legs were

beginning to bulk-up. All good training for the next stop, which was the maze of walkways between the canals of Venice. They literally go on forever and bare little in common with the maps provided. Somewhat like Fountain Gate shopping centre, but with gondolas instead of shopping trolleys, which is quite possibly the most offensive comparison ever made in the history of this strange city.

A highlight was a water-bus to the neighbouring island of Morano, where we found some exotic glass artists in action. Seriously talented dudes. They start with a blob of molten glass on a stick, poke at it like 'twice' with some pliers and it turns into a galloping stallion or a chandelier. Here I saw a bunch of amateur antennas on top of one of the canal houses, but no sign of any operators. I'm betting they make their own egg insulators from glass too. Eventually we found our way back to the hotel, (Hotel Amadeus) which was no small miracle, so we could collect our bags for the next leg.

This was a bit tricky as we wanted to get to Vienna in Austria, but there was no direct path by train. Two months earlier we had booked a spot on a long-haul bus to take us half-way to a place called Villach where we could link up with a train to go the remaining distance on that day. The bus was an awesome two-story behemoth with a coffee kitchen and big leather seats that faced each other across a travel table. It had its own high speed internet access and the multi-talented driver announced all stops fluently in three languages. When we reached the historic city of Vilach we had a full sixteen minutes to appreciate its grandeur before the train sped us Northward into Austria at 250kph.

Vienna has a lot of charm. We settled into our austere accommodations with few problems and the following morning took a subway to the giant, 110 year old ferris wheel (The Riesenrad). This



was the one that Orsen Wells rode in *The Third Man* in 1945, but we didn't hear a single zither playing. It was cool and there was a little snow on the ground, but not enough to form a decent snowman. We ogled at some of the floating hotels on the Danube river and also visited Franz Josephs Palace, which only seemed fair as we had already seen his glacier in New Zealand some years beforehand.

After Vienna it was only a few more train hours to Innsbruck. Always much more comfortable than driving, usually accompanied by a table and working power point, so I could use these stray hours on a PC for a sequel adventure novel I had been chipping away at. (there's no such thing as unallocated time)

Innsbruck is an old and pretty city filling a valley between two mountain ranges. It had a difficult to define method of transport up the mountain. In the city centre there is a set of steps leading deep underground where a type of cable car of suspended rooms hang inside a heavy frame that is dragged under the city and up the side of the mountain at a steep angle, while the little rooms maintain their own levels, like a Ferris wheel rolled flat and pulled through a tunnel. At the top of this mountain a passing tourist from Melbourne was happy to take our picture.

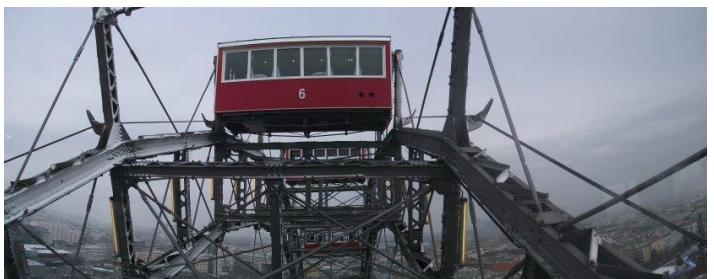
The following day found us in Salzburg for Christmas Eve. Plenty of street stalls dished out local delicacies and Santa-shaped objects. The hotel here was a full kilometre from the station, but, it was no obstacle to our newfound Greek-wrestler type musculature. That which didn't kill us, only made us stronger. In fact we travelled for the whole month without having to resort to a single taxi. Possibly they hate me for that.

The last leg took us back to Munich for more sightseeing and Christmas cheer. I checked out a large technology museum there, which even had an Amateur Radio section. In a glass case there was an old FT101E that had the European branding of a **Sommerkamp FT277** that was a bit different. Other technology displays of early computer and communications equipment were excellent. I even spotted a Siemens 100 RTTY machine.



Still, after basking this grand old city for a day and a half, it was back to the airport and the long haul to VK3 land. The temperature changed from a European sub-zero to a humid 33° night at Tullamarine.

With these sorts of journeys, available time is finite and this forces choices between detail and diversity. We left with a better understanding of how to get around that part of the world and of that which we shall return to someday for a closer inspection. We were fortunate that the planets lined up in our favour and the connections were seamless.



How are your Nixies ?

About 12 years ago my bedside clock silently passed without a whisp of smoke or the all too familiar sound an electronic component being shot out of a rifle. It had been a faithful old clock with 30mm high LED's that I could see at a distance of a few feet whilst in bed without my glasses on... So, I needed a new bedside clock.. At the time I had been looking at a website called Ledsales (<https://www.ledsales.com.au>) and they had a clock kit that used Nixie tubes for the display, interesting I thought or just coincidence, just the time to purchase a bedside clock a little out of the ordinary...

What is a Nixie tube you ask ? I'm glad you did, here goes ☺

A **Nixie tube** (English /'nɪk.si:/ **NIK-see**), or cold cathode display, is an **electronic device** for **displaying numerals or other information** using **glow discharge**.

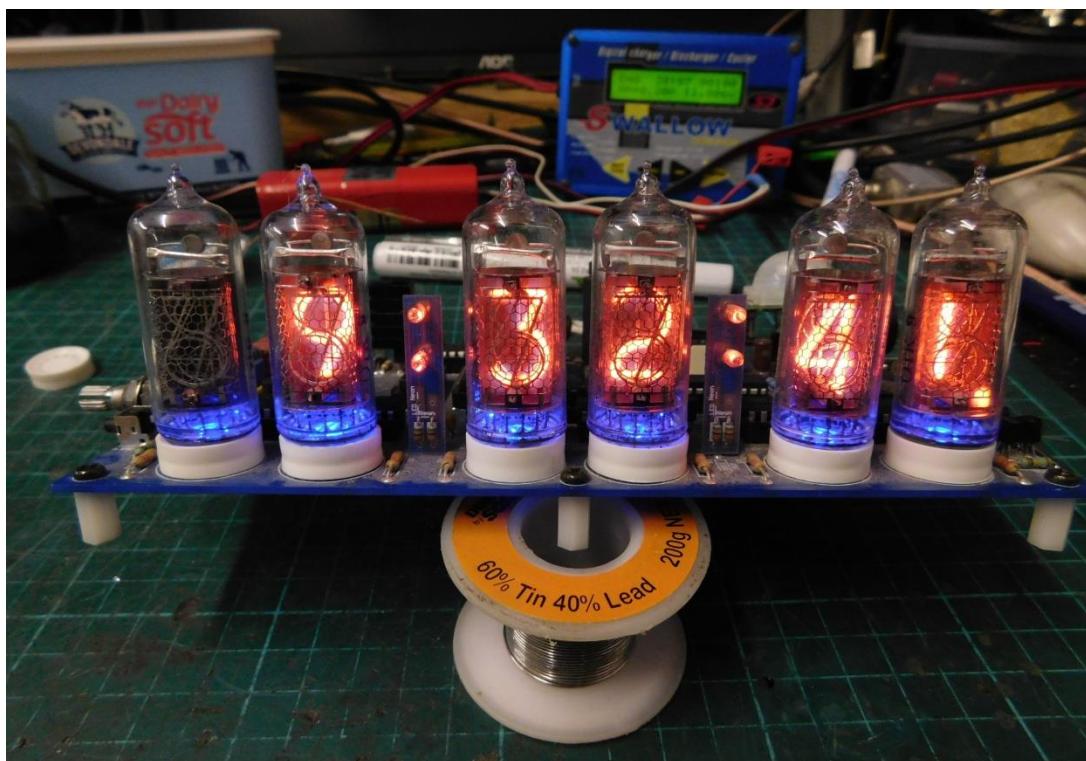


The glass tube contains a wire-mesh **anode** and multiple **cathodes**, shaped like **numerals** or other symbols. Applying power to one cathode surrounds it with an orange **glow discharge**. The tube is filled with a gas at low pressure, usually mostly **neon** and often a little **mercury** or **argon**, in a **Penning mixture**.

Although it resembles a **vacuum tube** in appearance, its operation does not depend on **thermionic emission of electrons** from a heated cathode. It is therefore called a **cold-cathode tube** (a form of **gas-filled tube**), or a variant of **neon lamp**. Such tubes rarely exceed 40 °C (104 °F) even under the most severe of operating conditions in a room at ambient temperature. Nixies have no heater or control grid, typically a single anode, and shaped bare metal cathodes.
(Thank you Wikipedia)

Having around 25mm high numerals I should have been able to see it in the dark so I purchased the kit from ledsales and when it arrived promptly put the kit together.

The finished kit.



All good, for the next 12 years the clock didn't miss a beat, keeping accurate time and generally performing as it should.

One interesting feature of the clock is the display doesn't run continuously, rather it has a small PIR (passive infra-red) module found in burglar alarms that turns the display on for 30 seconds and then turns the display off, extending the Nixie tubes life considerably. If I wake in the night and want to know what time it is I just raise my hand a few inches and the nixies light up for long enough to be able to read the time. And after 30 seconds of no movement they turn off again, allowing me to go back to sleep. Neat !

But, nothing ever runs smoothly, even after 12 years. The other morning I was half asleep and wanted to know what time it was so I stretched my arm out to trigger the display and accidentally "cupped" the tubes with my hand. As I withdrew my hand I dragged the Nixie clock off the bedside table and I heard a crack, from what I suspected it was one of the tubes...

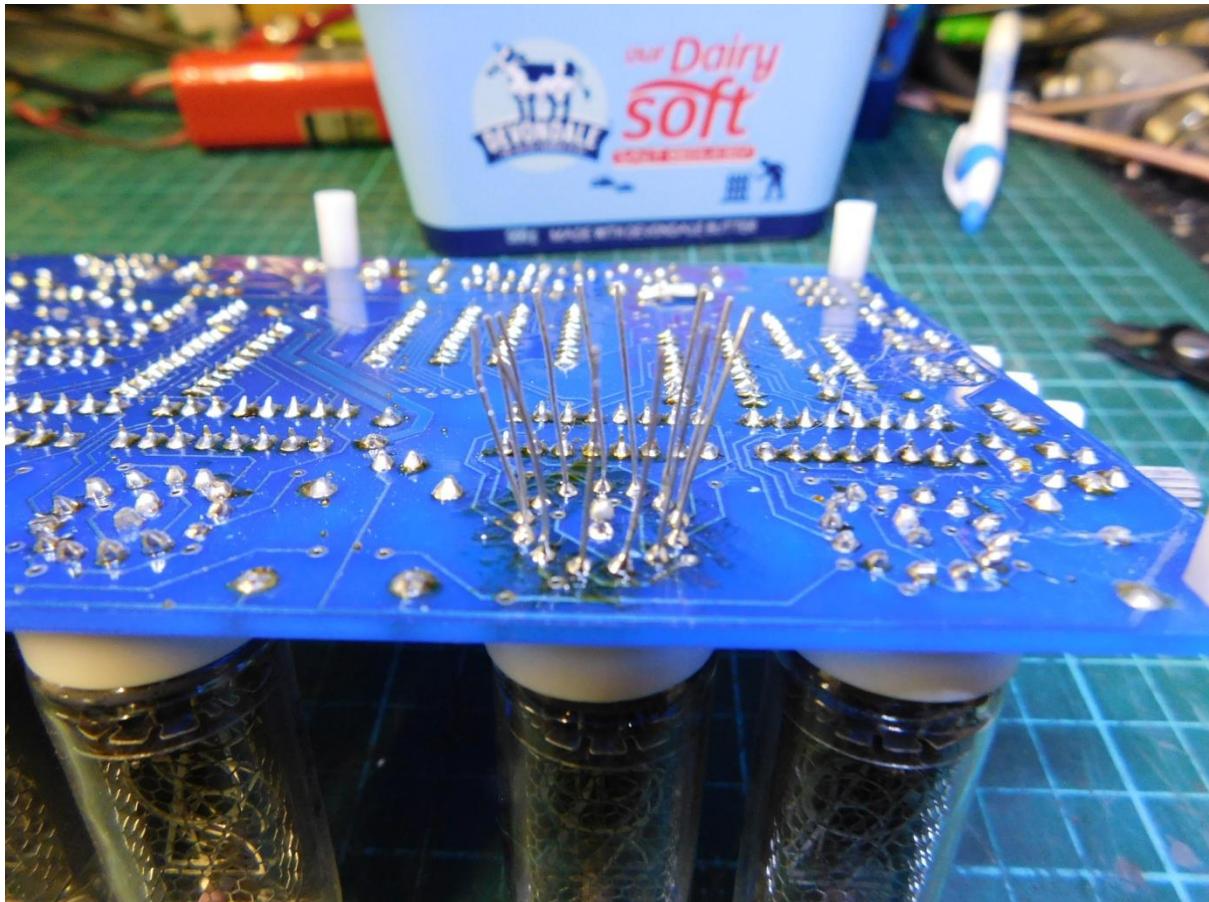
Bugger !



Yes, I'd broken one of the tubes....

When I purchased the kit I also purchased a few spare Nixie tubes as well, just in case... Just as well, I needed one now !

So out to shack and out with the old and in with the "new" Nixie 😊



After some testing I was relieved to find that the Nixie driver I.C. was ok, each Nixie tube has it's own dedicated driver I.C. and these are getting hard to find now.

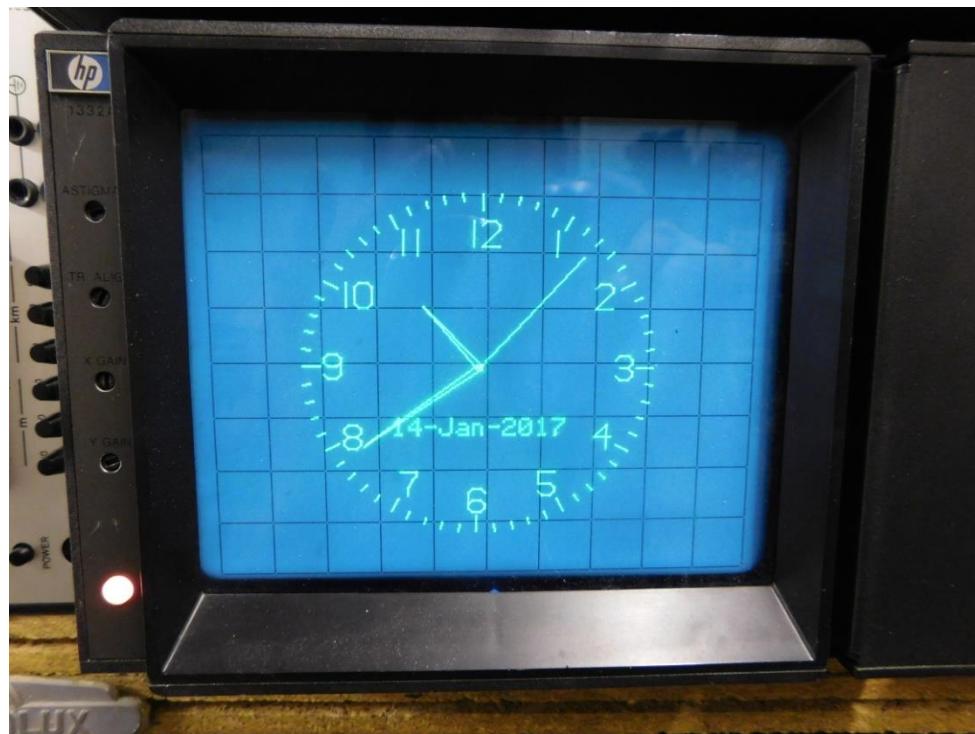
A flick of a pushbutton and the date was ok as well, a quick resetting of the time (a few seconds) and the Nixie clock was pressed back into service on the bedside table.

An interesting feature of the Nixie clock is the power supply for it is a 12 volt D.C. plugpack. To ignite the Nixie tubes to get them to glow there is an onboard voltage multiplier circuit that raises the excitation voltage for the Nixie tubes to around 180 volts D.C. . Only once I have "waved" my hand around to see what time it is and come in contact with the 180 volt rail.. I got out of bed quick smart that morning....

One day I'll make a case for the clock.....

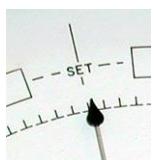


Another clock I have is an Oscilloscope clock, but that's for discussion for another time 😊



Cheers and 73,

Rob. VK3BRS



DMR Radio



Have you heard of DMR radio, as in Digital Mobile Radio. You've probably heard of Dstar, promoted mostly by Icom, and now by Kenwood, Dstar stands for "Digital Smart Technologies for Amateur Radio" and was designed as an open source project by the "Japan Amateur Radio League", the only problem was they used a commercial "AMBE" codec chip made by "Digital Voice Systems, Inc." who will not release any info. So you are basically forced to go to DVSI for an IC.

The other system you probably have heard all about is Yaesu's Fusion radio. From the reports I've read they are catching up to Dstar fairly rapidly. Unfortunately there does not seem to be much information about 'C4FM' out there. Just info, mainly promotional from Yaesu

Now there is another player out there, in the form of DMR, this is currently only targeted at commercial operators, but as has happened many times before, used commercial radios are popping up on the second hand market. The other option is cheap Chinese digital radios.

Luckily there are quite a few companies making radio's, so if you go down this route you are unlikely to end up at a dead end, like could happen with a single sourced system.

Companies like Motorola, Vertex Standard, Kenwood, Baofeng etc can supply you a radio
Unfortunately Icom & Yaesu are keeping clear for now.

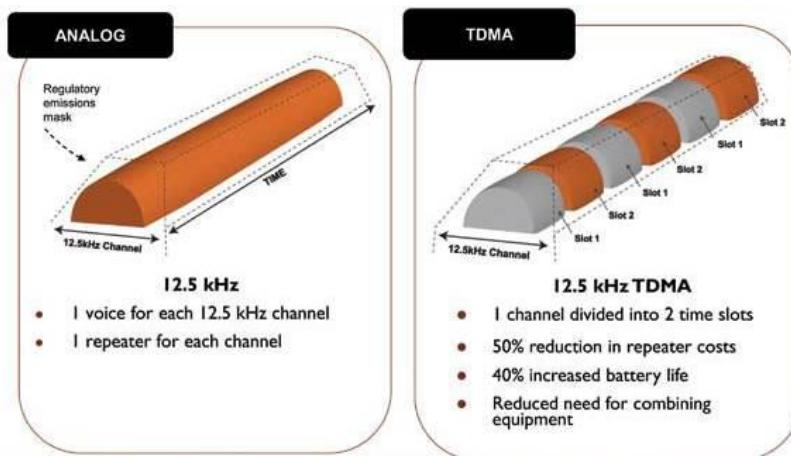
Be careful, some manufacturers/traders etc. are treating the word 'DMR' to mean any form of digital radio, so searching for 'DMR' can turn up Icom etc., even though they have a letter out there stating they have no interest in entering that market. *So watch out.*

In Victoria, we have 3 local repeaters, with a forth on Mt Bulla, so hopefully coverage is good.

There are a further 8 around the country, see <http://www.vkdmr.info/>

Another source of info is

http://www.dmr-marc.net/media/Amateur_Radio_Guide_to_DMR_Rev_1_20150510.pdf



Paul VK3TGX

General Meeting Minutes

Date : 18-11-2016

Start time : 20:05

Location : Club rooms.

Chairperson : Ian Jackson 3buf

Minute Taker : Michael 3ghm

Present : As per attendance sheet

Visitors: Roger 3hrs

Apologies : As per attendance sheet.

Correspondence received :

Bank statement

Goulburn and southern highlands amateur society re Ian's 3buf letter about the WIA

Licence renewals 3bja 3rlp

Other club magazines

WIA directors meetings various emails

Correspondence sent : listed and tabled

Treasurer's report :

Read & Moved : Graeme 3bxg **Seconded :** Craig **Carried**

New Callsigns :

Previous Minutes : As per Gateway magazine

Moved : Mike 3kto **Seconded :** Leigh 3facb **Carried**

Business arising from the previous minutes :

Ovens river trip was enjoyed by all.

Logic talk by Ian 3buf at last Prac night.

WIA directors talk at FAMPARC on 15th Nov GGREC provided the sausage sizzle this was followed by a repeat talk at EMDRC in the evening. Call for a meeting to approve a forensic audit of the finances. There is also a call for another meeting with 100 plus votes to eject 1-4 directors. EMDRC meeting was videoed and is up on Youtube.

New business :

Arduino nights. Last session is next week. If sessions continue next year participants will be required to pay \$4 each per session.

Xmas BBQ at Graeme's 10th December

Xmas Hamper to raffle off. \$1ea 6 for \$5 for tickets.

Whiteboard left over in the shack. Move that the club dispose of the white board by auction at the January club general meeting.

Moved: 3buf **Seconded:** Albert 3bqo **Carried**

Motion to dispose of the old BBQ

Moved: Bruno 3bft **Seconded:** Paul 3tgx **Carried**

DStar session at EMDRC tomorrow at 14:00 hrs

Meeting closed : : pm

Next Committee Meeting : 1st Tuesday of the month

Next Prac Night : 1st Friday of the month

Next General Meeting : 3rd Friday of the month



Club Information



Meetings 2000hrs on third Friday of the month at the
Cranbourne Guide Grant Street Cranbourne
Prac nights first Friday in the Peter Pavey Clubrooms Cranbourne 1930hrs
Visitors are always welcome to attend

Office bearers

President	Ian Jackson	VK3BUF	Repeater Officer	Albert Hubbard	VK3BQO
Admin Sec	Michael Van DenAcker	VK3GHM	Web Master	Mark Clohesy	VK3PKT
Treasurer	Graeme Brown	VK3BXG	Magazine Editor	Paul Stubbs	VK3TGX
General 1	Rob Streater	VK3BRS	Property Officer	Bruno Tonizzo	VK3BFT
General 2	Max Hill	VK3TMK	Secretary	Ian Jackson	VK3BUF

Call in Frequencies, Beacons and Repeaters

The Club Station VK3BJA operates from the Cranbourne Clubrooms.
6m Repeater VK3RDD – Currently de-commissioned until further notice - *sorry*
70cm Repeater Cranbourne VK3RLP In 434.475MHz Out 439.475MHz CTCSS 91.5Hz
VK3RLP Repeater supports Remote Internet access (IRLP), Node 6794.
70cm Repeater Drouin 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

Membership Fee Schedule

Pension Member rate \$25.00 Extra Family Member \$20.00

Standard Member rate \$40.00 Junior Member rate \$25.00

Fees can be paid by EFT to BSB 633000 - Account 146016746.

- Always identify your EFT payments.

- Membership Fee's Are Due at each April Annual General Meeting.

Magazine Articles to editor@ggrec.org.au or vk3tqx@gmail.com

All other Club correspondence to: secretary@ggrec.org.au

or via Snail Mail : GGREC, C/O Ian Jackson, 408 Old Sale Rd, Drouin West 3818

GGREC Web Site & Archive may be viewed at: www.ggrec.org.au

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