

### September 2023



Life on the Bleeding Edge SC/MP Rides Again Radios For Sale

And More



14/09/2023

**Cover photo**, A crowbar to protect my 'new' radio – mmm a tad overdone. (If you have any good photos, please send them in)

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#### **Event Queue**

#### September:

15 <sup>th.</sup>	8:00	General	Meeting

#### **October:**

6 <sup>th</sup>	7:30	Prac night
20 <sup>th.</sup>	8:00	General Meeting

#### November:

3 <sup>rd</sup>	7:30	Prac night
17 <sup>th.</sup>	8:00	General Meeting

Club run events are only possible with the involvement of ALL members. Without volunteers to coordinate and participate in club events the club will fail to prosper

## President's Message

September is upon us and now weekends are loud with the sputterings of lawnmowers that have languished in dark corners of the garage for many months. We have recently received a barrage of information from the ACMA on the look and feel of what our Amateur Radio licenses are going to look like from February 2024. I have been licensed for 45 years now and this is by far the biggest overhaul I have seen. The ACMA have provided very detailed reporting of their proposals, Mostly it is good news, but a couple of the policies still have issues. Here are a few salient dot points.



- Licenses and exams will be free, but some processing fees will still exist, similar to AMC prices.
- Selecting the next available callsign will be \$30.15 Picking one of your own: \$41.45 (3 letter calls) \$52.75 (2 letter calls)
- Most regulations remain modeled upon existing regs, but with some simplifications
- There are whole new processes for Assessors, both in accreditation and delivery.
- Assessors will be able to mark papers on the spot.
- The ACMA will maintain a public callsign & operator database different to what they have now. It will not include personal detail info
- We are all going to get ACM notices with a document that will help us with reciprocal licensing if traveling overseas
- Limits will be placed on the number of callsigns we can have (5 max for normal calls)
- They will get in touch with Amateurs around every 5 years to see if we are still alive. If we don't respond, eventually callsigns will be re-issued. (You will have to let them know if you move or change email address)
- Higher power operation to be via a peculiar blend of scientific licensing and other regulations yet to be finalised. (This is quite vague) They want to alter rules around Scientific licenses so that research can be conducted on Amateur bands.
- The ACMA would require Amateurs wishing to use high power for experiments on Amateur bands to first commission a report from an 'Approved Person' then purchases a Scientific License for a fixed period. They wrote: *Most applications for assigned scientific licences are prepared with the assistance of an accredited person, who undertakes coordination and frequency assignment tasks. The licence application is then considered by the ACMA.*

There is much to be happy about with these changes, but I regard the last two items ri be unacceptable. I would encourage Amateurs who agree about the inappropriateness of these revised scientific licenses to send a submission to the ACMA indicating that this proposal is bad, inconsistent with Amateur Radio values and unprecedented in the world.

A comment on some of the links that get sent out from time to time.

Occasionally the GGREC provides links to external references and groups, both via email and Club newsletter. This has been a long standing activity which spans decades. It is also entirely consistent with objectives listed in Club Rules. Specifically: The objects of the Club shall be (A) To promote and develop the science of radio, electronics and its associated interests, in all its branches. (B) To cooperate with similar clubs and organisations throughout the world.

Links may be provided by the club to the WIA, RASA, or other radio groups locally and overseas. RASA produces a free quarterly magazine and links to that may be provided. If the WIA had its magazine available for a free download, links to that would be provided too, however this is only available to WIA members via a paid subscription. GGREC is not permitted to free-link to their journal, but sometimes it can link to news releases. The Club does receive one printed copy of AR via the post. This copy is subsequently delivered to the Club shack for people to read.

The GGREC has a long standing affiliation with the WIA, however an affiliation is not a monopoly and we can link to other content provided it is consistent with the objects of the Club and our editorial policy. If members don't like reading links to items of interest from the WIA, RASA, or other groups, that's ok. They don't have to follow those links. No member has the right to censor what other members may choose to read. Unless our Association rules are changed to mandate censorship, GGREC will continue to distribute information to its members from a wide range of sources.

In October I will be off to Japan for some weeks. This will be a challenge. So far my vocabulary has been limited to Yaesu and Toyota, which won't help me much in a restaurant, hence I'm cramming some key phrases. After much research, I have discovered that the Japanese word for menu is.... menu. Accommodation is tight so I have booked nine different hotels in advance and purchased national rail passes. What could possibly go wrong? It seems there are a few interesting items to check out. Parts of Tokyo are ground zero for Anime fans. There's even a full-size Gundam robot about 20 stories high. They have a Universal Studios near Osaka and I want to check out the Akashi bridge, which has a full 2km span over water. As long as the typhoons, tsunami's, earthquakes and maid café's don't get me, it should be fun.

Unfortunately, I won't be at the October meeting or be able to assist with JOTA this year. Bruno and a couple of other members have kindly offered their time. If you are free to help on October 21 at the Club shack, please contact Bruno.

Cheers, Ian VK3BUF

## **From The Editor**



This month I received a call from my aunt "My computer is..." with lots of very non-technical descriptions of a computer stuck in the good old Windows 10 startup repair loop. Although one line did kind of sum it all up, 'boot device inaccessible'.

Ages ago I did some work on that machine that included installing a 480Gig Kingston SSD.

Everyone raves on about SSD's and just HOW much more reliable they are over their previous spinning disc generations. Yes they are way faster – the reason I upgraded her, trying to get some

performance out of her box before it hits the bin to be replaced by a Windows 11 box, (a procedure I am definitely not looking forward to.) But more reliable??? Huh.

So on getting home I pulled that drive and connected it to one of my play machines and used Macrium Reflect to make a disc image, a process that proceeded smoothly with no errors.

Now (hopefully) with a good backup image, I started having a look at that old Kingston SSD, first was a virus scan using the default Microsoft tool, this took over 3 hours – awfully slow, with only one hit – nothing that looked like a show stopper – no root kits etc.

Then I tried HDTune, as you can see it definitely has problems. So much for the concept of a super speedy HDD replacement. I then ran the HDTune Error Scan, however I came back to an error message about accessing the drive – so it's defiantly on its last legs, barely breathing. In that picture the line should be fairly flat line at the top, indicating high speed transfer's to all cells, with no great dips – the dips are when accessing all but totally knackered cells.

So time to get onto the <u>CentreCom</u> website and see what the sweet spot is for SSD's these days, a 1TB, or a 2TB etc. My aunt does not have much to store, however having heaps of spare blocks makes it easier for the drive to do 'wear levelling' where the drive swaps a heavily used and worn block for one that has way less write activity.

This is what I don't like about SSD's, the cells have a rather short life before they ware out, it's almost like they are mechanical as opposed to electronic device.

However there was one bright spot, I travel via Eastlink to get to her, however only two and a half Km the other side of that exit is Strictly Ham, so I now have a nice new 2 & 70 vertical antenna. The old one a Dick Smith 2M 5/8 wave, is using a 2M beam directly below it as its ground plane. This grounding has proven intermittent many a time, so it will be good to try this one and see how it compares. This will also hopefully improve my access to the clubs 70cm repeater that has been crap ever since it moved frequency for the new 7MHz split.

Paul VK3TGX

# Life on the Bleeding Edge

For my PCs I've been assembling systems from the National Semiconductor SC/MP, through Digital Equipment Corporation PDP-11, VAX and Alpha to Intel Xeon systems. At my age I'm contemplating the purchase of my last personal computer. Being lazy, I decided in early May 2023 to use a custom build service from Scorptec (Clayton).



With new processor series Intel tends to introduce new sockets at a greater rate than AMD. Each socket change requires a new motherboard. For future proofing, the starting point was AMD's currently highest rated CPU and graphics processors that were fit for my purposes. In this case the AMD 7950X3D CPU which uses the newly introduced AM5 socket, DDR5 RAM, Gen5 support, etc., plus RX 7900 XTX graphics. The 7950X3D has a significantly larger cache. By design not every core in the processor has access to this cache so the motherboard BIOS must be updated.

<sup>&</sup>lt;sup>1</sup> SC/MP donation to <u>Scienceworks</u>, attribution: <u>https://collections.museumsvictoria.com.au/items/393735</u>

Major component manufacturers integrate a number of their products into named series. With total control their design experience should ensure compatibility with the best integration of their hardware and software.

Initial component selection was a motherboard, two video cards, computer case, water cooling (for the CPU) and a power supply from one component manufacturer's best product line. Then life got interesting:

- The preferred watercooler was out of stock and wouldn't be available for many weeks so a third party cooler had to be selected. Although cooling capacity is not impacted, the preferred manufacturers monitoring software would report a number of sensors at 0°C as this watercooler isn't integrated.
- 2. The build team identified the manufacturer's case was too small to accommodate two of their RX 7900 XTX video cards. Choice was a third party case or delete one video card. Operating systems in virtual memory were to use the second card, so just optional. To keep everything in the same manufacturer's product series the second video card was deleted.
- 3. On initial assembly the build team was unable to boot the system reliably with the purchased DDR5 RAM coupled with the latest version of the BIOS. Same result when they tried using memory the manufacturer had stated was qualified for use on the motherboard.
- 4. Suspecting a faulty motherboard the build team had to wait for the next shipment at the end of month. Same results produced by a motherboard from a different batch. So not a hardware failure. The manufacturer would need to update the BIOS and they could not provide the timing to debug and release a new BIOS. Options were to downgrade the processor to an older/slower model, or change to a motherboard from a different manufacturer. The motherboard was changed to the top of the line model from a different manufacturer and this slightly less capable board had the benefit of being cheaper.
- 5. This next motherboard was specified to support four, Gen5, M.2 NVMe SSD drives. For the C: drive, in the BIOS four, Gen5, 2TByte SSD drives were configured as a RAID10 array using the supplied firmware. Shortly after delivery one of the Gen5 drives disappeared from the BIOS. Leaving three drives functional in the RAID10 array for the C: Drive. This enabled the array and PC to keep working i.e. loss of one drive is not fatal for a RAID10 array although the array status went critical. In some circumstances a RAID10 array can continue to function with the loss of two drives. The remaining Gen5 drives were recognized individually by the BIOS as Gen5 drives but the motherboard's port speed for each drive was only Gen3 which crippled performance.

- 6. The PC was returned to Scorptec (Rowville) service department as a warranty claim. On examination they found one SSD port on the motherboard and an SSD had failed. My best guess is a case of infant mortality i.e the port electronics failed and destroyed the drive, or the drive failed and damaged the port electronics. The probability of this happening has to be low as Scorptec had performed bench testing on the PC for days and it had lasted some days at home before the RAID10 array went critical. <u>Murphy's Law</u><sup>2</sup> strikes again.
- 7. There were no replacement motherboards available. In less than one month the motherboard had been deleted by the manufacturer, become <u>unobtanium</u><sup>3</sup> in Australia. A different motherboard would have to be installed as the warranty repair.
- 8. To keep a 10Gbe port for connection to the network the only choice left was an even cheaper motherboard from yet another manufacturer. The repair of the system is currently ongoing in September 2023.

Motherboards appeared on paper to support the latest AMD processor but failed. Hardware failures required warranty repairs. In this case my laziness in engaging Scorptec to perform a custom build has been worthwhile. Imagine if you were sitting at home with a pile of boxes holding all the components for this PC build. First the PC does not reliably boot. Are you the cause of the failure from an ESD event? Which component is causing the problem? How do you know if you have an unstable power supply, faulty video card, faulty RAM, faulty motherboard, faulty processor, etc.? Would you have access to the manufacturer's qualified RAM for testing?

If I had performed the build it would have required multiple return trips to diagnose defects and address the failures as they were identified. Unstable operation, three different motherboards, a drive failure would truly have been a nightmare. In my case a custom build has saved my bacon with design and manufacturing defects that are outside of their control being resolved by Scorptec.

If contemplating assembly of something special, a custom build may provide value. Scorptec isn't the only company e.g. CPL, Newcomputers.com.au, etc., all seem to offer custom builds. Alternatively, pre-assembled systems.

May to September 2023 and still no PC. Unless you are a masochist, I cannot recommend living on the bleeding edge.

Gary Page

<sup>&</sup>lt;sup>2</sup> <u>https://en.wikipedia.org/wiki/Murphy%27s\_law</u>

<sup>&</sup>lt;sup>3</sup> <u>https://en.wikipedia.org/wiki/Unobtainium</u>

# **SC/MP Rides Again**

On reading Gary's 'Life on the Bleeding Edge' article and seeing his SC/MP development kit, my thoughts immediately jumped to my old SC/MP toy.



A Time & Date generator for a Telex exchange.

Many years ago, Telstra disassembled its Telex, (Teleprinter) network, and sold on the last customers to another company, where they ran it on the 'regular' telephone network, using custom modems, that made the attached teleprinters think they were still connected to the dedicated Telex network that Telstra previously operated.

At that time I was working for Telstra in a repair shop attached to a warehouse. I always thought putting us out with the stores section, that had absolutely no technical knowledge, and no idea what we, as technicians did, was a silly idea. However on the flip side it did mean I got to see quite a bit of old kit passing though that I could get my fingers onto (Yes there was lots of new stuff, but taking that was a bit of a career shortening move). How about a pallet of BWD scopes!

Anyway, this T&D generator appeared, whilst I had never saw it when I worked in the Telex end of the world, I quickly recognised what it was.

When you made a Telex call, the exchange printed the id (answerback) of the user you had called along with the date and time. So this is one source of that info.

Actually Telstra had two networks, the main Telex network, that was offered to customers, and was connected to the international telex network, and an in-house private network. The private one was custom built out of RTL logic IC's, in a whopping big box, referred to by its nick name of FRED, 'F... Ridiculous Electronic Device', whereas the customer facing system was relay based, made by Ericson's the same as the regular crossbar telephone exchanges used at the time.

The internal one was used for sending work orders out to the various depots. Ask lan, he got quite involved with it, making custom 'interface' box's (SPAN buffer) based on the Tandy TRS-80 colour computer.

Now as to whether this box I have was used on the internal system, or the customer facing one, as an add on (as it's not made by Ericson), I have no idea.

Anyway, it didn't take me long to get it going, and the fact that it still does is kind of amazing as it is now getting on quite a bit. The main board has 14/9/78 written on it, so why it's still running 45 years later has me stumped. EPROMS have a nasty habit of eventually forgetting what's in them – I spent many hours in that Telstra TSG workshop reburning hundreds of EPROMS in the Sagem telex machines that we used back then. If it wasn't the EPROMS, then it was the optical devices (tired LED's), or the good old favourite, dried out caps in the power supplies.



Whilst I was able to get it to run, I then could not figure out how to reset the time after it had wondered. It has just a simple 1MHz crystal oscillator that is quite poor in the accuracy stakes, so someone would have been tasked with resetting it now and then. Yes they could have just pulled the power and started from scratch, but that seems a bit agricultural to me. It has a keypad, and try as I can, I could never figure out what my options were after I hit the run button.

So I have had it in my mind for ages to rip out its EPROMS and have a look at the code to see just what's going on – maybe the ROM's are not entirely ok, maybe a few bits have been lost here and there, there is only one way to find out.

Now I do have an EPROM programmer, however the smallest it will do is the 2716 2K devices, these MM5204's are WAY older than that with only 512 bytes each, so no-way was I going to be able to source a programmer, I was on my own.

Now as I only want to read them (now) the job is way easier, just hook them up to something with enough IO lines, then write some code. The first thought went to the Raspberry Pi Pico I showed last month, however they are a much newer 3.3V based device, and will not tolerate the 5V TTL logic levels used here.

Now as it only has 9 address lines and 8 data lines, an Arduino Nano is just capable of doing the job. Whilst the IC has a few select and enable lines, these can all be just left tied low, or high as needed to make it read as there are no other devices on the buss etc.



TTAP I SOLI MULTINE I SUBSTRUCT I SUB-	VK3TGX	EPROM	reader	T&D	EPROM A
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6666	88	C4	84	35	C4	66	31	C4	ec.	36	C4	69	32	C4	θE	37
0010	C4	66	33	86	DC	01	07	C4	66	01	19	C4	66	01	C4	69
8828	01	CA	88	81	62	F4	FF	94	F7	C4	89	C9	6A	C4	99	C9
8838	0C	82	C4	89	C9	88	C3	ØF	E4	FF	D4	87	98	27	C1	0C
8848	9C	EF	8F	85	C4	88	81	C3	80	E4	FF.	D4	0F	9C	8D	C1
8858	88	82	F4	FD	C9	68	81	10	98	D7	98	EA	10	98	18	01
6969	89	68	81	98	F7	C1	9C	98	C8	8F	85	C3	ØF	Ε4	FF	D4
8878	07	9C	BE	C9	ec	90	BA.	C4	01	C9	9C	C1	68	98	2E	94
6689	64	Α9	68	90	12	01	C1	8A	94	02	98	A5	01	C9	80	E4
6699	FF	CA	88	B9	ΘA	90	9A	C1	ΘA	E4	69	98	94	A9	8A	61
8848	C4	ee	CA	80	98	88	C4	88	37	C4	99	33	3F	C1	8A	94
ееве	F5	c4	eA.	81	CS	81	C9	30	61	82	F-4	FF	9C	F5	C5	F6
eece	C4	81	37	C4	68	33	3F	C4	ØA	81	C5	81	Ē1	38	9C	D6
eepe	01	82	F4	FF	9C	F3	86	DC	64	87	D4	FB	87	8F	eA.	86
66E6	D4	FD	87	DC	82	87	C4	84	36	C4	14	32	¢4	84	37	C4
66L6	28	33	C4	θE	35	C4	98	31	66	D4	FE	87	C1	10	D4	01
0100	98	66	C4	54	8F	ЗF	98	84	C4	F6	8F	26	66	DC	81	07
0110	C4	89	8F	69	C4	14	CB	69	C4	66	CB	82	C6	81	E4	FF
8128	81	C4	8F	CB	61	19	C1	10	D4	81	98	86	C4	D9	8F	64
8138	98	84	C4	1D	8F	83	BB	81	98	86	D4	81	98	E8	98	E5
8148	C1	18	E4	FF	D4	86	81	AB	82	83	78	94	84	C4	99	90
8158	CF	88	66	90	C3	C4	81	37	C4	68	33	85	68	88	84	90
8168	85	c4	84	35	C4	66	31	A9	66	C4	82	36	c4	28	32	C4
0170	θA	3E	C4	86	3E	C4	8A	ЗE	C4	63	ЗE	C1	FF	Ε4	82	9C
0180	θF	C4	63	83	F9	FE	94	88	C4	66	C9	FF	C9	FE	A9	60
8198	C4	eΑ	3E	82	C1	FF	F5	81	9C	82	A9	FE	C4	8A	ЗE	C4
8148	82	3E	82	Ci	FE	F1	FF	90	62	A9	FE	C1	FF	98	11	C4
8188	82	63	F9	FE	94	8A	C4	99	C9	FF	C4	81	C9	FE	A9	66
8108	C4	ØÅ,	38	C4	ØA	38	C5	FC	C1	FE	81	C1	FF	98	99	01
81D8	82	F4	eA.	81	F4	FF	90	F7	82	C8	44	36	CØ	42	32	C1
01E0	01	98	62	C4	ØΑ	F1	99	81	FΑ	88	94	82	90	4C	82	F2
01F0	80	F4	Ε4	90	16	01	C1	83	98	6A	81	82	F4	8A	91	F4
<b>VK3T</b>	SX B	EPRO	DM r	ea	der		T&I	D EF	PROP	1 B						
8888	FF	9C	F7	81	82	F1	82	D4	03	98	2F	C4	ee	C9	FF	C4
8818	01	<b>C</b> 9	FE	A9	00	CS.	FA	C4	01	36	C4	68	32	3E	82	1F
8828	1F	10	1F	18	1F	18	1F	1F	15	1F	18	1F	82	FD	81	94
6638	86	C4	60	C9	FF	A9	88	3E	90	F2	C4	84	36	C4	28	32
								-	-		-	_			_	

0040 C4 0A CA 00 C4 04 37 CA 01 C4 0A 33 CA 02 C4 02 0050 35 C4 08 31 C3 F6 01 C1 80 CF 01 BA 00 9C F5 C4 0068 04 35 C4 14 31 C8 58 CD 01 C0 48 CD 01 C7 FF CD 0070 01 C7 FF CD 01 C0 3F CD 01 C7 FF CD 01 C7 FF CD 0080 01 C0 33 CD 01 C7 FF CD 01 C7 FF CD 01 C8 27 CD 8898 81 CD 81 C7 FF CD 81 C7 FF CD 81 C7 FF CD 81 C7 BRAB FF CD 01 C0 14 CD 01 C0 11 CD 01 C0 08 CD 01 C0 0000 0A CD 01 90 10 C8 F6 FE D0 C4 C0 EC EE E6 C2 D4 00C0 E0 EA CE CC F0 C2 01 37 C2 02 33 C4 0C 36 C4 00 00D0 32 C4 04 35 C4 00 31 C4 09 01 C1 00 E4 00E0 01 02 F4 FF 94 F3 06 D4 FD 07 DC 02 07 CA 80 FF ЗF 88 88 8118 00 00 88 88 88 00 88 88 00 00 00 00 00 ee 88 

Here is my quick lash-up EPROM reader on a proto board, it isn't pretty, but it only has to read two EPROMS before it all gets recycled. The one takeaway I had was I need to be more active in the programming area, as this took too long to get going. What's the saying, "use it or lose it".

Now I need to get that data into a disassembler, hopefully I won't have to massage the data too much. Unfortunately there are quite a few formats this data can be stored in, I went for almost plain HEX, as that was easy to extract though a serial terminal from the Arduino, however it will be just my luck that I have to convert it all too binary etc.

Next, I'll have to have a look at some software Gary pointed me to, to disassemble the clocks software.

It all depends on what format that software expects, probably not mine, that was chosen for human readability, based on the Hex display one once saw from the DOS program Xtree that everyone used back in the DOS days.

However 'the DOS days' is well after these chips. They are back in the mini-computer era of DEC VAX's, or PDP-11, where Unix was the OS, strangely taking us back to telco's – the US Bell company, the creators of Unix.

#### The PMG – Telecom – Telstra days

When I went looking for my first job, Telecom was recruiting, looking for trainees, I had finished Year 11, as far as the 'Ballam Park Tech' went back then. I could either jump out of the school system or go to somewhere else that had Year 12, and maybe beyond.

I attended one of the Telecom interviews for position as a trainee tech, they said 'Yes', so I bailed on my efforts at the Frankston high school.

I started at the Ballarat training school, and was eventually placed in the 'Telegraphs and Data' section, in the 'TSG' – 'Technical Support Group', which was one quite large electronics repair shop in Collingwood.

Back then Telecom was a technology driven company, pretty much all of the management hierarchy were engineers who had come up through the ranks, it was a government organization that had been split off from the post office years before, and making lots of money etc. was usually not the driving force, every section was given their allowance/budget and you roughly tried to follow that – like any other government entity.

So technology ruled, there were many 'labs' where all sorts of in-house devices were born, about the only thing they didn't build was the actual telephone exchange equipment, although they definitely got into them and made any changes they saw fit. It was all relay based back then, no custom IC's with 'secret sauce' inside that was kept secret. In fact, full technical information and technician training was often a part of the contract for most systems purchased.

So back to the 'labs', that is where my 'Time and Date' generator was born, probably the same place that designed and built that secondary, in-house Telex network, called 'SPAN', 'Service Provisioning Advice Network', which gives a bit of a push to it being part of that network, although 'the labs' did not restrict themselves to working on their own systems, and could have been upgrading the main Telex network as well. I worked in the Melbourne Telex exchange for a stint and custom bits were all around.

If you look at the from panel there is a 'VB' and a 'VD' number, these refer to telecom internal technical drawings etc., So everything I seek was there, unfortunately probably long thrown away, not that that matters too much as I no longer work there, as in no access to those doc's.

These days the place (Telstra) has long being taken over by the bean counters, probably a direct result from the government selling shares in Telstra as they sold it off and made it private. Technology is now something they buy in, with a maintenance contract. The providers install, maintain then decommission their technology, almost no more technicians, no labs, few exchanges, it's all but just a shop reselling NBN services, with the mobile phone network probably the last patch of technology as I knew it. Pity, as it was a good place to work...

So this box probably is more a keepsake than anything else, A reminder of days gone by and fun times had. Yes I can see some changes I'd like to make, like drastically improving it's time keeping abilities, but in so doing I don't want to ruin it. (or is that ruining the memories)

Kind of like all those YouTube channels resurrecting their childhood memories of playing with Commodore 64's and all that goes with it

Paul VK3TGX

## Jim VK3UFO has some radio items for sale

- 1 Kenwood TS590S (HF last production run, has all the factory fixes, in original box, \$1400)
- 2 Kenwood TS440SAT (HF, \$600)
- 3 Yaesu FT-450 (with internal tuner) (HF in original box, \$900)
- 4 Yaesu FT-7800 (2m/70cm, \$350)
- 5 Yaesu ft-2800M (2m in original box, \$150)

If interested contact Jim via jpf@pobox.com Here are a couple of images of the radios: (More images available at: <u>https://vk3ufo.com/pics/</u>)





# Meeting 1/09/2023























# **Interesting YouTube Videos**



Whisper Writer to Radio Teletype Conversion <u>https://youtu.be/4ta-AWDALyY</u>

# How Did GPS Get So Good?



How GPS Works, And How It Got Better Than The Designers Ever Imagined <u>https://youtu.be/qJ7ZAUjsycY</u>





The GGREC is an affiliated club of the WIA <u>https://www.wia.org.au/</u>

We also give Thanks to



https://www.jaycar.com.au/



https://www.altronics.com.au/







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

#### **Office bearers**

President	Ian Jackson	VK3BUF	General 3	Gerard Watts	VK3ZXC
Admin Sec	vacant		Web Master	Mark Clohesy	VK3PKT
Treasurer	Klaus Illhardt	VK3IU	Magazine Editor	Paul Stubbs	VK3TGX
General 1	Fred Reid	VK3FWR	Property Officer	'committee'	
General 2	Bruce Williams	VK3BRW	Assoc. Secretary	Bruno Tonizzo	VK3BFT

#### **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 431.425MHz Out 438.425MHz CTCSS 91.5Hz VK3RGW Repeater supports Remote Internet access (IRLP), Node 6794 **offline**. 70cm Repeater Seaview VK3RWD, In 431.575MHz Out 438.575MHz CTCSS 91.5Hz Simplex VHF - 145.450MHz FM, Simplex UHF - **TBA** VK3RLP Beacons 1296.532MHz & 2403.532MHz **(currently offline)** 

## **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 <u>editor@ggrec.org.au</u> Cut off, 10<sup>th</sup> of the month All other Club correspondence to: <u>secretary@ggrec.org.au</u> or via post : GGREC, 408 Old Sale Rd, Drouin West 3818 GGREC Web Site & Archive may be viewed at: <u>www.ggrec.org.au</u> Website errors, contact web master: <u>webmaster@ggrec.org.au</u> Facebook Page <u>www.facebook.com/GippslandGate</u>