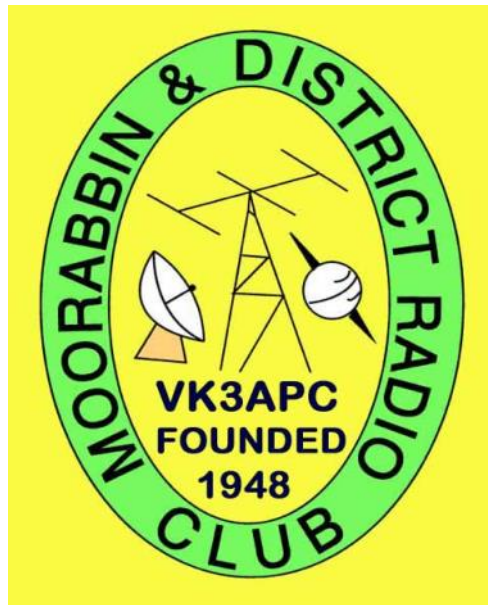


# APC NEWS



**70<sup>th</sup> Anniversary  
Year**

**ILLWE Report  
and  
AGM results  
inside.**



**The antenna farm at McCrea Yacht Club.** The fiberglass pole with the AFW antenna is strapped to the central flag pole. The 20 m vertical is to the left and is difficult to see. The 80 m antenna has one end attached to the flag pole further left. The 40 m antenna is out of view to the right.

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# QTC

Well the AGM has been held and there was no major change in the team. Ian VK3IFM replaced Gerard VK3GER as a committee member after Gerard retired. Thanks to Gerard for his contributions over time in many roles and welcome back Ian. Congratulations to all.

We need some feedback on what purpose our library should meet. It is not being used but takes up space. I'm not suggesting a book burning, well not yet.

The ILLWE 2018 was held with greater inter-club participation than we have had for awhile. The weather was poor but many contacts were made. A separate report is in this issue.

With the weather warming up a little some members are planning to get back in the field. Some might venture into the workshop and heat up the soldering iron. Whatever activity you undertake please take a picture and send it to the editor with a few words. Activity begets activity and you can inspire your fellow members to get some of those activities and projects off the back burner.

73

Ron

VK3AFW,

# COMING UP

14th September, Friday 7:45 for 8:00 PM An Internet-Connected Digital Multi-Mode Personal Repeater.by Roger VK3KYY	
12th October, Friday 7:45 for 8:00 PM Antenna Analyzers by Terry VK3XI and Ron VK3AFW	6th 7th October Phone section Oceana DX Contest 13th 14th October CW section of Oceana DX Contest.
9th November, Friday 7:45 for 8:00 PM TBA	
14th December, Friday 7:45 for 8:00 PM Christmas Party	

# **JULY MEETING**

## **A Visit to Bletchley Park**

### **Joe VK3YSP and Julie VK3FOWL**



Joe VK3YSP, supported by Julie VK3FOWL, took the members on a three part tour of Bletchley Park. The first part dealt with the Turing Bombe decoders for the German Enigma secret message encoding machine, the second with the first programmable computer, Colossus and the third part with the RSGB station at Bletchley Park.

**Left, the front of Bletchley Park**

# JULY MEETING cont'd

Bletchley Park is located mid-way between Oxford and Cambridge Universities adjacent to a railway station. It was chosen in part for easy access by academics and other recruits. For some 30 years little was known about the work there but since then major efforts have been made to reconstruct some of the original equipment's and exhibit them as a working museum.



The Germans were encoding their military messages using Enigma machines and then sending them in the familiar groups of five by Morse code. The British had receiving stations where the German messages were written down as received and the message sheets couriered to Bletchley Park for decoding. Seminal work by Polish encryption experts had provided the British with the principles of a decoding scheme they had devised plus a replica of an Enigma machine. Without this the British deciphering of German messages may never have happened.

Joe responds to a question

# JULY MEETING cont'd

Joe explained the mechanism of the common Enigma machine and some ways the team could try to get a decoding of key words used in messages, such as “weather report” or ‘Heil Hitler”. Once that was achieved the Bombes could be set to work looking for further possible decodes. The Bombes worked in parallel in a sort of emulation of the Enigma machine, trying different combinations of possible wheel settings of the Enigma machine. They used standard Post Office equipment, motors and relays and are a delight to watch spinning through the different combinations. The ability to read much of the German Army’s messages is said to have shortened the war by 2 years.

The Bombes provided the likely settings of the Enigma machine whose message was being studied. The settings were put into a reverse Enigma, the X machine and the original German message emerged to be sent to the intelligence section. This work was ultra-secret as any hint that the British were reading the military messages would have caused a change in German methods, locking out the British decoders who relied on flaws in the system and human errors.

**Right Julie checks one of Joe’s slide for accuracy**

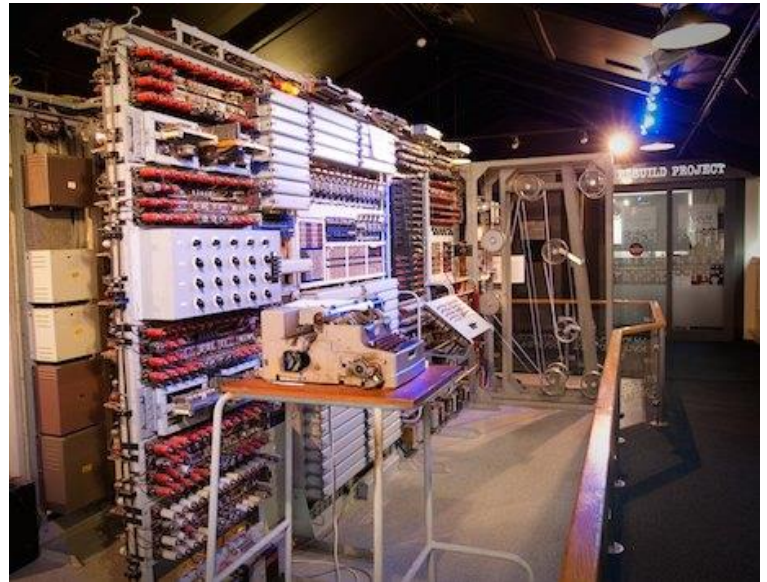


# JULY MEETING cont'd



Left: Rebuilt Turing Bombes.

Below the rebuilt Colossus Computer





# JULY MEETING cont'd



.A happy operator at the National Radio Centre in Bletchley Park

# JULY MEETING cont'd

The Colossus was built in several versions and 10 were operating by the end of the war. These vacuum tube digital computers were more flexible than the Bombes and were used for decoding messages from Lorenz encoders used by the German Navy. The received messages were recorded on punched tape which was glued into continuous loops and read at 2,000 characters per second.

The precursor to Colossus was the Heath Robinson Machine, a fine bit of adaptation and inspired gadgetry. It used less than two dozen valves and while it did decode German messages it was slow and unreliable. Like the Bombes the Colossus machines only generated the wheel settings of the encoder and decoding involved another device. Colossus Mk2 had 2,400 valves. Programming was by switches and plugs. The secret to keeping so many valves operating was to bring up the heater voltage slowly when switching on, thus minimising stresses in the elements.

The last major exhibit was the very comprehensive RSGB radio station. Equipment and antennas cover from 160 m to 70 cm. Operators from all over the World come to use GB3RS.

There is a showcase on Amateur radio and an illustrated timeline of the development of radio and RADAR. Joe commented that our Museum had better exhibits than the RSGB display.

For more information on Bletchley Park go to <https://bletchleypark.org.uk/>

Thanks Joe and Julie for an entertaining and informative evening.

# IT'S NOT A G5RV ITS AN ALL FREQUENCY WIRE

Visitor: "So you've got a new antenna?"

Me: "Yep. The All Frequency Wire or AFW for short. It's a wire doublet hung from the tower with the ends supported by two 5 m (17 ft.) water pipes. It just fits in the back yard with nominally 30 m (99 ft.) of wire and 300 ohm ribbon feeder."

V: "Oh a G5RV eh?" They're good."

M: "No, it's a good metre (approximately 3 foot) shorter than a G5RV and nominally resonant on 60 m."

V: "But it's nearly 3 half-waves on 20 m and ribbon fed. It's a G5RV".

M: "Not really. It's fed at nominally 1/3 of the way in from the end nearest the house. The feed-line length is 11 m (36 ft. approximately) nominally which is electrically 30% more than the G5RV feed line and I feed it with a 4:1 balun which then connects to an ATU. It does not present a low VSWR into 50 ohms on any band even after the balun."

V: "So you screwed up your G5RV then and tried to hide it with an ATU."

M: "Well I suppose you could say that except I wanted to have a 5 MHz dipole for SOTA and I use an 11 m mast so these dimensions and arrangements suited that. I found it seemed to work pretty well and the ATU tuned all the impedances without protest. I realised that it would probably be better than the Terminated Folded Dipole (TFD) which I was using at home. A simulation on the computer showed that none of the dimensions were critical, variations of 0.3 m not making huge changes. "

# IT'S NOT A G5RV ITS AN ALL FREQUENCY WIRE cont'd

V: "Why 5 MHz for SOTA, we don't have that band?"

M: "It's coming and with the low sun spot count I needed to be able to operate on 80 m for the short skip QSO's. A 60 m dipole is as small as you can go without losing significantly with respect to efficiency on 80 m. Using the ATU is worth the extra weight and volume except for a really light-weight station as I don't have to lower the wire to change links to change bands."

V: "So I suppose it's the same as any other G5RV on the bands."

M: "It's not a G5RV. And the ATU tunes it on 1.8 to 54 MHz and all bands in between. I don't have problems with operating above 7.2 MHz or on 10 MHz as happened with my old 80/40 m trapped dipole. It seems to be 6 to 10 dB better than the TFD and equal to the 80/40 trapped dipole on 40 m and 80 m. The ambient noise level on 40 m is much higher than on the TFD. Maybe it is a little higher than the 80/40 trapped dipole but without being able to do A/B tests it's a bit subjective. On 20 m it has gain in some directions and isn't much different to the 2 element beam to ZL. It's not as good to the USA as there is a null in the pattern in that direction but I can still hear most stations. On 18 MHz and 21 MHz it's much the same story. It certainly meets my requirement for a reasonable antenna for 80 m, 40 m and 30 m and when we get it, 60 m. Although the nominal length fitted easily I was prepared to cut a bit off if it was too long."

V: "So it's OK as a G5RV after all?"

# IT'S NOT A G5RV ITS AN ALL FREQUENCY WIRE cont'd

M: "Sigh. Well the OCF 60 m dipole is more convenient than the old G5RV I used to use and the arrangement is more frequency agile. It's in between the G5RV and the ZS6BKW variant in lengths but the OCF makes a difference to the impedance ranges. It's not going to be great on 160 m but I will be able to work locally. On the higher bands there will be directions where the gain is useful but there will be nulls in many directions. If I could only put up one antenna this would be it. The only change I might make is to replace the 300 ohm feedline with open wire line, but as this arrangement works so well the incentive to change is low."

V: "That's great. I'm a fan of the G5RV too."

M: "I got that impression."

**PS.** It is not necessary that the feedline to an antenna have a 1.0:1 VSWR. It does need to have low losses. Open Wire Line can have low losses with VSWR' up to 20:1. I'm not sure what the practical limit is for 300 ohm ribbon. A balanced auto ATU would be good but they are not readily available as a remote system. I have a remote ATU connected to the balun so the coax to the shack is matched. The losses are in the ATU, Balun and 300 ohm feeder. I'm confident they contribute less than 1 dB each below 15 MHz and probably not much more up to 30 MHz. A possible 1 to 3 dB loss is an acceptable compromise for an antenna that fits into the yard and works well on 80m, (60 m), 40 m, 30m, and adequately (for a multiband antenna) above 11 MHz. Better to have up to 3 dB loss than no antenna or one with at least 10 dB loss.

# THE GREAT ECLIPSE

I decided to get up early and try to photograph the eclipse as it was something I would not see again. My camera, in spite of being set for manual focus decided it knew better and kept searching for a smiling face to focus on and most shots were out of focus. It also refused to take a photo during the maximum eclipse period. Even worse it switched to recording in thumbnail mode so all my pictures since then have had a limited number of pixels. Smart cameras? Bah! de VK3AFW



**The night before**



**Just before maximum eclipse**



**Mars and the Moon**

# INTERNATIONAL LIGHT AND LIGHTHOUSE WEEKEND



The International Lighthouse and Lightship Weekend (ILLWE) is an activity for radio amateurs world-wide to commemorate the service rendered by Light Houses and the men and women who operated them, often in remote places where the weather was mostly atrocious. While not a completion, participating stations do like to work as many of the over 400 Lighthouses listed as being involved this year.

This year two of the stalwarts of the Moorabbin and District Radio Club (M&DRC) Ian VK3IFM and Gerard VK3GER were unavailable to participate so the call went out to other nearby clubs to help. Roy VK3BG from the Frankston and Mornington Peninsular Amateur Radio Club (FAMPARC) responded and together with Ron VK3AFW formed the backbone of the activity. The activity took place adjacent to the Eastern (McCrea) Light once essential for navigation by shipping entering and departing Port Philip. The light was the tallest in Victoria at 34 m and is an impressive sight.

## ILLWE CONT'D

Both Roy and Ron arrived just before 10 AM on Saturday 18<sup>th</sup> August. Guy Bancroft of the McCrea Yacht Club was there and opened up the rooms. While not raining at that time, the wind was very strong and it was obvious worse was to come. It was appropriate weather for the ILLWE. Roy and Ron erected five aeri-als, a 80 m double bazooka dipole, a 40 m OCF di-pole, a 5 MHz 300 ohm OCF all frequency wire dou-blet, a 20 m vertical with radials on the beachside lawn and a 2 m “white stick” mounted off the balcony. This took much longer than intended but all aeri-als except the 2 m one withstood the overnight gale.

Once inside the weather did its worst but all were well protected inside and could watch with smugness as nearby 80,000 tonne vessels disappeared into the fog of rain.



**Roy VK3GB working stations on 80 m.**



## ILLWE CONT'D

Roy started on 40 m but the band was noisy and propagation below normal. Ron concentrated on FT8 on 30 m, 20 m 17 m and 15 m where there were some signals. With help from Peter VK3IJ, one of the FANPARC members to visit on Saturday, a couple of lighthouse stations were found on 20 m and worked on SSB but the band was bereft of strong signals. Peter also brought hot chips and potato cakes so he was doubly welcome.

We had a good contingent of FAMPARC members in attendance, apologies for not recording all names and call signs.

After sunset Roy turned his attention to 80 m and much better propagation was enjoyed. The evening meal consisted of pizza and some cakes baked by Roy's wife. Heavy rain crashed against the big glass windows of the club room and the bay was lit by flashes of lightning.



**Entrance to the McCrea Yacht Club Build-**

## ILLWE CONT'D

Bedtime was about half past midnight and reveille was 7 AM. Ron cooked and enjoyed the traditional egg and bacon muffins with strong black coffee. 80 m continued to be in good form. Overall just over half our SSB contacts were on 80 m.

Overnight some water got past the electrical tape into a join in the 40 m coax but this was easily fixed on Sunday morning. The 2 m antenna was reinstated to a vertical position.

We looked for interstate members, Gerard VK3GER/4 at Longreach and Graham VK3KMG/4 on the coast. Gerard was worked but he was on the edge of the skip zone and it was a difficult contact. 40 m on SSB was noisy and propagation was fickle.

Two members from the nearby Southern Peninsular Amateur Radio Club (SPARC), Roger VK3VKI and Paul VK3CRT visited after we had checked into their Sunday morning net and worked six SPARC members.

Three members of the M&DRC were worked, Denis VK3BGS, Graham VK3GL and Gerard VK3GER.

At noon on Sunday we had a light lunch, packed up and cleaned up.

## ILLWE CONT'D



SPARC visitors, Roger VK3VKI and Paul VK3CRT enjoy a morning tea break.

# ILLWE CONT'D

## **QSO count.**

We worked 18 unique Australian lighthouses and lights and 2 unique ZL lighthouses. On HF (shortwave) SSB we had 85 contacts on SSB (voice) and one on CW (Morse code). On 2 m FM (very high frequency, voice) we worked 8 different call signs, all via the SPARC repeater.

As mentioned before, 14 MHz provided little action on SSB or CW and nothing was heard on these modes on any higher frequency.

On FT8 we had 48 contacts from 80 m through to 15 m but no one else indicated they were a light-house activator. Without this mode our tally on 10 MHz and above would have been miserable.

Countries worked were:

Japan, USA, New Zealand, Germany, Fiji, France, Portugal, Indonesia, China, South Korea and on Morse code, Papua New Guinea.

This is a great activity and hopefully more will commit to taking part next year. There are some things we could have done a bit better and they will be considered next year.

Special thanks to Graham Mason and Guy Bancroft of the McCrea Yacht Club for their facilitation of the weekend and to the Club for their hospitality. It is a wonderful facility in which to celebrate the contribution of light houses and the light house keepers.

# 2018 Family Open Cockpit Weekend



**An Australian Avon Sabre at the Temora Warbirds exhibition.**

The Australian National Aviation Museum is holding an Open Cockpit Weekend on 27 October 2018 10:00 AM to 28 October 2018 10:00 AM

The Museum is located at 2 First Street, Moorabbin Airport Victoria 3194

This is the weekend where the Australian National Aviation Museum opens all the cockpits to aircraft it safely can for public access, including for the first time the recently received and restored Sabre Jet Fighter A94-910. Also at the Museum over the weekend will be a petting farm for little children, additional cockpits, BBQ food, coffee and a couple of surprises.

# TRADE DISCOUNTS

**FOR CLUB MEMBERS at ALTRONICS and JAYCAR.**

Moorabbin and District Radio Club Inc. members can now buy over the counter at **Trade prices** from both **Altronics and Jaycar**. When making a purchase ask for **Trade Discount** and for **Altronics** quote the Club's Trade account number **32323** and your **call sign** or for **Jaycar** quote Customer Number **45400209**. **This is NOT a charge account so you use your money.**  
**Note: Minimum purchase of \$20 may apply.**

Check out these companies at their websites.



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