



GATEWAY

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

March 2013 From The President

This month's guest speaker is John Morrissey, VK3ZRX, who will be giving a talk about Time Domain Reflectometry. This is not something I am familiar with, but I am assured that it relates to testing coax feed lines for breakages and faults. It ought to be very interesting.

As you are all aware, April will be our AGM and you will need to elect a new president. I have been in office for the past two years, but now I feel it is time for someone else to have a go. As always, all positions are officially vacant at the end of each Club year, however, the Admin Secretary (Graeme VK3BXG), the Treasurer (Ian VK3BUF) and General Member (Mark VK3FWSP) have nominated to stay on for another term, and I know they will be very helpful in making sure things run smoothly for the new committee. Give it a go; there are only six Committee meetings and eleven General meetings per year.

We are planning to get an antenna Field Weekend going in October. This should be an exciting event for the whole Club in a format that has not been tried before. Further details are in this edition of Gateway.

The VK3RWD 70cm repeater project is now well under way. The license was successfully transferred to the GGREC this week. Recently members of the Repeater



Project group visited the Repeater site in Drouin to discuss antenna and equipment enclosure options. Transmitter and receiver hardware has been purchased and the project is taking shape.

I'm looking forward to seeing you all at the March meeting.

Dianne Jackson VK3JDI

CONTENTS

GGREC Field Weekend	3-4
VK3RWD Project	5
History of Circuit Boards	6-8
2013 AGM	9
ISS loses Comms	10
March Minutes	11-12
Club Information	13

Event Queue from March 2013

March 15th – Friday Night. General Meeting at the Guide Hall
2000 hrs Time Domain Reflectometry

March 24th – Sunday. EMDRC White elephant Sale
Great Ryrie Primary School Great Ryrie Street Heathmont Victoria
see emdrc.com.au for more information

April 5th – Friday Night. Prac Night - Peter Pavey Clubrooms
From 1930 hrs Albert will continue with Design Spark

April 13th & 14th – Sat-Sun. WIA National Field Day
see wia.org.au for information

April 11th – Saturday. Moorabbin & District Hamfest
Southern Community Centre Rupert Drive Mulgrave

April 19th – Friday Night. General Meeting at the Guide Hall
2013 AGM See page 6 for details.

May 3rd – Friday Night. Prac Night - Peter Pavey Clubrooms
From 1930 hrs come along for a chat

GGREC Field Weekend for October

At the last committee meeting the committee resolved to stage a special Radio Field Weekend event for October 12 & 13 (Saturday & Sunday) open to all Club members and guests of Club members. The venue is the entire bottom paddock of **VK3BUF's** and **VK3JDI's** QTH (about 2.4 acres) a little north of Drouin.

The details are still being finalised, but here are the main elements of the plan:

- Members are invited to attend and setup whatever antennas they wish for the event duration. (long-wire antennas can be extended into the centre 2.7 acre paddock where some livestock would be present)
- Bands & modes of operation are also up to the individual
- Members may camp at the site on the Saturday Night, or just do day visits
- A common pavilion would be set up with basic barbeque facilities available
- On each of the two days there would be three one-hour lecture times where speakers would be invited to discuss the different attributes of antenna types. (a program for this aspect would be established closer to the event)
- A theme for the event is for members to provide their own battery power for inverters etc. supplemented by some solar panels if they wish.
- On the Saturday night there would be a bonfire
- Basic toilet facilities would be provided
- While most of the area will be cut paddock, a 0.6 acre treed area is also accessible.
- Caravans are ok, but owners not willing to take them down to the lower area can park them at the top of the property where power is available.
- The site is approximately 100metres above sea level, secure and secluded from view by roads and adjacent properties. Unless extreme weather prevails, most vehicles should readily access the site.

The intent is for this to be a relaxing weekend where members can experiment and compare antenna designs under field conditions. Those not wishing to put antennas up for themselves would be welcome to come along and soak up the radio festival atmosphere. It is hoped that this event will encourage operators to prepare for portable radio work in a friendly & secure environment.



Heliax purchase offer to GGREC members

The Club has been offered a very good price to supply LDF4-50 heliax type coax. The RWD repeater project requires a length of good quality coax such as this. If we lump a few lengths together we can make an overall saving on delivery; if not the per metre price. If you would like to be added to the list to purchase a length, you will need to send an email to Rob **VK3BRS** at vk3brs@gmail.com If you want to know the specifications of said coax, you can either do a web search or we can email them to you if requested. The special connectors required for heliax are available also but we would need a list of requirements to obtain prices. So send an email to show your interest and we will see what can be done. You will be sent a reply with the price details. As we are not in a tearing hurry for the cable, you will have until the end of March to show your interest. Note that this offer applies only to GGREC Club members.

The VK3RWD repeater project.

First site visit

A very good representative number of members paid a visit to the VK3RWD repeater site at Graeme's QTH in Drouin on the second of March. Everyone took an interest in where the antenna mast was to be located and how we were going to move a Holden engine that was mounted on a stand and used to power a circular saw. This ingenious piece of machinery, being surplus to requirements now, was in the way of the cabinet location for the new repeater equipment. A date in the future will be appointed for the working bee when this will be relocated.

Over a cup of coffee, we discussed the whys and wherefores of some of the project aspects before departing and leaving Graeme's house to return to the normal quiet of the country. Thanks Graeme.

With the project still in its infancy, there is much to do but all sections of the rebuild have at least been addressed with members working on those relevant sections. A cabinet will be required for the equipment. Due to the location where we will be installing the repeater there is the possibility of moisture or dust ingress therefore we will be needing a weatherproof cabinet similar to a traffic light control cabinet so if you are aware of one that is surplus to requirements please let me know.

One thing that we will be ordering for the repeater is some coax. We have obtained a pretty good price on Heliac type LDF 4-50. Elsewhere in this magazine issue there is a notice offering members to add their own requirements to the purchase order if they want a length. At least if we buy a large amount in one order, the delivery cost will only be for one lot.



The Early History of Printed Circuit Boards

Nearly sixty years ago Dr Paul Eisler came up with a proposal for a "printed circuit" to replace the point-to-point wiring used to interconnect the various components making up an electronic system, the technology remains the foundation of the modern PCB fabrication industry. Although other methods of producing printed circuit boards were investigated, it was Eisler's etched foil concept that prevailed.

But for Eisler getting the printed circuit off the ground was to take some time. Not only had development work to be undertaken, but the electronics industry had to be persuaded to drop point-to-point wiring in favour of an interconnection medium that, although inherently more consistent and more reliable, was, at least initially, considerably more expensive. Not an easy task.

His basic idea involved printing the required circuit pattern on to copper foil bonded to an insulating substrate. The printing used a special ink which, upon immersion in an etching chemical, would act as an etch-resist. The unwanted copper would be etched away leaving behind the circuit pattern. The non-availability of copper-foil-clad insulating materials was the first of many difficulties to be overcome.

By 1942 Eisler had produced the world's first radio with components interconnected by means of a printed circuit. In February 1943 the first application for a British patent was made in the names of Vezey-Strong and Eisler.

During, and immediately after, World War II efforts had been made to interest UK government departments in the etched foil process. Indeed, some interest was generated, but no business of any significance resulted and in November 1949 help was sought from the National Research Development Corporation (NRDC). In March 1954, the first instalment of a significant NRDC loan was received.

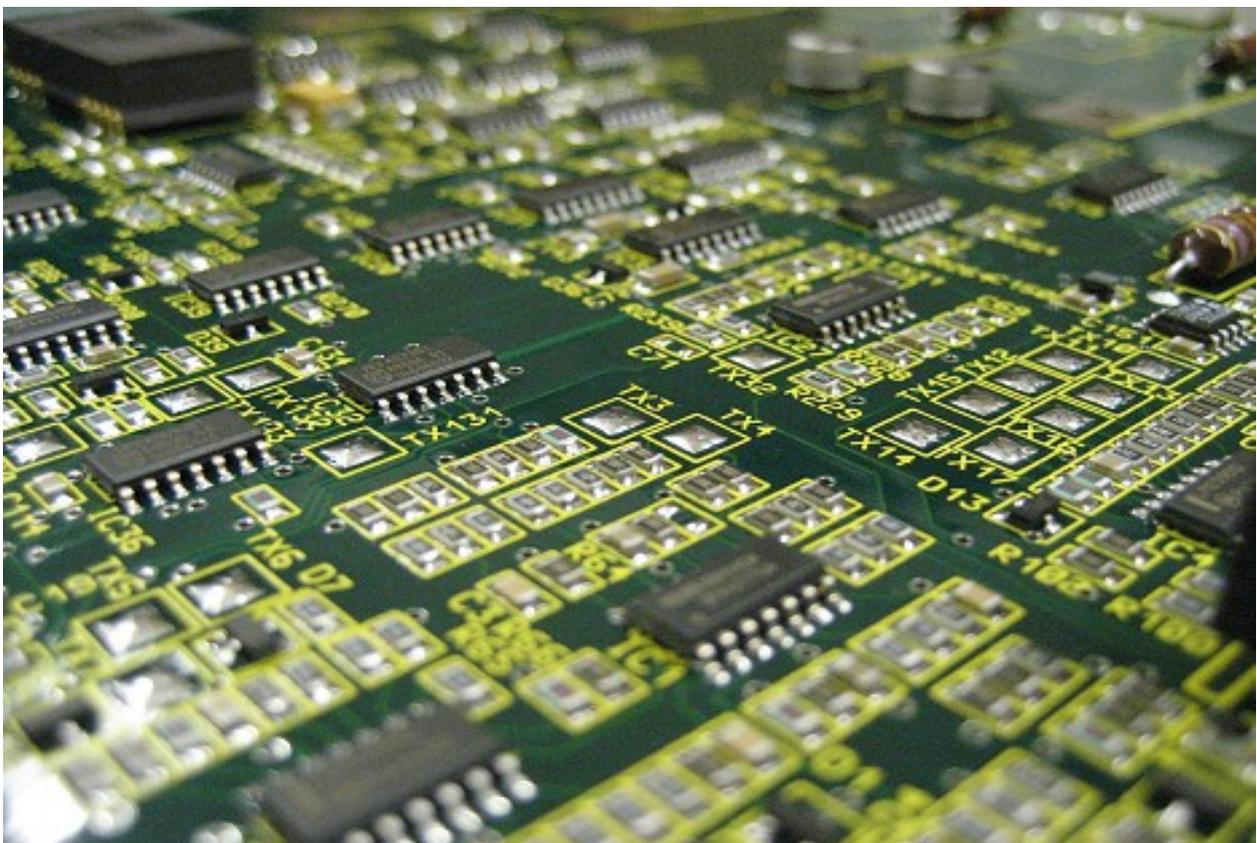
By June 1953 Technograph had been granted 12 patents in the UK and six in the USA. The company had also been granted 10 patents in other countries and had no less than 58 other applications pending.



Around this time Technograph was involved in licensing negotiations with, among others, the Telegraph Condenser Company (TCC), and the eventual granting of a licence to this large, internationally operating company was to mark the beginning of a fruitful relationship.

TCC set up a printed circuit division at its premises in Acton, London, but the market itself had to be developed, with potential users being persuaded to try the new means of interconnecting components. This was no easy task. Although PCBs' consistency enabled them to offer increased interconnection reliability, the electronic circuits of the day were not particularly complex and hand wiring was not regarded as a significantly troublesome operation. It was also cheaper. The cost of producing a hand wired unit was around half that of one based on a printed circuit board.

Another problem that had to be addressed was the commercial non-availability of copper-clad base material. First attempts at developing such materials have been described as "laughable". Copper foils of 0.005-inch and 0.010-inch thickness were being offered where the actual requirement was for foil 0.0015-inch thick. And the adhesives used to bond it to the insulating base were not capable of producing anything like the required peel strength. It took years for the problems to be truly overcome.



But overcome they were, and by the late 1950s printed circuits were able to offer both technical and price advantages over hand wiring. One of the earliest products in the UK to fully benefit from these advantages was the portable gramophone used to play the recently introduced 45 rpm discs. These record players were selling in substantial numbers and the single-valve amplifiers they incorporated were PCB based.

Television and radio manufacturers were also high volume users of single-sided PCBs made using the print-and-etch technique on predominantly paper phenolic copper-clad laminates. Double-sided boards were being produced but not yet incorporating plated-through holes (PTHs), although this technique was under investigation at this time.

However, in addition to consumer products, the electronics industry was also beginning to develop equipment such as electrically-operated accounting machines for the business sector. These "professional electronic" applications demanded double-sided PCBs, but it was not until the early 1960s that both Technograph and TCC became serious players in the business of PTH board manufacture, the techniques of which had been perfected in the United States during the late 1950s.

By January 1957 manufacturing operations had been moved from south-east London to Fleet, Hampshire.

During the 1950s the finest track and gaps being produced were one sixteenth of an inch (0.0625-in), massive by today's standards, but perfectly adequate for the vast majority of applications which, compared to modern circuitry, were relatively simple.

In 1971 all manufacturing operations were transferred from Fleet to Bracknell, Berkshire.

The early 1970s saw an explosion in the number of UK printed circuit suppliers and, although Technograph - in effect the developer of the printed circuit as we know it today - no longer dominated the sector, it nevertheless remained a very significant player. By 1979, however, it was "under pressure" and the Group was sold to RHP (Ransome, Hoffman, Pollard).

Paul Eisler arrived in Britain in 1936 from Vienna as a refugee from Nazi persecution. His invention of the etched foil printed circuit, whilst being of enormous benefit to the world-wide electronics industry, brought him little personal financial return. He died in 1992, aged 85. His autobiography, "My life with the Printed Circuit", ISBN 0934223041, is published by Lehigh University Press.

2013 AGM and Membership Dues

This is a formal notice to all members of the Gippsland Gate Radio and Electronics Club that the 2013 AGM will be held on April the 19th commencing at the conclusion of the April General meeting. we are calling for nominations for the committee positions. So far the following members have nominated for the listed committee positions.

- Ian Jackson **VK3BUF** Treasurer
- Graeme Brown **VK3BXG** Administration-secretary
- Mark Clohesy **VK3FWSP** General Committee Member

We still need nominations for the President and a general Committee Member, you may also nominate for one of the above positions if you would like to.

If you would like to run for a position on the committee please feel free to nominate yourself or if you would like to nominate someone else speak to them first and then if they are willing put their name forward.

This year Ian **VK3BUF** will be away (as will Di **VK3JDI**) in China for the AGM, to make it easier on the new committee he will be collecting the membership dues at the May meeting instead of the April meeting. Those paying by Electronic Transfer may do so at any time before the May meeting and all members that have paid the 2012-2013 membership dues will be considered as financial members for the purpose of voting rights at the 2013 AGM.

The committee has voted and decided that the membership dues will increase this year as follows..

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

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

This is an increase of \$3 across all membership types and it was felt by the committee that a small increase on the dues to cover ongoing costs to the club was needed as there had been no increase in a number of years.

Albert **VK3BQO** will chair the general meeting in Di's **VK3JDI** place and has also offered to once again to chair the AGM. His offer has been accepted by the committee and they would once again like to thank him for the excellent job he does chairing the AGM.

International Space Station Experiences Loss of Communications

At approximately 9:45 AM EST (1445 UTC) on Tuesday, February 19, the International Space Station (ISS) experienced a loss of communication with the ground. At that time, flight controllers in Houston were updating the software on-board the ISS's flight computers when one of the ISS's data relay systems malfunctioned.

The primary computer that controls critical station functions defaulted to a backup computer, but it did not allow the ISS to communicate with NASA's tracking and data relay satellites.



Mission Control at Johnson Space Centre in Houston, Texas was able to communicate with the crew as the ISS flew over Russian ground stations before 11 AM EST (1500 UTC) and instructed the crew to connect a backup computer to begin the process of restoring communications.

Once communication was re-established, Commander Kevin Ford, KF5GPP, reported that the ISS's status was fine and that the crew was doing well. Communication systems were restored as of 12:34 PM EST.

Thanks to NASA and the ARRL for the information

General Meeting of 18th February 2013

Location:	Guide Hall Cranbourne
Start Time:	Meeting commenced at 2002 hrs
Chairperson:	President Dianne VK3JDI
Minutes taken:	Bryan VK3FOAB
Present and Guests:	As per attendance sheet.
Apologies:	As per attendance sheet
New Callsign:	None

Correspondence received:

AR Magazine, EMDRC newsletter, WANSARC news link

Correspondence out:

WIA Clubs list e-mail regarding our Hamfest; ACMA regarding VK3RWD transfer.

Treasurers Report:

Income total \$43.42 expenses total \$109.89

Bendigo Investment Acc \$9221.31 Bendigo Cheque Acc \$3333.18

Quick books balance: \$2563.29 the difference being 3 un-presented cheques.

Two of the cheques relate to the rental payments made to the Guide Hall Committee. Ian has pursued this with the Committee (again.)

Some payments have been received for tables for the Hamfest. They will be trickling in over time. Moved Ian VK3BUF seconded Craig VK3FDRG. All in favour, carried.

Minutes from January general meeting:

As per Gateway moved Dianne VK3JDI. seconded Mark VK3FWSP All in favour.

Business from the Previous Minutes.

Club membership listing on website needed to be amended, and this has been dealt with by Steve VK3EGD

Beacons Albert VK3BQO gave a brief run-down to members about state of the club beacons. Neither the 1.2GHz beacon nor the 2.4GHz beacon were operational. Both these devices operate under the VK3RLP call sign. Rob VK3BRS has managed to get it working and it will shortly be re-installed. The 2.4GHz beacon is also operational, and a working bee will be scheduled in the not too distant future so that both beacons can be reinstalled on the water tower.

Repeater rebuild VK3RWD The first meeting of the sub-committee took place last Friday night with 16 members in attendance. The meeting generated lots of questions, comments and suggestions. It was decided to go with Phillips equipment as the basis for the repeater, provided the right models could be secured. At the Kyneton Hamfest, the necessary gear (and backup) was obtained for \$80. It has been handed to Steve VK3EGD to evaluate. We have a possible

duplexer, power supplies are built in, but controller will have to be built. Graeme **VK3BXG** has donated his location for the tower, and he will put up a mast and he will co-use it. A number of people will design the antenna (stacked dipole). Steve is looking at the equipment that has been acquired.

Tilt over Mast Voted last month for the disposal of this mast. Graeme **VK3BXG** wanted to buy the mast, and he submitted a bid for purchase of same. The opportunity to place bids has been open to other club members as well. Graeme at the repeater sub-committee meeting that should be successful in acquiring the mast, he was happy for the club to be co-users, although he would construct/own the mast. Ian **VK3BUF** moved that Graeme's bid for the mast be accepted. This was voted on by a show of hands, and accepted.

Hamfest Wayne **VK3ZWC** informed the meeting that 20 July 2013 has been confirmed as the date of the Hamfest. A couple of tables have been sold, and 3-4 booked. Prices will be the same as last year, with entry fees of \$6 and \$20 per table with a maximum of 4 tables per seller. Altronics will also be associated with the Hamfest again this year. Door prizes need to be purchased: suggestions about what these might be are welcome.

Birthday celebrations for Russ **VK3WMR** There has been a change of venue from The Cuckoo in Olinda to Taco Bills in Pakenham. (Taco Bills is located on the south side of the Princes Highway, near Ahern Road.) It features an a la carte menu. The date for the celebration is still 2nd March 2013. Russ' email details can be found in the club magazine Festivities begin at 1800 hours.

Tribander Russ also has an Icon T98 tribander, which he is planning on selling. It covers 2m, 6m and 70cm. Contact Russ if you are interested in viewing/purchasing same.

New Business.

Prac Night Albert **VK3BQO** sought advice from the meeting whether there was continued interest in further training in the use of the Design Spark program, which was introduced by Albert and Ian at the February General Meeting. On the basis of the interest expressed tonight, further work will be done with Design Spark at coming Prac nights.

Glasses Ian **VK3BUF** reminded members that glass tumblers featuring the GGREC logo are still available for \$14 apiece.

Wyong Field Day Brian **VK3BSN** reminded members that this will take place on 24th February. It is the biggest Hamfest in Australia with sales commencing at 0600. Brian also commented that, following his recent attendance at the Kyneton meeting, numbers were down by about 30% in terms of attendees and traders.

Meeting Closed at 2032hrs.

Next Meeting 15th March 2013

Talk on Slow Scan TV by Paul **VK3TGX**



Club Information

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

Office bearers

President	Dianne Jackson	VK3JDI	Repeater Officer	Albert Hubbard	VK3BQO
Admin Sec	Graeme Brown	VK3BXG	Web Master	Stephen Harding	VK3EGD
Treasurer	Ian Jackson	VK3BUF	Magazine Editor	Mark Clohesy	VK3FWSP
General 1	Michael Van Den Acker	VK3GHM	Property Officer	Bruno Tonizzo	VK3BFT
General 2	Mark Clohesy	VK3FWSP	Secretary	Ian Jackson	VK3BUF

Call in Frequencies, Beacons and Repeaters

- The Club Station **VK3BJA** operates from the Cranbourne Clubrooms.
- 6m Repeater Cockatoo **VK3RDD** : Freq. In **52.575 MHz**, Out **53.575 MHz**
The 6m Repeater requires CTCSS tone access of **91.5 Hz**
- 70cm Repeater Cranbourne **VK3RLP** In **434.475 MHz** Out **439.475 MHz**
The 70cm Repeater requires CTCSS tone access of **123 Hz**
The 70cm Repeater supports Remote Internet access (IRLP) Node **6794**.
 - Simplex VHF - **145.450 MHz FM**
 - Simplex UHF - **438.850 MHz FM**
- **VK3RLP Beacons 1296.542 MHz & 2043.532 MHz**

Membership Fee Schedule

Standard Member rate \$37.00 Junior Member rate \$22.00
Pension Member rate \$22.00 Extra Family Member \$17.00

- 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 pockets@twistedsouls.com

All other Club correspondence to: secretary@ggrec.org.au
or via Snail Mail : PO Box 1098, Cranbourne 3977

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

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