



THE OFFICIAL JOURNAL OF
THE GIPPSLAND GATE RADIO AND ELECTRONICS CLUB

5 JULY 86

GIPPSLAND GATE RADIO AND ELECTRONICS CLUB

COMMITTEE MEMBERS 1986/87

President.....Ian Jackson VK3BUF
Secretary.....Andy Beales VK3KCS
Treasurer.....Albert Hubbard VK3BQO
Member.....Kerry Clayton VK3KFC
Member.....Dave Game VK3BJV

Club Component Officer & Test Equipment Library:
Albert VK3BQO

Publicity Coordinator:
Kerry VK3KFC

Magazine Editorial:
The entire Committee

Club meetings held at the 1st Oakwood Park scout hall in
Heyington Crescent, Noble Park North. Meetings commence on
the Third Friday of each month at 8:00 pm.

Club Station: VK3BJA Located at the scout hall.

Postal address: P.O.Box 98 Dandenong 3175

ALL VISITORS WELCOME

PRESIDENTS REPORT - JULY 86

Greetings readers to the latest edition of GATEWAY, it has been a while since the printing of our last magazine and henceforth we intend to make it a little more regular. The magazine has taken on a new look, all articles are now compiled using a word processor and are evaluated by a spell checking program before going to print. This should keep all spelling mistakes to a minimum.

I welcome the new committee for 1986/87, although there have been few changes of role from the last term we will be giving publicity of the clubs new image a high priority.

One of our members must be congratulated for gaining his Limited license recently, Richard Everett can now be heard on Two Metres using the callsign VK3XR0. Richard has put a great deal of effort into passing this last exam and proves once again that acquiring an Amateur Radio license is not impossible, merely difficult.

An interesting item appeared last month, Telecom commenced a campaign of public and staff relations and now produce a monthly newsletter to promote this. They call it Gateway, a familiar title? I thought so.

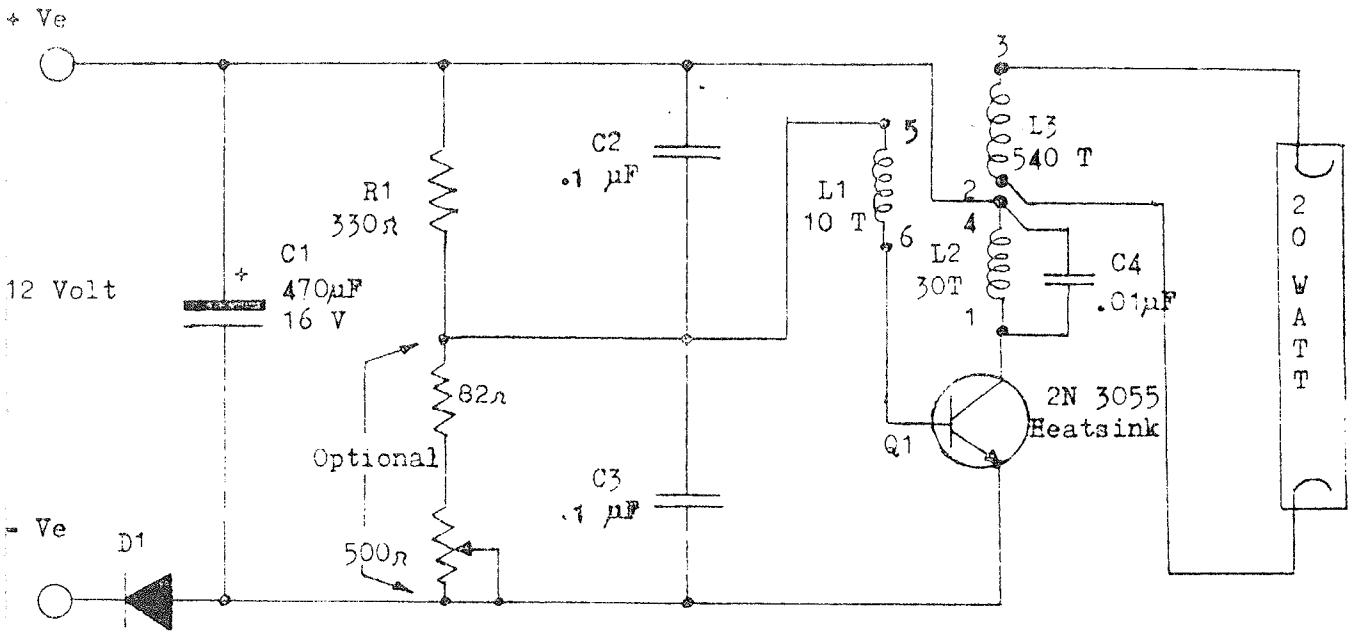
Readers will note the new A5 format of the magazine. It does to some degree simplify production, we welcome comments from our vast reading audience to decide whether or not we keep it this way.

A comment worthy of note by all is that SUBSCRIPTIONS ARE NOW DUE!, bordering on overdue. Albert, our treasurer will be more than happy to receive ten dollars from you for our continued membership. In fact he has been known to rub his hands together during the transaction.

A final note; when you come along to the next meeting consider that others that you know who are a little curious as to where you go on those Friday nights once a month may well be interested in what goes on. Dont leave them at home wondering, invite them along!

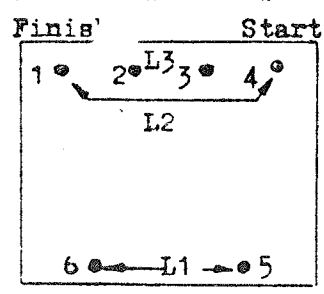
Until next month...

73's from Ian, VK3BUF President G.G.R.E.C



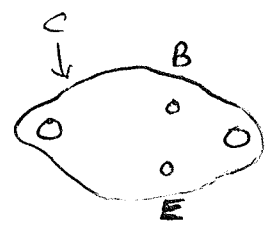
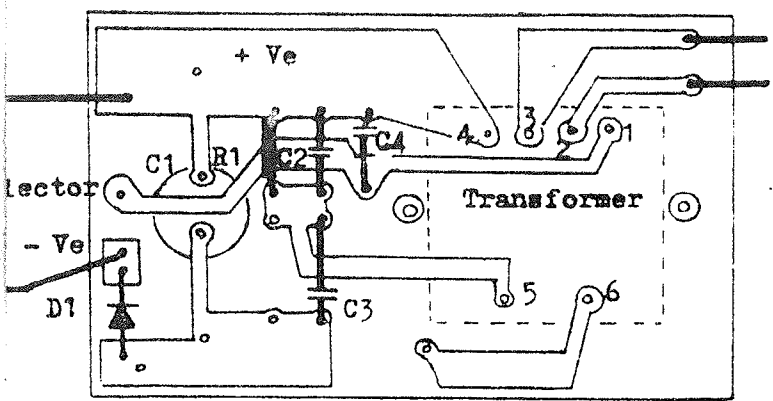
C1. To compensate for INDUCTANCE when using long battery leads.
 R1. To Bias 2N 3055 (For 18W slimline tube use 470Ω.
 TRANSISTOR. Wiring between Transistor and P.C.Board to be as short as possible.
 FREQUENCY. Above audio range Eg. 17 KHZ. (Tube gives out 20% more light above 10 KHZ.
 TRANSFORMER. From A.S.T.I.C. 800 Telephone.
 Step 1. Unwind top windings and leave on winding between T2 & T3 (L3 300 to 540T 38 S.W.
 Step 2. Wind on L2 (30T 30 S.W.G.) Note direction of winding.
 Step 3. Wind on L1 (10T 30 S.W.G.) " " " " "

 PREVENT ANY WIRES ON
 APPROACH TO COLL TAGS
 FROM CROSSING.



If Direction of winding is clockwise (looking from bottom) wind both other windings clockwise.
 If Direction of winding is anti clockwise, wind both other windings anti-clockwise.

Start Finish
 Looking from bottom of coil.



Emitter of 2N 3055. Base of 2N 3055.

COMPONENT LAYOUT LOOKING FROM BOTTOM OF BOARD.

- (A) Life member. Any person rendering such meritorious service as to warrant such membership to be approved by a three fifths majority of members present and voting at any general meeting of the Club.
- (B) Full member. Any person over sixteen years of age.
- (C) Junior member. Any person under sixteen years of age. Any person over sixteen years of age attending an educational institution full time.
- (D) Pensioner member. Any person eligible for a state or Federal Government pension.
- (E) Honorary member. Any person/s that the Club committee may from time to time appoint.

Article 6:

The Clubs fiscal year is from the first of April to the thirty first of March of the calendar year following. The subscription fees payable each fiscal year by each class of member shall be decided at the general meeting following the Annual General Meeting. Any member not paying the prescribed subscription by the thirtieth of June shall be deemed to be unfinancial.

Article 7:

Any member may be expelled or suspended from membership for a period not exceeding twelve months, at the discretion of the Club committee, provided that such member shall have the right to appeal to a general meeting. Voting on this issue both in committee and in general meeting be by secret ballot.

Article 8:

Any member may resign his membership by giving notice in writing to the Secretary, but shall continue to be responsible for any liability incurred during or as a result of his membership.

Article 9:

- (A) The Annual General Meeting shall be held in April each calendar year.
- (B) At least six other general meetings shall be held each fiscal year.
- (C) All general meetings shall be conducted in accordance with standing orders.

Article 10:

- (A) At the Annual General Meeting a Club Committee comprising the following shall be elected from amongst the financial members: President, Secretary, Treasurer and two additional members. The position of any committee member absent from two consecutive committee meetings without apology or three consecutive meetings of the committee with apology shall automatically become vacant.
- (B) The Club committee shall have the power to co-opt up to two further committee members.
- (C) The decision of the Club committee shall in all matters relating to the Club be final. It shall have general control of officers, committees, sub-committees and may for good causes declare any office vacant. It shall constitute a Board of Appeal from the rulings of officers and actions of all committees and may hear and determine any disputed matters or any complaints or grievances as to Club matters between members except as

otherwise provided for in article seven.

(10) All Club committee members shall retire at the Annual General Meeting and shall be eligible for re-election providing they have not served three full consecutive terms in which case they shall be ineligible. The Club committee members shall assume office at the conclusion of the Annual General Meeting.

(11) In the event of an office holder being deemed incompetent by a majority of committee members in a 'no confidence' vote, the office holder shall stand down until such time as the position is reconfirmed at a General Meeting as provided for in article seven.

(12) A retiring President or Secretary who is not a member of the new Club committee shall automatically become an associate member of the Club committee for a period of six weeks with power to vote.

(13) It shall be the duty of the President to preside at the general meeting of the Club and the Club committee, and to prepare and enter other duties as authoritatively referred to his office.

It shall be the duty of the Secretary to keep a record to be kept the names of members, record the attendance at the Club committee meetings, record and preserve the minutes of the Club committee and Club General Meetings and to perform all other duties as authoritatively referred to his office.

It shall be the duty of the Treasurer to have custody of the Club funds except where otherwise provided for in article thirteen. Accounting for the same to the

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(1) ... the ... of ...

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Article 12:

- (A) The quorum at General Meetings shall be ten financial members or one sixth of the financial membership, which ever is the smaller.
- (B) The quorum at Club committee meetings shall be three committee members.

Article 13:

- (A) The Club fiscal year shall commence on the first day of April of each year and all the Club books shall be brought up to date and finalised for the preceeding day.
- (B) The funds of the Club are to be deposited in a bank selected by the Club committee, such moneys of the Club not immediately required may be invested upon such securities and in such a manner as from time to time determined by the Club committee or by a majority of members present and voting at a General Meeting.
- (C) The Club committee shall have the power to sign and countersign cheques, and otherwise act as may be necessary to operate any Club account.
- (D) All disbursements other than petty cash shall be made by cheque which must be approved by any two committee members.
- (E) The Club shall keep one general account and may at the discretion of the committee generate other accounts if the need arises such as editorial or educational. In all cases the general Club account may call on the other accounts for moneys.

Article 14:

(A) The club shall be dissolved if a resolution to this effect is carried by a three fifths majority of members present and voting at a General Meeting, two months notice of motion of the proposed resolution having been given in the newsletter.

(B) In the event of dissolution all assets shall be sold, the means determined by the Club Committee (that is, the committee in office prior to dissolution) and any outstanding debts paid. All records and balance of moneys remaining shall be transferred to the Wireless Institute of Australia, Victorian Division, to be used in furthering the original objects of the Club.

Article 15:

Each member shall be entitled to one vote irrespective of class of membership, except honorary members who shall have no vote. In the event of an equality of voting on any question the chairman shall have the casting vote.

Article 16:

This constitution may be amended by a three fifths majority of members present and voting at a General Meeting, provided two months notice of the proposed amendment has been given in the Club newsletter or formal notice.

Article 17:

Any doubt arising as to the application or meaning of any article of this constitution shall be resolved by a vote

is a General Meeting, whose decisions shall be final and conclusive.

Article 18:

The Club committee shall publish or cause to be published a newsletter. Issues are to be sent at least quarterly and distributed to members in a manner decided by the Club committee. An amount of one dollar per annum per member shall be charged for the periodical and such amount to be included in the annual subscription payable by each member.

Article 19:

The Club committee may promulgate rules governing all Club events, contests or competitions and may vary and interpret such rules.

Article 20:

A majority of committee members shall hold the A.S.P., A.I.L.P. or I.O.L.P. positions.

Article 21:

All members responsible for damage or destruction of property, equipment or other material of the Club through willful or negligent actions of the club, the conditions to be determined by the Club committee.

Article 22:

The Club committee shall have the authority to approve the purchase and/or sale of equipment and/or supplies to Club members.

CHANGES TO THE CONSTITUTION - WHAT THEY MEAN

Last month the Gippsland Gate Radio Club made some changes to its constitution, These few simple changes give the Club a whole new outlook. The new title of the Gippsland Gate Radio and Electronics Club does what it implies. Our aim is now to promote the fields of Radio communications, electronics and computers. This means that we invite participation and new members from a much wider section of the community. Our meeting nights shall reflect these changes, we shall still maintain our involvement in Amateur Radio, provide encouragement for those trying to attain their radio license and all other activities pursued in the past. We shall also promote digital electronics and try to teach to our members basic principles that will enable them to build and repair electronic devices that are now an integral part of our lives.

We plan projects, lectures, activities and exhibitions to make the Club meeting nights a date worthy of putting on the calendar. To make this work will take more than a series of demonstrations by the committee. It will take INVOLVEMENT by the members, a will to drag out the smoking soldering iron and have a bash at a project; even at the risk of putting scorch marks on the tablecloth. Everybody who has even a passing interest in radio and electronics has to start somewhere, and where better than in the friendly atmosphere of a Club?

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Bugging the vox populi

Digital phone exchanges boost the potential for largescale surveillance

The heavy tread of Big Brother has come a lot closer in the last 10 years with the commercial production of voice analysers: instruments connected to the telephone network which can detect not only the content of a conversation but who is speaking.

In the past three years, 55 countries, most of them in the Third World, bought the AXE digital phone exchange manufactured by Swedish communications company Ericsson. One of its main selling features is its ability to function with a sophisticated phone monitoring and recording system.

Saudi Arabia's is the biggest: a US\$1.5-billion, 586,000-line network. The most recent AXE buyer is Uruguay, and others include Venezuela, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Africa, Mexico and Panama.

Ericsson's only competitors for these sophisticated telephone exchanges are Western Electric (US), Northern Telecom (Canada), and Nippon Electric (Japan).

The possible uses of the system with voice analysers for police surveillance have prompted the employee union at Ericsson to register concern about its members' role in providing the system to countries where "the military have a leadership in the politics and organisation of the state." The union wants employees with moral reservations excluded from work on this kind of equipment.

Confirming that buyers often demand that the AXE equipment include phone-tapping potential, Ericsson executive Bengt Kellgren added: "Ericsson feel that given the market situation, they cannot ignore this demand because they would lose sales."

However, the ability of the digital AXE computer, the APX12, to monitor and record conversations simultaneously is deployed in normal use for connection and disconnection of phones. Adding a voice analyser, a tape recorder and a second computer enables largescale surveillance intervention.

The analyser can match a voice tracked by the APX212 with the same voice registered in the memory of the second computer. The longer the voice record, the more accurate is the identification. Auxiliary systems detect the location of the phones.

The analyser's recognition system relies on speech sound characteristics which vary from one language to another and differ in the pronunciation of individuals. This form of voice identification is not fool-proof because it is easy for human beings to imitate dialects, change the tone of voice or speak more softly. Any of these falsifications disorients the analyser unless it has a record of these variations in its test bank.

Jan Gauffin, head of a unit researching voice recognition and developing a more efficient analyser at the Tekniska Hogskola in Stockholm, says he can still fool his analyser, but that it is getting harder to do.

According to Gauffin, the main virtue of a voice analyser connected to the tele-

phone network is that it can discard "irrelevant" calls.

The coming generation of listening devices analyse messages from their information content. Ericsson is already using an internal phone system which will connect a call on verbal command. Some civilian systems are triggered by combinations of up to 12 key words, and devices capable of reacting to specific phrases are not far off.

Civilian research into voice recognition is only the small visible part of the iceberg; progress in military research is shrouded in secrecy. The Pentagon has proposed that the world's largest producers of communications equipment engage in a joint project to solve the problem of word recognition in communications which suffer from static interference.

Philology and sociology have shown that certain activities generate specialised languages, with a relatively small vocabulary of between 200 and 500 words relating to their basic features. If the given words are used over the telephone network, it will be possible to locate and monitor people involved in activities the authorities keep under surveillance. □

Andrés Alsina in Stockholm

The low-flying letterbox

The Pacsat low-orbit satellite will meet basic information needs within modest budgets

The marriage of low-tech satellites and new computing techniques promise cheap and versatile information relay and processing for Third World countries. The first such system catering for developing countries will be launched in 1987.

Already deployed by amateur radio groups in the US, these are known as low earth orbit (LEO) satellites, orbiting as low as a few hundred kilometres. Modern communications satellites are placed in the geosynchronous orbit about 36,000km up, so they revolve at the same speed as the earth and are thus continuously in range of an earth station antenna.

The LEO group offset the problem of a synchronous orbit by ranging over the globe; this puts them within range of a ground station four times a day for up to 15 minutes a time. This means operational

use is different from that of GSO satellites capable of beaming real-time messages for telephony and TV.

A LEO satellite is more like a flying electronic letterbox: it receives and stores information from a ground station and transmits this later to other ground stations requiring it. This makes the LEO group simpler and cheaper to operate: it costs only a fraction of the amount required to put a GSO satellite in orbit.

The Pacsat satellite which will pioneer the venture for the Third World is geared to the type of function LEO satellites perform best: it will meet basic information needs in areas ranging from agricultural planning to disaster relief. The project is run by Volunteers in Technical Assistance, a US-based group working on development projects in Africa, Asia, Latin Amer-

ica and the Caribbean. Vita provides the design, and it is being built by the Radio Amateur Satellite Corporation.

Only a metre long, Pacsat will include an on-board computer capable of processing 960 characters a second – about 600 pages of text in a 15-minute transmission. These packets of digitalised information give the satellite its name.

Vita estimates the cost of the shuttle launch and the ground station network at less than US\$1-million. Ground station equipment needs are simple, possibly solar powered and even portable. Cost in each case could be under US\$2,000. A fullblown GSO satellite system costs between US\$100-million and US\$150-million.

Because communications satellite systems provide services that are beyond the capability of LEOs, the costs cannot be directly compared. But the much lower cost of a LEO system is crucial if it can play a key role in a country's telecommunications system. Pacsat even compares favourably with the cheap Intelsat domestic lease programme, which provides developing countries with basic telecommunications for as little as US\$1-million a year.

The dissemination of agricultural data illustrates how Pacsat can be deployed effectively in the Third World. Local crop problems can be analysed through the satellite by tapping centralised computer databases. For example, a farmer can have specific local data on climate, soils, crops and field practices sent to a central database, within 24 hours, he could receive computer-processed analyses on fertiliser application, planting schedules, irrigation needs, with recommended alternative economical strategies.

Other Pacsat applications include personal communication and information exchange, allowing data to be relayed from one developing country to another within a day or so. □

Arthur Purcell