



OXTALES

Newsletter of the Oxley Region Amateur Radio Club Inc.
PO Box 712 Port Macquarie 2444

May 2001

Compiled by VK2TT

PRESIDENT: Bob Brodie VK2EJK 6582.0592
VICE. PRES: Bruce Walker VK2HOT 6583.8360
TREASURER: Roy Burges VK2YOR 6583.9349
SECRETARY: Alan Nutt VK2GD 6582.3557

President's Report

Can you believe this report will be the last President's report prior to the end of our financial year? Now is the time to start thinking of where you may be able to volunteer your service to the management team to help in maintaining the progress of the Club.

The Club has forty-three current members and there are still some thirty or so amateurs in our area who are not members. With the encouragement of new members to the ranks of amateur operators, we could be looking forward to one hundred members in the next few years. On the other hand the task maybe left to the old hands who "do grow weary" and if this may be the case then our membership will inevitably decline.

We made a fine effort in the recent John Moyle Contest and the Annual Field Day Weekend is well in hand. On the day, the events do run well, but thanks are due to a lot of preparation time prior to these events, undertaken by a dedicated band of workers.

73. Bob Brodie VK2EJK (President)

Down The Coax

Friday May 18th 2001
Evening Get together
7.00pm SES Building

June Monthly Meeting
Saturday 5th June 1.00pm
SES Building

Annual Field Day Weekend
June 9th/10th 2001
Sea Scouts Hall
Buller St.,
PORT MACQUARIE

July Monthly Meeting
July 7th 2001
1.00pm SES Building

Silent Key VK2BAZ

It is with regret that we have to report the unexpected and untimely passing of Barry Harwood (VK2BAZ) who has been a Distant Member of O.R.A.R.C. for some years now. Barry was laid to rest in Gunnedah

In This Issue :

Item.	Page No.
President's Report	1
Down The Coax	1
Silent Key - VK2BAZ	1
Net Controller's Roster	2
Memory Jogger for Field Day Weekend	2
Remember The Storms	3
Some Thoughts on Logic Design	3
Transatlantic LF Communications	5
Morse Code	6
A.R. in Emergencies	6
Travelling to New Zealand ?	6
Magazines	6
John Moyle Contest 2000	7
Items for Sale	7
Membership Register	8

NSW, on Friday, 20th April, 2001.

Amongst those attending his funeral was Bill (VK2ZCV), a close friend of Barry's for many years. Barry is survived by his widow, Joan, three daughters, and three grand-children.

Barry, was born on 7th December, 1940, in Gunnedah. He began his career in an Electrical Apprenticeship in Sydney. He later returned to regional NSW and worked in the communications technical field throughout the rest of his life. He was an active, practicing amateur for many years, being deeply involved in his local club activities in repeater installation and maintenance area in the Gunnedah/Narrabri region, which included the design and installation of the first 2-metre Voice Repeater on Mount Kaputar.

Barry will be sadly missed in the amateur radio ranks. Through the pages of this newsletter, may we express sincere condolences to Joan and the extended Harwood family on the loss of their loved one.

Net Controller's Roster for Club Nets.

Following general agreement at the March monthly meeting, a net controller's roster has been compiled, and it is presented below. The roster nominates only those club members who have so far agreed to participate as net controller for the Club's 2-metre nets on Wednesday evenings and Sunday mornings. As agreed at the meeting, any member who finds himself unable to be present as rostered controller on a given date, will take responsibility for mutually arranging with another member to take his place. The roster is a guide only, and the concept of changes by mutual arrangement should enable members to make smooth running of the nets with a fair distribution of the role of net controller. The roster will appear in each Oxtales and will cover the three months beginning from the date of each issue. With the current number and preferences stated by volunteers, the maximum number of rostered days in any three months, for any one member, will be two. Some only copped one day for this quarter, but don't get complacent, those who missed out on a second stint this time will certainly cop it in the next roster! If your name is not included below, it is be-

cause you have either indicated a preference not to participate, or have not yet had an opportunity to indicate. If you are willing to participate, please contact Trevor (VK2TT), who is the current compiler of the roster. He will guarantee your inclusion and thus help you share the joys of addressing and controlling the multitudes. Hi.

Net Controller's Roster

May 2001

Sundays

6th VK2TT
13th VK2AIF
20th VK2JJ
27th VK2OA

Wednesdays

9th VK2ATM
16th VK2EI
23rd VK2HBM
30th VK2GD

June 2001

3rd VK2BZD
10th VK2TT
17th VK2AIF
24th VK2OA

6th VK2MAZ
13th VK2EJK
20th VK2DAL
27th VK2HOT

July 2001

1st VK2DAL
8th VK2EJK
15th VK2MAZ
22nd VK2JJ
29th VK2HOT

4th VK2ATM
11th VK2EI
18th VK2AYD
25th VK2GD

Memory Jogger for Field Day

Members and readers of this erudite Newsletter are reminded that this will be the last issue to be fully distributed before the June Field Day weekend. Preparations are running fully up to the wheel for this event. Despite our Co-ordinator's unfortunate accident, rendering him immobile with a nasty broken leg, he has been able to brief those willing helpers who have rallied to the cause, and the jobs that required completion are well in hand. Get well soon Allan, and we will have a ceremonial burning of those crutches when you are back on your own pins again.

The field day this year, as well as the usual fox-hunts, and equipment suppliers, will include a Home Brew competition, and a Vintage Equipment display, along with disposals, and Packet Radio and PSK31 demonstrations.

Special thanks are due to Wendy and Arthur Monck, for their generosity in preparing and donating a range of excellent prizes for winning on the day of the event. The prizes include very useful items such

as a picnic setting for 2, a basket containing pillow and cushions, a garden pack, a basket, a car cushion, a "Gone Fishing" pack and other personal comfort items.

The major raffle prizes, 1st: A \$100 open order on Big W. with 2nd & 3rd prizes comprising a \$25 open order on Dick Smith Electronics, and 2 bottles of Cassegrain vino. Members attending the next club meetings will be presented with tickets for personal purchase or sale (or both). See Down the Coax, in this issue for dates, time and venue if you don't already know it all... and really, you should!

Remember the Storms and Floods?

On the 10th of March, whilst having a QSO on 11 meters with a mate, at approximately 10:30pm in the evening just before going QRT, I heard a station putting in a "breaker" on 27.355 LSB, calling for assistance.

After pulling the station in, with a lot of background noise, and taking into consideration I have just moved to my new QTH, (using the 5/8th ground plane antenna, which is only 19 feet off the ground), it turned out that the station was on the eastern side of the Walcha mountains and was calling for help from his "\$100,000 rig". He was in a semi-trailer, stuck on a bend no wider than a pool table, with a tree across the road in front, and a land slide further on, asking for assistance as the storms set in for the night.

After taking all his details and coming to the conclusion that this was a station in real distress and truly needed assistance, I decided to call the SES and police. I relayed details to police and SES crew for a good 3.5 hours, taking it into the early morning hours.

I asked the big rig if he was contactable on either mobile phone, or UHF CB, and he replied that the phone was not in a serviceable area and he was unable to activate any of the repeaters on the UHF band. He was unable to go forward or backwards and was in great concern for his life as there were more trees close by looking for a place to fall.

As it turned out, the SES and police were unable to get to him that night as there were many road blockages and they had to wait until first daylight so they could fly in a helicopter to his

rescue.

I never heard from him since, but I feel as though I have done a great deed for him, and his family, and it was all done with a clapped out CB Radio... Just goes to show when all else fails, we can still rely on wireless radio, even if it is a CB!

Jason (VK2FT)

Some Thoughts on Logic Circuit Design

(By VK2GD Allan Nutt)

Initial Choices

The designer of any digital circuit must make a number of choices right from the outset. Sometimes the nature of the project will make some of those choices for him but, more likely, the designer will be the one to make the preliminary decisions.

The primary choice is determined by the complexity of the logic circuit to be designed and requires a decision as to whether the design should be based on a microprocessor/micro controller or built from discrete logic devices.

In the case of a microprocessor or micro controller design, the overall chip count will almost certainly be reduced, and so take up less space. It does not necessarily follow, however, that a cost reduction will also be achieved since the specialised chips, sockets, crystals etc., used in a processor-based design are often much more expensive than discrete logic gates, counters and flip-flops, which can cost less than a dollar each.

It should also be appreciated that some assumptions are made about the designer in a processor approach. Firstly, the designer must be familiar with the particular processor he wants to use, both from a hardware and software perspective. He must know the processor's instruction set in detail and be sufficiently skilled in assembler programming to write the particular routine for his design, test it and debug it as necessary.

Secondly, he must have access to and know how to use an EPROM or EEPROM burner so that his program can be suitably stored.

These two assumptions alone are probably

sufficient to deter the average hobbyist but it is certainly not an impossibility.

Discrete Components

The alternative approach using discrete logic components still requires a reasonable knowledge of digital logic, but is far more challenging and a lot more fun to implement. The designer is very much 'boss of the wash' and is not restricted by the limitations or restrictions of a particular processor. The project may take a lot more components but, in the end, similar results can be achieved with the added satisfaction of having done it 'your way'!

Having decided on a discrete component approach, the designer must then decide on the logic family or families he will use. With the present day proliferation of logic families, this might seem a fairly daunting task, requiring about the same expertise as a neurosurgeon. However, the task can be simplified somewhat by making an initial choice between the more-or-less standard transistor-transistor-logic (TTL) devices and the comparable complimentary metal oxide silicon (CMOS) devices. Without attempting to explain all the differences between the two families, the following information may be helpful.

TTL

Standard TTL devices usually start with the digits '74', eg. 7404, 74373 etc. They are constructed from a special IC type of bipolar NPN and PNP transistors. There is a large range of sub-families identified by additional letters included in the part number, eg. 74LS04, 74HF04 and so on. The basic differences are speed and 'drive' capability.

Speed

Speed is primarily determined in logic devices by the time taken for a voltage level change at the input to propagate through to the output and is measured in nanoseconds. A typical propagation delay in a standard 74 series device would be in the order of 25ns or so. The data books are full of this sort of information because, in some applications, it really is important to know what signals get through what devices first, but that's another story. By contrast, a similar 74H series device may have a delay of only 8ns or less. TTL devices can operate at clock speeds up to 100MHz or more. Some specialised types, known as ECL (emitter-coupled logic) devices, can operate up to 1GHz or more. Almost all TTL devices operate on a single 5V rail which must be held stable within +/- 5%.

TTL Logic Levels and Drive Capability

Logic levels for TTL devices are translated into appropriate voltage levels which are used to represent the "true" or "false" condition, often referred to in digital jargon as a "high" or a "1" and "low" or "0" respectively. To allow for variations between devices, a logic "1" can be any voltage between the 5V supply rail and 2.4V while a logic "0" can be any voltage between 0V and 0.8V. Voltage levels between 0.8V and 2.4V are considered to be in no-man's land and the logic level is therefore indeterminate.

Drive level specifies the number of gate "inputs" that can be hung off a preceding gate "output" and it varies by a factor of ten or so, depending on whether the drive is "high" or "low". Each gate can be considered as a switch, and the drive level is the current the switch can pass to or receive from a following switch or switches. When a gate's output is a "high" or logic 1, it is said to be "sourcing" current into any following gates and the limit is usually less than 1mA. When the output is "low", the gate is said to be "sinking" current from any following gates and the limit is around 16mA or more. Each driven gate draws current from the previous gate when that gate's output is high or sends current back into the preceding gate's output when its output is "low". Data books tell us that, for standard TTL, each gate output can drive up to ten following gate inputs. Drive levels are often specified in what are known as drive units. A drive unit is 1.6mA when the output of a gate is "low" or 160uA when the output is "high". Ten gates inputs all driven from the output of a single gate will draw a total of less than 1.6mA when the drive is "high" or send around 16mA back into the drive gate when its output is "low". In either case, the current limitations of the driving gate are not exceeded and a TTL driving gate is therefore said to be capable of supplying a total of ten drive units.

CMOS

By contrast, CMOS devices can be recognised by type numbers starting with either "40", "45", "74C" or 74HC", the latter two types being pin for pin compatible with their standard TTL counterparts. They are generally much slower than their TTL cousins, with propagation delays extending beyond 100ns although there are some current devices that approach standard TTL and even ECL performance (current 1GHz Pentium III processors, for example). CMOS devices can operate over a wide voltage range, starting below 1.7V and extending to 18V or more. Their main claim to fame is the tremendous improvement in power consumption when compared to TTL logic families. Whereas a standard TTL chip may draw 25mA or more from the %V supply rail, a

comparable CMOS chip may only draw a few microamps. When many chips are involved, the reduction in power supply size alone may make a CMOS design the logical choice, particularly when speed is not a critical design factor.

CMOS Logic Levels and Drive Capability

CMOS logic levels and drive levels are both significantly different from TTL devices and require special consideration and even special chips when both device families are mixed, as can be required in some designs. CMOS logic levels are defined as follows: "Low", or logic 0 is any voltage less than 1/3 of the supply rail while a "high", or logic 1 is any voltage higher than 2/3 of the supply rail. It can be seen that the "no man's land" or indeterminate logic level between 1/3 and 2/3 of the supply rail is 1/3 of the actual supply rail, or 6V in the case of an 18V supply. Compare this to the nominal 1.6V for a standard TTL device and you can see why this gives CMOS devices a much higher noise immunity than their TTL counterpart. False logic levels induced by local noise do not affect CMOS devices anywhere near as much as TTL devices.

Because the inputs of CMOS gates are field effect transistors instead of bipolar transistors as in TTL devices, their input impedance is very high (in excess of 100Meg). This dramatically reduces the input loading effect on preceding gates which means that the drive capability is virtually unlimited in most cases, although speed limitations will become a problem if too many gates are driven from one output since the cumulative gate input capacitances becomes a significant consideration rather than the load current.

The output drive capability is only about 1/10 of a TTL device and care must be exercised when CMOS devices are driving other components that may require higher drive current levels than can be supplied from a single CMOS gate. This also applies, incidentally, to high capacitance loads which may take a high initial peak current in excess of the driving gate's limits. Sometimes gate outputs can be paralleled to improve drive capability but a better method is to use one of the special level conversion buffers which are designed to interface a CMOS device to high input current devices like lamps, relays or TTL chips.

Static Damage

One final important point of note concerns the susceptibility of CMOS devices to damage from electrostatic discharge as a result of their very high input impedance. A high voltage static discharge into a gate will permanently destroy the gate insulation layer and make the device useless. Although many CMOS devices have built-in Zener diode protection across the inputs, care should still be taken when handling any CMOS device. The chip should always be kept in foil when not plugged in to a circuit and handled only by the ends, not the pins. An earthed wrist strap is a good investment but, in any case, always touch an earth point to discharge body static before touching a CMOS device or boards containing CMOS devices.

While unused inputs on TTL devices may be left unconnected and take on a "high" logic level, the same cannot be said of CMOS devices. Because of the high input impedance, unconnected gates may assume a logic level that is indeterminate or even variable. Worse still, they can be damaged by electrostatic discharge. All unused CMOS inputs should therefore be tied either to the supply rail or earth. The same does not apply to unused outputs, however, which may be left floating without damage.

And a final word of warning to the unwary — never insert or remove any logic device, TTL or CMOS while power is applied to a circuit board as the device will almost certainly be destroyed.

LF-TO-LF TRANSATLANTIC AMATEUR CONTACT IS HISTORY

Amateur Radio history was made in February when amateurs in Canada and the UK completed what appears to be the first two-way transatlantic Amateur Radio exchange on 136 KHz. Larry Kayser, VA3LK, and Lawrence "Laurie" Mayhead, G3AQC, managed the LF feat using extremely slow CW that featured 90-second-long dits and 180-second-long dahs. The two-way contact took two weeks to complete.

Now - who said 5 wpm was slow..!

- David VK2AYD

(VK2XU eat your heart out! ... Ed.)

MORSE CODE

In the March edition of "QST" there were 5 closely typed pages covering the minutes of the ARRL January Directors meeting. These are quite detailed. (WIA Directors please note). Morse Code was mentioned and the fact that at the WRC-2003 meeting it could be dropped completely. To off-set this, the ARRL is already preparing plans for HF band planning for the Novice operators. It is perhaps something we should be looking at here.

- David VK2AYD

Amateur Radio in Emergencies

Whilst surfing the www, John VK2JJ came across this one:

*Bangalore Amateur Radio Club
- VU2ARC -
Radio Active Since 1959*

Provided HF coms. during the major earthquake in GUJARAT. (Ghandi's home state.)

The Govt. of India has empowered every district in the Country with special provisions to utilise Amateur Radio when such natural calamities as earthquakes, floods, cyclones and wide spread fire, which causes failure of normal telecommunication facilities.

TRAVELLING TO NEW ZEALAND?

Did you know that New Zealand is one of very few countries in the world where licensed amateurs visiting from overseas can immediately operate without the hassle of getting a ZL licence and without paying a licence fee? A visiting amateur can walk down the gangplank from the arrival aircraft into the terminal building and start operating on 144 MHz and above with the callsign ZL/(homecall)! See:-

<http://www.med.govt.nz/rsm/guide.html>
and also

<http://www.nzart.org.nz/nzart/nzart/ recip.html>

- David VK2AYD

MAGAZINES

I hear a lot of talk on the weekly nets about the magazine "Radio & Communications". Why not spend your money wisely and subscribe to the REAL Australian magazine "Amateur Radio". Join the WIA. They are the people that fight for your frequencies and privileges. All the other magazines do is to take your money - if you are happy with that - so be it - but never whinge if you lose a privilege.

The WIA needs your support. The Amateur Radio fraternity world wide needs your support. The next World Telecommunications Conference is scheduled for July 2003. This is the time when the Morse Code will be decided. Between now and then, there will be many matters to resolve, such as the 40 metre band. Exclusivity of 40, 20, 15, 12 and 10 metre bands. If the WIA does not have the funds, it can't fight for you. And certainly the "other" magazines will not help. So join now - we need your support.

de VK2AYD

International Space Station

You may be interested to know that the current Crew Commander aboard the ISS is Yury Usachev UA9AD. Astronaut Susan Helms, KC7NHZ, runs regular sked with schools around the world. Downlink is 145.80 MHz and the uplink is 144.49 MHz. More info can be obtained from:

<http://ariss.gsfc.nasa.gov/>

de VK2AYD

JOHN MOYLE CONTEST 2001

The Club had decided that we would enter the six hour multioperator section in this year's event and that Tacking Point would be the operation site. This operation was to be a test for our new alternator and the two antenna masts that were purchased as part of the Hastings Council grant.

Startup time was to be 12:00 local time

Saturday, and at 9:30 the equipment was moving into position, accompanied by a N.E wind blowing at thirty knots. Erecting the tent was the first task and this required the strength of at least eight helpers to eventually fasten it. The antenna masts were an easier operation and the G5RV was strung from the railing on the lighthouse to one mast whilst a 6 element 2M yagi was positioned on the other. A 2.4 kva alternator does not have any problems with thirty knots of wind, and was ready for operation smartly.

At 12:00 the radio equipment was in place. Both the HF and 2M SSB transmitters were placed in the violently shaking tent.. The operators were to wear seat belts in case of a takeoff. The 2M FM crew had taken up V.I.P accommodation in a custom built studio in an enclosed trailer somewhat protected from the wind

If Murphy had not done enough with the wind, he also place a gremlin in the HF A.T.U. A replacement used by Noah (skipper of the Ark) was produced and with the aid of a soldering iron provided by VE7AGN (no we did not have it e-mailed) Tony who was passing through with his XYL at the right time.

From then on it was contesting with Dave AYD and Arthur ATM aided by Jim BZD on HF, Bill ZCV and Neil EI on 2M SSB, and Bruce HOT, Bruce MAZ and Craig HBM on 2M FM.

The referee Bob EJK was kept busy keeping some sort of order in the "on air" time between 2M SSB and 2M FM early in the rush but it was not long before all teams were down to a steady routine.

We had quite a number of visitors including club members, general public and a bridal party. One old time Sigs man walked away from the HF group, commenting that he could hear the Morse being sent but the key was not going up and down. (he must have been the radio operator on the same vessel that the ATU came from).

As the time drew near to 18:00 hours the dreaded thought of having to pack the tent and masts was coming to fruition. The wind did not abate but to the surprise of all we had all the gear dismantled and packed in thirty minutes.

How did we perform ? The total points were

510 consisting of 310 for 2 M SSB, 116 for 2M FM, and 84 for HF. It was a good performance under trying conditions and was enjoyed by all participants.

We learned a lot from the experience and we are looking forward to the Lighthouse Weekend on the 4th August.

Bob - VK2EJK.

Items for sale:

Crank up Tilt over 75' tower
204ba 20 mtr monobander
Tail twister Rotator
All coaxes and rotor cables and indicator
Will take \$650 for the lot.

2-MX Yagi, 14-elements on 6 Metre
Boom Home Brewed \$150

New 15 HP Johnson Boat Motor
30 hrs of use perfect nick.
Will take \$1500 OBO
Paid \$2000 5 months ago for it.

May have to sell:
Yaesu 726R all mode
2-6-430-satellites bands
Good nick with all manuals
Will need \$800 for it.

Contact: Larry Conner
<vk2ipo@dingoblue.net.au>
Telephone: 02 6585.3436

OXTALES Material

It was a great pleasure to compile this issue of OXTALES. The quantity and quality material submitted by members was most encouraging... in fact there is some held in reserve for next issue. But don't relax! Keep it coming. My thanks to all those members who contributed ...

- Trevor (VK2TT)

OXLEY REGION AMATEUR RADIO CLUB Inc.
MEMBERSHIP REGISTER.
 (At 26th April, 2001)

Cat.	FIRST NAME (Spouse)	SURNAME	CALL SIGN	TOWN/CITY	TPH. NO.	
1	F	JOHN (FLORENCE)	BAILEY	VK2KHB	PORT MACQUARIE	02 6582.2192
2	F	JOHN (MARY)	BAYLIS	VK2JB	LAKE CATHIE	02 6585.5703
3	F	BOB (JOSIE)	BRODIE	VK2EJK	PORT MACQUARIE	02 6582.0592
4	F	ROY W (JUNE)	BURGES	VK2YOR	PORT MACQUARIE	02 6583.9349
5	F	BRUCE	CLARK	VK2MAZ	PORT MACQUARIE	02 6582.5279
6	F	LARRY	CONNER	VK2IPO	WAUCHOPE	02 6585.3436
7	F	KEVIN (JUNE)	COULTER	VK2MAM	PORT MACQUARIE	02 6583.8325
8	F	IAN	DALRYMPLE	VK2XU	PORT MACQUARIE	02 6584.9922
9	F	TRACY (CINDY)	DIGNUM	VK2GTM	HERONS CREEK	02 6585.7061
10	F	CHARLES (PAT)	EDMONDSON	VK2FSH	PORT MACQUARIE	02 6584.0495
11	D	STAN (BETTY)	ELLIS	VK2DDL	TUNCURRY	02 6554.7996
12	F	BADEN (VALERY)	GLEESON	VK2MOQ	PORT MACQUARIE	02 6582.2018
13	F	LEWIS (PAMELA)	GREEN	VK2AG	PORT MACQUARIE	02 6584.9162
14	F	RICHARD J	HALL	VK2BXO	PORT MACQUARIE	02 6582.6588
15	L	KEITH	HANLON	-	PORT MACQUARIE	-
16	F	DAVID (ISOBEL)	HARDING	VK2AIF	WAUCHOPE	02 6586.4980
17	L	PETER	HILL	VK2BZA	LAKE CATHIE	02 6585.5349
18	F	SNOW	HODDER	VK2DV	PORT MACQUARIE	02 6583.7095
19	F	WILL (CAROL))	JAMIESON	VK2XXU	DUNBOGAN	02 6559.8622
20	F	DON	JONES	-	PORT MACQUARIE	02 6582.5084
21	F	JOHN (THEA)	JONES	VK2JJ	LAKE CATHIE	02 6585.4522
22	F	GARRY (LINDA)	LAWER	VK2TRK	PORT MACQUARIE	02 6582.0597
23	L	LARRY	LINDSAY	VK2CLL	WAUCHOPE	02 6587.1155
24	L	HENRY	LUNDELL	VK2ZHE	PORT MACQUARIE	-
25	F	KEITH (GWEN)	LUTTON	VK2KDL	TELEGRAPH POINT	02 6585.0321
26	F	ALLAN (DAWN)	MADIGAN	VK2OA	WAUCHOPE	02 6585.2043
27	F	JASON	MARIS	VK2FT	TELEGRAPH POINT	02 6585.0426
28	F	CRAIG	MARTIN	VK2HBM	WAUCHOPE	02 6585.3452
29	F	JOHN (KARIN)	MCDONAGH	VK2VY	PORT MACQUARIE	02 6582.0020
30	F	TERRY	MEEHAN	VK2KL	PORT MACQUARIE	02 6584.2997
31	L	ARTHUR (WENDY)	MONCK	VK2ATM	PORT MACQUARIE	02 6583.1311
32	F	LAURIE (ROBIN)	NEWHAM	VK2ELN	PORT MACQUARIE	02 6583.5387
33	F	ALAN	NUTT	VK2GD	PORT MACQUARIE	02 6582.3557
34	F	DAVID A (DEE)	PILLEY	VK2AYD	KING CREEK	02 6585.2647
35	F	BILL	ROTH	VK2CWR	PORT MACQUARIE	02 6581.1776
36	F	NEIL (VERENA)	SANDFORD	VK2EI	PORT MACQUARIE	02 6582.5830
37	F	BILL	SINCLAIR	VK2ZCV	PORT MACQUARIE	02 6583.9302
38	F	DAVID (ROMA)	SMITH	VK2DAL	WAUCHOPE	02 6585.1004
39	F	DAVID (AILEEN)	TARRANT	VK2TBC	SARATOGA	02 4369.8738
40	F	TREVOR (PHYLLIS)	THATCHER	VK2TT	WAUCHOPE	02 6585.2278
41	D	GRAEME (JOYCE)	VIRTUE	VK2GJ	BRUNSWICK HEADS	02 6685.1336
42	F	BRUCE (GWEN)	WALKER	VK2HOT	PORT MACQUARIE	02 6583.8360
43	F	JIM	WEBSTER	VK2BZD	PORT MACQUARIE	-

F = Full Member

D = Distant Member

L = Life Member