

MEETINGS, NETS and SERVICES**Club Station:** VK4WIS**Club Repeaters:**

Maleny: VK4RSC on 146.850 MHz & 438.075 MHz.

Peregian Beach: VK4RMB on 146.825 MHz & 438.175 MHz.

Gympie: VK4RGY on 146.625 MHz & 438.825 MHz.

Bli Bli: VK4RSN on 53.700 MHz

General Meeting: Monthly on the first Tuesday at 7:30 pm in the Club House, old Toll Plaza building, 85 Godfreys Road, Bli Bli. Visitors are welcome to attend.**Weekday Meeting:** Weekly at 10:00 am on Wednesday.**Good Morning Net:** Daily at 8.15 am at VK4RSC on 146.850 MHz. Conducted by various club members.**Tech Net:** Weekly at 8:30 pm Sunday at VK4RSC on 146.850 MHz. Check in, raise topics and ask your technical questions.**80 m Net:** Weekly at 7:30 pm Thursday on 3660 kHz.**10 m Net:** Weekly at 8:15 pm Wednesday on 28.470 MHz.**6 m Net:** Weekly at 7.30 pm Friday at VK4RSN on 53.700 MHz.**2 m Net:** Weekly at 7:30 pm Sunday on 144.300 MHz SSB. Conducted by club station VK4WIS.**QNEWS:** Relayed Sunday at 9:00 am at VK4RSC on 146.850 MHz. After the broadcast a callback is conducted by VK4WIS.**Internet:** www.vk4wis.org

This website provides previous issues of Pelican Droppings in full colour in pdf format which can be downloaded.

The current issue can be had by subscribing to the email edition in pdf format. Apply to SCARC.

EchoLink: Available on VK4RSC 146.850 MHz.

The Internet station is VK4AKA-R and the node is #195107.

Owing to the editor's several long absences away from home during the year the October-November 2006 issue of this newsletter was overtaken by time and was not produced.

NEXT ISSUE**SCARC Inc. Office Bearers AGM Feb 2006**

President	Ray Stuart VK4YRS
Vice-President	Noel Des Jardins VK4NL
Secretary	Gordon Taylor VK4VP
Treasurer	Keith Noll VK4AKA
Committee	Harvey Wickes VK4AHW; Frank Winter VK4BLF; Mike Little VK4YFL; Richard Philp VK4YRP

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Pelican Droppings

Newsletter of the Sunshine Coast Amateur Radio Club Inc.

Issue No.86

December 2006-January 2007



Club members relaxing in the club radio room, enjoying the pleasure of conversation on kindred interests. Clockwise are: Dennis VK4FDEC, Vin VK4FVCW, Richard VK4YRP, Harry VK4TK (obscured), Bill VK4XZ and Warwick VK4NW.

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Address: The Secretary, Sunshine Coast Amateur Radio Club Inc.
85 Godfreys Road Bli Bli Qld 4560



Presidential Preamble

It has been a very busy last couple of months at the club.

On the third Sunday meeting in October, the WIA President Michael Owen VK3KI visited the club. It was a chance to show off our Club to him and the other visitors. Councillor Greg Rogerson presented the final cheque to the club from Maroochydhore Council. Thanks to the Maroochydhore Council for caravan and the donation of \$17,800 to complete the fit-out. A WICEN discussion was also held with WICEN National and State Coordinators and representatives from other clubs.

Sunfest has been and gone and all the people I spoke with said it was a good day. Thanks to Richard VK4YRP and all others who assisted. The club made about \$1000 and this will be confirmed when all the accounts are finalised.

The Queensland Presidents lunch was held in Brisbane. A report is in this month's PD.

Jota: Thanks to all those who assisted at the two locations and from home. At the Clubrooms with me, we had Bill VK4BBX, Carole VK4FUNN, Wayne VK4WS, Geoff VK4ZMO and his son Mitchell. At Cooroy we had Noel VK4NL, Len VK4JZ, Tony VK4KKY Tony, Keith VK4MBH and Wayne VK4WS.

The 6 metre repeater has been remade by Warwick VK4NW and re-located to Dulong with the assistance of Noel VK4NL.

The Club has purchased a video projector which was fitted to the ceiling in the meeting room by Richard VK4YRP and Bill VK4XZ. Daryl VK4ADM donated an amplifier so that we can have sound with our presentations.

Education: Speak to Harvey VK4AHW if you are interested in attending classes for any level of licence.

WICEN sub-committee: Vin VK4FVCW our caravan project coordinator records show that over 900 man-hours have gone into the caravan so far. Please contact Vin if you want to assist.

Speaker sub committee: Last month's speaker was Noel Stanaway and it was very interesting to hear about weather patterns. Advise VK4BLF Frank if you know a person who could be an interesting speaker for our monthly meeting. Continued on page 9

Visit to the Sunshine Coast Amateur Radio Club by WIA President Michael Owen, National WICEN Coordinator Ewan Mcleod, and Ken Fuller on the 15th October Report by Richard Philp VK4YRP, WICEN Area Coordinator

This visit was an opportunity to show off our partially completed WICEN Caravan resplendent in its yellow paint job and with most of the signwriting done just in time. It coincided with the club's planned 3rd Sunday open day. We were also able to invite a number of people from other clubs and WICEN groups, and representatives from Maroochy Shire, the major sponsors of our WICEN Mobile Emergency Communications Centre project.

The day started with Michael Owen addressing a very crowded meeting of over fifty people, and was followed by a barbeque lunch. The afternoon was taken up by a meeting of WICEN interested people including the National WICEN Coordinator Ewan VK4ERM, The new WICEN Queensland Coordinator David Meyrick VK4IQ, our own WICEN people, Brisbane Area WICEN Group, Redcliffe Radio Club, Caboolture Radio Club, and Lockyer Valley.

It was a unique opportunity to have all of the key players together. For the club it was very productive day with the WIA showing its national commitment to WICEN to the Maroochy Shire. The day culminated with the rebirth of WICEN Queensland in the south east.

Well done to Ken Fuller for making it all possible. Special thanks go to Vin VK4FVCW for his efforts to have the van available in time. End

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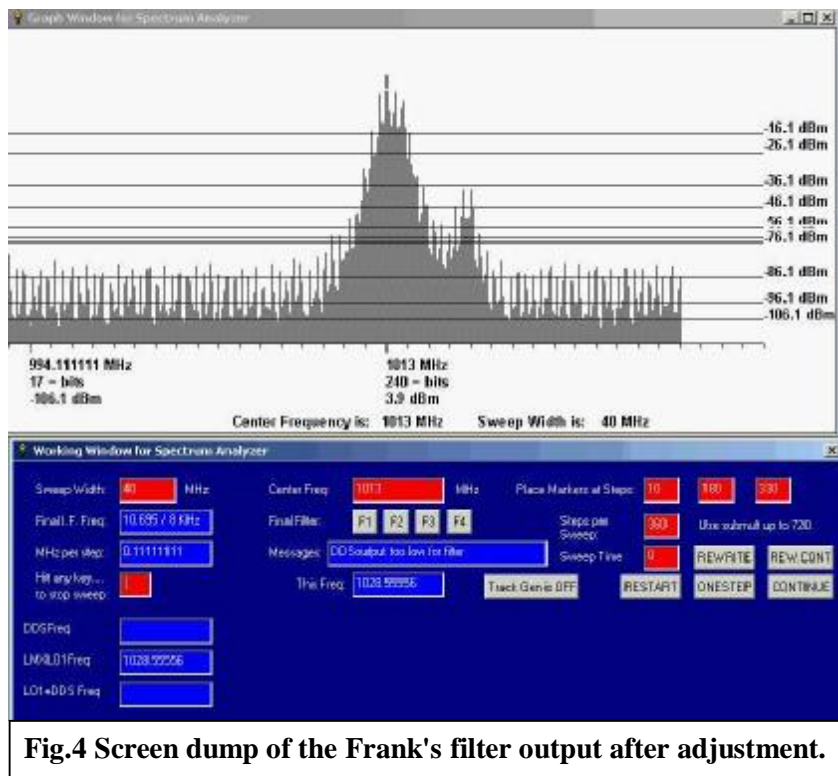


Fig.4 Screen dump of the Frank's filter output after adjustment.

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Homebrew Competition - November 2006

This year's winner was Rod Cardell VK4MRC. Although he was the only participant, his homebrew work during the year would have provided stiff competition in any company, and he was a worthy winner. His mini-shield with name and project description will appear on the perpetual Homebrew Shield along with the many others who have been selected over the years.

Rod is a newcomer to the ranks of amateur radio. Being interested in building radios he wisely started with the simplest of radios - the crystal set receiver. Your editor remembers beginning with a super-regenerative receiver using a 6AC7 metal-enclosed valve and a 6H6 glass valve as power supply rectifier. Rod too moved from crystal set to super-regenerative receiver, using a 12AT7 double triode for RF and AF stages.

The photograph below shows the array of project work that he carried during the year. It includes six crystal sets, one super-regenerative receiver, an audio amplifier, an antenna tuner with multi-taps and a power supply; not forgetting attention to finish. End



Rod Cardell VK4MRC with his year's achievement at homebrewing

6 m Repeater at Dulong

by Warwick Marshalsea VK4NW

The club 6 m repeater is fully functional at its location on the heights of Dulong (near Nambour, courtesy of Vin VK4FVCW) at 300 m above sea level. It has wide coverage and can be accessed with ease around the Sunshine Coast with minimum power to a vertical antenna. Your transceiver frequencies are 53.700 MHz Rx and 52.700 MHz Tx.

The repeater radio is a Philips low-band FM828 that I modified to work on the licensed frequencies. The six cavities for isolation of transmission and receive RF are made from short lengths of heliax coax by Harvey VK4AHW. They were fine-tuned by Keith VK4AKA and Wayne VK4WS. The separate transmit and receive antennas are end fed 1/2 wave vertical dipoles designed and made by myself. The transmit power is 10 Watts via RG213 coaxial cable feed lines to the antennas. Photos of the 6 m radio cabinet (showing the heliax cavities) and the finished antennas appear in Fig 1 below. A photo of the antennas at their working location is shown in Fig. 2.

The installation has good coverage from north to south and may be west as well that is yet to be proven. Reports of coverage of this received are welcomed. End



Fig.1 6 m radio cabinet and finished Rx and TX antennas



Fig.3 Final assembly of cavities with SMA connectors

Chris tried this method and his cavity filter without tuning produced a noticeable output on about 1040 MHz. Chris had other things to do, so the task of tuning his filter was postponed to a later time. See Fig.4 on the next page for the screen dump of the Frank's filter output after adjustment.

In this screen dump the Y axis is not calibrated, the X axis (frequency) on the other hand is extremely accurate (within a few hertz!). If you study this image you'll note a secondary peak at about 1017 MHz which is due to over coupling between stages. The correct this, the coupling wires need to be bent and soon as Frank gets a suitable set of thin long nose pliers, this adjustment will be made. But there are many other tasks waiting to be done, so stay tuned for other instalments of the story.

Altogether, building the spectrum analyzer is an interesting exercise from theoretical and practical perspectives. It requires substantial knowledge of construction methods and computer theory as well as RF theory. In fact it has been likened to the "Holy Grail" for radio amateurs. End

On the left is the centre assembly that consists of 4 copper pipes (6 mm diameter) soldered together and the brass base plate. The pipes are a tight press fit into the brass base so that they won't come apart when soldering everything else together. On top of the copper pipes are 4 tuning screws with Teflon spacers. The tuning screws are threaded into the top plate (not shown) to allow convenient adjustment of the filter. On the right are the 4 copper tubes (25 mm diameter) that form the main cavities.

Coupling between the 4 tubes (stages) of the filter proved somewhat troublesome. On the first attempt, Frank used insulators striped from RG174 coax cable, which was bought as having Teflon insulation. It sort of worked but the filter had to be soldered apart later because the connectors came adrift. It turned out that the insulators had partially melted. Some "real" Teflon was salvaged from a discarded home appliance heater and tested to see if it could withstand the heat. Teflon can be easily identified by applying a blow torch to a sample and if it melts it is not Teflon. If it glows red hot, it is Teflon. Amazing what is sold as "TEFLON" insulated coaxial cable. Frank also discovered that Teflon insulation changes the propagation characteristics of the conductor wire that couples the individual cavities. It is essential to have the specified wire length without insulation. The type of wire also had an effect on the coupling characteristics. Soft drawn copper wire behaves differently than stranded copper wire. Probably the familiar surface effect of RF propagation is responsible. All in all, the coupling between the filter elements was quite a challenge. Fig.3 is the final assembly with SMA "bulkhead connectors", tuned and ready to go.

Tuning was another interesting exercise. Part of the S.A. is an oscillator which is computer controlled to produce precise frequencies between 1 GHz and 2 GHz as mentioned earlier. Frank wrote a computer program to sweep frequencies between 1 GHz and 1.4 GHz and piped the output of this oscillator into the cavity filter. The output of the cavity filter was "rectified" using a Schottky diode and a low pass filter (an opamp) to provide output voltages in the range of 0V to 2V DC. This output voltage varied in proportion to the filter attenuation. A part of Scotty's software simplified the tuning process. The amplitude from the sweep was displayed in real time just like a computer based oscilloscope so the effects of adjusting the tuning screws could be seen instantaneously.

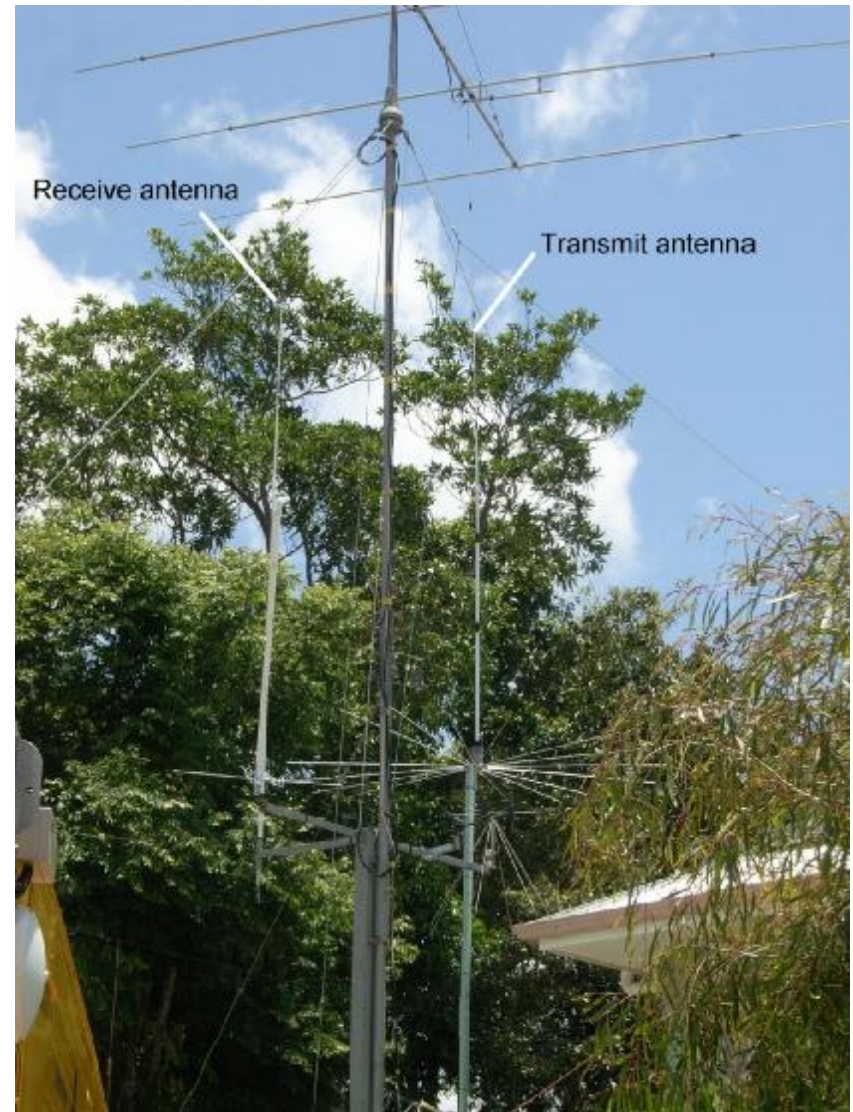


Fig.2 Repeater receive and transmit antennas installed at the Dulong site.

Note the elaborate ground plane for the transmit antenna.

Bill Sebbens—Long Service Award

Bill Sebbens VK4XZ recently received a long service award from the State Emergency Services. Bill had served for more than 25 years, a tremendous effort by him. The award consisted of medals for dress and lapel and separate ribbons. Congratulations Bill.

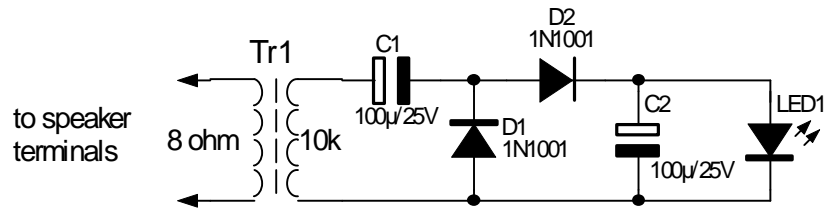
LED Speaker Indicator
By Daryl Manley VK4ADM

Readers may find this little circuit of interest. With a number of speakers connected to many radios it can be difficult to tell which one is talking to you. With this in mind I came up with the simple passive circuit shown below which indicates that a speaker is active. Each speaker would require one of these circuits.

Circuit description

Audio is taken directly from across the speaker and feed through a small audio coupling transformer(8 ohms/ 10kohms)to a voltage doubler circuit. The resulting DC voltage is then used to trigger a LED.I found that this circuit worked best with speakers of 8 ohms or above.

End



LED Speaker Indicator circuit diagram

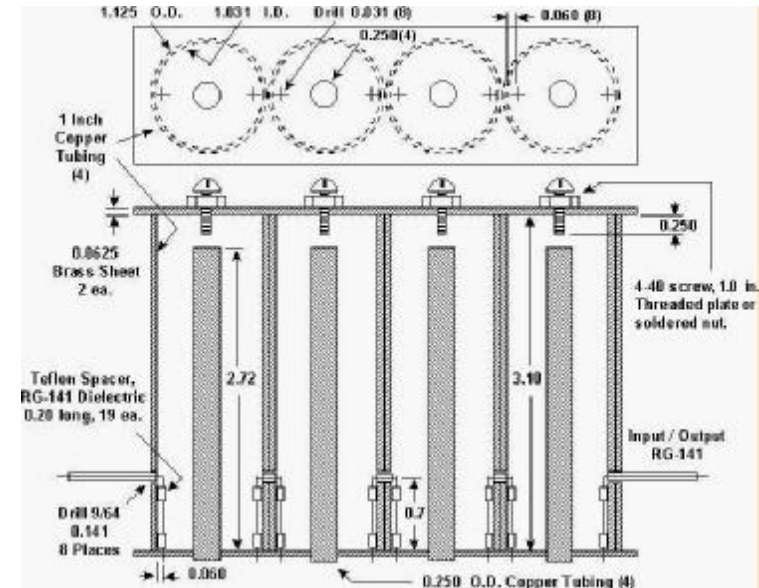


Fig.1 Filter assembly drawing

After three attempts, Frank finally had everything right. Chris was smart enough to silver solder (which melts at higher temperatures than lead solder) for some parts. Frank persisted with lead solder and press fits until he got it right. After it was finished someone came up with the bright idea of using solder paste and a kitchen oven to solder everything at once. Ah well, the next filter! See Fig.2 for filter parts.

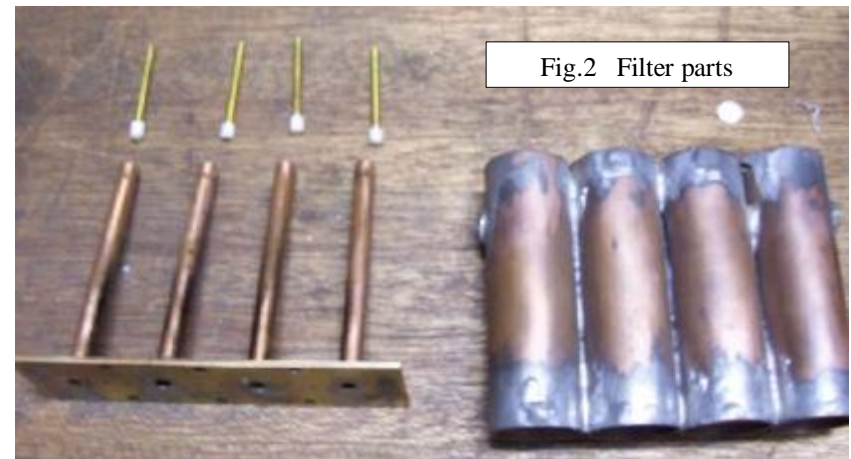


Fig.2 Filter parts

Building A Cavity filter for 1013 Mhz

by Frank Winter VK4BLF and Chris Lamp VK4UTT

Several members of S.C.A.R.C. are building (more or less actively) a spectrum analyzer to cover the frequency range between 0 Hz and 1 GHz. The basic concept of the S.A. is a double conversion receiver where the frequency to be analyzed is mixed with a local oscillator frequency between 1 GHz and 2 GHz. The lower sideband from the mixer output is passed through a very narrow filter tuned to 1013.3 MHz.

To refresh your memory, if the input frequency to the S.A. is 10 MHz and this is mixed with 1,023.3 MHz, the mixer produces a lower sideband (1,013.3 MHz) and an upper sideband (1,033.3 MHz). The filter described in this article is designed to reject the upper sideband and allow the lower sideband to be processed further. By the way, the IF (1013.3 MHz) is later heterodyned with a 1,026 MHz frequency for final processing at 10.7 MHz.

So the problem at hand is to build a filter that is stable and has very sharp skirts to reject unwanted frequencies. There are a number of design and building options using box or tube structures with a varying number of resonators or stages. More stages yield better rejection of unwanted frequencies.

Our spectrum analyzer has been designed by Scotty (<http://users4.ev1.net/~wsprowl>) who has spent an extraordinary amount of effort developing the hardware and software for this project. Scotty designed a four stage tubular cavity filter built from 25 mm copper tube with excellent rejection characteristics.

For our group on the Sunshine Coast, Richard VK4YRP found suitable tubing and cut it to the correct lengths. Harvey (VK4AHW) provided appropriate brass and copper bits so that the basic structure of the filter could be built.

The mechanical aspects of the filter turned out to be more complicated than the drawing might indicate. Expertise in soldering fairly large bits of copper and brass is a definitely a required skill. Also various holes need to be drilled with a high degree of precision. A good metal workshop is almost a necessity. Insert See Fig.1 for drawing of 1013.3 MHz Cavity Filter.



WICEN caravan antennas
 Pictured are six of the many antennas for 6 m, 2 m and 70 cm.
 Each will be tuned to its band of frequencies. For HF a 7 m vertical antenna will be mounted on the front lower to provide communications on 40 m and 5 MHz.

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Project testing for beginners

A short course from Pelican Droppings

So you have finished building your first project and you are ready to power it up and see if it works. Here are the basic testing procedures you should do.

Note: All testing is in-circuit after installation.

Tools

DVM reading continuity, resistance, current (100 or 200 mA full scale), and DC voltage.

Before you power up

Check all resistors using a good DVM. In circuit testing of resistors can be misleading but the reading should never be higher than the resistor value.

Check all capacitors by value printed on the casings (you should not install capacitors with unclear markings).

Check the name on all transistors. You may need a magnifying glass.

Check the pin-outs of all installed transistors against a reference manual (like the DSE catalogue reference section).

If you are using a PCB check components one-by-one for correct placement according to the layout. If you are not using a PCB with layout drawing, follow the circuit through on the component layout. Do frequent continuity tests between connecting components.

When you power up for the first time

At the power input terminals of the project board, check the resistance to ground. Note that the resistance may go low to begin, then increase to a steady state value. This is because there is a large electrolytic capacitor in the power bus that is charging up. Usually the resistance to ground will be 50 k ohms or higher.

If it is lower find the low value resistor in the circuit diagram. If there isn't one then you have a fault.

Select the mA range (100 - 200 mA) of the DVM and connect it between the positive output of your power supply and positive input to your project.

Switch on with your eye on the DVM display. Be ready to switch off if the current is higher than you expect. End

PRESIDENTS MEETING

Report by club president Ray VK4YRS

On Saturday the fourteenth of October Richard VK4YRP and I drove to the 18ft Sailing Club on the Brisbane River for the annual Queensland Club Presidents' lunch. The meeting was chaired by Don Wilschefski VK4BY.

The WIA President Michael Owen plus acting secretary Ken Fuller and WIA National WICEN Coordinator Ewan McLeod were invited guests. Michael Owen spoke in length about the WIA, its recent achievements and plans for the future and how the clubs and members could work with the WIA to ensure our hobby grows. He advised that 1000 new Foundation licenses had been issued in just under one year. Ewan McLeod spoke about WICEN and its future plans.

It was very interesting to hear the challenges of other clubs and how they intended to address each one. End

Continued from page 2

Clubroom happenings: Our librarian Vicki, was the only person to sell the entire contents of her tables at Sunfest. Well done Vicki. The club has subscribed to " Practical Wireless " and " QST " magazines for a year as a trial and are available for loan to members.

The " South Yarra " store is looking very tidy since Joe and Mike sold a lot of items at Sunfest.

If you need to use the " Green Room " when ever the club rooms are open. Ask Bill VK4XZ.

The clubrooms are now open on the first and third Sunday of the month starting at 9:00am. Please join us for a talk and a BYO BBQ lunch. Our next night meeting is on Tuesday 5th of December 2006 at 7:30pm at the clubrooms.

Check the SCARC web site www.vk4wis.org for information updates. Remember the club nets don't exist without members taking part.

That's enough from me. 73 all, Ray

2007 club membership subscription

Members are advised that subscriptions for the coming year are due on January 1, 2007.