

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

Bald Knob: VK4RSC on 146.850 MHz & 438.075 MHz.

Luguna Lookout: VK4RMB on 146.825 MHz & 438.175 MHz

91.5 Hz CTCSS

Dulong: VK4RSN on 53.700 MHz

Gympie: Private repeater on 147.975 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—2:00 pm on Wednesday.

Sunday Meeting: 3rd Sunday of each month at 10:00—2:00 pm.

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 USB.**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 USB.**2 m Net:** Weekly at 7:30 pm Monday on 147.975 MHz.

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 VK4WIS-R and the node is #316084.

NEXT ISSUE

Intro to Class D power amps postponed until next issue.

SCARC Inc. Office Bearers AGM March 2007

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

Copy deadline: 3rd Tuesday of the month preceding GM issue.

Email editor: gcombes6@bigpond.com

Pelican Droppings

Newsletter of the Sunshine Coast Amateur Radio Club Inc.

Issue No.91

October-November 2007

Radar Hill Tower**Proposed site for 6m repeater, APRS digipeater and Hub for repeater linking****INSIDE**

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Address: The Secretary, Sunshine Coast Amateur Radio Club Inc.
PO Box 7551, Sippy Downs, Qld. 4556



Presidential Preamble

Don't forget folks - any thing I say in this column is my opinion and not that of the club. All is in good fun, intended for team morale.

How time flies. We got off to a wet start for this edition. The rain and wind created an emergency in the local area. EMQ and activated the North Coast WICEN specialist unit SCARC van at Dulong. Vin VK4FVCW manned the unit. Richard VK4YFR from the home base started the ball rolling, sorting out where to place his operators and how to get them into position taking into account all the road closures. Bill VK4XZ, David VK4HFW, Bill VK4BBX and Geoff VK4KEL headed to the hill to help out with the van. Daryl VK4ADM headed for Maroochy SES to fill in any gaps. Ray VK4YRS and Carol VK4FUNN followed closely behind to keep tabs on Daryl and to make the next link. Graham VK4ZTS made his way to Caloundra EMQ headquarters with Warwick VK4NW following close behind. Tony VK4FAAA, Keith VK4MBH, Len VK4JZ and Roy VK4ARS filled-in with liaison and backup for the groups.

After a phone call from Richard VK4YRP I headed to SES Tewanin to make the final link in the network. On arrival I contacted Peter Toomey EMQ and he showed me the door – I mean the door to the radio room -and off I went to work manning phones and radios. As this was my first visit to the SES Tewanin for an emergency exercise it was certainly an eye opener. Those guys know there work - it's all about team work to get a job done.

Dave VK4UN was next to arrive and I think he too was surprised to see the effort required to run the show. I am sorry to say it was like getting blood out of a stone to get Dave into a rhythm. Just as he was about to take a phone call Bob Abbot, Mayor of Noosa Shire, walked by and that was the last I saw of Dave. Thanks for the help Dave. Perhaps Richard could you arrange a lock and chain next time to keep him chained to the table. All jokes aside I needed a break to have a meal and Dave filled in the gaps more than adequately.

Wednesday club openings are going ahead full steam, Angus VK4KMC is busy at compiling our equipment asset register as well as keeping the workshop area tidy. Please help him if he should require you.

All X are Y is put symbolically as $X = XY$, and all Y are Z is put symbolically as $Y = YZ$,

then $X = XY = X(YZ) = (XY)Z = XZ$,

or $X = XZ$, which says that all X are Z.

Boole achieved even more powerful results when he introduced the symbol 1 for the universal class, the symbol 0 for the empty class and the operator "-" for complementation. All this is difficult to understand by those of us familiar with classical algebra. We should realise that as Boolean algebra is abstract so to is classical algebra.

Boole achieved many honours in his life. But perhaps posterity has bestowed the greatest honour on him. Many computer languages have objects that take the values TRUE and FALSE. They are called "Booleans". And today the study of digital systems containing logic elements such as AND, NOT, and OR gates is predicated by an understanding of Boolean algebra.

Reference "*God Created the Integers*" by Stephen Hawking End

LCD Displays continued

LCDs have the disadvantages of slow switching speed and their requirement for an external light source, but their low power requirement makes them ideal for use with CMOS and battery powered equipment. End

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Famous Personalities: George Boole (1815-1864)

George Boole was born in Lincoln in the north of England, the son of a struggling shoemaker. He had a distinguished record at local schools, and he supplemented his education in the classroom by learning outside it. At the age of fourteen he translated an ode written by the Greek poet Meleager. Boole's adoring father was impressed and persuaded the local Lincoln Herald to print it along with the translator's age. A local schoolmaster wrote to the editor that the translation far exceeded the powers of a fourteen-year-old, who, no doubt, would have been sceptical of Boole's mathematical genius.



The limited resources of his parents meant that young Boole could not contemplate a university education, so, rather than taking instruction, he decided to give instruction. He became a school teacher, and in 1834 he opened a day school for young boys and girls that became a success. He was associated with the local Mechanics Institute, and made sure that its library was well-stocked with the works of Newton, Laplace and Lagrange. He devoured these works and read them again and again so as to master their material.

The environment in and around Lincoln must have suited Boole, for he began publishing papers in the newly founded Cambridge Mathematical Journal. Then in 1843 he submitted his first paper to the Royal Society, the apex of British Science. This paper won him a gold medal from the RS and earned him the acclaim of the British mathematics community.

George Boole's great contribution was in expressing the fundamental laws of logic in mathematical form. All previous attempts to render logic in algebraic form had tried to force it into the algebra of real numbers. Boole realised that another algebra was needed (now called Boolean algebra). Here is how Boole proved that if all X are Y and all Y are Z then all X are Z:

Richard VK4YRP and Vin VK4FVCW held a debrief on the WICEN exercise. Feedback to me from Richard proved that the exercise was a great team effort.

Many visitors are turning up at the club as the word gets around among retired travellers and visitors to the coast.

Sunfest was next on the agenda, and, yes, Richard VK4YRP was in the box seat again doing a terrific job organising the helpers and advertising a mammoth task. Thanks to the team as it all fell into place and the day was a complete success. The only complaint came from Ray VK4YRS who found no leftovers for the week to nibble on. Carol and her team ran out of pies and almost everything else. Special thanks go to David VK4ICE, Doug VK4MHE, Caloundra RSL, Leading Edge Electronics of Caloundra, Bunnings of Noosaville, Melco Hardware of Noosaville, Woolworths of Noosa Civic, Suncoast Auto Parts, for supplying the wonderful prizes.

The bike ride took place the next day with the S CARC van positioned at Mooloolaba. I could sleep in Sunday morning. When I did head down to see if I could help with the after I found every one heading home. One more thing while we are in the party mode, my thanks go to the team of XYLS who look after us and keep us well fed and under control. "Take a bow girls"!

I almost forgot while all this was going on our Pelican Droppings editor Geoff VK4GWC and XYL Robyn were in the midst of wedding plans. Congratulations, I hope all went well, best wishes from all at the club and for health and happiness in the future.

Bill VK4XZ organised a portable antenna day at the Sunday opening on 16/09/07. Bill was last seen trying to hide some of the antennas in his car for a speedy departure. From all reports it was a success, but news just to hand says Mike VK4YFL managed to burn the sausages again and by the looks of the BBQ he was trying to char grill.

Time for a break, see you again next issue, Noel VK4NL

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Send to The Secretary at the address shown on the front cover of this newsletter

A 13.8 Volt 20 Amp. Regulated Power Supply for Repeaters

By Harvey Wickes VK4AHW

A few years ago SCARC came across a pile of old Philips TX-814s and 815s (19" Rack Mounting) that were being thrown out by a commercial 2-way company in Brisbane. With a few reasonably simple modifications, these power supplies, which are built like a Sherman tank, end up making very reliable repeater power supplies.

If, like me, you have a shack set up to run from a 12 volt battery bank, these power supplies are just what you need, because they are designed to run all day while trickle charging your batteries. In the event of a mains failure, all the gear runs from the batteries until the mains comes back on or the batteries go flat, at which time the power supply drops smoothly into the battery charge mode, and the batteries are re-charged. If all goes as intended, there will be no interruption to 12 volt power.

Brief circuit description

In its original form, the power supply consists of a very rugged power transformer that supplies about 19 volts at up to 25 amps after full wave rectification and filtering. This is fed to two almost identical active filter circuits which each employ a hefty BDX65 Power Darlington series pass transistor, as well as another BDX62 Power Darlington for the battery charging facility. These transistors are mounted on a giant finned heat sink. A D.C. relay control circuit, along with a subsidiary 10 volt regulator, completes the parts of the unit we are interested in. The remaining audio and RF TX chain can be removed, made use of or ignored, depending on how keen you are.

Modifications required (see Figs. 1 & 2 on pages 6 & 7)

1. I mounted an extra pair of stud mounted power diodes in holes drilled in the heat sink, placing one diode in parallel with each of the existing diodes (D1&D2) and (D3&D4). This may be a bit of over-kill, but I thought the original diodes looked a little small to handle continuous high currents.
2. Active filter 1 is designed to pass more current (10 amps) than active filter 2 (5 amps), but with a little fiddling the two circuits can be made to mirror each other, paralleled, and carry up to 10 amps



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Joe's 'South Yarra' Store

By Harvey Wickes VK4AHW

If you are in need of a knob or a switch,
Single pole, double pole, it matters not which,
I know where you'll find them; of this I am sure,
There's bound to be heaps in the 'South Yarra' store.

Electronic components of L, C and R,
Transistors and diodes and screws in a jar,
Co-ax connectors, both sockets and plugs,
Crystals and filters and used solder lugs.

Microphones, speakers and lengths of good cable,
Kits to assemble, if only you're able,
There's carefully labeled thermionic devices,
CRO tubes and valves at remarkable prices.

So next time you feel like a bit of "home brewing",
But not had much luck at component pursuing,
The 'South Yarra' store is the place you should go,
Where to get what you need, you simply ask Joe.

Now here comes the news that will sadden your heart,
Young Joe's headed Stateside to make a new start.
The store we all love will be never the same,
And somebody else will be playing Joe's game.

In spite of our sadness, in spite of our woe,
A bright happy future we wish you, young Joe.
We're sure gonna miss you, God speed on your way
And thanks for the chance at the Raffle Meat Tray,

All of us here at SCARC wish you and your lady years of happiness,
I don't know anyone who is held in higher esteem within our Ham
Radio community. Thanks for all the memories.
The South Yarra Store will always be our reminder of what a gent
you are. 73

each. Step one is to replace the 5amp fuse F2 with a 10 amp fuse identical to F1.

3. Zener diodes D1 and D3 need to be matched, using a pair of BZX79 C16s. Note that the original D3 was a 15 volt type, whilst D1 was 16 volts. It is worth making some effort to closely match these zener voltages. An 82 ohm one watt resistor can be soldered from the cathode of D1 to the cathode of D3 to assist in balancing drive to the two series pass Darlington transistors, so that they equally share the load current.

4. Bridge the emitters of TR2 and TR3 together by linking pins 3 and 11.

5. Run a parallel wire from the emitter of TR3 across to the D.C. Relay Control board, as the original lead is thinner than its counterpart on TR2's emitter. This simply guards against any slight voltage drop at high currents.

6. A disk ceramic RF bypass cap of .047 mfd. should be fitted from base to emitter on TR3, thus duplicating the 2 x 22 nF caps across TR2's base/emitter.

7. Connect suitable DC cables to the 12 volt battery bank via the DC power socket, SK9. Note that this power supply requires a 12 V battery to be connected before the relays pull in. No battery... no output.

8. Mount a suitable pair of red and black output terminals to the front panel to provide voltage for the repeater. A toroidal ferrite filter with heavy gauge twin windings is wired in series with the output leads. Two .0022 disk ceramic caps are wired to provide a Pi filter, with the aim of keeping RF out of the power supply.

9. The two D.C. relays are wired in parallel, with pin 42 to 45, 43 to 46 and 44 to 47. That completes the modifications required. If all is done correctly, the 12 volt battery source can be switched on with the external. D.C. switch, and you should see or hear the two relays pull in, thus delivering 12 volts to the front output terminals. Turning on the A.C supply switch will bring on the regulated 13.8 volts, and commence trickle charging the batteries. Should the mains fail, the relays switch back to DC battery supply, and when mains is restored, the charger automatically tops up the batteries.

Circuit modifications can be seen marked in bold in Figs.1 & 2 on pages 6 & 7. Take care, have fun, and keep the smoke inside everything. Good luck with your re-worked power supply/charger. End

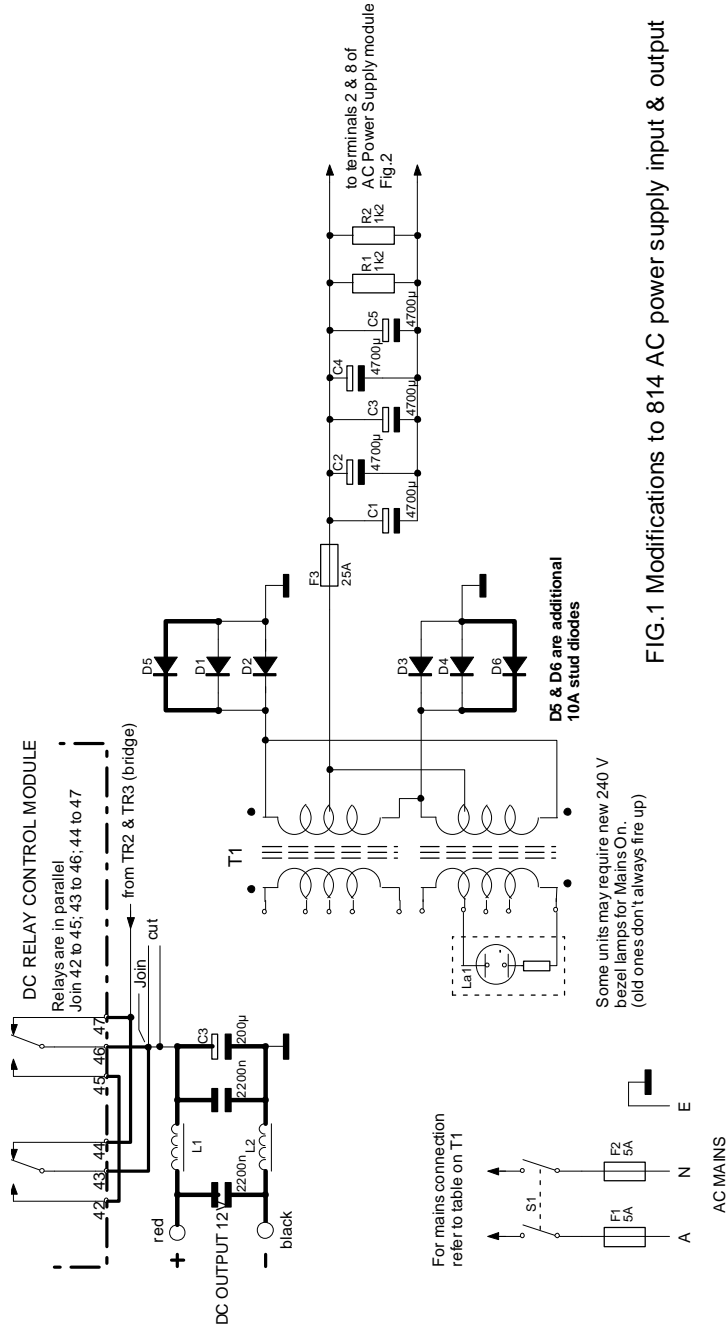


FIG.1 Modifications to 814 AC power supply input & output

to terminals 2 & 8 of
AC Power Supply module
Fig.2

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The Liquid Crystal Display (LCD)

by Tony Thorrold VK4KKY

LCDs are all around us. Your transceiver probably has an LCD readout, as does your digital multimeter, your mobile phone, your watch, your bedside clock, your microwave oven and so on!

An LCD consists of six layers. From the top they are:

A transparent polariser, a set of transparent top electrodes, the liquid crystal element, a transparent back electrode, another transparent polariser and, right at the back, a mirror.

The transparent back electrode layer forms a common back plane while the seven segments which form the numbers are on the transparent top layer, so there are eight electrical contacts. When a potential is applied between a top electrode and the back plane, the region covered by the electrode turns black and thus becomes visible against a silver background.

Why does it turn black? The liquid crystal layer contains tiny organic, cigar-shaped crystals which normally arrange themselves in a 90° spiral with the topmost crystal parallel to the back plane and the lowest crystal perpendicular to the back plane. Outside light shining onto the display is polarised by the top polarising layer like light through a pair of 'Polaroid' sunglasses. The crystal spiral then rotates the polarisation angle of light passing through it by 90° and the back polarising layer rotates it by a further 90°. The light is then reflected by the mirror and comes back through all the layers again, ending up looking silver in colour.

When a potential is applied between a top electrode and the back plane, the crystals in this region all become parallel to the back plane. Now the polarised light passing through this layer is no longer rotated and when it reaches the back polarising layer it is absorbed. No light reaches the mirror in this region, so no light is reflected and the segment appears dark.

The type of display just described is known as a standard twist display. A supertwist display uses crystals which rotate 270° and this improves the viewing angle and contrast of the display. If a DC potential is applied, the crystals soon chemically break down, so a square wave with a frequency of approximately 100 Hz is used to overcome this problem. (continued on page 15)

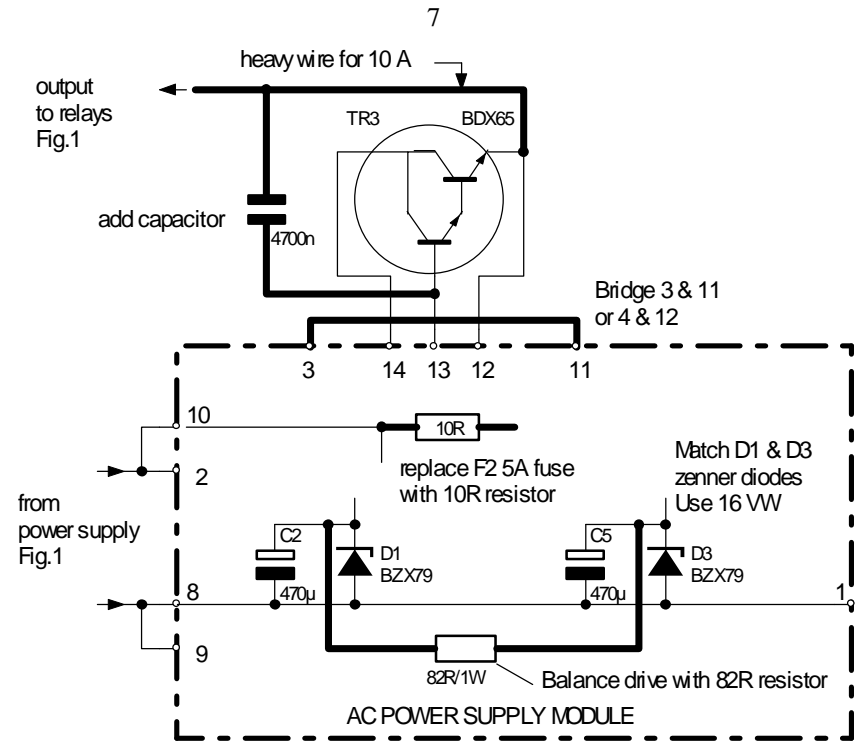


FIG.2 Modifications to 814 AC power supply module

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The HP 8567A Signal Generator

The editor chats with Frank Winter VK4BLF

Superseded RF instruments and CROs made by leading manufacturers such as Hewlett-Packard and Tektronix are sort after by amateurs who like to experiment with in the home building of electronics. Model numbers crop up regularly in magazines like *Dubus* (Germany), *VHF Communications* (UK) and *QEX* (ARRL USA). Original cost is beyond the means of the amateur, but after 20 years the price in the second-hand market place are within easy reach. Because HP and Tek instruments were so well made, are easily repaired and have excellent manuals, many of the superseded models are in full working order, or can be made so easily. The usual sources of supply are auctions, hamfests and, today, the internet.

Frank Winter was one of several club members who made the journey to USA earlier this year with the main purpose of attending the Dayton, Ohio hamfest. While there he bought a HP synthesized signal generator model 8567A weighing a mere 18 kg. After lugging it around for the remainder of the USA trip, the signal generator is now on the benchtop at the home QTH. Here are some of the facts and features of it:

Size, mm Width 435, Depth 574, Height 133

Fully computerised (has own microprocessor)

Output amplitude +13 to -153.5 dBm (50 ohm) accurately.

Fine and course tuning by push button.

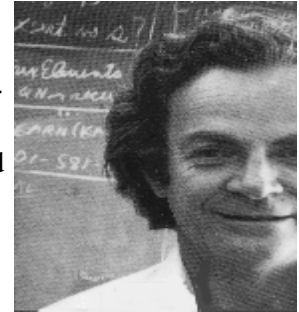
continued next page



Richard Feynman and amateur radio

by Geoff Combes VK4GWC

Richard Feynman (1918 - 1988) was one of the great physicists of the U.S.A. and the world. He won the Nobel Prize in physics for his singular work on quantum electrodynamics (QED) which is about the way atomic and sub-atomic particles work. I have been reading a biography on Feynman (Ref) and came upon this anecdote on how he was helped by amateur radio.



In 1951, aged just 33, he was employed at Caltech but worked summers in Rio, Brazil, because he preferred its weather over the winter in U.S.A. <quote>

"The way to keep up to date with the latest experiments being carried out in The Kellogg Radiation Laboratory at Caltech highlights the way the world has changed since 1951. Today, a scientist anywhere in the world wishing to get the latest news from another scientist anywhere else in the world would use e-mail and the Internet. You'd get the latest data delivered right to into your computer, ready to analyse, without even the chore of keying the numbers in for yourself. In 1951, though, even telephone communications between the United States and Brazil was unreliable and inconvenient. So Feynman communicated with Caltech with the aid of amateur radio operators. About one a week he would contact a ham in Pasadena who would pass on the latest news from Kellogg Lab. 'The contact I had with Caltech by ham radio was' said Feynman, 'very effective and useful to me.' " <unquote>.

Ref. *Richard Feynman—A Life in Science*, John Gribbin and Mary Gribbin, Plume, 1998

The HP 8567A Signal Generator continued
Modulation CW AM/FM FM/AM PM
Frank is currently using the HP8657A on:

Testing return loss couplers

Aligning the home-brew spectrum analyser

Calibrating the amplitude of the home-brew spectrum analyser

Calibrating transceivers.

End