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Vice-President:- Barrie Halliday   VK3KBY   Treasurer: - Ron Burns   VK3COP
Membership Sec: - Pat O'Shannessy   VK3OV   Webmaster: - Steven Hamer   VK3DP
Station Manager: - Vacant   Publicity Officer: - Vacant
Technical Committee: - Phil VK3ELV, Ray VK3RW, Geoff VK3ZNA, Kevin VK3BPH & Rodney VK3UG
Newsletter:- Rodney VK3UG (Editor)   rodlynn6@bigpond.com & AndyVK3AJA (Printing/ Distribution)

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Presidents Report March 2016

To all those that attended our last meeting, thank you very much for being there. It was the best attendance at a meeting for as long as I can remember. It was great to see so many. Not only did we have a great attendance but there were some really positive comments from members about continuing to get our club moving. All thoughts, ideas and input from members is greatly appreciated.

At the time of writing this report no more information has been forthcoming from ARV concerning the time line for the changeover on Mt Wombat. I have had an Email form Peter Mill answering our question as to who is responsible in the event of equipment failure. In the first instance we will be responsible to investigate the failure. If it is beyond our knowledge then ARV will call in a specialist to solve the issue. This will be at ARV expense.

Thank you to Geoff VK3ZNA for his presentation at the last meeting on various antenna connectors and how to utilize them in the best manner. Geoff's talk was a great illustration of the knowledge that we have within our Club. Amateur Radio is a very diverse hobby with many facets and many people within our Club have expertise in their area of interest. I would like to see more members come forward and talk about their area of expertise. Don't be shy or hold back, you will be surprised at what you know that others don't.

Our annual get-together with the Bendigo Amateur Radio and Electronics Club is set for Sunday 10th April at Goulburn Weir. As per normal it is a BYO everything and this year we will have a low key, self-organised car boot sale, so bring along that treasure that you no longer need as someone else may require it. Any time after 11.00am is fine.

I have been asked by an Amateur from Cobram if any of our members has done any work with FreeDV. If so could they let me know as the person concerned is experimenting with this method of transmission and would like to talk to them both on air and face to face to compare notes.

FreeDV is a Digital Voice mode for HF radio. You can run FreeDV using a free GUI application for Windows, Linux and OSX that allows any SSB radio to be used for low bit rate digital voice. Alternatively you can buy a SM1000 FreeDV adaptor that allows you to run FreeDV on any HF radio without a PC or sound card. FreeDV is voice in – voice out.

Speech is compressed down by using CODEC 2 to 700-1600 bit/s then modulated onto a 1.25 kHz wide signal comprised of 16 QPSK carriers which is sent to the Mic input of a SSB radio. The signal is received by an SSB radio, then demodulated and decoded by FreeDV. FreeDV 700(B) rivals SSB in it's low SNR performance. At high SNRs FreeDV 1600 sounds like FM, with no annoying analogue HF radio noise.

At our next meeting to be held on Saturday 2nd April we will have two presentations. The first presentation will be by Andy VK3AJA on how to program the inexpensive Chinese hand held radios. Then, if time permits I will do a talk on the operation of IRLP.

Looking forward to seeing as many of you as possible at our next meeting.

Cheers & 73

Peter – VK3FPSR
President – SADARC

SADARC Calendar of Events

April 2nd	Club Meeting with Andy & Peter talking about programming handhelds and IRLP
April 3rd	Assessors training day.
April 10th	Goulburn Weir BBQ with BAREC and Car Boot Sale
May 7th	Club Meeting with Guest Speaker and BBQ
June 4th	Club Meeting with Guest Speaker

Shepparton and District Amateur Radio Club Meeting

1:00pm, Sat 5 March 2016

☐ Welcome
 VK3KBY Barrie, VK3BPH Kevin, VK3ZE Huntly, VK3ZNA Geoff, VK3FALN Alan, SWL Nathan, SWL Jason, VK3HEN Darren, VK3OV Pat, VK3DMD Doug, VK3KMF Mark, VK3HKH Kane, VK3GMV Wayne, VK3UG Rodney, VK3NMK Mike(Visitor), VK3FBNG Bruce, VK3KJB John, VK3CHV Ian, VK3AO Alan, VK3PXJ John, VK3COP Ron, VK3FPSR Peter, VK3AJA Andy.

☐ Apologies VK3NQS, VK3FJHM, VK3DP, VK3GEB, VK3DSF

Great turn out to the meeting this month and everyone enjoyed Geoff's presentation on connectors and soldering. Thank you Geoff.
It was great to have a chat and a BBQ lunch before the meeting.

☐ Confirmation of Minutes of previous Meeting
Read by Peter   Moved by Jason seconded by Kevin.

☐ Matters arising from the Minutes
 None.

☐ Inward and Outward Correspondence
 IN, Bill for PO box. WIA Insurance renewal.

 OUT, Another email sent to Fred Swainston re visit as still no
 response. He is probably a bit distracted at present.

☐ Reports
   o   President , none
   o   Financial   Read by Ron and moved   Kevin seconded

   o   Technical read by Rodney.   Discussion about Mt Wombat troubles.
     Agreed probably better to wait till all parties finished at Mt. Wombat
   then see what is in place as much of the projected work is out of our control.
    All new equipment (to us) is evidently going to be installed in hut
    and old equipment given back to SADARC.
    Hopefully the new repeaters/equipment in hut will be same
    or better that in there now. We shall see……..

    It was mentioned to possibly setup station here instead?
    Technical committee to get the Club House station back up
    to scratch.   We'll possibly install the lattice tower from Mt Wombat at the club rooms.

☐ Murray Quad has been cancelled unfortunately due to blue green algae in river. We therefore won't be required to provide coms for the event. I am sure everyone involved up at Yarrawonga setting up this large event is very disappointed. Perhaps next year.

☐ General Business

Hamfest as per normal this year.   Kevin moved motion seconded by Geoff Angus.

Lunch a Nagambie weir move to 2 nd weekend in April 9 th. 2016
With car boot sale bring stuff.

D-Star equipment… Toby is happy to give back to us. Possible refit to Mt wombat. We will look into this after the Mt. Wombat works are completed. (There is enough drama already) And according to the original agreement, Austereo will provide internet connection for SADARC at Mt. Wombat.
Old Mt. Wombat Tower can be stored in Geoff's shed for now.
Will be delivered by Austereo as per original agreement.

Peter (President) is going to contact Echuca steam rally and see if they would like us to provide a display.
  ☐ Meeting closed at 2.05 pm

The Editor's Ramblings

The meeting on the 5th March was well attended with over 20 attending and with several new faces. Some have already joined the club and we hope those who were testing the water feel the club is worthy of their attendance.

Geoff VK3ZNA presented a practical demonstration on attaching coaxial cables to various antenna connectors. Geoff hopes to have a short article on this in a later newsletter.

Wherever possible the header of the newsletter gives the key information about the club repeaters and facilities and when each meeting is to occur. Kane Hinchcliffe VK3HKH and Jacek VK3TJS successfully reconfigured the IRLP mode, and the Echolink too I understand. Correct me if I am wrong. Negotiations are taking place with Austereo to ascertain whether the D-Star repeater can be connected to the internet once it is reinstalled on Mt Wombat.

The get together with the Midland Group will take place as a BYO BBQ at Goulburn Weir near Waring Roadhouse on Sunday 9th April at 11am. If you want to dispose of some gear or are interested in obtaining some pre-loved equipment a car boot sale will be taking place too, so bring some goodies to sell or give away or money to buy some.

In addition to the club skeds of a Wednesday evening several other skeds are participated in by other club members. For example there is a sked at 8.15am every day on 3695 kHz LSB. Kevin VK3BPH and Ian VK3JNC are often heard on this sked. Huntly VK3ZE is also involved in another regular sked. So there are a number of skeds that occur around the region and if you would like to be involved have a chat with other members to see what skeds are around the bands and when. If you would like some skeds publicised contact the editor and I'll put them into the newsletter.

Our Secretary is a keen lad and has suggested that we get together into small groups to assist other members with antenna problems, whether it is installation or fault finding. The suggested day is convenient Saturdays. We need to know if you have a problem and you will need to discuss it with the helpers so that appropriate help can be given. We would need to know, what band(s) you are having trouble with, what antenna you may already have and how high, size of your block, interference problems, material available, etc.

Talking of interference it has been found that some NBN installations that use a radio link instead of an optical connection develop severe interference to the AM broadcast band and well into the short wave bands. Apparently the source of the interference is the head unit that will probably be on your roof that receives the signal, from a nearby Telstra or Optus tower. You can find out which item it is by switching off the various units one by one. Once determined which unit it is you will need to contact NBN to have the problem resolved. As I understand it the cooperation isn't all that good so perseverance may be needed, even ultimately taking the matter to the communications ombudsman or your local federal MP.

Mount Wombat Repeater Site

Most members will be aware that the club does not have the lease on the site where our repeaters are installed. As I understand it the club originally had the lease and this was arranged through Marg Gillies, Bruce Gillies' wife who had helpful contacts in government. This went along smoothly until the powers that be who administered the leasing of mountain tops for radio communications were going to increase the lease fees to levels we could not afford. The Wireless Institute of Australia, Victorian Division took up the cudgels for many hill top sites and reasonable lease fees were applied. The WIA paid both the lease fees and the licence fees which amounted to around $100 per year. We have not been able to see a copy of the lease and the conditions on it despite asking many times for a copy.

When WIA divisions were abolished a number of years ago the Victorian Division of the WIA ceased to exist and a number of the executive of the Vic Division formed Amateur Radio Victoria (ARV) which also took over the repeater lease agreements and paying the licence fees. All has gone smoothly until around two years ago when ARV notified the club that the mast guys did not meet current standards. They were going to replace the guys but didn't. Other things have occurred since then with a complete modernisation of the repeater site being undertaken, despite the technical committee's belief that the repeater site we have works very well, is safe and reliable. We are told the revamping of the site will mean that the site will meet the requirements for the insurance company. We have not seen what the insurance company's requirements are and if we had a copy we would no doubt have attended to any needing attention. .

Already Austereo have had a new 15 metre self supporting tower installed which will hold all likely antennas for Austereo and those amateur repeater antennas that ARV say should be on the tower. We are still in negotiation with ARV as the proposed antennas for 2mx and 70cm are only 3dBd gain compared to those in use at 6 dBd. We believe that because our repeaters are 50 km away from Shepparton that the extra gain is essential if we are to reasonably cover our area of interest.

It is proposed that most of our equipment will be replaced by newer equipment and that it will be placed into racks that are apparently being made to suit the repeater building. This will mean for a while our repeaters on Mt Wombat will not be operational and we will need to use the 2mx and 70cm repeaters on Mt Major. Some areas will do better using these repeaters but some will not have repeater access at all.

How soon this work is to take place is unknown at this stage. You will be kept informed as best we can. Email is the quickest method. Max Mathey has been advised of the work that is going to take place and he and Norma will need to think what they want to do long term with their UHF CB repeater on Ch3/33.

Murray Quad

It is sad to see that the Murray Quad once again has been ruined by the weather. This time due to the outbreak of Blue-Green Algae along a large expanse of the Murray river all water activities included in the Quad had to be cancelled and hence the complete Quad. A possible time for the Quad to happen is now in November. Bruce and Darren have spent quite a bit of time on this and we are sorry that it has all happened. The key organiser must be bitterly disappointed and we commiserate with him.

The 630 metre band

Phil VK3ELV has been busy on the 630 metre band (472 to 479 kHz) and he is getting extremely good results. On Wednesday 2nd of March his signals were heard in Washington State USA, Phil's first confirmed signal and the first from Australia. Congratulations Phil.

The characteristics of this band are very different to the other bands that we do operate on. The antenna systems tend to be huge if reasonable efficiency is to be achieved and average amateur antennas will vary from as low as 1% up to perhaps 10% efficiency. The other 90 to 99% of the RF energy is used up in ATUs,

ground losses etc. So antenna height and length are important, and fortunately Phil has a number of big trees on his block and he has been able to get his end fed antenna wire up through the canopy of some of these. The earth losses on such a vertical antenna system can be extremely high and where Phil is located high losses would be expected. However, it is thought that maybe due to the rocky low conductivity of the earth that in actual fact the antenna system may be acting more like a centre fed dipole, despite the fact one half of the dipole is below ground.

Satellite Piracy

Phil VK3ELV came across this on the internet. We can't vouch for the authenticity of this information but it makes an interesting read. If relative amateurs can do this what does it say about the security of many of the satellites in orbit.

The Great Brazilian Sat-Hack Crackdown

Brazilian satellite hackers use high-performance antennas and homebrew gear to turn U.S. Navy satellites into their personal CB radios. Photo: Divulgação/Polícia Federal

CAMPINAS, Brazil — On the night of March 8, cruising 22,000 miles above the Earth, U.S. Navy communications satellite FLTSAT-8 suddenly erupted with illicit activity. Jubilant voices and anthems crowded the channel on a junkyard's worth of homemade gear from across vast and silent stretches of the Amazon: Ronaldo, a Brazilian soccer idol, had just scored his first goal with the Corinthians.

It was a party that won't soon be forgotten. Ten days later, Brazilian Federal Police swooped in on 39 suspects in six states in the largest crackdown to date on a growing problem here: illegal hijacking of U.S. military satellite transponders.

"This had been happening for more than five years," says Celso Campos, of the Brazilian Federal Police. "Since the communication channel was open, not encrypted, lots of people used it to talk to each other."

The practice is so entrenched, and the knowledge and tools so widely available, few believe the campaign to stamp it out will be quick or easy.

Much of this country's geography is remote, and beyond the reach of cellphone coverage, making American satellites an ideal, if illegal, communications option. The problem goes back more than a decade, to the mid-1990s, when Brazilian radio technicians discovered they could jump on the UHF frequencies dedicated to satellites in the Navy's Fleet Satellite Communication system, or FLTSATCOM. They've been at it ever since.

Truck drivers love the birds because they provide better range and sound than ham radios. Rogue loggers in the Amazon use the satellites to transmit coded warnings when authorities threaten to close in. Drug dealers and organized criminal factions use them to coordinate operations.

Today, the satellites, which pirates called "Bolinha" or "little ball," are a national phenomenon.

"It's impossible not to find equipment like this when we catch an organized crime gang," says a police officer involved in last month's action.

The crackdown, called "Operation Satellite," was Brazil's first large-scale enforcement against the problem. Police followed coordinates provided by the U.S. Department of Defense and confirmed by Anatel, Brazil's FCC. Among those charged were university professors, electricians, truckers and farmers, the police say. The suspects face up to four years and jail, but are more likely to be fined if convicted.

First lofted into orbit in the 1970s, the FLTSATCOM bird was at the time a major advance in military communications. Their 23 channels were used by every branch of the U.S. armed forces and the White House for encrypted data and voice, typically from portable ground units that could be quickly unpacked and put to use on the battlefield.

As the original FLTSAT constellation of four satellites fell out of service, the Navy launched a more advanced UFO satellite (for Ultra High Frequency Follow-On) to replace them. Today, there are two FLTSAT and eight

UFO birds in geosynchronous orbit. Navy contractors are working on a next-generation system called Mobile User Objective System beginning in September 2009.

Until then, the military is still using aging FLTSAT and UFO satellites — and so are a lot of Brazilians. While the technology on the transponders still dates from the 1970s, radio sets back on Earth have only improved and plummeted in cost — opening a cheap, efficient and illegal backdoor.

To use the satellite, pirates typically take an ordinary ham radio transmitter, which operates in the 144- to 148-MHZ range, and add a frequency doubler cobbled from coils and a varactor diode. That lets the radio stretch into the lower end of FLTSATCOM's 292- to 317-MHz uplink range. All the gear can be bought near any truck stop for less than $500. Ads on specialized websites offer to perform the conversion for less than $100. Taught the ropes, even rough electricians can make Bolinha-ware.

"I saw it more than once in truck repair shops," says amateur radio operator Adinei Brochi (PY2ADN) "Nearly illiterate men rigged a radio in less than one minute, rolling wire on a coil."

Brochi, who assembled his first radio set from spare parts at 12, has been tracking the Brazilian satellite hacking problem(.pdf) for years.

Brochi says the Pentagon's concerns are obvious.

"If a soldier is shot in an ambush, the first thing he will think of doing will be to send a help request over the radio," observes Brochi. "What if he's trying to call for help and two truckers are discussing soccer? In an emergency, that soldier won't be able to remember quickly how to change the radio programming to look for a frequency that's not saturated."

When real criminals use these frequencies, it's easy to tell they're hiding something, but it's nearly impossible to know what it is. In one intercepted conversation posted to YouTube, a man alerts a friend that he should watch out, because things are getting "crispy" and "strong winds" are on their way.

Sometimes loggers refer to the approach of authorities by saying, "Santa Claus is coming," says Brochi.

When the user's location is stable, the signal can be triangulated. That's how the Defense Department got the coordinates to feed Brazilian authorities in March's raids.

While Brazil may be the world capital of FLTSATCOM hijacking, there have been cases in other countries — even in the United States. In February of last year, FCC investigators used a mobile direction-finding vehicle to trace rogue transmissions to a Brazilian immigrant in New Jersey. When the investigators inspected his radio gear, they found a transceiver programmed to a FLTSAT frequency, connected to an antenna in the back of his house. Joaquim Barbosa was hit with a $20,000 fine.

A technician with Anatel, speaking on condition of anonymity, says the chief problem with ending the satellite abuse in this country is that U.S. and Brazilian authorities simply waited too long to start. Thousands of users are believed to have the know-how to use the system. After a bust, the airwaves always go quiet for a while, but the hijackers always return.

One week after the "Operation Satellite," Brochi met with Wired.com at a gathering of amateur radio enthusiasts in a bucolic square in Campinas, about 60 miles north of Sao Paulo. Brochi switches on his UHF receiver and scans through the satellite frequencies.

It's relatively quiet now on the satellite underground, except for the static-like sound of encrypted military traffic. But eventually, a lone creaky voice cuts through. It's a man in Porto Velho, the capital of Rondônia, a day's drive north into the upper Amazon basin. He's making small talk with a friend in Portuguese. The satellite pirates are creeping back on the air.

IRLP (Part 1)   This is a repeat of Peter's original articles in 2011

As I and a few others use IRLP on a regular basis I thought I would inform others as to how the system works. A number of members have made comments that they are not sure how to use it and are interested to become au fait with the procedures.

IRLP usually operates on 2m or 70cm. It is method of communicating long distance via a Computer, a Radio and using the local repeater. By long distance I mean anywhere in the World where there is an IRLP Node. A special Microphone is required that can generate the DTMF tones. Each IRLP Node or location has a 4 digit number. This list of Node numbers can be found at the IRLP web site. The address for this web site is www.irlp.net. The site carries lots of other information about IRLP that is far greater in depth than this little editorial.

To operate IRLP you listen to check that the local repeater frequency is not in use. If it is clear you then announce your call sign and that you wish to use the IRLP. After releasing the PTT you then press the PTT again and key in the number of the IRLP Node you wish to contact. After keying in the number release the PTT and listen. If you have been connected successfully to the Node you dialled the Node will respond with a connection message.

After connection it is normal to wait about 10 seconds prior to putting out a call. Effectively you are connected to a repeater that you normally can't hear so you need to make sure you have not interrupted local traffic. It IS acceptable to call CQ, in fact, if you really want to make a contact, it is preferable to say "This is VK3FPSR calling CQ, is anyone available for a contact?" as opposed to "VK3FPSR Listening" ...silence for 2 minutes, followed by a disconnect. However 3 x 3 x 47 CQs are unnecessary and should be left for CW/SSB frequencies where tuning around is the observed practice.

Once your connection is made and you have a contact you carry out a normal conversation. I find it is better if you leave a pause between overs for the system to catch up or in case someone else wishes to join your conversation.

At the conclusion of your conversation you need to disconnect from the Node you are connected to. Simply announce that you are going clear of the Node and key 73 into your Microphone keypad. This will disconnect you. The Node that you had been connected to will now announce that you have been disconnected.

In next months Newsletter I will give more information on using IRLP. This is only the start and will get you up and running initially.

Cheers & 73

Peter.
VK3FPSR