VHF/UHF – An Expanding World

David Smith VK3HZ

Weak Signal

David Smith - VK3HZ

I have received a number of interesting submissions from people detailing their activities. So, this month the majority of the column will be turned over to them.

Barry VK3BJM near Kyneton in central Victoria reports on some enhancement to the west on Saturday 10th May:

On firing up the station at 2200z on Saturday morning, I noted the Adelaide 2 m beacon at 419 and reasonably steady. I spent the next hour working the usual suspects to the NE, then at the top of the hour I heard Phil VK5AKK on 144.200 MHz through the back of the array. I redirected myself to the Adelaide direction and worked Phil at 55. We QSYed down to 144.160 MHz, and were followed by Geoff VK5GF. I worked Geoff, who was a smackingly comfortable 58. 70 cm wasn't playing ball though, and no contacts were completed there. Phil and I both tried 23 cm as well, but again were unsuccessful. The VK5VF 2 m beacon was about 53 at the time.

I continued to call to the west, and at 2313 worked Gary VK5ZK, who was 55 on 144.100 MHz. At 2332z Terry VK3ATS, in Mildura, was worked on 144.150MHz at 58.

Interestingly, stations just north of Adelaide (and slightly over the Mt Lofty Ranges) were not accessing the path - after much effort Brian VK5BC and I completed on 144.100 MHz, with reports of 31 both ways, at 0007z. At the time VK5AKK was still hovering at a level of 57-58 or thereabouts.

I left the receiver listening to the VK5VF 2 m beacon for the remainder of the day, and it was audible well into the afternoon. Sunday morning there was no evidence of similar favourable conditions.

Broken Hill and the WIA AGM

Peter VK3KAI sent in this report of his trip to the WIA AGM:

Having had my arm twisted firmly to attend the WIA AGM in Broken Hill, some very loose plans were formulated. I would have some company for the trip, so care was needed in not planning to spend too much time playing RF!

The car was fitted with a HF mount and 2 whips were available - a 40 m single band unit and an Outbacker multiband unit. The IC-7000 was fitted to the car in a temporary fashion - enough for reception on HF, but I had insufficient time to do things (such as grounding) properly. I also threw the homebrew 144 MHz Squalo and a short mast and 5-element Yagi into the car.

The trip started at 1730 local from Churchill, with a drive to and through Melbourne to Kyneton - fortunately the planned departure time meant that we missed the evening peak hour. A little 2 m and 70 cm FM operation occurred along the way (the Squalo was not "up"). Caught up with Barry VK3BJM via the phone and then the Mount Macedon repeater. Stopped in to enjoy dinner, a bottle of red, and a long chat before heading to bed.

In the morning, a short chat was had with Barry over coffee whilst having a quick look over the radio shack. Discussion included sites for potential activity near Broken Hill.

Barry had the Friday off, so was relaxed, but with several tasks on the "to do" list. We departed from Kyneton at around 0830, again without any antennas fitted other than the FM vertical - Kyneton was very cold first thing after a clear, cloudless night!

We had a pleasant drive up the Calder Highway to Charlton, where we stopped for breakfast at 1005 - but convinced the coffee shop owner to make breakfast (kitchen was supposed to shut at 1000). Near the end of breakfast, I received a call from Barry. Following a brief chat, I fitted the 40 m whip and the 2 m Squalo to the car. Once everything was installed, we resumed the long drive. Just after we restarted, Barry called on 144.1 MHz. A very good 57/59 signal was received. We chatted briefly as I drove through the second half of town and onto the open highway. The next contact with Barry occurred briefly about 30 km short of Ouyen - a good haul for mobile! Signals were 52 to start with and fluctuated with the local terrain - local cuttings made Barry drop into the noise. From then on, it was just listening to the FM repeaters or occasionally to the activity on 40 m. The drive on to Mildura and then to Broken Hill was somewhat monotonous, with occasional FM contacts.

Once in Broken Hill, we settled into the motel room and then joined the crowd for a very pleasant meal at the Southern Cross Hotel. We were at a small table and were joined by an amateur and some friends from Bendigo. Much of the evening was spent discussing things VHF, UHF and above, as the Bendigo group were also interested in astronomy.

Despite the long drive on Friday and the long dinner, I was given a leave pass to play radio on Saturday morning. I headed off on the Menindee road, following Barry's description of a favourable location (QF07sx). I found the spot easily and was set up just before 2130 Z. I alerted Barry via SMS and then a quick call on the mobile. At 2131, contact was made via an aircraft travelling Adelaide to Sydney. The contact was short, but complete. Barry posted a message on the VK Logger as I started to get the laptop PC and interface together, just in case there was a chance of some MS contacts. I received a 'phone call from Steve VK2ZT and pointed the 5-element beam in the appropriate direction, but heard nothing. A little after 2200 (time not recorded), I received a 'phone call from Rex VK7MO. We talked about what was happening - I was having some issues with the laptop and the interface, as it had been a few years since I had tried to operate the system from the car and had not used it with the IC-7000 (yes - poor planning). I finally got the system working and started trying on FSK441 with Rex at 2235. I had a complete contact in the log by 2242 - only seven minutes! I was amazed that it took so little time - I guess a quiet location helps! At some stage, Phil VK5AKK had called, but I did not receive notification of the voice message until late that afternoon: Sorry Phil.

I also ventured out again on Sunday to a nearby location, with the goal of working my home square via MS. Ralph VK3WRE was willing to try. I was set up and transmitting by 2135 and received several pings over the next hour or so from Ralph. Unfortunately, Ralph heard nothing from me and we gave up at 2250 after telephone contact.

So, two stations were happy that I had taken some limited gear with me - Barry had actually worked a new square (previously in the log via a reciprocal contact) and Rex had a new square. Unfortunately, no new square to count for me. Given the uncertainties of the trip, I did not wish to raise expectations of others, so made no prior announcement of any possible activity. Perhaps I can arrange another trip in the future....

The return trip was uneventful, with some more 2 m FM contacts. We stayed overnight on Sunday in Mildura - thanks to Geoff and Marilyn Syme. Christine VK5CTY was also staying at the Syme residence, so some lively discussion occurred. I had work commitments on Tuesday, so could not stay for the local

Mildura activities on Monday evening. A long but un-eventual drive on Monday saw us safely home in the Latrobe Valley late in the afternoon.

Aircraft Enhancement

Here's another report from Barry VK3BJM. Interestingly, Barry is now using an ADS-B receiver to receive real-time positions from aircraft in view of his antenna.

As background, the ADS-B system is a distant descendant of the Interrogate Friend or Foe radar system (IFF) where a ground-based radar sent a signal to interrogate a transponder on a military aircraft, which then replied with the appropriate code. The system has been extended over the years for both military and civilian use so that the radar can ask for different information. Thanks to onboard GPS systems, the aircraft now know accurately where they. ADS-B eliminates the need for the ground-based radar by having the aircraft periodically transmit a message that includes an identification and precise position. So, with a relatively simple receiver such as the Kinetics SBS-1, you can now have your own air traffic control display.

So, over to Barry, who also reports on the other side of the contact with Peter VK3KAI:

Another interesting morning up here amongst the frosted grass of Kyneton. Peter VK3KAI had travelled up to Broken Hill for the WIA AGM, and this morning had travelled out to spot where I'd operated from during the 2007 Summer Field Day, a ridge about 15 km ESE of Broken Hill - locator QF07sx. I'd left the array parked in the Broken Hill direction, and had also left my ADS-B receiver running, so on entering the shack the only hold-up was waiting for the AM-17 to warm up its clogs... As it was doing this I noted on the Radar two aircraft; one Sydney to Adelaide flight that had just passed the area for potential enhancement, and a Jetstar flight from Adelaide to Sydney just crossing the beam heading. As soon as the AM-17 was on line I called, and there was Peter at a solid 56. I received 55. There was enough time for two exchanges, then the signal dived - by the time the aircraft was 5 degrees away from the beaming heading to Peter, he was 41 and headed for the noise. This was at 2134z.

The aircraft track and the beam heading cross at about 65 degrees to each other, so the enhancement is brief, but strong. This spot is about 277 km from my QTH; Peter was 634km distant, so the aircraft track is well positioned for mutual visibility. The aircraft was at 37,000' at the time.

Later, during the usual AE activity, I had just returned to 144.200 after working Les VK3TJ in Mildura on 144.180, when I heard Steve VK2ZT in Medowie QF57wf. The time was 2244z. I'd been hearing plenty of Steve since rebuilding my 2 m array, but due to distance of the path, the brevity of the AE "openings", and the level of activity on 144.200 these days, we'd never completed a contact. Steve was regularly a comfortable 51 at these times. This time, as he worked Rob VK3XQ, he peaked at 53. Again the brevity of the opening beat me, as the signal fell away as the contact was completed. I made this observation on the VK Logger, and we agreed to try another frequency after 2300z. Settling on 144.140, we had two near misses at 2309z and 2314 with incompleted exchanges of 41, before completing at 2321z with reports of 51 both ways. Steve actually hit 52 in his last over. I still can't tell for sure which aircraft are providing this path - it could be Melbourne>Sydney, or it could be Adelaide>Sydney, but it is reasonably regular. The path distance is 843 km, according to the distance calculator on the Logger. I think working over this distance via AE is actually more satisfying than the fact this contact was a new Grid Locator for me!

Once completed, I stayed on to try and do the same with Colin VK2KOL in Mt Druitt;

this was a little harder but again, after two near misses we completed at 2337z with an exchange of 41 both ways. Colin's local noise issues (S2 at the end!) are not to be envied...

Unfortunately this morning there were no completed contacts on 1296MHz with any of the VK1/2's - but we can't have everything, I guess!

South-Eastern Australia Tour

It seems that it's the time of year for long drives through the countryside. Leigh VK2KRR penned the following piece on his ramble through southern VK5, visiting many amateurs and other sites that he has heard in various ways:

Went for a bit of a drive over the Queen's Birthday long weekend into VK5. I was lucky enough to be able to call into a number of operators QTH's and get a look at their shacks and operating conditions at their QTH.

Left my QTH (The Rock, near Wagga) at 9 am Saturday. First up, I stopped in at Barry VK3BJM's QTH at Kyneton at around 2 pm. It's awesome to come up a road and see a huge 4-yagi array towering over a house. It was good to catch up with Barry and he was kind enough to check some specs of my IC910 and I also got a preview of an awesome aircraft tracker he was running.

Next, it was the Mt Gambier AR convention. Met up with heaps of operators there, some I've met before and others only on radio so it was great to meet the new faces and catch up with others. Of particular interest was catching up with Chris VK5MC. Chris was kind enough to invite me to call into his QTH on the way up to Adelaide. He drew me a 'mud map' and told me to just go up and have a look. He didn't really explain about what he was working on.

Leaving Mt Gambier at around 11.30 am, I drove north for 30 mins or so and found the VK5MC QTH. Driving up the driveway, I could see a massive EME dish towering over the top of the house! I had a huge grin on my face :-) I pulled up and have just gone 'oh my god'! I was looking at around a 40 ft diameter dish pointing at the horizon! It was huge. Extremely impressed by Chris's monster homemade dish on his property in the middle of nowhere.

I then drove for hours and hours and eventually ended up at the QTH of Jeff VK5GF who has recently moved from Alice Springs to Victor Harbour. Jeff is still getting everything set up for his new location but it's looking all pretty good so far. I also got to see the actual QSL cards from his famous 144 MHz TEP contacts into Japan from Alice Springs, which was quite amazing to see.

Next stop on Monday was to Goolwa to see Garry VK5ZK. Was great to call in to see Garry's setup and chat about radio things. Also Harry VK5HR came down to Garry's to meet me while I was in the area which was great too as I've worked Harry a few times. Garry is just getting going on 1296 now which is great and when I arrived was doing a test with VK5BC over at Corny Point.

Then with some great assistance on simplex I headed on over to catch up with Bill VK5ACY (ex Kangaroo Island). Bill is now located to the south of the Adelaide city. As Bill has only recently moved he is still setting up his new QTH and cement was going down for the new tower as I arrived. Although I think Bill was a bit reserved about AR-DX possibilities from near the city, things are looking up and tests have been promising. Can't wait till Bill has everything set up on the new tower to see how it goes.

More great simplex directions from VK5ACY and VK5AKK, I headed up the hills to catch up with Phil VK5AKK. Phil is way up at the top of the range and is an

interesting drive to get there for sure. Firstly I could not even see Phil's tower and antennas - there are so many trees about. But up the back of the block was the tower. The antennas are still slightly shielded by trees but the height is working well. I walked up to the highest point on the ridge and you could see virtually everywhere for a very long way. Phil has quite a long run of coax too to get to the antennas from the shack so quite a bit of loss. especially on 23cm. I have to mention that I got the best meal of the whole trip while I was at Phil's QTH, as cooked up by his XYL. Thank you very much! I was never expecting to get a roast chicken with baked vegetables and gravy!! When she said something to eat I thought she meant like a piece of cake! OMG she should not have done that but I appreciated it!

By this stage it was around 3.30pm and I really had to head off. I went via Murray Bridge then over to Loxton way. It was nice to use the legendary Murray Bridge repeater on a local level for something different. Out along the road to Loxton I tried to get Phil the QF04 grid square. I could hear him a fair way out but a vertical yagi at his end would have been much better. Right out at some isolated little town for only a few km was the NE corner of QF04. I could only hear him when near the Telstra tower, but Phil could not copy me.

Further along the track towards Loxton, now in the darkness I could see the red lights of a massive radio tower off in the distance, a long way away. As I got close I realised it's Renmark Channel 5A TV (or closer to Loxton really). I got closer and the whole 4 MHz of the 2 m band began to get wiped out! It was a totally full scale signal for MHz and MHz on my mobile rig - amazing. I tuned down to 143.760 and listened for a bit to the audio. It was great for me to drive past this great big radiator all alone in the middle of nowhere, as Renmark TV audio is something I have always referred to as a beacon for the past 5 years or so and having studied the signals from it on many occasions. It was great to see its origin.

Next up, I called into Mildura and was greeted by Les VK3TJ who kindly drove down to McDonalds to catch up and have a chat. Garry VK3KYF kept me company on the Mildura and Robinvale repeaters for as long as they would go, then just the long, long trip home across the plains. I arrived home around 4am Tuesday morning.

Thank you to everyone for your kind hospitality, it was great and very inspirational to call into such a prominent group of DXers QTHs and see their setups and what challenges are presented with the local terrain and other issues. The knowledge and experience of these guys is amazing.

My apologies to VK5BC and VK5ZLX, just ran out of time to call up to the Barossa. I could have spent a whole day up there though I reckon. Next time hopefully.

SK – W4RNL and DJ9BV

It's been a sad time for the amateur community recently – particularly in the area of Antenna development.

In April, it was announced that L.B. Cebik W4RNL had become SK. LB was the Technical Editor for the antenneX Online Magazine and a regular monthly contributor with his antenna modelling column. I always found his web site to be of great value when researching antenna options. Fortunately this site will be maintained and is highly recommended - www.cebik.com. His valuable additions will be sorely missed.

Then in early June came the announcement that Rainer DJ9BV had passed away after a long illness. Any of you who have built your own VHF/UHF yagi would be well aware of Rainer's work optimising the DL6WU yagi designs. His designs are, in my opinion, still the best you can build. Again, he will be sadly missed.

VK Logger Improvements

The VK Logger (www.vklogger.com) has received a major overhaul. Adam VK4CP has been burning a lot of midnight oil in completely rewriting the code for the site to take advantage of new web technology. While the look and feel of the site is basically the same, there have been many detail improvements. Visit the Help section in the Forum area for more details.

As of early June, the VK Logger now has 573 registered users.

More Stations On 23 cm

I reported a some time ago on the increase in activity on the 23 cm band in the VK3 area. Brian VK5BC reports that VK5 is having a similar boom:

Activity and interest in 1296 in SA is on the increase. Latest stations to add 1296 capability to their stations are Garry VK5ZK, Graham VK5KGP and Jeff VK5GF. These stations are all located in the Goolwa/Victor Harbor region south of Adelaide and are ideally placed for contacts to the east. I managed a scatchy contact with Garry this afternoon. This is just over 100 km over a less than ideal path.

There are several other existing active stations on 1296 including Phil VK5AKK, Roger VK5NY, Ron VK5KRA, Keith VK5AKM & Peter VK5ZLX. There are also some including John VK5BJE planning to be on 1296 shortly.

Please send any Weak Signal reports to David VK3HZ

Digital DX Modes

Rex Moncur – VK7MO

With winter upon us, meteor scatter using WSJT's FSK441 mode is a good way of working long distances on 2 metres – up to 2000 km. Activity sessions are held on each Saturday and Sunday morning as follows in local NSW/VIC times:

0500 to 0600: 144.330 ZL to VK with ZL transmitting first period

0600 to 0700: 144.230 ZL North Island to ZL South Island, South first period

0600 to 0700: 144.230 VK to VK – unstructured

0700 to 0800: 144.230 Saturday VK3/5/7, first period to VK1/2/4

0700 to 0800: 144.230 Sunday VK1/2/3/5/7, first period to VK4

Some of the regular ZL operators are Bob ZL3TY (Greymouth), Starr ZL3CU (Christchurch) and Peter ZL4LV (Dunedin). In VK, regular operators are Waldis VK1WJ, Dave VK2AWD, Colin VK2KOL, Mark VK2EMA, Gavin VK3HY, Peter VK3SO, Jim VK3II, Rhett VK3VHF, Wayne VK4WS, Phil VK4CDI, Alan VK4EME, John VK4JMC, Peter VK5ZLX and Rex VK7MO.

Joe Taylor K1JT is developing a new Digital mode called WSPR that is aimed primarily at propagation tests on HF. It runs in a total bandwidth of 6 Hz making it possible for a large number of stations to run tests in just 200 Hz of bandwidth. The program searches the full 200 Hz to which you are tuned and prints out a list of all stations it can decode. Rex VK7MO has been testing this program with Jim VK3II and David VK3HZ and it works well at two metres, with signal levels down to around -27 dB on the WSJT scale. Rex also tested it with K1JT via EME and despite the narrow bandwidth it still works well and coped with libration frequency spreading.

The initial tests gave decodes down to -27 dB but subsequently Joe was able to use these test files to improve the decoder down to -29 dB. Joe has advised that he is looking to develop a QSO version of WSPR.

Please send any Digital DX Modes reports to Rex VK7MO