2014 Spring VHF/UHF Field Day

22nd November 2014

The most obvious facet of this event was the local lack of activity. The number of operators working the various bands appeared to be well down on previous Field Days. Maybe some of that could be attributed to the WIA not having appointed a replacement VHF/UHF FD manager and getting the event's rules on their web site as well as promoted better. Maybe it was just the wrong weekend as it conflicted with other events. I don't know but if the trend continues, I might not be another participant in future FDs.

I, again, sojourned to Beechmont Plateau, QG61OV55NN, in the Gold Coast hinterland at a high spot on a dairy farm - with the permission of the owner of course. The weather forecast was for a hot day with the possibility of some rain and maybe a thunderstorm late in the day. I was on site from about 9AM until 8PM local time and, while it got quite hot, fortunately the rain did not eventuate where I was. I didn't have a thermometer with me (probably just as well too) but it was a real blessing when the cooling northeasterly breeze came up early in the afternoon.

Gear-wise, everything mostly went ok until I found that the transverter box with the 2.4/3.4GHz gear wouldn't switch over from the 2.4GHz state, the modified UPS that energises the rotators became intermittent and finally ceased, and then the CIV-USB interface was causing the VKCL auto-frequency and emission mode reading function to drop out periodically. The last straw was about 6.20PM when the battery volts dropped below the IC-706 low voltage threshold and wouldn't power back up to let me operate microwave until my 7PM station shutdown. Oh, did I mention that it turned out that the battery bank was only being charged from one solar panel as the other one had inadvertently become disconnected, or that I had to re-solder the SMA connector outer on the 2.4GHz feed before I could erect the microwave antenna mast?

I realise that FD events are personal trials to see if we can resolve any difficulties encountered but isn't it time that everything worked as it should?

Maybe this is the right time to announce that my new IC-7000 suffers when in proximity to FM broadcast transmitters…. I kept hearing what sounded like sideband splatters while working on 144.150, preamp on, 8 element yagi attached, so I went-a-tuning. Yep, definitely sideband splatter effects so switched to wideband FM and wow – broadcasting FM audio effects present even if not really showing on the S-Meter. Tuning downwards towards 100MHz provided plenty of frequencies of strong FM broadcast presences and once down in the FM band, the signals were S9+60. At one stage I was hearing the Coolangatta aviation terminal information beacon audio while I was still above 140MHz !! I made a note at the time to ensure that I take my pre-tuned block bandpass coaxial filters with me for future events: I have one set for 144.15 for SSB use and a second set at 146.5 MHz for FM use. The insertion loss is probably acceptable if you are to avoid the annoying received interference aspects.

Why didn't the transverter box with the 2.4/3.4GHz gear switch over from the 2.4GHz state? That was as simple as a wire broken from the solder tag on a multi-pin connector but since I didn't have a 12V soldering iron with me, just a butane one, that was resolved with a quick fix by a short jumper lead with small croc clips on the ends.

Probably the most annoying thing was the modified UPS for the rotators going intermittent and finally stopping. I don't know why as that has yet to be re-tested. Certainly I could hear the relay click in but the UPS was not outputting any 50Hz power – blown internal fuse perhaps? What it meant in practice was that I was back to manual rotation of the two mast pipes: releasing the T-lock at the bottom of the pipe then turning the antennas to the correct direction then re-locking in that position. This manual operation meant that I also lost my accurate bearing detail from the rotator display. One of the new functions this time out was the inclusion of a couple of CMPS10 compass modules on the antenna structures and fed to a small PICAXE-based display arrangement. This gave me accurate bearings on each mast so all was not lost in being able to point the antennas - just the small display digits (on a 20x4 LCD) were hard to see from a distance. In normal use with the operator directly in front of it, this display size wouldn't be an issue.

The CIV-USB interface drop out was causing the VKCL auto-frequency and emission mode reading function to stay at the last known value and was only apparent when I went to re-work someone on a different band and it shouted DUPE at me. Hopefully my log is correct now after some manual editing. The IC-7000 interface was the one to drop out, the one to the IC-706 microwave IF didn't so I will try to make sure I use them the other way around next time. All I did when I realised it was a continuing issue was to just use VKCL in manual mode.

I am still not sure how I managed to disconnect the second 80W solar panel from the lead to the charger but the outcome was that I wasn't putting in as much current as I was using during peak transmit periods and the battery bank was being slowly discharged to the point that after the sun went down, there was little reserve charge and the IC-706 microwave IF

simply shut down. It will pay to double-check the charge current next time – or just physically check the connectors are fully seated. The failure of the microwave functions meant that I was unable to work Doug VK4OE on 1296, 2403, 3400, 5760 and 10368 and thus gain valuable points for working the 62KM path from QG61OV to QG62MK at microwave.

I don't think they can be counted as additional operators but I was surrounded by a herd of dairy cows twice during the event and it is amazing how curious they are. I had one cow rocking the FD trailer while scratching the top of its head on the rotator mounting bracket while another folded in the passenger side mirror on the car scratching itself. They just poked their heads into the trailer to see what was invading their territory and just stared. The second time it happened was while I was packing up and they were reluctant to move out of my way while I tried to wield masting pipes and antennas onto the top of the trailer and roll up coaxes. In the end I simply tossed the coax forms as a mass(/mess) straight into the trailer to detangle later after my return home.

The longest distance worked was VK4KSY at 303KM (2m SSB) with the next closest VK4IC at 233KM (2m SSB). There were very few stations on 6M SSB and no sporadic E or F2 propagation was noticed, reported or worked. I even had a single 23cm CW contact with VK4WR as signals were fine on CW but the SSB was quite weak each way – fortunately I now carry a hand morse key in my FD kit for such circumstances. I was heard by John VK4JMC on 10368.150 SSB over a 90KM obstructed path but could not hear him so no contact points. A few contacts were tried on 2403.150 but only VK4JMC was worked. No contacts were made on 3.4 or 5.7 GHz and no other stations seemed to be equipped to work those bands (VK4OE excepted). Part of the problem was the almost total lack of microwave-capable stations and part may have been my location is partially shaded from the Greater Brisbane Area by the southernmost part of Mt Tamborine.

I achieved just 64 contacts in the nearly 8 hours of operation, around 885 points under Division 1 rules and 10994 points under Division 2 rules, both subject to log validation. Hopefully the 2015 Summer Field Day will have higher participation rate and maybe even some DX to make the day more enjoyable.

Soapbox time:

I do wish people would do some frequency netting of their equipment before they participate in events such as Field Days. It is amazing the number of people who are up to 2-3KHz in error of what is purported to be the contest calling frequency, xxx.150, on the various bands – and probably wonder why they make few contacts. Even at 10GHz microwave, my typical frequency error would be less than 100Hz – and that is the sum of the IF transceiver frequency error and the multiplied 10MHz reference error. Do yourself a favour too by saving the frequencies into successive transceiver memories so a request to QSY is a very quick and easy task. For instance, my IC-7000 & IC-706MK2G both have 50.150, 50.155, 50.160, 50.165, 50.170, 50.175, 50.180, 50.190, 50.200, 52.100, 52.150, 52.525FM, 144.150, 144.155, 144.160, 144.165, 144.170, 144.175, 144.180, 144.190, 144.200, 146.500FM, 146.550FM, 146.600FM, 432.150, 432.155, 432.160, 432.165, 432.170, 432.175, 432.180, 432.190, 432.200, 439.000FM, 439.025FM (all USB except otherwise denoted) available by simply rotating the memory knob. A QSY from 2M SSB to 6M SSB is simply a few quick knob clicks provided you have antennas set up for the various bands, even less if you need to clear off the calling frequency to liaise for contacts on other bands. I use the 2M/70CM output into a coax switch so that I can select between the 2M horizontal, the 70CM horizontal or vertical yagis or even just a vertical whip. Stations with only a 2M and 70CM horizontal yagi only need a single 2-pole coax switch to be manipulated – or a second transceiver dedicated to the alternate band and antenna….

My IC-706MK1 microwave IF transceiver has a similar memory pattern set up for the commonly used FD frequencies: 145.150, 145.155, 145.160 etc as all of my microwave equipment is set up for a 145 MHz IF. It doesn't help when the other end has no idea where the nominal frequency is though…..

The primary antenna polarisation for SSB work (regardless of band) is horizontal yet some attempt to use vertical and are hard to work as a result of the weak signals. The halo and crossed-dipoles (i.e. turnstile) both produce a reasonable facsimile of omnidirectional coverage yet are horizontal polarisation. Time to pick up the tools and get building new FD antennas fellows!

27th Nov 2014 -Post FD wrap-up:

I found a faulty BNC IF connector on the 23CM transverter I/O – the center pin had never been soldered so was working by luck (or a few pF of coupling capacitance) rather than good management. Tests before to after indicated about 20dB of improvement in performance.. It had obviously worked/connected properly in earlier times though now it doesn't have a choice! The transmit performance and frequency were also checked.

All of the coax antenna feed cables were checked for O/C and S/C and connector looseness on the cable. The two N-male connectors on the RG213 to the 70CM yagis needed to be re-terminated. Whether they were ok during the event is not known.

The SMA plug to the 3.4 feed also needed to be re-terminated but that could have been damaged on the homeward trip as it looked ok when it was being erected on the Saturday morning. No one else tried working 3.4 that day so I'll never know.

The broken wire on the 2.4/3.4 changeover control resulted in replacing the entire cable to the microwave control panel with a longer one, some reworking of the panel plus adding an extra toggle switch so that all transverters can have independent power switching thus providing an option to reduce the total power consumed from the batteries.

The IC-706 will shut down with low voltage but I am revising the 12VDC distribution to minimize voltage drops across the power wiring. It should make it quicker to power up all of the devices in my radio 'frame/box' once I drop it on the operating table plus have shorter DC cable lengths.

The rotator arrangements are still up for revision at this point. I plan to use the two CMPS10 compass modules as the primary direction indicators in a new PICAXE 28X2 development, re-using much of the existing version code and adding in the CMPS10 and a new GPS module support. The modified UPS has yet to be checked but that will happen in the next few days and revised depending on what is found wrong at present.

The transverters for 2.4, 3.4, 5.7 and 10 GHz will all be checked for frequency accuracy, receive sensitivity and RF output power shortly so that I am confident that they are working properly - well in advance of the 2015 Summer Field Day in mid-January.

Finally the main batteries themselves will be individually checked for storage capacity so that I don't encounter the same lack-of-power situation.

Nominal results:(as extracted from VKCL reports)

Spring VHF-UHF Field Day Contest 2014 CallSign: VK4ADC

Sectn: B: Portable station, single operator, 8 hours

Scoring Table - Division 1

Band	Locators Activated	Locators Worked	QSOs Made	Total	Band Mult	Band Total
50	10	20	16	46	1	46
144	10	30	27	67	3	201
420	10	20	14	44	5	220
1.2G	10	10	6	26	8	208
2.4G	10	10	1	21	10	210
3.3G	0	0	0	0	10	0
5.6G	0	0	0	0	10	0
10.G	0	0	0	0	10	0
Grand Total:						885

Spring VHF-UHF Field Day Contest 2014 CallSign: VK4ADC

Sectn: B: Portable station, single operator, 8 hours

Scoring Table - Division 2

Band	QSOs Made	Bonus Pnts /P - /P	Bonus Pnts /P - /H /H - /P	Sub Total	Distance Score	Total
50	16	30	65	95	2397	2492
144	27	50	110	160	2864	3024

420	14	40	50	90	3225	3315
1.2G	6	10	25	35	1727	1762
2.4G	1	0	5	5	396	401
3.3G	0	0	0	0	0	0
5.6G	0	0	0	0	0	0
10.G	0	0	0	0	0	0
Grand Total:						10994

Mouse-over to see in larger detail.....

Saturday 7.45AM, ready to depart

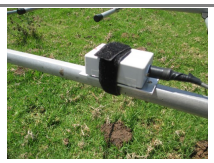
Yep, yagis tied down

Solar panels tied down reasonably securely too

Generator, battery bank and genny fuel on board, coax feeders too.

On site just before 9AM & ready to start setup.

The range in the background is Tamborine and the path to Brisbane is just down the slope dropping to the left.



This is one of the CMPS10 compass modules as fiited in a plastic jiffy box & mounded on an aluminium plate between director 1 and director 2 on the 6 metre yagi

The CMPS10 is almost exactly the middle of this photo. The 6M, 2M & dual 70CM yagis ready to go up

The first antenna setup in the air.

The radio "frame" with as much pre-wiring done as possible to shorten the setup & pulldown times.

The second CMPS10 module on a plastic flap on the support frame under the 23CM yagi

The microwave antennas and dual transverters for 2.4/3.4 and 5.7/10 in place. The feeds of the gridpack, the prime focus dish and the 23CM yagi are all carefully aligned by eye prior to erection.

The interim display unit for the CMPS10 modules. In this version, the toggle switch at right is used to select which CMPS10 is in use. The 10.5 degree magnetic offset for this QTH is already included in the displayed bearing.

Mid-afternoon, the solar panels have been moved to the alternate side of the trailer and lifted to capture maximum sun. The polytarps were added to provide shade from a particularly hot sun that day and to make it possible to see the LCD displays.

The antennas all pointing towards Brisbane.

The sunlight level is really dropping by this time of the afternoon and the panels were removed and pre-packed shortly afterwards.