

2012 Summer VHF/UHF Field Day

14 January 2012

Well, this one was a shocker for me – and many others it seems too. Murphy was well and truly in attendance at many locations throughout Australia. Things went wrong for Doug VK4OE when his mast wouldn't come back down on the Saturday night, the VK4GHZ camp had to escape to Tenterfield township to get Saturday night's dinner after the second generator wouldn't start, then there was the rain.....

I had decided that this time around the station set-up was going to be a bit different. I modified my 'family' 6'x4' box trailer by adding some 50mm RHS tubular sockets at each corner, built up a peaked frame to provide support for a polytarp roof and added additional tie-down bars lower down the trailer's sides. The concept was to use a small folding table inside the trailer as a FD operating point, the tarp roof would provide shade and the polytarp sides could be quickly added in the event of rain. A wooden transit frame down one side would provide secure positioning of the major items like the 12V battery box and the petrol generator plus fuel container.

The 50mm RHS sockets had 'risers' created for them from 40mm RHS tube, an outrigger arm added near the bottom for rotator mounting and a Y-shaped catch/retain piece near the top. The very top of the RHS section had a roller function fitted (a modified rope pulley) to take the wire from a winch. I used two old Channel Master TV rotators that were modified to each take a multi-turn potentiometer inside, coupled to the main through-shaft. These two units were fitted on the driver's side rear and passenger side front, respectively the VHF/UHF yagi and gridpack mountings. The photos further below tell/show more.

If I really needed to, I could drive off to the local shop (if there is one) to buy emergency supplies leaving the trailer plus erected antennas in place. In real terms, I could actually slowly move the whole station/assembly from one spot in a large parking area without disassembling anything or unplugging other than the petrol generator (trees permitting!).

My Field Day experience started with an extra 105-100Km to get 'there'. I had inadvertently left my 10MHz TCXO still plugged in on the workbench, blatantly ignoring the sign I had written the night before that was my reminder to take it with me. I was some 50Km along the road when I realised that I hadn't picked it up in my haste to depart so back home I came, then I travelled back again along the same stretch of road with the TCXO on board. The result of that was that I was well over an hour later reaching the Beechmont site than expected. The piece of ground that I selected (the highest) had a slight slope so I uncoupled the 4WD and left the trailer stand-alone.

The day got worse from the earlier false start. The main masting tube that carries all of the VHF and UHF yagis bent to about a 30 degree 'list' when I was initially trying to lift it vertical, using the same method as I have every other FD – manpower. I must mention here that the load on it was the same as the previous few field days and only the base mounting arrangement was different.. When I got it back toward the ground, some of the antennas saw more of the grass surface that they should have - resulting in a few bent yagi elements. I then used my body weight near the bend point to get the pipe back to a semblance of "straight", the result being a wiggly-straight rather than anything else. At least I got it straight enough to use, even if the antennas did seem to be somewhat non-vertical !

The next time I tried to lift it, I used the 900Kg boat electric/hand winch that I had bought fairly cheaply a few weeks before. The antenna pipe didn't seem to be rising skywards – until I realised that the front of the trailer was doing just that instead.. By placing some of my body weight on the trailer's a-frame, up went the mast. Well, up it went except with a list tending to one side. The due process was stopped, a rope tied onto the mast tube and the other end tied off at the front of the trailer. That allowed me to control the sideways tilt until I could get it completely vertical and in the 'retained' position.

The next array to rise skyward was the gridpack with the dual 2.4GHz/3.4GHz feed plus it's associated transverter box. That went up like a dream, couldn't ask for anything easier with it.

Now it was time to try the rotators and set the True North (TN) position using my newest project – a PICAXE-based dual controller (</~vk4adc/web/index.php/picaxe-projects/77-rothware/158-picaxerotcntrlr>). All of the leads were plugged into the various sockets, GPS receiver included, plus the modified UPS to generate the 50Hz motor power. The exact location info was read from the GPS and displayed on the LCD display, the rotator positions showed as 0 degrees so I set up the masts so that the arrays were pointing at TN. All ok until I decided to test-rotate each rotator. The modified UPS (</~vk4adc/web/index.php/field-day-activities/75-fdhardware/156-fdantrot>) was not powering up so the 24VAC 50 Hz power

was not being applied to the rotator motors. I manually operated the switches on the UPS and it worked that way. Obviously there was something wrong with the additional relay wiring that I had added within the UPS. No time to fix it now, I was still in setting-up mode.

The radio gear was then assembled on the table top, and all went well until I powered up the notebook with the Icom interface cable in the COM1: port on the back across to the IC-706Mk2G transceiver. VKCL and Omnirig were not communicating to the radio even though it had done so normally the night before.. Cursing Murphy, that left me to run the VKCL software in manual freq/mode mode, that was OK, but would be slower to use.

Antennas on, there were strange signals across the SSB segment of 2m. They weren't there when I was in this location last November. I flicked across to WFM and the source of the problem became very evident : FM broadcast stations, multiple programs & mixing / intermod products. I tuned down to the FM band on the 706 and the signal meter didn't budge off full scale, and there were so many signals /mixes evident that it became obvious that either the local FM transmitters had either had a large power increase, additional FM stations had been added since November, or there was a major transmitted intermod issue. It just made 2m SSB operation harder and obliterated the weaker signals..

Several times during my stay I had 'visits' from some curious locals plus some visitors who had come to check out the views from the outlook. I spent quite a while explaining the differences between AR and CB, why so many different sized antennas were part of the installation, and then provided each with a WIA "Calling CQ" brochure.

I finally made my first contact about 12.30PM local time, about 90 minutes later than planned. That was the first of 47 valid contacts between then and 0800Z (6PM local), on 6m SSB, 6m FM, 2m SSB, 70cm SSB and 23cm SSB. No contacts were made on 2.4 or 3.4 GHz even though Adam VK4GHZ and I tried there. I didn't manage to work any sporadic E on 6m, or any really long distance contacts on any band.

Of course, I was wondering if the microwave equipment was working properly by this stage so I went looking for the Brisbane beacons. I could just hear the VK4RBB signal on 432 MHz, not at all on 1296, 2304 and 3400 MHz. At least I was able to peak the 70cm yagi and thus confirm the beacon's true direction from up at Beechmont and thus able to properly set up the gridpack's direction. As a result, I am still in a state of 'wondering'.

Oh, did I mention the rain.. Yes, once again it rained during a VHF/UHF Field Day. I didn't get other than a little damp as I had seen the early weather forecast a week before. I had made sure that my FD QTH was reasonably rain-proof. I got the side and front polytarps in place before it did more than "spit". It had stopped long before I had to pull it all down so I was still pretty dry when all was done. I understand some of the other participants got a lot wetter than I did !

I decided that I would pack up early, before it got too dark, given the issues in getting the main mast up in the air. It all came down fairly smoothly, and was easily packed back into the trailer and the 4WD, with only hardware that wasn't going to suffer too badly from rain being left in the trailer. It was all done by about 7.30PM, the load tied down, the small polytarp covering the major part of the trailer bed's load and then I was off home again.

Overall, the trailer-based concept is good for a single operator. My current implementation is not the best and I have already decided on the physical changes. A bit more RHS tube, some cutting and welding, plus painting, is on the drawing board for these next couple of weeks. The first part to take care of is the replacement of the damaged mast pipe with some thicker wall semi-structural galv steel pipe, overkill perhaps, but with the winch in place, the extra pipe weight won't be an issue. Next comes the tubular arm to keep the mast pipe from moving sideways during the setup and disassembly process – it will easily be removed as soon as the pipe is vertical and then will be replaced for the masts downward journey.

The current peaked frame will be changed to a simpler sloping from back to front flat style, that will allow me to stand, even at the very front inside the trailer, just like I can do at present.

The table will be moved to being across the front of the trailer, (yes, it just fits across) so that my back will be to the rear of the trailer. The wooden transit frame will probably stay along the driver's side and, largely, won't be in the way once the battery box position is moved rearward about 100mm. A new single larger heavy duty polytarp will make the whole weather-protection arrangement simpler and quicker.

The aim is to get the mechanical work out of the way before it is forgotten about and that way I can concentrate on confirming the "radio" side of the gear is working properly just prior to each FD outing.

(POST-NOTE: This trailer **has** undergone more updates since this event (SFD) and will be used in most future field day events. Check out later FD postings to see the variations/improvements as they are implemented....)

...And that 'modified UPS' problem, well that was a wire that had come off the relay pin, inside the heatshrink, maybe when the heatshrink was 'shrunk'. Those strange rotator readings were caused by the screws on the mechanical coupler to the potentiometer not being properly tight. It's easy to find these things when you are back in the home environment and not under pressure to get everything working in time for the start of a FD event.

The 23cm, 12cm and 9cm equipment will undergo testing shortly to see if it is all working correctly – or if any part does, in fact, have any performance issues.

The next FD outing will be to a different site - that is one thing that is quite certain. It seems regardless of where I pick to go, there are QRN sources (electric fences or HV powerlines) or QRM (local radiocomm or broadcast transmitters..). I will have to try harder to find an isolated site, clear of radiocomm and broadcasting facilities, yet still readily accessible by vehicle. That is a mammoth task in itself.

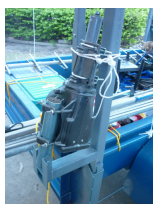
Mouse-over the images for a larger view...



The trailer all loaded and ready to go.. UHF yagis on the passenger side, the mast tuding and 2m and 6m booms on the driver's side.



This view shows the top frame shape, added just to support a polytarp cover for shade/rain.



Rotator on rear driver's side corner, roped into position for the trip. The rotator is fixed to the pipe, which is then hinged by a centre-bolt to allow the antennas to be fitted while it is horizontal. The mast is then erected up to the vertical plane using a winch mounted on the front driver's side corner and the winch wire rope passing over the modified pulley at the top of the riser pipe..



Rotator on front passenger side corner, roped into position for the trip. The size and construction is identical so that they can be fitted into any of the 4 sockets now part of the trailer.



This is the style of the 'catch and retain' at the top of the 40mm RHS tube. A 1/4" bolt passes through the holes after the masting pipe is in the vertical position.



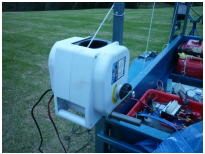
On site at Beechmont before the 'action' started.



The rotator tilts outward so the masting pipe can be attached. The original hex nuts were replaced by 1/4" wingnuts to make the process simpler/quicker.



The full array of VHF and UHF antennas ready for the coax feeds to be attached.



The 900Kg boat winch mounted on the front driver's corner socket.



Oops. not quite straight is it ??



The initial FD environment until the threat of rain arrived.



The operating table. From left, the modified UPS, the rotator controller, carry case has the 2.4/3.4 IC-706 on the very top, the TR751A plus 1296 transverter at centre, the IC-706Mk2G for 6m/2m/70cm at the bottom. This was taken before the notebook was set up to the right of the wooden transit carry case.



The 'weatherproofed' station. I don't like the look - or the mess - that will be fixed in version 2. Apart from the 'look', it takes to long to put up the sides even with pre-cut ropes already attached to the grommets on each tarp.



That masting pipe against a straight one. No wonder the pipe didn't look too vertical when up on site !

The outcome :

| Band | Locators Activated | Locators Worked | QSOs Made | Total | Band Mult | Band Total |
|--------|-----------------------|--------------------|--------------|-------|--------------|---------------|
| 50 | 10 | 30 | 14 | 54 | 1 | 54 |
| 144 | 10 | 30 | 21 | 61 | 3 | 183 |
| 420 | 10 | 30 | 10 | 50 | 5 | 250 |
| 1.2G | 10 | 10 | 2 | 22 | 8 | 176 |
| 2.4G | 0 | 0 | 0 | 0 | 10 | 0 |
| 3.3G | 0 | 0 | 0 | 0 | 10 | 0 |
| 5.6G | 0 | 0 | 0 | 0 | 10 | 0 |
| 10.G | 0 | 0 | 0 | 0 | 10 | 0 |
| 24.G | 0 | 0 | 0 | 0 | 10 | 0 |
| 47.G | 0 | 0 | 0 | 0 | 10 | 0 |
| Higher | 0 | 0 | 0 | 0 | 10 | 0 |

Final Total: 663

Note that there weren't any points against 2.4 or 3.4 GHz, and only two contacts against 1296.

Makes me wonder if it was worthwhile actually going back for the TCXO that is used for synthesiser locking on these 3 bands !