

2015 John Moyle Memorial Field Day

(also called the John Moyle Field Day / JMFD)

21 March 2015

The lead-up to this event was swaddled with my doubts as to which bands to operate: HF or HF/UHF/UHF or all of those bands plus microwave to 10GHz. The VKLogger forum provided an insight that there didn't appear to be a lot of interest in people going portable microwave so my final selection was to run HF/UHF/UHF, i.e. 3.5 to 439 MHz.

The second doubt was as to where to set up. The early forecast (some 7 days out) was for 80 percent chance of showers and/or storm and if that was the case, coupled with lack of stations at VHF and UHF in terms of points for distance scoring, I decided that a local high spot was going to be the preference. I re-checked the forecast the day before to note that there wasn't a lot of change from the one 7 days earlier:

*Saturday 21 March Summary**Min 22 Max 30 Shower or two. Possible storm.**Southeast Coast area**Partly cloudy. Medium (60%) chance of showers. The chance of a thunderstorm from the late morning. Light winds becoming east to southeasterly 15 to 25 km/h in the morning then becoming light in the evening. Overnight temperatures falling to the low 20s with daytime temperatures reaching around 30.*

That forecast only reinforced the idea of staying locally as it meant that I could pack up and head home without an hour or two of travel involved. Google Earth is your friend when deciding on FD setup locations and I found a couple of possibilities only about 5KM from home as the crow flies, somewhat further by road. Remember always to check in street view to see if a locked entry gate will prevent your access.

I actually started getting ready for the JMFD a few weeks beforehand, at least in terms of maintenance and ensuring the batteries were fully charged. Putting the gear together is always the last 2-3 days beforehand task as I find all of the rest of the FD bits and repair cables and antennas as necessary, load them in / onto the FD trailer and make ready for the event.

Remember the 6 P's concept: "Prior Preparation Prevents P_{ss} Poor Performance"

I was well aware that the portable HF antenna, a homebrew trapped dipole for 3.5, 7, 14, 21 and 28, hadn't been used since the 2014 JMFD and that it should be pre-checked so it was set up in the back yard along with a HF transceiver and SWR meter and the low-SWR frequency points noted. It appeared that the wires must have stretched or the effective height was lower than previously as the frequencies noted were somewhat lower than expected, down towards the lower end of the various HF bands. I use adjustment "tails" on all sections so that the final frequency trimming is quite easy without adjusting the overall length but I wasn't happy with a couple of the frequency points. I decided that a pre-FD refurbish was in order so set about measuring out new lengths of heavier gauge building wire, shortening a few lengths/sections slightly and soldering the ends into ring terminals after having crimped them. Assembled and erected to the height for my FD operations, the antenna was retuned back to the desired parts of each band.

Mouse-over to see the images larger...



The back yard setup of the trapped HF Inverted-V for tuning.

Oh, the ease of setting up such things when **not** in a small suburban back yard...



The end support is a 2.0M length of 40mm PVC pressure pipe that fits into a larger (50mm) PVC sleeve set in concrete in the grey/brown bucket - about 15KG. The blue container end weights are again filled with concrete - about 25KG each.



The centre support pipe is made from 38mm dia 1M steel tube sections with tapered flanges at one end - acquired from a discarded trampoline net frame !



The second outer end is identical to the first in detail, two end weights (blue) and the support tube into another concreted bucket.



The overall view of the antenna setup as mounted on my "FD" trailer.



The short 32mm supporting tube is hinged via a bolt right near the lower end and then (in my case) the multi-section vertical pipe is simply slipped over it. The whole assembly is dragged vertically by a small manual winch. A 6mm nylon rope is used as a halyard to make the antenna easy to erect and/or tune.

More photos later...

Seeing as how I was set up for HF antenna testing, I then took on the task of improving the whip arrangements using the 7M squid pole. I had tried a wire dangling off it down to a toroidal transformer but I needed to make it simpler / better / more robust. I don't know if I saw it on a VKLogger forum item but decided to thread the wire down through the centre of the squid pole and let it draw it as needed through a hole drilled through the bottom cap. With the pole fully extended, a knot was put in the wire to prevent it actually passing back through the hole and being lost. A short length of wire was left protruding from the bottom and terminated in a mid-size crocodile clip. The antenna was tested on various bands and the tap point on the ferrite autotransformer adjusted for best match, typically the one marked as 200 ohms provided the best result. Note that the bottom of the transformer box is marked as "ground" and it also has a crocodile clip on the end of that wire and for the purposes of the tests, it was connected (variously) to a mag wheel or wheel nut on the car and/or trailer when I used the timber wheel mount option. It seemed to provide a reasonable match on all bands 3.5 to 28 MHz when used with the autotransformer and a Z100 ATU on the HF transceiver. I was able to evaluate its performance against the dipole on 20m as I switched between the two antennas while listening to some USA stations (dipole oriented NE/SW), the HF whip only being 1-2 S-points below the dipole. As a general purpose & quick-to-erect HF antenna, it works reasonably well and will go along for the FD as an alternative HF antenna.

Since I wasn't taking the microwave gear, I decided to use just two Icom multimode multiband 100W transceivers, the IC-7000 for HF and the IC-706MK2G for 6/2/70 SSB and FM, and fitted them side-by-side into a smaller wooden FD transit box along with the coaxial antenna switch for 2M / 70CM, a 2 position HF switch and a new-version antenna rotator control box

(to be described in a separate article on this web site in due course). The power cabling and anything else that can be done beforehand is done with the transit case so that all that is needed once on site is to plug in the main power, the coax antenna feeds, the rotator cables and the USB cable. It makes it quick and easy and with less chance of wiring errors....

Saturday morning and all is ready for the JMFD – except for the weather. The trailer and car were both loaded and I was ready to drive off when it wasn't just the showers that were predicted, it was outright rain. The sky was grey right around and I could see more rain coming my way and since I wasn't traveling very far, that meant that there would be rain where I was going too. Executive decision time: get thoroughly wet taking the time to put up the four yagi antennas for 6M, 2M and 70CM – or – do it the quick way with the turnstile “tree” (also 6/2/70) which simply sits on the top of a pipe and doesn't require rotation, just the 3 coaxes attached prior to erection, fold out the 3 sets of four elements. The turnstile option won, the 4 yagis were quickly untied from the top of the trailer frame, and I departed about 8.45AM. Travel time to this “local” site was just 15 minutes, part of it (about 3KM) being dirt road. Arrival on site @ 8.58AM.

I picked the clear area spotted via Google Earth, parked the car and trailer for an easy departure and started by setting up the trapped HF inverted-V, supported about 7M off the ground in the center and about 2M at each end. The end weights were placed to provide good (but not extreme) tension on the dipole assembly – finished by 9.22AM.

Next was the HF vertical whip, i.e. the 7M squid pole, mounted via the wooden wheel-mount-assembly pushed in under the sides of the back wheel of the station wagon. The active lead to the ferrite autotransformer was clipped on, the earth lead attached to the mag wheel and the coax lead dropped along the ground to the back of the car. Assembly finished: 9.32AM.

The third antenna setup stage was the erection of the turnstile antenna and I was originally going to use the two pipes that normally support the yagi assemblies but discovered that the coax feeder form was not going to be long enough. I was forced to disassemble slightly and drop the arrangement back to using just the 3M long bottom section. Assembly finished: 9.47AM.

The last antenna to go up was a 2M ground plane and it was fitted to the top of the mast tube and held in place to the trailer frame with a double-sided Velcro strip. Assembly finished: 9.56AM. The whole antenna setup time from arrival on site to completed was just on one hour and provided coverage of 3.5, 7, 14, 21, 28, 50, 52.525, 144, 146.5 and 432 / 439 MHz.

The transceiver transit box was left in the back of the wagon and the coaxes were connected. Last thing was the 12VDC power from the batteries at the front of the trailer – oops, the power lead is really about 200mm too short for good positioning. Alternative configuration time? A quick look at the skies indicated more rain coming but if I hurried, I could transfer the gear to a folding table set in the trailer before the rain poured down. I pulled the polytarp top cover across the trailer and roped it down, shifted the transit box and reconnected the coax and power cables. Yep, all was dry - except me. Ok, time to ignore the wet and plug in the Netbook computer and fire up VKCL.

The logging software is a new version of VKCL (v3.11) to account for changes to the rules for this event this year. VKCL was initially set up to read frequency and mode from each radio via serial to USB adapters into a 4 port USB hub and thence into the Asus Netbook computer. The only issue was that once on site, as soon as the USB hub lead was plugged in, the VHF/UHF transceiver was filled with hash noise. Unplugging the lead made it disappear. I am not sure if it is the hub (not the one I normally use) or one or both USB/serial interfaces. Regardless, I went without any CIV linkages to the transceivers and changed the band selection in VKCL manually as I moved through the HF and VHF bands. It may have been the proximity to the antennas, a bad coax lead or something simple but it wasn't chased at the time, I considered it to be a follow-up later scenario.

By about 11.15, I was set up as well as I could be except for the battery bank charging arrangements. There was a bit of a break in the rain so I grabbed the two 80W solar panels out of the wagon and set them up facing approximately North and fed the output across to the solar regulator and thence the batteries. I had used this regulator during the 2015 Summer VHF/UHF Field Day without issue but the noise from the charging current pulses were very significant on HF. The IC-7000 noise blanker cut a lot of it out but it was still there when a signal was being received. I did have an alternative regulator on board so I replaced the regulator with a homebrew PICAXE-controlled one, maybe not as efficient but since it didn't do power control by PWM, it was “radio-quiet”. I could then turn the IC-7000 NB back off and all was as it should be, quiet except for the static crashes / noises.

I decided that since all was ready, I would take my time, do some eavesdropping to find out where the activity was, have some early lunch before entering the contest. It was easiest to start dead on 0200Z for the following 6 hours. That would give me until 6PM local time, by which time it would be starting to get dark, but still light enough to pack up antennas etc before the ‘dark’ was pitch black. The one thing I hadn't really considered at this stage was that the rain was going to turn into fully-fledged thunderstorms with thunder booming and lightning flashes abounding. I sat in the trailer trying to find stations to work in between the static crashes – something that continued virtually all afternoon. Those crashes were up to S9 even on 2M SSB and at its lowest, typically S3 residual even with AGC set to fast and bursting to S9 and beyond on HF. That really did make it hard to work some of the weaker stations.

One of the most obvious states that I observed was the almost total lack of activity on VHF and UHF in my geographical area – south-east VK4. I worked only a few callsigns throughout the 6 hours operating. Was it the weather forecast or it is just people are tired of FDs / contests? Maybe I would have done better had I used the set of yagis but that still wouldn't have greatly increased the actual activity on these bands, just made it easier to work the few stations about. Best distance worked on VHF was VK2ACD at 158KM on 2M although right at the end of the 6 hours, I did hear David VK4KSY some 263KM away right down in the receiver/antenna background noise whilst using the turnstile. Oh for the 2M yagi right then!

Contacts were made on all HF bands plus 6, 2 & 70 though many of the contacts were on 40M and 20M. Not bad for a fully portable setup plus 100W or less. No contacts were made on 146.500 or 439.000 FM despite quite a few calls on those frequencies, a few were made on 52.525 FM with the balance all on SSB.

The sun had really started to disappear down amongst the trees by 4.30PM so I decided to pack up the solar panels and bring out the two-stroke generator in lieu. In reality, the panels didn't contribute much in the way of charge as the highest current noted was about 2.5A. So much for taking the advantage of solar charging on a cloudy, rainy day.

After making the few possible contacts on VHF and UHF at the start of the third 3-hour block at 5PM local time, I took advantage of a brief lull in the rain and pulled down the 2M ground plane and the turnstile array and packed them ready for the trip home. The HF whip was also pulled down and just the HF inverted-V left up. I worked right up to 5.59PM then quickly started to pack up the rest of the station. The transit box was quick by simply undoing all of the BNC feeder connectors plus the DC power and it was put in the back of the wagon. The HF V was then pulled down, packed and the end support hardware loaded into the trailer. As usual, most things get put into the car (if they fit) so only the batteries, generator, fuel containers, mounting pipes, the turnstile array and the end weights ended up traveling back in the trailer.

Did I mention that the final pickup was in the rain with lightning all around me – yet again. The ground was slippery – try the “slip and slide effect” on wet clay – and the footwear was encrusted in a red mud / soil / clay. I suppose at least I was lucky that I didn't have traction problems getting out of there since I was only in a Commodore wagon and not a 4WD. It was still raining the few minutes later when I arrived home so a quick grab of the Netbook and USB backup stick and I left the rest there to be attended to later – like the next day.

Section entered: 6 hour / Portable / All Bands / Phone / Single Operator.

A quick summary of the contacts from the VKCL screen:

Band	QSO	CW	Ph	Dg	Pts
80 m	3	0	3	0	6
40 m	48	0	48	0	96
20 m	41	0	41	0	82
15 m	7	0	7	0	14
10 m	3	0	3	0	6
6 m	5	0	5	0	28
2 m	7	0	7	0	54
70 cm	3	0	3	0	12

It's very obvious that I didn't operate on CW or Digital but that I did run 80 through 70CM.

I did try the HF V but it wouldn't load up on 160M, even with the ATU in line.

Mouse-over to see the images larger...



Saturday morning, 8.00AM, the view South



Saturday morning, 8.00AM, the view West



The view into the back of the wagon, the plastic utility boxes contain setup bits, spares, tarps, ropes etc...



The radio transit box this time is smaller than usual as there is no microwave gear involved. IC-7000 on LHS bottom for HF, IC-706MK2G at RHS for 6M / 2M / 70CM with coax switch for 2M / 70CM antenna selection directly above. The black box at top LHS is the new version antenna rotator, and while not used for actually rotating antennas on this occasion, does provide UTC time, latitude, longitude and grid locator info from the inbuilt GPS receiver.



The view of the "FD" trailer prior to departure. The sets of "end pole" and end weights are along each side to help with weight distribution. The silver cover at the LHS front is over the box for the two-stroke 720W generator, orange/red battery bank in the centre and 50:1 fuel container at front RHS and at the very back RHS.



The arrangement of the PVC end pole hardware is easy to determine in this view, the pink stringline is the correct length for the positioning of the end poles to make it easier to erect the trapped inverted V.

The wooden frame is a quick wheel-mount for the squid pole HF whip. Some 70x35 'legs' with selectable mounting positions to suit the wheel diameter, a 19mm thick base board and some angle brackets and bolts make up the arrangement. The vertical pipe is again 32mm dia.



Just after arriving at the FD site. Nothing around except dirt, trees and bushes.



This is the nominal path of the HV inverted V, clear of significant vegetation at both ends. The positioning is basically East-West to give maximum signals from North / South. At this stage, the centre pole was up and the halyard in place but the V had yet to be attached.



The end mounting at the western end.



The view past the trailer to the far end of the trapped inverted V.



This is the squid pole as fastened to the wooden mounting base and ready to place in position.



The squid pole on the pipe is set vertical and the top through-bolt is passed through the holes. You can just see the black wire has been straightened out so that it will pass through the small hole in the bottom of the squid pole as it is extended.



The timber mounting was then kicked into position straddling the rear wheel. It is a tight fit so no other supporting arrangements are necessary. A large alligator clip on the metal brackets connect to the mag wheel via some flattened coax braid thus allowing the use of the whole car as a counterpoise.



The final step is to add the toroidal autotransformer at the base of the whip and its ground lead is also clipped to the mag wheel. An RG58 coax is fed across to the radios. The nominal tap point was left at the 200 ohm position - whether right or wrong - but the LDG autotuner matched it up regardless of band in use.



The 6/2/70 turnstile assembly is simply slipped into the top of the pipe, the coaxes attached and the elements extended.



A slightly clearer view of the turnstile. The red rag was left on the end of the pipe as it wasn't in the way and I would have needed to re-attach it before driving home anyway - the pipes extend about 1M out the back of the trailer.



This view shows almost all of the antennas in position. The proximity of one to another couldn't be helped but as only one band is in use at a time (single operator), that is acceptable.



The view of the miniature antenna farm from afar.



The GPS mode display on the new rotator controller box provides UTC, lat, long, maidenhead grid plus the number of satellites in view, quality of fix etc..



This was the initial setup for operating. It wasn't raining at this particular point but it was going to be uncomfortable sitting this way for some 6 hours. With the threat of more rain / thunderstorms, it was considered better to move up into the trailer.



The revised operating position in the trailer using one of the small blow-mould tables, polytarp cover overhead. Extra side tarps were added later as required.



The two 80W solar panels were simply leaned against the trailer's mudguard in the first instance. They were later re-oriented more towards the west as the sun moved across the sky.



The whole suite of antennas visible against a very grey sky...

There were other photos of the dirt and bush environment but they will be of little interest to others so have not been shown here.