# Field Day Ideas 2008/2009
# (Note - mouse-over images for larger views)

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{ VHF & UHF FD Antenna Techniques }

**This web page deals mainly with setting up VHF and UHF field day antennas but if you are looking for something for slightly lower frequencies, check out the HF ideas page for details of antenna concepts at HF for field day set-ups. For HF, see details of my homebrew TRAP INVERTED-V FOR 10 TO 80 METRES (/~vk4adc/web/index.php/hf-projects/45-hf-antennas/104-trap-inv-v-for-hf) as well.**

**If you are looking for ideas on how to set up a station for a field day, it is probably a good idea to check my report pages for the 2009 Summer Field Day and the 2009 John Moyle Field Day as those pages contain photos of the actual field day configurations at VHF/UHF (and then HF also) plus some tips on what to do ( & some not-what-to-do ). You can download my Grid Locator calculator software for Windows from the GridLocW page, and if you plan on using the likes of the VKCL logging software with multiple Icom radios, visit the VKCL page on my site also.**

**Doug VK4ADC**

The 2009 Summer VHF/UHF Field Day is just around the corner from now (..December 2008..) and I have started to get some gear ready for this one... and the next field day.. and the one after that... so putting in a bit of effort once seems the right way to go.

The hardest part of getting ready to undertake an activity like this is always the antennas - radios can just be grabbed along with 12 volt DC power leads and the battery in the car (if nothing better is to hand ! ) - but antennas need to be efficient to have any real success. I have plans to operate 6SSB, 6FM, 2SSB, 2FM, 70SSB and maybe 70FM so a decent array of antennas is going to be required.

From past experience, the calling frequencies are : 50.150 SSB, 52.525 FM, 144.150 SSB, 146.500 FM, 432.150 SSB and 439.000 FM and I expect to observe the normal protocol of no contest operating between xxx.100 and xxx.149 MHz on the SSB segments of any of the VHF or UHF bands.

I probably had a bit of an advantage over many others since I was able to grab a couple of my 'left-over' OzGear yagis for 6m, 2m and 70cm as a starting point rather than starting building extra antennas from scratch. That is not to say that it was just a matter of 'grab & run' ! Modifications were required to make them easier to transport, quicker to put together in a field day situation, with minimal issues, and good repeatability of results. Then there was the matter of "how to hang them in the sky" to deal with. The final part of the concept was that the whole arrangement had to be able to be erected by one person... me... and then de-erected (is that really a word ?) quickly in the pack-up phase.

The 4 element 6m yagi could readily have the reflector and 2 directors removed for transport by using wingnuts on the 3/16" element mounting screws but the driven element was another story. I ended up cutting the actual 12mm diameter driven element just either side of the centre-fixing screw hole and each t-match arm just to the inside of their screw holes. Since I already had a 16mm strengthening tube for the DE, that meant that the two new DE half-elements would simply slide into the 'sockets'.

I added a 75mm length of 16mm to each t-match point, drilled in 15mm for the screw fixing, and thus achieved a 'socket' for each of the t-match arms. A touch of Aluminox on the inside of each 'socket' and the elements and t-match arms would slide in easily but were still a snug fit. That meant that the 6 metre yagi would disassemble to a 2.8m long boom complete with DE mount plus attached 1/2 wave coax balun, 3 elements about 3m long, two elements 1.5m long (complete with attached t-match arms). To assemble, push in the DE assemblies on each side, attach 3 elements using wingnuts and clamp to the mast.


(/~vk4adc/web/../images/6myagi-on-ground-complete.JPG)

4el 6m yagi, assembled and ready to erect


(/~vk4adc/web/../images/6myagi-feed-mtg.JPG)

Showing hinged mounting assembly


(/~vk4adc/web/../images/6myagi-feed-mtg-flipped.JPG)

View with hinged mount flipped

(Reminder - mouse over images for larger views)

The 8 element 2 metre yagi was next, the same DE modification being applied. This yagi just requires the first and also the front-most director, the two half DE's and the reflector to be removed for transport while the other elements will simply rotate on their mounting points, the half wave coax balun already zip-tied to the 3.15m long boom. Re-assembly : attach 3 elements using wingnuts and push in the two DE halves.


(/~vk4adc/web/../images/2myagi-onground.jpg)

8el 2m yagi, assembled and ready to erect (disassembled 6m yagi in foreground)


(/~vk4adc/web/../images/2myagi-partassembled.JPG)

Partially assembled


(/~vk4adc/web/../images/2myagi-feedpoint.JPG)

T-match feed point underneath view - note 2m half wave coax balun assembly


(/~vk4adc/web/../images/2myagi-disassembled1.JPG)

2m yagi disassembled for transport

The 11 element 70cm yagi is small enough to transport 'as is' so no modifications were made to it.


(/~vk4adc/web/../images/70cmyagi-onground.JPG)

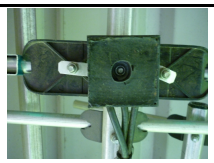
11 el 70cm yagi ready to erect. Because of its relatively small size, this antenna is transported 'as is'.


(/~vk4adc/web/../images/70cmyagi-feedpoint.JPG)

Underneath view of 70cm coax balun & T-match. Red plastic end cap covers the UHF female connector against ingress of moisture or dirt.

( Update : added photos below in October 2010)

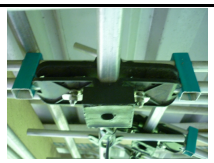
The matching units for all of the above antennas are of this style.....



This is a close-up of one of the matching units - a half wave coax balun - and how it mounts to the folded dipole element. The baluns for the 6, 2 and 70cm antennas are all of this construction style, with various coax cable lengths to suit the type and frequency in use.

The right hand 'flag' distorted from the straight-out position when the nut was tightened - and then better left alone rather than try to fix it. It shows the centre of the balun feed and particularly the centre Nyloc nut & washer.

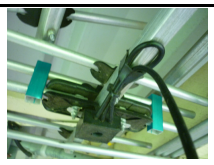
{ Photo taken with the antenna in it's storage location just under a Colourbond metal patio roof. }



A slightly-side view that shows the Nyloc nuts on the 'flag' connections to the 2 side feed points

View showing the coax feed to the N female in-line connector.

Other antenna elements in this picture so it may be a bit confusing. Just concentrate on the boom with the DE plus 3 directors to the bottom.



The half-wave of coax, adjusted for velocity factor, is just looped in and out of the potting box. The coax flylead out to the N female connector has specifically been chosen as half-wavelength in coax so that the impedance at the actual feed point is replicated at the connector.

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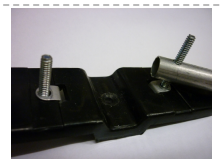
Addendum 12 April 2011 :

It is important that you do not just relay on the screw-in-a-hole to make contact with the aluminium element tubes when assembling an antenna type (eg a yagi) and a pair of plastic/insulating element clamps.

The following photos show how it should be done....



There is a piece of aluminium strip that actually makes the contact with the surface of the aluminium element...

The main connection from the screw is made by the screw head and by the washer and nut on the outside of the "far side" of the element "sandwich".

This image clearly shows the two sections of the sandwich, both with the metallic contact insert, plus the element in between on the RHS.

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I don't know about you but most of my yagis have always been u-bolted to the vertical mast pipe and thus come out horizontally polarised. Well that's fine for normal SSB mode operation but sometimes you want to run both the SSB end AND the FM end of 2m or 70cm and the FM stations are all using vertical polarisation. Hmmm...

I had this idea to make it easier to put together in the field and give me the option of (1) horizontal (2) 45 degree orientation (which gives some loss in either polarisation but is less than the typical 26dB cross-polarisation loss !) or (3) vertical polarisation. To provide this flexibility, the antenna booms are attached to a 100mm square flat aluminium plate which is hinged to a second 100mm square plate and that is u-bolted to the vertical mast pipe.

The arrangement means that while the mast pipe is lying down (more or less horizontal), the antennas are actually placed underneath and the u-bolts for each antenna are then tightened around the mast pipe at the correct spacing, and when the pipe is 'walked' up to the vertical position, the antennas 'hinge'/swing down to the horizontal polarisation position.

A quick trip to Bunnings hardware provided some 100mm nickel plated hinges and the aluminium plate squares were cut off a length of 100mm wide x 3mm thick bar. The hinges were pop-riveted to the aluminium squares, 9mm holes drilled to accept the u-bolt and V-block and smaller (but same-spacing) holes in the other side to match up with the boom of each yagi.

The V-blocks were also pop-riveted to the assembly to make sure that the whole arrangement was as simple as possible to put together in the field. That trip to Bunnings also brought forth some 3/16" whitworth wingnuts and a 30m long spool of 4mm white nylon rope (to be dealt with later on !).

Rear view of hinge when assembled onto the mast tube

Front view of hinge when the mast tube is vertical

Where possible, I have used 3/16" whitworth screws with either Nyloc nuts (for places where nothing is un-done) or wingnuts to make everything easier. The boom of each yagi is attached by 3/16" screws & wingnuts, the removable elements on the yagis are 3/16" plus wingnuts... Plus I remembered to buy an extra pack of 8 wingnuts to take along on the outings... just in case the grass/scrub/bush claims any.


(/~vk4adc/web/../images/6-2-70-on-mast-tube-ready-to-go-vertical.jpg)

The yagis for 6, 2 & 70cm fastened to the mast tube and ready to 'walk' to vertical

The yagis on the mast tube. This photo shows the 5/8 wave whip on the top too

Ok I had the basic antenna configuration concept established but that still left the 'skyhook' issues to be dealt with. The masting pipe used was actually 2 lengths, an outer of 38mm and an inner pipe of 32mm, thinwall masting pipe used in the TV antenna erection industry - so not too heavy to man-handle. I tack-welded a '32mm collar' to the top of the 38mm pipe - but this is a bit of a misnomer because a 32mm collar is designed to fit over a 32mm pipe and the centre-bolt is then tightened so that the 32mm pipe doesn't move.

The collar is actually 38mm inside diameter and is a thick-gauge steel tube to which a nut has been welded, covering a clearance hole into the tube.... That collar fixes the inner to the outer tube when the bolt is tight, so that the antenna array can be spun around using armstrong rotation - without the inner tube deciding (by itself) where it wants to finish up once rotation is finished.

Initially I didn't tack weld the collar and the antenna array continued rotating past the desired direction ! Ok, that is the mounting pipe under control....


(/~vk4adc/web/../images/mastingtube-with32mmcollar.JPG)

38mm masting tube with 32mm collar butt-welded to the end. Inner tube is 32mm and telescopes completely inside the 38mm tube. In this case, a small amount is left protruding and the collar-bolt locks it off to prevent any movement. A nut on the collar can be used to 'lock-off' the bolt to prevent movement or loss for long--term installations. The other end of the mast tube has a similar collar butt-welded to it to help control unwanted rotation during erection, during the field day due to high wind, and on pull-down.

Have you ever tried to stand up a pipe loaded with antennas only to find the the bottom end of the pipe decided to go 'walkies' ??? Most 'antenna-erection' people have and the last thing I wanted on a field day excursion was to try to control an out-of-control mast pipe plus antennas by myself. Obviously I needed to 'fix' the bottom of the pipe so that it couldn't move away.

I recalled someone somewhere mentioning a tyre plate so I set about creating my version of one. The concept is simple - a flat metal plate (that you drive one tyre onto) plus a 'hinged' pipe base - and I was fortunate that still in my junkbox was a metal structure that I had used for that same purpose on a HF trap vertical some 30 years earlier !

I simply bolted the bracket to the base and voila ! A short 32mm pipe remains in the bracket and pivots on the lower cross-bolt while the upper bolt is inserted simply as a precaution against the pipe just falling flat unintentionally once vertical.


(/~vk4adc/web/../images/tyrebase-horiz1.JPG)

Tyre plate with 32m thickwall steel mounting tube horizontal, noting 32mm collar which provides the stop-point for the mast tube


(/~vk4adc/web/../images/tyrebase-vertical1.JPG)

Tyre plate with inner base tube vertical. Note the bolt slips through the top cross holes (more obvious in photo at right)


(/~vk4adc/web/../images/tyrebase-horiz2.JPG)

Closer view showing pivot on cross-bolt near the end of the tube, washer spacing to reduce side-play.

Another 32mm collar was placed on the lower 32mm pipe as a stop-point and fixed just above the upper bracket height and the 38mm vertical mast pipe simply rotates on that collar. An afterthought was to spot weld yet another 32mm collar onto the other end of the 38mm pipe - so that both ends are interchangeable PLUS the mast pipe can be fixed into position as the pipe is 'walked' into the vertical position. In doing so, it means that the antennas do not inadvertently rotate and that makes it easier to lower again if you have forgotten to do something... like attaching the coax cables.. The result is that the two 32mm collars, one fixed to the hinged tube, the other one at the bottom of the mast tube, now perform the rotating bearing - if you can call it that. A side benefit is that you can tighten up the upper collar (of the two) to add tension to the rotation - something that may turn out to be useful in high wind environments when you don't want the antennas to auto-rotate into some haphazard direction.

That sorted out the secure footing, the vertical mounting pipe, the 3 yagis but left the "how do you stop it from falling over" issue ! Ok, I might use either of two cars for field day excursions - a Suzuki Grand Vitara XL7 4WD or a 2004 VY Holden Commodore Station Wagon - so I guessed that I had better plan for either to be used to stop it all falling over !

The Suzuki has longtitudinal roof bars ( ie. one along each side) but no cross-bars. That meant that I would have to provide cross-bars to support the mast tube plus antennas in transit plus some method of anchoring the vertical mast pipe using a u-bolt or similar. The inside roof bar spacing was 940mm, allowing about 70mm each side made the 25mm roof bar tube length 1080mm, allowing for u-bolts at each end.

Simple enough on this vehicle, the rear cross bar will line up with the rear wheel centre-line so all I need to do is add an attachable extension with multiple u-bolt holes to suit varying ground angles. Sweet ! A couple more 1/4" whit bolts x 60mm, 1/4" wingnuts and a 25mm diameter extension tube. Final positioning of the cross-bar will need to be done in-situ at setup time so that the mast tube can be set to near-vertical, when combined with u-bolt holes every 34mm in the extension tube (note - my u-bolts are 68mm centre-to-centre).

An additional stabilisation bar from the front roof bar to the extension tube has been made but not yet photographed - that will have to wait for the actual FD happens.... Oh, if only the Commodore was this easy !


(/~vk4adc/web/../images/roofbar-extension1.JPG)

End of extension bar that clamps around the masting pipe. Note the multitude of holes to allow for vertical positioning of the mast tube regardless of the ground angle at the setup point.


(/~vk4adc/web/../images/roofbar-extension2.JPG)

This end of the extension bar bolts to the back roof bar via 1/4" whit bolts and wingnuts


(/~vk4adc/web/../images/roofbar-detailed.JPG)

The rear bar has mutiple holes, the front bar has only the u-bolt holes at each end.


(/~vk4adc/web/../images/roofbar-extension-joined1.JPG)

Home-made roof bars with multiple holes in the back bar to allow attachment of the extension bar with various amounts of bar extension.


(/~vk4adc/web/../images/roofbar-extension-joined2.JPG)

The completed roof bars with the extension added to the back bar. Even better - they fit on the Vitara !

This view shows the roof extension bar only - before the bracing/stabilisation bar is attached.The string at centre is a plum-bob positioning guide to ensure that the u-bolt is over the tilting wheel-base support tube.

This shows the extension bar protruding from the back roof bar, with a stabilisation bar going towards the upwards protruding u-bolt on the front roof bar.

With the mast tube held in position vertically.

The Commodore wagon has been fitted with two transverse roof bars so easy to take the mast tubing plus antennas on them if fully spaced - but the rear wheel is then about 400mm in front of the rear roof bar. Ok, that meant a longtitudinal bar was going to be required - with an outrigger arm that could be adjusted in position to suit the "angle of the dangle" in that particular parking spot - typically set to about 700mm to clear the car body etc... After all, who said that the car was going to be parked on perfectly flat ground during a field day ?

Another trip to Bunnings later, I had a couple of 2.4m lengths of 70x35 non-structural pine to work with. I considered steel framing but it was just going to be too hard given the shape of the roof bars - an ellipsis. The timber was cheap at $2.40 a length so if I got it wrong, I wasn't going to be out of pocket too much. In short, I sculpted out the wood to provide a vice-like grip/clamp of upper and lower piece of timber, complete with other sculpting to give adequate roof clearance. I decided that I would make it to fit the passenger side of the vehicle though the driver's side conversion would simply require 2 more lower blocks to be cut and sculpted - but with the cutaways reversed LHS to RHS.

The longtitudinal bar (2.4m long) was drilled with a pair of 1/4" holes spaced 50mm every 50mm along the segment between the two roof bars to allow fitting of the outrigger arm and while I initially considered cutting the timber to provide only an overlap for the roof bars, I finally decided that the whole 2.4m length was preferable as it would provide for easy stabilisation for the mast tubes, antenna booms etc during transit.

The outrigger arm was more 70x35mm pine drilled to 1/4" every 50mm along the centre-line for most of its length and was fitted with a double V-block arrangement for the easy use of a u-bolt to go around the mast pipe. A bracing arm was made from slightly lighter pine of 50x25mm and it had 1/4" holes drilled every 50mm along its centre line. Needless to say, 1/4" bolts were used for the bracing and outrigger arms to attach to the longtitudinal bar.

The photos tell more than the words can ! The old song 'Paint it Black' came to mind when I thought that I wanted to disguise the main longtitudinal bar - as well as keeping it clean and protecting it from the weather. I had a spray can of gloss black (Bunnings again !) that I applied after I had primed the timber so while it's not really disguised, at least it will be easy to touch up with fresh paint as required.

The outrigger arm and bracing piece were primed then painted bright yellow - for personal safety - so that I didn't inadvertently walk into them - and since they will not be on the main bar except when set up for a field day, no one will ordinarily see them.

*Commodore version photos coming eventually .... (but not yet - as this configuration has not yet been used 'in anger for a FD'..)*

Hmmm... yagis are directional and I might not hear all of the weaker stations off the back or sides of the yagis ! Solution: Add a 2m 5/8 wave braided whip on a bracket to the top of the mast tube. It doesn't matter if it gets rotated as it is essentially omnidirectional. I have used one of these on the car on 50 MHz before and it appears to be close to a base-loaded 1/4 wave and gives an SWR there typically better than 1.5:1, somewhat lower SWR around 1.2:1 on 146 MHz FM, 430 - 440 MHz - no idea as I had never tried it !

Ground plane or no ground plane ? Would the mast tube with yagis mounted slightly below work as a counterpoise ? Let's try it and see.... If nothing else, I would have a 'near-resonant' monitoring antenna for 6m and/or 2m vertical polarisation.

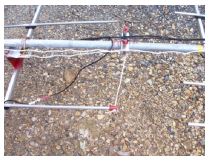
It was all coming together... I made up 4 colour-coded feeders from foam-centred RG58 cable with N male on the top end, BNC male on the bottom, formed them using nylon zip-ties, and started a few SWR tests. The 4 element 6m yagi was 1.4:1 at 50.1 (slightly lower around 50.25), the 8 element was 1.1:1 at 144.1, the 11 element 70cm yagi was 1.2:1 at 432.1, the old braid-style 2m 5/8 whip on the top was 1.55:1 @ 50.1, 1.9:1 @ 52.525, 2.2:1 @ 144.19, 1.9:1 @ 146.5, 2.2;1 @ 432.0 and 1.5:1 @ 439.0 MHz so while not 1:1, it would certainly be useable - even if the lobes were all over the place.....

Now back a while, I indicated that I wanted to be able to use one of 3 polarisation options (1) Horizontal, (2) 45 degrees, (3) Vertical. The 45 degree option can be achieved exactly by cutting isosceles triangles out of timber and temporarily fixing them into the hinge pieces - or - can be set approximately by that 4mm nylon rope, along with the transition from horizontal to vertical polarisation.

Tighten the rope and the yagi pops from horizontal to 45 degrees then up to vertical. All it needs is a small pulley arrangement above the yagi mount point and a clamp attachment ABOVE the bracing arm u-bolt (to prevent the polarisation changing as you rotate the array). Two small pulleys (or convenient holes in other brackets to thread the rope through), 2 x 1/2" PVC conduit tube pieces, 2 ropes and 2 fixing points are required to flip polarisation of both the 2m and 70cm yagis.

The simplest clamp attachment point I could think of was yet another u-bolt because it has two protruding threaded pieces - one for each yagi. One thing I should mention : my yagis are made of lightweight materials so very low weight. If you make yagis out of conventional tubing diameters ( & weights) then you might have to re-engineer the hinge-ing and polarisation manipulation methods.

The 1/2" PVC tube was cut to about 2 x 30mm pieces reamed out to provide a tapered end and then cut longtitudinaly after a 3/16" hole was drilled through it. It is a tight fit over the end of one of the 12mm diameter directors and with the 4mm rope through the hole and is simply knotted, it provides a quick and easy method of applying the 'force' to the 2m or 70cm yagis to pull/flip them from horizontal to vertical. Installation of this PVC sleeve is a quick slip-on and pull-down is a quick slip-off and untie the knot procedure.



2 metre yagi :

note the white rope feeds from the split piece of PVC conduit (painted red) slipped on the end of a director element, through an extra u-bolt on the mast tube and downwards..

70cm yagi :

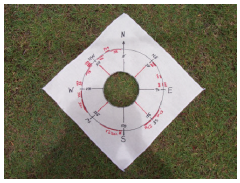
note the white rope feeds from the split piece of PVC conduit (painted red) slipped on the end of a director element, through an extra hole in the adjacent vertical whip mount then downwards.. to..

..the flat 3mm MDF board, which is attached to the mast tube by a u-bolt and has a couple of slots plus extra holes in it. When stored, the 2 ropes are wound either side of the u-bolt and use the slots (PVC cap end) and are finally tied off through the holes.

When in actual use (as shown above), usually the top slot is used to "anchor" both rope(s) at the correct length for either vertical (pulled) or horizontal (loose) polarisation. Note that the ropes MUST be tied off ABOVE the support clamp....

Now we are down to the niceties. We have a set of rotatable yagis, an attachment to a vehicle at both ground level and at roof level, feeders all zip tied together to make it all easy to handle. But wait, which direction are the yagis pointed ? I won't be able to see them from under the polytarp shade... Yet another u-bolt with pointer arm onto the mast tube should do it. Quick and easy but I still don't know which way they are pointing : North, East, South or West or some point in between !

Solution : make a compass from material and place it over the hinged wheel plate BEFORE adding the mast tube. Work out North from a compass or GPS and rotate the material until it is essentially correct then set the pointer arm to line up with the front of the yagis. While it may not be exact, these yagis have a reasonable front-lobe beamwidth so some error isn't going to be catastrophic. You can always re-point the yagis for maximum signals once you start actual operations.



Calico square with 45 and 90 degree compass points, plus some common prefix directions - location based on southern VK4.

The cut-out fits easily over the hinged tyre base assembly.

Fitted with the 'pointer' arm on yet another u-bolt

Another nicety - make and take a plumb-bob to help get the u-bolt position on the extension arms in the correct position (i.e. to line up with the tyre base mount ) before you are hefting some 10 - 15 KGs of masting pipe and antennas and trying to get it vertical. That way the fumbling is minimised and it is just a matter of inserting the u-bolt and winding on the red wingnuts after raising the pipe to an actual pre-determined vertical position! My field day plumb-bob is made from a length of string and an eye-bolt.

From many of the above photos you may notice a lot of the bolts and nuts painted with bright red paint ( same as the home-made generator cage below). Have you ever tried to find that washer or nut you dropped into the grass while putting together anything in the back yard.. How many times were you successful ?? Well, bright red might make it just that bit easier to find that dropped bolt, screw, washer, nut or wingnut during the set-up phase during a field day - in a place where the grass is not mown short - !.

Power sources - well, I have dual 12V batteries that I can remove from my boat so they will suffice without having to resort to using the vehicle battery. That means that when I am ready to depart, I won't be looking at an immovable object that weighs more than I can readily push-start. Ok, 2 x 12V batteries in parallel - but without a means of charging them, I may not be able to run for the full 8 hours. One other certainty - even though I have 2 NiMH batteries for the notebook computer, they will not last the whole 8 hours !

Ron VK4KLC offered the use of his home-made 12V generator system as he wasn't venturing forth in this event. It consists of a Honda 4 stroke 5HP engine drive-shaft coupled via a flexible joint to a car alternator - so produces 12V (+...) that will readily charge 12V batteries - even mostly flat ones.... My brother came up with his GMC 850 watt 2 stroke generator that will produce 12Vdc PLUS 240Vac. This latter one would allow me to charge the 2 x 12V batteries and also use the mains power adapter/charger that suits the notebook.

The generator from Ron means that I have to use the 300W DSE 12Vdc to 240AC power inverter to charge the notebook. Which will I take on the Field Day ? Easy, both - plus the DC/AC power inverter...! That way I have built in a 'standby' power generation system in case one fails..

Ron VK4KLC's home-made generator using a 4 stroke 5HP Honda motor.

View showing the car alternator inside the safety cage

GMC generator with 240VAC available from under the protective flap on the front cover

12V output is the 'T'-style 2 pin LV socket at near dead-centre of the above photo.

The electronics gear - well, that starts with a IBM notebook running the latest VKCL software with the (optional) Omnirig software and a CIV interface to read frequency and mode from the Icom 706 transceiver. Whether I use the auto-frequency/mode-read option will be determined by the activity on the day but the software is loaded and the interface is working.

The IC-706 is the original version (not the MK2G) that usually finds it's way into my 4WD for trips out of Brisbane and where the criteria is mainly HF. The fact that it doesn't go to 70cm is a pain but it is good for 100W PEP on 50MHz so that covers the 6SSB and 6FM modes - however it only does 10W PEP on 2SSB and 10W on 2FM so is a bit of a liability there. { Consumption : 20+A peak @ 13.2V on 50MHz transmit }

I also have an old Kenwood TR751A which will do 25W on both FM and SSB on 2m and by pre-programming the 144.150 and 146.500 frequencies (plus some 5KHz points up for SSB, 25KHz up for FM), that covers the 2SSB and 2FM modes. { Consumption : 6A @ 13.2V on transmit }

By using separate radios for these two bands, power consumption is increased but the ability to run both bands similtaneously is a significant benefit. I don't have a simple 70cm multimode transceiver ( simply because I don't have a major interest here ) so things get a bit more complicated for this band.

In the shack {and therefore for this field day}, I use an IC-718 into a Microwave Modules 28MHz to 432MHz transverter for SSB, outputting around 10w PEP. For FM, I use a Yaesu VX7R with an external speaker/mic and it produces about 5W RF out and if I run it off external power rather than just the internal battery, it will run the full field day period.

The 70cm yagi antenna will be coax-switched between the transverter and the VX7R. If I have it finished beforehand, I hope to have a homebrew 432MHz linear running 2x MRF648's (about 100W PEP out) available too.

The final pieces of 'gear' are a small quartz clock set to UTC, pre-printed A4 field day log sheets, plain paper for jottings and a multitude of pens - just in case of a computer 'glitch' - or excessive EMI to/from the notebook since the antennas will be very close to it.... Update 16/1/09 - well, the dual MRF648 70cm power amp isn't running however I managed to get an MRF646 power amp running during the week so that gets me up to around 35 watts on 70cm SSB.

While I will still be taking the IC-706 and the TR751A as backups, the main rig for 6 & 2 SSB/FM will be the home station IC-7400 - with it's higher power capability on both bands - 100w PEP & up to 100w on FM. I will have try to to conserve battery power so may 'turn back the wick' a little.

Note that I do not normally use PL259-style connectors on my interconnection cables. Any gear with SO239 sockets immediately has a BNC (female) to PL259 adapter screwed into same. All flyleads are either BNC or 'N'-series (for high power), mostly BNC. It is then a simple matter as to whether the SWR meter is in-line or not because it too has BNC/SO239 adapters and by using a short BNC-BNC male coax flylead (normally RFI 9006 Cellfoil, and colour coded with different colours of heatshrink), any RF re-configuration is very quick. Ditto for the coax switch, BNC/PL259 adapters and colour coded BNC/BNC 9006 coax flyleads

For interest, I started weighing some of the field day hardware on some old bathroom scales. The dual-tube masting was 6.5Kg (3m of 38mm, 3m of 32mm + 2 x 38mm collars), the hinged base plate was 3.5Kg, the 6m yagi was around 1.5Kg, the 2m yagi also aropund 1.5Kg, the 70cm yagi close to 1Kg and the 5/8 whip complete with pipe mounting bracket just under 1/2 Kg. The interesting thing was the effective lift weight of the entire antenna array, just below the 6m yagi ( about half-way along the total mast tube length), was 12Kg. At this value, it is readily lifted up and then 'walked' to the vertical position.

Add the transceivers, power supplies, a notebook computer for logging if you prefer that method, a suitable table and a comfy chair and the field day is yours to conquer ! Don't forget the hat, the esky with the cold water, lunch, a few snacks to nibble on, some lighting to log by, a torch or lamp to use if/when pulling down in the dark, insect repellent... and, above all else, remember to have a good day !

P.S. Note to self - take the spray can of 'Instant Start' (90% ethanol, 10% petrol) - it will make getting a stubborn generator so much easier to start !

Check out the actual 2009 Summer VHF/UHF Field day station on it's own discrete web page..

These antennas were used again during the 2009 John Moyle Field Day (see separate web page under 2009 Field Day info)