



MANCHESTER CRUISING ASSOCIATION

**Essential of Radio – VHF and Beyond
Jerry Armitage: 9 November 2006**

What did the late King Hussein of Jordan and Cliff Richard have in common? The king wasn't widely known for singing cheerily about his summer holidays; Cliff has no more than a handful of camels. However, they were both radio amateurs. Along with 60,000 other in the UK alone - and that's more than twice the population of Knutsford taking to the ether. After a short description of what radio hams do (which is quite varied and at a variety of frequencies) Jerry turned to marine VHF and gave us some very useful insights and tips.

If you buy a new aerial for your VHF you are likely to find three key factors mentioned: impedance, frequency range and gain.

Impedance is rather like resistance but applies to high frequency signals so, while it's measured in ohms (Ω), you can't measure it with your multimeter. The important fact is that for marine VHF your aerial should be 50 ohm and so should everything else: cable and connectors. Anything else and you will reduce the amount of power that is actually radiated by the aerial. So don't even think of using coaxial cable designed for TV systems. It's 75 ohm.

The frequency range for marine VHF is between 156 and 162 MHz giving it a wavelength of close to 2 metres. For good power output (i.e. good gain) from the aerial, its length needs to be related to this and for sailors a quarter wavelength aerial (47 cm) is optimum. A longer aerial, say one wavelength, would have greater gain and give greater range if it could be kept vertical but, since yachts heel, the shorter antenna is a good compromise.

A measure of how well the aerial is matched to the system is the Voltage Standing Wave Ratio (VSWR). This tells you how much power is being radiated by the aerial compared with how much is being reflected back to the transmitter. 1:1 is perfect, 1.3:1 is pretty good and infinity:1 is truly awful.

How to check your system? A radio check with the coastguard, especially if you are nearby, doesn't tell you much. They have such good receiving aerials so would hear you even with a poor set-up. Much better is to check your system with a VSWR meter (costing a few tens of pounds). If you insert this between your VHF set and the aerial you can get a direct measurement and, with a Dummy Load, you can even troubleshoot the aerial system. Jerry had made a Dummy Load with a Coleman's Mustard tin and some resistors but you can buy them. And, if you do decide to make one watch out: the Coleman's Mustard tin in my cupboard has a plastic lid and might not be ideal.

Jerry rounded off his half-hour with some tips on aerial construction and the one that seemed to capture most interest was his emergency emergency aerial (the one to make when your emergency aerial had just been dropped

overboard). Take a good length of coaxial cable (and not the TV stuff!) attached to a plug that fits the aerial socket on the back of your VHF. Strip 47 cm (or thereabouts) of the outer covering and the copper braid beneath from the end without the plug. This will expose the inner plastic core with the core of the cable running through it: this is your quarter-wavelength aerial. Keep it straight by either taping it to a length of wood or plastic (not metal) or just dangle it from a halyard. Plug in, get the aerial as high as possible and call up your friends to see what they're doing for lunch.

You have an aerial built by Jerry but not Jerry-built and we had an engaging talk. So much so that my companion, who thinks that electricity leaks from sockets without bulbs in them, said "That was interesting" in the car on the way home. She'll be encouraging me to eat up the mustard next so she can knock up a Dummy Load.

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