THE TV TWINLEAD J-POLE ANTENNA for 2 METERS

Several years ago, a VHF emergency antenna was described by Julio Ripoli WD4JNS in the *Emergency Coordinators Manual*. It is basically a J-pole design and, because of its relative low cost and portability, it makes a useful addition to any ham's portable equipment for traveling, camping and emergency work. It can be coiled up in a small space and stored in a briefcase, purse, knapsack, car trunk or glovebox. It has no radials and occupies very little space even when in use. Because of its J-pole design, it requires no metal ground plane; allowing one additional flexibility in location. The raw materials to construct this antenna consist of a) 5 feet of 300 ohm twinlead (use the cheap stuff, **not** the foam filled or shielded variety), b) 6 feet of 50 ohm co-ax and c) a suitable connector to attach to your rig.

Some recent work by WB9RQR in Wisconsin has shown that the original dimensions published for the antenna might be a bit long, giving a 1:1 SWR at about 145.5 Mhz. His Ozaukee County ARES group looked at optimizing the antenna for resonance at about 146 MHz. In addition, they wanted to look at the possibility of enclosing the antenna in some type of structure so that the antenna could be clamped to an existing support (like at home or on a Humvee).

For the first situation, called the "roll up" version, they simply shortened the overall length of the antenna by ¼" and obtained a 1:1 SWR at 146 MHz. This antenna is shown in Figure 1.

The braid of the co-ax is soldered to the short (notched) side of the J and the center conductor is soldered to the long side. Connect both sides of the twinlead together at the bottom of the J and solder. When all of the trimming and soldering is done, place the co-ax parallel to the bottom of end of the antenna and wrap the joint tightly with electricians' tape. A dab of clear lacquer (like fingernail polish) on all exposed wires plus the top and the notch will help seal out moisture. Use a **plastic** hook at the top for hanging the antenna (I've used a loop of nylon fishing line).

Putting the antenna into an enclosure will affect the SWR, with the amount of the effect depending upon the type of enclosure. The Wisconsin folks looked at PVC and CPVC pipe and found that PVC had a marked effect on resonant frequency, with CPVC having an even greater effect. This necessitated some re-design of the antenna element. Figure 2 shows the construction details for the element to be enclosed in CPVC pipe. The previous comments regarding construction apply here, also.

Figure 3 shows the details for the CPVC pipe enclosure. Use pipe cement to glue the pipe sections to the reducing fitting, but leave the cap unglued. The force of the cap gives a tight, waterproof seal. A 2 inch loop of string (or fishing line) through the spade lug in the cap will hold the antenna in place in the enclosure. Seal the spade lug and nut with a dab of clear lacquer or silicone sealant. Some experimentation with the length of the lower pipe section will give you some extra pipe length below the radiating portion of the antenna for mounting to a support structure using cable ties or duct tape for temporary installations, or U-bolts for something more permanent.

Any way you construct it, this antenna design makes an interesting construction project that will yield a pretty useful end product.

de K8EIO - based on information in ARRL *Field Forum* - April, 1996

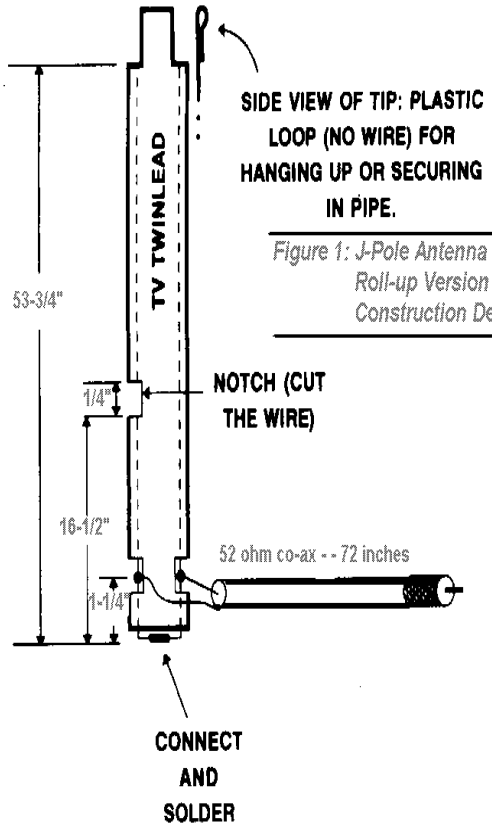

Figure 1: J-Pole Antenna Roll-up Version Construction De

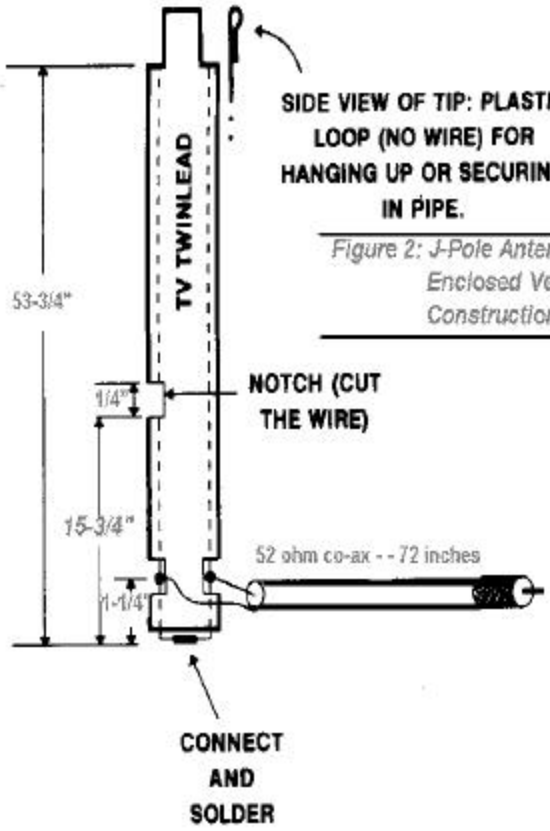

Figure 2: J-Pole Antenna Enclosed Version Construction Details

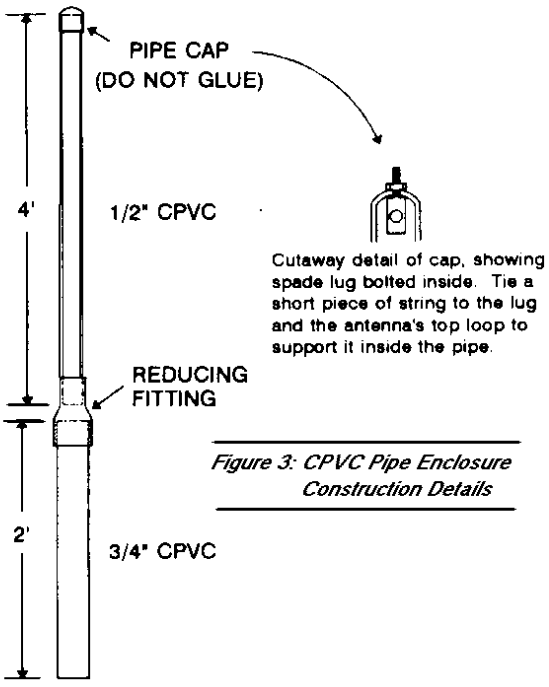

Figure 3: CPVC Pipe Enclosure Construction Details