Application Note
AN-15

Simple Camera Tripod Antenna Bracket

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In Boulder, Colorado, the local ARES group, BCARES, [www.bouldercountyares.org] provides amateur television services to the Sheriff, Police and Fire departments. Most of the operations are from "feet on the ground" with a camera operator walking around with a TV camera and ATV transmitter in a pack on his/her back. Because of this, and also for BCARES mobile operations, we have standardized on using vertical polarization for all our TV operations, ATV repeater, etc. "Rubber Duck" antennas are used with the portable back pack sets and temporary, mag. mount, mobile whip antennas are used for operations from automobiles. For extremely long distances, or difficult terrain, we also deploy high gain, yaggi antennas on portable antenna tripods.

Fig. 1 Antenna Bracket on tripod

Fig. 2 Perforated steel bar

The radiation from a vertical, flexible, whip antenna directly attached to an ATV transmitter and sticking out of the back pack, is compromised by it's closeness to the human body and other equipment in the back pack. BCARES has found that the antenna radiates much more effectively (i.e. read much longer range) if the antenna can be removed from the back pack and placed in an isolated, elevated location. Fig. 1 shows a

simple, but elegant solution which works well.. A simple bracket was made which attaches directly to the camera tripod base plate and holds the flexible whip antenna well above the TV camcorder.

Fig. 3 Attachment to camera tripod


Fig. 4 BNC antenna connector

The bracket is fabricated from a piece of 1 3/8", 14 ga., perforated, steel flat bar, Fig. 2. The steel bar is pre-drilled with 3/8" holes. These bars are readily available from your hardware or home improvement store. The thickness of the bar is ideal to fit between the tripod mounting plate and the camcorder. See Fig. 3. Only two holes need to be drilled. An extra, small, #12 (0.189") hole is drilled next to an existing large hole to accommodate the base plate alignment pin. The camera mounting screw is typically either a 1/4"-20 (small consumer cameras) or 3/8"-16 (large professional cameras). Either screw will go through one of the pre-drilled 3/8" holes. To mount the antenna, I use a BNC jack/jack (f/f) bulkhead adapter, Fig. 4. Thus another existing hole on the top of the bracket is enlarged to 1/2" for mounting the BNC bulkhead adapter. The bracket is bent in two locations as seen in the photo, Fig. 1. The exact location of these bends depends upon the size of the camera used and the desired antenna height above the camera. An RG-58, 50 Ω, BNC cable is used to attach the antenna to the TV transmitter. The total cost for the steel bar, BNC adapter and BNC cable was about $20.

A word of caution. This arrangement puts the TV camera in the near radiation field of the antenna. We have found that some cameras are more susceptible to RFI than others. For some cameras, we have found it necessary to add clamp-on, ferrite, RFI chokes around the camera's DC power and audio/video cables, immediately adjacent to the camera. Some experimentation may be necessary to find the optimum antenna height, .max. allowable transmitter power, RFI filtering on cables and cable placement.