

Interference Issues in Command Post Operations:

By Tony Whobrey, KC4JTV

On occasion, amateur radio operators are requested to assist in a command post setting, in a common location with other responding agencies, such as police, fire departments and other emergency service organizations. This is often a somewhat more challenging task than it would first appear. Besides the obvious check in and chain of command considerations that have been previously discussed, care must be taken to avoid interference between amateur radio operations and other communications systems in operation at the command post.

A command post is one of the more hostile environments for amateur radio operations, given the usually close proximity, with regard to both physical location and frequency, to public safety users. Given the disparity between public safety's definition of "high power" at 250+ watts and that of commonly used portable ham gear at a somewhat lower figure, it is a given that you will see some effect on your amateur operations. One well-known agency uses 110watt mobile transceivers for over 300watts ERP(i), and fixed repeaters that often exceed that figure. Transmitters in this power range will cause receiver overload (de-sense) in commonly available amateur gear at substantial distances.

Some consideration in choosing which of your available equipment to deploy will go a long way toward insuring a successful operation. Don't bring that full tilt dual-bander with all the bells and whistles, if its receiver overloads every time you drive past the local FM station. Likewise, if you have an amateur transceiver that has been modified to transmit outside standard amateur frequencies, leave it at home, even if you think you are authorized to use it. This will avoid any accusation of your operations inadvertently straying onto unauthorized frequencies. If an interference issue does arise, it is far preferable to be able to state that your radio cannot transmit on say, 155.xxxMHz, than to have to say "I did not transmit on 155.xxxMHz". Be assured that if you have a genuine need to transmit on public safety frequencies, most agencies will eventually provide you with a suitable, type accepted radio for use on their licensed frequencies.

When you reach command post proper, you may be assigned to a specific area. If not, your first task is to find a suitable location for your station(s). While it is tempting to "follow the leader", and set your station right along side others already established, this approach is not always best. Adequate separation between your operation and others will yield many benefits, not the least of which is ease of entry and exit. It is easier to transport you and your equipment a few more feet, than to maneuver around others who are already set up. Such a location will also help you get as much space as possible between your antenna and everyone else's. Since a transmitter's near field strength decreases rapidly with distance, an additional 30 or 40 feet of horizontal separation can often help your receiver pick out the desired signal from the virtual "RF storm" created by several non-amateur transmitters in simultaneous operation. If you are not able to obtain significant horizontal separation, at least try to erect your antenna at a different vertical level than those nearby, to reduce coupling between your antenna and those used by others. This separation will also reduce the chance of your own transmitter causing interference to your friends a few MHz away. Another approach is a band pass filter, installed in your transmission line, which greatly reduces out of band signals in both directions. These products, while somewhat expensive, will greatly aid both transmission and reception under difficult conditions.

By looking at the antennas used by other agencies on the scene, you may be able to approximate their frequency of operation. If the majority of others appear to be on "high band" (155 MHz), you will find less interference on the 440 MHz frequencies as opposed to using 2 meters. The opposite is also true; if everybody else seems to be on UHF, opt for 2 meters. A 155MHz quarter wave is about 18 inches long; its 450MHz counterpart is about 6 inches in length. You probably already

know the frequencies in common use in your own community. At a large operation there may be a technician or communications officer that can help you determine which frequencies to use.

If the command post is in a remote area, be aware that you may be on your own to supply a power source for your operation, as some mobile command posts will not have generator or battery capacity to spare. At least, make sure you can supply your own heavy-duty extension cord if needed. An automobile can supply power for a limited amount of 12-volt equipment, until a more suitable power source can be established. If you employ a portable generator, equip it with an adequate muffler, to prevent sonic interference issues. A noisy power plant will greatly degrade the effectiveness of any receiver in its immediate area.

If your technical skills are well thought of in your community, you may accidentally become the de-facto "radioman" at one time or another, especially when working with smaller agencies. These smaller departments often don't have on staff communications technicians, and may well call on you should one of their radios fail. If you are comfortable in this role, you may be able to assist with minor problems, as a blown fuse or broken antenna affects a commercial radio in exactly the same manner that it does similar amateur gear. Conversely, don't be offended if you are not asked to assist, some larger entities have guidelines that specify who can service their equipment.

As each situation has its own characteristics, these comments are certainly not all inclusive. However, an awareness of these points will give you some idea of what to expect, should you be asked to participate in a command post operation.