

All amateur radio antennas should be grounded whenever and wherever possible.

This is necessary to prevent contact with people, static accumulation, and in case of lightning or accidental contact with other energized conductors, so that they do not become “hot” and carry unknown potential to operators. It is usually those “poorly grounded” items which are struck.

This risk becomes particularly acute when an Emergency Station thinks that he or she must “stay on the air” (against good common sense) during thunderstorms or other electrically active atmospherics in order to provide the required service.

Expedient, temporary antenna installations require extreme caution. No one should operate communication equipment in the open, with an elevated antenna, during a thunderstorm.

Lightning strikes occur when the potential between a cloud and the earth rises to a point which enables a static spark to jump between the two. Field team leaders should monitor NOAA weather and upon hearing the first clap of thunder, operators should disconnect the coaxial cable from elevated antennas and revert to using indoor antennas, portable or mobile operation from enclosed vehicles or sturdy buildings as a required safety procedure.

In fixed installations, use DC grounded antennas whenever possible. If the antenna is properly grounded, static charges “should” bleed off at sharp points and edges. A grounded antenna still needs a lightning arrestor, because even grounded antennas may get “hit.” Each coax feed line should be connected to ground (at least an 8 ft. ground rod connected with minimum #4AWG bare copper, through a lightning arrestor).

Lightning does not need to actually strike the antenna to cause damage to electrical equipment, because lightning creates a strong electromagnetic field in the surrounding area which may couple with your antenna system and conduct to ground through the equipment. “Ground bounce” may also occur via the power grid during a lightning strike. An individual surge protector should be used on each piece of equipment connected to the AC mains. Both coax feed lines and power cords should always be disconnected from amateur equipment in EOCs and other served agency locations when not in use. Make sure that coax terminations ends are legibly tagged for identification and placed at least 3 ft. from equipment and the coax center conductor shunted to shield/ground when the antenna is not in use.

The equipment ground and antenna ground/lightning arrestor should be tied to the same point(s) whenever possible to form a grid. In expedient portable /mobile environments people may inadvertently create several “ground” points without realizing what a difference in potentials can do to wreak havoc on their equipment.

There are specific requirements in the National Electrical Code (NEC) about how to connect communication system signal grounds, lightning protection grounds, and the AC mains safety ground to the earth. The grounding system in the NEC provides the best protection from electrical shock, as well as the best protection to your house or buildings in the event of a lightning strike. It also provides the best protection to equipment, by minimizing the effects of “ground bounce” during a lightning strike. The NEC provisions are also legal requirements, because the NEC is incorporated by reference into the Virginia Uniform Statewide Building, Electrical and Fire Prevention Codes. Every fire insurance policy underwritten in Virginia has

an escape clause for the insurer if the wiring isn't to code. The system recommended by NEC also minimizes floating "RF in the shack."

So please refer to: The National Electrical Code (NEC)...

Article 250, Grounding, Methods and Materials

Article 305 Temporary Wiring- Installations for Emergencies, Tests and Holidays

... Where installations shall be sufficient for the purpose, but not intended for permanent operation....

Article 305 Section 3(b)temporary when used less than 90 days, includes holiday lights too

Article 305 Section 3(c) ... Includes wiring for Emergencies and Tests

Article 810 Amateur Radio: Transmitter, Receiver, Antenna installations

810-20(c) ... discharge unit...must be grounded to the nearest possible... not near classified hazardous locations

810-56: "Lead in conductors to radio transmitters shall be so located or installed as to make accidental contact with them difficult." (To prevent RF burns etc)

810-57: "Antenna Discharge Unit – Transmitting Stations: conductors...and..." suitable means that will drain static charges from the antenna system."