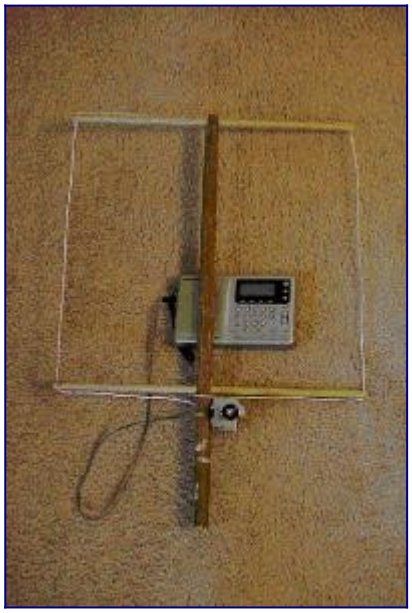
How To Quickly Locate And Fix Power Line Interference

by Gene Preston K5GP

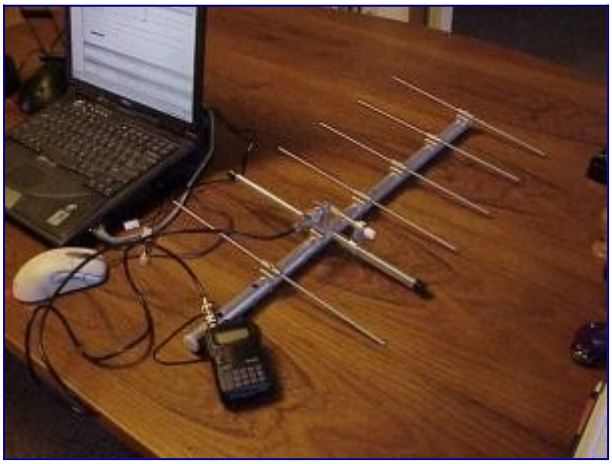
I worked for a power company for 28 years as an engineer and helped my company track down radio noise complaints. Now I'm retired and help hams here in Austin, Texas track down their power line noise. The big problem for both you and the power company (working together) is to find the exact pole the noise is coming from. Helping the power company find the source of the noise will greatly speed things up for you. You can start looking for the noise source with a loop antenna and an HF (or AM broadcast band) receiver to find a likely pole. If loose hardware is the problem, the noise will cut in and out with a little motion of the pole and/or wires. If motion causes the noise to vary, ask the power company to tighten up all the hardware on the pole. This type of noise has the characteristic of going away when it rains. If your noise is present when it rains, proceed as described below.



Gene Preston K5GP's HF loop antenna and portable receiver. Click here for a schematic.

If your noise is present when it is raining, the faulty component is probably a bad fuse, bad lightning arrestor, or leaky insulator, but probably not a bad transformer, since oil-filled transformers tend to self-destruct with any internal arcing. These components will not change in noise intensity when shaking a pole.

To pinpoint the exact pole for bad components requires the use of a hand-held directional antenna with a VHF or UHF receiver used in AM or SSB mode. An S meter is not needed. I use a six-element 440 MHz yagi with a Yaesu VX-5R HT in the AM mode. A 2M quad or three-element 2M yagi will also work fine. FM mode will not work. You should be able to hear the noise up to about 100 feet from the source on 144 and 440 MHz. Once the pole is located, you are now ready to call the power company and schedule them to meet you at the site of that specific pole. Get them to schedule a specific date and time. Your knowledge of the specific source of noise helps in getting this meeting scheduled.



Gene Preston K5GP's 440 MHz yagi and hand-held receiver (used in AM mode.)

You should be present at the noise site with your receiver listening to the noise when the power company is working on the pole, so you can tell them if their work has fixed the problem.

My suggestion for the power company is to do the following: 1) use a hotstick to push on different wires to see if any wires are associated with the noise source, 2) tighten all the hardware, especially the hardware supporting the main conductors and/or crossarms since they usually have leakage currents that make noise on the galvanized bolts going through the wooden pole, 3) disconnect the lightning arrestor(s), 4) jumper around the fuse disconnect(s) and then disconnect the fuse from the circuit, and finally 5) change out insulators (this is a more difficult task and is usually not the problem, unless there is a slack span with bell insulators). If slack span bell insulators are the problem, ask the power company to spray WD40 inside the bell insulators and then tighten up the slack, or change out the bell insulators with a single section fiberglass insulator.

Sweep the beam antenna back and forth across the noise source to help pinpoint the maximum signal location. Rotate the beam polarization to see how the source is polarized. The noise will be maximum when the antenna elements are parallel with the wires immediately connected to the bad component.

Following the above procedures should help expedite the elimination of your power line noise. Send me an e-mail if you have questions.

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