

Topic:	Transmitter Hunting
Speaker:	Glen Thomas, WB6W
Date:	Thursday, 5-Apr-01, at 1930
Event:	Cupertino ARES general meeting, Orientation Training

The following is a summary of the presentation made to CARES on Transmitter Hunting.

General

Transmitter Hunting (a.k.a. T-Hunting, Bunny Hunting) is a fun aspect of Amateur Radio that also has a very practical application. When required, CARES members may be called on to track down a radio stuck on transmit, or find a jammer disrupting a local frequency.

Glen WB6W described T-Hunting and the techniques typically used to locate a transmitted signal. The goal is to detect changes in the signal strength of the hidden transmitter: the stronger the signal, the closer you are; the weaker the signal, the further away you are. As you get closer, it may be harder to detect changes in signal strength. This then means we need to introduce additional attenuation (reducing the strength) between the signal and our HTs so the bearing to the transmitter can be determined. Here are some techniques he covered.

1. **Body Fade.** This technique requires you to hold an HT close to your chest or waist and use your body mass to block (attenuate) the signal. As you listen to the signal (or observe your S-meter), slowly turn around. When the signal sounds the weakest, the transmitter is behind you (180 degrees in the direction that you are facing).
2. **Remove the Antenna.** As you get closer to the transmitter, you may not detect any changes in signal strength. Remove the antenna and perform the Body Fade technique.
3. **Shielded Tube.** A Cardboard tube wrapped with aluminum foil that is big enough to encase your HT can also be used reduce the signal strength. Lower the HT into the tube until you hear a noticeable change in the audio signal. Then, slowly turn around. When the signal sounds the weakest (null), the transmitter is behind you (180 degrees in the direction you are facing). As you get closer, use this process with the antenna removed.
4. **Frequency Offset.** Change the frequency of your HT up or down by 5 or 10 kHz to reduce the receiver's sensitivity (thereby the signal strength). This is best used as you get closer to the transmitter. Also, tune to the 3rd harmonic of the signal and listen for a lower strength signal.
5. **Directional Antennas.** Small Yagi's or 2 meter beams connected to your HT allow you to find the direction of where the signal is strongest. This technique is best used when you are far from the transmitter.

Glenn talked of other methods for determining the bearing of a transmitter including Doppler and dual antenna switching systems. Typical supplies required when you are hunting a transmitter are a map, ruler, and compass. Also, a variable attenuator and hand-held Yagi's are also good T-hunting tools.

The Sport

Glen described some general rules for T-Hunting:

- the hidden transmitter must be located in a publicly accessible place
- the winner is determined by the shortest distance traveled, NOT THE SPEED TO GET THERE
- whoever wins the last T-hunt hides the bunny during the next T-hunt

Glen also described some interesting hiding places where transmitters have been hidden:

- 20 feet up in a tree
- behind a gas station next to a fence
- in a picnic cooler in a park

- buried with the tree as the antenna

Applying the concepts

On Saturday 7-Apr-01, 6 CARES members put these techniques to practice in front of City Hall. After experimenting with the Body Fade and Shielded Tube techniques, a 1 watt transmitter was hidden about 1 mile from City Hall. Three teams of two each attempted to find the transmitter. By applying most of the techniques listed here, all teams converged on the location and the transmitter ultimately was found. All participants enjoyed the event and expressed interest in doing this again.

We will do this again some time soon -- if interested in participating, please let me know.

More Information

The ARRL publishes a book on Transmitter Hunting and Direction Finding that is available from HRO or the ARRL website (<http://www.arrl.org>). For more information about T-Hunting in the San Francisco Bay Area, check out this web-site: <http://members.nbc.com/kd6dx/t-hunt.html>.

Revision

18-Apr-01 Original