

Fox Hunting Plans

Calvert Amateur Radio Association

February 7, 2013

**N3AE
KB3WFV
WA4PRR**

What is Fox Hunting

(Amateur Radio Direction Finding - ARDF)

- Locating a hidden transmitter using direction finding equipment and skill.
 - typically 2 meters and 80 meters
- Is a recognized sport in Europe
- Can involve a time constraint
- Can involve elements of “orienteering”
 - compass & map
- Skills apply to finding Emergency Locator Transmitters and interference sources as well

See <http://www.k3cal.org/files/Fox%20Hunting.ppt>
for more background and information

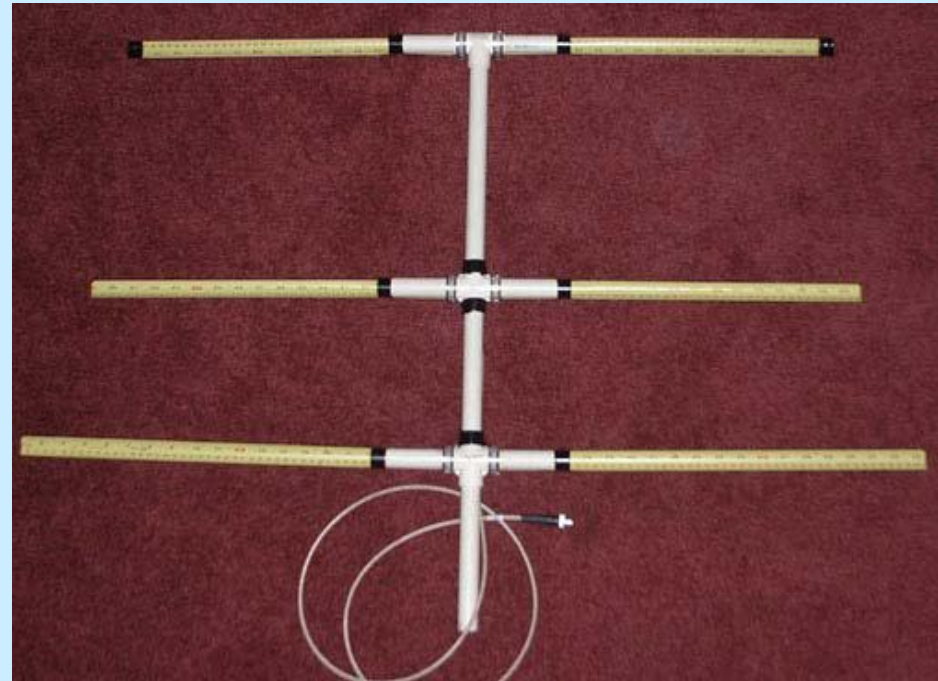
Proposed CARA Project

- Build simple direction finding antenna (“tape measure” Yagi)
- Hold the first annual CARA Fox Hunt in early spring
- Small monetary award for winner using small entry fee (much like our 50/50 at meetings)
- Optional “practice run” sometime before actual event
- Locations to be determined

Equipment

- Directional Antenna
 - home built Yagi
- 2M HT or receiver with Signal strength output
 - meter or bar graph
- Map and compass
 - For triangulating fox location
- Attenuator
 - for “close-in” work
 - design TBD

Home brew “tape measure” yagi



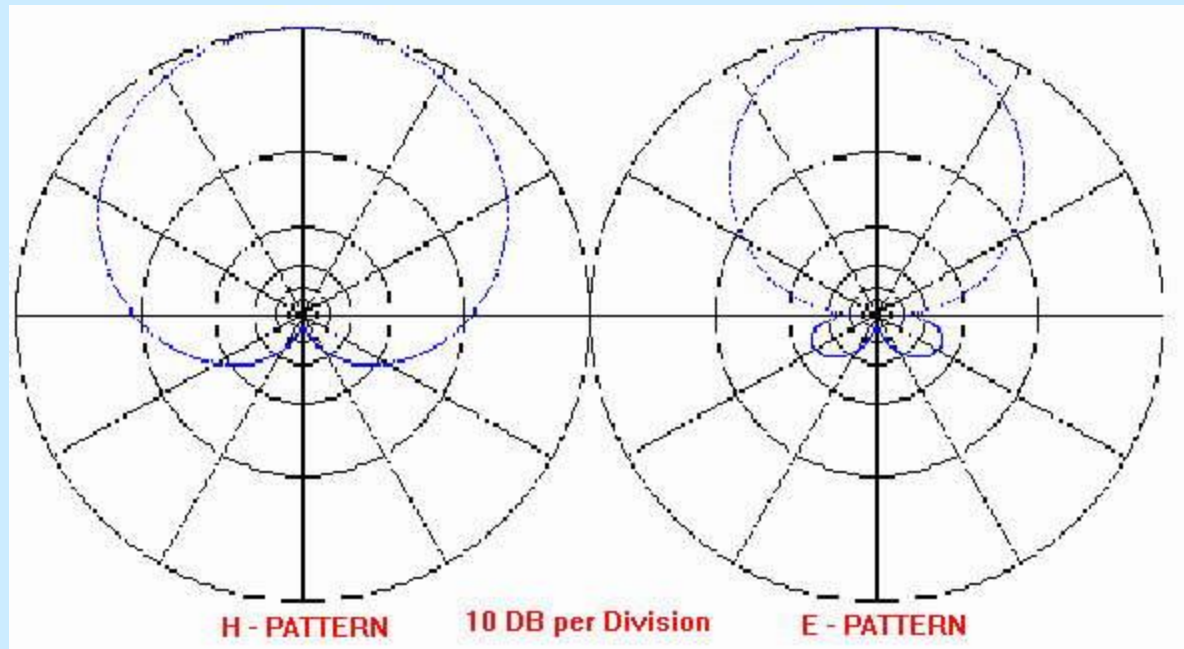
CARA Plans:

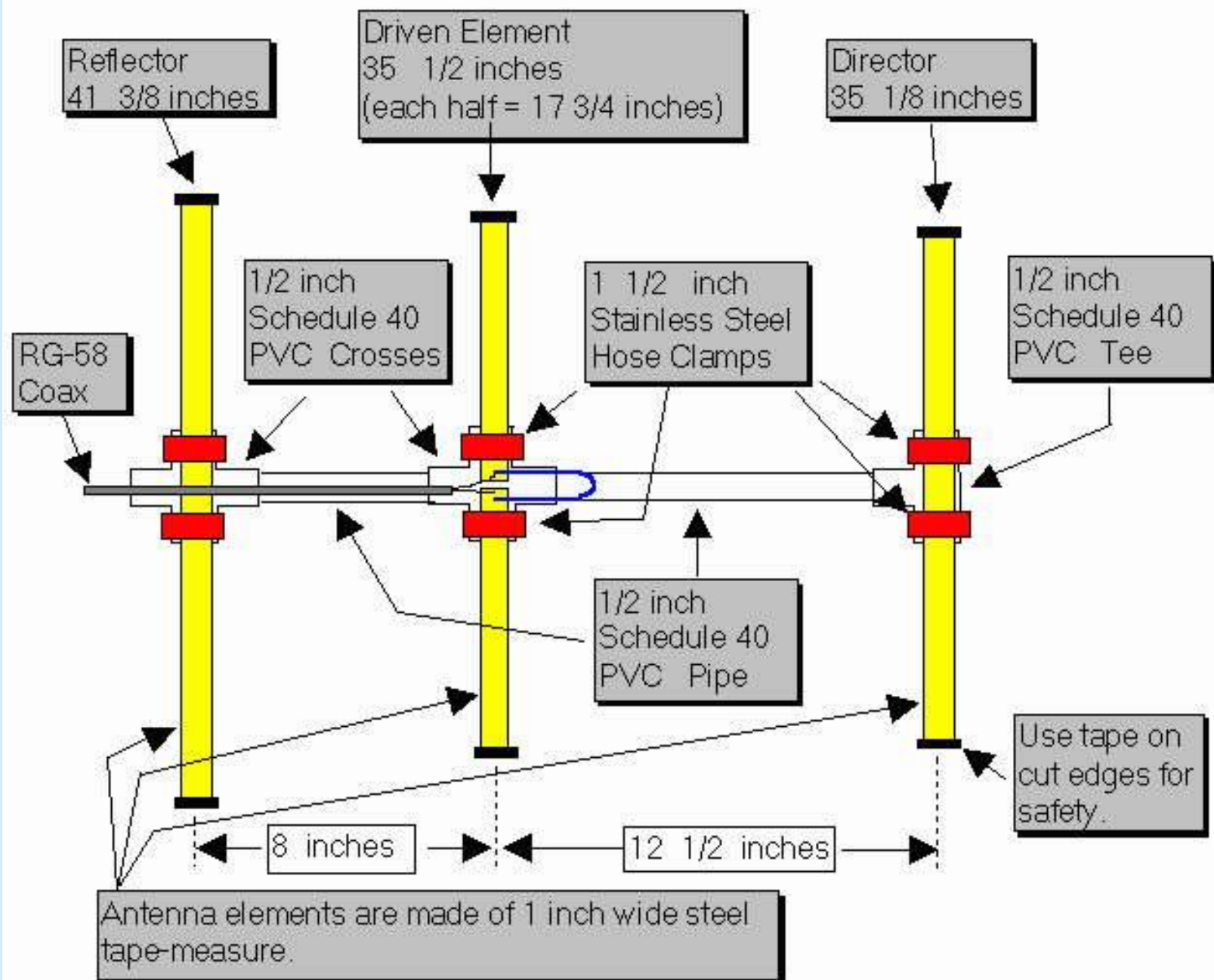
Build WB2HOL Tape Measure Yagi

From WB2HOL Optimized Tape Measure Beam for Radio Direction Finding

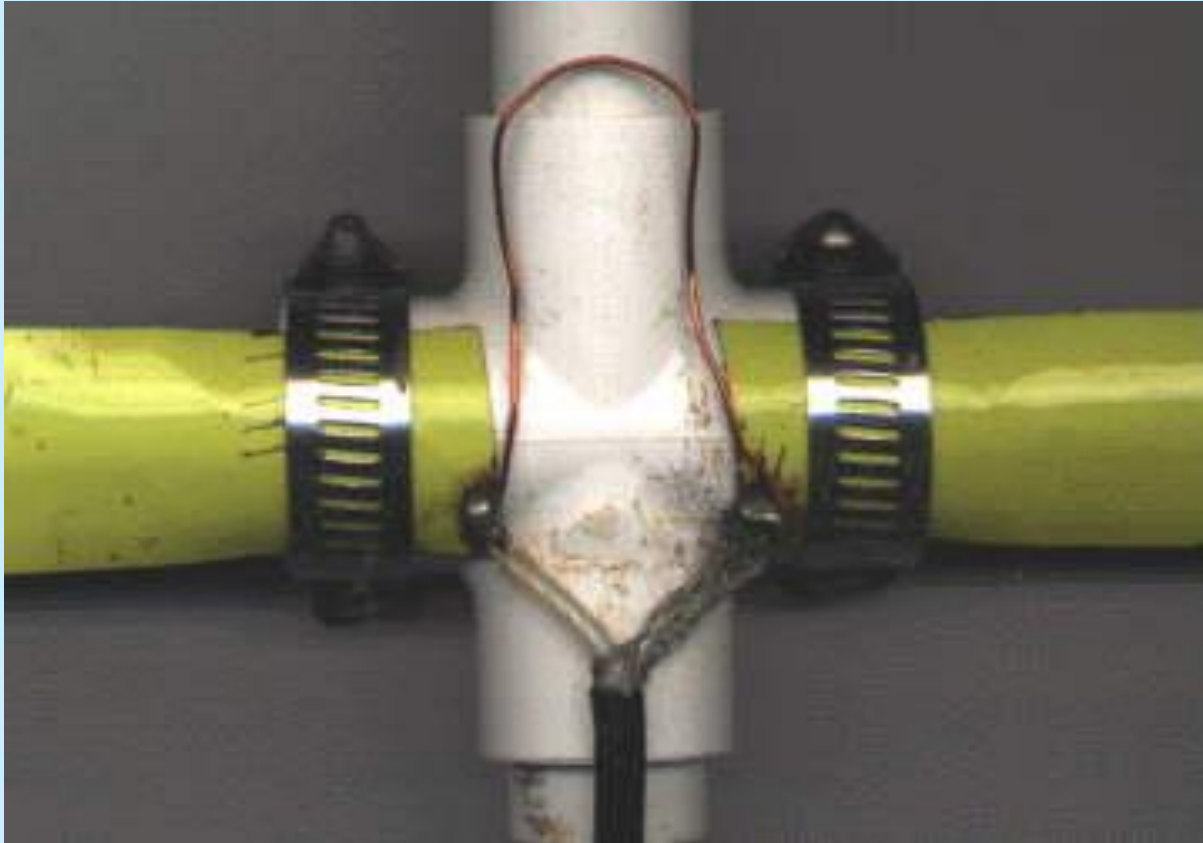
http://theleggios.net/wb2hol/projects/rdf/tape_bm.htm

- Sharp Null in Back Lobe



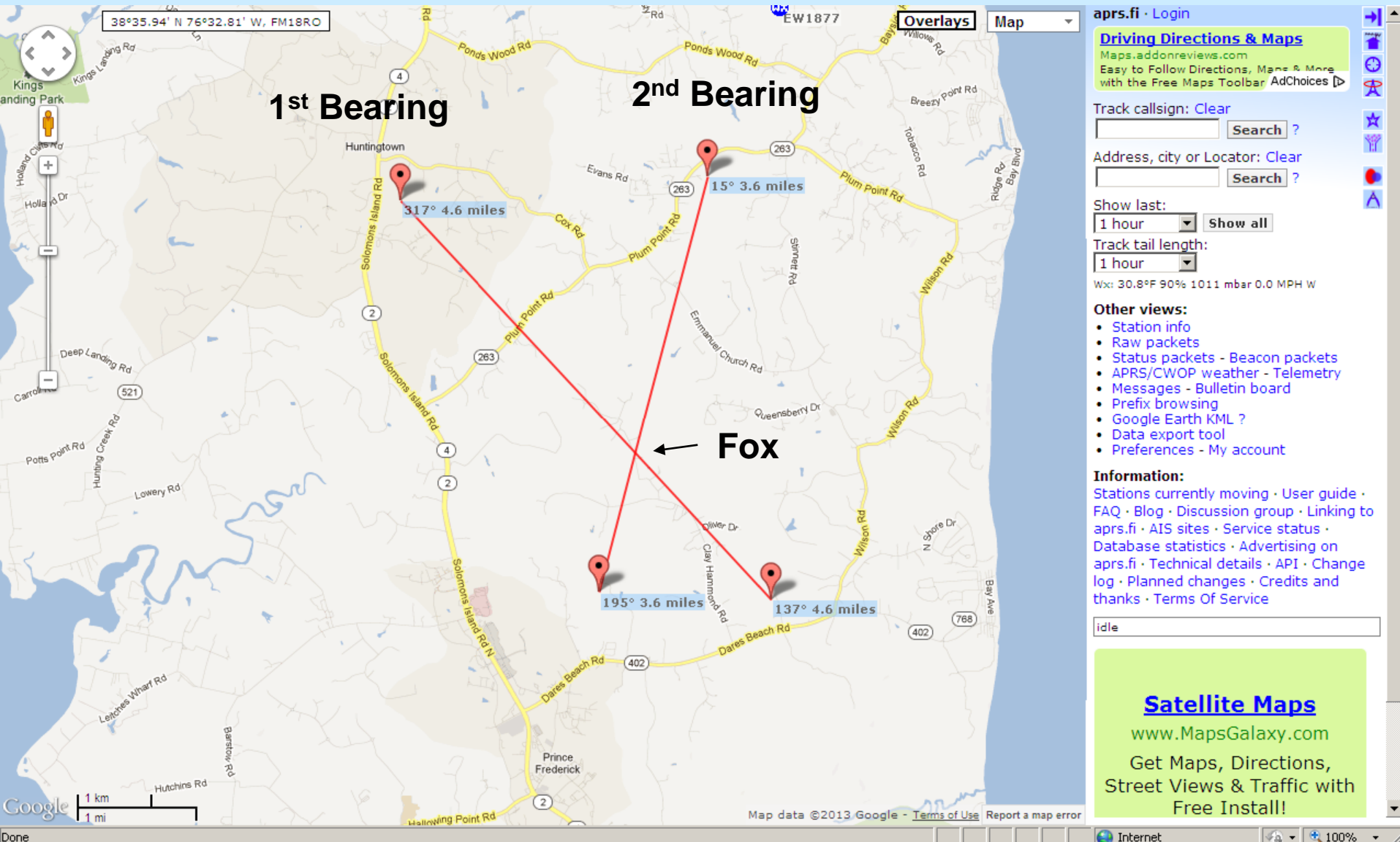


Beta or Hairpin Matching




Still investigating need for a balun

Map and Compass

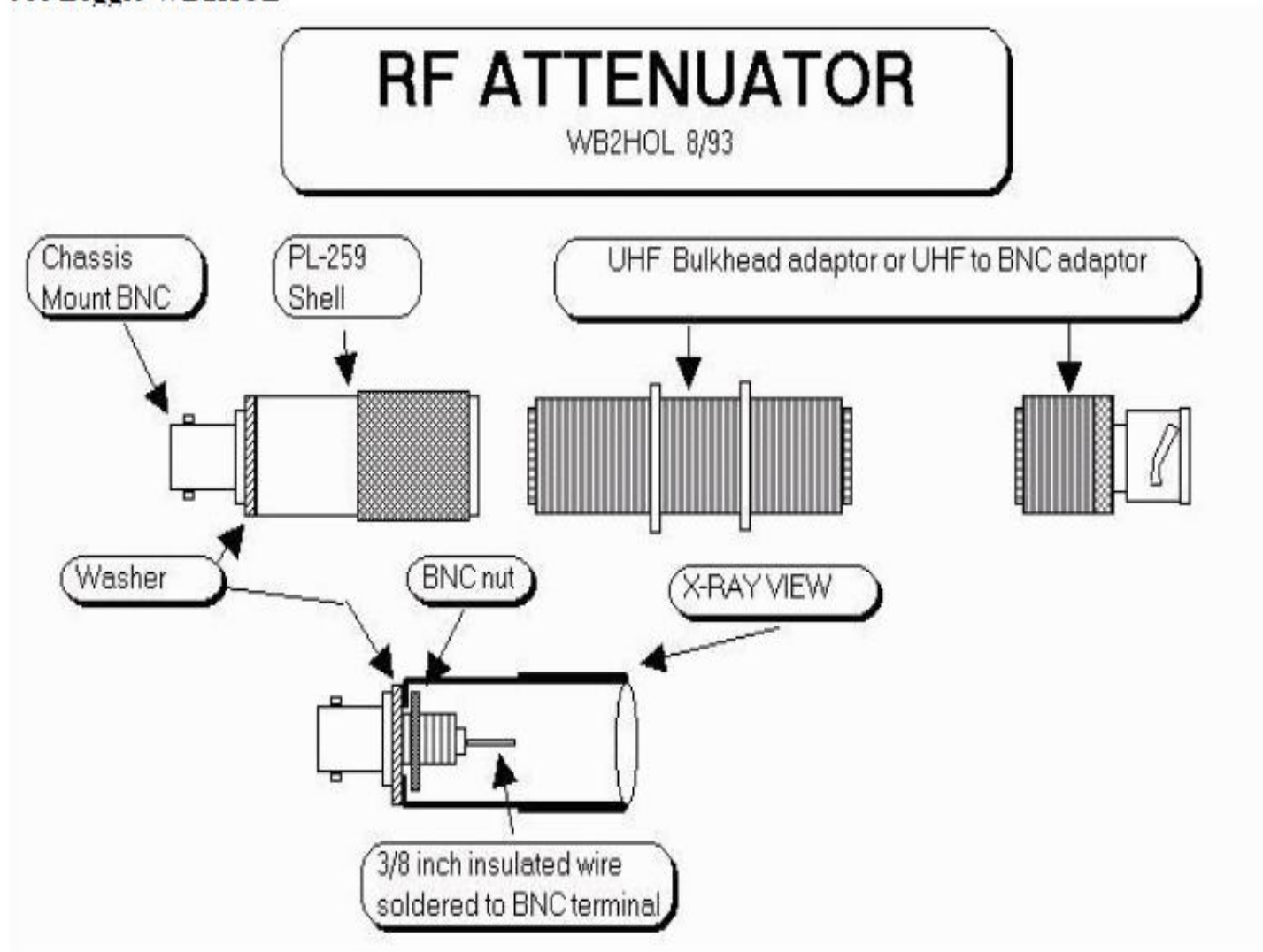


Attenuator

- Need to attenuate the signal from the Yagi when “close” to the fox, otherwise can’t find signal peak or null
 - Time Direction of Arrival antennas don’t need attenuation since they work using signal phase, not amplitude
 - “Close” depends upon fox transmitter power and antenna, but $\frac{1}{4}$ mile is a rough figure
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- When really close in, signal leakage right through the HT case becomes important
 - Other techniques come into play, like wrapping the HT with aluminum foil, foil covered paper towel tube over a rubber duck and using “body fade” method for direction finding.

SIMPLE ADJUSTABLE PASSIVE ATTENUATOR

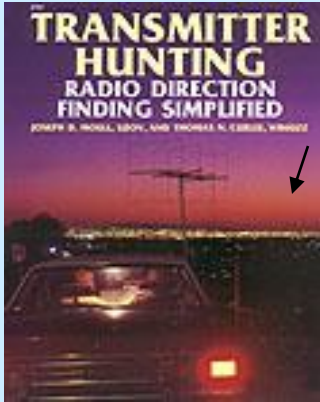
Joe Leggio WB2HOL



Open Questions

- How many people want to participate?
- How wide of a search area?
 - Walking-only hunt at a local park
 - Driving hunt within the county (but parked during bearing determination; safety first)
- Single Operator or team of two
 - Team may make more sense for driving hunt
- Visually hide the fox (“close-in” hunt) or make the fox easy to see when within a hundred yards or so

ARDF Resources



Joe Moell K0OV

<http://www.homingin.com/THRDFSinfo.html>

Good top level sites with links:

<http://www.homingin.com/>

<http://www.arrl.org/direction-finding>

http://ka7oei.com/ardf_pages.html

<http://www.ardf-r2.org/en/>

Doppler & TDOA Systems

<http://www.qsl.net/ve2emm/index.html#index>

<http://www.kn2c.us/>

<http://www.handi-finder.com>

<http://www.silcom.com/~pelican2/>

<http://www.ramseyelectronics.com/>

<http://webhome.idirect.com/~griffith/tdoa.htm>

APRS & Direction Finding

<http://www.aprs.net/vm/DOS/DF.HTM>