Here's a handy reference chart for 160 meter buffs. You can save the batteries in your calculator for more important tasks.

A CHART FOR 160 METER COUNTERPOISE LENGTHS

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This is a chart for determining counterpoise lengths for 160 meter vertical antennas based on the formula 240/f (MHz).

More amateur stations are using vertical antennas on 160 meters than short random wires because they get more DX! The vertical is used in spite of its inefficiency (*i.e.*, not a half wave tall with 120 radials around it). Ground conductivity, which varies according to location, also creates losses to radiated power, yet the vertical gets out better over 300 miles.

Unless you live on a farm, it is impossible to put up a 120 foot 160 meter vertical and have 120 radials 130 feet long. The best we can hope for is to use a shorter vertical. About 30 feet seems to be the minimum practical length, with at least four counterpoise radials—always more than one radial.

The use of vertical antennas requires a counterpoise, or radials. If the antenna is mounted up in the air, it should have a counterpoise that is ungrounded. Many of the 160 meter operators have fouhat the higher the antenna is mounted above the ground, the louder their signals will be. They are mounting them on top of their towers, which requires radials or a counterpoise. In broadcast work 120 radials are recommended for full efficiency. Less than that is a compromise with ground losses. Remember that BC station verticals are mounted on the ground. For amateur work less loss can be obtained by elevating the antenna and using a counterpoise system.

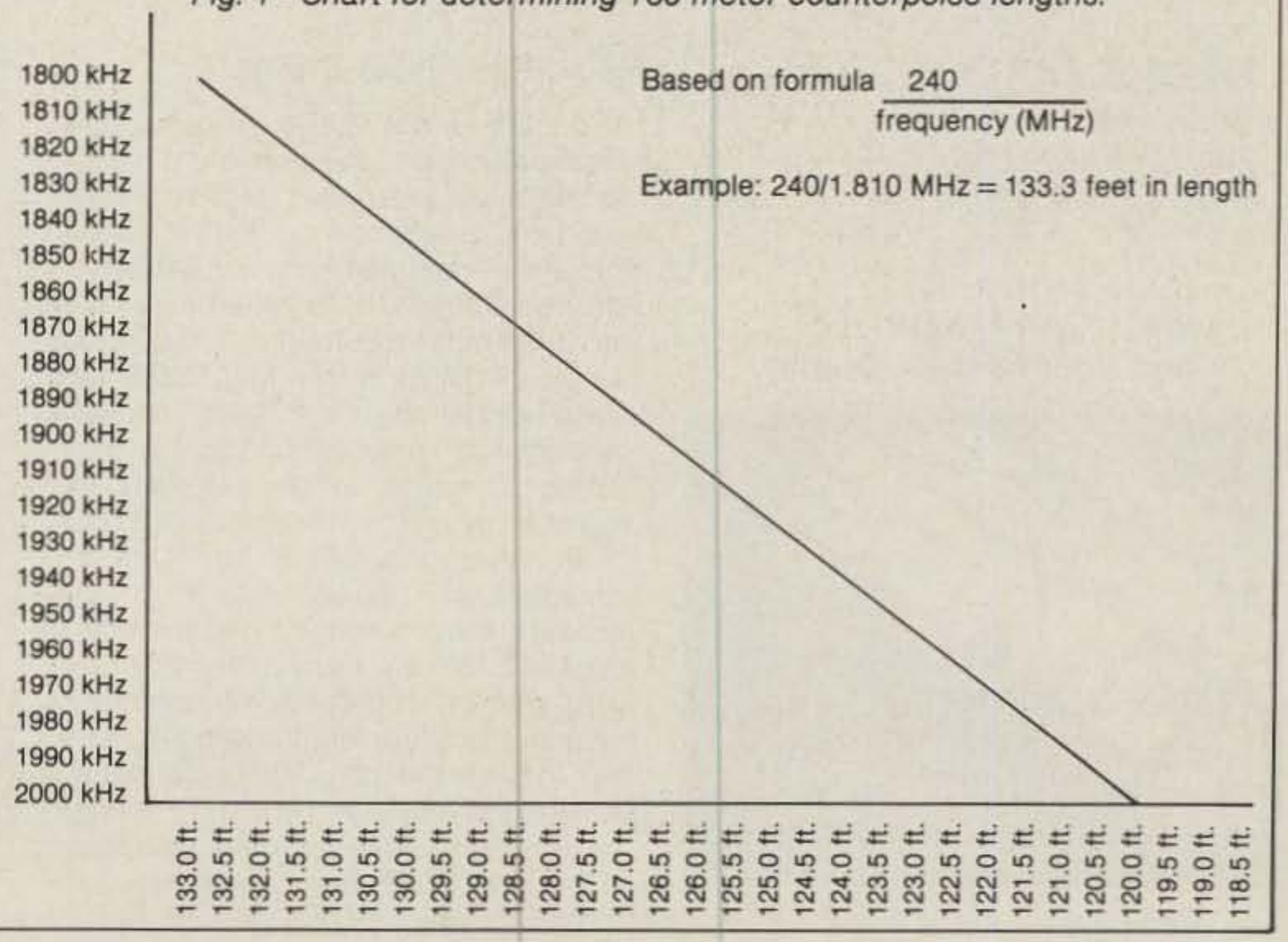
My conception of a counterpoise is a radial suspended above the ground and not connected to it. A radial can be a wire buried in the ground. However, some loss can be expected with this method due to heating of the soil.

It seems to me after listening to some of the best stations on 160 meters, that a vertical antenna mounted up in the air (the higher the better) with a counterpoise works best. Maybe the counterpoise radiates where a ground-mounted vertical with buried radials does not? There is really not too much solid discussion on 160 meter systems in the books. That is what makes 160 meters fun; there are unlimited things to experiment with.

A Marconi-type vertical where the bottom of the ground-mounted antenna is connected to the earth ground, and buried radials through a coil, has more losses than one mounted up in the air. In either case you have some loss in the coil, but in the Marconi you have the ground losses, too.

In either case here is a handy chart for determining lengths of radials or counterpoises for any part of the 160 meter band you desire, without having to do the paperwork. Most verticals only cover a small portion of the band. Thus, the counterpoise should be cut to the operating frequency.

Fig. 1– Chart for determining 160 meter counterpoise lengths.



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