

Fig 1—Correct representation of Q5, the TIP112 transistor.

Cosmetics

Lastly, a cosmetic error that got into the design is the schematic representation of Q5, the TIP-112 transistor. The correct diagram is shown in Fig 1.

In the Fig 1 caption, R10 should be identified as $330\ \Omega$, $\frac{1}{4}\ W$. Delete R11.

I would like to thank all the readers for their comments and for the additional information.—*Ed Oscarson, WA1TWX, 70 Behrens Rd, New Hartford, CT 06057*

MORE ON ELEVATED RADIALS

◊ I've been doing some NEC modeling of AM broadcast antennas, and I believe that the results will be of interest to others. This latest research indicates that elevated radials can be used in conjunction with a ground-mounted vertical monopole to achieve results that are as good as can be obtained from a conventional ground-mounted tower with 120 buried radials.


The general layout is given in Fig 2. The ground rods can be omitted without hurting

the electrical performance of the antenna, and the masts, which are used to support the elevated radials, can be conductive (metal) or nonconductive (the difference in radiated field strength is 3% or less).

The vertical monopole (ground-mounted on a base insulator) has a physical length of $0.25\ \lambda$. The four radials slant upward from the feed point at a 45° angle until reaching the desired height (H), then extend outward horizontally from that point. The computer analysis appears to indicate that the height of the radials (H) can be as little as 4 to 5 feet on 80 meters, but a height of 10 to 15 feet produces a slight increase in signal strength, and would be better from a safety standpoint.

How long should the radials be for best performance? As a *general* rule, if the radials are suspended at a height of H above ground, then their length should be equal to $0.25\ \lambda$ plus H. In other words, if H = 10 feet, then at 3.8 MHz, the length of the radials should be $0.25\ \lambda$ (which is 64.7 feet) + 10 feet = 74.7 feet. The feed-point impedance depends on many variables, but NEC-GSD predicts values in the range of 22 to 31 ohms. Complete information can be found in A. Christman and R. Radcliff, "Using Elevated Radials with Ground-Mounted Towers," *IEEE Transactions on Broadcasting*, Vol 37, No 3, Sep 1991, pp 77-82. —*Al Christman, KB8I, Grove City College, 100 Campus Dr, Grove City, PA 16127-2104*

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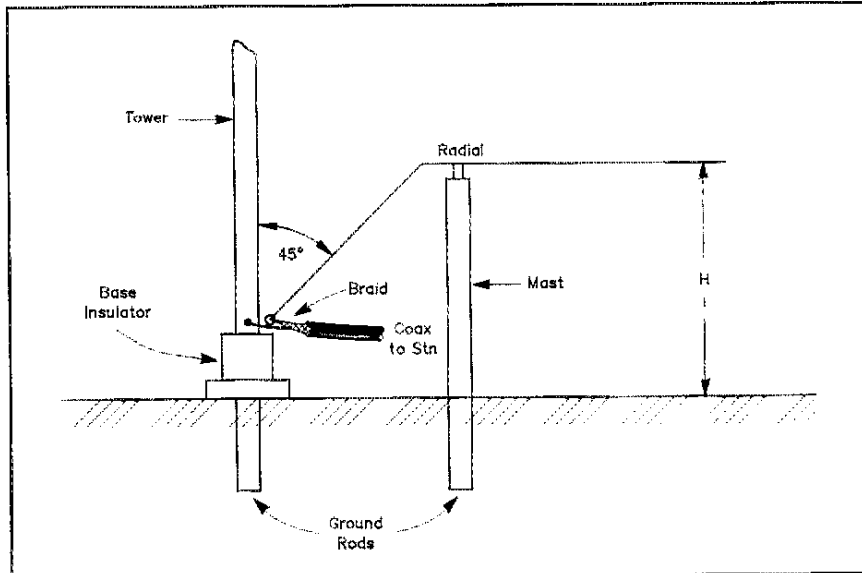



Fig 2—Elevated radials can be used in conjunction with a ground-mounted vertical monopole to achieve results equal to those of a conventional ground-mounted tower with 120 buried radials. The ground rods can be omitted without hurting the electrical performance of the antenna. The masts supporting the elevated radials can be conductive (metal) or nonconductive (the difference in radiated field strength is 3% or less).

Feedback

◊ In Fig 7 of our article, "Calibrating the Signal Generator in the Sky," (*QST*, Nov 1992, pages 42-45), W4HHK and I depicted a curve purporting to show mean solar radiation versus frequency for an undisturbed sun. Some readers have inquired as to the significance of the negative frequency numbers on the horizontal axis. Actually, the horizontal axis was mislabeled; it should read, "Log Frequency (GHz)." Since a logarithm is simply an exponent, $\log(10\ \text{GHz}) = 1$, and $\log(1\ \text{GHz}) = \log(10^0\ \text{GHz}) = 0$. Thus, any frequency below 1 GHz has a negative log.

The units for flux were omitted from the vertical axis of this same figure. Flux density is measured in Janskys (after Karl Jansky, believed to be the world's first radio astronomer). Given the appropriate fudge factor, Janskys correlate well to watts per square meter. Note that the vertical axis shown is also logarithmic, rather like a Bel scale.

One other, minor point. The caption for Fig 1 identifies the size of W4HHK's 5.5-meter dish as 17 feet. Last time I checked, 5.5 meters equated to 18 feet. Like other critical dimensions, dish diameter is something no self-respecting moonbouncer wants understated!—*Dr H. Paul Shuch, N6TX, Professor of Electronics, Pennsylvania College of Technology*

◊ In the December 1992 feature on Hurricane Andrew (page 27, sidebar at lower right), I wrote "... I coordinated three teams from Jacksonville. ..." Not so. The Jacksonville teams, requested by the Red Cross and drawn from the Duval County ARES Unit, arrived quite early, with no help from me. My apologies for the mix-up.—*George Thurston, W4MLE, Northern Florida Section Emergency Coordinator* 

Strays

GERATOL NET

◊ Originally created in the early 1970s to provide a meeting place for amateurs who were working toward earning the ARRL Worked All States (WAS) Award endorsement for contacting hams with 2×1 - and 1×2 -letter call signs, the GERATOL net has met at 3750-3775 kHz at 0000 UTC since September 1984. Any North American Extra Class amateur is invited to check into any session to join the conversation and to hand out and pick up new states on 75 phone.

In its early days, the net was largely composed of old-timers, leading someone to suggest naming it the Geritol Net. This was changed to GERATOL, an acronym for Greetings Extra Radio Amateurs, Tired of Operating Lately? The GERATOL net has no dues and even operates a free QSL bureau to facilitate its participants' ability to exchange the cards necessary for awards/endorsements.

For information, contact Betty Collins, KC9V, PO Box 263, State Line, IN 47982.