

Low Power Operation

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I start here with a second look at the vertical antenna. In the past, I've mentioned the ho-hum performance of the vertical antennas I have used. Larry Jones WB5KYK sent me a great letter on the vertical antenna. Apparently, he didn't like my statement that vertical antennas radiated poorly in all directions. Larry has over 29 years of experience in vertical antennas. Follow Larry's field operator's guide to verticals for a good antenna that radiates a good signal in all directions. Larry writes the following:

"So, you want to put up an antenna that doesn't require a tower. Enter the vertical, the stepchild of the antenna family. Or is it? Let's find out what really works at one's QTH and not what works just in theory.

"First understand that the very nature of this beast makes it noisy on receive, so if there is a noise problem, be ready to use a different antenna for reception. This is not much of a problem with verticals on bands above 40 meters. Do not even think about putting up a vertical if it is easier to put up than a beam. Understand that the antennas that we are talking about are those that will work. It is easy to drive a piece of pipe in the ground, bolt on a commercially made vertical, and call CQ. That is the kind of vertical that Mike was talking about. What he didn't say was that the only QTH where these antennas work worth a damn are ships at sea and islands. If that is the kind of antenna project in mind, quit reading right here, sell the QTH, and get a copy of 73 sent to the new QTH.

"Avoid any vertical that has traps in it, especially on QRP. These things make the vertical radiate poorly on more than one band, while they eat up one watt. Nothing like having a poor signal on more than one band from the same antenna! Also, avoid using loading coils at the base of the antenna. If a coil has to be used, make it with big copper (#6) wire. Solder the feedline to the tap point. Don't use some device that is easy to bolt on to the coil, sup-

plied by a friend down the block. Chances are he got it from the vertical he took down that didn't work.

"Where does the vertical go? In the clear. It is that simple. If this can't be done by ground-mounting the vertical, try going up. Once I used a short vertical mounted to the side of a chimney on 160 meters, and it worked great. With this method, be sure that a big copper wire is run to the base of the vertical for grounding. Attach it to a good ground rod. I consider a ground rod of no less than 12 feet to be about the minimum length for above-ground installations. Be sure to run as many radials down to the ground as possible. They don't need to be the same length. I consider 16 to be a minimum number.

"These are not tuned radials, so the formula to determine their length is this: make them reach the ground as far away from the antenna as possible. The wire to make the radials really doesn't matter. Here comes the bad part. In all likelihood, a tuner will have to be used. I suggest any QRP operator get (or build) a good low power tuner. And what about the power loss in a tuner? How many hams are using RG8/U or smaller coax in a QRP operation? Why not use a hardline or 9913? I can't see how anyone could be too concerned about the loss in a properly designed tuner if they aren't concerned with that hamfest special coax. Granted, a little power will be lost in the tuner, but try connecting a power meter to the feedline at the antenna. Don't place it immediately after the tuner, but at the feedpoint. See how much

power is actually getting to the antenna without a tuner. It is an illuminating observation.

"If the antenna system is to be permanent, it is always good to have insulated radial wire. Be sure to connect these above-ground radials to the antenna grounding point in an electrically sound manner. This usually means soldering. What is mechanically sound is not always electrically sound.

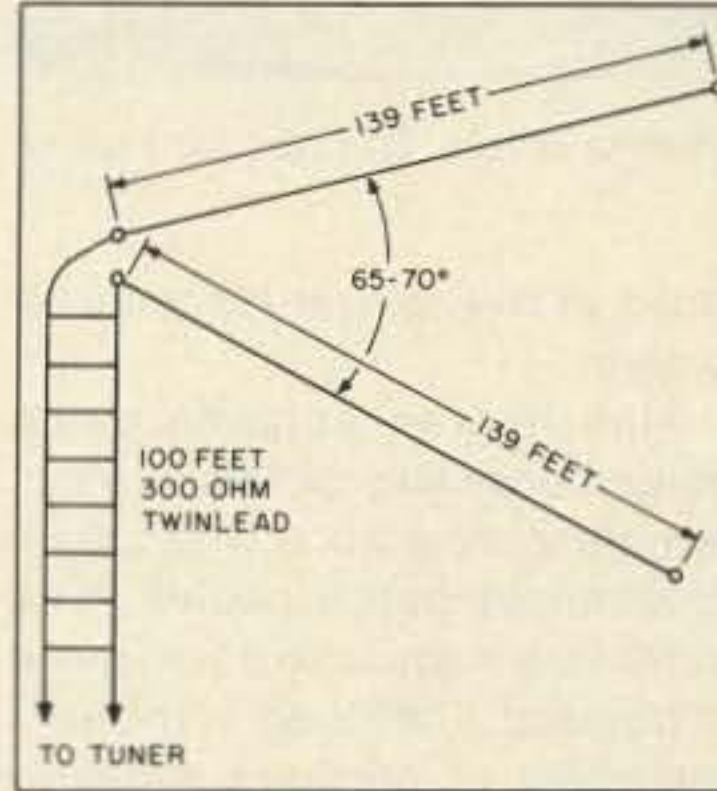


Figure 1. The 20 meter VEE beam.

"If something needs to be bolted to the antenna base for attaching radials, tin the soldering lugs with solder. The vertical antenna builder and user must fight any loss of continuity in his radial system. A cheap way to attach the radials at the end to ground, in above the ground installations, is to use aluminum tent pegs. They are durable as well as cheap. It doesn't matter if the vertical is ground-mounted or above-ground mounted. Tie the radial system into everything that will give a ground, such as chain link fences, arbor wire benches, water pipes, and steel or copper lines.

"The rule for ground- and above-ground mounted verticals is to evenly space the radials as much as possible in a 360 degree circle. Also, ground-mounted verticals should have as many radials as possible. They should be as

long as they can be, up to two or three feet longer than $\frac{1}{4}$ the wavelength on the lowest frequency used. Tie the radials into everything. I highly recommend using a large number of short radials right around the base of the antenna. How short is short? $\frac{1}{16}$ of a wavelength will work, but $\frac{1}{8}$ is better. If possible, put poultry wire on top of the ground around the base of the antenna. The radials will work fine on top of the ground. If they are buried, don't bury them too deep, especially if operating on 10, 15, and 20 meters.

"The best and simplest vertical is $\frac{1}{4}$ wavelength long and operates on a single band. A $\frac{1}{4}$ wavelength vertical cut for 7.1 MHz would only be 32.96 feet tall. A telescoping TV mast pole would work fine for this. Get a cool drink in a glass bottle to celebrate purchasing the TV mast pole and have the base insulator for the vertical. I said that a $\frac{1}{4}$ wave vertical is the best. Let me state it this way. It is the best when considering cost, ease of installation, and feedline matching. It will work great, but there are other verticals that will out perform it.

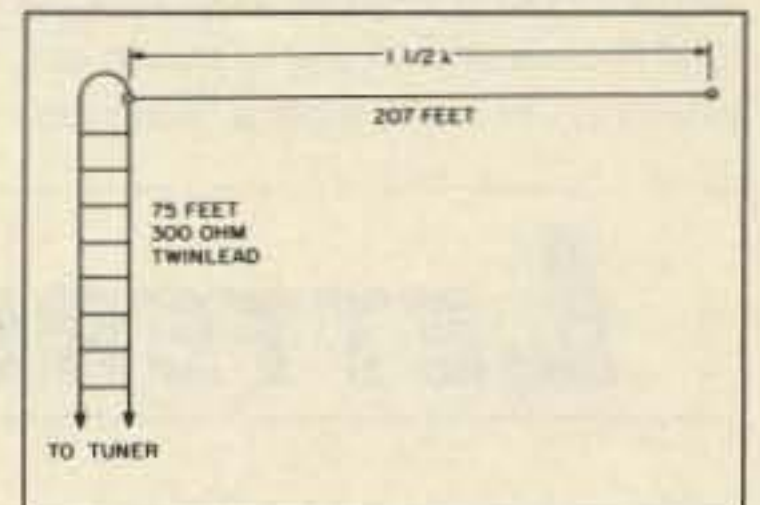


Figure 2. The 40 meter long wire antenna.

"The vertical, when operating against the proper radial system, is a low-angle radiator. The trade off for good performance at great distances is poorer performance at shorter distances. These antennas do work, and they work well for what they were designed to do—transmit well at great distances.

"At our QTH we have an inverted L (one of the many forms of the vertical) that is $\frac{3}{8}$ wavelength long on 1.84 MHz. I have 120 ground radials down, 125 feet long, grounded to what I call my central ground hub: five ground rods, 12 feet long, arranged in a square. I have 150 ground radials that are 18 feet long and poultry wire at the base of the antenna. I'm also tied into various ground sources around the QTH. My vertical radiates equally good in all directions.

"I always enjoy hearing from people who use verticals, and

0073 Spy Key

by Skip Westrich WB8OWM



Here is a very inexpensive homebrew "0073 Spy Key," Mr. Bond. Use two dominoes, a Radio Shack 275-016 micro-switch, a dash (pardon the pun) of epoxy, and you are in business, so to speak. The key works great upright or on its side and tucks away nicely for covert operations.

One last item, Mr. Bond. The key never needs adjustment. With those 5-amp, 250 VAC contacts, this key should "Never Say Die."

So there you have it. Good luck with your mission, Mr. Bond.

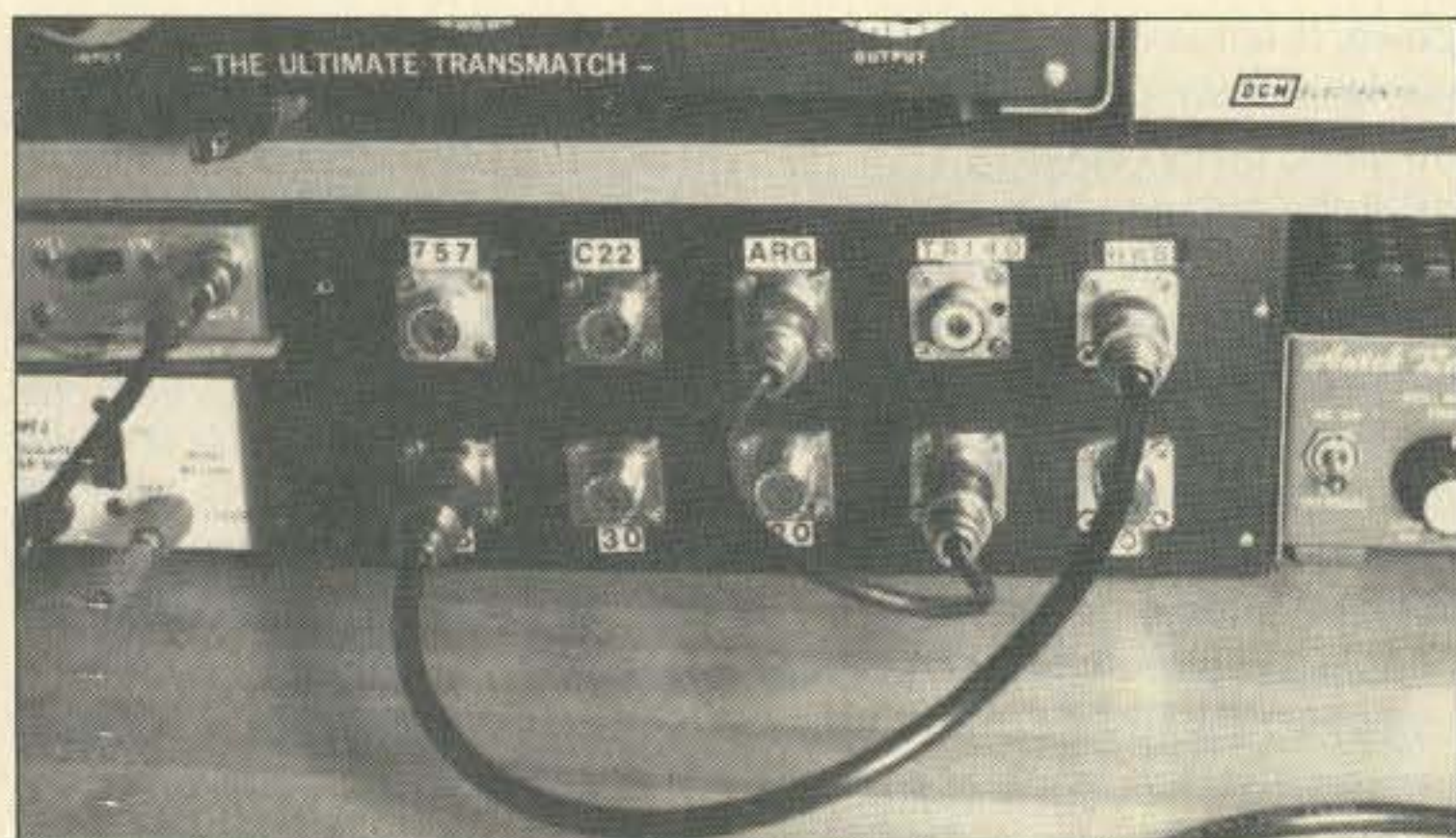


Photo A. Alan Pike's quick change antenna setup. Top row for radios, bottom row for antennas.

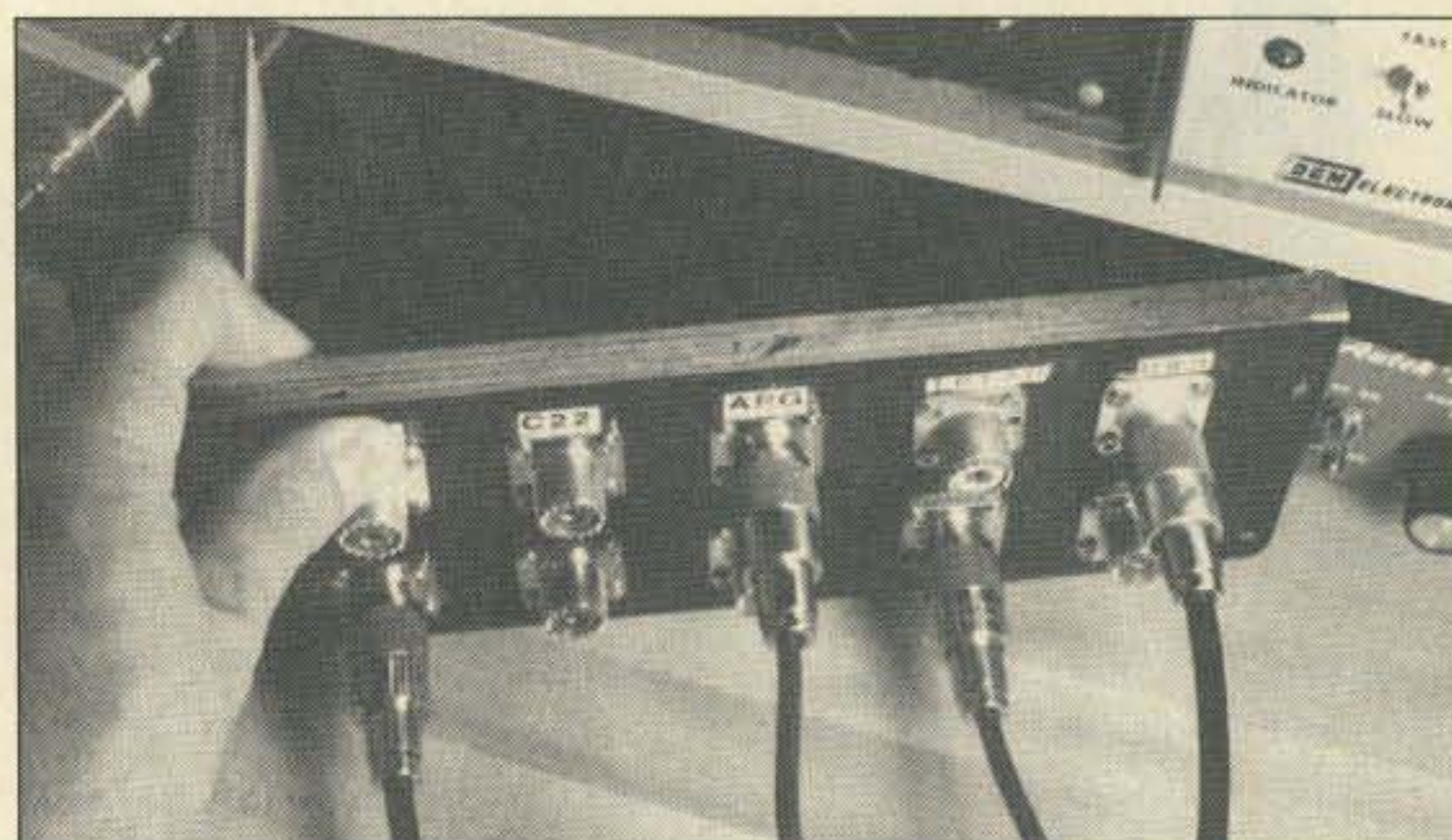


Photo B. Not much to it. Just some female connectors and a piece of plywood.

people who are planning vertical antenna projects. Feel free to drop me a line, SASE please." (Send your comments to Larry and not to WB8VGE.)

Write to Larry Jones WB5KYK, at Rt 12, Box 139C, Laurel MS 39440. Don't forget the SASE!

I've mentioned in the past about all those SWR meters, antenna switches, etc. we manage to put in line. Alan Pike W8MGF has a solution for a multitude of antennas and rigs. After spending a lot of time bent over the rigs, fiddling with coax connectors from this rig to that one, and trying to figure out which coax went where, Alan de-

ecided to re-engineer his antenna system.

Alan has an antenna patch panel consisting of two rows of female connectors with quick disconnect patch cables. The panel was made from an old piece of plywood. The labels came from the sheet of pressure sensitive numbers and letters that come with video tapes. The top row goes to rig/tuners. The bottom row is the termination point for his dipoles. Alan says, "It really speeds up changing antennas, and is a lot cheaper than coax switches."

Talk Field Day, and hear all

about antennas. Everyone wants the ultimate death ray? Here are two antennas that have worked out quite well for the Zuni-Loopers Field Day group. Fred Turpin, Bob Spidell, and Cameron Hartford.

The first antenna, the 20 meter Vee beam, is quite simple. It is two wavelengths of a leg, 139 feet, with an apex angle of 65 to 70 degrees. This antenna was hauled into the pines to a height of 50 feet. The antenna has a gain of about 5.5 dB. The Vee was found to have very low noise characteristics.

The 40 meter long wire antenna is made of 207 feet of wire feed

with about 75 feet of 300Ω twinlead through a tuner in end-Zepp fashion. Tuning was broad on 40 meters but sharp on 80 meters.

Next month, I'll continue with the solar power series. After we finish applying solar power to our stations, we'll start building some receivers.

If you write a request and don't send an SASE, you may not get a reply. I can be reached via Compuserve ID# 73357,222. Also, via packet from the KA8Z BBS. Just tell whatever BBS to forward messages to me via KA8Z. **73**

LETTERS

Number 33 on your Feedback card

Fox Hunting Revival

In Wayne's April editorial, he states that he hopes to get fox hunting revived in the US. I think this is a great idea, though fox hunting is not dead and has already had its own revival.

I can go on a mobile transmitter hunt at least 10 times a month in the Los Angeles area. In San Diego or Santa Barbara, there are additional hunts. These hunts are on 10, 6, 2, and 220. Participation in these hunts has grown 50 to 100 percent in the last five years. We have every kind of hunt you can imagine. Some are simple hunts where the hidden T goes out, hides, and (almost) everyone finds him in the next one to three hours. Others are more specialized.

The predominant style of fox hunting in Europe and Asia has never been popular in the US. With rare exceptions, US fox hunting is mobile, while most fox hunting in Europe is on foot, as a physical sport. The requirement for fox hunting is cross country running.

From the Hamshack

In a European or Asian fox hunt, it isn't unusual for up to five transmitters to be on the air at the same time, over hundreds of meters of hillside. Winning times of less than an hour are the norm, with the hunter being required to find all five transmitters, sometimes in a specific order.

European style fox hunting would be an ideal activity at Scouting events. This may be a way to get students into ham radio. Inexpensive DF receivers (that could also monitor the local repeaters), can be cheaply built. Building the receiver would give the Scouts experience in electronics while the actual fox hunting would combine radio, the outdoors, and learning skills with a map and compass.

How about a National Scouting Fox Hunting Championship? This would be an ideal way to get non-hams involved, since a license really isn't necessary.

T-hunting, as it is known in our country, has much to offer ham radio. T-hunting is a microcosm of

ham radio, combining the camaraderie of a meeting or Field Day, the fun of a contest, public service, and the satisfaction of homebrewing. Anyone can hunt. We have blind hams that do so regularly, using an audio S-meter when turning the beam. T-hunting is a natural for high school students since it combines cars, competition among friends, and electronics.

Thomas N. Curlee WB6UZZ
Fullerton CA

In Appreciation

My husband and I are new to ham radio. I just upgraded to Tech in February, and the group of fellas where I took the test were very supportive and really pulling for me. They made me feel great. I'm very lucky to have met such a great bunch of guys, because had I run into some "Die Hards," I probably never would have gotten into amateur radio.

Earl Dugan, Director of the Greater Bridgeport Amateur Radio Club, really put me at ease and encouraged both of us, and still does. He always tells me that you can never ask a stupid ques-

tion where radio is concerned. It's better to ask once or twenty times, rather than risk irreparable damage.

Beth, our daughter, who has some learning disability, is getting the bug through the Handi Ham Courage Center. They're another great group.

Millie Blotney KA1QOW
Keene NH

HI to Incarcerated Hams

I am trying to form a new amateur radio organization called "Hams Incarcerated" or "HI." The goals are: 1. to promote communications among incarcerated hams; 2. improve public awareness of the free public services rendered by ham radio; and 3. to establish an amateur radio station inside prison, primarily to provide public services, such as traffic handlers, net control, and emergency communications assistance.

If you are, or know, an incarcerated ham and you would like to QSO/QSL an incarcerated ham, please contact:

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