

# 75 Meter 1/4-Wave Sloper Array

*Confessions of a contester.*

by Alan Hoffmaster WA3EKL

There comes a time in every ham's life when he's got to own up, and I guess it's my turn to let the cat out of the bag.

A 75 meter quarterwave sloper falls into one of two categories. It either works great or it doesn't work at all. A number of hams I have talked to over the air have fallen into the second category, but with a simple modification, they're now enjoying first-category status. OK, get the net ready, because here comes the cat!

## Sloper Secrets

The one factor with the greatest effect on a quarterwave sloper's performance is how physically close the top end of the sloper is to the tower leg. If the top of the sloper is more than 1 1/2 inches from the tower leg, it doesn't work at all. It took me a year and a half to discover this. I went from 20th place in a DX pileup to 2nd or 1st place.

There is another trick that helps in working DX. Some antenna sources say to make the angle between the tower and the sloper 45 degrees. This works very well for East Coast-West Coast communication, but it's a very poor angle for DX contacts. The optimum angle for DX contacts appears to be 30 degrees between the sloper and the tower, or 60 degrees between the sloper and the ground. This means you need a tower about 65 feet high for a 1/4-wavelength 75 meter sloper.

However, if you have a 50-foot tower you still can achieve good performance from a modified sloper. Attach the sloper to the top of your tower and pull it out so that it makes a 30 degree angle with the tower. About 10 feet up the tower, attach a rope and pull it out parallel with the ground until it contacts the sloper wire. Tie the rope to the sloper at this point. Now pull the remaining sloper wire out parallel with the ground and tie it off to some other 10-foot support point. (See Figure 1.)

## Sloper Array for DX

I will now explain my system in detail. First there are three 1/4λ-slopers hanging down from the top of a 65-foot tower, one off of each leg, spaced 120 degrees apart. Each sloper makes a 30-degree angle with the tower. Each sloper is fed from a remotely controlled coaxial relay box, thus requiring only one coax feed from the shack. A 24-inch length of 50-ohm coax extends from the box to a homemade bracket on each leg of the tower, very close to the top of each sloper. The bracket consists of a 3-inch length of 3/4-inch diameter soft copper tubing, which I mashed flat with a hammer.

One end was rolled around a 3/8-inch bolt in order to create a cylinder about the size of the outer braid of a piece of RG-213 coax. About half an inch from the other end, I drilled two holes for mounting the bracket to the tower

leg with a U-bolt. Next, I cut back about one inch of the outer jacket off the 24-inch length of coax. I removed 3/8-inch of the braid to expose the insulation. I then tinned the braid, which I inserted into the cylinder end of the bracket and soldered in place.

I removed about a quarter-inch of the insulation sticking out of the bracket, exposing the center conductor. After mounting the bracket/coax assembly to the tower, I soldered a short piece of #12 wire between the center conductor of the coax and the top of the sloper. The bracket assembly was then waterproofed with coax seal.

One final note. The coax box shorts all unused ports to ground. Therefore, two of the slopers are grounded at all times. The system was tuned by shortening or lengthening each sloper until the SWR was lowest at the frequency I wanted.

## Results

The response I have received from DX stations has been overwhelming. During a DX pileup the south sloper usually requires from one to three calls to get the station. The northeastern sloper requires six calls at the most, and the western sloper nine at the most. Considering the competition during a major DX contest, that's fairly good.

I seem to be able to hear and work DX stations on the slopers that I can't even hear on the inverted-V at 65 feet. There also appears to be about a 5 dB difference between the V and the slopers. Between the slopers themselves there is about a 6 dB difference on the sloper in the preferred direction.

I know the system is working because we've been averaging between 55 and 65 countries per DX contest in the past few years. Good luck with your system, and good DX. **73**

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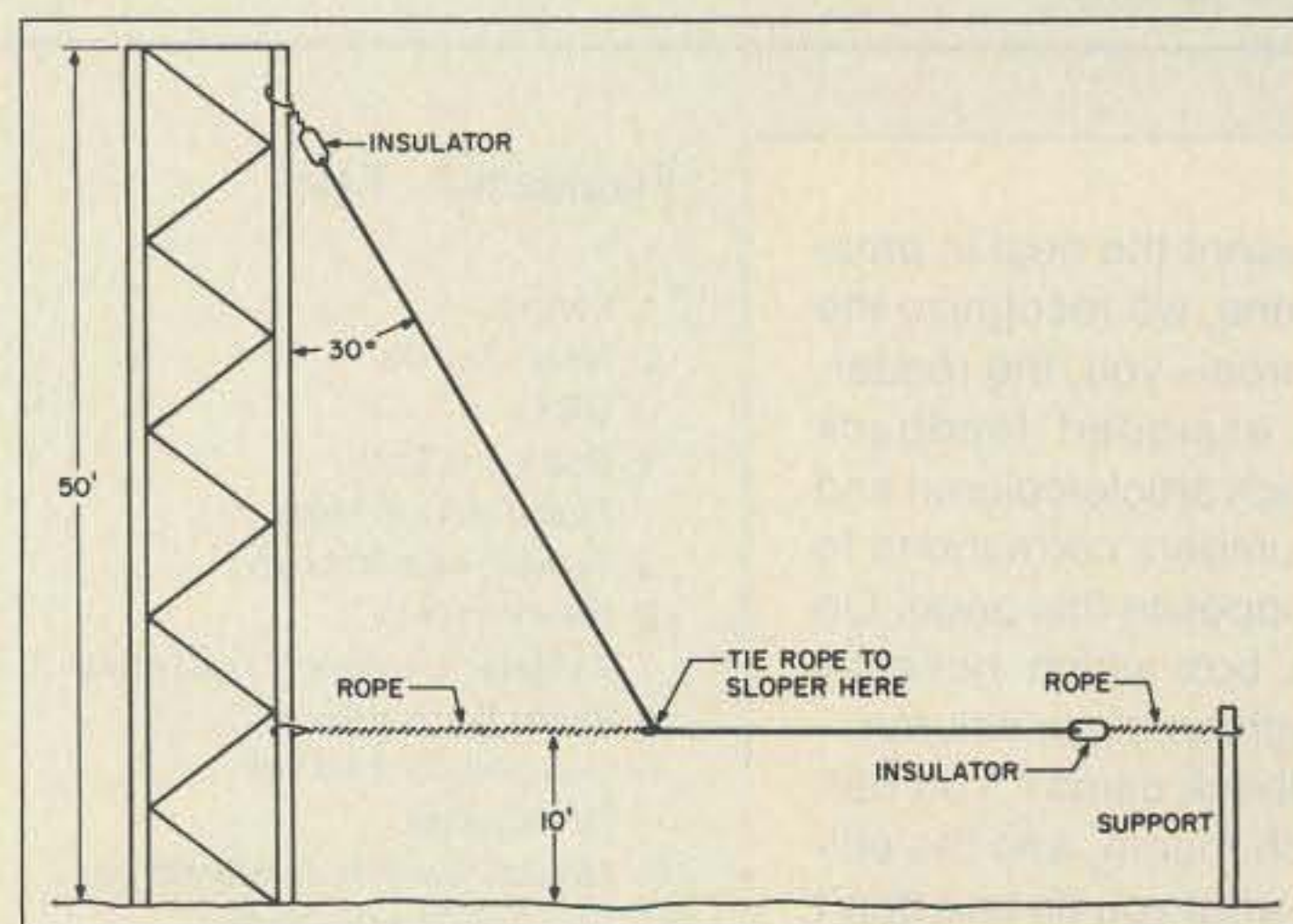


Figure 1. Thirty degrees between the sloper and the tower seems to be the optimum angle for DX contacts.

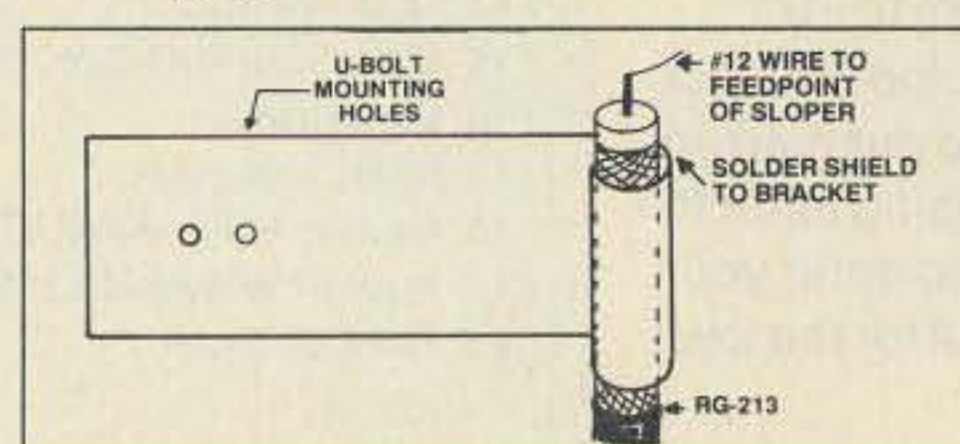


Figure 2. Bracket and feedline mounting details.