A Homespun Longwave Loop

The first thoughts that usually come to mind when thinking of the longwaves, are of huge antennas reaching skyward, wires strung between mountains, gigantic tuning coils, and lots of raw RF power. While this may be true for some transmitting sites, the listening hobbyist can do quite well without such formalities.

Here is an easy-to-build loop antenna that will rival (and often beat) the receiving performance of many multi-acre arrays. This indoor directional antenna should be useful for the upcoming DX season to help you sort through competing stations and null out sources of man-made noise.

These junk box parts are needed to build the Loop:

- About 250 ft. of #26 - #30 gauge insulated or enamel wire (splicing is OK)
- A two-section tuning capacitor from an old broadcast set
- Five feet or so of coaxial cable (RG-58 or similar)
- A plug to fit the external antenna jack of your receiver
- Two wood slats; one 48" long and the other 42" long; 5/16" to 1/2" thick (furring strips work well)

Plug in your soldering iron and read on!

1) Place a notch in each of the wood supports and fit the two pieces together to form the loop frame. Use a couple drops of glue to hold the joint together. Drill two small holes in the upright arm as shown in Figure 1.
2) Using a fine-toothed hacksaw, carefully saw 30 shallow slots, spaced about 3/16" apart, in each arm. Place one additional slot in the lower part of the upright arm to provide a starting point.
3) Wind the one-turn coupling loop in the middle slot of each arm. Pass the ends of the winding through the top hole previously drilled in the upright arm.
4) Wind the large loop in the remaining slots starting from the outside and working toward the center. When you come to the one-turn winding installed in Step 3, simply cross over it to the next open slot. When you're finished, pass the ends of the winding through the lower hole in the upright arm.
5) Solder a jumper wire between the two stator terminals of the tuning capacitor. This combines both sections of the capacitor providing about 700 pf of total capacitance.
6) Mount the capacitor to the upright arm just below the loop as shown. This can be done with small screws or even a dab of silicone sealer. Solder one end of the large loop winding to the stator terminal of the capacitor. Attach the other end to the rotor connection (capacitor frame).
7) Connect one end of the single-turn loop to the center conductor of the coax feedline and connect the other end to the braided shield. Tape the connections to prevent shorting. Finally, install the antenna plug at the other end of the feedline.

This completes assembly of the loop. You can secure any loose wires to the upright arm with tape or plastic tie wraps. The antenna can be used in a hand-held fashion, or you could build a simple base plate to make it self-supporting.

Initial Checkout

With the loop plugged into your receiver, tune to, let's say 375 kHz. Adjust the tuning capacitor for a peak in the background noise. This indicates the loop is tuned for resonance at that frequency. If you move more than 10 kHz or so, the capacitor should be re-peaked.

With the dimensions given here, the loop should be tunable from about 175 kHz to well inside the AM broadcast band. If you want coverage below 175 kHz, you can add a fixed "gimmick" capacitor across the variable capacitor to extend its tuning range.

I use a 620 pf mica capacitor that allows my loop to be tuned down to 135 kHz. I leave one end of the mica capacitor connected to the frame of the tuning capacitor at all times. When I need lower frequency coverage, I connect the other end to the capacitor stator terminal with a small alligator clip. You could also install a small toggle switch to do the job.

Above all, feel free to experiment with this antenna. Nothing in the design is extremely critical, and a little deviation from the exact instructions won't hurt anything. Perhaps you'll even come up with some improvements of your own to make it more useful. If you build one, write in and tell me how it works for you! If there's enough interest, I may devote a column to a simple preamp for use with the loop. Let me know what you think.

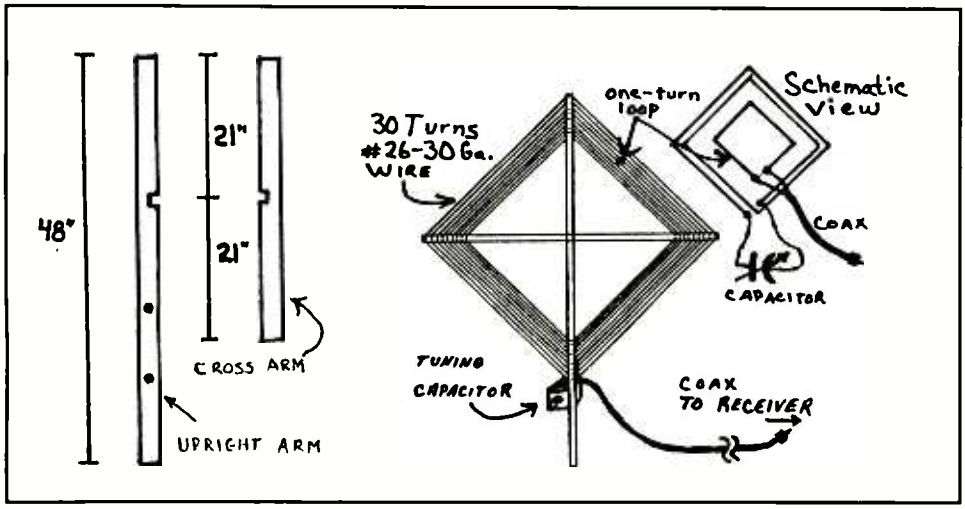

Figure 1: Loop Construction Detail

European DX—Well...Sort Of

Even with the best stateside antenna (loop or otherwise) you're not likely to hear too many beacons from Europe. Fortunately, one reader, Cor De Hoogh of the Netherlands has just the solution to this dilemma. He's offering to trade audio tapes of longwave bandscans with U.S. listeners. In this way, you can hear what the LF scene sounds like in Europe without any great pains. He's interested in anything below 500 kHz, not for serious DX purposes of course, but just for curiosity sake.

Anyone interested in trading tapes can write him at: Stationsstraat 12-B, 1211 EM Hilversum, The Netherlands.

And while your tape recorder is handy, you may want to take note of a new beacon on the air. Michael McFerrin of Fairhaven, MI, has announced the startup of his new experimental lowfer beacon "MJM" on 174.9 kHz. The beacon may also use the identifier "MJM - Michigan" and will be operating 24 hours a day. He's accepting reception reports by cassette recording. If the tape is correct, he will return it with a station QSL card. No return postage is necessary. The address is: Anchor Bay Broadcasting Corp., Beacon Verification, Box 230249, Fair Haven, MI 48023-0249.

Another beacon, this one outside the basement band, has taken to the air. It is part of a research project on radio propagation and may be of interest to beacon chasers. It is located in Wales, Alaska, and operates on 25.455 MHz 24 hours a day sending "R" in CW. At 100 watts output, you stand a good chance of hearing it when conditions are right.

Reception reports of the beacon would be appreciated and can be sent to: Dr. Robert Hunsucker, Geophysical Institute University of Alaska, Fairbanks, AK 80912-5000.

That's it for this month. See you in Atlanta!