

## USING THE LOOP by Grant Manning

The loop antenna is probably one of the most useful, but most easily misunderstood DX aids available. It won't, for example, log stations for you! Properly used, in conjunction with a long-wire, it will help log many stations you wouldn't otherwise hear.

So, since there are many loop owners that don't know some of the tricks, here are a few hints to make "looping" more advantageous. To properly use a loop, you should have a well shielded receiver; this means that, with the antenna disconnected, you should not pick up any stations. What you pick up without an antenna, you can't null with a loop--with any loop. Your receiver should also have an 'S' meter.

It's always best to have another antenna to compare signals to--a standard, so to speak. A good idea for all DX shacks is a random length (25-100') of wire strung outside. When DXing, it's much easier to listen with the long wire first, get an idea of band conditions, and then switch to the loop for bringing your DX signal out of the mud.

There are several ways to use your loop. Loops can "null" (decrease) an unwanted signal--sometimes entirely, allowing same channel, or adjacent channel DX.

Before using your loop, be sure your battery is fresh! More good DX has been lost to a dead battery than I'd like to think about. If you don't have a small VOM (volt-ohm meter), go and buy one. Inexpensive ones suitable for checking loop batteries are available from Radio Shack for under \$10. Check the battery under load, that is, with the loop on (best if it's been on for a few minutes). Correct battery voltage is 8-9 volts for a 9 volt battery. AC adaptors, while eliminating the battery, have been found to introduce much AC line noise and distort the loop pattern. Batteries remain the best bet.

Now contemplate your loop. It's meant to be used with gobs of patience and lots of love. Move it slowly and handle it gently--you just won't get anywhere whipping it around. Learn to watch your receiver's 'S' meter for quick dips in the signal as you rotate through the null.

Your loop will null in both the horizontal, and vertical planes. That is, it will null as you turn it around, and null deeper as tilt it, from horizontal to 90 degrees (90° to horizontal for box loops). Remember, that metal can re-radiate RF signal, so you want to locate your loop as far away from nearby metal objects as possible; this includes your receiver. The loop will also pick up light dimmers, digital displays, counters, etc., so if you hear a strange noise when attempting to null, figure out what it is that's causing the interference and shut it off.

If you are attempting to listen to a station on 1460 kHz, through a strong local on 1450, you could try to log 1460 in the following manner. First, put a null on your 1450 signal. Slowly rotate the loop 360 degrees, and watch the 'S' meter. You will have two points of null, one much deeper than the other--use the deeper one to work with. A truly balanced loop will provide equal strength at both null points, however. You have to experiment to find which way to tilt. If you don't see a dip in the signal, either de-tune the loop, or cut in your attenuator or RF gain to decrease the signal fed to the receiver from the loop, while rocking the loop back and forth to get a deep null (low 'S' meter reading).

Keep tilting and rotating until you get the deepest null on the 1450 signal possible. Go slowly! It's sudden! At this point, your 1450 signal will sound like a severe selective fade, with little carrier left. When you're satisfied with the null on 1450, tune your receiver to 1460, and tune the loop to 1460 also--without moving it physically. If, at this point, you have a station on 1460, slowly, slowly move the loop for best reception, tilting and rotating as necessary to rid yourself of the 1450 signal.

Another way to operate the loop is to peak everything to 1460, and slowly turn the loop around without tilting it. While this works OK most of the time, it is less likely to work next to a strong local. On co-channel nulling, rotate the loop, and while rotating, tilt to about 45 degrees, and you've a good chance to null offending co-channel signals. It is sometimes difficult to get a null on one of two stations operating on the same frequency--best results are obtained if the stations are located at right angles from each other. This doesn't always hold true, however, and depends on what part of the signal you are trying to null.

To hunt for the rare TP, or TA, it's best that the receiver's BFO is turned on, and while slowly tuning up and down the band, check all the zero-beats heard. When a zero-beat shows up where one hasn't before (exact frequency readout is nice here), simply peak both receiver and loop to that frequency, and rotate the loop (with no tilt) for best signal. Best hunting is done with a long-wire unless you remember to peak the loop!

Although it's possible to inductively couple a TRF or a similar transistor radio to a loop, you don't really take much advantage of the loop's capabilities when doing so. By holding the radio close to the loop, and tuning the loop to the same frequency the radio is on, it will greatly boost the radio's signal, which is what you'd expect. However, with the loop used this way, the loopstick inside the transistor radio pretty much negates all nulling properties of the external loop, and the loop amplifier need not be turned on.

With a shortwave loop (they are good to about 6 MHz) its gain is generally better than that of a good longwire, and the ability to null noise, makes it excellent for 60, 90 and 120 meter SWling. On shortwave, unless you are near a local, it's very difficult to null the skywave signals appreciably, and nulls are very broad. Works great for ham band DXing, as you can null 75 meter hams, for DX work.