Natural Radio

News, Comments and Letters About Natural Radio

February 2000

The holidays have come and gone and all is quiet on the Natural Radio front. There was almost no correspondence this month, and again as with the Leonids last month, the Quadrantids meteor shower was not visible due to clouds. At least the night was clear for the eclipse of the moon this past week (although with the temperature near zero, I didn't spend a lot of time looking).

I did get into the workshop a bit and am working on a design for a steep sided high-pass filter to get rid of hum and buzz. If all goes well, I'll have some results next month and publish the circuit. I'm still collecting parts for the comb-filter circuit sent to me last month -- the first big hamfest of the year is tomorrow, so hopefully, I'll be able to find the remaining parts. This month's listening produced more questions than answers, and as usual the whistlers were quite elusive.

Power Line Noise I made an interesting discovery this month during some of my evening whistler listening. Because of my schedule I usually do my listening around midnight. I go out to the end of the driveway, which is as far from power lines as possible and with my WR-3, I can usually hear sferics and fairly strong tweeks above the hum. I also have a LF Engineering loop receiver that I haven't used in a while, so one night I decided to do some comparison listening with the two receivers.

I listened first with the WR-3 and heard the usual amount of sferics and tweeks above the hum. With the loop receiver, the tweeks and spherics were almost lost in hum and buzz, and this was with the hi-pass filter kicked in! Interesting. Of course, the receivers have different amounts of gain – but what we're talking about here is the ratio of signal to hum and noise. One of two things must be happening. Either the electrical component of the tweeks and spherics is stronger than the magnetic component, or the magnetic component of the power line interference is stronger than the electrical. I would suspect the latter.

I don't remember a lot from my college fields course, but I do know that at a distance of many wavelengths from an antenna, the magnetic and electrical components of a radiated wave are equal. Close to the antenna, the "near-field" area, the magnetic and electrical components may not be equal. In our noisy environments, we are in the "near-field" area since a 60 Hz. wave is many miles long.

Now, I don't know if it is the usual case in a suburban location to have the magnetic interference component considerably stronger than the electrical component, but knowing what the case is could help in trying to design a receiver for use in noisy environments. If anyone has done this type of comparison or could do it, I'd be interested in hearing about it.

Power Transmission Lines This observation got me thinking about the nature of power transmission. Power transmission lines are transmission lines – just like 300 ohm twinlead or the ladderline you might connect to an antenna. They are designed to transfer power to a load and not radiate. But, just like with an antenna feedline, anytime there are discontinuities that disrupt the impedance (transformers, tap-offs, sharp bends, mismatched loads), unwanted radiation occurs.

Now this is just a hunch, but I would venture a guess that long high-voltage transmission lines may be less of a problem to our Natural Radio listening than the lower voltage local lines with all their discontinuities and varying loads. It might be worth making some relative measurements of interference to find out if this is true. This data might make it easier to find a quiet listening location.

Whistler Reporting Well, either nobody wanted to brave the January weather to do natural radio listening or my idea of whistler reporting was really dumb. I, for one, was not real excited about going outside in the late night or pre-dawn hours with sub-freezing temperatures, but I thought some of you guys in the warmer southern climates might be doing some listening. Anyway, if there is any interest at all please send in your reports or comments.

Coordinated Monitoring During Spring Equinox Whistler activity tends to increase around the time of the equinoxes, so in the past there has been coordinated monitoring activity around these times. The weekends of March 18 - 19 and March 25 - 26 are the weekends nearest the spring equinox. In the past monitoring has been done around sunrise.

I will publish the exact times of monitoring in the March column. Since this hasn't been done in a few years, my inclination is to keep the reporting simple in order to get as many participants as possible. Recording would be nice, but not essential.

This is a good opportunity for beginners to maybe hear some whistlers, and a chance to test our location and equipment. Having lots of people listening in a variety of locations might give us some baseline data on what is required to hear whistlers if anyone is hearing them during the monitoring period.

As always, your suggestions and comments are welcome.