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LISTENING ON 160

or

Glendower - I can call spirits from the vasty deep.
Hotspur - Why, so can I, or so can any man; but
will they come when you do call for them?

...Henry IV, Part 1, Act III

I've devoted quite a bit of this past fall to getting on 160. Among the readers of RADIOSPORTING we have many with considerably more experience on the band than I have, but being new to the band has its advantages too. All my problems and mistakes are fresh in my mind. Perhaps a few of these experiences will save you some of the grief that I've suffered.

When I first got on, I found that the 160 meter band was full of birdies, noise and signals that others could hear but I couldn't. Here's what I did to cure my problems.

Birdies

At all sorts of odd intervals across the band, I found that someone had inserted a birdie right on top of stations that I wanted to hear. The primary solution: a high pass filter. Source: Webb W1ETC, "High-Pass Filters for Receiving Applications," QST, October 1983, p.17. N1RC built it right into the Beverage box which switches directions for my Beverages.

What? You don't have a switchable Beverage? See N1RC and K1VR, 73 Magazine, October 1983, p.10.

The high pass filter cuts off at 1.7 MHz and gets rid of all sorts of broadcast station trash. However, it does have a cost...3 dB insertion loss. Note that if you are truly close to a broadcast station, the toroid core may saturate. In that case a classic high pass filter using coils would be required.

I thought that a high pass filter was all that would be required. Instead, I discovered that I had only peeled away one layer of birdies.

The second layer turned out to be a cordless telephone transmitting in the 1.7 MHz band, above the cut-off of the high pass filter mentioned above, and generating a lot of crud. Unplugging the cordless phone really helped. I am still not sure, however, to tell the truth, that I've ended the birdie agony.

A neighbor toward Europe may have a cordless phone too. While this would ordinarily be harmless, my Beverage comes close enough to that house to pick up a phone there too, if it is on. Fortunately, I suspect that the offending neighbor may not be using that telephone during the evenings because its front end is probably wide enough to go beserk when I fire up with a kW at 1.8 MHz. So this problem area seems to have been beaten down into a non-problem.

Noise

Noise that was hardly noticeable at 3.5 MHz, all of a sudden became unbearable at 1.8 MHz.

First, I went and bought the Interference Handbook, by William R. Nelson, WA6FQG, former RFI Investigator, Southern California Edison Company, published by Radio Publications, Inc., Wilton, CT. I found it at the Ham Radio Bookstore. It explained a lot to things that I knew only vaguely through folklore, and offered great comfort that I would one day find answers to my problems.

Second, I physically inspected each Beverage for bad connections. Boy, did I get lucky. The ground wire from an outdoor impedance matching box (this means that it contained the toroid) had broken on its way to the ground rod below. Installing a wire thick enough (#12 solid copper) to withstand being tripped over by a human or a dog solved the problem.

Third, I added several radials of insulated wire, 20-33 feet long, which were hanging around my cellar (leftovers from the radial system on the 80 meter verticals). I wish I had a good answer to the twin questions: How many are required to be enough? And, how long should they be? But I don't. On the other hand, W1RR is experimenting with wires on the ground underneath his Beverages to improve the ground even more, so you can harass him into writing up his results. I don't know. Nonetheless, all the texts recommend radials at each end of a Beverage.

Fourth, I specified Lutron, Centurion model light dimmers when we redid the lighting in the living room. These are more expensive than the usual sort, but worth it if you value your sanity. They were $22.40 each at Wolfer's (a comprehensive lighting supply house), Watertown, MA., 617/254-0700. Ask for Janet Rome. Or call Lutron's hot line 800/523-5466, for the name of a local dealer.

However, I had completely forgotten about the dimmer in the kitchen. For months I kept a record of when a very loud noise would come on. I tried to recognize patterns with respect to time, temperature, weather and day of the week, to no avail. Then one evening it hit me. My wife finished some work in the kitchen, turned off the light, and walked into the shack. All of a sudden I knew.

Weak Signals

The Outdoor Splice

During the course of my physical inspection of the Beverages, I discovered an F connector splice (an F connector into an F-81 barrel to another F connector) in the RG-59 feedline which I had left outdoors on the ground. In the haste of installing the system two years ago, I had violated the cardinal rule about protecting outdoor splices from the weather. At the time, discovering whether or not the new Beverage would work was imperative. The task of going back to weatherproof the splice just slipped away. Water had invaded the coax and I had

to cut back three feet on either side of the splice before I found fresh coax.

Speaking of outdoor splices, CWY (a cable TV manufacturer) has invented the cutest little splice system. They take a grey PVC plastic plumbing splice, the kind of thing that joins two hoses, together with two cane tips, the rubber bottoms to a cane, and shove the cane tips on each end of the splice after drilling a hole in each cane tip. The holes are a bit smaller than the RG-59; but by lubricating the RG-59 (or RG-6) with spit (or soap and water for the more fastidious), it becomes possible to shove the cable through. Now you can step on the splice and know that it won't be damaged. Assembly is much easier than any other splicing system I've seen. On the other hand, it would be inappropriate for a mid-air span.

The Preamp

With a new baby in our house, I've become a devotee of checkbook construction. Instead of building a preamp, I bought one from Advanced Receiver Research (W1VD's company), P.O. Box 1242, Burlington, CT, 203/584-0776. Their Model P1-30/20VD, in a rugged aluminum case with BNC connectors, costs $32.95, postpaid. The board without the case and connectors is only $22.95. In this form you can mount it yourself inside your Beverage switching box. ARR does not advertise this product. It is apparently a specialty item for DXers and contesters.

The preamp yields 19 dB gain across 1-30 MHz, using 10-16 VDC at 10 mA. In addition to its use on 160, it turns out to be handy on 10 when the band is dying and that ZK2 is but RS 51 or 52, instead of the 59 which would make it easy.

During the first two weeks of use, my preamp blew the transistor. It could have been too much electricity in the air from a nearby lightning storm, or too much RF on the Beverage from my own transmissions, but a pair of back-to-back diodes, installed by the factory, has cured the problem. W1VD cautions that one should check to see if the diodes are causing any TVI.

For the more adventurous, there is a useful circuit in "Resurrecting the Beverage Antenna" by Smith, W5USM, 73, June 1978, at page #55. The circuit was apparently designed by famed 160 meter man K1PBW. See also "Build This 'Quickie' Preamp," DeMaw, W1FB, QST, April 1977, and Reisert, W1JR, Ham Radio, December 1984, page 99.

Interantenna Coupling

Everyone advises that you get a Beverage as far as possible from transmitting antennas. But after erecting a two element vertical phased array on 80 (a pair of ColAtchCo 42 footers), northeast/southwest, I found that my Beverage was two feet from the southwest vertical and eight feet form the northeast one.

In the course of experimenting, I discovered that if I switched the vertical array from NE to SW, signal levels would change dramatically. It took three hours, but I moved the Beverage. It is now 10 feet from the southwest vertical and 20 feet from the northeast. It isn't what I'd like, but, since I live on but 1.3 acres, it was all I could do. However, it seems to be enough. Now, no matter what I do to the 80 meter array, it doesn't affect reception on 160.

Hearing the above story, AA1K/3, renowned 160 man, told me that he routinely decouples other antennas by shorting or grounding them to reduce this problem.

Usefulness

All of the above may seem like a lot of work for a mere 8 to 15 countries during an all band DX contest. However, with good receive antennas, it is possible to save a lot of time on 160. In other words, if the objective is to get in and out, receive antennas help. Having finished all the above work on the Beverage receiving system, a new benefit came to light. All of a sudden a new layer of signals became readable on 80. Now, I'm starting to get cards from guys running Ten-Tec 5 watt transceivers on 80!

In addition, 160 is a nice place to seek new adventure after achieving 5BDXCC. Its a long winter between CQ and ARRL contests.

Good luck with your receiving system. Remember, the better you hear, the less you'll transmit after that rare one has already come back to me. (K1VR)

Mr. Hopengarten, when he is not chasing DX or shouting "CQ Contest," is president of Channel One, a satellite TV services company in Waltham, MA. As his training is in law and business, he hastens to point out that he'll feel no offense if someone criticizes his engineering, and welcomes comments on this article.

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Telling lies at YCCC hospitality suite during the Dayton Hamvention. L. to R. Fred, K1VR, Yuri, VE3BMV and Pedro, NP4A after emptying a few cans of beer, supposedly to be used to build the Beer Can Vertical.