

How We Tracked The Rogue

By Peter Rock, KJ4ND and Brian Hatfield KG4DIO

part 1 of 2

In December of 2001, another repeater was interfering with a repeater in the London, Ky area. The local repeater is on 147.180/KE4ZJT. After a short time, it was apparent that this rogue repeater had it's input and output reversed, so that it's input was going into KE4ZJT'S repeater, and being sent out again to the rogue repeater's input, which then would repeat the cycle again. Also the tone had to match, since KE4ZJT'S repeater was tone accessed. When first listening to the rogue repeater trying to hear any ID, a few times a CW ID could be heard, which I identified as K8VE, which turns out to be a repeater way over in the center of West Virginia, about 200 miles (line of sight) east of London, Ky.

Several of the hams in the Laurel Amateur Radio Society Radio Club made attempts to find where this rogue repeater was. Those of us in the London, Ky area got a reading about 90-100 degrees (almost east), and one of the hams in the Annville, Ky area got a southeast reading. In fact I drove about 20 miles east of London, and still got readings to the east. One of the other hams Mark (KF4IFC) went farther east the next weekend and went as far as Hazard, Ky which is about 55 miles (line of sight) east of London, Ky and got readings to the south.

On 12/15/01, Dave KG4LGA, Eddie KG4LFZ, and myself Peter KJ4ND got together and decided to try to track down this rogue repeater. We started about 6:30 AM and traveled to Hazard, Ky and got some readings from the hospital area, which pointed to the southeast. We traveled to the south on route 15 to route 7. One reading on a mountain in the Comettsville area gave a confusing west reading. We continued south to the Kingdom Come area, and got a reading to the southwest. Next we traveled up to Pine Mountain which is more like a long ridge, as is the larger Black Mountain. Our way was blocked by a large pine tree across the road and another driver from the other direction was also blocked. We had a chain and used it to pull the tree over a little and then broke off the larger branches to give us room to drive by. We stayed up on Pine Mountain for some time and got some strong signal readings which seemed to be mainly to the southeast. It was some time before we came to a crossroad to identify where we were and got two signals at that point, one more to the southeast and one to the west. The whole area is covered by mountains and hills and is very prone to many reflections of any signals. Therefore we tried to get our reading from the tops of mountains and hills. Next we drove down to route 119 near Laden, and headed west to Hazard, Ky. As we did the signal continued to weaken. We tried another reading just north of Hazard near Hanging Rock but got multiple signal readings there.

So, we decided we needed a new approach, and decide to try around the south of Black Mountain, on the premise that if the repeater was behind the mountain, it might refract around the mountain and give confusing readings. We took route 38 to the east and the signal started to get stronger, and got very strong after going through Evarts, and to Louellen, In this area, we could get a signal reading on an HT, with the antenna off, inside the truck. So we knew we had to be very close.

January 17, 2002, we could not find any ways up to the tops of the mountains all around us and continued up route 179 over Black Mountain. As we got to the top of that ridge there was a gravel road to the left and we took it in about 1000 feet where we took some readings which showed to the southwest. We went back down the mountain and tried to find another way up an adjoining mountain but there were several coal companies that owned these areas and we ran out of time and had to head home (about 2 hours drive home). We had traveled about 290 miles that day and felt we got very close, but did not exactly find it.

The main antenna that I was using was very simple, using 2 half wave dipoles about 0.2 wavelengths apart fed about 140 degrees out of phase. This results in a very useful pattern with a peak to the front, and 2 sharp nulls perpendicular to this. Also I used an 80 db attenuator when getting close to the repeater. After getting back to London, Ky I contacted Brian KG4DIO, and gave him all the information I had about where we went and what we found and lent him my antenna and maps since he was planning to go "fox hunting " to find the rogue repeater the next day with Jack KE4ZJT.

This part submitted by Peter Rock, KJ4ND President of Laurel Amateur Radio Society Radio Club.

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part 2 of 2

I guess that is were I come in my name is Brian Hatfield and my call is KG4DIO. I will start with my part of the story when Peter KJ4ND came over to the house and told me of the fox hunt they had and all the interesting fun. We sat down at the kitchen table which was of course covered with maps and fox hunting equipment and after a while Peter and I came up with the strategy of trying to get below the repeater and get a northern reading on it.

The next morning Jack KE4ZJT and I drove to Cawood, Kentucky and started our fox hunt there. We went south on US. 421 to the Ky. / Virginia line and took our first reading on the mountain there. That was the location we had planned on as the first starting point to see if the rouge repeater was further south than we expected. But it was to the north and at that point we got our first line on the map. I used a compass and a map and from then on we knew it was in Ky. We also decided to only take readings on mountain tops whenever possible because of the terrain and reflections that would be given. We went on in to Virginia about 20 miles and went north on 606 toward interstate 38. About halfway on 606 we went over a huge mountain and got a reading to the northwest which was the second spoke on our wheel. Shortly after that we got lost and never did find 38 on that side of the mountain, so we ended up on 68 in Appalachia Virginia. We got gas and got directions back toward Cumberland Ky. The repeater signal was dead Appalachia. We ended up on US. 160 going over Black Mountain towards Cumberland Ky. and on top of the mountain we got a reading dead west. Then we went on into Cumberland Ky. At Cumberland we got another reading southwest. At that point we decided to go down US. 119 toward Harlan Ky. We got a really strong signal on the handheld at the Totz exit on 119 but we decided to go toward Harlan, because at that time we thought it was just an opening in the valley. At Harlan we get Us. 38 towards Evarts Ky. There we turned on to Hwy, 215 that was one of the locations we had decided to check. It was almost dead there. So we decided to get back on 38 and go to the 15 mile marker were Eddie KF4LFZ got the best reading on his hand held with the antenna off. We got the same readings as Eddie did, so we decided to go down 38 but after about 15 miles it faded out on the handheld. We got a reading there on a good size hill and it was to the northwest, we headed back down 38 back toward Evarts and there was a unmarked road 179 we decided to take and see where it went and on top of the mountain we got reflections from every direction. These mountains are everywhere and are straight up and most are 4000 feet to almost 5000 feet. As you can tell reflections drove us nuts.

We did not realize that Peter and his group had been in that very spot the day before and we all were less than 4 miles from the rouge repeater. So we decided to go down 179 and see were it went and it ended back on US. 119. at Cumberland. At that point we looked at all the lines on the map and decided to go down 119 again back towards Harlan and we had made a complete circle. I had the antenna off of the handheld and we got very good numbers on the signal. Surely we had to be close. We headed back south and about three miles north of the Totz exit, the handheld was full scale with the antenna off. We attenuated 80db and got a direction and went a few more miles got another reading. Just above the Totz exit we saw a tower on the mountain we had completely missed before. But we decided to continue south and kept checking our readings and, of course, all the readings followed the tower. We stopped seven or eight more times on US 119. We went to the location where the tower was. It was on "the Harlan Cumberland Coal Company's property. The security guard sent us to the shop, they were working on Sunday, the rest of the company was closed. They gave us phone numbers of people to call on the following day. We got hold of the FCC and then contacted the Coal Company. They told Jack that they would have their radio people there to check it out in the morning and confiscate any equipment they found. That's the day the interference stopped. We had only been fox hunting for a few months our local Club the Laurel Amateur Radio Society had just started fox hunting activities. We only had a few hunts under our belts, then along came the ultimate fox hunt. We ended up driving 320 miles that day. It was the work of a lot of good hams and a lot of driving. The hunt took approximately 20 hours with all the trips and approximately 900 miles of driving. And, of course, due to everyone's hard work, victory was ours.

This part submitted by Brian Hatfield, KG4DIO.

John D. Meyers, NB4K
Kentucky Section Manager
Great Lakes Division

Source: Kentucky Amateur Radio Web Site – <http://www.qsl.net/kyham/>