

Intrusion Into The Ham Bands: Strange, Out-Of-Place Signals

Don't Clean Your Glasses, Or Fine-Tune Your Receiver. Murray And Company Have Control Of What You See And Hear For The Next Few Minutes...

by Murray Green, K3BEQ

What we sometimes hear with our scanners or on the ham bands isn't always what we could call "normal." And some things are chalked up as curious, if not downright mysterious. Over three decades of operating and maintaining two VHF amateur radio repeaters in the Washington, D.C., metropolitan area, the Green Mountain Repeater Association (GMRA) has had its share of unusual repeater interference problems.

Most repeaters cannot escape a *certain* amount of interference, but what I'm about to describe borders on the bizarre. All of the incidents were documented and some forwarded to FCC Enforcement as a matter of record. I am pleased to report that every case was handled amicably, dirty transmitters taken off the air or corrected, and illegal use of the Amateur Radio Service spectrum eliminated. That said, get ready to be entertained!

Glider Mania?

On a clear Sunday afternoon, the GMRA 146.610-MHz repeater erupted suddenly with communications between a glider pilot and its towing aircraft. It took a few minutes to figure out exactly what was going on, but when the glider pilot said, "Disengage tow—wow it's beautiful up here," we sort of got the message. They were apparently using the repeater's input frequency of 146.010 MHz, not realizing they were keying up the repeater. (There is a 600-kHz separation between the input and output frequencies to avoid desensing.)

A control operator made contact with the glider pilot, informing him that unless he had an amateur radio license he was illegally operating in a spectrum exclusively allocated to the Amateur Radio Service. The pilot acknowledged the transmission but said nothing more. His signals soon began to fade away as his glider flew out of range. It was assumed that either the pilot's were using ham radio equipment or commercial equipment improperly set to the wrong frequency. Why the pilots were not using FAA-approved radio frequencies is unknown. No further incidents have been heard.

Cars And Kids

At precisely 3:30 p.m. weekdays, the following transmissions were heard on the 146.610 MHz repeater: "Car 321, car 341, car 240." "Zimmerman's ok, Callahan's ok, 221 ok," etc., etc. This went on for about 30 minutes. One of our members called a control operator and said that he was hearing the signal on 146.000 MHz on his handheld with a rubber duck antenna, full strength—a good sign he was very close to the source. He also recognized one of the names mentioned on the air as a family living across the street from him. (The closeness to the



The civilian air band is where comms between a pilot and a glider belong, not on 146.010 MHz!

repeater's input frequency of 146.010 MHz made the transmissions readable on the output frequency of 146.610 MHz.)

After some brainstorming, it appeared that the frequency was being used by school representatives to coordinate the pick-up of students by parents or relatives. The numbers were assigned to cars, while other numbers were recognized and names transmitted to teachers to release the student(s).

We discovered the name and location of the school, and the next day two control operators parked in the school lot. Cars began to line up. At precisely 3:30 p.m. a man came out of the school entrance with a handheld and literally blew us away as we listened to him on 146.000 MHz, directing pickup of students. As soon as the traffic departed, we approached the official, introduced ourselves, and explained the problem. He was using a commercial handheld and said he would check it out with the distributor. No further transmissions were heard.

A Helicopter And Chase Vehicles

One weekend partially distorted signals were keying up the repeater. A sweep of the 2-meter band showed that some sort of government communications were being conducted on 146.025 MHz and splattering over to 146.010 MHz and activating the 146.610-MHz repeater. (The 146.025/146.625-MHz repeater in nearby Arlington, Virginia, requires a Private Line, or PL, tone



An unsolved radio mystery unfolded as licensed ops heard what appeared to be transmissions coming from a control operator in a helicopter who was coordinating chase vehicles in the Washington, D.C., metropolitan area. In another instance, about a week later, the repeater was activated by a nearby transmission from operator coordinating personnel on the ground. A possible military operation? We'll never know the answer. (DoD photo by Lance Cpl. Donald R. Storms, U.S. Marine Corps.)

to activate its receiver. Therefore it was not being interfered with and its users were unaware of the problem.)

The exchanges appeared to be coming from a control operator in a helicopter who was coordinating chase vehicles in and around the Washington, D.C., metropolitan area, including Northern Virginia and Maryland. Whether or not it was an exercise is unknown.

A ham in Bowie, Maryland, who was monitoring the event said that the helicopter was almost directly over his home and he could hear the propeller and voice transmission quite loudly on 146.025 MHz. They both faded as the helicopter flew away. No attempt to contact the operators was made, primarily out of total surprise by the event. After about an hour or so of exchanges, they were terminated by their control operator. No further helicopter incidences were heard.

However...

The Aircraft!

About a week or so later, similar voice transmissions were again heard on 146.025 MHz, splattering over to 146.010 MHz and activating our repeater. This time it appeared to be coming from an aircraft coordinating personnel on the ground.

Contact was made with the aircraft operator, informing him of his illegal operations. The operator was then heard saying, "All stations unplug channel 3, repeat unplug channel 3." The interference never returned. Again, why authorized FAA aircraft frequencies were not being used is unknown.

The Open Microphone— Home For The Holidays

A continuous signal timed out our 146.880-MHz repeater. The signal contained no audio, although a tapping noise could be heard in the background. At first, the tapping sounded like someone typing on a computer keyboard. We assumed the open-mic transmitter was in someone's radio shack. However, a call from a local ham advised that he could hear on his HT a strong signal on the repeater's *input* frequency of 146.280 MHz. He noted that it was raining heavily at his residence and the rain coincided with the tapping noise heard through the open mic. We, therefore, suspected the mic to be in a parked vehicle in close proximity to the ham's house.

Now aware of the approximate location, a number of members cruised the area using DFing (direction-finding) equipment. They got lucky. An empty

out-of-state pickup truck with ham tags was emitting a strong signal from its parking spot in front of a private home. Contact with the residents revealed the ham was visiting for the holidays and inadvertently left his transmitter on and the microphone stuck in the transmit position. Case closed.

Emergency Dispatch Vehicles

An unknown signal was periodically activating our two repeaters. The transmissions were of short duration, making DFing very difficult. However, a member was mobiling while listening to the repeater input frequency, and said it was full quieting (solid signal into the repeater) in a specific area of town. Additionally, we were able to determine that the offending transmitter was in the 154-MHz range and was being used to dispatch *ambulances*. The signal also varied ± 20 kHz from its center. But what was most unusual about the interference was that it occurred *after* each dispatch transmission, not during.

The transmitter site was in a secure area, but luckily one of our members had access to it. He talked the problem over with some helpful tech reps who discovered a faulty component in their com-

mercial repeater. The representatives confirmed that a weak roaming oscillator spur was being emitted immediately after a transmission. Because of the height of the antennas involved (theirs was 250 feet, ours 300), coupled with a line-of-sight spacing of about five to seven miles, even a low-power signal was sufficient to create interference. Although it initially took about a month to track down the faulty transmitter, once the problem was identified it was corrected over the course of only two days.

Police Repeater

One afternoon police transmissions were being received over one of our repeaters. At first we thought it might be someone illegally re-broadcasting, but a member was able to quickly identify the frequency of the transmissions and, subsequently, the specific police department. Our repeater licensee contacted the tech rep, who coincidentally was a ham. He advised that the police repeater had just been installed and apparently was not tuned properly, promising that it would be corrected the next day. He was true to his word, and the interference stopped. Hams in the right places make things happen quickly.

Pager Transmitter

Here's a most interesting case. It seemed that on most days our repeater was being activated intermittently between the hours of 11 p.m. and 6 a.m. The initial consensus was that everyone was sleeping at that time, so no one was listening, so it wasn't a problem. *Wrong!* Some of our control operators did monitor and complained, rightly so, that it was interfering with their sleep. And so the hunt began. Fortunately, the tones of the pager were isolated to a specific frequency and we were able to pick up a CW identification, making it relatively easy to locate the owners. The company tech rep was contacted and informed of the problem. We were lucky: it turned out that he was quite tenacious and didn't mind being awakened at midnight.

To shorten the story, there was a string of pagers serving customers around Baltimore and another around Washington, D.C. The rep was able to quickly turn off the Baltimore ring during the interference, turn it back on, and then do the same thing with the D.C. system. The latter was the culprit, or at least one of the

paggers within the ring was. Unfortunately, finding the individual pager transmitter would require him to visit *each* facility. It took a couple of weeks, but the faulty transmitter was finally located, thanks to a persistent tech rep and club members working with him. They lost a lot of sleep.

The unusual part of this discovery was that the pager was running only 4 watts to a low-profile antenna in a facility about five miles from the repeater. *The facility closed after 6 p.m.* Why the pager activated and emitted a spur to the input of our repeater frequency only during the above hours remains a mystery. Shades of *The Twilight Zone!*

The Buzzing Tone, An Unsolved Mystery

This was a very strange one. An intermittent commercial signal was throwing out a spur that was activating the repeater and emitting a buzzing tone. Once again, one of our members picked up a strong signal on the input frequency of our repeater while driving through a specific area of town. It was a particularly hot summer week when the repeater licensee and I, handhelds in tow, went to the vicinity of the interference. Now, if you can hear a signal *without* the handheld antenna attached, you know you're on top of it! It took about six hours, but the dirty transmitter was located.

The strange part of this find was that the antenna—a commercial vertical dipole—was bent to a rakish angle with its transmission cable leading to a somewhat dilapidated, unlocked wooden shack. Entering, we found a commercial transmitter in the on position, no license on the walls, and no personnel in the unsecured "facility." With no one to contact and the dirty transmitter creating interference, we simply turned it off and departed. We left a note attached to the wall outlining the problem, including our names, organization, and telephone numbers. No one ever called. The interference never returned. The year was 2000!

Epilogue

The majority of the above interference problems are understandable. Typically they result from equipment failures or use of purchased or leased equipment that had been incorrectly programmed by the seller or distributor. However, intrusion into a radio spectrum exclusively allocated to



A stuck mic was the culprit (as it is in many cases!), but never fear, the mystery was solved.

the Amateur Radio Service by what *appears* to be government or military surveillance tactical operations is not only strange, but also unacceptable. The ironic part of *their* transmissions was that they were heard throughout the entire Washington D.C./Baltimore/Northern Virginia area, apparently with absolutely no transmission security.

The bad news is that we were unable to isolate and pinpoint the intruders. The good news is that once challenged on the air, the intrusion stopped. *Maybe they got the message.*

We now return control of your magazine back to you. We wish you all lots of radio fun and adventures—and only mysteries you can *solve!* ■

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