

The Neckloops Don't Work- A Possible Cause

By Stephen O. Frazier

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People with telecoil equipped hearing aids or cochlear implants often report that “the neckloops don't work” when visiting a performance space or place of worship with an FM or RF assistive listening system (ALS). 2,000 seat Popejoy Hall at the University of New Mexico in Albuquerque was an example of that problem a while back. Popejoy is the city's premier performing arts venue, offering a wide variety of cultural experiences that include a number of lecture series. It's home to the New Mexico Philharmonic, and offers an impressive roster of touring attractions year after year that includes Broadway shows, national and international dance companies, and even an international piano competition.

A few years ago the hall retired their aging FM system and installed a state-of-the-art RF ALS for which they offer the option of neckloops instead of earphones as required by the ADA. Users complained that the new ALS worked well with the venue supplied earphones but the neckloops simply did not work unless you turned the volume way up on the receiver and then strung the loop over your ears. When they complained to the hall's management they were told that they had consulted the sound technicians and were told the system worked perfectly. That staff also reported that they regularly tested and maintained the system's equipment, but that claim was questionable as they had no field strength meter or other device to check if the neckloops were producing any sound at all, let alone at a level adequate for a hard of hearing theater goer using the equipment.

Addressing the problem

After filing multiple complaints on behalf of the many hard of hearing people who regularly attended performances at Popejoy that went unresolved, I contacted the hall's management and requested a meeting to discuss the neckloop problem. The ensuing investigation that was undertaken found that both claims were true – the system worked very well and the neckloops, as they were being used, didn't work.

I took an associate along with me for that meeting. An experienced engineer named Mike Langner who has much more technical expertise than I possess. Mike, like me, is hard of hearing and relies on hearing loops in a variety of settings. He's a semi-retired broadcast engineer who brought clear sound to New Mexico broadcast audiences for over sixty years. In his retirement he designs, donates and installs hearing loops for NM nonprofits. He's certified by the Society of Broadcast Engineers as a Professional Broadcast Engineer and is still active as the technical consultant to the New Mexico Broadcasters Association. He makes visits around the state for industry compliance inspections. His background includes designing, setting up and running public address and assistive listening systems employing all of the major technologies

used for such purposes.

We met with management and sound techs in the auditorium near the sound board for the hall's sound system. Popejoy's sound techs were adamant that their equipment was not the problem, insisting that the neckloops worked well. Mike asked if they could turn the sound system on and give him a neckloop to examine and test. He had brought along a couple of field strength meters to test the magnetic field created by the Sennheiser neckloops Popejoy used. Mike and I both turned on the telecoils in our hearing aids and couldn't hear a thing.

The Solution

Mike then tested the neckloop he was using and found that the sound from the neckloop was nearly 30 dB below the standard of 400 milliamperes per meter (mA/M) required for adequate audibility and volume from an induction loop. It was obvious that the neckloops were not working as intended, so Mike asked if the volume level being fed to the transmitter of the RF system was correct. He was taken to the sound system and the VU meter indicated the level being fed to the system was approximately -30 dB which, Mike said, was far too low. When a member of the hall's tech staff turned the volume being "sent" from the mixing console to just below 0 dB on the frequently occurring peaks, both Mike and I found that the neckloops we were trying worked well. The sound level was good when set at about half volume on the receiver, leaving an adequate amount of additional volume available to serve the needs of someone with a much more serious hearing loss than Mike's and my moderate to severe loss. Mike again took a reading with his field strength meter and got a reading that met the 400 mA/M field strength standard for such an electromagnetic signal.

It was obvious from this experience there was nothing wrong with the system or its equipment, the neckloops didn't work simply because the volume being broadcast by the RF system was not adequate. With the volume properly set, the neckloops would work just fine.

Other Problems

A complication that exacerbated the neckloop problem turned out to be that the hall does not ordinarily provide a "board operator" for the sound system for all performances. Traveling Broadway shows and many similar troupes usually provide their own operator for the mixing board – someone who knows the special needs of the show such as when mics are turned up or down or recorded sound is at the requisite level. We were told those visiting board operators paid little, if any, attention to the audio levels going to the ALS. If they do anything, it's turning that feed down to a low level so it won't be too loud when the show's volume peaks. Mike suggested that the Hall could control the volume of the ALS with what he called a "Sta-Level" being added to the audio line feeding the RF system's transmitter. We also suggested various ways they could check to ensure that their neckloops were working properly.

Lessons Learned

The lesson learned in this Popejoy Hall case was that there might be a simple solution to the "neckloops not working" reports from hard of hearing theatre goers. In other cases it might not

be as simple, but boosting the volume to the FM or RF system at the control board is certainly worth attempting to see if it's the culprit.

Another lesson is that any venue with an ALS that employs neckloops should have a way to test that they are working properly. That could be a field strength meter, a pair of Lexie Lumen over-the-counter telecoil equipped hearing aids, a pair of cast off telecoil capable hearing aids, or some other testing device, and instruction on its use.

A further lesson is that management and their sound crew need to at least attempt to ensure that any outsiders operating the hall's sound system and ALS be provided with adequate information on the proper use of that system.

That hall management should be open to a really thorough investigation of complaints is yet another lesson. If they are truly concerned with the needs of their hard of hearing patrons rather than just in meeting the equipment requirements of the ADA, they will act on those complaints.