Recording History

The Story Behind Our GE 44-Tonner Sound Set

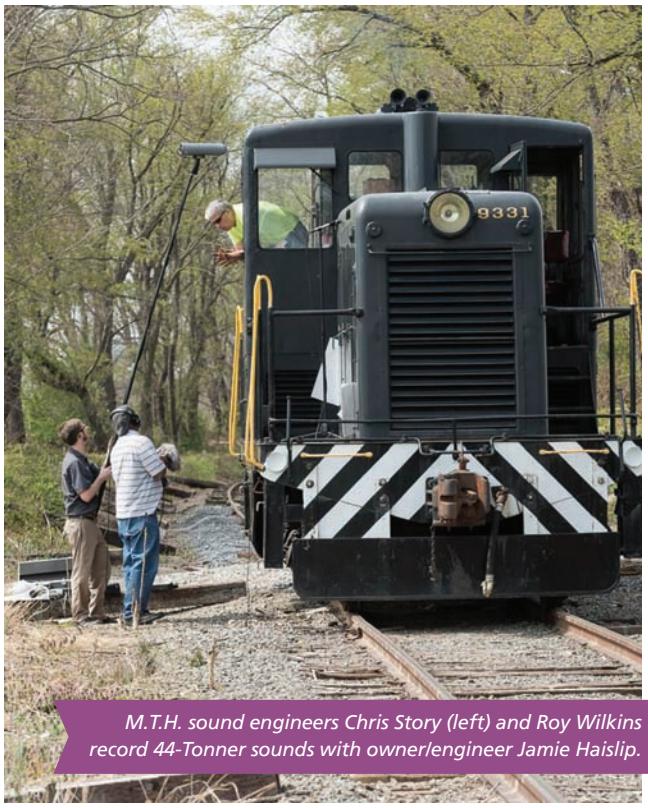
CrossingGate recently interviewed M.T.H. sound engineer Chris Story about creating the sound set for the new GE 44-Tonner, which arrives in hobby shops this Fall.

***CrossingGate:* Tell us about the engine you recorded.**
Chris Story: There are a number of 44-Tonners still running, but the the problem is that many of them are not in great shape. We were fortunate to find a very well restored engine pretty close to our home office, on a tourist railroad called the Walkersville Southern in Walkersville, Maryland. So what you'll hear in our model is the sound of a 44-Tonner in its heyday, when it was nearly new from the GE factory.

The engine we recorded has an interesting back story. It's a former Pennsylvania Railroad 44-Tonner built in 1949, and it's likely that it actually served on the ex-Pennsy branch line where it runs today. It earned a living for more than 50 years, on the Pennsy until 1962 and then in a South Carolina quarry until about 2001. Jamie Haislip, a volunteer at the Walkersville Southern, bought it from the South Carolina Railroad Museum for $5,000 in 2011. It was in rough but working condition then, and in the years since he and fellow volunteers have restored it to near-showroom condition.

***CrossingGate*: What was the most fun part of doing the recording?**
Chris Story: Well, this engine has one of the coolest start-up sequences I've ever heard, and you'll be able to hear the whole sequence in the model when you access the Extended Startup in DCS™. A 44-Tonner has two Caterpillar V-8 diesels — actually the same motor used in a lot of bulldozers. They're pretty high compression and require a good deal of effort to turn over when they're cold. So to make it easier, in a cold start they use just four of the cylinders, with the valves open on the other four. So you hear the engine turn over, fire up on four cylinders, and then quickly the other four cylinders light up. And they do that with one motor, and then go through the same sequence with the other V-8. So you get this unique rattly/throaty startup sequence that I've never heard on another diesel.

We'll also have an abbreviated startup sequence for normal operation, so you don't have to listen to the whole thing every time you start up the model. But the full sequence can be activated with the Extended Startup [SSU] softkey in DCS operation. We'll also have an Extended Shutdown [SSD softkey] sequence where you'll hear the fuel pump and other sounds in the background and then the engine slowly winds down.



M.T.H. sound engineers Chris Story (left) and Roy Wilkins record 44-Tonner sounds with owner/engineer Jamie Haislip.

***CrossingGate*: What other sounds will we hear on the model?**
Chris Story: We recorded the diesel motors at each rev level, as we always do. The 44-Tonner also has a rather unique air compressor that is part of our sound set. But capturing the horn presented an interesting challenge.

Jamie's 44-Tonner has a Nathan multi-chime horn, which was not original equipment on these engines. Fortunately, he had another, non-operable 44-Tonner in the yard that he's in the process of restoring, and that engine had a Wabco A-2 single-note horn, which was common on new 44-Tonners. So we were able to record the correct horn from that other engine.

However, since that horn hadn't been operated in some time, it was a bit out of tune — most likely the diaphragm tension was slightly off. So I did some research on what a Wabco A-2 is supposed to sound like, and we used some sophisticated audio software to get it into the right key and make it sound

like an A-2 should. Interestingly, it sounds a bit like a car horn, not the loud multi-chime horns that we're used to hearing on mainline diesels.

***CrossingGate*: Sounds like you really have an ear for diesel horns.**
Chris Story: Roy Wilkins, our other sound engineer, and myself are both musicians, so the musicality of a horn is really important to us. Making sure, for example, that if it's supposed to sound like a B minor or a B7 inverted chord, that's what you hear from our engine. I think that makes a difference to the modeler, even if they're not musically inclined. Also, we have a pretty extensive library of whistle and horn recordings that we've gathered over the years, so we have good reference points to help make our sounds accurate.

***CrossingGate*: So you and Roy work together on location recordings?**
Chris Story: Actually Roy works out of our Columbia office and I work in our Michigan location and yes, in this case we did join up in Walkersville to record the 44-Tonner. I also moonlight as a sound engineer for live concerts, so I look at locomotive recording sessions as a live performance, where the performer on stage is the engine, and the crowd variables, if you will, are the birds and the wind in the trees and the farmer on a tractor plowing a field a mile away, where we have to wait until he's done.

With the 44-Tonner, we were fortunate in that Jamie found a place to record about a mile or two from the Walkersville Southern yard, near an unmarked grade crossing surrounded by fields and trees. With a big diesel on a mainline railroad, we're seldom that fortunate. We did most of the 44-Tonner recordings in the morning, when the birds and animals were quiet and the wind was low; we were also pretty far from farm equipment or traffic noise. This makes the recording cleaner and the editing process easier, because you have less ambient noise that you need to get rid of.

***CrossingGate*: Did you do anything special to match the sounds to the model?**
Chris Story: Yes, with any sound set we're shaping the equalization of the sounds to the particular speaker we're playing them through, as well as the speaker cabinet, which is the model. That's crucial, because, for example, you can overdrive a speaker pretty easily and distort the sounds. Locomotive sounds have a lot of low-end energy, and it's a challenge to reproduce those low-end frequencies in a small speaker like you have in a model.

That challenge is particulary acute with our 44-Tonner, because our model is the only current one with accurate scale-width hoods, which are really narrow. And this engine is really small. So you've got a tiny space with two can motors, the new, smaller version of our DCS system that we developed for S gauge, and the biggest speaker we can fit in there, a 40mm VECO speaker, which is one of my favorites. Fortunately, the engine has a heavy die-cast metal shell, which I think acts as a pretty good speaker cabinet.

***CrossingGate*: Anything else you'd like to mention?**
Chris Story: In the end, I'd like people to know that we've put a lot of effort and attention to detail into this model. I'm very excited to see it hit the market, and I think folks are really going to enjoy it.

While our Premier model is not the first O scale 44-tonner, we believe it is the best. Die-cast metal constuction and twin vertical can motors provide extraordinary pulling power, while versatile tooling allows us to produce early and late body styles in exact 1:48 scale. To our knowledge, this is the only current production 44-Tonner that accurately reproduces the prototype's narrow hoods and wide walkways.

Proto-Sound 3.0 provides sounds recorded from a 44-tonner running today, the ability to throttle down as slow as 3 scale miles per hour, and a "lash-up" feature* that allows you to operate the 44-tonner as a shop switcher moving around steam engines or diesels many times its size, as the prototype often did.

Prototype history
The 44-tonner was a workaround. In 1937, seeing that new diesels were putting the fireman's role in jeopardy, the railroad unions negotiated the "90,000 Pound Rule" with the railroads — specifying that any engine with a weight on drivers of 90,000 pounds or more would require a two-man crew. General Electric's 44-tonner, introduced in 1940, skirted the 90,000 pound rule and was thus the largest locomotive that could legally be operated by one person on a common carrier railroad.

But while the 44-tonner put the fireman out of work, it made the engineer's life easier than it had been on the 0-4-0 or 0-6-0 steamer it replaced. The greenhouse-like cab in the center of the engine offered 360-degree visibility, a decided advantage in the chaos of the switch yards, industrial areas and railroad backshops where the 44-tonners usually labored. In the event of a collision, the engineer had the protection of a hood at each end of his locomotive, unlike an end-cab switcher.

Under each of those hoods throbbed a dependable 180-hp Caterpillar V-8 diesel — so dependable that many of these engines are still hauling freight or tourists today, more than seven decades after they were built. Predicting modern diesels, where the lone engineer shares his cab with a train crew that no longer has a caboose, the 44-tonner's cab also sported a second seat for a brakeman or conductor.

Unlike most of its competitors in the small engine business, who saw their main clients as industrial plants and short lines, General Electric pursued sales with Class 1 railroads. At least 26 of them rostered 44-tonners, with the Pennsy having the largest fleet at 45 engines. The 44-tonner was also beloved by industrial roads and short lines, where it often served as mainline power on lines with prosaic names like Arcade & Attica or Dansville & Mount Morris. The engine was also popular with the U.S. military for use domestically and abroad. By the time the last of the 44-tonners was outshopped in 1956, about 386 engines were working in locales as diverse as Cuba, India and Saudi Arabia.

** Requires the M.T.H. Digitial Command System (DCS)*