Museum News: Helper Engines

By C. W. (Bill) Smith

We see them every day...mile-long freight trains, filling the air with their black exhaust as they labor to pull their 10 million-pound loads, blocking the crossings for what seems to be an interminable time. And, at the end, one or two extra locomotives are in place of the traditional red caboose, which has been gone for many years now. Due to our mountainous terrain, that extra boost is needed to get the trains over the "hump."

If you look carefully as the "helper" engines pass by, you can't help but notice that there is no one driving the giant machines. In this day of electronics and wireless communication and control, the engineer has been eliminated from those last engines and all control is done from the lead unit.

On July 4th, 1937, this Daylight passenger train could not get enough traction to round a freshly ballasted curve near Cuesta, CA, and had to rely on a large 2-10-2 freight engine to give it a push around the curve. Older engines near the end of their life were often put into helper service on the Southern Pacific.

In "olden" days, the day of the steam engine, the same process was used to help trains through our mountain passes. The helpers were stationed just before the area they were needed and were coupled to the train when it arrived. After they got to relatively flat country on the other side, they dropped off and waited for the next train going in the opposite direction. They worked as well in reverse as they did forward, so there was no need to turn the helper engine around for the next job.

But, that brings up a good question...without radios, how did the engineers coordinate their efforts so that both engines moved the load over the pass efficiently and safely? The answer...whistles!

If you have ever stood by the tracks when a steam excursion train blew by, you quickly realized that the steam whistle was tremendously louder than you ever expected. Steam whistles can be heard for miles, even over the clatter of bumping railroad cars and hissing steam noise.

In May of 2006, UP #844 was passing through Sanderson on a trip east and made a stop at our recently demolished SP depot to take on water, check the engine and give local folks a photo op. It drew quite a crowd of adults and school kids, and as we stood there, marveling at that huge creature, unexpectedly, the engineer pulled the whistle cord. It was quite amusing to see 150 people jump two feet off the ground when the giant beast bellowed and coughed up a cloud of steam and smoke.

So, by using whistle blasts at the appropriate time, the lead engineer and the helper engineer talked to each other. Two long blasts from the lead engineer told the helper to release his air brakes and push forward slowly to take up slack. The helper responded by giving two long blasts to signify "message received."

When the lead sensed or saw the slack being taken up, he opened his throttle and began pulling his engine forward. By manipulating their throttles and using their senses, the two engineers divided the work load so that the lead pulled the forward half of the train and the helper pushed the back half.

Driving the steam locomotive was as much an art as it was a skill, learning to listen to the engine (and each one had its own "personality,") judging how hard it was working and making adjustments to achieve its peak of efficiency and safety. The helper engineer spent his trip constantly adjusting his throttle to keep the locomotive pushing its load, and watching his air brake pressure gauge.

When the lead engineer wanted to stop, he gave one long blast on his whistle. This gave the helper a heads up, and as the lead applied his brakes, the pressure gauge needle in the helper engine began to drop, indicating that braking was in progress.

Now the helper began to reduce his throttle slowly to keep steam moving through his cylinders to lubricate them, then he shut the throttle off as the train slowed to a stop. No matter how big the steam locomotive, it still responded to a delicate touch and certain finesse in handling the throttle.

And, in addition, there were rules on how to handle cabooses in a helper operation. The older, wood-frame cabooses had to be coupled behind the helper engine. They could not take the tremendous force the helper had to exert to move the train, and might splinter to matchwood under the pressure. Wood cabooses with steel frames and all-steel cabooses could be coupled in front of the helper, as they were designed to take the stress.

In our area, helpers were cut in west of Paisano Pass, between Alpine and Marfa, highest point on the New Orleans-Los Angeles route. After the train passed over Altuda Pass west of Marathon, the helper dropped off to a siding and awaited the arrival of the next west-bound train that needed a push.

In a recent change to policy, Union Pacific today uses DPUs, Distributed Power Units, in which the locomotives are spotted at different places in the train. For the average 70-car freight train, four locomotives are used with two in the lead and two at the rear. Redistributing the power units results in greater efficiency in running the trains.

Popularmechincs.com reports that "monster trains" up to 3.5 miles in length are being tested which can replace 600 18-wheelers on the highway, making the railroad the most economical way to ship across the continent.

Fortunately, trains like that will be limited to double-track mainlines. After all, who would want to sit, waiting for that thing to go by?