

In re investigation of accident which occurred
on the Denver & Rio Grande Railroad,
near Fountain, Colo., on
February 22, 1915.

On February 22, 1915, there was a derailment on the Denver & Rio Grande Railroad, near Fountain, Colo., which resulted in the death of the engineman and fireman and the injury of 12 passengers, 1 mail clerk, 1 express messenger, and 1 new agent. After investigation of this accident, the Chief of the Division of Safety reports as follows:

The train involved in this accident was westbound train No. 15, consisting of 1 mail car, 2 baggage cars, 2 coaches, 4 Pullman sleeping cars and a coach, in the order named, hauled by locomotive No. 1002, and was in charge of Conductor Muse and Engineman Hockenberger. It left Denver, Colo., at 7.45 p.m., passed Fountain at 11.01 p.m., 2 minutes late, and was derailed about two and one-half miles beyond Fountain at about 11.05 p.m., while running at a speed estimated to have been about 45 miles per hour.

The track was completely torn up for a distance of 350 feet from the point of derailment to where the locomotive came to rest on its right side at right angles to the track. The mail car was turned around, with one end resting on top of the engine, the car itself remaining in an upright position. The next four cars were derailed, as well as the forward truck of the following car, all remaining upright and none being seriously damaged.

This part of the Denver & Rio Grande Railroad is a single track line, trains being operated by train orders and time-card rights. The track was straight in each direction for a considerable distance, with a descending grade for westbound trains of .6%. The track at this point is laid with 85-lb. rails 33 feet in length, single-spiked to about 20 red spruce and native pine ties under each rail, the majority being pine, ballasted with from 12 to 15 inches of smelter slag. No tie plates are used except on curves. The weather was clear.

The accident occurred at a point about 1,287 feet beyond mile post No. 90. Examination of the track between mile post No. 90 and point of derailment showed the presence of 126 defective ties, 8 being in the first rail length east of the point of derailment and 40 being in the first 8 rail lengths. There were also 54 missing spikes and 17 spikes loose enough to be drawn by hand. Of these 71 loose or missing spikes, 21 were at joints. Beginning at the second rail back from the point of derailment, and continuing for 8 rail lengths toward mile post No. 90, the gauge varied from 4 ft. 8½ inches to 4 ft. 9-¾ inches, the ties in many places bearing evidence of the rails having spread from one-half inch to one and one-quarter inches, while at many of the joints the spikes had been nearly cut off, caused by creeping rails and the movement of the track when being passed over by trains.

Beginning at the point where the locomotive came to rest and extending in a westerly direction for a distance of 50 rail lengths, there were 115 defective ties, 82 missing spikes and

121 loose spikes. Of the 203 loose or missing spikes, 111 were at joints. At one joint there were 4 missing spikes and the angle bar cracked from the top to the angle at the base. A great many of the spikes were from one-half inch to one and one-quarter inches above the base of the rail, while at one point the spikes on the outside of the rail were so far from the rail as to be of no value in holding it in place, this condition existing on four successive ties. At another point three successive spikes on the out side of the rail were loose, while in the same ties, in order to keep the rail from spreading, spikes turned with the backs to the rail were driven upon other spikes laid lengthwise across the ties.

After the accident the old or damaged ties were thrown to one side, new ones being put in the track in their places. The inspectors requested that these ties be allowed to remain until photographs could be taken. On returning to the scene of the accident the following morning, however, these ties were found to have been piled up and were being burned. Several of the ties were then removed from the fire and examination of these indicated that the rails had spread, the outside spikes having been pushed outward to a considerable extent. These ties, which are believed to have been those which were in the track about at the point of derailment, were also badly base-worn.

Examination of the locomotive showed that the paint on the outside of each of the back pair of engine truck wheels was scraped off and the same condition prevailed with respect to the tires of the driving wheels. The leading points of the counter

balances in the driving wheels on the right side were battered, especially in the main driving wheel where the distance from the tread of the tire to the face of the counter balance was less than on the other driving wheels and also less than the height of the rail. These conditions would indicate that these wheels had dropped inside of the rails, the counter balance on the right side riding on the rails. All of the wheels under the engine were in good condition with respect to gauge and showed very little wear. The lateral motion of the engine truck was found not to exceed one-eighth inch.

Trackwalker Adkins stated that he walked over the track in both directions on the day of the accident and noticed no unusual conditions. He did not carry a track gauge, stating that he judged the gauge of the track by whether or not the spikes were tight on both sides of the rails. He did not notice many spikes worked out of the ties in the vicinity of the point where the derailment afterward occurred, but did notice a few such spikes at joints.

Section Foreman Sullivan stated that he had had 30 years' experience as foreman. Just prior to the time he took charge of this section in August, 1912, it had received general repairs by an extra gang. At that time his section extended only to mile post No. 92, while at present it extends to mile post No. 96, comprising 8 miles of single track main line. In 1913, the track was not surfaced, light repairs being made in the nature of putting in ties, picking up low joints, etc. In 1914, between mile posts Nos. 90 and 91 he put in from 300 to 350 ties and made

light repairs, similar to the preceding year. He further stated that he went over the track a day or two before the accident, but did not notice anything wrong. During the preceding year he had not been able to employ as many men as he was allowed to employ, the men being able to find work elsewhere which would pay more money. In March, 1914, he had an average of 10 men, and an average of 5 men during each of the next 4 months. In August, September and October he averaged about 3 men, while in November and December, of 1914, and January, 1915, he had but two men, and only one man, the trackwalker, in February. He stated, however, that no work would be done in the track in the winter if it could possibly be avoided, hence a large force of men would not be needed during those months. He further stated that he had found quite a number of rotten ties. Many of the ties were of pine and very often the life of such ties was only two years. During the winter he had had trouble with the spikes only at joints, where they worked out more frequently than at other places.

Roadmaster Kennedy stated that he went over this portion of the track on a motor car about 4 or 5 days prior to the occurrence of the accident, making a general inspection. He found the track to be in good condition. Two days prior to the accident he rode over this track on a train and did not notice any unusual movement of the cars. He further stated that he arrived at the scene of the accident two hours after its occurrence and during the day made a careful examination of the equipment and roadway, but on account of the track being badly torn up he was unable to determine what caused the accident. He stated that he did not make any

measurements of the gauge. He considered the track to be perfectly safe for the movement of passenger trains at high speed.

Division Superintendent Miller stated that it was not necessary for trackmen to carry a gauge; that track out of gauge could be detected by looking at it and also by watching it from the rear end of a train. He made a careful examination of the track, equipment, etc., but did not know what caused the accident, stating that he did not consider the conditions found to exist after derailment to be the same as those which existed prior to the derailment. In the first place he considered it impossible for such conditions to exist without being noticed by the track-walker, section foreman or roadmaster; secondly, he thought the spikes pushed outward at the point of derailment were due to the derailment itself, being a result of, and not the cause of, the derailment. He thought the uneven condition of the track on each side of the derailed train was also a result of the derailment, being due to the strain placed on the track by the sudden stopping of the train.

It is believed that this accident was caused by the spreading of the rails under the locomotive hauling this train. The examination of the track revealed the presence of defective ties, insecure spiking and irregular gauge, while the wheels of the locomotive bore conclusive evidence of having been running on the inside of the rails, and it is thought that the irregularity of the track caused the locomotive to rock to such an extent that the rails finally spread sufficiently to allow the engine truck

wheels to drop between the rails, forcing them outward and causing the subsequent derailing of the driving wheels.