

IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON
THE WABASH RAILROAD, NEAR MOUNTAIN, IOWA,
MAY 11, 1919.

June 20, 1919.

On May 11, 1919, there was a derailment of a freight train on the Wabash Railroad, near Mountain, Iowa, which resulted in the death of one employee and two trespassers and the injury of two trespassers. After investigation, the Chief of the Bureau of Safety submits the following report:

This accident occurred on the 15th District, which extends from Moberly, Mo., to Mountain, Iowa, a distance of 95.3 miles, and is a single track line over which the movement of trains is governed by time table and train orders, no block signal system being in use. The geographical direction is north and south, but the time table direction is east and west, and is the direction referred to in this report.

Approaching the point of accident from the east beginning at milepost 240, there is 300 feet of tangent, a curve of 2 degrees 30 minutes to the left 350 feet in length, then a tangent 1850 feet in length, and then a 3 degree 30 minute curve to the right, the derailment occurring 550 feet west of the eastern end of this curve. From milepost 240 the track is level for a distance of 825 feet, followed by a descending grade varying from .49% to 1.24%, 1300 feet in length, an ascending grade of about 1% for a distance of 500 feet, about 200 feet of practically level track, and a further descending grade of about 1% to the point of derailment. The track is laid with 80-lb. rerolled steel rails, from 29 to 31 feet in

length, single spiked, with 18 to 20 mixed oak, elm and hickory ties to the rail, ballasted with burned gumbo. A few rail braces are used on curves, but no tie plates. The elevation of the outer rail on the curve at the point of derailment was 3 inches. The weather was cloudy.

The train involved was westbound freight No. 95, en route from Moberly, Mo., to Moulton, Iowa, consisting of engine 2046, 36 cars and a caboose, in charge of Conductor Kinade and Engineman Nichols. It passed Coatesville, Mo., $5\frac{1}{2}$ miles east of the point of accident, at 3.25 p.m., and was derailed at about 3.40 p.m. at a point about $2\frac{1}{2}$ miles east of Moulton, while traveling at a speed of about 25 miles an hour. After running a short distance on the ties the engine and tender turned over on the left side of a 12-foot fill and were considerably damaged. Fifteen cars were also derailed, ten turning over on the left side of the track, three being demolished. One rested across the track, one was derailed to the right, while the other three remained upright on the roadbed. The employee killed was the fireman.

The first signs of derailment were flange marks on the ties on the inside of the north rail, extending a distance of nearly 15 feet, and corresponding marks on the inside web of the south rail, the outer rail on the curve. This rail was partially overturned, while beyond this point the track was entirely torn up for a distance of about 280 feet. Examination of the engine and tender failed to disclose anything which could have contributed to the derailment. Examination

of the track showed it to be in very poor condition; there were broken ties, broken angle bars, missing angle bar bolts, and missing, broken and loose spikes. Between milepost 240 and the point of accident, a distance of about one-half mile, inspection showed 148 rotten and broken ties, as many as six in succession and as many as twelve to the rail; 17 angle bar bolts were missing, three from one joint; 83 spikes were missing and 247 spikes so loose that they could be pulled out by hand, while a large number did not come in contact with the rail. Many of the rails were badly curve-worn, while the head of one rail was partially split off. The gauge and alignment were fair, but the surface was poor, especially within six rail lengths of the point of derailment; the joint of the second rail, 45 feet from that point, had a super-elevation of $1-13/16$ inches, while the center of the rail had a super-elevation of $4-1/8$ inches, a net variation of $2-5/16$ inches. Similar conditions were noted at other points near the scene of the accident. The ballast had disintegrated to a great extent, and cinders had been added from time to time on various parts of the track, forming a mixed ballast to a depth of about 8 inches.

Engineman Nichols stated that he first observed that something was wrong when he and the fireman heard a noise under the tank which sounded as if the wheels were on the ground. He looked around and noticed that the gangway on the left side was opening up, while it was closing up on the right side, the tank swinging in such a way as to indicate that it had been

derailed. He at once shut off steam and made an emergency application of the air brakes. He thought the engine must have run about six rail lengths after he heard the noise under the tank. Engineman Nichols also stated that he had examined the engine at Moberly, and except for a flat spot on one of the rear tender wheels, it was all right in every way. Prior to the derailment it moved smoothly and without any swing or lurch, at a speed of about 23 or 24 miles an hour. He stated that the tank was derailed before the engine, and he attributed the derailment to the sagging and spreading, and consequent overturning of the rails. He added that while he had made no close examination of the track, he noticed a number of decayed ties which had been torn up by the derailment, and also flange marks on the web of the rail.

Conductor Kickadee who was riding in the caboose when the accident occurred, made an examination of the track, finding flange marks on the ties inside of the right hand rail, while the left hand rail was turned over and on its web had flange marks of several wheels for a distance of six or eight feet back of the leaving end. Beyond this point the rails were disconnected and the track so torn up that it was impossible to follow the flange marks any farther. At the time of derailment the speed of the train was not greater than 25 miles an hour. He thought the accident due to the rails spreading or turning over. He was thoroughly familiar with the track at the scene of the accident and believed that it was not in such condition as to be able to sustain an engine

of the size of the one derailed. He added that the track was soft at point of derailment and the ties decayed and rotten, and that the turning of the rail must have been due to the failure of the ties to hold the spikes.

Brakemen Barr and Pruett stated that the speed of the train at the time of the derailment was from 20 to 25 miles an hour, and in general corroborated the statements of the engineman and conductor.

Track Supervisor Jackson stated that he arrived about 40 minutes after the accident and his investigation showed that under the fifteenth car, the front truck of which was derailed, the south rail was loose for its entire length, and had been twisted and turned over. There were flange marks on the gauge side of the web for a distance of about ten feet back of its leaving end, and the spikes were loose, some being above and others under the rail. The joint connecting the leaving end with the receiving end of the adjoining west rail had been broken, and the rail buried in the mud under the track. Beyond this point he was unable to identify any of the rails. He stated that there were flange marks on the ties inside of the north rail opposite the beginning of the flange marks on the web of the south rail, but the north rail at this point was upright and intact. His examination of the track for a distance of about one-half a mile back of where the accident occurred showed that the track was not in good condition, the principal defects being decayed ties, broken bolts, missing spikes, and numerous spikes so loose

that they could be pulled out by hand. He thought the track unsafe for freight trains moving at a greater speed than 25 miles an hour, and stated he knew there were rails in the vicinity of the accident which had part of the head missing. He did not regard such a condition as safe for operating purposes, but owing to the shortage of ties and rails they had not been able up to the present time to make the necessary improvements.

Section Foreman Powell stated that there had been a number of heavy rains in the vicinity in the past 40 days, which, together with the decayed condition of the ties, had softened the track, and because of this he had limited the speed of all trains to 25 miles an hour. On the morning of May 8 he had put in some ties and made other repairs east and west of but not at the point of derailment, and on the morning of the accident he had gone over the track, but observed nothing unusual. He admitted that the track conditions were not good, and that they were bad between mileposts 240 and 241. He thought that the weight of the train might have been too heavy for the roadbed, and stated that the failure to improve conditions was entirely due to the inability to secure necessary materials.

Engine 2046 is of the 2-6-2 type, with a total wheel base of 61 feet 4½ inches, its weight combined with the tender, loaded, being 268,900 lbs. Examination showed nothing wrong with it, with the exception of damage sustained as a result of the derailment.

This accident was caused by the overturning of the outside rail of the curve, due to the existence of track conditions so poor as to render unsafe the operation of trains at the rates of speed allowed. With the exception of the gauge and alignment, every feature, including surface, ballast, ties and all track materials, gave every evidence of a much neglected and run down property, the maintenance of track being given little consideration with respect to the safety of the passenger and freight traffic moved over it. That the bad condition of the track on this part of the road was realized is shown by the fact that on the morning of the accident orders were issued restricting the speed of all trains to 25 miles an hour between Moulton and milepost 227, a distance of about 6 miles.

The existence of track conditions of this character ^{on other roads} has been the cause of many serious accidents in the past, and in the reports covering the investigation of these accidents attention has been called to the necessity of immediately eradicating such dangerous conditions, or else protecting the movement of trains by adequate speed restrictions. Special speed restrictions were in force at the time this accident occurred, but the track conditions shown to exist were obviously not such as to enable trains to be moved with safety at that speed. Immediate steps should be taken to improve the existing track conditions, if other accidents of a similar character are to be prevented.