

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED
ON THE SOUTHERN RAILWAY AT LARKINSVILLE,
ALA., ON JULY 13, 1923.

August 2, 1923.

To the Commission:

On July 13, 1923, there was a derailment of a passenger train on the Southern Railway at Larkinsville, Ala., which resulted in the death of 1 trespasser, and the injury of 36 passengers.

Location and method of operation.

This accident occurred on that part of the Memphis Division extending between Stevenson and Sheffield, Ala., a distance of 127.2 miles, this being a single-track line over which trains are operated by time-table and train orders, no block-signal system being in use. The point of accident was about 2 miles east of Larkinsville; approaching this point from the east there is a long tangent, a curve of $1^{\circ} 4'$ to the left, 609 feet in length, and another long tangent, the point of accident being on the last-mentioned tangent 343 feet west of the curve.

The grade is ascending for a distance of about 2,600 feet, varying from 0.1 to 1.2 per cent, and then descending for a distance of 217 feet to the point of accident. The track is laid with 75-pound rails, 33 feet in length, with 19 or 20 oak ties to the rail-length, single-spiked, tie-plated on curves, and ballasted with gravel. The weather was cloudy at the time of the accident, which occurred at about 1.16 a.m.

Description.

Westbound passenger train No. 25 consisted of one express car, one mail car, one combination car, two coaches, and four Pullman sleeping cars, all of steel construction, hauled by engine 1346, and was in charge of Conductor McFahan and Engineman Jacobs. It left Scottsboro 5.5 miles from Larkinsville, at 1.10 a.m., 14 minutes late, and was derailed near Larkinsville while traveling at a speed estimated at between 40 and 45 miles an hour.

The engine and first two cars were not derailed, while the third car had only the rear truck derailed. All the remaining cars were entirely derailed, the fifth, sixth, seventh, and ninth cars being overturned.

Summary of evidence.

The statements of Engineman Jacobs and Fireman Peters were to the effect that they noticed nothing wrong with the track, their first knowledge of anything wrong being when the air brakes were applied in emergency. The statements of Conductor McManan, Flagman Cloud, and Train Porter Stephens also were to the effect that the application of the air brakes was the first thing they noticed, while Baggage-master Martin, who was riding in the combination car, said he felt the rear truck of that car being derailed and that he at once applied the air brakes in emergency. The estimates of these employees as to the speed of the train at the time of the derailment were to the effect that it was between 40 and 45 miles an hour.

Section Foreman Grizzle said that on examining the track he found that there was a broken rail on the left side, this rail having been broken into six pieces; he did not examine the rail closely, but said that the fractures appeared to be new. Section Foreman Grizzle also stated that he had inspected the track about a week previous to the accident and that its general condition was good. Track Supervisor Williams, on reaching the point of accident, saw the broken rail, reached the conclusion that it was what caused the accident, and did not make a close examination of it. He walked back a short distance, however, examining the track and said that it was in good condition. It had been timbered, lined and surfaced in April, and newly ballasted in May.

Roadmaster Jenkins measured the gauge and elevation for a distance of 10 rail lengths east of the point of derailment. His measurements of the gauge showed it to be maintained in good condition, but it is noted that the surface was none too well maintained, the right rail at a point eight rail lengths from the point of derailment being 1 inch lower than the left rail. Roadmaster Jenkins said there were two broken rails on the left side of the track, the second apparently having broken as a result of the accident. The first broken rail had been broken into six pieces, the first break occurring at a point 19 feet 5 inches from the receiving end, while the first mark on the ties was about 20 feet from the receiving end, all these breaks showed the presence of transverse fissures.

The rail which broke was made by the Tennessee Coal and Iron Co., rolled in December, 1904, and laid in the track in January, 1905. Examination showed that at four of the five points at which it fractured there were clearly defined transverse fissures, in the case of the other fracture, its bruised condition obscured the type of fracture. Bending tests were made on the receiving end of the rail, it being supported on bearings $22\frac{1}{2}$ inches apart, and bending loads of 180,000 pounds being applied at six different points along the length of the rail. The approximate fiber stress due to this bending load was 110,000 pounds per square inch. The rail was permanently bent at each of the places which were thus loaded, but it did not rupture. These results indicate that the quality of the steel was good, and that the cold-rolling effects of the wheels during its period of time in service had not destroyed all of its inherent toughness and ductility.

Engine 1346 was inspected before the departure of the train from Chattanooga, at which time nothing wrong was found, and examination subsequent to the accident failed to disclose the presence of anything which could have contributed to the occurrence of the accident.

Conclusions.

This accident was caused by a broken rail.

Examination of the rail which broke showed that its failure was due to the presence of transverse fissures, these fissures being discovered at four of the five points at which the rail was fractured. The prevalence of the transverse fissures is attributed to the effect of the wheel loads introducing internal strains of tension in the head which culminated in rupture of the rail in each of the several places where transverse fissures were disclosed.

All of the employees involved were experienced men, at the time of the accident they had been on duty less than 3 hours, after from 17 to 26 hours off duty.

Respectfully submitted,

W. P. BORLAND

Director.