

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON
THE CHICAGO & EASTERN ILLINOIS RAILWAY AT OTTER
CREEK JUNCTION, IND., ON JUNE 23, 1924.

July 12, 1924.

To the Commission:

On June 23, 1924, there was a derailment of a freight train on the Chicago & Eastern Illinois Railway at Otter Creek Junction, Ind., which resulted in the death of one employee and the injury of three employees.

Location and Method of Operation

This accident occurred on that part of the Chicago Division extending between Danville, Ill., and Terre Haute, Ind., a distance of 54.3 miles, which in the vicinity of the point of accident is a single-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The point of accident was at the frog of the switch leading from the main track to the Brazil Branch, a few hundred feet north of the telegraph office at Otter Creek Junction. Approaching this point from the north the track is tangent for a distance of about 2 miles, at the switch the main track curves to the right and the Brazil Branch to the left, the curvature on the main track being 4° and the length of the curve being about 1,250 feet. The grade is descending for several thousand feet, varying from 0.11 to 0.53 per cent, this grade extending to within about 1,000 feet of the switch; it is then very slightly ascending to the point of accident. Under time-table instructions the speed of all trains around the curve is restricted to 30 miles an hour.

The main track is laid with 90-pound rails, 33 feet in length, with an average of 20 oak ties to the rail length, ballasted with about 15 inches of coarse gravel, and tie-plated on the curve. The frog is a No. 12 left-hand spring frog, manufactured in 1920, and is of the 90-pound A.R.A. swing-wing type. The general maintenance of the track was good.

The weather was cloudy at the time of the accident, which occurred at about 3.10 a.m.

Description

Southbound second-class freight train No. 67 consisted of 40 cars and a caboose, hauled by engine 1940, and was in charge of Conductor King and Engineman Wheeler. It passed Atherton, 4.4 miles from Otter Creek Junction and the last open office, at 3.03 a.m., 19 minutes late, and was derailed at the frog at the Brazil Branch Switch while travelling at a speed variously estimated to have been between 20 and 35 miles an hour.

Engine 1940 came to rest on its left side in the angle between the main and branch line tracks at a point 202 feet beyond the frog, clear of the main track, while the tender was on its side across the main track. The first six cars were derailed, the first being demolished and the third overturned, while the other four derailed cars remained upright. The employee killed was the engineman.

Summary of Evidence

Fireman Murphy said the speed had been about 30 or 35 miles an hour while descending the grade and had been reduced to about 25 miles an hour by an application of the air brakes made in the vicinity of a road crossing about 3,000 feet north of the point of accident, at which time the engineman also shut off steam. The brakes were released shortly afterwards and the engineman made a second application just before reaching the frog at which the derailment occurred. Fireman Murphy said he was sitting on his seat box at the time and that he had seen the automatic signal north of the switch displaying a clear indication. He did not know how much brake-pipe pressure was used in making the two applications, or the distance the train ran between applications. Fireman Murphy also stated that he had fired all the engines used in pool service on this run and had not noticed a jar at this particular frog any more than at any other frog located on a curve. Head Brakeman Campbell, who was also riding on the fireman's side of the engine, thought the speed from Atherton to the top of the grade approaching Otter Creek Junction was about 40 miles an hour, and said Engineman Wheeler made quite a severe air-brake application, reducing the speed to about 20 miles an hour, and his statements indicated that the engineman had just begun to work steam, without the air brakes being fully released, when the accident occurred.

Conductor King, who was riding in the caboose, said the train passed Atherton at a speed of about 20 miles an hour, approached Otter Creek Junction at 25 miles an hour and was running at a speed of about 30 miles an hour when the accident occurred, although he afterwards said he did not think the speed was more than 25 miles an hour. He had felt one slight application of the air brakes and said they had just been released when the accident occurred. On account of injuries sustained as a result of the sudden stop, he did not go to the head end of the train to ascertain the cause of the accident. Flagman McConnell thought the speed was about 30 miles an hour while passing Atherton, and said an application of the air brakes was made on the descending grade approaching Otter Creek Junction at a time when the speed was 25 or 30 miles an hour, but he did not notice how much of an application was made or whether or not a second application was made. He estimated the speed at the time of derailment to have been 15 or 20 miles an hour.

Operator Adams, on duty at Otter Creek Junction, said he was outside watching the train as it approached, and that the automatic signal was displaying a clear indication, as was also the case with the train-order board. Operator Adams said the engine of train No. 67 was not working steam, while the train was moving at a speed of 30 or 35 miles an hour. He also said he had noticed fire flying near the head end of the train but as he had not paid particular attention to it he did not know whether it came from the ash pan or from the brakes. As soon as the derailment occurred he went inside the office to report the occurrence of the accident to the dispatcher and noted the time of the arrival of the train as 3.10 a.m.

Assistant Road Foreman of Engines Cutler said he found marks indicating that the engine derailed near the point of the frog. There was a mark on the guard rail where a wheel had climbed over it, this being about 2 or 2½ feet north of the point of the frog, while there was another similar mark on the guard rail directly opposite the point of the frog, and he said that three different pairs of wheels apparently had climbed the guard rail. Road Foreman of Engines Powell and Master Mechanic Heiser also saw these marks. None of these officials advanced any opinion as to the cause of the accident. Inspection of the engine, which is of the 2-8-2 type, was made at the shops by a gang foreman and machine foreman and checked by the general foreman and also by Road Foreman Powell, but nothing was developed which could have contributed to the occurrence of the accident.

Section Foreman Dean said that after the rear end of the train had been pulled back from the wreckage he examined the frog and found that wheels had climbed the guard rail at a point 3 feet 2 inches north of the point of the frog, while the guard rail was turned over toward the left and slightly bent. The frog was in good condition, while the gauge at the point of the frog measured 4 feet 8 $\frac{1}{4}$ inches. Section Foreman Dean had been laying some rail on the inside of the curve about a week previously, but said he had made no changes in the rail on the outside of the curve nor had he done any work at the frog. It further appeared from the statements of Section Foreman Dean that the guard rail was fully bolted and clamped, as well as being braced, these braces having been put in during the month of May, 1924.

Assistant Supervisor Truby in general corroborated the statements of the section foreman, except to say that only the leaving end of the guard rail was turned over toward the left. In addition, he stated that the ties under the frog and guard rail were somewhat worn but not enough to warrant removal. He was in charge of the laying of the rail on the inside of the curve, mentioned by the section foreman, and said that at that time the guard rail was removed and afterwards replaced in the same position, secured by two clamps and three braces in addition to the tie-plates and spiking. The clamps were Chicago & Eastern Illinois standard 90-pound clamps, but the braces were 85-pound braces and did not fit as well on that account. Mr. Truby further stated that the rail to which the guard rail was attached was bent and the second rail south of the heel of the frog bent so that it had to be removed. He found the guard rail somewhat worn but thought the track conditions at this point were safe and said he did not make any repairs to the frog or changes of any kind after the accident, and expressed the opinion that the pony-truck wheels of the engine had climbed the guard rail. Mr. Truby also said that at a point about 9 feet north of the point of the frog the gauge was 8 feet 9 $\frac{1}{4}$ inches. These statements were generally concurred in by Supervisor Oliver. Division Engineer Brannon stated that after the accident the super-elevation at the switch was found to be 2 $\frac{1}{4}$ inches and at the frog it was 2 $\frac{1}{4}$ inches. He also stated that after the accident the six stop and hold-down plates were properly spiked and in position and that the bolts were also in proper position. In his report to the superintendent under date of June 26, Mr. Brannon stated that in summing up the results of his investigation he found the track conditions good with nothing about them to have caused the accident.

Conclusions

The cause of this accident was not definitely ascertained, but may have been due to wide gauge of the track, coupled with excessive speed.

In addition to the evidence developed by the statements of the various employees and officials, careful investigation was made both of track conditions and of the derailed engine, but nothing was found which could of itself have caused the occurrence of this accident. There were two circumstances, however, to which attention is directed, the first is that train No. 67 apparently travelled the distance of 4.4 miles from Atherton to Otter Creek Junction in about seven minutes, or at an average rate of speed of nearly 38 miles an hour, while the other is the fact that the gauge a few feet north of the point of the frog was open, even after allowing for the curvature at that particular point. With the wide gauge, coupled with slight wear on the guard rail, which in this type of frog on a curve receives the greatest pressure, the wheels would have a tendency to climb the guard rail, while the further fact that this frog is located where superelevation for a high rate of speed is impracticable makes complete obedience to speed restrictions an absolute necessity for the movement of trains in safety, and it is probable that the explanation for the occurrence of this accident may be found in a combination of speed which was a little high and gauge which was wide.

The crew in charge of train No. 67 were experienced men, at the time of the accident they had been on duty about $3\frac{1}{2}$ hours, previous to which the engine crew had been off duty about $17\frac{1}{2}$ hours.

Respectfully submitted,

W. P. BORLAND,

Director.