

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE  
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE  
PENNSYLVANIA RAILROAD AT INDIANAPOLIS, IND., ON  
NOVEMBER 17, 1927.

January 12, 1928.

To the Commission:

On November 17, 1927, there was a derailment of a passenger train on the Pennsylvania Railroad at Indianapolis, Ind., resulting in the death of one employee and the injury of two employees.

Location and method of operation

This accident occurred on that part of the Indianapolis Division extending between Indianapolis, Ind., and Louisville, Ky., a distance of 111.7 miles, in the vicinity of the point of accident this is a single-track line over which trains are operated by time-table, train orders and a manual block-signal system. The accident occurred at the frog of a trailing-point switch located 1,070 feet east of the union station, approaching this point from the west, beginning at the station, the track is tangent for a distance of about 250 feet, followed by a compound curve to the right extending about 320 feet to the point of derailment and for a very short distance beyond that point. The curvature varies from  $5^{\circ} 30'$  to  $18^{\circ}$ , being  $7^{\circ} 52'$  at the point of the frog and practically constitutes one leg of a wye, the switch where it joins the tangent track extending toward Louisville being the one where the derailment occurred. The grade for eastbound trains is ascending from the station, not exceeding 0.5 per cent, for a distance of about 870 feet, and it is then practically level to the point of accident.

The track at the point of accident is constructed on a viaduct, about 20 feet above the street level. The track is laid with 100-pound rails, 33 feet in length, with 20 ties to the rail-length, tie-plated, double-spiked and ballasted with limestone. The frog of the turnout is a No. 10 manganese frog, manufactured in 1926 and installed in the track in December of that year. The guard rail, a one-piece manganese guard rail,

was installed on the gauge side of the inside rail of the turnout in December, 1926. The maximum speed permitted through turnouts is 10 miles an hour.

The weather was cloudy at the time of the accident, which occurred at about 4 19 a.m.

#### Description

Eastbound passenger train No. 306 consisted of one express car, one mail car, two express cars, one combination car, one coach and seven sleeping cars, hauled by engines 7039 and 8478, and was in charge of Conductor DeBolt and Enginemen Talkington and Guenter. This train departed from the union station at 4.17 a.m., 12 minutes late, and was derailed at the frog of the switch 1,070 feet east of the station while traveling at a speed variously estimated to have been from 2 to 12 miles per hour.

Engine 7039, together with its tender, was derailed to the left, broke away from the second engine, and fell off the viaduct, coming to rest on its left side, parallel with the track, with rear end of the engine about 200 feet east of the point of derailment. Engine 8478 was also derailed but remained upright on the roadbed. None of the cars was derailed. The employee killed was the fireman of the lead engine.

#### Summary of evidence

Engineman Talkington, of the lead engine, said that he made a running test of the air brakes shortly after departing from the union station, with the engine working steam and the train moving at a speed of 6 or 7 miles per hour, releasing the brakes at about JO Block Station, which is just beyond where the first marks of derailment appeared on the track. As he released the brakes he felt that there was something wrong and on looking out he saw the engine heading away from the track. He called a warning of danger to the fireman and immediately applied the air brakes in emergency, shortly before the engine plunged off the viaduct. Engineman Talkington could not recall whether he shut off steam when he made the emergency air-brake application. He also said that the engine appeared to be a little stiff, as though it had not been out of the shop very long, and that it might have bound hard enough in rounding the curve to climb the rail, he had not noticed any jar or vibration of the engine prior to the occurrence of the accident.

Engineman Guenter, of the second engine, stated that he did not notice anything wrong until his own engine was derailed, at which time the speed was about 8 or 10 miles per hour, and he said that he immediately placed the brake valve handle in the emergency position. Engineman Guenter observed no unusual motion of his engine, although he used heavy throttle, and he thought the track seemed to be in as good condition as usual. Fireman Smith, of the second engine, started to work on the fire as soon as the train departed from the station and was unaware of anything wrong until he noticed a reduction of speed, which he thought was due to the making of a running test of the air brakes, but he then saw Engineman Guenter place the brake valve handle in the emergency position and jump, after which his engine began to lurch and bounce on the ties and came to a stop. Fireman Smith estimated the speed to have been from 6 to 10 miles per hour just prior to the accident and noticed nothing unusual with the condition of the track.

Conductor De Bolt stated that the first he knew of anything wrong was when the train seemed to give one or two jerks and then came to a stop. He estimated the speed to have been about 6 miles per hour at the time of the accident. The statements of Baggageman Donovan, Head Brakeman Weir and Flagman Stelzer practically corroborated those of Conductor De Bolt, their estimates as to the speed just prior to the accident ranged from 2 to 6 miles per hour.

The statements of Night Car Foreman May and Car Inspectors Wright, Jackson, B.S. Ray and W.B. Ray were to the effect that the air brakes on train No. 306 were tested on its arrival at the union station and that they worked properly, and a general inspection of the train, including air line, boxes, wheels, etc., disclosed no defects. No inspection, however was made of the brakes on the engines.

Operator Moore, stationed at JO Block Station, stated that he watched the approach of train No. 306 and that the engines were not slipping while rounding the curve. The first knowledge he had of anything wrong was on seeing sparks flying from under the lead engine as it neared the office and at first he thought that they were due to an air-brake application having been made. He then saw that the sparks were coming from under the pony truck, but before he could definitely ascertain the nature of the trouble, not knowing that the lead engine was derailed, it had passed the office and then plunged off the viaduct. He estimated the speed to have been about 6 miles per hour when the lead engine passed the office.

Track Foreman Hawkins stated that he last inspected the track in the vicinity of the point of accident five days prior to its occurrence, but that the track walker had passed over it every day and had not reported anything wrong. With the exception of about nine long ties, the last nine ties west of the frog, the ties were in good condition for high speed. He said that the gauge of the track was all right, as was the guard rail, and that the frog was not badly worn. Track Foreman Hawkins was of the opinion that track conditions did not cause the accident, but he said there were slight irregularities, such as one point where there was a variation in cross levels of one-fourth inch, churning at one joint which resulted in the joint being not more than one-half inch low and a soft spot at the heel of the frog. The gauge was in fair condition, possibly 4 feet  $9\frac{1}{4}$  inches.

Track Supervisor McCarthy stated that on the day prior to the accident he went over the track and found it to be in good condition. His examination of the track after the accident disclosed the frog, guard rail, ties, surface, alinement and superelevation to be in good condition, although he did think the gauge might be 4 feet  $9\frac{1}{4}$  inches.

During the afternoon of the day of the accident tests were made with an engine of the same type as engine 7039, no additional engine was used and freight cars were substituted for passenger cars in order to make up a train approximately equal to the length of train No. 306. The test train made six movements over the track in the vicinity of the switch at a speed of about 10 miles per hour. No derailment occurred, although it was noted that there was a marked tendency of the engine to vibrate. As a result of rainfall during the previous day, slime had accumulated at the ends of the ties at a point about 25 feet west of the frog and in this vicinity marked vertical deflection was noted under traffic.

The track from the station to a point 167 feet west of the point of accident is maintained by the Indianapolis Union Railway, beginning at the first mark of derailment, just east of the frog, and proceeding westward as far as the jurisdiction of the Pennsylvania track forces extended, it was found that at the point where the first marks appeared the gauge was 4 feet  $8\frac{3}{4}$  inches, standard at the point of the frog,  $\frac{1}{4}$  inch wide at a point 7 feet west thereof, and from that point westward around the curve to the end of the Pennsylvania Railroad's jurisdiction the gauge varied from 4 feet  $8\frac{7}{8}$  inches to 4 feet  $9\frac{1}{4}$  inches; according to the track foreman it was his intention to maintain a gauge of 4 feet 9 inches. Measurements of the cross levels at the point

of the frog disclosed the north rail to be  $1/8$  inch higher than the south rail and at a point 7 feet west thereof to be  $1/8$  inch lower, then for the next  $30\frac{1}{2}$  feet westward the north rail was as much as  $3/4$  inch lower than the south rail, the maximum being at a point 17 feet west of the frog. Under traffic the north or outside rail deflected vertically  $1/8$  inch at the point of frog and the south rail  $5/16$  inch, at points 7,  $8\frac{1}{2}$ , 17,  $25\frac{1}{2}$ , and  $37\frac{1}{2}$  feet west of the frog the north rail deflected vertically  $5/16$ ,  $1/4$ ,  $3/16$ ,  $5/16$  and  $3/16$  inch, respectively, while the south rail was found to deflect  $1/4$ ,  $3/16$ ,  $1/8$ ,  $5/16$ , and  $1/4$  inch at those various locations. At the point where the north rail was  $3/4$  inch lower than the south rail, 17 feet from the frog, it was found that the north rail would give  $3/16$  inch under traffic while the south rail would give  $1/8$  inch, resulting in a net variation under traffic of 1 inch.

The first distinct mark of derailment was on the outside of the left rail, about 9 feet 6 inches east of the point of the frog, and a few inches beyond this point a flange mark appeared on the base of the rail, while the bond wires had been severed. Flange marks were then distinctly visible upon the ties, on the left side of each rail, to the point at which the driving wheels of the lead engine derailed and plunged off the viaduct.

Engine 7039 is of the 4-6-2 type, class K2s, and it had been out of the shops at Columbus, Ohio, less than one month after a general overhauling. Careful inspection of this engine in company with an inspector of the Bureau of Locomotive Inspection failed to disclose any defect that would have caused the accident. The left front wheel of the engine truck, however, had been scored in the derailment, the mark beginning at the junction of the flange and tread and extending diagonally across the flange.

### Conclusions

The cause of this accident was not definitely ascertained.

Careful examination of engine 7039 failed to disclose the presence of any defects which could have caused this accident. Examination of the track showed that there were several irregularities; nine of the switch ties immediately west of the frog were in bad condition and there was a point in the outside rail 25 feet west of the frog where that rail was  $3/4$  inch lower than the inside rail. It also appeared that the gauge was not uniformly maintained, varying from 4 feet  $8\frac{3}{4}$  inches to 4 feet  $9\frac{1}{4}$  inches. These irregularities would have been a serious matter if train movements were made around this curve at any considerable rate of speed, but the speed of

the train involved in this accident was low, the maximum estimate being only 12 miles per hour, and while it is true that the existence of the track conditions mentioned above probably contributed to the occurrence of the accident, and possibly were the direct cause of the same, yet it is not believed that the circumstances justify the making of a definite statement to that effect.

The employees involved were experience men, and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. BORLAND,

Director.