

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT WHICH OCCURRED ON THE GRAND TRUNK WESTERN RAILROAD AT SOUTH BEND, IND., ON APRIL 28, 1932.

June 7, 1932.

To the Commission:

On April 28, 1932, there was a derailment of a passenger train on the Grand Trunk Western Railroad at South Bend, Ind., which resulted in the death of 2 employees, and the injury of 2 express messengers and 2 residents of a dwelling adjacent to the railroad. This accident was investigated in conjunction with a representative of the Public Service Commission of Indiana.

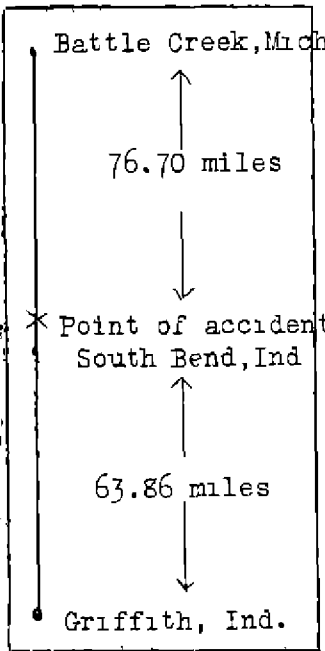
Location and method of operation

This accident occurred on the South Bend Sub-division of the Chicago Division, which extends between Battle Creek, Mich., and Griffith, Ind., a distance of 140.56 miles, in the vicinity of the point of accident this is a double-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. Joint track operation with the New York Central Railroad extends on a viaduct from High Street westward to Arnold Street, a distance of 1.57 miles. Approaching from the east, the Grand Trunk Western track is tangent for almost 2 miles and then there is a 2° curve to the left 1,873 feet in length, called the 18th Street curve, followed by 3,653 feet of tangent extending across the St. Joseph River bridge, and then there is a 7° curve to the right 1,030 feet in length extending to the junction with the New York Central tracks; the first marks of derailment appeared on this 7° curve at a point 61 feet from its leaving end. The grade is slightly undulating, the average grade for westbound trains being 0.25 per cent ascending where the initial derailment occurred.

In the joint track territory the tracks of the New York Central Railroad parallel the tracks of the Grand Trunk Western Railroad on the south. At a point about 400 feet east of the junction at High Street the spur track of the South Bend Toy Works leads off the

Greenlawn Ave. 18th St.

Inv. No. 1763  
Grand Trunk Western R.R.  
South Bend, Indiana  
April 28, 1932

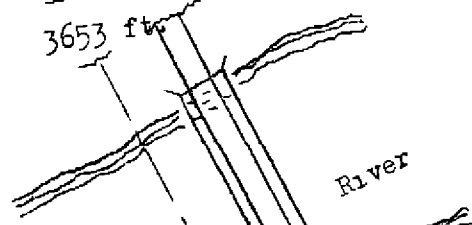


Direction of train #5

20°  
1873 ft.

P.T.

3653 ft.



St. Joseph

100-ft. spiral P.C.

70°  
1030 ft

100-ft. spiral

South Bend P.T.  
Toy Works Spur

New York Central R.R.

High

Street

Point of accident

Marietta

Street

track of the New York Central Railroad toward the northwest and crosses the tracks of the Grand Trunk Western Railroad, this crossing with the westbound main track of the Grand Trunk Western Railroad being at a point 126 feet east of where the first marks of derailment appeared. The super-elevation of the south rail on the Grand Trunk Western main track was practically uniform, the maximum being  $3\frac{3}{4}$  inches, but at the point where the spur track crossed it the super-elevation reduced to  $3/16$  inch, following which it increased to  $1\frac{7}{16}$  inches, and then tapered off to  $1\frac{1}{4}$  inches at the point where the first marks of derailment appeared.

The track is laid with 100-pound rails, 39 feet in length, with an average of 24 ties to the rail-length, tie-plated, double-spiked on the inside, and ballasted with gravel and stone to a depth of 12 inches.

When a westbound train on the Grand Trunk Western Railroad enters upon the track circuit at a point 2.9 miles east of High Street viaduct, or at automatic block signal 1033, an annunciator is sounded and a red light is also caused to be displayed in the interlocking tower at South Bend and the leverman is required to record the time at which this takes place on a sheet provided for that purpose. The station at South Bend is located 0.9 mile west of High Street, while the interlocking tower is located just west of the station.

Under speed restrictions contained in the special time-table instructions, the maximum speed for passenger trains is 60 miles per hour, while trains are limited to a speed of 25 miles per hour on the westbound main track over the switch leading from the old main track to the elevation at 18th Street, and to 30 miles per hour around the 70° curve approaching the joint track territory.

The weather was clear at the time of the accident, which occurred about 4.15 a.m.

#### Description

Westbound passenger train No. 5 consisted of three baggage cars, one mail car, two baggage cars, one coach and two Pullman sleeping cars, in the order named, hauled by engine 6037, of the 4-8-2 type, and was in charge of Conductor Mirfield and Engineman Groves. The

cars were of all-steel construction, with the exception of the third and fifth cars, which were of steel-underframe construction. This train left Cassopolis, 22.96 miles west of South Bend and the last open office, at 3.53 a.m., according to the train sheet, eight minutes late, and was approaching the joint track at High Street, South Bend, when it was derailed while traveling at a speed estimated to have been between 30 and 40 miles per hour.

Engine 6037 and its tender turned over on their left sides and slid along on the south rail of the westbound track and the north rail of the eastbound track for a distance of more than 500 feet, stopping parallel with the tracks. The first car rode the retaining wall of the viaduct until finally its head end toppled off the viaduct at Marietta Street, the car coming to rest with its head end on the street, 18 feet below, and its rear end on the retaining wall. The second car fell off the retaining wall between High and Marietta Streets and damaged an adjacent dwelling, injuring two of its occupants. The third to the seventh cars, inclusive, stopped in zig-zag fashion across the tracks, upright, and one pair of wheels of the lead truck of the first Pullman sleeping car was also derailed. The employees killed were the engineman and fireman.

#### Summary of evidence

Conductor Mirfield, who was riding in the seventh car, estimated the speed to have been about 40 miles per hour while rounding the 18th Street curve, he felt a lurch and started to reach for the air and set the brakes, but before he could do so a service application was made by the engineman which reduced the speed to 25 miles per hour. The brakes were then released and the train seemed to proceed toward High Street at normal speed, the conductor estimating it to have been 30 miles per hour on entering the curve on which the accident occurred. He could not recall that the air brakes were applied while rounding this particular curve, and he said that there was no lurch of the train; he could feel the wheel flanges crowding the outside rail, as usual, but nothing to make him feel uneasy or to think that there was any danger until the derailment actually occurred, exactly at 4.15 a.m. He examined the track and was unable to find any marks on the ties made by the engine before it turned over, and was unable to say what caused the accident.

Conductor Mirfield conversed with Engineman Groves at Battle Creek and at that time the engineman appeared to be in normal condition.

Baggage man Hodgson was also riding in the seventh car; while he could not estimate the speed, yet in his opinion the train entered the curve at 18th Street at more than the usual rate of speed, but the brakes were applied and he did not think any more about it. Approaching the curve at High Street he got up and started ahead into the baggage car, but the train entered the curve at an unusual rate of speed and then the accident occurred, throwing him over against the side of the car.

Brakeman Smith was also riding in the seventh car; he too thought that the train entered the curve at 18th Street a little hard, saying that the air brakes were applied about the time the engine entered the curve and that he felt a lurch of the car in which he was riding. He could not estimate the speed, but thought it was normal after rounding the curve. Brakeman Smith then started through the coach and a passenger inquired as to the time; he looked at his watch and said it was 4.14 a.m., and as he did so the coach commenced to bump up and down as a result of the derailment.

Flagman Dunn was riding on the rear car, he said that the train entered the curve at 18th Street faster than usual, about 40 miles per hour, and he felt the air brakes apply about when the engine reached the curve, reducing the speed to about 30 miles per hour, he did not notice any increase in speed between this point and the point of accident.

New York Central Leverman Shultz, on duty in the tower governing joint track operation at South Bend, stated that train No. 5 entered upon the track circuit and the annunciator started to buzz at 4.12 a.m., and the red light also was displayed on the chart. He had no record of the time the accident occurred, but was notified as to that time later on. The record he keeps is in accordance with time compared from a standard clock each morning.

Assistant Engineer Haywood stated that while there is practically no superelevation to the south or outside rail of the 7° curve at the point where the spur track of the South Bend Toy Works crosses the west-bound main track, yet there is no danger of derailment provided a train complies with the 30-mile speed-

restriction in effect around that particular curve, and he had no knowledge of any previous trouble. With no elevation at this point an engine would turn over at a speed of 60 miles per hour. The superelevation of the entire curve was fairly uniform, the maximum being  $3\frac{3}{4}$  inches and the average  $2\frac{1}{2}$  inches, and the first marks made by the engine appeared at a point 126 feet west of the center line of the spur track, while the head end of the engine stopped 516 feet beyond the first marks.

Engine Inspector Pack inspected engine 6037 and its tender at Port Huron on April 27, 1932, the day prior to the accident, at 10.30 a.m., and found all running gear and working parts to be in good condition.

Road Foreman of Engines Billington stated that the engine was considerably damaged as a result of the derailment, but that he was unable to find any defect that existed prior to the accident. In his opinion the conditions indicated that the train was traveling at considerable speed at the time of the derailment, more than the authorized speed.

Car Foreman Lampson in charge of the wrecking outfit stated that he examined the running gear and damaged parts of the derailed cars, but found no defect that would have in any way caused the accident, and was unable to form any opinion as to its cause, although he thought the train must have been traveling right along for the derailed cars to go as far as they did.

Assistant General Manager Davidson stated in his report that the superelevation around the curve was quite uniform, the maximum being  $3\frac{3}{4}$  inches, which in turn tapered off to approximately  $3/16$  inch at the diamond formed by the crossing with the toy works spur, following which the superelevation again increased, being  $1\frac{1}{4}$  inches at the point of derailment and then reducing to zero on the spiral at the leaving end of the curve. The superelevation had received a large amount of attention, due to the fact that there had been considerable settlement on this fill account of its newness and depth, and he thought it would permit a speed of 60 miles per hour without overturning an engine. Examination of the track disclosed it to be in excellent condition and there were no wheel flange marks on the ties east of the point where the engine overturned.

Engine 6037 is of the 4-8-2 mountain passenger type, class U-1, with a driving wheel base of 19 feet 6 inches and total wheel base of 41 feet 9 inches; the

tender is of the Vanderbilt type with a water capacity of 13,500 gallons, and a coal capacity of 18 tons. The loaded weight, engine and tender, is 604,110 pounds.

### Conclusions

This accident apparently was caused by excessive speed on a sharp curve.

According to the testimony, the train lurched when it entered upon the curve at 18th Street and all the members of the train crew were somewhat concerned as to the speed, Conductor Marfield being so much concerned that he decided to reach for the air and set the brakes, but before he could do so an application was made by the engineer, reducing the speed to what the conductor thought was a safe speed. There is a speed restriction of 25 miles per hour on the curve at 18th Street and one of 30 miles per hour on the 70° curve, and none of the members of the train crew thought the speed exceeded 40 miles on either curve. According to the train sheet, however, train No. 5 covered the distance of approximately 32 miles from Cassopolis to High Street in 28 minutes, or at an average rate of 60 miles per hour, while New York Central Leverman Snultz stated that the annunciator started to buzz at 4.12 a.m., Brakeman Smith placed the time of the occurrence of the accident at 4.14 a.m., and Conductor Marfield placed it at exactly 4.15 a.m. Taking this latter figure, the distance of 2.9 miles from the beginning of the annunciator circuit at automatic signal 1032 to High Street was covered in 3 minutes, or at an average rate of speed of almost 58 miles per hour, although there is a speed restriction of 25 miles per hour at 18th Street and one of 30 miles on the 70° curve. Apparently the speed was too high while rounding the 70° curve that when the engine reached the practically flat diamond formed by the crossing of the South Berd Toy Works with the west-bound main track, at which point the super-elevation of the outside rail was only 3/16 inch, it did not again right itself, but turned over from centrifugal force without first being derailed, as there were no flange marks on the ties east of the point where the engine overturned, 126 feet beyond the diamond. In further support of the opinion that excessive speed was the cause of the accident is the manner in which the wreckage came to rest, the engine having slid on its side for more than 500 feet, while two cars plunged over the retaining wall and five other cars were de-

railed and scattered across the tracks.

Engineman Groves entered the service as a fireman on April 11, 1909, and was promoted to engineman on October 24, 1912, while Fireman Schinning entered the service on January 19, 1920, their records were good. All of the other employes involved were also experienced men, and at the time of the accident none of the employees had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. BORLAND,

Director.