

INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 2967

READING COMPANY

REPORT IN RE ACCIDENT

NEAR MYERSTOWN, PA., ON

JANUARY 18, 1946

SUMMARY

Railroad: Reading
Date: January 18, 1946
Location: Myerstown, Pa.
Kind of accident: Derailment and collision
Trains involved: Passenger : Freight
Train numbers: Extra 1734 West : Extra 2011 East
Engine numbers: 1734 : 2011
Consist: 9 cars : 68 cars, caboose
Estimated speed: 55 m. p. h. : 25 m. p. h.
Operation: Timetable, train orders and
automatic block-signal system
Track: Four; 1° curve; 0.47 percent
ascending grade westward
Weather: Clear
Time: 8:46 p. m.
Casualties: 2 killed; 23 injured
Cause: Passenger train moving at speed in
excess of that for which engine
was designed, and derailed car of
passenger train obstructing adja-
cent main track immediately in
front of approaching freight train

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2967

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

READING COMPANY

February 28, 1946.

Accident near Myerstown, Pa., on January 18, 1946, caused by a passenger train moving at a speed in excess of that for which the engine was designed, and by a derailed car of the passenger train obstructing an adjacent main track immediately in front of an approaching freight train.

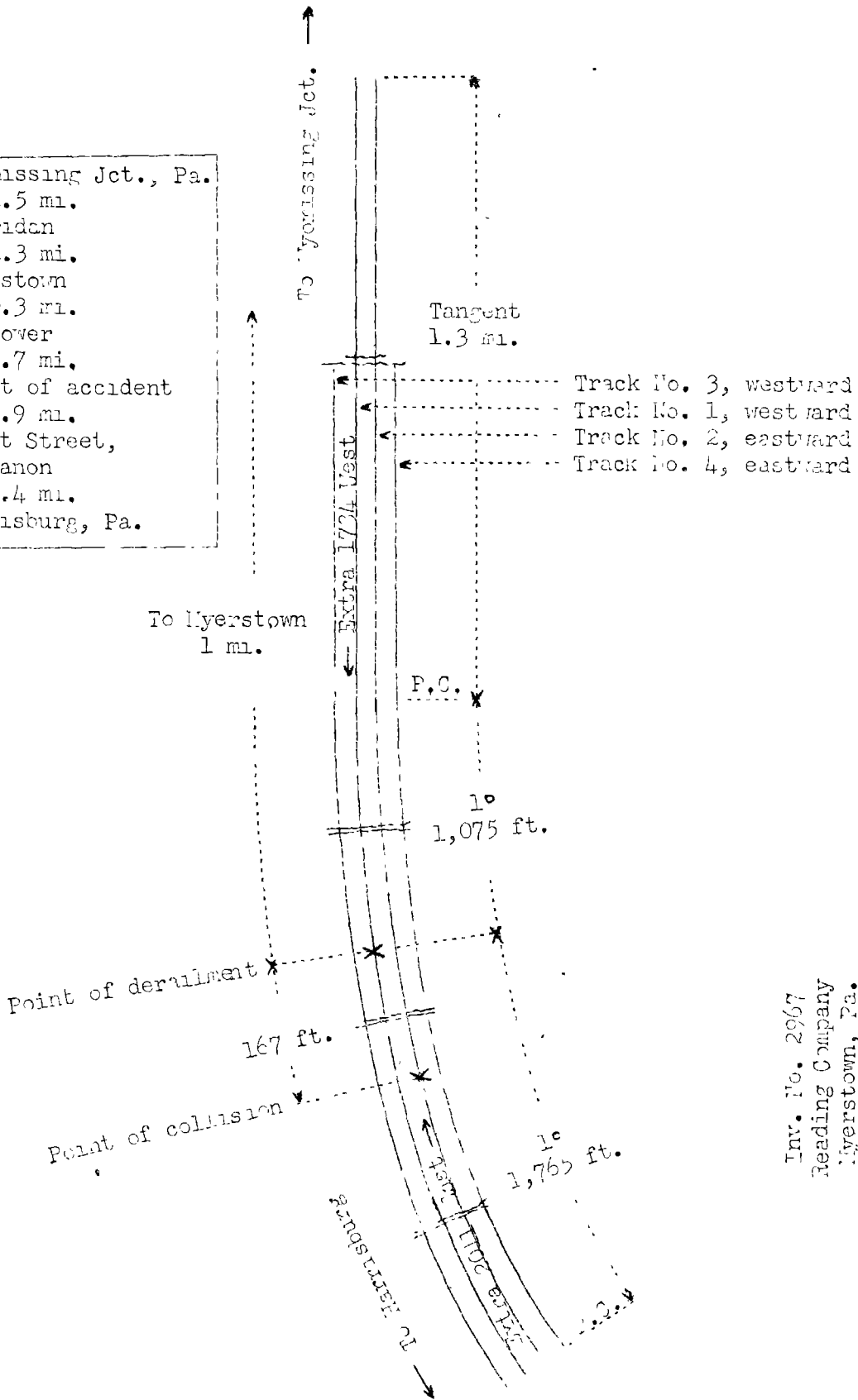
REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On January 18, 1946, there was a derailment of a passenger train, and a collision between a derailed car of the passenger train and a freight train, on the line of the Reading Company near Myerstown, Pa., which resulted in the death of 1 passenger and 1 train-service employee, and the injury of 19 passengers, 1 Pullman porter and 3 train-service employees. This accident was investigated in conjunction with a representative of the Pennsylvania Public Utility Commission.

¹Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.

- Wyomissing Jct., Pa. 14.5 mi.
- Sheridan 4.3 mi.
- Myerstown 0.3 mi.
- NY Tower 0.7 mi.
- X Point of accident 4.9 mi.
- Front Street, Lebanon 26.4 mi.
- Harrisburg, Pa.



Inv. No. 2967
 Reading Company
 Myerstown, Pa.
 January 13, 1946

Location of Accident and Method of Operation

This accident occurred on that part of the Reading Division extending between Wyomissing Jct. and Harrisburg, Pa., 51.1 miles, a four-track line in the vicinity of the point of accident, over which trains moving with the current of traffic are operated by timetable, train orders and an automatic block-signal system. The main tracks from south to north are designated as No. 4 and No. 2, eastward, and No. 1 and No. 3, westward. The passenger train involved was being operated on track No. 1, and the freight train was on track No. 2. The derailment of the passenger train occurred 19.8 miles west of Wyomissing Jct., at a point 1 mile west of the station at Myerstown, and the collision occurred 167 feet west of the point of derailment. From the east there is a tangent 1.3 miles in length, which is followed by a 1° curve to the left 1,075 feet to the point of derailment and 1,765 feet westward. The grade is 0.47 percent ascending westward.

At the point of accident the distance between the centerlines of the main tracks is 13 feet 2 inches. The track structure consists of 130-pound rail, 39 feet in length, laid on an average of 20 ties per rail length. It is fully tie-plated, double-spiked inside and single-spiked outside each rail, provided with 4-hole angle bars, an average of 8 rail anchors per rail length, and is ballasted with crushed stone to a depth of 12 inches.

Operating rules read in part as follows:

102. When a train is disabled or stopped suddenly by an emergency application of the air brakes or other causes, adjacent tracks as well as tracks of other railroads that are liable to be obstructed must at once be protected until it is ascertained they are safe and clear for the movement of trains.

The maximum authorized speed for the passenger train was 40 miles per hour and for the freight train, 30 miles per hour.

Description of Accident

Extra 1734 West, a west-bound passenger train, consisted of engine 1734, one coach, four sleeping cars, one kitchen car and three sleeping cars, in the order named. All cars were of steel construction. This train departed from Wyomissing Jct. at 8:21 p. m., passed Sheridan, 4.3 miles east of Myerstown, at 8:40 p. m., passed MY Tower, the last open office, 0.7 mile east of the point of accident, at 8:45 p. m., and while it was moving on track No. 1 at an estimated speed of 55 miles per hour the engine, the first four cars and the front truck of the fifth car were derailed. Immediately after the derailment

occurred, the third car, which obstructed track No. 2, was struck by Extra 2011 East.

Extra 2011 East, an east-bound freight train, consisting of engine 2011, 68 cars and a caboose, passed Front Street, Lebanon, the last open office, 4.9 miles west of the point of accident, at 8:32 p. m., and while moving on track No. 2 at an estimated speed of 25 miles per hour it collided with the derailed passenger car.

The engine of Extra 1734 stopped on its right side on track No. 3 and practically parallel to it, with the front end 578 feet west of the point of derailment. The first and the second cars stopped on track No. 3 and practically in line with it, at the rear of the engine, and leaned to the north at an angle of 60 degrees. The third to the fifth cars, inclusive, stopped practically upright and in various positions on tracks Nos. 1 and 3, and about 400 feet east of the engine. The engine and the first 15 cars of Extra 2011 were derailed. The engine stopped on its right side on track No. 4 and practically parallel to it, with the front end 45 feet east of the point of collision. The tender, which became separated from the engine and the first car, stopped at the rear of the engine and at right angles to it. The derailed equipment of both trains was badly damaged.

The weather was clear at the time of the accident, which occurred about 8:46 p. m.

The fireman of Extra 1734 West was killed. The engineer of Extra 1734 West, and the engineer and the front brakeman of Extra 2011 East were injured.

Engine 1734 is a 2-8-2 type. The total weight in working order is 335,000 pounds, distributed as follows: Engine truck, 21,800 pounds; driving wheels, 248,850 pounds; and trailer truck, 64,350 pounds. The specified diameters of the engine-truck wheels, the driving wheels and the trailer-truck wheels are, respectively, 33, 31-1/2, and 42-3/4 inches. The rigid wheelbase is 16.5 feet long, the total wheelbase is 35 feet, and the length of the engine and tender is 34 feet 3-1/2 inches. The spring arrangement of the engine is in two parts. The front part consists of the engine truck and the No. 1 and No. 2 driving wheels, and the rear part consists of the No. 3 and No. 4 driving wheels and the trailer truck. The tender is rectangular in shape and is equipped with two 4-wheel trucks. Its capacity is 11,000 gallons of water and 13 tons of coal. The weight of the tender loaded is 209,200 pounds. The last class 4 repairs to the engine were completed May 4, 1945. The last monthly inspection and repairs were completed December 28, 1945. The accumulated mileage since the last class repairs was 20,000 miles. The center of gravity of the engine is 71.8 inches above the tops of the rails and the center of gravity of the

tender when fully loaded is 30.5 inches above the tops of the rails. The theoretical equilibrium speed for engine 1734 on the curve involved was 47.24 miles per hour.

Discussion

Extra 1734 West was moving on a 1° curve to the left in territory where the maximum authorized speed was 40 miles per hour when the No. 1 driving wheels were derailed to the right, at a point 1,075 feet west of the east end of the curve, where the superelevation was 1-1/2 inches and the gage was 4 feet 8-3/4 inches. The derailed wheels continued in line with the track about 225 feet to the point where the general derailment occurred. There was no indication of dragging equipment, defective track or of any obstruction having been on the track.

As Extra 1734 West was approaching the curve where the derailment occurred the headlight was lighted brightly and the enginemen were maintaining a lookout ahead. The conductor and the front brakeman were in the sixth car and the flagman was in the rear car. The engineer said that before his train passed Myerstown the train was drifting, then, after it passed IX Tower, he opened the throttle slightly to maintain a speed of 40 miles per hour on the ascending grade. The engine had been riding smoothly. Soon after the engine entered the curve on which the derailment occurred the engineer felt the rear end of the engine settle downward, then the engine alternately thrust hard to the left and to the right about five or six times, and he moved the brake valve to emergency position. The engine overturned before the speed was materially reduced. The brakes of this train had been tested and had functioned properly. The fireman was killed in the accident. The members of the train crew were not aware of anything being wrong until the derailment occurred. Under the rules, the members of the crew of Extra 1734 West were required to protect adjacent tracks in both directions. However, Extra 2011 East struck the third car of Extra 1734 West almost immediately after the derailment occurred.

As Extra 2011 East was approaching the point where the accident occurred the speed was about 25 miles per hour. The headlight was lighted brightly and the members of the crew on the engine were maintaining a lookout ahead. The last automatic signal which this train passed displayed proceed. When the engine was about 600 feet west of the point of accident the engineer saw the derailed car, and he immediately moved the brake valve to emergency position, but the collision occurred before the speed was materially reduced. The brakes of this train had been tested and had functioned properly en route.

A west-bound passenger train, which was moving on track No. 1 at an estimated speed of 45 miles per hour, passed the point where the derailment occurred about 12 minutes prior to the

accident. The engineer of this train said there was no indication of irregularity in the surface or alinement of the track in this vicinity, and the engine rode smoothly on the curve.

The surface, alinement and gage of the track on which the derailment occurred were well maintained for the maximum authorized speed of 40 miles per hour. The track in this vicinity had been inspected by the section forces earlier during the day of the accident and no defective condition was observed. After the accident, examination of the track disclosed that beginning at a point 724 feet immediately west of the east end of the curve involved the track was shifted out of normal alinement throughout a distance of 351 feet. This shifting varied between 1 inch and 6 inches to the north and to the south of the normal alinement. The first mark on the track structure appeared on an angle-bar bolt inside the low rail at a point 1,075 feet west of the east end of the curve. Throughout a distance of 225 feet immediately west of the first mark on the track structure scraping marks appeared intermittently inside the low rail and outside the high rail to the point where the general derailment occurred.

Examination of engine 1734 disclosed that the engine truck and the driving-wheel assemblies were in good condition. The tires, the wheels and the lateral motion were within the specified limits. The driving-box shoes and wedges and the radial buffer castings were well lubricated. The spring arrangement was maintained in good alinement, and there was no indication of unequal distribution of weight. The trailer-truck assembly was broken in several places, but all parts were found at the point where the engine stopped. There was no indication that any of the breaks occurred prior to the accident. The left No. 1 driving-wheel tire bore scraping marks on the outer face near the tread and the counterbalance was battered. These marks indicate that the No. 1 driving wheels were the first to become derailed.

Engine 1734 was built in 1915, and is of the 2-8-2 type. The weight on the driving-wheel assembly is 248,850 pounds. The specified diameter of the driving wheels is 61-1/2 inches. The cylinders are 25 inches in diameter and the length of the piston stroke is 32 inches. The operating steam pressure is 225 pounds per square inch, and the tractive force is 62,200 pounds. The engine was built for heavy-duty slow-speed freight service. It was designed for high initial torque, and is provided with main rods, parallel rods and valve gear of heavy construction. The main rods connect the piston-rod crossheads and the No. 3 driving wheels, and the distance between the centers of the crosshead pins and the centers of the main pins is 11 feet. The driving-wheel centers, which are of the spoke type, are provided with conventional counterbalances. The counterbalances rotate in a plane separate from the one in which the rods and valve gear rotate, and an unbalanced condition of the reciprocating parts exists because of restricted space for counterbalances on the relatively small driving wheels. The unbalance at the top end

the bottom quarters of the Nos. 1, 2 and 4 driving wheels of engine 1734 is 284 pounds, which is about one-third of the static weight. The superintendent of motive power said that the horizontal components per tie to prevent lateral movement of the track under this engine, on the curve involved, at speeds of 40, 47.24 and 55 miles per hour were, respectively, 390 pounds, 553 pounds and 736 pounds.

The investigation disclosed that the lateral movement of engines of the class of engine 1734 was much greater when hauling light trains than when hauling full tonnage. At the time of the accident engine 1734 was hauling a train of only 17 percent of full tonnage for that engine. An engineer who had operated this engine many trips said that it would thrust laterally when a light train was being hauled and a small amount of steam was being used. However, the engineer who was in charge of the engine at the time of the accident was not familiar with this characteristic, and said the engine had been riding smoothly on curves and tangents east of the curve on which the accident occurred. The engine was not provided with a speedometer. The engineer and the members of the train crew thought the speed at the time of the derailment was about 40 miles per hour. Apparently the speed was considerably higher than 40 miles per hour as the train traversed the distance between Sheridan and MY Tower, 4.6 miles, in 5 minutes, an average of 55.2 miles per hour.

A special instruction in the current timetable provides that the maximum authorized speed for the class of engine involved in the accident is 40 miles per hour, and this was understood by the surviving members of the crew of Extra 1734. After the accident, the carrier addressed to each engineer instructions not to exceed the maximum authorized speed with an engine of the same class as engine 1734. The evidence indicates that, at the time the derailment occurred, Extra 1734 was moving at a speed of at least 55 miles per hour, which was in excess of that for which the engine was designed, and it appears that the vertical motion and the lateral motion of the engine were sufficient to lift the No. 1 driving wheels free of the rails.

Cause

It is found that this accident was caused by a passenger train moving at a speed in excess of that for which the engine was designed, and by a derailed car of the passenger train obstructing an adjacent main track immediately in front of an approaching freight train.

Dated at Washington, D. C., this twenty-eighth day of February, 1946.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.