

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING  
AN ACCIDENT WHICH OCCURRED ON THE PENNSYLVANIA RAILROAD  
NEAR DEANS, N. J., ON JUNE 7, 1932.

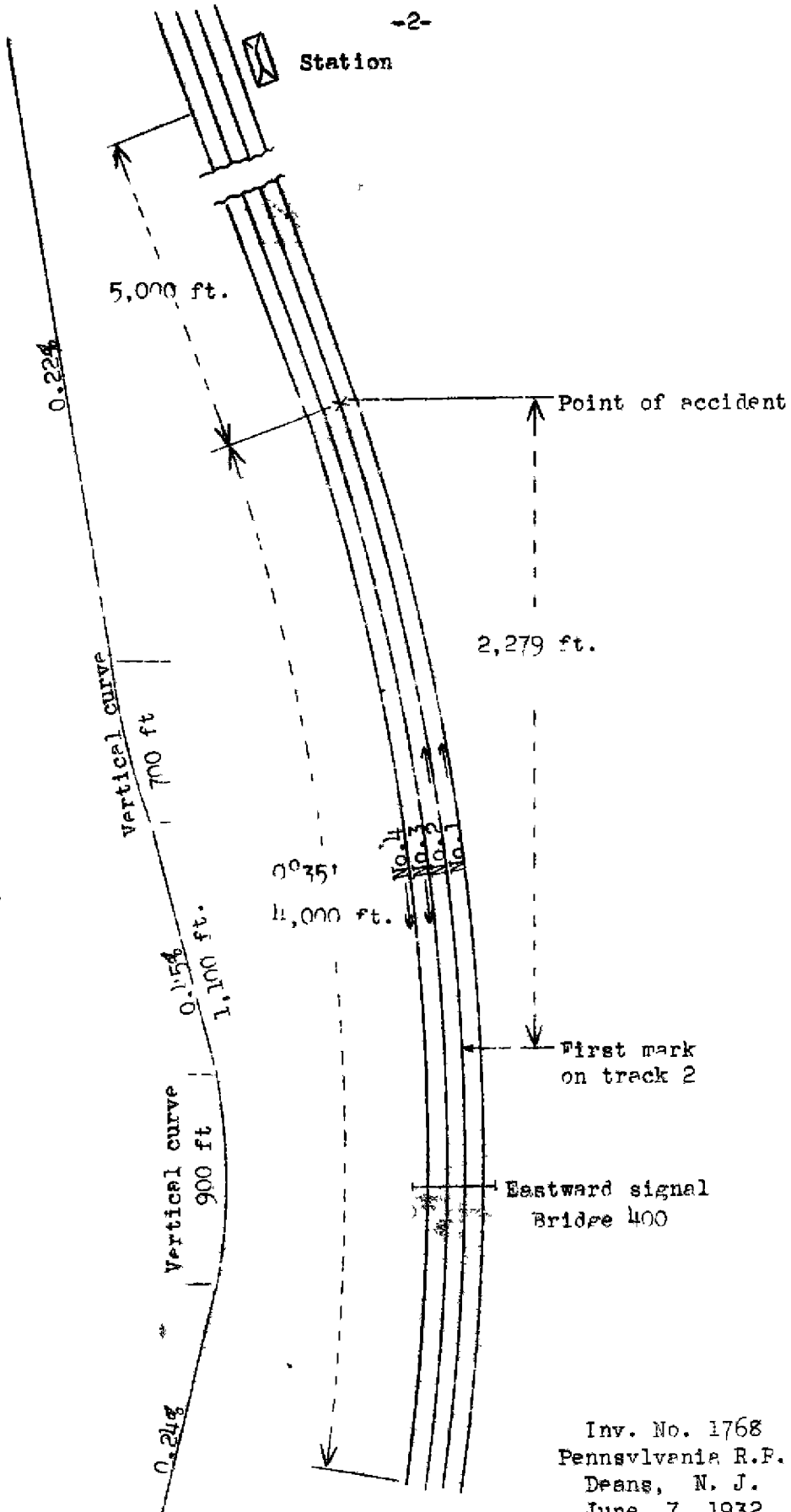
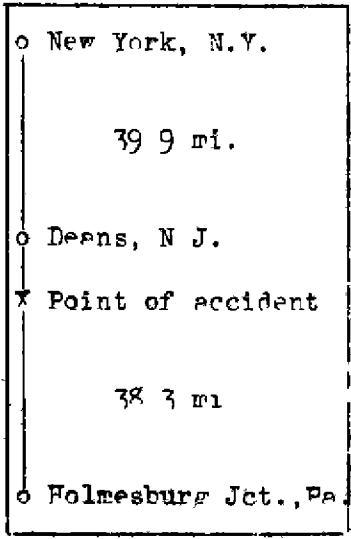
July 26, 1932.

To the Commission:

On June 7, 1932, there was a derailment of a freight train on the Pennsylvania Railroad near Deans, N. J., the wreckage being struck by a passenger train running in the same direction on an adjacent track, which resulted in the injury of 42 passengers and 12 employees. The investigation of this accident was made in conjunction with representatives of the New Jersey Board of Public Utility Commissioners.

Location and method of operation

This accident occurred on that part of the New York Division which extends between New York, N. Y., and Holmesburg Junction, Pa., a distance of 78.2 miles. This is a four-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. Installations have been made for the operation of engines equipped either with cab signal and automatic train-stop apparatus, or with cab signals only. The engine of the passenger train involved was equipped with cab signal, whistle and acknowledgment, but not with automatic train-stop apparatus. The tracks numbered from south to north are 1, eastbound passenger; 2, eastbound freight; 3, westbound freight; and 4, westbound passenger. The accident occurred on track 2 at a point approximately 5,000 feet west of the station at Deans; approaching this point from the west, there is a  $0^{\circ} 35'$  curve to the left approximately 4,000 feet in length, followed by approximately 650 feet of tangent track, the derailment occurring at the beginning or western end of the tangent track, while the passenger train struck the derailed freight cars about 400 feet beyond that point. Beginning at the western end of the  $0^{\circ} 35'$  curve, the grade is 0.24 per cent descending, followed by a vertical curve approximately 900 feet in length, and then 0.45 per cent ascending grade for 1,100 feet, a vertical curve for a distance of 700 feet, and 0.22 per cent ascending grade for some distance beyond, the accident occurring on this latter ascending grade. The last automatic signals passed by the two trains involved were located on eastbound signal bridge 400, about 2,870 feet west of the point of accident.



Inv. No. 1768  
 Pennsylvania R.F.  
 Deans, N. J.  
 June 7, 1932

The tracks are laid with 130-pound rails, 39 feet in length, with an average of 22 treated ties to the rail-length, fully tie-plated, and ballasted with stone to a depth of about 24 inches. At the point of accident the track is constructed on an embankment of stone and earth about 18 feet in height, which is in good condition. The track is well maintained.

The weather was clear at the time of the accident, which occurred about 6.37 p. m.

#### Description

Eastbound freight train extra 6747-6755 consisted of 100 cars loaded with coal and a caboose, hauled by engines 6747 and 6755, and was in charge of Conductor Walters and Enginemen Brooke and Black. This train departed from Enola, Pa., at 12.40 p. m., passed MK Tower at Monmouth Junction, N.J., the last open office, 2.7 miles from Deans, at 6.33 p. m., and was derailed near Deans while traveling at a speed estimated by the crew to have been between 30 and 35 miles per hour.

Eastbound passenger train No. 1076 consisted of 1 combination car, 2 coaches, 1 dining car, and 2 parlor cars, all of steel construction, hauled by engine 3834, and was in charge of Conductor Weatherby and Engineman Schock. This train departed from Atlantic City, N.J., at 4.35 p.m., passed Monmouth Junction at 6.35 p. m., practically on time and was running on track 1 when it collided with the derailed cars of extra 6747-6755 while traveling at an estimated speed of about 65 miles per hour.

Engines ~~6747 and 6755, their tenders and the first 82 cars in the collision~~ remained coupled and were not derailed. The train parted between the eighty-second and eighty-third cars, and the eighty-third to the eighty-eighth cars inclusive remained coupled and stopped on the track with the eighty-third car at a point about 1,500 feet east of the first mark of derailment, or point of accident. The eighty-ninth car stopped, fouling tracks 1 and 2, and the next eight cars were derailed and stopped in various positions fouling all four tracks. The last three cars and the caboose remained coupled, the rear end of the caboose stopping at a point about 175 feet east of the first mark of derailment. Passenger train No. 1076 was entirely derailed and the engine and cars were thrown down the embankment to the right of track 1. The employees injured were the engineman, fireman, conductor, two brakemen, one of whom was deadheading, and seven dining-car employees, all of train No. 1076

### Summary of evidence

Engineman Brooke, in charge of the leading engine of extra 6747-6755, stated that before departing from Enola yard the brakeman reported to him that all brakes were working and in the road test the brakes functioned properly. He made several applications of the brakes at points on route and again made a road test after taking water at Thorndale, and he stated that the train handled splendidly. The train was traveling at a speed of 30 or 35 miles per hour and both engines were working steam when the air brakes were applied and the train stopped, the conductor later coming up to the head end of the train and informing him that a coupler had pulled out. Engineman Brooke stated that the pulling out of this coupler no doubt was due to the slack running in and out, as there is quite a dip in the track approaching the point of accident, and he had noticed the slack running in and out at that point. There are quite a few dips in the track on the Philadelphia and New York Divisions which cause shocks when the slack runs in and out; these shocks are rarely felt on trains of 70 cars but are always felt on trains of 100 cars; they are not very severe at the head end but are quite severe at the rear end, and Engineman Brooke stated that on the Philadelphia Division they had instructions to shut off the second engine at such dips in the track. Engineman Brooke further stated that while a speed of 50 miles per hour is allowed for freight trains in that territory, he considered that he was handling the train properly at a speed of 30 or 35 miles per hour.

Fireman Stricker, of the leading engine of extra 6747-6755, and Engineman Black of the second engine, corroborated the statements of Engineman Brooke; Engineman Black further stated that he had handled long trains ~~in this Division~~ during the past four years and had noticed the slack run in between Monmouth Junction and Deans.

Conductor Walters, of extra 6747-6755, stated that after leaving Thorndale he rode on the right side of the caboose cupola and looked over the train on all curves, but he noticed nothing unusual in its operation until the brakes were applied near Deans. At times there were big clouds of dust from the tops of the coal cars and on rounding the curve near Monmouth Junction he could see about 30 or 40 cars in his train; as they reached the dip in the track he warned the flagman to brace himself, as is usual at this point, and he then felt the air brakes applied in emergency and saw the cars piling up ahead; he said at this time the engine of train No. 1076 was passing the caboose. Just before he felt the slack run in he had heard train No. 1076 as it approached and on glancing back had seen it about two car-lengths behind. When the trains stopped the rear car of train No. 1076 was standing at the east end of the caboose. After

getting off the caboose he could see that the ties to the rear of his train were torn up for a distance of 10 or 15 rail-lengths, the marks on the ties indicated that something had been dragging, and later he found that the coupler had pulled out of the east end of the eighty-third car and was wedged under the drop bottom of the last car in the train. Conductor Walters further stated that just before the occurrence of the accident, when the slack ran in, he could see nothing for a few seconds due to dust from the coal cars, but at no time did he see any dust coming from underneath the cars. Flagman Clark said that when he went back to flag he saw a knuckle and a coupler strap lying on the track, some large holes between the ties, and some of the ties were gouged out; there also were marks indicating that something had been scraping the ties.

Engineer Schock, of train No. 1076, stated that the last automatic signal west of the point of accident, was clear as his train passed it, that the cab signal was clear, and that this apparatus had been functioning properly en route. He was operating his train at a speed of about 65 miles per hour when he saw a cloud of dust ahead and immediately crashed into the wreckage of the freight train without any warning having been given him, and without his having applied the brakes or shut off steam.

Car Inspectors Tyrell and Craig, who were on duty at Enola, stated they inspected the cars that made up the freight train and found no defects on any of them.

The first mark found on track 2 was at a point 2,279 feet west of the point of derailment; it was about  $\frac{3}{4}$  inch in width and about 2 inches in length on top of a tie, 34 inches south of the gauge of the north rail. Between this mark and a point 922 feet west of the point of derailment there were marks consisting of two V-shaped grooves across the ties,  $1\frac{1}{4}$  inches apart, the north groove being 25 inches south of the gauge of the north rail, and grooves across the ties  $\frac{1}{2}$  to 4 inches in width and 34 inches south of the gauge of the north rail. At a point 922 feet west of the point of derailment the west side of two ties were gouged out on top just inside the north rail, to a depth of from 3 to 5 inches; the succeeding tie was broken and the ballast gouged out 2 inches below the tie, and between that point and the first wheel mark on the ties, a point of derailment, there were nine different points at which the ties were broken and gouged out on their west sides; one tie plate was broken, another bent, a bolt was broken, one tie was moved eastward about 8 inches, and at one point there was a hole in the ballast about 3 inches below the bottom of the west side of the tie. At some points these gougings were near the south rail and at others, near the north rail. At the point of derailment the wheel marks were on the ties on the north side

of each rail and the bolts of an angle bar on the inside of the south rail were broken off. At a point 92 feet east of the point of derailment were found the first wheel marks on the south side of each rail.

The coupler that pulled out from the east or "B" end of the eighty-third car was found wedged under the drop bottom of the last car in the train. This coupler was from a high side hopper car, BWCM 2246; the coupler was an ARA type D coupler with Westinghouse friction draft gear. Inspection of this coupler revealed that the forward yoke rivet pulled through the top part of the yoke and the second rivet sheared off close to the inside face of the yoke. The top yoke member was fractured through the outside rivet hole in a fillet of the lip or gib, and the bottom member of the yoke was fractured at the inside bend. The fracture at the gib of the top member showed an old defect, on the inside, covering about 45 per cent of the area of the fracture, and could not have been detected by any ordinary inspection. The fracture at the inside bend of the bottom member was new, and the fracture of the inside rivet also was new.

#### Conclusions

This accident was caused by a pulled-out coupler.

Examination of the track and equipment showed that the coupler had pulled out of the east or "B" end of the eighty-third car; after the accident this coupler was found wedged under a car approximately 200 feet east of the first mark of derailment, while the first mark on the track apparently made by something dragging, was found at a point 2,279 feet west of the first mark of derailment. There were many marks on the track within this intervening distance, and examination of the coupler showed that the top yoke member had fractured through the outside rivet hole, 45 per cent of the surface of this fracture being an old defect; this in turn probably was followed by the failure of the yoke rivets and the bottom member of the yoke, and then the pulling out of the coupler. The old defect in the top yoke member could not have been detected by ordinary inspection. The combination of this old defect together with the movement of slack in this part of the train, due to the dip in the track, were believed to be the underlying causes of this accident.

Although the passenger engine was equipped with cab signals it appears that at the time of the derailment of the freight train the engine of the passenger train was practically opposite its rear end and consequently warning of impending danger was not given to the passenger engineman in time to permit him to take any action to prevent or reduce the severity of the accident to his train.

All of the employees involved were experienced 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.

