INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT WHICH OCCURRED ON THE PENNSYLVANIA RAILROAD AT HAMLET, IND., ON JULY 19, 1932.

August 26, 1932.

To the Commission:

On July 19, 1932, there was a derailment of a passenger train on the Pennsylvania Railroad at Hamlet, Ind., which resulted in the injury of one mail clerk. The investigation of this accident was made in conjunction with a representative of the Public Service Commission of Indiana.

Location and method of operation

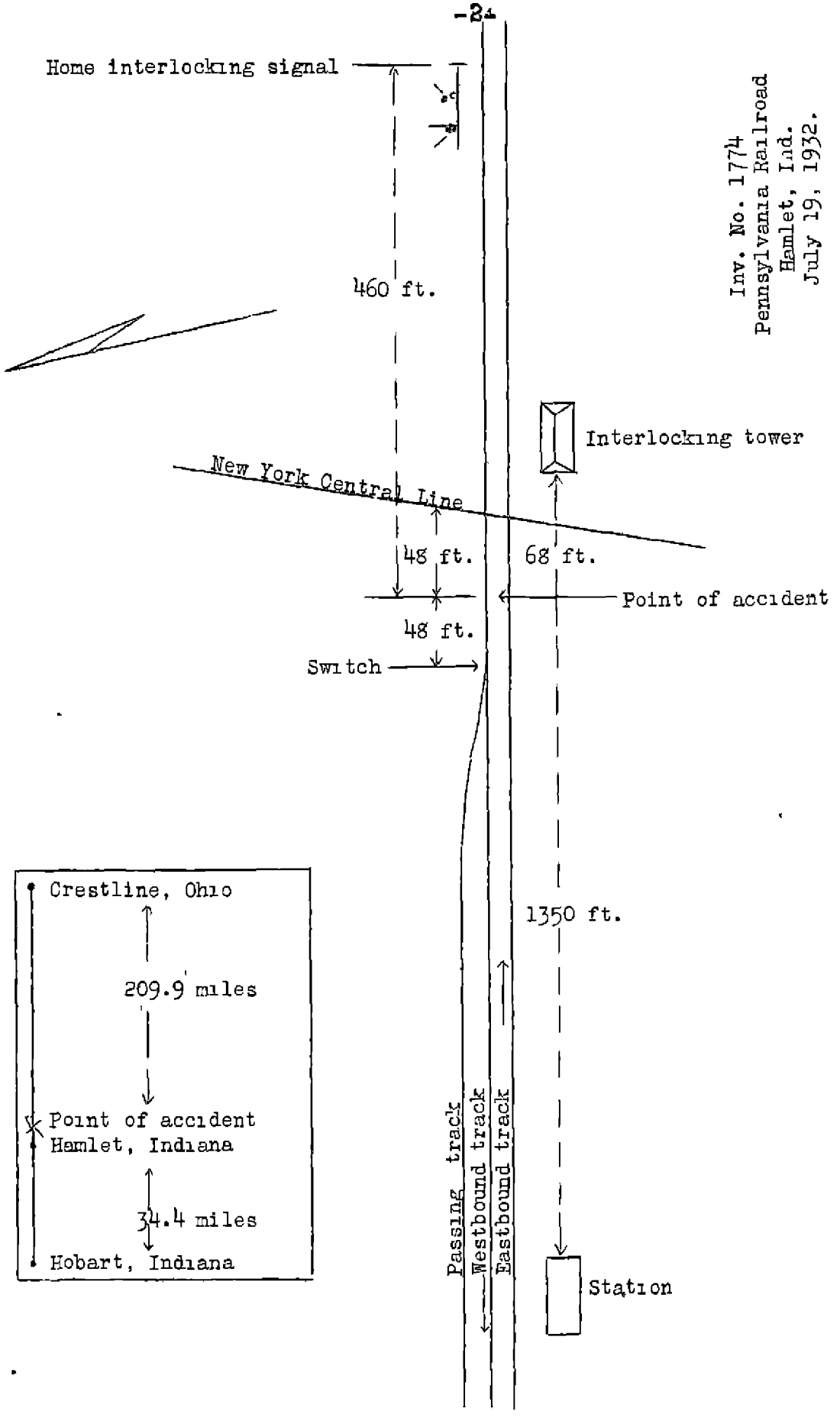
This accident occurred on that part of the Fort Wayne Division extending between Crestline, Ohio, and a point just east of Hobart, Ind., a distance of 244.3 miles. This is a double-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The accident occurred on the westbound track at a point approximately 1,350 feet east of the station; approaching this point from the east, the track is tangent for $2\frac{1}{4}$ miles, this tangent extending about $\frac{3}{4}$ mile beyond the point of accident. The grade is practically level at the point of accident.

There is an interlocking plant at Hamlet, the tower being located south of the eastbound track and about 68 feet east of the point of accident. At a point 48 feet east of the point of accident the track of the New York Central Railroad crosses the tracks of the Pennsylvania practically at right angles, and at a point 48 feet west of the point of accident there is a facing-point switch which leads to the right to a passing track. The last westbound signal is a home interlocking located approximately 460 feet east of the point of accident.

The track is laid with 130-pound rails, 39 feet in length, with 22 treated hardwood ties to the rail-length, fully tie-plated, and ballasted with limestone to a depth of 12 inches. The track was well maintained.

The weather was clear at the time of the accident, which occurred at 4.57 a.m.

Inv. No. 1774
Pennsylvania Railroad
Hamlet, Ind.
July 19, 1932.



Description

Westbound passenger train No. 15 consisted of 4 refrigerator express cars, 1 express car, 1 storage mail car, 2 mail cars, 1 combination baggage car and coach, 1 coach and 3 Pullman sleeping cars, hauled by engine 3772, and was in charge of Conductor Lombard and Engineman Spindler. All the cars were of steel construction with the exception of the first four cars, which were of steel-underframe construction. This train departed from Fort Wayne, 78.2 miles east of Hamlet, at 3.22 a.m., two minutes late, left Plymouth, 14.1 miles east of Hamlet, at 4.40 a.m., on time, and was derailed at Hamlet while traveling at a speed estimated by the members of the crew to have been between 60 and 65 miles per hour.

The rear truck of the tender and all the following cars with the exception of the rear truck of the last car were derailed. The engine and tender stopped with the front end of the engine approximately 1,550 feet west of the point of accident. The rear truck of the tender was torn loose and stopped approximately 560 feet east of the tender; the cars stopped in various positions fouling both main tracks and the passing track, the rear car stopping just beyond the passing-track switch.

Summary of evidence

Engineman Spindler, who took charge of the engine at Fort Wayne, stated that he was operating his train at a speed of about 60 miles per hour approaching Hamlet and the train was running smoothly. After passing over the New York Central crossing he felt the engine lunge and as he looked back the air brakes applied, which in his judgment was due to the train breaking in two, although he could not see anything at that moment; he placed the brake valve in the emergency position and on looking back again he saw the cars being derailed. After the accident he went back and found that the flange was missing from the left rear wheel of the rear tender truck. The statements of Fireman Rost substantiated those of the engineman.

Conductor Lombard, Head Brakeman Menzie, Flagman Tilbury and Baggageman Beach estimated the speed of their train at the time of the accident to have been between 60 and 65 miles per hour. Conductor Lombard also stated that before departure from Fort Wayne one of the car inspectors reported to him that the train was all right.

Operator Kinney, on duty at Hamlet tower, stated that train No. 15 passed his tower traveling at a speed between 50 and 60 miles per hour, and when the engine reached a point

about 50 feet west of the New York Central crossing he heard something snap, about as loud as a pistol report, and he then saw the cars being derailed.

Engineman Sellers and Fireman Hudson, who operated train No. 15, with engine 3772, from Crestline to Fort Wayne, stated that they noticed nothing unusual in the condition of either the engine or tender.

Locomotive Inspector Shindeldecker stated that he inspected engine 3772 before the departure of train No. 15 from Crestline on the day of the accident and found three defects on the left side of the No. 2 truck; a broken coil spring, a cracked brake shoe, and a nut missing from a brake hanger pin, and these defects were repaired. He inspects wheels for sharp flanges, wheels loose on the axle, broken or chipped flanges, flat spots, shelled-out spots, cracks, etc., and in this case found the tender wheels in good condition with no indication of any cracks. His inspection of the front tender truck was made from the pit, but in order to inspect the rear truck he had to crawl under the tender. Upon examining the portions of the flange found subsequent to the accident he stated that apparently there was an old defect; in fact one section of the flange more than 12 inches in length bore no indication of recent adhesion, but he said this might have been overlooked by reason of the position of the brake shoe at the time of inspection, which was made with a flash light.

Car Inspector Treece, on duty at Fort Wayne, stated that he inspected the south side of the cars in train No. 15, including the tender, and found nothing wrong on the tender. He stated, however, that the nature of the construction of the tender did not afford opportunity to see a missing flange during a side inspection, especially at night with a lantern, and according to recent instructions he was not required to get under a car. In this connection, Master Mechanic Brower stated that it was the duty of car inspectors at Fort Wayne passenger station to make a car to car inspection of the brakes, know that they apply and release properly, and while making that inspection to know that the brake beams, brake hangers, brake heads and draft gear are in proper position and that the generator belts and appurtenances of like nature are in proper position. He further stated that there is considerable overhang to the tender involved; the rear truck was a Buckeye truck and the wheels were pretty well hidden. There was a space of about 4 inches between the brake shoe and the top of the rail, and at Fort Wayne there is a platform adjacent to the track that is about 8 inches above the top of the rail and would also interfere with a view of the wheels.

The tender of engine 3772 was equipped with two 6-wheel trucks and had a solid steel foundation which supported a tank 51 feet 2 inches in length, 10 feet in width and 9 feet in height, with a capacity of ~~210,000~~ gallons; this tender extended 12 feet 6 inches back from the rear pair of truck wheels, and was only 2 feet 4 inches above the rails. The wheel involved was a steel wheel 33 inches in diameter, made by the Edgewater Steel Company, and bore the following markings: Edgewater 11-29 447060-12993-78-E. The tread thickness was 1 3/8 inches, corresponding to 3/8 inch above the road limit of wear. The wheel was last turned at the Columbus shop on May 23, 1932, and at the time of this investigation showed very little wear. Between June 26 and 29 engine 3772 and its tender were out of service at Crestline for the regular monthly inspection, at which time the tender wheels were whitewashed and no defects were found. Subsequent to the accident the entire flange, in two pieces, one measuring 65 3/4 inches in length and the other 40 1/8 inches in length, were found 2½ miles east of Adams, or approximately 86 miles east of the point of derailment; the larger piece was found in the grass north of the westbound track, while the other piece was south of the eastbound track.

Between Adams and the point of accident there are 10 curves ranging from 0° 20' to 2° and various interlocking plants, one of which was at Fort Wayne, where the train was inspected. The first mark of derailment, however, was at a point 48 feet west of the New York Central crossing at Hamlet, and the indications were that the damaged wheel then contacted the facing-point switch leading to the passing track, causing the derailment of the train. The marks on the flange and axle indicated that the flange broke loose from the wheel, around the entire circumference, and ran for some distance hanging on the axle, finally breaking in two pieces near the point where found. Portions of the tread which adhered to the flange showed a distinct piping of 1/8 to 1/4 inch around the entire circumference.

Examination of the broken flange was made by the engineering department of the Pennsylvania Railroad at Altoona, Pa., and a report was made to Chief of Motive Power Hankins, which reads in part as follows:

> "Failure occurred by the flange with corresponding rim portion parting from the rim near the base of the flange. A skin of material approximately 1/8 inch thick extending solid around the tread evidenced entirely new and sudden rupture. The defective condition of the wheel was, therefore, not visible on the tread face. It would appear, however, although there is no positive proof, that the fracture extended through the surface under the rim on the inside of the wheel.

"The material in the tread shows an average Brinell hardness of 240, ranging from 239 to 243, which is normal for wrought steel wheels.

"A transverse section through the rim showed pronounced cracks indicating a defective condition. A tangential section through the rim verifies the abnormal structure condition in that numerous cracks exist, orientated in a longitudinal-circumferential direction and parallel with the plane of fracture. This orientation of the fractures rendered the wheel weak crosswise to the rim.

"The condition represented by the transverse and longitudinal sections are a manufacturing defect (Internal shatters), which it is not practical to predetermine without destroying the wheel. It is our opinion that this unsound condition of the wheel was the direct cause of the failure."

Conclusions

This accident was caused by a broken flange.

The evidence in this case shows that the entire flange broke off from the left rear wheel of the rear tender truck at a point nearly 8 miles east of Fort Wayne, or 86 miles from where the train subsequently was derailed. Examination of the wheel and flange by the engineering department of the railroad indicated the presence of a defect in manufacture. This tender was of unusual size, with the wheels considerably obscured; it had been inspected at Crestline before the engine departed on train No. 15, and car inspectors also examined the train on its arrival at Fort Wayne. No exceptions to the wheel were taken as a result of the inspection at Crestline, at which point the inspector went under the tender, while the inspector who examined the left side of the train at Fort Wayne did not notice that the flange was missing.

Respectfully submitted,

W. P. Borland.

Director.