INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT ON THE LEHIGH VALLEY RAILROAD AT AVOCA, PA., ON MARCH 26, 1933.

May 20, 1933.

To the Commission:

On March 26, 1933, there was a derailment of a freight train on the Lehigh Valley Railroad at Avoca, Pa., which resulted in the death of one employee.

Location and method of operation

This accident occurred on that part of the Wyoming Division known as the Mountain Cut-off, which extends between Pittston Jct. and Gracedale, Pa., a distance of 20.5 miles, and is a double-track line over which trains are operated by time table, train orders, an automatic block-signal system, and an automatic train-stop system of the intermittent-inductive type. The derailment occurred on the west-bound track near the switch leading to a track which connects with a track of the Delaware & Hudson Company and which is known as the Avoca Loop. Approaching this point from the east, there is a series of short curves and tangents, followed by 497 feet of tangent track, the accident occurrring on the western end of this tangent. The grade for west-bound trains is 1.16 per cent descending.

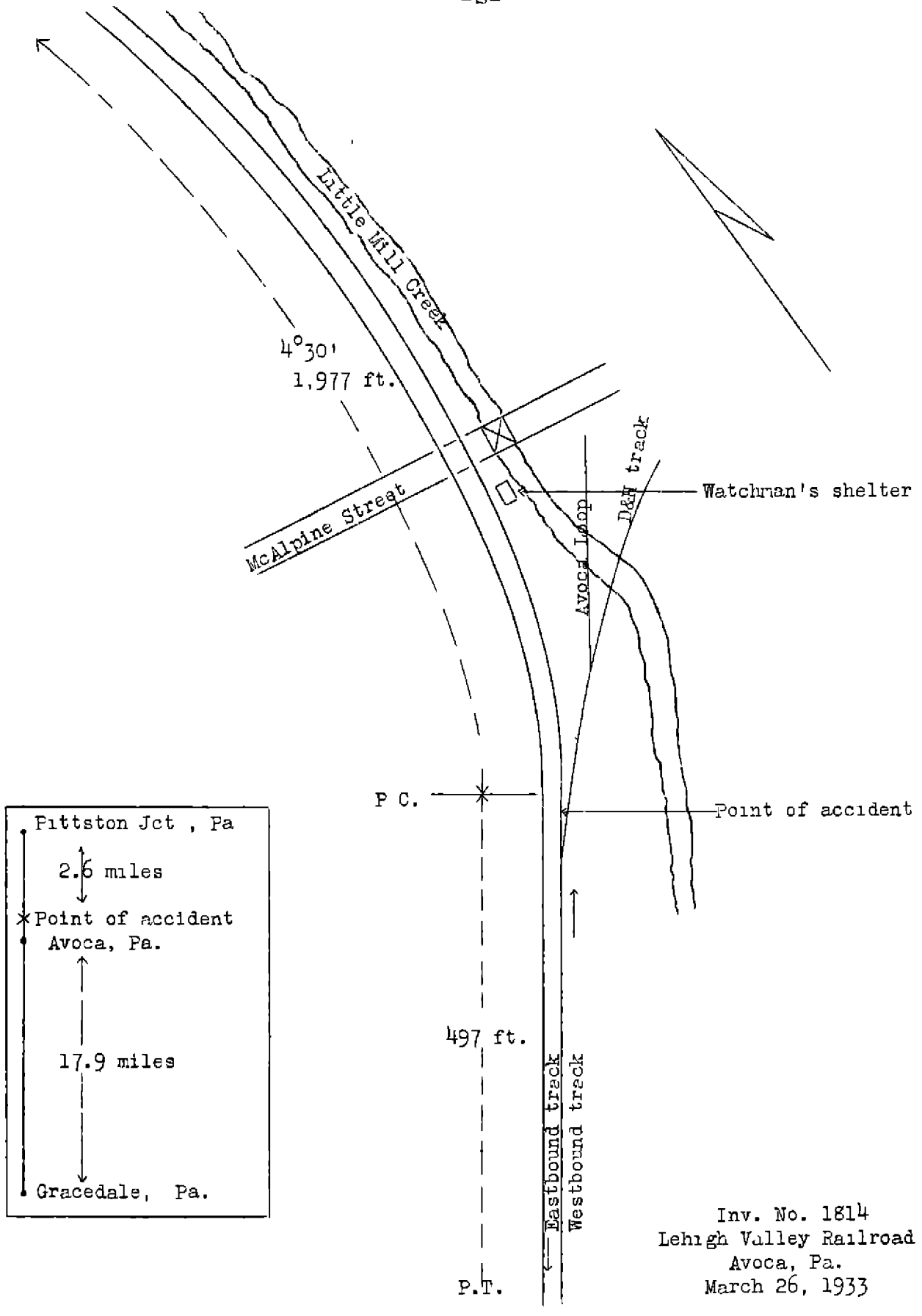
The track is laid with 136-pound rail, 39 feet in length, with 23 treated hardwood ties to the rail length, tieplated and fully spiked, and ballasted with cinders to a depth of 24 inches. The track is in good condition and well maintained.

There were light snow flurries at the time of the accident, which occurred about 3:03 or 3:05 a.m.

Description

West-bound freight train extra 5110, known as PM 1, consisted of 36 cars and a caboose, hauled by engine 5110, and was in charge of Conductor Davis and Engineman McCarthy. This train passed Gracedale, the last open office, at 2:26 a.m., stopped at Mountain Top, 1.2 miles west of Gracedale and 16.7 miles east of Avoca, for train inspection by the crew, and was derailed at Avoca while traveling at a speed estimated to have been between 18 and 25 miles per hour.

The seventeenth to the twenty-third cars, inclusive, were completely derailed and the twenty-fourth and twenty-fifth cars partially derailed. The first five derailed cars stopped to the right of the track in various positions, three of them lying in the bed of a creek which paralleled the track. A watchman's shelter, located to the right of the track and east of a highway



Inv. No. 1814
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crossing, was demolished. The employee killed was the crossing watchman.

Summary of evidence

Engineman McCarthy stated that the first indication he had of anything wrong was when the train broke in two and the brakes applied in emergency, and at the same time the brakeman called to him to stop. The front portion of the train traveled a distance of about 20 car lengths before stopping. Engineman McCarthy stated that he had looked back along the train from time to time and at no time had he seen anything irregular; at the time of the accident the speed was between 18 and 25 miles per hour. He also said that the air brakes had been inspected by the air-brake inspectors at Packerton, where his train started and were reported to be working properly, and the brakes had functioned properly en route. The statements of Fireman Wagner substantiated those of the engineman. He also had observed the train from time to time, the last time being when the train was between 1 and 2 miles from Avoca, but at no time had he noticed anything wrong.

Head Brakeman Lingertot stated that he dropped off the train just before it stopped at Mountain Top, about two cars having passed him; he then inspected the left sides of the cars as he walked back toward the rear end and had passed the twentieth car when the conductor met him with the bills. He crossed over to the right side of the train and inspected the cars as he walked back to the engine, and during this inspection he saw nothing wrong. He stated that he particularly remembered passing a car of molasses, which was the seventeenth car in the train, and that he noticed nothing wrong with it. He rode on the left side of the cab after leaving Mountain Top and looked back over the train on rounding the various curves, and saw sparks flying when the brakes were applied. Coming in to Avoca he saw a streak of fire back under the train and called to the engineman, but the brakes went on in emergency at about the same time.

Conductor Davis stated that when the train stopped at Mountain Top he met the head brakeman at about the center of the train and inspected both sides of that portion of the train that was not covered by the brakeman. Leaving there, he rode on the left side in the caboose and watched the train as it rounded the curves, but noticed nothing other than the usual fire flying when the brakes were applied.

After the accident Flagman Krumanocker went back to flag; he examined the track carefully as he went back but saw nothing that would indicate dragging equipment.

General Car Foreman Thomas stated that he arrived at the scene of the accident about 1 hour after its occurrence and inspected the track eastward to a point beyond the switch leading to the D&H track but saw no indication of dragging equipment. He then returned to the first derailed car, which was lying west of

the track, and on examining the truck which was lying between the car and the track he found a broken arch bar; this car was the seventeenth car in the train. Examination of the other derailed equipment which was lying west of this car revealed nothing that would have caused the accident. It was his opinion that the broken arch bar allowed the wheel to rise and mount the rail, thus causing the derailment, and he concluded that it was the le truck of the car. He gauged the wheels, found they were tight on the axles, all axles were straight, and the wheel treads and flanges were in good condition. All column and box bolts and nuts were intact, and neither the bottom binder brace nor the top member of the arch-bar truck was broken. The bottom bolt of the right front column-post casting showed wear, indicating that it had come in contact with a metal surface, and General Car Foreman Thomas stated that marks which were found on the stock rail at the switch could have been made by the column bolt. He found the rear truck about 135 feet west of the car on the bank of the creek, headed toward the creek; the wheels were in proper gauge and tight and the axles were straight. General Foreman Mitchell, Master Car Builder Myers, and Division Engineer Donovan stated that they agreed with the statements made by General Car Foreman Thomas.

Division Engineer Donovan further stated that in company with other officials he found marks at a switch at Hendlers, 6½ miles east of the point of derailment, indicating that the bottom of the column bolt had come in contact with the frog and stock rail of the turnout, as well as with the frog and stock rail at the switch at Avoca. The marks were at the same distance from the main track rail as the column bolts on the truck. The marks at Hendlers apparently were those made by the bottom of the bolt sliding over the stock rail and outside of the frog, while at Avoca apparently the inside of the column bolt rubbed along the outside of the stock rail and the frog. The first mark of derailment was at a point approximately 15 feet west of the frog, and it was his opinion that the bolt finally came in contact with the wing rail of the frog, causing the wheels to be forced out of line and the truck to rise and leave the track just west of the frog.

Inspection was made of the track east of the point of derailment and the first marks were found to be those at Hendlers; these marks consisted of a brush mark across the top of the stock rail and a pronounced abrasion on the inside of the wing of the frog and entirely across the surface of the frog. These marks were outside of and about 6 inches from the right rail. No other marks of any kind were found between this point and the switch at Avoca, at which point marks were found on the outside and top of the stock rail and on the outside of the wing rail of the frog. These marks were similar to those found at Hendlers and probably were made by the column bolts of the broken arch-bar truck. The first marks of derailed wheels were found about 15 feet west of the point of frog, leading to the right of the track. These marks indicated that only one pair of wheels was derailed for a

distance of 60 feet, then for a distance of 240 feet the only marks were those that indicated that something was dragging and striking the outer edges of the ties, on the right side of the track, skewing them badly; the marks then indicated a general derailment of the cars immediately following.

The front truck of the seventeenth car, HMHX 8072, a tank car, was found on the right side of the track lying between the car and the west-bound track; the trailing truck was found about 136 feet west of the car, not badly damaged. This car was loaded with 93,600 pounds of molasses, total weight of car 130,100 pounds, and had a capacity of 136,000 pounds. It was equipped with trucks of the arch-bar type, and the bottom arch bar on the right side of the lead truck was broken; the break was at the bend in the bar at the foot of the column post casting. The front portion of the top arch bar was bent upward, and the bottom brace or tie bar was buckled; in other respects the truck was not badly damaged. The fracture appeared to be about 85 per cent new, the old fracture being at the top of the bar and just under the front edge of the column post casting.

Conclusions

This accident was caused by the failure of an arch-bar truck.

The investigation disclosed that the bottom arch bar on the right side of the lead truck of the seventeenth car failed at the bend under the front edge of the column post casting, allowing the truck to sag and the columnbolt to come in contact with the wing rail on the frog, forcing the wheels out of line and resulting in their derailment.

Respectfully submitted,

W. P. BORLAND,

Director.