

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE
NORTHERN PACIFIC RAILWAY NEAR OLYMPIA, WASH., ON
NOVEMBER 17, 1925.

January 25, 1926.

To the Commission.

On November 17, 1925, there was a derailment of a passenger train on the Northern Pacific Railway near Olympia, Wash., resulting in the death of 1 employee and 1 passenger, and the injury of 28 passengers, 2 mail clerks and 6 employees. This accident was investigated in conjunction with a representative of the Washington Department of Public Works.

Location and method of operation

This accident occurred on that part of the Tacoma Division extending between St. Clair and Hoquiam, Wash., a distance of 72.5 miles, in the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders, no block-signal system being in use. The accident occurred about 2.8 miles west of Olympia, approaching this point from the west the track is tangent for a considerable distance, followed by a $6^{\circ} 06'$ curve to the left 774.9 feet in length, the accident occurring on this curve at a point about 400 feet from its western end. The grade is 1.20 per cent descending for eastbound trains to a point just west of the western end of the curve, and is then level around the curve.

The track is laid with 72-pound rails, 30 feet in length, single-spiked, and fully tie-plated on curves; there are about 17 or 18 ties to the rail-length, and the ballast consists of sand and gravel, about 18 inches in depth. The track is well maintained. At a point 953.1 feet west of the western end of the curve there is a speed restriction board, on the engineman's side of an eastbound train, reading as follows, "LIMIT 25 FOR 3 MILES".

It was raining and dark at the time of the accident, which occurred at about 6.10 p.m.

Description

Eastbound passenger train No. 424 consisted of one combination mail and express car, one combination baggage and smoking car, and one day coach, hauled by engine 255, and was in charge of Conductor Foster and Engineman Putnam. This train left Little Rock, 11.9 miles from Olympia, at 5.54 p.m., according to the train sheet, 16 minutes late, and on reaching a point approximately 9.1 miles beyond was derailed while traveling at a speed estimated to have been from 35 to 50 miles an hour.

The entire train was derailed on the outside of the curve and came to rest parallel with the track. Engine 255 was on its right side, about 40 feet from the track, with its head end buried in the gravel to a depth of about 3 feet, the tender broke loose from its trucks and came to rest a short distance behind the engine, bottom up. The first two cars passed the engine on the left, the head end of the first car being 385 feet from the point where the track was first disturbed, while the second car was opposite the engine and tender. These two cars were nearly upright, while the third car was overturned. The employee killed was the engineman.

Summary of evidence

Fireman Whitman said that when passing Belmore, about 2.5 miles west of the point of accident, he finished putting in the last fire, at which time he estimated the speed to have been about 50 miles an hour. The engineman shut off steam when about $\frac{1}{2}$ mile beyond the station at Belmore and then permitted the engine to drift and Fireman Whitman did not remember whether or not any air-brake application was made prior to the accident, estimating the speed at this time to have been about 35 miles an hour. He said he was unaware of anything wrong prior to the derailment, when the left side of the engine seemed to rise very suddenly. He also said he had talked with Engineman Putnam frequently en route and that there appeared to be nothing wrong with his physical condition.

Conductor Foster, who was riding in the rear car at the time of the accident, said the speed of the train did not appear to be any higher than usual, estimating it to have been about 45 or 50 miles an hour at Belmore, and about 35 miles an hour at the time of derailment. He said that the engineman shut off steam

when from 1/2 to 1 mile beyond Belmore, and that the engine was drifting when it reached the curve, but he did not know whether or not the air brakes were applied just prior to the accident. Conductor Foster also stated that on a number of occasions he had spoken to Engineman Putnam about operating the train at excessive speed.

Brakeman Kephart was riding in the rear car at the time of the accident, he noticed nothing to indicate excessive speed, and emphatically stated that on previous occasions the speed had been much higher on the curve than in this instance, estimating it to have been about 35 miles an hour just prior to the time of the accident.

Several persons riding in the rear car were questioned but their statements were to the effect that while the train was apparently traveling at a good rate of speed they were not concerned in this connection and noticed no unusual rocking or swaying of the car.

Division Roadmaster Knight stated that he arrived at the scene of the accident about four hours after its occurrence and took measurements of the gauge and superelevation of the track on the curve. The maximum gauge was 4 feet 8-13/16 inches, and at one point, about 200 feet west of the point of derailment, the gauge was found to be 1/16 inch tight, the maximum superelevation of the outside rail was 4-5/8 inches and the minimum was 4-1/8 inches. The alinement was good, as were track conditions as a whole, and he did not think that track conditions contributed in any manner to the accident. He said it was his opinion that a speed of 40 miles an hour could be made with safety around the curve in question, but that with a train moving in excess of this rate of speed a strain would be exerted on the track, and he thought the speed of train No. 424 must have been not less than 50 miles an hour at the time of the derailment.

Assistant Engineer Buchanan said first indications of the derailment were found to be where the spikes had been pulled loose on the outside rail of the curve. After the accident the left main rod was found to have been broken, but Mr. Buchanan said there was no mark to indicate that the ends of this rod had struck the ground or ties. He further stated that he did not think track conditions had any bearing on the accident,

that the curve was safe for a speed of 35 miles an hour, and he thought the train must have been traveling at a speed of about 45 or 50 miles an hour at the time of the derailment.

Roadmaster Ager also arrived at the point of accident a few hours after its occurrence, he found no track conditions that would have contributed to or caused the accident and thought that the train must have been traveling at a speed of between 40 and 50 miles an hour. He verified Mr. Buchanan's statement that there were no indications the broken left main rod was the cause of the accident.

Section Foreman Yarrowborough stated that he had inspected the track on the curve twice on the day of the accident, once on a gasoline car and once on foot, but had found nothing irregular.

Engine 255 is of the 4-6-0 type, and had last received repairs in September 1924. Master Mechanic Bruce stated that on examining the engine after the accident he found the broken left main rod and at first thought this was the cause of the accident, but careful examination failed to develop anything to indicate that the broken rod had come in contact with the ties or ground on the outside of the left rail, while examination of the broken ends of the rod failed to reveal the presence of any dirt on them. Mr. Bruce said that apparently the broken rod had come up from the back, where it had revolved around the pin, and broke through the running board, wedging itself in this position, the driving wheels never completing this revolution, in fact, making only about half of a revolution, indicating that the engine was not running on its wheels at the time the main rod broke. The throttle was found to be open but this could have been caused by its having been dragged in the dirt after the engine was derailed; the reverse lever was in forward motion. Mr. Bruce thought the accident was caused by excessive speed, resulting in turning over the outside rail of the curve.

Examination of the broken rod, which was 126 $\frac{1}{2}$ inches in length, showed that it had broken at a point 41 inches from its forward end. The broken ends were free from dirt, showing a fresh break, and there was no mark on the rod to show that it had struck anything or had come in contact with the ties or ground. The longest piece of this rod was attached to the main pin and when the engine came to rest the

loose end of this piece was protruding through the running board inclined toward the rear of the engine. This rod apparently broke at the time the engine turned over, and at this time the side rods were bent, which probably stopped the wheels from revolving, otherwise the rod would have stripped that side of the engine.

The rails on the curve on which this accident occurred were relay rails, laid at this point in July 1925, at which time the track was relined and surfaced, and placed generally in first-class condition. Examination of the track showed that the first evidence of anything wrong was where the spikes on the outside rail had been loosened for a distance of 44.5 feet extending to where the rail finally turned over; flange marks then appeared on the gauge side of the web of the outside rail, and on the ties on the gauge side of the inner rail, for a distance of 51.2 feet, at which point the engine apparently swerved abruptly to the right and left the roadbed.

Conclusions

This accident is believed to have been due to excessive speed on a curve.

The speed of trains moving through the territory in which this accident occurred is restricted to 25 miles an hour and the investigation failed to develop anything to indicate that the track was not entirely safe for this rate of speed. It seemed equally clear, however, that the speed limit was not being observed and apparently the strain placed on the track as a result of this excessive speed was so great as to loosen the spikes which were holding the outside rail, allowing that rail to overturn and resulting in the derailment of the train.

While the engine came to rest on its right side, it was found that the main rod on the left side was broken, and the side rods bent. Just what was responsible for this condition was not definitely determined, although the investigation showed that the breaking of the main rod could not have been the cause of the derailment.

The employees involved were experienced men, and at the time of the accident they had been on duty less than $3\frac{1}{2}$ hours after about 16 hours off duty.

Respectfully submitted,

W. P. BORLAND
Director.