INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE CHICAGO, MILWAUKEE & ST. PAUL RAILWAY NEAR PORTSMOUTH, IOWA, ON MARCH 6, 1924.

April 18, 1924.

To the Commission;

On March 6, 1924, there was a derailment of a passenger train on the Chicago, Milwaukee & St. Paul Railway near Portsmouth, Iowa, which resulted in the death of one employee and the injury of eight passengers, two employees, and three trespassers

Location and method of operation.

This accident occurred on the Iowa Division which extends between Council Bluffs and Perry, Iowa, a distance of 120.6 miles; in the vicinity of the point of accident this is a single-track line over which trains are operated by time-table, train orders and a manual block-signal system. The accident occurred at a point approximately 2.65 miles west of Portsmouth, approaching this point from the west there is a 3° curve to the right 1,500 feet in length, then 882 feet of tangent, followed by a 3° curve to the left 1,225 feet in length The derailment occurred on this latter curve 264 feet from its western end. The grade at the point of derailment is practically level

The track is laid with 90-pound rails, 33 feet in length, with an average of 30 ties to the rail length, about 90% being hardwood, single-spiked, tie-plated on curves, and ballasted with gravel and cinders, to a depth of from 8 to 12 inches. Twenty-four inch angle bars are used, staggered The rail was manufactured in 1916, and laid in September, 1917

Time table rules restrict the speed of passenger trains to 55 miles an hour between Council Bluffs and Manilla, Iowa, within which territory this accident occurred. The weather was cloudy at the time of the accident, which occurred at about 2:00 a.m.

Description.

Eastbound passenger train No. 20 consisted of one baggage and express car, one coach, one chair car, one Pullman tourist car, one Pullman sleeping car, and one observation car, in the order named, of all-steel construction, hauled by engine 6624, and was in charge of Conductor Reardon and

Engineman Pendy. This train left Council Bluffs at 1:10 a.m., according to the train sheet, 10 minutes late, passed Neola, the last open office, approximately 12¾ miles west of the point of accident at 1:40 a.m., 11 minutes late, and was derailed while traveling at a speed estimated to have been between 36 and 45 miles an hour.

The entire train was derailed to the right, with the exception of the engine trucks, which came to rest to the left of the track and almost opposite the head end of the engine. Engine 6634 apparently slid about 75 feet on its right side before coming to rest about 5 feet from the outside rail, almost parallel to the track, and about 750 feet from the initial point of derailment; the tender was directly behind it. The first three cars came to rest on their right sides, while the fourth, fifth and sixth cars remained upright and partly on the roadbed. The employee killed was the engineman.

Summary of evidence.

Fireman Warner said his train left Council Bluffs about 14 minutes late, and while it was his opinion that they had made up a minute or two of the lost time at the time of the derailment, no special effort was being made to gain additional time, the speed of his train being about 45 miles an hour at the time of accident. He said the first intimation he had of anything wrong was a noise which sounded as if the engine truck were off the rail but before he could move from the deck of the engine to the cab window the engine turned over on its right side, throwing him from the cab. He stated that the engine was not a hard riding one and while it rolled considerably on this trip, it was no more than usual. He also said there seemed to be considerable lateral in the trailer truck but he did not know how much lateral there was as he had not inspected them. Fireman Warner was of the opinion that the front end of the engine was the first to be derailed.

Conductor Reardon stated that his train left Council Bluffs eleven minutes late, and passed Neola, eleven minutes late; there was nothing unusual in the operation of the train between these points, and schedule speed was maintained. He estimated the speed to have been between 35 and 40 miles an hour at the time of the derailment, and was of the opinion that the air brakes were applied in emergency immediately prior to the accident. He looked at his watch immediately after the accident and noted that it was then 2:00 a.m. He could advance no probable cause of the derailment. The statements of other members of the train crew added nothing of importance to the evidence.

The air brakes were tested and worked properly en route.

General Roadmaster Snea was of the opinion that the south rail ran true to surface prior to the accident, but that the north rail had heaved considerably, thereby reducing the superelevation With this condition prevailing the weight of trains was thrown agairst the outer rail, widening the gauge, as indicated by the tie plates, for 1½ inches, and the gauge being ½ inch wide at the point of accident in addition, permitted the left trailer truck wheel to drop inside the low rail, turning the outside rail over, resulting in the subsequent derailment. He stated that in the half mile of track immediately preceding the derailment there were a number of ties that should have been renewed last fall, and that had the outside rail been shimmed to the extent of 1½ inches, making the superelevation 3½ inches, the accident would not have occurred. However, he did not think that track conditions were unsafe in this vicinity, and that 45 miles an hour was a safe speed.

Maintenance of Way Engineer Penfield stated that measures are being taken to hold the track in gauge, overcome rail creeping, and the bunching of ties in this vicinity.

Division Engineer Sinclair stated that he arrived at the scene of the accident at about 2:30 p.m The superelevation of the outside rail was one inch less at the point of accident than it was three rail lengths west thereof, it should reach its maximum elevation about six rail lengths east of the west end of the curve, and the initial point of derailment was eight rail lengths from this end of the curve. He stated that the half mile of track preceding the point of accident was in unusual condition, and that he was present when some spikes were pulled out of the ties by hand He was of the opinion that track conditions caused the accident, the gauge of the track being wide enough to permit the left trailer wheel to drop inside the low rail.

Roadmaster Barnoski and Section Foreman Laurinat rode over the track at the point of accident on the day prior thereto and noticed a surge at about the curve where the accident occurred, apparently due to the low rail having heaved. The roadmaster instructed the section foreman to remedy this condition. Roadmaster Barnoski was of the opinion that the accident was a result of track conditions, and had a slow order been in effect at this point the derailment would not have occurred.

Assistant Superintendent of Motive Power Bjorkholm stated that he examined the engine after the accident, and the indications were that the engine truck did not leave the rails until the engine tipped over, as there were no marks on the wheels, truck, or beneath the cylinders or pilot.

Inspection of the track disclosed the first mark of derailment was on the curve at a point 264 feet from its western end, on the gauge side of the head of the north rail, the low rail of the curve; 16 feet beyond on this side of this rail there was a mark on an angle bar and bolt head. At a point 35 feet farther an inside angle bar and the corner of the head of the rail were knocked off. Immediately following this the ties were marked near the gauge side of the rail for a distance of 180 feet. From this point on the track was torn up for approximately 500 feet and 15 rails were bent. Starting at a point 83 feet west of where the track was torn up the north rail was turned over and there were wheel marks on the web of the rail. The first mark on the south rail appeared on an angle bar on the outside of the rail at a point 99 feet from the initial point of derailment, following which the ties and angle bars on this side of the rail were marked to the point where the track was torn up. From the western end of the curve to the initial point of derailment there were found 17 decayed ties, approximately 10% of the total for this distance, 28 broken tie plates, about 9%, 7 ties not spiked in the north rail, and 8 ties not spiked in the south rail, while 7 ties were double spiked in the north rail and 15 ties double spiked in the south rail. For a distance of 77 rail joints approximately one half mile, west of the point of accident numerous broken, decayed, and rail cut ties were found. Within this distance 17 joints were found in the north rail with no spikes in 3 successive ties; 47 joints with no spikes in 2 successive ties; and 12 joints with 1 tie not spiked. In the south rail there were 3 joints with no spikes in 3 successive ties; 37 joints with no spikes in 2 successive ties, and 15 joints with one tie not spiked. Rail creeping had bunched the ties in a number of places, either shearing the spikes or pulling them out. This condition apparently had existed for some time. In addition to the large number of joint ties not spiked there were many others which appeared to have been placed in the track last year and not spiked, and a number of spikes loose enough to be pulled out with the fingers were also found. A number of tie plates were broken, apparently on account of rust and age, while in places others were used as braces on the outside of the rails

Measurements of the gauge and superelevation, starting at a point 412½ feet west of the initial point of derailment, at every rail joint on each side of the track, the joints being staggered, were as follows:

Superelevation		Gauge	
	continued		continued
6.0"	3.0"	1/8" wide	5/16" wide
1/2"	3.0"	1/8" "	1/16" "
1.0"	3.0"	7/16" "	5/8" "
1 1/4"	3.0"	1/2" "	3/8" "
1 3/4"	3.0"	1/8" "	3/8" "
1 5/8"	3 1/2"	0.0" "	11/16" "
1 1/2"	3 1/4"	0.0" "	5/8" "
2 "	3 1/4"	0.0" "	5/8" "
2 1/4"	3.0"	0.0" "	13/16" "
2 3/4"	2 3/4"	0.0" Curve starts	5/8" "
2 3/4"	2 1/2"	0.0	13/16" "
3.0"	2 1/2"	1/16" wide	1/2" "
3.0"	2 1/4"*	1/16" "	1/2" "*

*Point of derailment.

Engine 6624 is of the 4-6-2 type, having a total weight, engine and tender of 383,350 pounds. Its driving wheel base is 14 feet, and total wheel base, engine and tender, 67 feet 3/4 inch. Examination showed that the tires were in good condition and that there was not more than 5/16 inch lateral in any of the wheels. A thorough examination of this engine and its appurtenances failed to disclose anything that could have contributed to the cause of the derailment.

Conclusions.

This derailment was caused by bad track conditions.

Owing to the existing track conditions, the inside rail being heaved, wide gauge, and improper maintenance of the superelevation, apparently the left trailer truck wheel dropped inside the low rail, resulting in the crowding of the high rail to such an extent as to permit the right front driving wheel to drop between the rails, and the general derailment followed.

The large number of defective ties, together with improperly maintained superelevation, loose and missing spikes and generally bad track conditions will not permit the safe operation of trains at high rates of speed over this portion of track. The officials of this railroad are responsible for permitting these conditions to exist and for allowing trains to be operated at speeds which are excessive in view of the existing track conditions. Speed restrictions should be placed upon this track until it is placed in proper condition for the safe operation of trains over it.

All of the employees involved in this accident were experienced men. At the time of the accident the train and engine crew had been on duty approximately 3 hours, previous to which they had been off duty 13 hours or more.

Respectfully submitted,

W. P. BORLAND,

Director.