Inv-2094

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

CHICAGO GREAT WESTERN RAILROAD

MINGO, IOWA

SEPTEMBER 8, 1936

INVESTIGATION NO. 2094

SUMMARY

Railroad:	Chicago Great Western
Date:	September 8, 1936
Location:	Mingo, Iowa
Kind of accident:	Derailment
Train involved:	Freight
Train number:	Extra 870 East
Engine number:	870
Consist:	55 loaded cars, caboose
Speed:	30-35 m.p.h.
Track:	2^{o} curve
Weather:	Clear
Time:	7:30 a.m.
Casualties:	3 injured
Cause:	Tank car rocked off irregular track on curve

2094
October 8, 1936.

To the Commission:

On September 8, 1936, there was a derailment of a freight train on the Chicago Great Western Railroad near Mingo, Iowa, resulting in the injury of 3 employees. This accident was investigated in conjunction with the Iowa Board of Railroad Commissioners.

Location and method of operation

This accident occurred on the Fifth District of the Iowa Division, extending between South Des Moines and Marshalltown, Iowa, a distance of 59 miles; this is a single-track line over which trains are operated by time-table, train orders and an automatic block-signal system. The accident occurred at a point approximately 1½ miles east of the depot at Mingo; approaching the point of accident from the west the track is tangent for a distance of 5,752 feet, then there is a 2° curve to the right 1,385 feet in length, the accident occurring on this curve at a point about 360 feet from its western end. The grade for eastbound trains is level for a distance of 4,000 feet, then it is 0.24 percent descending for a distance of 2,200 feet to the point of derailment, following which it is level for 1,300 feet.

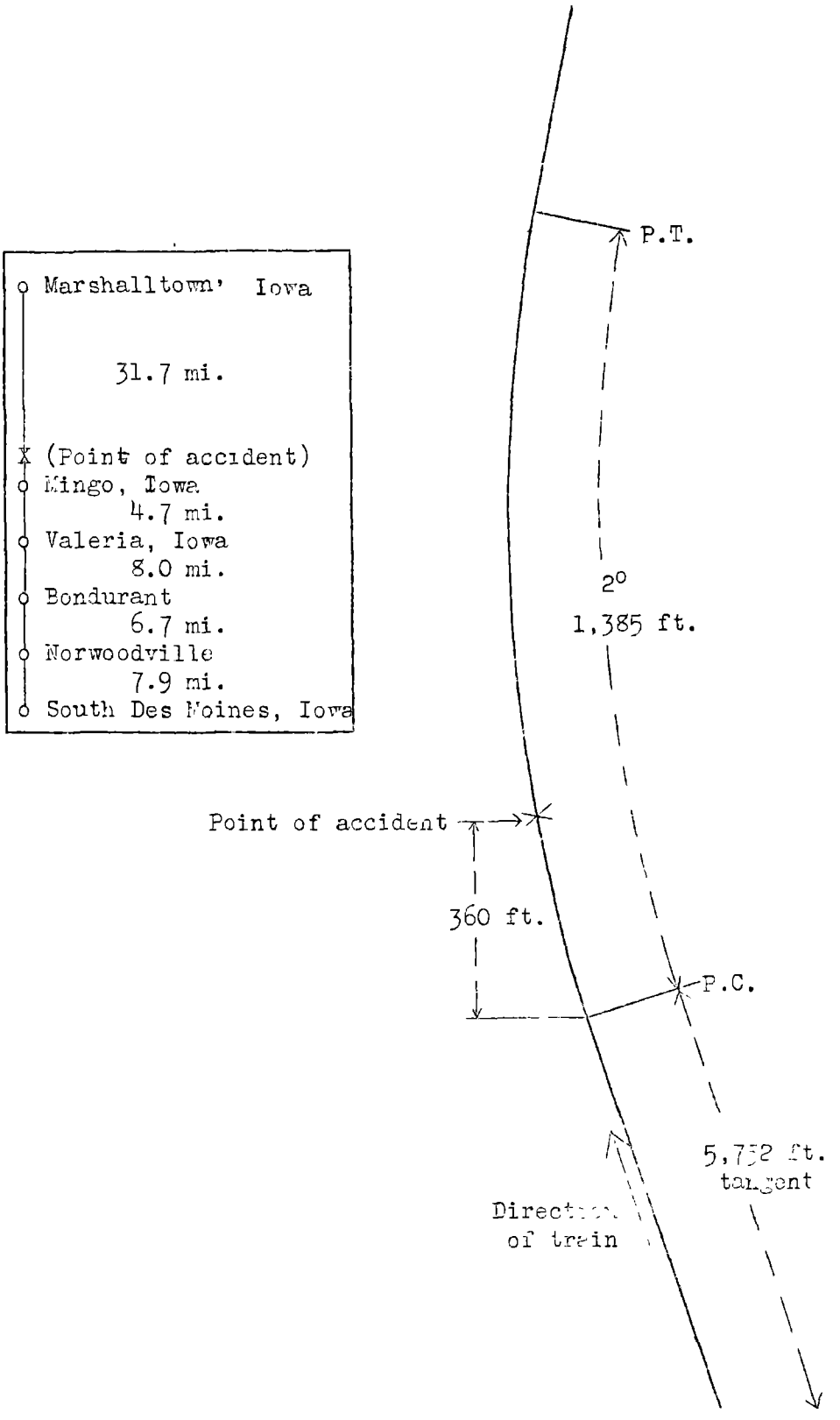
The track is laid with 85-pound rail, 33 feet in length, laid in 1914, with an average of 20 ties to the rail length, tieplated on curves, single-spiked, staggered rail joints and ballasted with gravel and cinders; the track is poorly maintained. The maximum superelevation of the outside rail of the curve involved was 4 inches, and it was 2 7/8 inches at the point of derailment; the maximum variation of gauge was 5/8 inch. The speed of freight trains is restricted to 35 miles per hour.

The weather was clear at the time of the accident, which occurred about 7:30 a.m.

Description

Extra 870, an eastbound freight train, consisted of 55 loaded cars and a caboose, hauled by engine 870, and was in charge of Conductor Carmichael and Engineman Lynch. This train left Bon Durant, the last open office, 12.7 miles west of Mingo, at 6:41 a.m., according to the train sheet, stopped

Inv. No. 2094
Chicago Great Western R.R.
Mingo, Iowa
Sept. 8, 1936



for water en route, passed Mingo and was derailed while traveling at a speed estimated to have been between 30 and 35 miles per hour.

The engine and first 49 cars were not derailed and continued for a distance of about 1,950 feet before stopping; the 50th and 51st cars were derailed and remained upright still coupled to the train, which had parted behind the 51st car; the balance of the train, consisting of 4 cars and caboose, were derailed and stopped on their sides, with the exception of the caboose which remained upright. The employees injured were the conductor, flagman and a student brakeman, all of whom were in the caboose at the time of the accident.

Summary of evidence

Engineman Lynch stated that the air brakes were tested and worked properly, but the train pulled hard and did not run freely; it became stalled and he had to double at Norwoodville, located 19.4 miles west of Mingo. Passing the west switch of the siding at Mingo the speed was between 30 and 35 miles per hour; he shut off and used a drifting throttle. On reaching a point just east of the east switch of the siding the engineman stretched the train with a light throttle and after reaching the foot of Mingo hill he was satisfied that he had the slack fully stretched. When the engine passed around the curve involved the engineman increased speed; after proceeding about the length of the train he felt the air brakes apply in emergency from the rear and the indicator on the air gauge dropped and the train stopped. He said that his train moved down Mingo hill without an air brake application having been made by him, whereas on other trains he had handled it was necessary to use the brakes down this hill; he was positive the slack was fully stretched when the accident occurred, and said the train was an ordinary handling train so far as slack action was concerned. Engineman Lynch said that there were no unusual riding qualities of the engine when it passed over the track where the rear portion of the train became derailed, and he did not know what caused the accident.

Fireman Hess and Head Brakeman Welch noticed nothing unusual en route, such as the riding qualities of the engine, rolling of cars, track conditions or slack action, nor movement of any slack just prior to the accident. The first intimation the fireman had of anything wrong was on noticing a slight jerk of the engine and on looking back he saw dust flying, and the dome of an oil tank car; the air brakes were

applied in emergency from the rear and the train stopped. He estimated the speed to have been between 30 and 35 miles per hour when the accident occurred.

Conductor Carmichael, Flagman Case and Student Brakeman Bedgood were in the caboose and were unaware of anything wrong until the accident occurred; the statements of the conductor and flagman were to the effect that the train was a hard pulling one. There was no unusual handling of the train descending Mingo hill prior to the accident, nor was there any unusual slack action; the slack apparently was stretched. Nothing out of the ordinary was noticed as to track conditions, and there was no excessive rocking of the caboose or rolling of cars. The train was inspected by the brakemen when a stop was made for water about 35 minutes before the accident and everything appeared to be all right. The speed at the time of accident was about 35 miles per hour and was not a factor in the derailment, and they did not know what caused the accident.

Section Foreman Utley was standing on the south side of the track about ½ mile west of Mingo when Extra 870 passed; he inspected the train but he did not see any indication of dragging equipment or hot boxes. Signal Maintainer Foster was standing on the south side of the track just west of the depot when Extra 870 passed and he also gave the train a running inspection, but noticed nothing wrong, and he waved a proceed signal to Flagman Case, who was on the rear of the caboose. Both of these employees estimated the speed of the train to have been about 40 miles per hour at the time it passed them.

Division Engineer Hoffman arrived at the scene of the accident on the following morning at which time the derailed cars had been removed. He examined the track westward from the point of derailment and took measurements at rail joints and centers; the superelevation of the outside rail of the curve involved was 2 7/8 inches at the point of derailment, while the maximum superelevation was 4 inches; the surface of the tangent track west of the curve, measured from 5/8 inch high at three different points to ¼ inch low at two other points. The variation in gauge was 5/8 inch. Nothing had been done to the track at this point since the derailment. He said that the rail joints on this line were all considerably battered, but that the general contour of the rail was in no worse condition than other rail having the same age and similar service. The tie allotment for this year on the main line of the 13 mile section upon which the derailment occurred, is 2,080 ties. In recent years most of the ballast used on this part of the track has been cinders, and the most

recent ballasting was done in the spring of 1935, when from 3 to 4 inches of cinders were added. The territory is scheduled for rail and ballast renewal in 1937, this to be an extension of the 112-pound rail now being laid between Melbourne and Baxter and will be extended to Des Moines. In company with Roadmaster Larson, he was over this track, on an eastbound passenger train, four days prior to the accident, but nothing out of the ordinary was noticed on the curve involved. Examination of the track subsequent to the accident did not disclose any rails that might have been broken before the accident. He noticed a flange mark on the head of the high rail at the point of derailment, $\frac{1}{2}$ inch from the edge of the head and practically opposite a rail joint of the low rail, apparently where a wheel had become raised at the time of derailment; the joint did not show any particular evidence of churning. He considered the track in fair condition for the authorized speeds. The foreman of this section has 13 miles of track to maintain and has three men in his crew; during portions of the last year he had six men, with a probable average of about four men throughout the year. There were some broken or decayed ties on this section, but the tie inspection for the year had not been completed. In his opinion the accident was caused by a rocking motion of the cars, which, being on a curve about the time the engineman started to work full steam, set up an action that tended to raise the wheel from the rail.

Roadmaster Larson stated that work of spotting the track had recently been performed east of Mingo, and bolts were tightened and some ties were renewed. He was last over the track on a freight train September 5, and at that time the section men were lining and spotting the track about 200 feet west of the point where the derailment occurred. During the two-day period prior to the accident, about $3\frac{1}{2}$ inches of rain had fallen. There was no soft-track condition and no trouble was experienced with the track spreading on the curve involved and no more work is required to keep it in condition than on other parts of the section. He considered the track safe for the maximum authorized speed of 35 miles per hour for freight trains.

Car Foreman Wilhite, in charge of the wrecking outfit, stated that he arrived at the scene of accident at 10:30 a.m. and immediately made an inspection. Car S.D.R.X. 4148, an all steel tank car loaded with 10,000 gallons of gasoline, was the fiftieth car in the train and the first of the two derailed cars that remained coupled to the forward portion of the train. The lead truck of this car was the first to become derailed and all wheels of the car were derailed to the

north of the rails. The only damage the car sustained was two bent top side-bearings on the south side, evidently caused by the car running on the ties. On car V.E.N.X. 2630, the car coupled behind S.D.R.X. 4148, the lead truck was derailed to the south of the rails and the rear truck derailed to the north of the rails. The brake rigging was torn off the east end, and one set of arch bars was bent at the west end, this being caused by striking the rail after the truck became derailed. No mechanical defect was found on any of the derailed equipment that would have caused the accident. The first wheel climbed the high rail of the curve at the point of derailment and ran on top of the rail for about 6 feet and then dropped off on the north side; on the inside of the south rail there was a mark on the ties opposite where the north wheel left the rail. He thought that variation in track conditions, together with slack action, caused the car to rock somewhat, and at about the time the engineman opened the throttle with the slack bunched, it caused a jerk which raised the wheel above the rail. He understood the A.A.R. requirements relative to free slack, and he said that the rules of the railroad required that all free slack be removed from cars passing over repair tracks.

Inspection of the track made by the Commission's inspectors three days after the accident, and after a heavy rainfall in that vicinity, disclosed that a low grade of maintenance, for main line service, prevailed. The rail was generally worn and many of the rails had been reversed to place the badly worn gauge side on the outside; practically all of the joints were badly battered, and some did not form a true radius with the curvature. In many cases 1 or 2 track bolts were missing and in several places the bolts were lying on the ground at the joint; several splice plates were broken or cracked, and some joints were noted with no effective spikes. At several points, 5 to 7 broken or decayed ties were noted per rail length, and many spikes were loosened and partially raised and some could be pulled out by hand; the surfacing was noticeably uneven and such as might readily set up a rocking motion of cars moving over it at considerable speed. The first mark of derailment was found to be a distinct flange mark on top of the north or high rail of the curve, about $\frac{1}{2}$ inch from the gauge side of the rail, indicating that a wheel had been raised and came down with the flange on top of the rail; this flange mark, which was nearly opposite a joint on the south rail, followed a sharp angle across the north rail, then wheel marks appeared on the ties on the north side of both rails. All equipment had been removed from the scene of accident before the arrival of the Commission's inspectors.

Discussion

Extra 870 left South Des Moines at 4:40 a.m., with 55 loaded cars and a caboose, 2,690 tons, and moved to the point of accident without any unusual incident other than doubling the hill at Norwoodville; the air brakes were tested and worked properly en route. The train was observed and inspected by members of the crew en route; it was also apparently in good condition at the time a running inspection was made by the section foreman and the signal maintainer at Mingo; it descended Mingo hill, an average grade of about 1 percent for a distance of approximately 2½ miles, without the engineman making an air brake application, passed Mingo depot at a speed estimated to have been between 25 and 40 miles per hour and was derailed on a 2° curve to the right about 1½ miles beyond while traveling at a speed estimated by members of the crew to have been between 30 and 35 miles per hour. Inspection of the equipment after the accident disclosed no defect that would have caused the accident. The engineman stated that shortly after passing Mingo he worked a light throttle and stretched the slack in the train, and that after traveling about the length of the train he worked a heavier throttle and continued to do so until the accident occurred. No severe slack action was experienced at any time with this train. There was uneven surface of the track at, and directly preceding, the point of derailment while cross levels showed the superelevation at the point of accident to be 2-7/8 inches, and one rail length farther west it was 4 inches, showing a variation of 1-1/8 inches in elevation in the rail length directly preceding the point of derailment and without taking into consideration the flexibility of the track. These variations would obviously tend to set up a rolling or rocking motion of the cars when moving over the track at 30 or 35 miles per hour and the marks on the top of the rail ½ inch from the gauge side indicated that the wheel was raised. The lead truck of the fiftieth car in the train, S.D.R.X. 8148, an all steel tank car loaded with 10,000 gallons of gasoline, was the first to become derailed on the outside rail of the 2° curve. Undoubtedly the speed was too high for the prevailing track conditions.

Conclusions

This accident was caused by a tank car rocking off the track on a curve, due principally to irregular track conditions.

Recommendations

It is recommended that maximum authorized speeds be reduced commensurate with track conditions.

Respectfully submitted,

W. J. PATTERSON,

Director.