BUREAU OF SAFETY

REPORT NO. 1983

Railroad:	Illinois Central
Date:	May 9, 1935
Location:	Rust, Ill.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	Extra 1754
Consist:	19 loaded cars and caboose
Speed:	40 m.p.h. or more
Track:	Tangent; not well maintained
Weather:	Clear
Casualties:	2 killed
Cause:	Track conditions did not provide adequate margin of safety above maximum authorized speed limit of 40 miles per hour

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT ON THE ILLINOIS CENTRAL RAILROAD NEAR RUST, ILL., ON MAY 9, 1935.

June 27, 1935.

To the Commission:

On May 9, 1935, there was a derailment of a freight train on the Illinois Central Railroad near Rust, Ill., which resulted in the death of 2 employees.

Location and method of operation

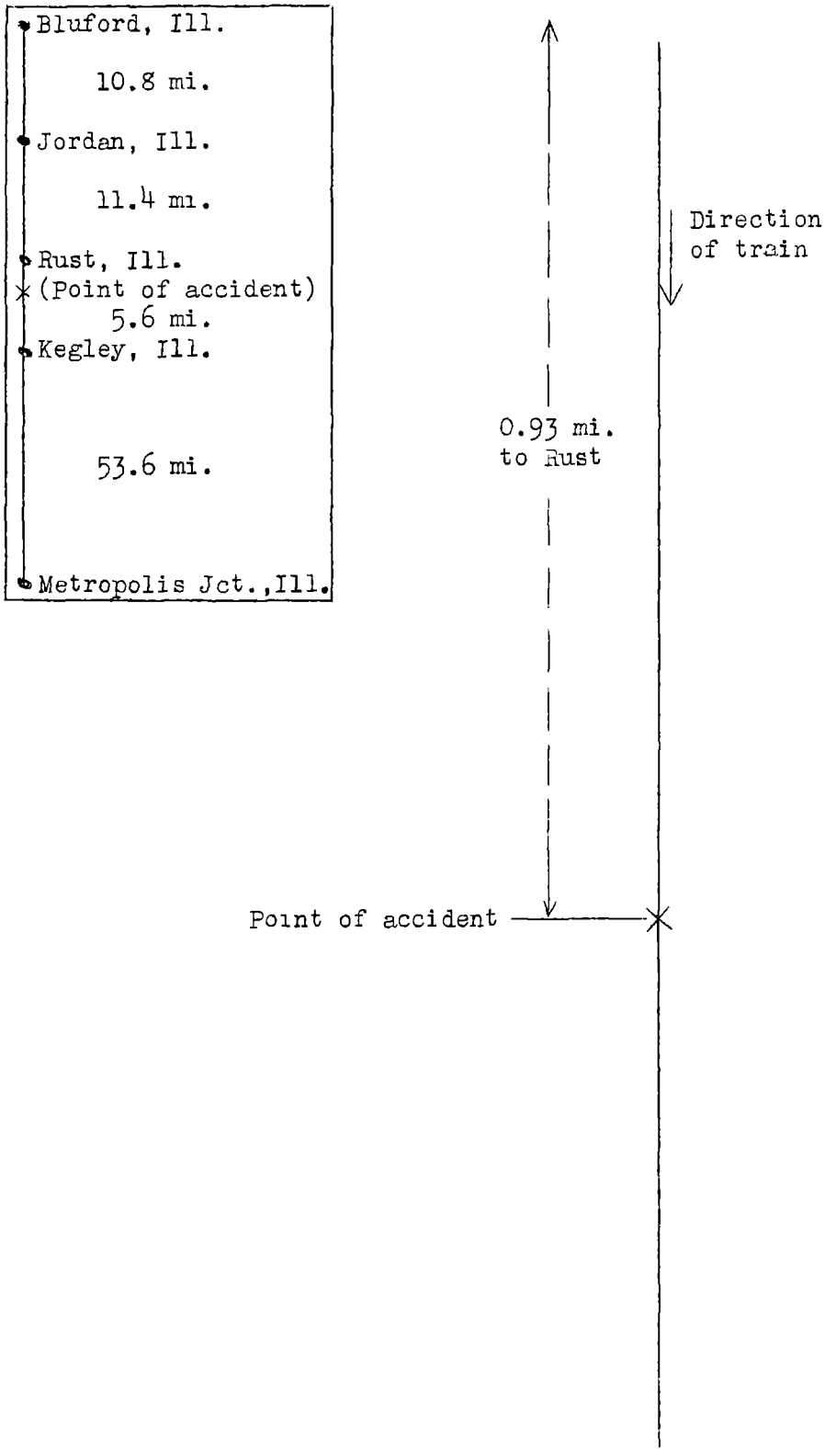
This accident occurred on the Bluford District of the St. Louis Division, extending between Bluford and Metropolis Junction, Ill., a distance of 81.4 miles; in the vicinity of the point of accident this is a single-track line over which trains are operated by time table and train orders, no block-signal system being in use. The accident occurred at a point 0.93 mile south of the south switch of the siding at Rust; approaching this point from the north, the track is tangent for a distance of about 1 mile to the point of accident, and for several miles beyond that point. The grade for south-bound trains is 0.15 percent descending at the point of accident.

The track is laid with 90-pound sawed rails, 31 feet in length, with 17 treated ties to the rail length, single-spiked, fully tieplated, and ballasted with 8 to 10 inches of cinders upon 18 inches of cementing gravel. Four-hole angle bars are used, fully bolted, the bolts being staggered; the rail joints also are staggered and rail anchors are used. Freight trains are restricted to a maximum speed of 40 miles per hour.

The weather was clear at the time of the accident, which occurred between 6:54 and 6:58 a.m.

Description

Extra 1754, a south-bound dispatch freight train, consisted of 19 loaded cars and a caboose, hauled by engine 1754, and was in charge of Conductor Camp and Engineman Edwards. There is a dispute as to the time at which this train left Bluford, the last open office, 22.2 miles north of Rust; according to the train sheet it was 6:25 a.m., but the conductor and flagman said it was 6:10 a.m. At Jordan, 11.4 miles north of Rust, the train



Inv. No. 1983
Illinois Central R.R.
Rust, Ill.
May 9, 1935

took siding and met an opposing train, after which it proceeded and was derailed south of Rust while traveling at a speed estimated by members of the crew to have been between 35 and 40 miles per hour.

Engine 1754, its tender, the first nine cars and the forward truck of the tenth car were derailed. The engine stopped on its right side, west of and parallel with the track, with its front end 404 feet south of the point of derailment; the first 7 cars were piled up within a distance of 118 feet, 5 of them being destroyed. Starting at a point 146 feet south of the point of derailment the track was torn up for a distance of 248 feet. The employees killed were the engineman and fireman.

Summary of evidence

Conductor Camp looked at his watch as his train left Bluford and it was 6:10 a.m.; owing to the location of the telegraph office it was possible for south-bound trains to depart without the operator knowing the leaving time, and he filled out the register ticket intended to be thrown off at Kegley, 5.6 miles south of Rust, and listed the time of departure from Bluford as 6:10 a.m. Orders were held to wait at Jordan until 6:20 a.m. and Rust until 6:40 a.m., also to meet an opposing train at Jordan, and to reduce speed to 10 miles per hour over bridge 59-0, located about 6.5 miles south of Jordan. Approaching Jordan, his train was 15 minutes late on the wait order and the crew of the opposing train had lined the switch for his train to take siding. Head Brakeman Ireland opened the south switch, then remained there and inspected the cars as the train passed him, following which he closed the switch and boarded the caboose, and the train left Jordan about 6:40 a.m., the delay at this point not amounting to more than 5 minutes. The first knowledge the conductor had of anything wrong was when the accident happened, at which time the speed was between 35 and 40 miles per hour. Conductor Camp thought the accident occurred within 2 or 3 minutes before 7 o'clock, saying that he had not looked at his watch after leaving Jordan. The air brakes had been tested and worked properly en route, and the conductor said that no application was made immediately prior to the emergency application which occurred at the time of the accident. After the accident the conductor saw where something had marked the gauge side of one rail and an angle bar, but he had no idea as to what caused the accident.

Head Brakeman Ireland stated that between Bluford and Jordan he rode on the brakeman's seat box on the engine and did not notice anything wrong with the riding qualities of the engine, although the fireman remarked that it rode roughly. On arrival at Jordan his train headed in at the open switch at a speed of about 10 miles per hour and pulled through the siding, almost 1

mile in length, at a speed of about 15 miles per hour. On reaching the south switch the head brakemen lined it and inspected the cars in the train as they passed him and then he closed the switch and boarded the caboose, no stop being made. He did not know what time his train left the south switch and estimated the speed to have been between close to 40 miles per hour when the accident occurred, saying that it was slightly down grade and that just enough steam was being worked to keep the slack stretched; he noticed nothing wrong with the riding qualities of the caboose and could not advance any opinion as to what caused the accident.

Flagman Rowlett said his train left Bluford at 6:10 a.m. and Jordan about 6:37 a.m. Speed was reduced over bridge 59-0 in compliance with the slow order, this being the only time he recalled that the brakes were applied prior to the emergency application at the time of the accident, at which time he estimated the speed to have been not more than 40 miles per hour. Flagman Rowlett further stated that at times the track over the Bluford District seemed to ride roughly as compared with other districts, but he thought that where the accident occurred it was one of the best pieces of track in that section. All of these employees testified that on the previous north-bound trip with a dispatch freight train they had noticed no unusual track conditions.

Claim Agent Heilig stated that he attended the coroner's inquest and that the coroner called his attention to the watch that had been removed from the body of Engineman Edwards after the accident. Careful examination of the watch disclosed a small dent in the back of the case, about in the center, and the crystal had been broken out; the hands were in good condition and not bent and the watch had stopped at 6:54.

Conductor Monroe, of Train First No. 74, the freight train met by Extra 1754 at Jordan, stated that his crew lined the north switch so that the extra could head in without stopping, and to the best of his knowledge the extra was in the passing track at 6:30 a.m.

Section Foreman McLearen, who arrived at the scene of the accident about 7:35 a.m., said his inspection of the track showed where something had cut the west rail and sheared angle bars and bolts in two or three places, but he did not see where any of the wheels had dropped on the ties; at the point of derailment, however, there was a mark on the top of the head of the rail such as might be made by the flange of a driving-wheel tire. He said that there were several soft spots in the track on his section and that during wet weather the track is inspected every day. At the point where the accident occurred the track is on a fill and had never given him any trouble, but there was a piece of soft track about 500 feet north of that lo-

cation. He had not performed work on the track involved for several days, and said that it never gets rough, and he had ridden over it during the afternoon of the day prior to the accident and at that time it looked all right; he also had placed the track level on it a few days previously and said it was not out of level enough to give concern. The section foreman did not know what caused the accident unless something gave way on the engine or a car, and while he could not say whether it was the engine that was derailed first yet in his opinion had the derailment occurred as a result of rough track the wheels would have marked the ties at some point.

Supervisor of Trains and Track Willingham, who arrived at the scene about 11:15 a.m., said the first mark he saw was a slight flange mark that ran on top of the west rail for approximately 16 or 17 feet and there was evidence of its having dropped off on the outside, about opposite the point where an angle bar on the gauge side of the east rail was sheared; however, there were no marks on the ties. About two rail lengths farther south there was a batter mark and after examining the engine he concluded that the mark was caused by the driving-wheel counter balance on the east side of the engine having struck the top of the rail. In his opinion the right front driving wheel was the first to be derailed, the tire on the opposite wheel dropping down on the gauge side just enough to permit the counter balance to strike the rail, but not enough to let the wheel flange mark the ties, after which the rail was spread and pulled out of line. Mr. Willingham further stated that on the morning prior to the accident he rode the train involved out of Bluford; he noticed nothing unusual while passing over the track where the accident subsequently occurred and considered the track to be maintained fairly well and good for a speed of 40 miles per hour.

Division Engineer Harrington stated that measurements taken following the accident disclosed the gauge to be from $\frac{1}{4}$ inch open to 1/16 inch tight, while the west rail was higher north of the point of accident but was a little lower just south of the scene of accident than at the point where it occurred; at this latter point, where a wheel on the west side mounted the rail, the west rail was $\frac{1}{4}$ inch lower than the east rail, and one-half rail length farther north the west rail was $\frac{1}{4}$ inch higher. Fifty or 60 feet north of the point where the wheel mounted the rail the west rail was as much as 1-1/8 inches higher than the east rail. Mr. Harrington's observations indicated to him that the flange of the right front driving wheel mounted the rail and rode on top of it for a distance of about 16 feet. At a point 23 feet south of the beginning of this mark the angle bar on the gauge side of the east rail was sheared a distance of 14 inches, but none of the bolts was sheared; 15 feet beyond that point the shoulder of the angle bar outside the west rail at the north end was

sheared off for a distance of 6 inches and the nuts also were sheared. From that point for a distance of 31 feet the outside of the rail was marked its full length as if a driving wheel had been rubbing against it, and then the wheel apparently remounted the rail, while opposite this point the gauge side of the east rail was badly burned. The first flange mark on a tie was 113 feet south of the point where the flange of a wheel first climbed the rail, this mark being on the gauge side of the east rail; there was no corresponding mark on the ties on the outside of the west rail. Commencing just north of this mark on a tie, the spikes on the gauge side of the west rail had been pulled upward, the rail settling back in place when cars not derailed were pulled back over it. At a point 179 feet south of the first mark on a rail, the joints were stripped from the west rail and the rail thrown from the road bed. Division Engineer Harrington looked over the engine and saw that the counter balances of the first and second driving wheels on the left side showed where they had hit the rail and there were grease marks on top of that rail that showed where the counter balances must have been riding the rail; the counter balance on the front left driving wheel showed more marks than the second driving wheel. Gauging of the driving wheel tires after the accident showed them all to be in good condition. It further appeared from his observations that there is some center-bound track in this territory, as well as some ties pumping and joints churning, due to excessive spring rains; cinders also had been grinding up, due to traffic; however, he rode over this track on a motor car on April 27 and found it apparently good for the allowable speed of 40 miles per hour. In his opinion the accident was not caused by track conditions, stating that there was every indication of excessive speed, and considering the gradient and location of the slow order and the fact that the train reduced speed to the 10-mile-per-hour limit over bridge 59-0 as required, also the condition of the derailed equipment and the manner in which it stopped, he thought the speed of the train at the time of the accident must have been between 55 and 60 miles per hour, which he said was entirely too fast for track conditions on this district.

Traveling Engineer McIntyre made statements similar to those previously given as to markings found on the track after the accident and the battered condition of the counter balances of the driving wheels on the left side of the engine; he also said that the No. 3 driving-wheel counter balance was battered. In his opinion the accident was caused by speed.

Master Mechanic Seely made careful inspection of the engine after the accident, but no mechanical defects were found. The lateral of all wheels was within the limit, the tires were good, and the wedges were free.

The report of the board of inquiry of the railroad was to the effect that the track in the immediate vicinity of the accident was, and still is, considered safe for a speed of 40 miles per hour, but is not especially well maintained and shows variation in level, gauge and tie conditions. Observations of train movements over track immediately north of the point of accident showed a swinging of engine and train on account of track conditions and several swinging or churning ties were noticeable in the track at the point of derailment; it also was stated that an inspection of engine 1754 failed to disclose any defect or irregularity that might have contributed in any way to the derailment. The board pointed out that, based on a departure time from Jordan of 6:40 a.m. and taking the time of the accident as 6:56 a.m., the average speed was 46.2 miles per hour, without allowing for any speed reduction at bridge 59-0; if the accident happened at 6:54 a.m., as indicated by the engineman's damaged watch, then the average speed was 52.1 miles per hour. It was the opinion of the board that excessive speed of the engine over track not suitable for a speed in excess of 40 miles per hour caused the right front driving wheel of the engine to mount the rail and drop off, thereby causing the derailment.

Engine 1754 is of the 2-8-2 type, and has a total weight, engine and tender in working order, of 450,200 pounds; it recently had received class 5 repairs, having come out of the shop on March 12, 1935. Examination was made of this engine after it had been rerailed, particular attention being paid to the driving boxes, but nothing was found which could have contributed to its derailment, neither was anything of this kind shown on the work reports during the 10 days prior to the accident.

Examination of the track made by the Commission's inspectors, beginning about 500 feet north of the point of derailment, showed it to be in fairly good condition up to a point 121 feet from the first marks on the ball of the west rail. Beyond this point, 46 out of 55 ties were centerbound, while the ballast under the ends of the ties on the east side showed evidence of considerable churning; it also was noted that the ties had been badly gouged in the center by a previous derailment, many of them showing cracks when engines passed over them, and that the track was depressed fully an inch at some points, particularly on the east side, when a train passed over it.

Discussion

Examination of the equipment, particularly the engine, failed to disclose any condition which could have contributed to the derailment. Examination of the track, however, showed that it was not well maintained; it was centerbound, the ties had been badly gouged in the center as a result of a previous derailment, the ballast had been churning under the ends of the

ties on the east side, and the track settled at some points on this side fully an inch under the weight of a passing train. The first marks on the track indicated that a pair of wheels had been derailed to the right or west and then were held suspended while traveling close to the rail, shearing the shoulders of angle bars, and also the bolts and nuts, and the indications on the left or east rail and also on the counterbalance of the left front driving wheel tended to show that these first marks of derailment were made by the front driving wheels.

The maximum permissible speed at this point for a dispatch freight train is 40 miles per hour and the estimates made by the members of the train crew were to the effect that the speed was close to this maximum at the time of the accident. It was not possible to check these estimates very closely; however, the conductor of the train met at Jordan, 11.4 miles north of Rust, said Extra 1754 was in the passing track at that point at 6:30 a.m., while the conductor of Extra 1754 said his train left Jordan about 6:40 a.m. and the flagman said it was 6:37 a.m. The conductor thought the accident occurred about 6:57 or 6:58 a.m., while afterwards it was found that the engineman's watch, damaged in the accident, had stopped at 6:54. If the conductor's figures are correct, then the train averaged about 40 miles per hour without allowing for reducing speed to 10 miles per hour over bridge 59-0; if, however, the accident occurred at the time indicated by the engineman's watch, then the train had averaged nearly 49 miles per hour. These figures indicate that the speed of the train probably had been maintained at or above the maximum permissible speed for a distance of several miles and it is believed that the track conditions previously mentioned, when coupled with this speed, caused the engine to rock to such an extent as to allow the right front driving wheel to mount the rail, thus precipitating the derailment.

Conclusions

This accident is believed to have been caused by track conditions which did not provide an adequate margin of safety and operation of this train probably somewhat in excess of the maximum rate of speed permitted.

Recommendation

It is recommended that the maximum authorized speeds in this territory be reduced until such time as the condition of the track has been sufficiently improved to provide an adequate margin of safety.

Respectfully submitted,

W. J. PATTERSON,

Director.