INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE MISSOURI PACIFIC RAILROAD NEAR MYRICK, MO., ON NOVEMBER 23, 1931.

December 29, 1931.

To the Commission:

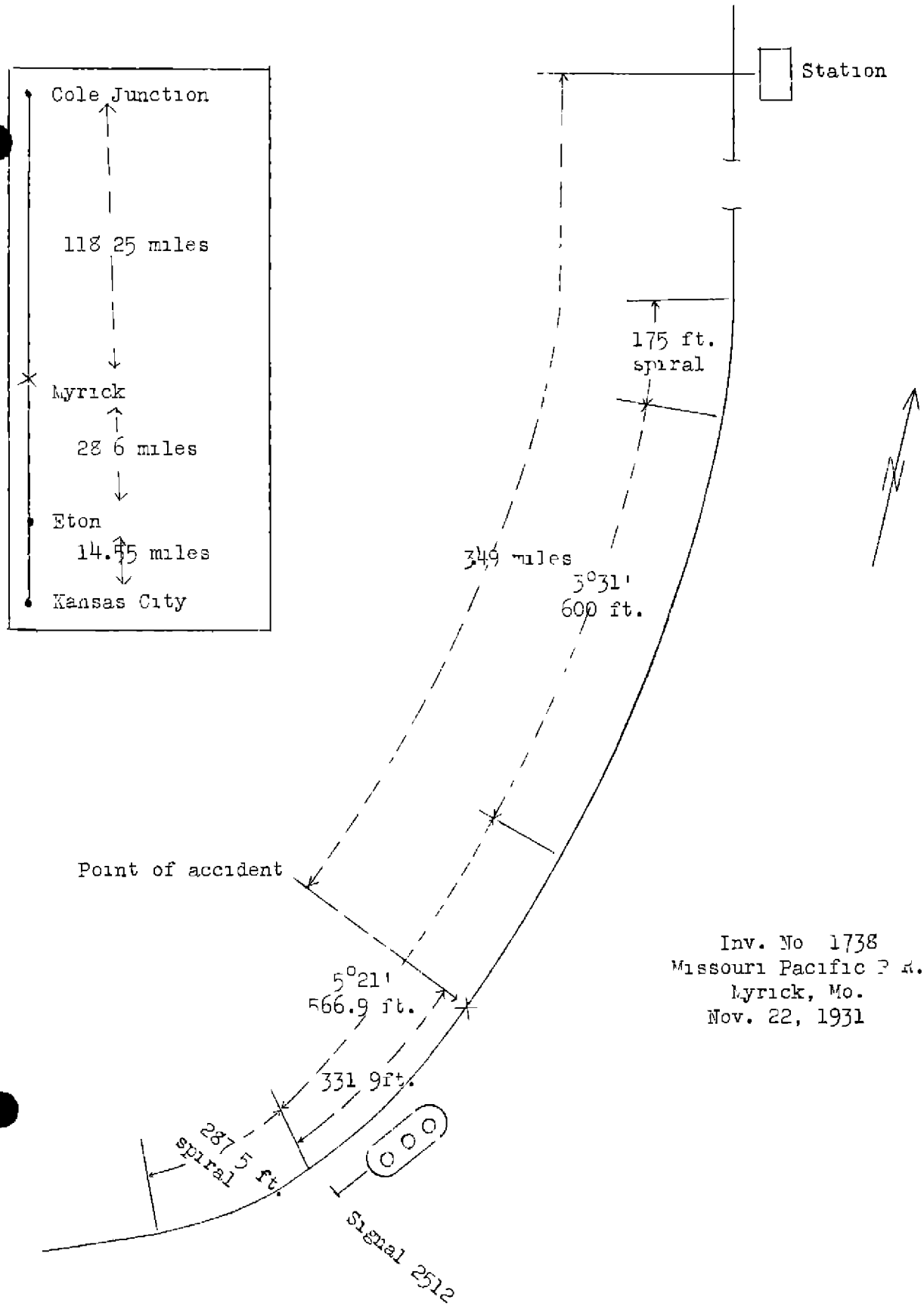
On November 23, 1931, there was a derailment of a freight train on the Missouri Pacific Railroad near Myrick, Mo., which resulted in the death of 4 attendants of live stock and the injury of 38 attendants of live stock. This investigation was made in conjunction with representatives of the Public Service Commission of Missouri

Location and method of operation

This accident occurred on the River District of the Eastern Division, which extends between Eton and Cole Junction, Mo., a distance of 146.85 miles In the immediate vicinity of the point of accident 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 3.49 miles west of the station at Myrick or 330 feet east of the first eastbound automatic signal - 2512 - which is of the color-light type and governs approach to the double-track line which begins at a point 1.84 miles east of this signal. Approaching the point of accident from the west, there is a series of short tangents and curves for a distance of 4,104.6 feet, followed by a compound curve to the left 1,029.4 feet in length, including spirals, with a maximum curvature of 5°21', the accident occurred on this curve, 615.4 feet from its western end, where the curvature is at its maximum. The grade was level at the point of accident. The maximum speed for freight trains is 40 miles per hour

In the vicinity of the point of accident the track is on a fill ranging in height from 4 to 6 feet; it is laid with 85-pound rails, 33 feet in length, with an average of 20 ties to the rail-length, 98 per cent treated hard wood and 2 per cent treated pine, single-spiked, fully tie-plated, with 6 anti-creepers to the rail, and is ballasted with chatt to a depth of from 12 to 14 inches. The super-elevation of the curve is $5\frac{3}{4}$ inches The track is fairly well maintained

There was a light rain falling at the time of the accident, which occurred at 5 p. m.



Inv. No 1738
Missouri Pacific R.R.,
Myrick, Mo.
Nov. 22, 1931

Description

Eastbound second-class freight train No. 62 consisted of 48 freight cars, 1 dining car, 1 coach, 1 chair car, and a caboose, hauled by engine 5541, a passenger engine of the 4-8-2 type, and was in charge of Conductor Hawkins and Engineman Billo. This train departed from East Yard, Kansas City, Mo., at 3.45 p. m., 3 hours and 44 minutes late, passed Eton, the last open telegraph office, 28.6 miles west of Myrick, at 4.15 p. m., 3 hours and 45 minutes late, according to the train sheet, and was derailed by a broken rail near Myrick while traveling at a speed estimated to have been between 25 and 35 miles per hour.

The engine and tender stopped approximately 1,000 feet east of the initial point of derailment, with the engine trailer-truck wheels and the tender derailed. The first 23 cars were derailed, the first 7 stopping parallel with the track, some on the left side and some on the right side, while the eighth to the twenty-third cars, inclusive, were bunched just beyond the initial point of derailment. The twenty-fourth car remained upright with the front truck derailed and the rear truck on part of the broken rail involved.

Summary of evidence

Engineman Billo stated that they received a bulletin which was read to him by Road Foreman of Engines Giffen, who rode on the engine during this trip, to the effect that the train was to be operated at a uniform speed of about 35 miles per hour, and he said that after leaving Eton the speed had not exceeded 33 miles per hour. Upon approaching signal 3512 he observed it displaying a clear indication and he was operating his train at a speed of about 30 miles per hour when he felt the engine strike a broken rail and he immediately applied the air brakes in emergency. It seemed to him that the right back driving wheel became derailed and then jumped back onto the rail. Later on he found the broken rail on the right or high side of the curve, under the last car derailed or the twenty-fourth car in the train. He examined the engine but found no defects that might have contributed to the accident, the brakes had been tested before departure of the train from Kansas City and had functioned properly en route, and he had noticed no unusual riding of the engine prior to the derailment. The statements of Fireman Doebrinel and Head Brakeman Huff practically corroborated those of Engineman Billo, except that Fireman Doebriner stated that the speed was not in excess of 35 miles per hour at the time of the accident, while Brakeman Huff estimated it to have been 35 miles per hour at that time.

Road Foreman of Engines Giffin stated that he rode the engine the entire trip up to the time of derailment and that a speed of 35 miles per hour had not been exceeded at any time, in compliance with the message received from the dispatcher Upon approaching signal 2512 the engineman reduced speed to about 30 miles per hour and the train was running smoothly when it seemed that the right rear driving wheel dropped off the end of a broken rail and the engineman immediately applied the brakes in emergency Road Foreman of Engines Giffen made a careful inspection of the engine after the occurrence of the accident and found no defects that could have contributed to its cause Upon examining the track he found under the twenty-fourth car a broken rail which disclosed the presence of a transverse fissure. Engine 5341 had recently come out of the shops, the driving tires had been turned and the lateral taken up in all the boxes, and he himself had given it a thorough inspection in the roundhouse at Kansas City before its departure on this trip, giving it especial attention, due to the importance of this run, as it was desired that the movement be made as smoothly as possible due to the fact that this train would carry a large number of horses. Engine 5341 was a passenger engine being temporarily used in freight service to condition it for passenger-train use

Conductor Hawkins and Rear Brakeman Yancey, who were riding in the caboose at the time of the accident, estimated the speed of their train at the time of the accident to have been 30 miles per hour.

Section Foreman Sanders, in charge of the section of track on which the accident occurred, stated that he arrived at the scene of the accident soon after its occurrence and examined the rail, which had broken at a point 7 feet $2\frac{1}{2}$ inches from its leaving end, the long piece was still in its original position in the track, the short piece was on the outside of the track, and the broken ends showed a small brown spot indicating a defect in the rail. His inspection of the track west of the point of accident revealed nothing wrong He had been over this section of track on the day previous to the occurrence of the accident, at which time he had found everything all right. He stated that the rail on this curve was in fair condition, that there was very little widening of the gauge, and what little existed probably was due to the flange wear on the high side of the curve. He had recently lined the track, renewed some ties and surfaced it, and within the last two months he had changed five defective and broken rails, all of them having been rails received from the Colorado Division, as was the case with the rail causing the accident here under investigation.

In this connection, however, the records in the office of the engineer maintenance of way showed that only three rails had been changed, one on July 10, one on August 28,

and another on September 17, 1951. All three rails were marked sec 850 x 105, the heat number on one rail was not distinct but the other two rails bore heat number 21078. The records failed to show clearly the nature of the defects.

Roadmaster Stewart stated that he arrived at the scene of the accident about one hour after its occurrence and found a broken rail on the high side of the curve under a car which had its front truck derailed and jammed against the trucks of a derailed car ahead, the ties under this rail having been moved ahead by the derailed trucks, and he thought that the break occurred between ties. Examination of the ends of the broken rail indicated the presence of a transverse fissure. Inspection of the track west of the point of accident disclosed no marks of any kind, and although Roadmaster Stewart found one point on the curve where the gauge was $\frac{3}{4}$ inch wide, he said there was no evidence of spread track. In the past quite a number of defective rails had been found, but not many due to transverse fissures. The rail involved had been relaid during the summer of 1929 and a Sperry rail detector car had been over this section of track once, in August, 1950.

Engineer Maintenance of Way Miller examined the broken rail and found a transverse fissure of a type that is not commonly seen. He classified it as being of a mushroom type, having small outside black fringe. He stated that a Sperry detector car was being operated over the Eastern Division at the time of the accident, this car was on its second trip over the entire system, and it is the practice to remove all defective rails from the track, regardless of the kind of defect indicated by the detector car. He thought that, covering the entire system, there would be an average of approximately 0 58 defective rails to the mile. The detector car was finding on its second trip a smaller percentage of defective rails per mile than was found on its former trip He also said that when more than two transverse fissures in any one heat are found, all rails of that heat are removed from the track

Division Trainmaster Bailey stated that he handled the details in connection with operation of train No 62 on the day of the accident. The lading was of extraordinary importance, consisting of high-class live stock, and he instructed the road foreman of engines, who was to ride on the train, to see that a uniform run was made, the train handled smoothly, and that the speed did not exceed 35 miles per hour He further stated that the heaviest freight power used on this district is known as the 1900 class, its weight as follows: weight on drivers 375,500 pounds, trucks 39,800 pounds, trailer front axle 39,900, rear axle 57,000, total weight engine 412,200, tender loaded 331,700 pounds. Total weight engine and tender 733,900 pounds, or slightly heavier than the engine involved in this accident.

Inspection of engine 5341 at Jefferson City after the occurrence of the accident disclosed all wheel flanges in

good condition, the driving-wheel tires were new, and rail marks on them indicated they were riding uniformly, the lateral was not excessive and inspection of other parts disclosed nothing that might have caused the accident. The only damage it sustained was an abrasion on the outside rim of the right back driving wheel, and three brake beams under the tender were slightly bent

The rail involved was on the high or right side of the curve, it was broken at a point 25 feet 9½ inches from its receiving end The broken ends of the rail displayed a transverse fissure and slag inclusion. The nucleus of the fissure was in the lower part of the ball just above the top of the web, and the fissure spread in open-fan formation toward the top of the gauge side of the rail. The silvery luster as seen on the extended area of the majority of fissures, was absent in this case, as also was the discoloration common to many fissures. This rail showed flange wear which extended its entire length, the width on the ball of the rail when new would have been 2¼ inches, while this rail measured only 2 inches, ¼ inch or about 11 per cent of the rail having been worn off on the gauge side. Cross levels taken on the day following the accident, beginning at a point 500 feet west of the point of derailment, showed that the elevation gradually increased from level to a maximum of 5 inches at the point of derailment, and the gauge of this portion of the track varied from standard to a maximum of 1 inch wide. No evidence of derailment was found west of the location of the broken rail.

This rail was rolled by the Colorado Fuel and Iron Company in November, 1905, branded Colorado Sec. 850 - x105, and the heat number appeared to be B-8160 It was placed in the main track on the Colorado Division between Hoisington, Kans., and Pueblo, Colo , in 1906, where it remained until 1929, it was transferred to the River District in June, 1929, and remained there until its failure. On July 27, 1930, it passed inspection by a detector car of Sperry Rail Service Corporation, no defective condition being recorded. It was exposed to greater traffic density on the River District than on the Colorado Division, and this may have had some effect on the development of the fissure subsequent to the inspection received on July 27, 1930.

For the purpose of determining whether the broken rail had defects other than the fissure which precipitated its failure, it was brought to Jefferson City, Mo., where its two pieces were bolted together, laid in a yard track, and subjected to inspection by detector car No. 112 of the Sperry Rail Service Corporation. The only new defect recorded by the detector car was a kink in the rail about 3 feet from the transverse fissure The rail was then subjected to further electrical inspection by the galvanometer, which did not disclose the presence of any other defects. The kink in the rail was a result of its having been bent at the time of derailment and subsequently partly straight-

ened so as to place it in position for the test.

The railroad company advised that the Speiry detector car which was in its line at the time of the accident had covered a total of 3,454 66 miles and had recorded indications of 1,589 defective rails These defects were classified as follows: 511 horizontal fissures, 833 transverse fissures, 561 split heads, 19 cracked webs, 1 piped rail, and 164 miscellaneous defects

Conclusions

This accident was caused by a broken rail.

Examination of the track disclosed a broken rail on the high or south side of the curve, which displayed a transverse fissure and slag inclusion. The fracture occurred at a point 25 feet 9½ inches from the receiving end of the rail, and the remaining 7 feet 2½ inches of rail was intact. The evidence indicated that the initial fracture occurred under the wheels of the engine, and the anchorage of the broken rail then became inadequate to withstand the outward force of the train as it rounded the curve, thus allowing the detached or leaving end of the longer portion of the rail to bend and move outward, separating the fragments and allowing the following wheels to be derailed. The abrasion on the outside rim of right back driving wheel of the engine indicated that it had been derailed, and then dropped inside of the right rail and came in contact with the gauge side of the rail As the truck wheels and all the driving wheels were on the rails when the engine stopped, however, it is evident that the right back driving wheel rerailed itself during the progress of the accident.

All of the employees involved were experienced men and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W P BORLAND,

Director.