

1929

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN
ACCIDENT ON THE YAZOO & MISSISSIPPI VALLEY RAILROAD,
ILLINOIS CENTRAL SYSTEM, NEAR CENTREVILLE, MISS., ON
SEPTEMBER 3, 1934.

November 6, 1934.

To the Commission:

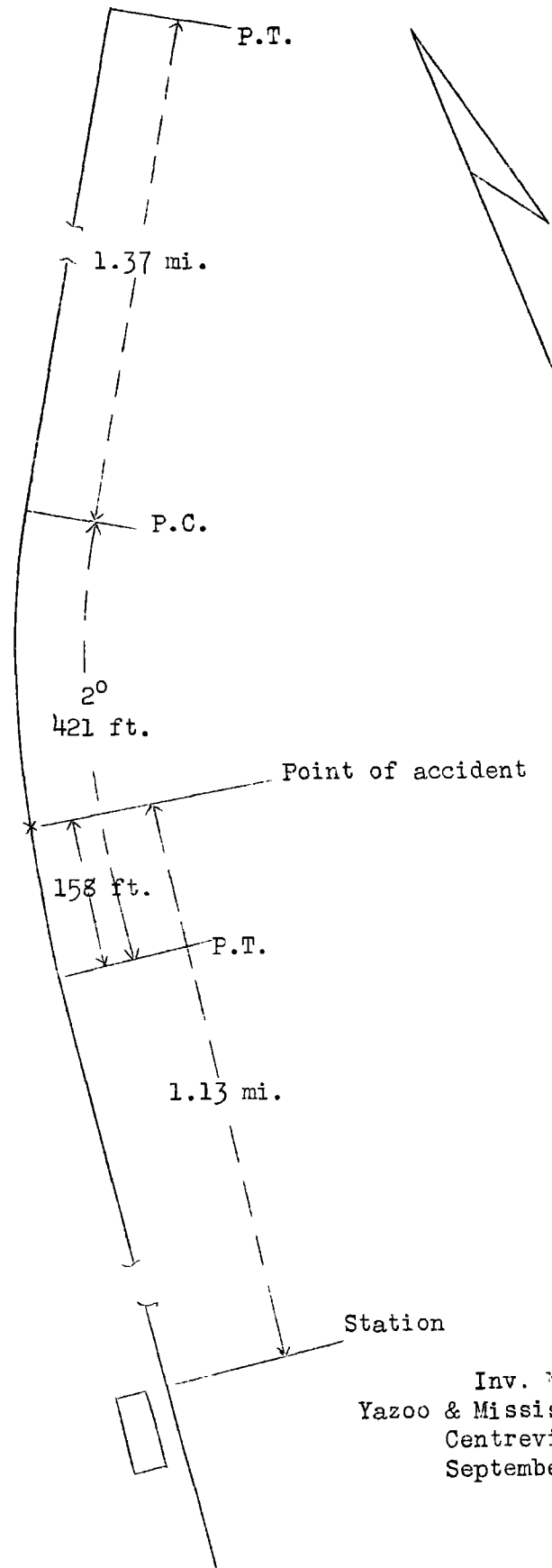
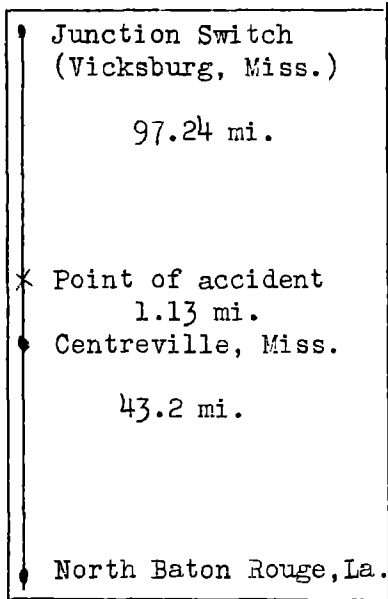
On September 3, 1934, there was a derailment of a passenger train on the Yazoo & Mississippi Valley Railroad near Centreville, Miss., which resulted in the death of 1 employee, and the injury of 5 passengers, 2 mail clerks, 1 trespasser and 3 employees.

Location and method of operation

This accident occurred on the Vicksburg District of the Vicksburg Division, which extends between Junction Switch, Vicksburg, Miss., and North Baton Rouge, La., a distance of 142.2 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 form of block signal system being in use. The accident occurred at a point approximately 1.13 miles north of the station at Centreville; approaching this point from the north, the track is tangent for more than 1 mile, followed by a 2° curve to the left 421 feet in length, the accident occurring on this curve 158 feet from its southern end. Beginning at a point approximately 1 mile north of the point of accident the grade for south-bound trains is generally descending; it is 0.55 percent for a distance of 400 feet, then 0.902 percent for a distance of 4,000 feet, and then 0.736 percent to and beyond the point of derailment.

The track is laid with 90-pound rails, 33 feet in length, with 20 treated ties to the rail length, fully tieplated and single-spiked; 8 rail anchors are used to the rail-length and the four-bolt angle bars are oil treated. The track is ballasted with bank-run gravel to a depth of 22 inches and is maintained in fair condition. On May 31, 1934, the speed limit for passenger trains was raised from 55 miles to 65 miles per hour.

The weather was clear at the time of the accident, which occurred about 12:08 p.m.



Inv. No. 1929
Yazoo & Mississippi Valley RR,
Centreville, Miss.
September 3, 1934.

Description

South-bound passenger Train No. 31 consisted of 1 combination mail and baggage car and 2 coaches, all of steel construction, hauled by engine 1122, and was in charge of Conductor Davis and Engineman Scott. Train No. 31 left Gloster, the last open office, 8.6 miles from Centreville, at 11:59 a.m., 39 minutes late, and was derailed on approaching Centreville while traveling at a speed estimated to have been between 55 and 65 miles per hour.

The entire train was derailed to the left or inside of the curve. The engine and tender broke loose from the cars and stopped on their left sides parallel with and about 9 feet from the center of the track with the front end of the engine 647 feet beyond the point of derailment. The cars also stopped on the left side of and parallel to the track; the first car remained upright, while the last two were tipped to the left. The employee killed was the engineman and those injured were the fireman, baggageman, and flagman.

Summary of evidence

Fireman Cronin stated that the train was traveling at a speed of about 55 miles per hour when he felt the engine rock, followed in a second by its derailment, and he saw the engineman shut off the throttle and apply the air brakes in emergency. The riding qualities of the engine were good and there had been no unusual motion until it started to rock just prior to the time it became derailed.

Conductor Davis, who was riding in the first coach, stated that the train was traveling at a speed of about 60 miles per hour when he felt the car become derailed, without having felt an application of the air brakes. He had not previously noticed any condition on this particular curve that would cause any concern as to the safety of his train; he had last passed over this track on the previous night, at which time there was nothing unusual. While the speed restrictions had been raised recently to 65 miles per hour he had not observed any difference in the riding of the train.

Flagman Faulkner, who was riding in the rear car, thought he heard an application of the air brakes, while Conductor Day, who was deadheading, and Conductor Carney, a passenger on Train No. 31 at the time of the accident, both of whom were in the rear car, said the first intimation they had of anything wrong was when they felt the air brakes being applied in emergency, followed in a few seconds by the derailment. Flagman Faulkner thought the speed was 55 miles per hour. Conductor

Day estimated it to have been about 60 miles per hour, the usual speed for passenger trains at this point, and Conductor Carney thought it was about 65 miles per hour and noticed nothing out of the ordinary in the operation of the train, nor was there anything about the track that had ever caused him any concern.

Section Foreman Guice stated that when he arrived at the scene of the accident soon after its occurrence he observed that the first mark of derailment was on the left or low rail of the curve but did not take any measurements. His section consists of 14 miles of track and during the last 3 or 4 months his crew has averaged about five men, and while he did not consider that he had sufficient men properly to maintain the track, yet he thought he had enough to maintain the track in safe condition. About the first part of August he smoothed the track in the vicinity of the point of accident, lined and gauged it, and about the middle of that month he lined some joints. On August 30 he lined a joint in the east rail about two rail lengths north of the point of accident, stating that he lined it back 1/4 inch toward the east. He last went over his entire section on September 1, at which time the track appeared to be all right, and although the curve was not in 100 percent condition, he considered it safe for the speed allowed; about 80 percent of the ties were in good condition. The superelevation on this curve was 2 1/2" and he had not had an opportunity of changing it since the speed limit was increased in May; while the speed of 65 miles per hour required a higher elevation yet he did not consider the present superelevation to be unsafe, saying that trains had been operating over the track at that speed. Two or three months previously, he had received a note from an engineman about a rough place on the curve, but had not received any report of rough track since that time.

Trainmaster Cunningham arrived at the scene about 2 p.m., and made a careful inspection of the track and equipment; at a point 72 feet north of where the left driving wheel mounted the rail he noticed small bright spots on the ball of the right rail; these marks appeared intermittently about every 6 or 8 feet, and thinking they might have been made by the engine running over or striking something on the track, he went to the engine but could find no marks on the wheels of the engine truck, which was clear of the engine and bottom up. He then resumed his examination of the track and found that the first mark on the ball of the left rail extended a distance of about 30 feet to the point where the wheel dropped off on the outside of the rail, and on the opposite side of the track, at a joint, the bolts had been sheared on the gauge side of the rail. The left rail then was out of line, having been pushed inward by the derailed left front driving wheel. It then appeared to him that at a point about one and one-half rail lengths farther south the

derailed wheels came back to the right, the third rail on that side south of the first mark of derailment being badly torn up and the end of the rail turned upward. There were wheel marks on the web of the left rail to a bridge the north end of which is located about 228 feet beyond the point of derailment. The engine stopped 647 feet beyond the point of derailment and it appeared to him that the engine had slid on its left side for a distance of about 20 feet before stopping. On examining the engine cab he found the throttle closed and the brake valve in emergency position, and the marks on the left front driving wheel clearly indicated that it had been derailed and followed the low side of the curve, and that the engine truck was derailed at that time; he felt certain the main and back driving wheels had remained on the rails for a distance of 90 feet before the engine became entirely derailed. As to the cause of the accident, he thought the track was slightly out of line and that an irregularity in the track caused the engine to rock, and that if the elevation was not what it should have been then that could have been an additional factor. Trainmaster Cunningham further stated that he had ridden trains over this track frequently and considered the track to be in good condition; the last time he had been over the track was on August 31 and at that time he noticed nothing unusual, and he considered the track safe for a speed of 65 miles per hour.

Track Supervisor Cunningham said that judging from the marks on top of the rail it appeared to him at first that something had been dragging, but later he concluded that these marks were made by the wheels when the brakes were applied. The ties on the curve were all right but some of those on the tangent north of the curve were not in as good a condition; they try to keep good ties on each side of a bad tie, and when the spikes become loose they plug the holes. He thought about 90 percent of the ties were in good condition, and said that while the tangent was a little rough he thought it was about as good as the balance of the track as a whole and considered it to be safe for a speed of 65 miles per hour.

Division Engineer Harper inspected the track and saw the first wheel-mark on top of the left rail which showed that a wheel ran a distance of approximately 29 feet before it dropped down on the outside, and at a distance of about 63 feet there were indications that a wheel had run on the inside of the right rail. The left rail at this point was turned over and the marks indicated that a wheel had run on the web of the rail. His examination of the track for a distance of 1,000 feet north of the point of derailment developed nothing irregular to any extent except that there were a few joints which were slightly low. The tangent north of the curve appeared to be in nearly perfect condition. After examining the track, Division Engineer

Harper went to the engine and his examination of it disclosed that the rivets on the inside of the left front driving wheel had been battered or sheared, while the rivets on the right intermediate and rear driving wheels showed indications that they had run on the inside of the rail and that the left intermediate and rear driving wheels had run on the web of a rail. Division Engineer Harper stated that he was consulted when the speed in this territory was raised to 65 miles per hour, and that he did not believe a 10-mile variation in speed would have any effect on the movement of the train around the curve. In his experience he had never had an engine mount the rail on the inside of a curve and he was unable to state what caused the accident except that something shoved the engine toward the inside, took off some of the weight, and caused the engine to go over the inside rail. He further stated that an engine would have to rock severely to cause the wheel to mount the rail on the inside, and it was his opinion that an out-of-line elevation would have caused the wheel to bind more on the outside of the curve.

A print prepared by Assistant Engineer Rhodes showed that the elevation varied from $2 \frac{1}{16}$ inches to $3 \frac{1}{8}$ inches between the point of the curve and the point where the first wheel mounted the left rail; the widest variation per half rail length was $\frac{9}{16}$ inch, this being within a rail length of the point of derailment, where the elevation changed from $2 \frac{3}{16}$ inches to $2 \frac{3}{4}$ inches. The gauge varied from standard to $\frac{3}{8}$ inch wide, while the curvature at a point one and one-half rail lengths from the point of derailment was $3 \frac{1}{4}^{\circ}$ and 2° at points one-half and two and one-half rail lengths from the point of derailment. He did not think the conditions were satisfactory for a speed of 65 miles per hour, saying the elevation should be $4 \frac{3}{4}$ inches for such a speed on a 2° curve, but said he did not know what caused the accident, although a rocking motion, lightening the load on the inside, might have been a contributing factor.

Master Mechanic Saunders stated that inspection of the track north of the point of derailment disclosed nothing that would indicate there had been anything dragging, and a thorough inspection of the engine after it was brought to Vicksburg disclosed nothing that could have contributed to the cause of the accident. All the driving and trailer truck wheels showed indications of having rubbed against the inside of the right rail, but the engine-truck wheels showed no evidence of having been derailed. It was his opinion that the engine might have rocked off the track.

Engineman Smith stated that he is assigned to Trains Nos. 31 and 36 and last passed over this track the day before the accident; he did not notice anything irregular at that time,

but on August 25 he had reported the track as being rough. He did not believe that this type of engine was inclined to rock more than any other type.

Engineman Montgomery, who also is assigned to trains Nos. 31 and 36, stated that he had been operating engine 1122 regularly since October, 1953. At first the rear end was low, but after it was raised the riding qualities of the engine were good; he last operated this engine 2 days prior to the accident. Engineman Montgomery had noticed nothing out of the ordinary about the track, stating that he operated at a speed between 50 and 60 miles per hour over the curve on which the accident occurred.

At the time of the inspection of track and equipment by the Commission's inspector on the day after the accident, the track had been repaired and all equipment except the engine and tender rerailed. His examination of the tangent track about 800 feet north of the curve disclosed approximately 20 percent of the ties with loose spikes, but from the point of curve to the point of derailment the ties appeared to be in good condition. Engine 1122 is of the 4-6-2 type, with a total weight, engine and tender, of 427,600 pounds, and his examination of the engine disclosed that the flanges of both front driving wheels were worn close to the 1-inch gauge.

Conclusions

It is believed that this accident was due to a combination of several factors, including irregularity in alinement and surface of track and a speed which was too high in view of the existing track conditions and the superelevation which was provided.

The evidence clearly indicated that the left front driving wheel had mounted the inside rail of the curve and then ran along on the running surface of the rail to the point where it dropped off on the outside. Apparently the engine crew had little warning of danger, the fireman saying that the engine rocked and then became derailed, the engineman immediately shutting off steam and applying the brakes. Examination of the engine did not reveal any defects which could have caused the accident, although the flange of each of the front driving wheels was worn close to the gauge. Examination of the track showed that there were many ties with loose spikes, and in addition the alinement of the curve was irregular and the elevation was uneven. The elevation varied from $2 \frac{1}{16}$ to $3 \frac{1}{8}$ inches, with an average of about $2 \frac{3}{4}$ inches, and the widest variation in elevation was just north of the point of derailment where there was a variation of $\frac{9}{16}$ inch in half a rail length, and it was in this immediate vicinity that the curvature changed from $3 \frac{1}{8}^{\circ}$ to 2° . This curve was supposed to have been a 2° curve but was not uniformly

maintained and as a matter of fact there were two points where the curvature was 3° or more. Notwithstanding these irregularities, the speed limit for passenger trains had been increased in the past month from 55 to 65 miles per hour without any change being made in elevation and apparently without any improvement in the maintenance. In this connection it is to be noted that the recommended practice of the American Railway Engineering Association for a speed of 65 miles per hour on a 2° curve would call for an elevation of $5 \frac{1}{2}$ inches and on a 3° curve the elevation would be $8 \frac{3}{8}$ inches; the practice on the Illinois Central System, as set forth in the A.R.E.A. proceedings of 1929, would call for corresponding elevations of $4 \frac{3}{4}$ and $7 \frac{1}{8}$ inches. The statements of some of the officials indicated that they recognized the existence of irregularities in the track and it is believed that these irregularities, coupled with the high rate of speed at which the train was moving, was sufficient to cause the engine to rock to such an extent as to result in its derailment.

When a speed of 65 miles per hour is authorized on a curve where the elevation averages about $2 \frac{3}{4}$ inches as against the A.R.E.A. recommended elevation of $5 \frac{1}{2}$ inches or more, the margin of safety intended to be provided has been materially reduced. When in addition to insufficient elevation the track is not well maintained the margin of safety is further reduced, and a corresponding reduction should be made in the authorized speed limit instead of increasing it. The officials of this railroad should give immediate attention to the various factors involved in this accident particularly with a view to improving the track maintenance and eliminating irregularities such as were shown to have existed in this case.

Respectfully submitted,

W. J. PATTERSON,

Director.