Inv-2401

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

TEXAS AND NEW ORLEANS RAILROAD

SOUTHERN PACIFIC LINES

ORANGE, TEXAS

DECEMBER 30, 1939

INVESTIGATION NO. 2401

SUMMARY

Inv-2401

Railroad:	Texas and New Orleans
Date:	December 30, 1939
Location:	Orange, Texas
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	3
Engine numbers:	617 and 619
Consist:	11 cars
Speed:	60 m. p. h.
Operation:	Timetable, train orders and automatic block system
Track:	Single; tangent; practically level
Weather:	Clear and cold
Time:	5:04 a. m.
Casualties:	42 injured
Cause:	Broken rail, resulting from transverse fissures

February 6, 1940.

To the Commission:

On December 30, 1939, there was a derailment of a passenger train on the Texas and New Orleans Railroad of the Southern Pacific Lines, near Orange, Texas, which resulted in the injury of 28 passengers, 6 persons carried under contract, 6 Pullman employees off duty, 1 dining-car employee, and 1 train porter.

Location and Method of Operation

This accident occurred on that part of the Houston Division designated as the Beaumont Subdivision which extends between Houston, Texas, and Lake Charles Yard, La., a distance of 144.1 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable, train orders and an automatic block system. The accident occurred at a point 1.2 miles east of Orange. Approaching this point from the east there is a tangent 2.25 miles to the point of accident and a considerable distance beyond. The grade is practically level.

The track structure is on a 6-foot fill and consists of 90-pound rail, 33 feet in length, laid on an average of 18 cypress and creosoted pine ties to the rail length; it is fully tieplated, single-spiked, secured with rail anchors, and ballasted with gravel to a depth of 8 inches below the ties; the track is fairly well maintained.

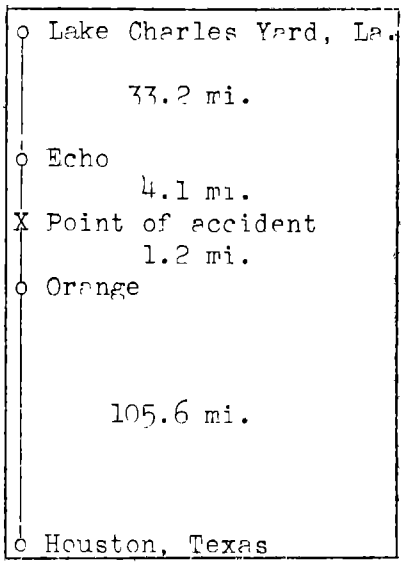
The maximum authorized speed for passenger trains is 60 miles per hour.

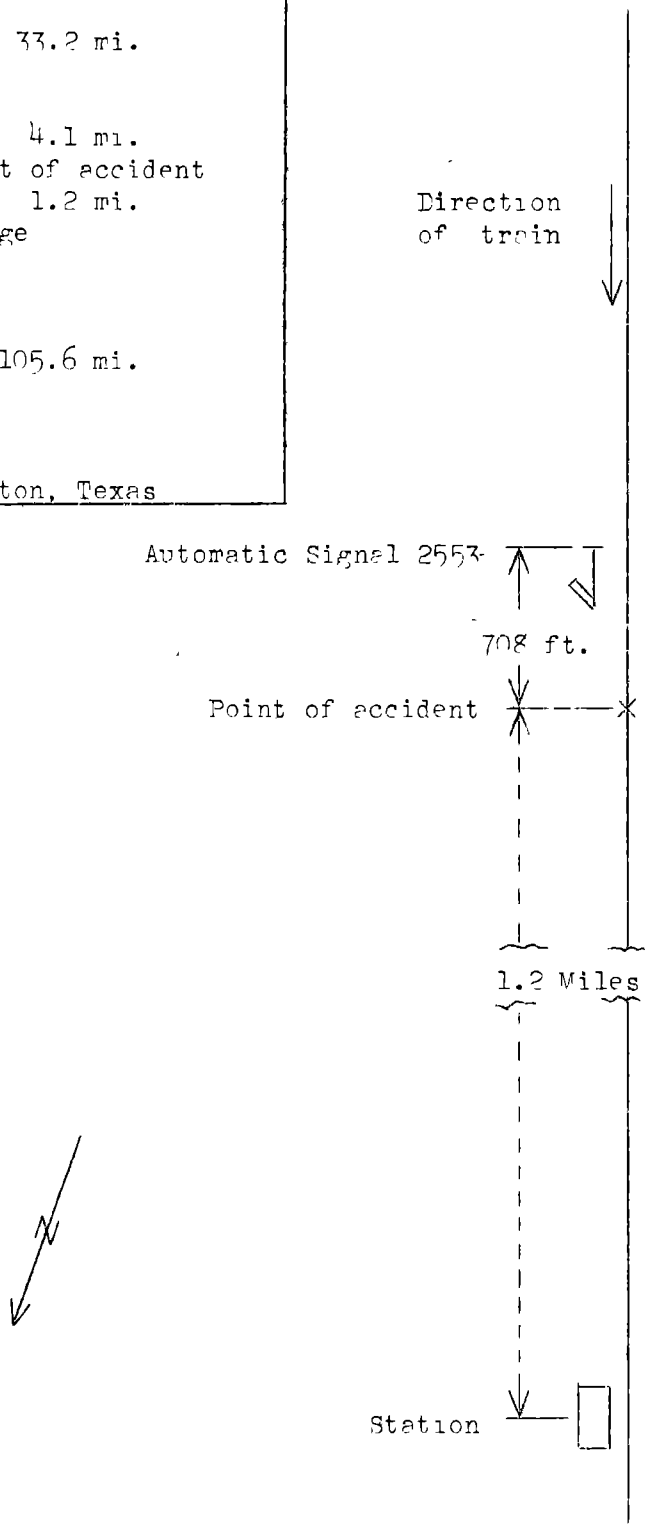
Automatic signal 2553, which governs westward movements, is the last signal passed by a west-bound train approaching the point of accident and is located 708 feet east thereof.

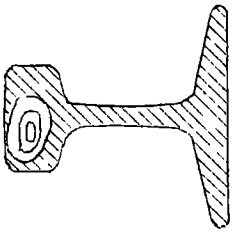
The weather was clear and cold at the time of accident, which occurred at 5:04 a. m.

Description

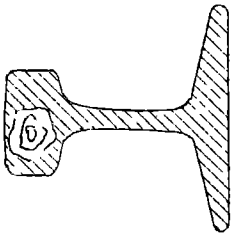
No. 3, a west-bound first-class passenger train, with Conductor Underwood and Enginemen Harrell and Flynn in charge, consisted of engines 617 and 619, both of which were of 4-6-2 type, one baggage car, one combination mail-baggage car, two baggage cars, two coaches, one chair car, one cafe lounge car, and three sleeping-cars, in the order named; all cars were of steel construction. This train departed from Lake Charles Yard, 38.5 miles east of Orange, at 3:46 a. m., according to the train sheet, 3 minutes late, departed from Echo, 5.3 miles east of Orange, at 4:56 a. m., 14 minutes late, and, while moving at a speed of







Fissure No. 2



Fissure No. 1

Inv. No. 2401
Texas & New Orleans R.R.
Orange, Texas
Dec. 30, 1939

60 miles per hour, was derailed when approaching Orange.

The engines separated from the first car and stopped, coupled, almost 1/2 mile west of the point of derailment. The first 10 cars were derailed and stopped in various positions throughout a distance of 643 feet west of the point of derailment. The first 4 cars stopped on their sides south of and parallel to the track. The fifth, sixth, and seventh cars were at right angles to the track; the fifth car was on its side, and the sixth and seventh cars remained upright; the next 3 cars remained coupled and stopped in general line with the track; the west end of the last car stopped at the point of derailment.

Summary of Evidence

Engineman Harrell, of the first engine, stated that the brakes were tested before leaving Lafayette, La., 73.4 miles east of Lake Charles Yard, and the brakes functioned properly en route. He last inspected his engine at Lake Charles Yard and did not observe any defective condition. His train departed from Echo at 4:57 a. m., 15 minutes late, and when it was approaching the point where the derailment occurred automatic signal 2553 displayed a proceed indication; the speed of the train was about 60 miles per hour and he was working a drifting throttle. The engine was riding smoothly and he did not see any obstruction on the track nor feel or hear anything unusual when the engine passed over the track where the derailment occurred. The first indication he had of a derailment was when the brakes became applied in emergency. The two engines remained coupled but became detached from the train and stopped more than 1/4 mile west of the derailed portion. The weather was clear and cold.

Fireman Haskins, of the first engine, stated that the first indication he had of the accident was when the brakes became applied in emergency. He looked back and saw sparks flying but steam from the steam-heat line obstructed his view and he could not tell which car was derailed first. Otherwise he corroborated the testimony of Engineman Harrell.

Engineman Flynn, of the second engine, stated that approaching Orange he observed that all the block signals were displaying clear indications and the speed of the train was about 60 miles per hour. His engine was riding smoothly and it was in first-class condition. The first indication he had of the derailment was when the brake-pipe pressure became depleted and by that he knew that the train had parted. Immediately before the brake-pipe pressure became depleted the action of the engine indicated that it had run over some obstruction, which seemed to be greater under the driving wheels on the left side. He was the engineman on Second 6, which was the last train to pass over the track involved before No. 3 was derailed and which passed

about 4 hours 35 minutes prior to the accident. At that time he did not notice any irregularity in the track.

Fireman Biglow, of the second engine, stated that the first indication he had of the accident was when the brakes became applied in emergency; immediately before this action he heard a noise which he thought was under the front part of his engine; in other respects he corroborated the statement of Engineman Flynn.

Conductor Underwood stated that he had just stepped from the sixth car to the front vestibule of the seventh car when he felt a lurch and realized that the train was derailed. He estimated that the speed was about 60 miles per hour at the time of derailment, which occurred at 5:04 a. m. Soon afterward he proceeded to the front end of the train, inspecting the track and equipment as he went, and concluded that the derailment was caused by a broken rail. He thought that the first car was the first to become derailed.

The statements of Brakeman La Cour, who was in the rear car, and Train Porter Wade, who was in the fifth car when the accident occurred, brought out nothing additional of value.

Division Engineer Staples stated that he arrived at the scene of the accident about 9:50 a. m. and he found that the track was torn up a distance of about 325 feet westward from a point where a rail on the south side was broken; throughout a distance of 1,400 feet eastward from that point there was no indication either of equipment having been dragging or of a wheel having been derailed. The initial fracture in the rail occurred at a point 5.6 feet west of the receiving end; this section was in normal position and attached to the angle bars, and the end extended approximately 6 inches beyond a tie; the ties west of this break were displaced from the track. The rail was broken into several pieces; 11 pieces were recovered but 3 or more were missing. A detailed examination of the rail was made at Houston and 4 transverse fissures, all on the gage side of the head of the rail, were revealed; the first, located 5.6 feet west of the receiving end of the rail, measured 1-1/2 inches horizontally by 1-1/16 inches vertically, and covered 38 percent of the cross-sectional area of the head of the rail; the second, located 12 feet 6 inches west of the receiving end, measured 1-5/8 inches horizontally by 1-1/8 inches vertically and covered about 40 percent of the cross-sectional area of the head; the third, located 15 feet 9 inches west of the receiving end, measured 3/4 inch horizontally by 1/2 inch vertically and covered 10 percent of the cross-sectional area of the head; the fourth, located 30 feet 3 inches west of the receiving end, measured 3/8 inch horizontally by 1/4 inch vertically and covered 5 percent of the cross-

sectional area of the head. The second fissure indicated that it had come to the surface at the top of the head of the rail, but there was no discoloration. The rail involved was a 90-pound open hearth, A. R. A. type "A;" it was manufactured by the Tennessee Coal and Iron Company and was rolled in April, 1923; it bore the heat letter "A," Ingot No. 70703, and was laid in the track in May, 1923. He also observed a pair of wheels with the axle broken about the center; these wheels were identified by the company records as belonging to the fourth car. He believed that the first car was first to become derailed, as there were wheel marks leading to the south side and these marks continued to the point where the front end of this car stopped. He and the section foreman checked the gage of the track from the point of derailment eastward 1,000 feet, taking the reading at each joint and center; the check indicated that the gage varied from 1/8 inch tight to 1/4 inch open. Cross-levels run by the engineers reflected a variation in levels of 3/4 inch; the maximum variation was 612 feet east of the point of derailment. In February, 1930, a detector car was operated over this portion of the railroad. The detector-car tape recorded a flaw in the twenty-eighth rail on the south side west of mile post 258.28, which was the rail involved in this accident. This record showed the flaw to be about 1 foot east of the leaving end of the rail. In a recheck the flaw was not indicated.

Section Foreman Free stated that he arrived at the scene of the accident at 8:30 a. m. He observed that a section of about 600 feet of track was torn out. He found a rail on the south side broken approximately 5 feet 6 inches from the receiving end and it was apparent that there was a transverse fissure at this break. There was no wheel mark on the ties east of the broken rail to indicate that any wheel had been derailed east of the point where the broken rail was found. It was his opinion that the derailment was caused by a rail failure. The last time he passed over the track, which was about 2 p. m., December 28, it was in good condition, the joints were tight, the rails spiked reasonably tight, and not more than 160 ties to a mile required renewal.

Observations of the Commission's Inspectors

Inspection of the track and the broken rail by the Commission's inspectors disclosed that the conditions were substantially as described by maintenance-of-way officials, except that the third fissure occurred at a point 17 feet 10-1/2 inches west of the receiving end of the rail. The leaving end of the piece of rail 5 feet 7 inches in length, where the first fissure appeared, bore evidence that wheels had been running off from it, and the receiving end of the adjoining piece was battered.

A pair of wheels with a broken axle was identified as belonging to the fourth car. The break occurred near the center of the axle and was irregular and flawless. There was a new bruise, measuring 3/8 inch in depth, 1-1/4 inches in width, and 2-1/2 inches in length, on the circumference of the axle where it was broken, and indicating that a hard blow had been received. The wheels and the flanges were in good condition.

Discussion

According to the evidence, the derailment occurred on tangent track which, prior to the accident, apparently was in good condition, and there was no defect in the equipment. The train was proceeding at a speed of about 60 miles per hour, which was the maximum authorized speed in the territory involved. The last automatic signal passed before the derailment occurred was displaying a proceed indication. The engineman and the fireman of the first engine said their engine passed smoothly over the point where the derailment occurred, but the engineman and the fireman of the second engine thought that their engine struck some object. The engines were not derailed.

After the derailment occurred a broken rail on the south side of the track was found. The rail disclosed four transverse fissures in the head, on the gage side. The first fissure, which covered 38 percent of the cross-sectional area of the head, was about 5 feet 7 inches from the receiving end of the rail, and the second fissure, which covered 40 percent of the cross-sectional area of the head, was about 12 feet 6 inches from the receiving end. The rail was broken into many fragments, 11 of which were recovered and 3 or more not recovered. Undoubtedly, most of these fractures resulted from the derailment. Marks on the pieces of rail adjacent to the first fissure indicated that wheel had rolled down over the leaving end of the first piece and then up the receiving end of the second piece; these marks indicate that the derailment occurred at the first fissure. Since the crew of the first engine observed no abnormal condition of the track but the crew of the second engine thought their engine struck some object, it appears that the rail broke under the tender of the first engine or the front part of the second engine. That the rail was not broken prior to the time the train reached the point of derailment is indicated by the fact that the last automatic signal passed displayed a proceed indication.

In February, 1939, a detector car had been operated over the track involved; a defect in the rail involved was indicated at a point about 1 foot from the leaving end, but when a recheck was made no defect was indicated; however, none of the four transverse fissures discovered in this rail was located at this point; the nearest one was about 1 foot 9 inches distant.

The broken axle of the fourth car bore indications that it had received a heavy blow, which apparently occurred during the process of derailment.

Conclusion

This accident was caused by a broken rail, resulting from the presence of transverse fissures.

Respectfully submitted,

S. N. MILLS

Director.