INTERSTATE COMMERCE COMMISSION

WASHINGTON

INVESTIGATION NO. 3252

ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY

REPORT IN RE ACCIDENT

NEAR RAVIA, OKLA., ON

MAY 6, 1949

SUMMARY

Date:	May 6, 1949
Railroad:	St. Louis-San Francisco
Location:	Ravia, Okla.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	31
Engine numbers:	Diesel-electric units 5201 and 5200
Consist:	53 cars, caboose
Speed:	40 m. p. h.
Operation:	Timetable, train orders, and automatic block-signal system
Track:	Single; 1° curve; 0.75 percent descending grade southward
Weather:	Clear
Time:	2:50 p. m.
Casualties:	2 injured
Cause:	Kinked track

INTERSTATE COMMERCE COMMISSION

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IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY

July 5, 1949

Accident near Ravia, Okla., on May 6, 1949, caused by kinked track.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On May 6, 1949, there was a derailment of a freight train on the St. Louis-San Francisco Railway near Ravia, Okla., which resulted in the injury of two train-service employees.

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[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.

Inv. No. 3252
St. Louis-San Francisco Railway
Ravia, Okla.
May 6, 1949

Location of Accident and Method of Operation

This accident occurred on that part of the Southwestern Division extending between Francis, Okla., and Denison, Tex., 97.4 miles, a single-track line, over which trains are operated by timetable, train orders, and an automatic block-signal system. The accident occurred on the main track at a point 54.11 miles south of Francis and 1.41 miles south of the station at Ravia. From the north there is a tangent 2,496 feet in length, and then a 1° curve to the left 652 feet to the point of accident and 446 feet southward. The grade for south-bound trains is successively, an average of about 1 percent descending 2.75 miles, 0.85 percent descending 1,013 feet, 1 percent descending 1,500 feet, 0.75 percent descending 1,538 feet to the point of accident and 722 feet southward. Then there is a vertical curve 600 feet, and a 0.3 percent descending grade 1,900 feet. The derailment occurred at the leaving end of a shallow cut. Immediately south of this cut the track is laid on a fill about 5 feet in height.

On the curve on which the accident occurred the track structure consisted of 90-pound rail, 33 feet in length, laid during 1944 on an average of 20 treated ties to the rail length. It was fully tieplated, single-spiked, and was provided with 4-hole joint bars 24 inches in length and 4 rail anchors per rail length. It was ballasted with coarse chats to a depth of 12 inches below the ties. Between the rails the ballast was practically level with the tops of the ties, and the ends of the ties were well ballasted. At the point of accident the specified curvature was 1 degree, and the specified superelevation was 2 inches.

The maximum authorized speed for freight trains was 50 miles per hour.

Description of Accident

No. 31, a south-bound second-class freight train, consisted of Diesel-electric units 5201 and 5200, coupled in multiple-unit control, 53 cars and a caboose. This train passed Ravia, the last open office, at 2:45 p. m., 5 hours 22 minutes late, and while it was moving on a 1° curve to the left at an estimated speed of 40 miles per hour the fifty-third car and the caboose were derailed to the left at a point 652 feet south of the north end of the curve.

The engine and the first 52 cars remained coupled and stopped with the fifty-second car standing about 1,800 feet south of the point of derailment. Separations occurred between

the fifty-second car and the fifty-third car, and between the fifty-third car and the caboose. The fifty-third car stopped on its right side, parallel to the track, 345 feet south of the point of derailment and about 13 feet east of the center-line of the track. It was badly damaged. The caboose stopped 230 feet south of the point of derailment, 10 feet east of the center-line of the track and parallel to it, and leaned to the right at an angle of about 45 degrees. It was considerably damaged.

The temperature on May 6 as recorded at Madill, Okla., about 10 miles south of the point of accident, was 84 degrees at noon and 90 degrees at 6 p. m. The weather was clear at the time of the accident, which occurred about 2:50 p. m.

The conductor and the flagman were injured.

Discussion

As No. 31 was approaching the point where the accident occurred, the speed was about 40 miles per hour. The enginemen and the front brakeman were maintaining a lookout ahead from the control compartment of the first Diesel-electric unit. They said that the engine was riding smoothly and that there was no indication of defective track. They were not aware of anything being wrong until the air brakes became applied in emergency. The conductor and the flagman were in the cupola of the caboose. The conductor said that he observed the left side of the train from the time it entered the curve until it was about 200 feet north of the point where the accident occurred, and there was no unusual swaying of the cars of the train. The conductor and the flagman first became aware of an abnormal condition when they felt the caboose lurch immediately before it was derailed.

After the accident, a section of track about 45 feet in length on the 1-degree curve to the left was found to be deflected to the right. The maximum deflection, which was about 9 inches, was located midway of this section. Beginning at a point 8 inches east of the west rail near the north end of the deflected portion of the track, the ties bore marks indicating that the wheels of one truck had become derailed. These wheel marks extended a distance of 140 feet diagonally eastward to the east rail. The east side of the fill and the ballast at the east end of the ties were disturbed between a point about 75 feet south of the first mark of derailment and the point where the caboose stopped. Additional wheel marks appeared on the tops of the ties on the gage side of the west rail and on the outside of the east rail between a point about 200 feet south of the first mark of derailment and the point where the separation occurred between the fifty-second and the fifty-third cars.

The track on which the accident occurred was constructed during 1944. Prior to the occurrence of this accident there had been no unusual displacement of the track structure. The track foreman last inspected the track in this vicinity about 7 hours 30 minutes prior to the time of the accident, and no unusual condition was observed. The last train prior to No. 31 to pass the point at which the derailment occurred was a south-bound freight train, which passed 17 minutes prior to the time of the accident. The conductor and the flagman of that train observed that the track in the vicinity where the accident occurred was not in proper alinement. They did not consider it dangerous, but the conductor reported it by message at the next station. However, the crew of No. 31 could not be notified as that train passed the last station 3 minutes before the message was filed for transmission. Officials of the railroad who examined the track soon after the derailment were of the opinion that the displacement of the track structure was caused by high temperature, and that it took place as No. 31 was moving on the curve.

The displacement of the track structure occurred on a 0.75 percent descending grade at a point 722 feet north of the north end of a vertical curve. Beyond the vertical curve the gradient was 0.3 percent descending. Unless the rails were adequately anchored, under this condition the rails would creep southward under moving trains, particularly when the brakes were applied. The creeping of the rails in the upper part of the grade would cause a compressed condition in the rails in the lower part of the grade. It is evident that the rails had been creeping southward during some time before the day of the accident, because three weeks previously a section 3 inches long was cut from each rail about 200 feet south of the point where the accident occurred, in order to relieve compression. When the track was being repaired after the derailment, it was necessary again to cut a section 3 inches long from each rail, in order to place the track in normal alinement. Apparently, the four rail anchors per rail length provided for preventing the creeping of the rail were not sufficient. The displacement of the track structure when No. 31 was passing over it pulled the ties from the ballast and caused the west rail to be abnormally elevated. Apparently, the rails were in such compression at this time that the additional force resulting from the movement of this train was

sufficient to cause the track to be suddenly deflected outward. The sharp deflection of the track to the west and the abnormal elevation of the west rail evidently compressed the flanges of the wheels of the rear truck of the fifty-third car against the gage side of the east rail with sufficient force to cause them to mount the rail, and then to drop outside the rail, and the caboose followed the fifty-third car.

Cause

It is found that this accident was caused by kinked track.

Dated at Washington, D. C., this fifth day of July, 1949.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.