Inv-2359

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

TEXAS AND PACIFIC RAILWAY

RANGER, TEXAS

JUNE 3, 1939

INVESTIGATION NO. 2359

SUMMARY

Inv-2359

Railroad:	Texas and Pacific
Date:	June 3, 1939
Location:	Ranger, Texas
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	3
Engine number:	326
Consist:	4 cars
Speed:	50-70 m.p.h.
Operation:	Timetable, train orders, and automatic block-signal system
Track:	Single; 6°12' curve to left; 0.85 percent ascending westward
Weather:	Clear
Time:	11:17 a.m.
Casualties:	2 killed, 12 injured
Cause:	Excessive speed on sharp curve

Inv-2359

June 23, 1939.

To the Commission:

On June 3, 1939, there was a derailment of a passenger train on the Texas and Pacific Railway near Ranger, Texas, which resulted in the death of two employees and the injury of nine passengers and three railway mail clerks.

Location and Method of Operation

This accident occurred on that part of the Rio Grande Division designated as the Fort Worth Sub-division which extends between Fort Worth and Baird, Texas, a distance of 140 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-signal system. The derailment occurred at a point 3.62 miles west of Ranger. Approaching from the east there is a tangent 5,234.1 feet in length, followed by a 6°12' curve to the left which extends 1,080.5 feet to the point of derailment and 488.8 feet beyond. The grade for west-bound trains is 0.85 percent ascending.

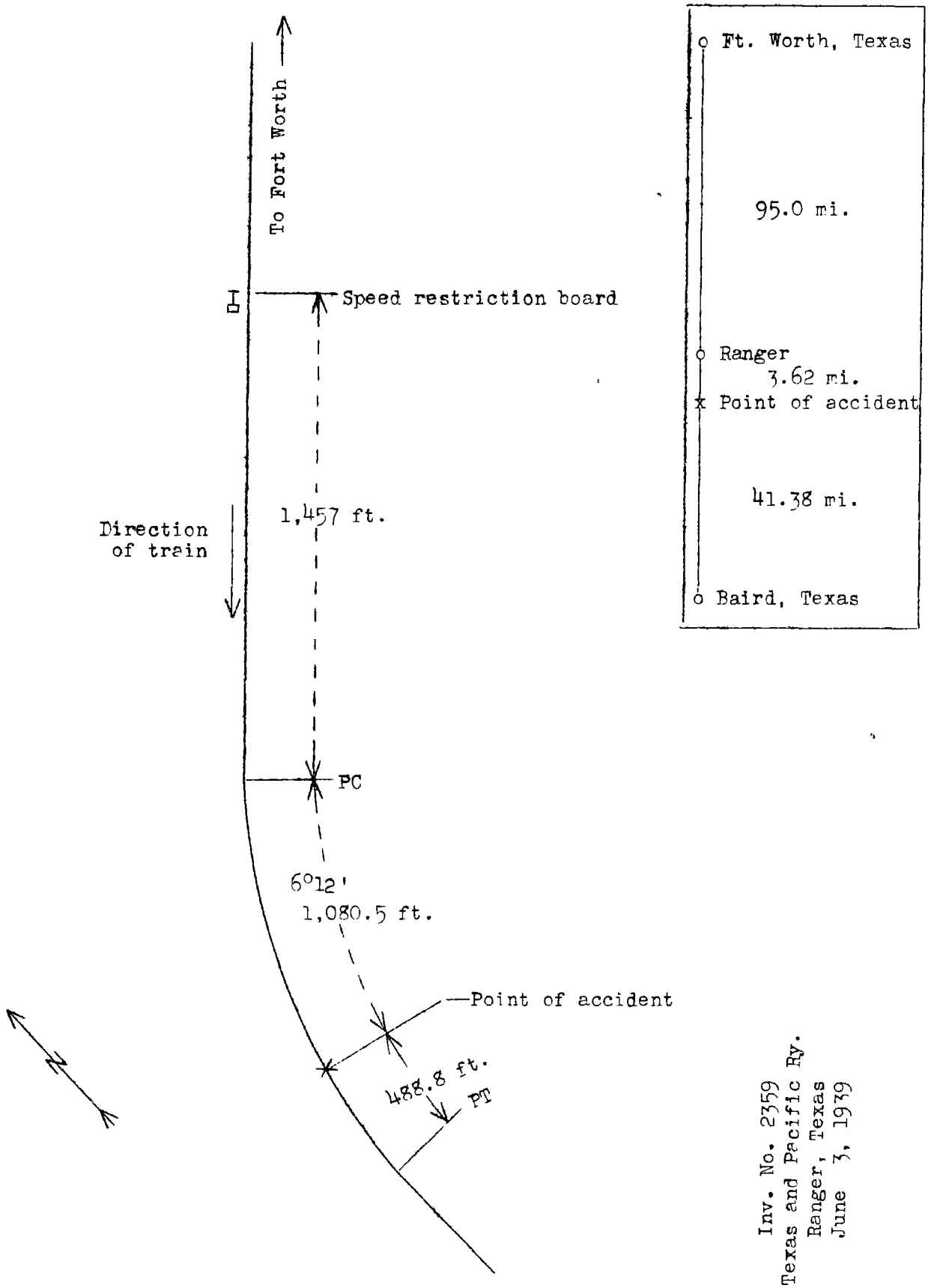
In the immediate vicinity of the point of accident the track is laid on an embankment about 12 feet high. The track structure consists of 110-pound rail, 39 feet in length, laid on 21 creosoted hardwood ties to the rail length; it is single-spiked on the inside and about 75 percent double-spiked on the outside, fully tieplated, provided with 9 rail anchors to the rail length, ballasted with 12 inches of crushed rock, and is well maintained. A superrelevation of 5½ inches is maintained on this curve.

The maximum authorized speed on tangents is 70 miles per hour. A wayside sign restricting the speed to 40 miles per hour on the curve involved is located 1,457 feet east of the curve.

The weather was clear at the time of the accident, which occurred at 11:17 a.m.

Description

No. 3, a west-bound passenger train, consisted of one express car, one combination baggage and mail car, one chair car, and one coach, in the order named, hauled by engine 326, and was in charge of Conductor Garrett and Engineman Mann. All cars were of all-steel construction except the last which was of steel under-frame



Inv. No. 2359
Texas and Pacific Ry.
Ranger, Texas
June 3, 1939

construction. This train departed from Ranger, the last open office and 3.62 miles east of the point of accident, at 11:12 a.m., according to the train sheet, 7 minutes late, and after entering the curve involved a distance of approximately 1,080 feet it was derailed while traveling at a speed variously estimated to have been between 50 and 70 miles per hour.

The engine, badly damaged, stopped on its right side 262 feet beyond the first mark of derailment and at the bottom of the embankment approximately 48 feet north of, and at an angle of 30 degrees to, the track. The tender, with tne cistern torn off, stopped behind the engine. The first car, badly damaged, stopped just south of and against the engine and the tender. The second, third, and fourth cars were derailed toward the north and stopped, considerably damaged, in alinement on the north side of the embankment, the west end of the leading car being 307 feet west of the first mark of derailment.

The employees killed were the engineman and the fireman.

Summary of Evidence

Conductor Garrett stated that at Fort Worth, 98.62 miles east of the point of accident, the air brakes were tested and they functioned properly en route. He said that he was in the front end of the rear coach when the train entered the curve on which the accident occurred, the speed at that time being not less than 50 miles per hour, which was in excess of the usual speed on that curve. He said that Engineman Mann always applied the brakes when approaching the curve involved but in this instance no application of the brakes was made. The first intimation the conductor had of the accident was when the brakes were applied in emergency and immediately thereafter he felt the wheels upon the ties.

The statement of Brakeman Staude, who also was in the front of the rear car, corroborated that of the conductor as to the movement of the train. He felt no brake application before entering the curve involved. He thought that the speed was about 65 miles per hour and said that the accident occurred at 11:17 a.m.

The statement of Baggageman Wade added nothing of importance.

Railway Postal Clerk Love, who was regularly assigned to No. 3, stated that just before the accident occurred the train was traveling faster than usual. He felt no application of the brakes immediately prior to the accident.

Railway Postal Clerk Jaco, who was regularly assigned to No. 3, said that the speed at the time of the accident was from 60 to 70 miles per hour. He stated that no brake application was made immediately prior to the accident.

Railway Postal Clerk Adams felt a jerk at the time the train entered the curve involved.

Express Messenger Crook, regularly assigned to No. 3, stated that the speed just prior to the derailment was greater than the usual speed.

Section Foreman Hall stated that he and his gang of four men were working about 1 mile east of the point of accident when No. 3 passed at a speed of 50 or 55 miles per hour. He exchanged signals with the engineman and observed the equipment of No. 3; he saw nothing defective that might cause or contribute to the cause of the accident. He said that during the months of April and May he renewed 34 ties and did considerable resurfacing and other work on the curve involved. He last inspected this track on May 25, and the irregularities noted at that time were not sufficient to render the track unsafe for the maximum authorized speed. He passed over the track at about 7:15 a.m. on the day of the accident and found everything normal. He arrived at the point of accident at 11:40 a.m. and found three rails on the north side of the track leaning toward the outside with the inside spikes pulled up from ½ inch to 3 inches and the heads of the outside spikes were bent slightly outward; he thought this condition was caused by excessive speed.

General Roadmaster Stevens stated that he inspected the curve involved about 2 p.m. on the day prior to the accident and found it in good condition and safe for the maximum authorized speed of 40 miles per hour. He said that he arrived at the scene of the accident at 3:35 p.m. and, approaching the point of accident from the east, he found the first mark of derailment at a point 8 inches inside the base of the low rail and 1,080.5 feet west of the east end of the curve; this mark was made by the wheels on the south side. Opposite this mark there was another mark which indicated that a flange of a wheel on the north side had mounted the rail and had traveled on the ball of the rail a distance of 20 feet before dropping to the ties on the outside of the rail and then marks appeared on the north ends of the ties a distance of 23 feet; beyond this latter point the track was destroyed. The rail was canted toward the outside of the curve a distance of about 330 feet.

District Roadmaster Beach stated that his last inspection of the curve involved, made from a track motor-car about noon on May 25, disclosed no defect that might have caused the accident and he considered the track safe for the maximum authorized speed. He arrived at the point of accident at 11:45 a.m., and his examination of the track at that time disclosed no indication that dragging equipment might have caused it. He corroborated the testimony of General Roadmaster Stevens relative to the condition of the track after the derailment. The district roadmaster stated that at a point two rail lengths west of the west end of canted rail he found a piece of rail about 8 feet in length broken off the east or receiving end of the rail but the indications were that this fracture was a result of the accident and not the cause of it. From a point 809 feet east of the point of derailment to the point of derailment he checked the elevation and the gage at 19.5-foot stations. The gage varied from 4 feet 8½ inches to 4 feet 9 inches. The elevation varied from 5 inches to 5-5/8 inches, being 5-1/8 inches at the point of derailment. The greatest variation in the elevation between any two adjacent stations was 3/8 inch, the elevation being 5-1/8 inches, 5½ inches, and 5-1/8 inches at stations 97.5 feet, 78 feet, and 58.5 feet, respectively, east of the point of derailment.

Master Mechanic Friend, who arrived at the point of accident at 3:25 p.m., stated that his examination of the derailed engine and equipment at that time disclosed nothing that might have caused the accident.

Inspector Cox stated that he made an air-brake inspection of No. 3 before its departure from Fort Worth on June 3 and observed no defects.

Machinist Ogden stated that he inspected engine 326 at Lancaster roundhouse on June 3, prior to its departure on No. 3, and found no defects.

Trainmaster Ogg, whose inspection of the track and equipment at the point of accident was made about 3:40 p.m., June 3, stated that he found nothing that might have caused or contributed to the cause of the accident. From the Abilene, Texas, radio broadcasting station, which leases wires that were interrupted by the derailment, he secured a statement indicating that the interruption resulting from the derailment occurred at 11:17 a.m.

The members of three freight crews, who passed over the track involved in the six-hour period immediately preceding the time of the accident, stated that they noticed neither bad nor unusual track conditions at the point involved.

According to the records of the railroad company, engine 326 is a 4-6-0 type locomotive with a rigid wheel base of 12 feet 9 inches, a total wheel base of 23 feet 5 inches, and a total weight of 160,500 pounds distributed as follows: drivers 127,500 pounds and engine truck 33,000 pounds. Since the inauguration of No. 3's schedule on May 16, according to the records, this engine has been reported repeatedly as riding roughly because of a very pronounced lateral movement.

Observations of Commission's Inspectors

Observations of the Commission's inspectors at the scene of the accident disclosed track conditions to be practically as stated by the railroad employees. The first flange marks on the ties were of such nature as to indicate that the wheels making them were carrying but little weight, and from the position of the locomotive it was obvious that it had been the first to become derailed. Inspection of the locomotive, including the flanges and the treads, disclosed that it had been in good mechanical condition; the wheels were in gage and tram.

The lateral movement on the bearings of the locomotive was checked by the Commission's inspectors and found to be as follows:

Front engine-truck wheels	3/4 inch,
Rear engine-truck wheels	11/16 inch,
Front drivers	17/32 inch,
Main drivers	29/32 inch, and
Rear drivers	3/8 inch.

Discussion

According to the evidence No. 3 was traveling at a speed variously estimated to have been from 50 to 70 miles per hour when it was derailed to the high side of a 6°12' curve on which the maximum authorized speed was 40 miles per hour. The investigation disclosed that the speed in this instance was in excess of the customary speed on this curve. According to the practice recommended by the American Railway Engineering Association, the maximum safe speed on the curve involved is about 51 miles per hour; the overturning speed is about 78 miles per hour. On previous trips the brakes had been applied before entering the curve involved but in this instance there was no application of the brakes made for some time prior to the derailment. Why the engineman failed to make the customary brake application before entering upon this curve is not known as he was killed in the accident.

There was no indication that dragging equipment was involved. For a period of about 20 days prior to the accident, this engine had been reported repeatedly as riding roughly because of very pronounced lateral motion; however, the maximum lateral movement on the bearings was only 29/32 inch which was on the middle pair of drivers. There was no indication of any defect in the engine wheels. The gage of the track varied from 4 feet 8½ inches to 4 feet 9 inches. The elevation of the high rail varied from 5 inches to 5-5/8 inches; the greatest variation between any two adjacent stations, 19.5 feet distant from each other, was 3/8 inch. There was a flange mark a distance of 20 feet on the ball of the outside rail and the indications were that the initial point of derailment occurred at the west end of this flange mark, at which point an engine wheel dropped to the outside of the rail.

No doubt the excessive speed combined with slight irregularities in the surface of the rail caused the engine first to thrust to the high side and then to the low side, causing a lateral rocking motion which continued until the flange of a wheel on the outside rail was raised high enough for the flange to mount the ball of the rail. It is possible that the lateral movement on the bearings may have augmented the force of the thrusts.

Conclusion

This accident was caused by excessive speed on a sharp curve.

Respectfully submitted,

W. J. PATTERSON,

Director.