INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3402

TEXAS AND NEW ORLEANS RAILROAD COMPANY

IN RE ACCIDENT

NEAR FINLAY, TEX., ON

MAY 7, 1951

SUMMARY

Date:	May 7, 1951
Railroad:	Texas and New Orleans
Location:	Finlay, Tex.
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	Second 5
Engine number:	703
Consist:	7 cars, caboose
Speed:	Overturning
Operation:	Timetable, train orders and automatic block-signal system
Track:	Single; 10°26' curve; vertical curve
Weather:	Clear
Time:	4:35 p. m.
Casualties:	1 killed; 6 injured
Cause:	Excessive speed on curve

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3402

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

TEXAS AND NEW ORLEANS RAILROAD COMPANY

July 12, 1951

Accident near Finlay, Tex., on May 7, 1951, caused by excessive speed on a curve.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On May 7, 1951, there was a derailment of a passenger train on the Texas and New Orleans Railroad near Finlay, Tex., which resulted in the death of one train-service employee, and the injury of three dining-car employees and three train-service employees.

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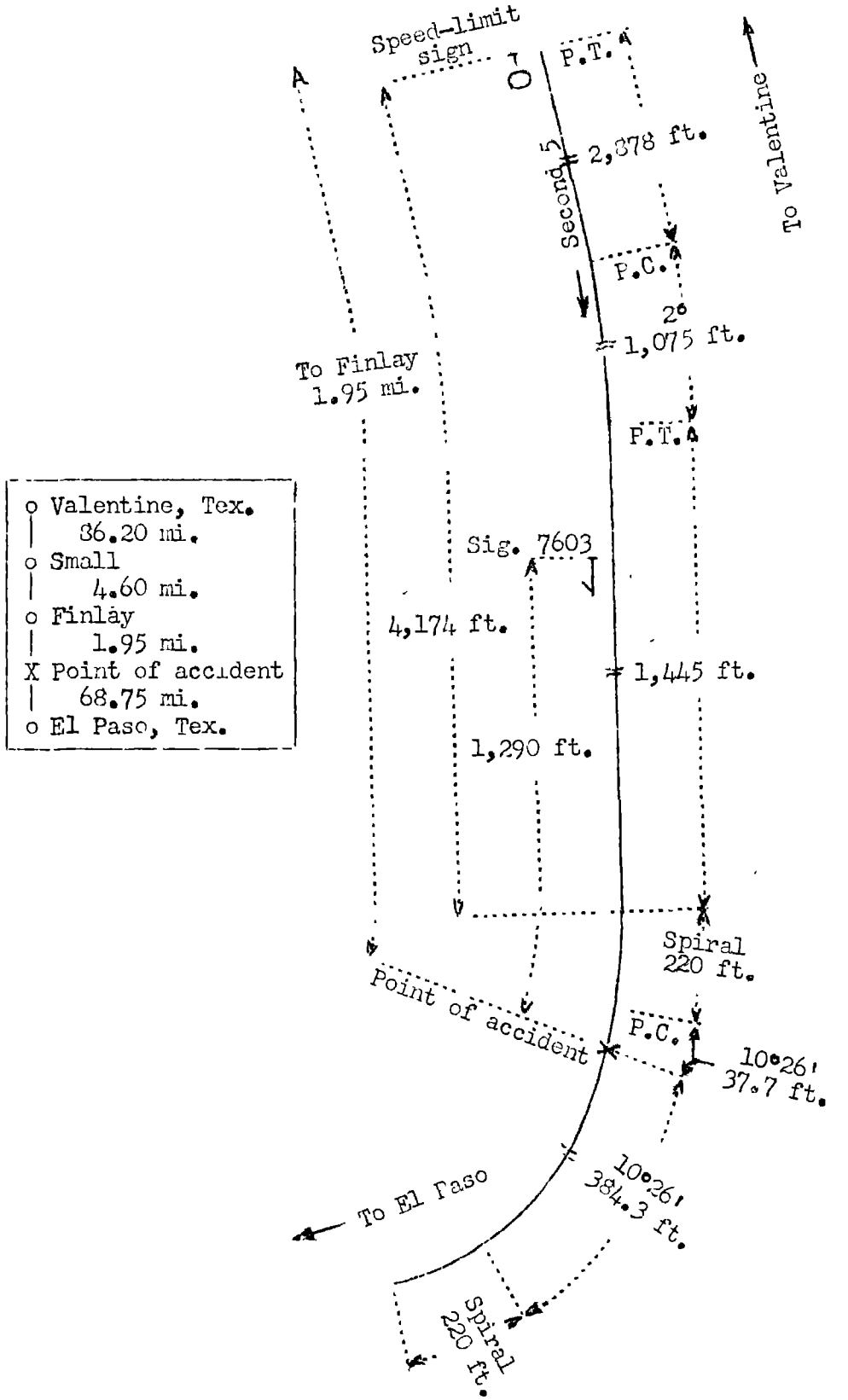
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.



Report No. 3402
Texas and New Orleans Railroad
Finlay, Tex.
May 7, 1951

Location of Accident and Method of Operation

This accident occurred on that part of the San Antonio Division extending between Valentine and El Paso, Tex., 161.5 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 accident occurred on the main track at a point 92.75 miles west of Valentine and 1.95 miles west of Finlay. From the east there are, in succession, a tangent 2,878 feet in length, a 2° curve to the right 1,075 feet, a tangent 1,445 feet, a spiral curve to the right 220 feet, a 10°26' curve to the right 37.7 feet to the point of accident and 384.3 feet westward. From the east the grade is practically level a distance of 1,100 feet, then there is a vertical curve 231 feet to the point of accident and 119 feet westward, followed by a 0.82 percent descending grade.

On the curve on which the accident occurred the track structure consists of 132-pound head-free rail, 39 feet in length, laid new in 1946 on an average of 21 ties to the rail length. It is fully tieplated with double-shoulder tieplates, double-spiked, and is provided with 4-hole, 28-inch joint bars, and an average of 12 rail anchors per rail. It is ballasted with crushed slag to an average depth of 8 inches below the bottoms of the ties. The specified superelevation for the 10°26' curve was 5 inches. At the point where the derailment occurred the superelevation was 4-15/16 inches, the gage was 4 feet 8-11/16 inches and the curvature was 10°26'.

Automatic signal 7603, governing west-bound movements, is located 1,290 feet east of the point of accident.

This carrier's operating rules read in part as follows:

> 10(J). Speed boards will be located to the right of track in direction of approach where practicable, * * *
>
> Speed boards that prescribe reduction in speed will be located three-fourths mile from initial point of restriction. * * *
>
> * * *

The speed on the curve on which the accident occurred was restricted to 30 miles per hour.

A speed-limit sign is located 4,174 feet east of the curve and 11 feet north of the center-line of the track. It is an oval-shape sign, 3 feet wide and 1 foot 11 inches high, is mounted on a mast 7 feet above the level of the tops of the rails, and bears the words "RESTRICTED 30 CURVES" in black letters on a white background.

Description of Accident

Second 5, a west-bound first-class passenger train, consisted of engine 703, a 4-8-4 type, one coach, two sleeping cars, one dining car, three sleeping cars and one caboose, in the order named. All cars were of all-steel construction. This train departed from Valentine at 2:42 p. m., 32 minutes late, departed from Small, the last open office, 86.2 miles west of Valentine, at 4:29 p. m., 19 minutes late, passed the speed-limit sign, passed signal 7603, which indicated Proceed, and while moving on a 10°26' curve to the right, the engine, the tender, the first five cars, and the left wheels of the front truck of the sixth car were derailed.

The engine and the tender remained coupled and stopped on their left sides, with the front end of the engine 430 feet west of the point of derailment and 40 feet south of the center-line of the track. The rear end of the tender was 38 feet south of the track. The cab was torn from the boiler. The drawbar was broken but the safety bar was not damaged. Separations occurred between the tender and the first car, and between the first and second cars. The first car stopped with the front end against the rear end of the tender and the rear end 8.5 feet south of the track. The front end of the car was crushed inward a distance of about 10 feet. The second car stopped across the track, with the front end 398 feet west of the point of derailment. The front end and the rear end of this car were, respectively, 8.5 feet north and 26.6 feet south of the center-line of the track. The car leaned slightly to the south. The other derailed cars stopped approximately upright and in line with the track. The engine, the tender and the first three cars were badly damaged. The other derailed cars were somewhat damaged.

The front brakeman was killed. The engineer, the fireman and the flagman were injured.

The weather was clear at the time of the accident, which occurred about 4:35 p. m.

The total weight of engine 703 in working order is 442,300 pounds, distributed as follows: Engine-truck, 76,000 pounds; driving-wheels, 262,000 pounds; and trailer-truck, 104,300 pounds. The specified diameters of the engine-truck wheels, the driving-wheels and the trailer-truck wheels are, respectively, 36, 73-1/2 and 45-1/2 inches. The rigid wheel-base is 20 feet long. The total length of the engine and tender coupled is 100 feet 3-1/2 inches. The engine is not equipped with a speed-recording device.

The tender has a rectangular-shape oil compartment and a cylindrical cistern. Its capacity is 4,912 gallons of fuel oil and 16,152 gallons of water. The weight of the tender loaded is 281,100 pounds.

The last class 3 repairs were completed on April 28, 1950, and the last trip inspection and repairs were completed at Sanderson, Tex., on May 6, 1951. The accumulated mileage since the last class 3 repairs was 78,538.

According to data furnished by the carrier, the center of gravity of engine 703 is 79 inches above the tops of the rails. The center of gravity of the tender with the estimated amount of fuel and water remaining at the time the accident occurred was calculated as 80.4 inches above the tops of the rails. The calculated equilibrium, safe and overturning speeds for engine 703, moving on a 10°26' curve having a superelevation of 5 inches, are, respectively, 27, 32.2 and 54.8 miles per hour. The calculated equilibrium, safe and overturning speeds for the tender, moving on the same curve, are, respectively, 27, 31.9 and 54.4 miles per hour.

Discussion

As Second 5 was approaching the point where the accident occurred the speed was about 60 miles per hour. The enginemen were in the cab of the engine, the conductor was in the fifth car, the front brakeman was in the first car and the flagman was in the caboose. Before the accident occurred the engine and the cars had been riding smoothly. The brakes of this train had been tested and had functioned properly when used en route. The engineer said that he made two brake-pipe reductions and placed the throttle in drifting position immediately after the train passed Finlay.

He said that he made a further brake-pipe reduction as the engine entered the curve on which the accident occurred. He thought that the train entered the curve at a speed of about 30 miles per hour. He said that the engine gradually overturned and that the wheels of the engine did not contact the ties. The fireman was so seriously injured that he could not be questioned during the investigation. The conductor said he thought the speed of the train was about 30 miles per hour when it entered the curve on which the accident occurred. The flagman said that when the train was about 1/4 mile east of the point where the accident occurred the speed was 40 or 45 miles per hour, and that it was about 30 miles per hour when the accident occurred.

Two U. S. Immigration Inspectors who were in the immediate vicinity of the point of accident said they observed Second 5 as it approached the point of accident and each estimated that the speed was about 60 miles per hour.

Examination of engine 703 and the cars of Second 5 after the accident occurred disclosed no condition which could have contributed to the cause of the derailment. The throttle of engine 703 was in drifting position, the reverse lever was in position for forward motion, the automatic brake-valve was in release position, and the independent brake-valve was in running position. The engine-truck, driving-wheel and trailer-truck assemblies were in good condition. The flanges and the treads of all wheels of the engine were of good contour, and the tread wear was negligible. All wheel-centers were tight on their axles. All tires were tight on their wheel-centers, and were parallel to their companion tires. The lateral motion in the driving wheels was within the limits prescribed by the carrier. The driving-box shoes and wedges were in good condition and well lubricated. The spring-buffer assembly between the engine and the tender was in good condition, and the chafing faces were well lubricated. The safety-guides on the engine-truck and trailer-truck showed no indication of contact with the track structure. An examination of the tender trucks and wheels disclosed nothing that would contribute to the cause of the derailment. There were several abrasions on the outside of the counterbalances of the left No. 2 and 3 driving wheels, and on the outside face of the left No. 4 driving-wheel tire, where these wheels had been in contact with the south ends of the ties.

Examination of the track throughout a distance of 1 mile east of the point of derailment disclosed that the alinement, gage and surface were well maintained. There was no indication of dragging equipment nor of an obstruction having been on the track. The first indication of displacement of the track structure was an outward canting of the high rail starting at a point 37.7 feet from the east end of the 10°26' curve. The degree of canting increased until the rail was broken 124 feet westward. The general derailment occurred at this point. Examination of the broken rail disclosed that the break was new and that there was no defect. The rail overturned throughout a distance of about 78 feet east of the point where the rail was broken. The south wheels of the front truck of the sixth car stopped on the web of the overturned rail. Starting at a point 212 feet west of the initial point of derailment the south ends of approximately 20 ties were badly broomed. There were no flange marks on the top of the high rail. There were no marks between the rails or on the low rail east of the point of derailment.

The engineer of a west-bound passenger train which passed over the track about 7 minutes before the derailment occurred said that his train rode smoothly at a speed of about 25 miles per hour and that there was no indication of defective track. The division engineer and the roadmaster were making an inspection of the track from the rear car of the same train and neither observed any unusual condition of the track in the vicinity of the point of derailment. The track was last inspected from a track motor-car about 3-1/2 hours before the accident occurred and no defective condition was observed.

Considering the absence of marks on the ties between the rails, the absence of a flange mark on the high rail and the condition of the safety bar after the accident occurred, it is apparent that the engine and the tender were moving at overturning speed when the derailment occurred.

Cause

It is found that this accident was caused by excessive speed on a curve.

Dated at Washington, D. C., this twelfth day of July, 1951.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.