INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT NO. 3393

THE NEW YORK CENTRAL RAILROAD COMPANY

IN RE ACCIDENT

AT TRENTON, MICH., ON

MARCH 15, 1951

SUMMARY

Date:	March 15, 1951
Railroad:	New York Central
Location:	Trenton, Mich.
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	309
Engine number:	5391
Consist:	14 cars
Speed:	53 m. p. h.
Operation:	Signal indications
Tracks:	Double; tangent; 0.38 percent ascending grade southward
Weather:	Rain and snow
Time:	12:01 a. m.
Casualties:	3 killed; 17 injured
Cause:	Broken rail

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3393

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

THE NEW YORK CENTRAL RAILROAD COMPANY

May 9, 1951

Accident at Trenton, Mich., on March 15, 1951, caused by a broken rail.

REPORT OF THE COMMISSION[1]

PATTERSON, Commissioner:

On March 15, 1951, there was a derailment of a passenger train on the New York Central Railroad at Trenton, Mich., which resulted in the death of 3 passengers, and the injury of 15 passengers and 2 train-service employees. This accident was investigated in conjunction with a representative of the Michigan Public Service Commission.

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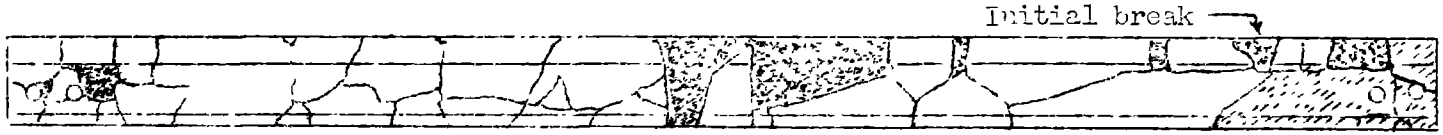
[1] Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.

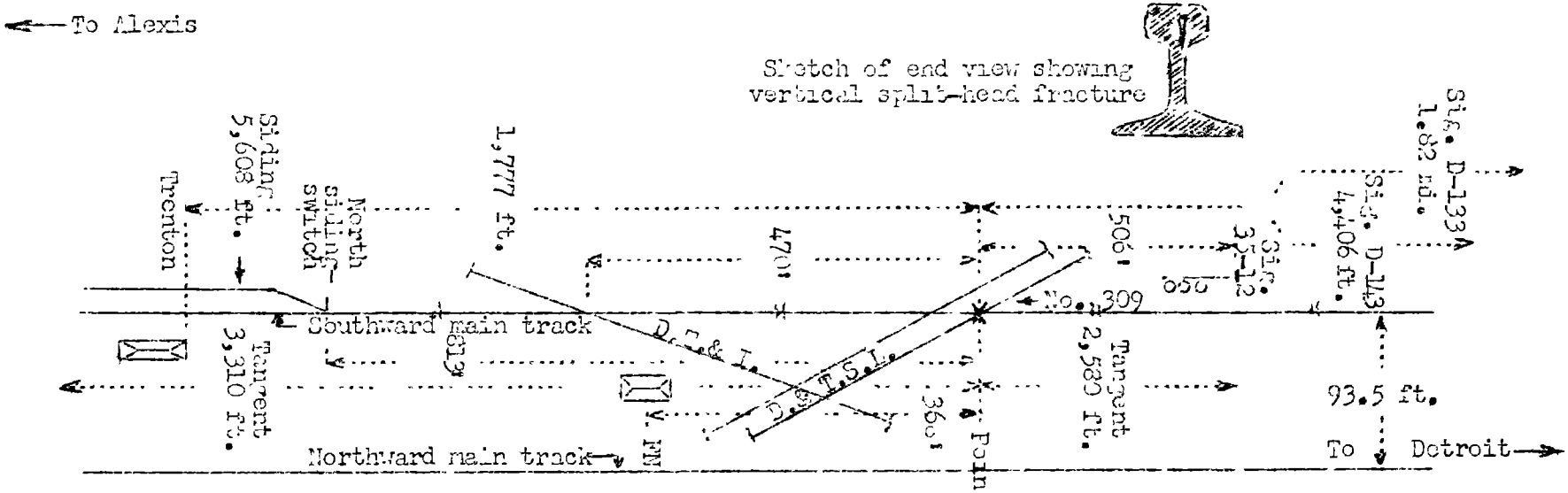


14 ft. 11 in.

Sketch showing broken rail - west side of track

Shaded areas indicate missing portions of rail

Cross-hatched area indicates pieces of rail remaining attached to frog



o Detroit, Mich.
5.11 mi.
o WD
5.19 mi.
o Wyandotte
3.80 mi.
o FT
0.22 mi.
X Point of accident
0.34 mi.
o Trenton, Mich.
34.27 mi.
o Alexis, Ohio

Report No. 3393
New York Central Railroad
Trenton, Mich.
March 15, 1951

Location of Accident and Method of Operation

This accident occurred on that part of the Detroit Division extending between YD, Detroit, Mich., and Alexis, Ohio, 43.82 miles, a double-track line, over which trains moving with the current of traffic are operated by signal indications, supplemented by an automatic train-stop system of the continuous-inductive type. From west to east the main tracks are designated as southward and northward. In the vicinity of the point of accident the main tracks are separated a distance of about 90 feet. At a point 1,777 feet north of the station at Trenton, 9.55 miles south of YD, the southward main track is crossed at grade by a double-track line of the Detroit and Toledo Shore Line Railroad, and 470 feet south of this crossing it is crossed at grade by a single-track line of the Detroit, Toledo and Ironton Railroad. A siding 5,608 feet in length parallels the southward main track on the west. The north switch of this siding is 813 feet south of the point of accident. The accident occurred on the southward main track 9.21 miles south of YD, where it is crossed by the northward main track of the D.& T.S.L. From the north there is a tangent 2,580 feet to the point of accident and 3,310 feet southward. The grade for south-bound trains is 0.38 percent ascending at the point of accident.

In the vicinity of the point of accident the track structure is laid on a fill varying from 2 to 6 feet in height. The structure of the southward main track consists of 105-pound Dudley rail, 39 feet in length, laid new in July, 1948, on an average of 24 treated ties to the rail length. It is fully tieplated with double-shoulder tie-plates, double-spiked and is provided with 6-hole 36-inch toeless joint bars and an average of 12 rail anchors per rail. It is ballasted with crushed stone to a depth of 12 inches below the bottoms of the ties.

The tracks of the D.& T.S.L. cross the tracks of the N.Y.C. from northwest to southeast at an angle of 13°45'. Each crossing consists of four solid manganese steel frogs connected by rolled closure rails. The frogs average 8 feet in length and are cast to fit the closure rails, which are 100-pound ARA-A section rails. At the north end of the westerly closure rail in the southward main track, the frog casting fits the fishing area of the rail on the gage side a distance of 12 inches. On the outside, the closure rail and the frog casting are connected by a 24-inch joint bar. The joint bar, the rail and the frog casting are bolted together by two 1-inch heat-treated bolts 15-1/2

inches and 17 inches long, spaced 5-5/8 inches apart. At the south end of this rail the frog casting fits the outside fishing area of the closure rail a distance of 12 inches. The closure rail and the frog casting are connected on the gage side by a 3/4-inch by 4-inch by 9-inch bar. The joint bar, the rail and the casting are bolted by two1-inch heat-treated bolts, 16 inches and 19 inches long. The frogs and the closure rails are laid on 8-inch by 12-inch crossing timbers spaced approximately 24 inches between centers. Each timber is provided with two twin-hook plates 3/4-inch by 4 inches by 23 inches, fully spiked. The crossings are ballasted with crushed stone to a depth of 12 inches below the bottoms of the timbers.

The track of the D.T.& I. crosses the tracks of the N.Y.C. from northeast to southwest at an angle of 17°39'.

Both crossings and the north switch of the siding are within the limits of FN interlocking. The interlocking station is located between the northward and the southward main tracks and 368 feet south of the point of derailment. Interlocking signal 35-12, governing south-bound movements on the southward main track, is located 506 feet north of the point of derailment. This signal is of the color-light type and is continuously lighted.

The maximum authorized speed for passenger trains is 70 miles per hour.

Description of Accident

No. 309, a south-bound first-class passenger train, consisted of engine 5391, a 4-6-4 type, one express-refrigerator car, two baggage cars, three coaches, and eight sleeping cars, in the order named. The first car was of steel-underframe construction, the second, third, fifth, eighth and ninth cars were of standard all-steel construction and the other cars were of light-weight steel construction. The fourth, sixth, seventh and the tenth to the fourteenth cars, inclusive, were equipped with tightlock couplers. This train departed from Detroit at 11:30 p. m., on time, entered the Toledo Branch at YD at 11:45 p. m., 3 minutes late, departed from Wyandotte, the last open office, 4.02 miles north of the point of accident, at 11:55 p. m., 5 minutes late, passed signal 35-12, which indicated Proceed, and while moving at a speed of 53 miles per hour, the rear truck of the first car, the third to the ninth cars, inclusive, and the front truck of the tenth car were derailed.

Separations occurred at each end of the second to the sixth cars, inclusive. The engine, the tender and the first car remained coupled and stopped with the front end of the engine 2,190 feet south of the point of accident. The rear truck of the first car was derailed, and this car stopped diagonally across the siding. The second car, which was not derailed, stopped with its rear end 1,394 feet south of the point of accident. The third car stopped on its right side, with its front end 972 feet south of the point of accident. The front end was 11 feet and the rear end was 20 feet west of the southward main track. The fourth car stopped on its right side, with its front end against the north end of the third car and its rear end 47 feet west of the southward main track. The fifth car stopped on its left side and at an angle of about 45 degrees to the track. Its front end was on the track structure and its rear end was 60 feet east of the track. The sixth car stopped parallel to the fifth car and leaned against it at an angle of about 45 degrees. Its front end was 25 feet west of the track and against the bottom of the fourth car, and its rear end was 42 feet east of the track. The seventh car leaned at an angle of 45 degrees, with its front end against the north end of the sixth car and its rear end 15 feet east of the track. The eighth car stopped practically upright and in line with the seventh car, with its rear end on the track structure. The ninth car stopped upright and on the track structure. The front truck of the tenth car was derailed. The rear end of the fourteenth car stopped 140 feet south of the point of accident. The fourth car was destroyed. The fifth and sixth cars were badly damaged, the first, third, seventh and eighth cars were considerably damaged and the second and the ninth to the fourteenth cars, inclusive, were slightly damaged.

The baggageman and the front brakeman were injured.

A mixture of rain and snow was falling at the time of the accident, which occurred at 12:01 a. m.

Discussion

As No. 309 was approaching the point where the accident occurred it was moving on tangent track at a speed of 53 miles per hour in territory where the maximum authorized speed was 70 miles per hour. The headlight was lighted brightly and the enginemen were maintaining a lookout ahead from their respective positions in the cab of the engine. The members of the train crew were in various locations throughout the cars

of the train. The brakes of this train had been tested and had functioned properly when used en route. The engineer said that signal 35-12 indicated Proceed, and that the indication was called by the fireman. The flagman also observed that signal 35-12 indicated Proceed. The engine rode smoothly over the D.& T.S.L. crossing and there was no unusual movement of the train before the derailment occurred. Immediately after the engine passed over the crossing, the brakes were applied in emergency as a result of the derailment. The baggageman said that the third car, in which he was riding, was derailed in the vicinity of the D.& T.S.L. crossing.

Examination of the equipment of No. 309 after the accident occurred disclosed no condition that would have caused or contributed to the cause of the derailment. The damage to the equipment occurred as a result of the derailment.

Examination of the track after the accident occurred disclosed that throughout a distance of 1,500 feet north of the point of accident the surface, gage and alinement were adequately maintained for the maximum authorized speed. The greatest variation in cross levels was 1/4-inch at four widely separated locations, and the gage varied between 4 feet 8-7/16 inches and 4 feet 8-9/16 inches. There was no indication of dragging equipment or of any obstruction having been on the track. The closure rail between the frogs in the west rail of the southward main track at the D.& T.S.L. crossing was broken into many pieces, 44 of which were recovered. Four pieces including a 6-inch section of the head and a 25-inch section of the base and web were attached to the frog at the receiving end of the rail. This rail contained a vertical split-head defect. Beginning at a point 1 inch from the receiving end of the rail, the vertical split extended longitudinally along the rail a distance of 8 feet 4 inches. It varied in height from 1 inch to 1-1/8 inches and the top was approximately 3/8-inch below the top surface of the rail. The defect did not extend to the outside of the rail and could not be detected by visual inspection before the rail failed. Apparently the initial break occurred at a point 20 inches from the receiving end, then the rail split longitudinally and the outside half of the head was detached a distance of 16-1/2 inches. The frog of the east rail was flange marked 13 feet 6 inches south of the point of derailment. Flange marks then appeared on the track structure 470 feet to the D.T.& I. crossing. South of the D.T.& I. crossing the rails of the southward main track were overturned a distance of 90 feet, and the track was destroyed 360 feet southward.

The defective rail was rolled in March, 1925, by the Illinois Steel Company and bore heat number 2135, letter A. It was laid in the main track of the D.& T.S.L. in 1925 and was removed from the D.& T.S.L. track after 1939 to provide a stock of rail suitable for rail replacement in main tracks. It was installed as a closure rail in the N.Y.C. crossing at Trenton in April, 1947. Under an arrangement between the two carriers, the D.& T.S.L. maintains the crossing in question. The rail in the southward main track of the N.Y.C. in the vicinity of the point of accident was laid new in 1948, and a rail-defect detector car has not been operated over the southward main track since that time.

A N.Y.C. patrol foreman inspected the southward main track on the afternoon of March 13, at which time no irregularities were observed. The crossings were inspected by a D.& T.S.L. track patrolman about 11:30 a. m., March 14, and no defects were visible at that time. The crew of No. 307, a first-class passenger train which passed over the crossing about 1 hour before the accident occurred, said that their train rode smoothly and they observed nothing unusual as their train passed the point where the accident occurred. Apparently the rail failed as the front portion of No. 309 was passing over it.

Cause

It is found that this accident was caused by a broken rail.

Dated at Washington, D. C., this ninth day of May, 1951.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,

Secretary.