

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2853
THE CHICAGO & NORTH WESTERN RAILWAY COMPANY
REPORT IN RE ACCIDENT
NEAR POPLAR GROVE, ILL., ON
DECEMBER 24, 1944

SUMMARY

Railroad: Chicago & North Western
Date: December 24, 1944
Location: Poplar Grove, Ill.
Kind of accident: Derailment
Train involved: Passenger
Train number: 522
Engine number: 2906
Consist: 15 cars
Estimated speed: 45 m. p. h.
Operation: Timetable, train orders and
manual-block system
Track: Single; tangent; 0.65 percent
descending grade eastward
Weather: Clear
Time: About 6:58 p. m.
Casualties: 2 killed; 38 injured
Cause: Broken rail, as result of presence
of transverse fissures

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2853

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

THE CHICAGO & NORTH WESTERN RAILWAY COMPANY

February 6, 1945.

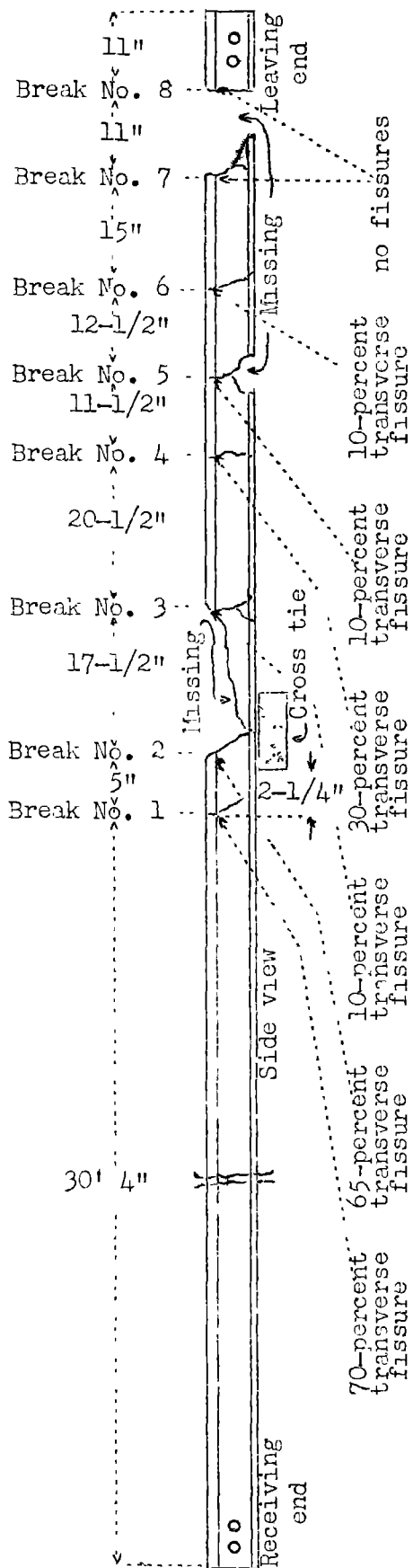
Accident near Poplar Grove, Ill., on December 24, 1944,
caused by a broken rail, as a result of the presence
of transverse fissures.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

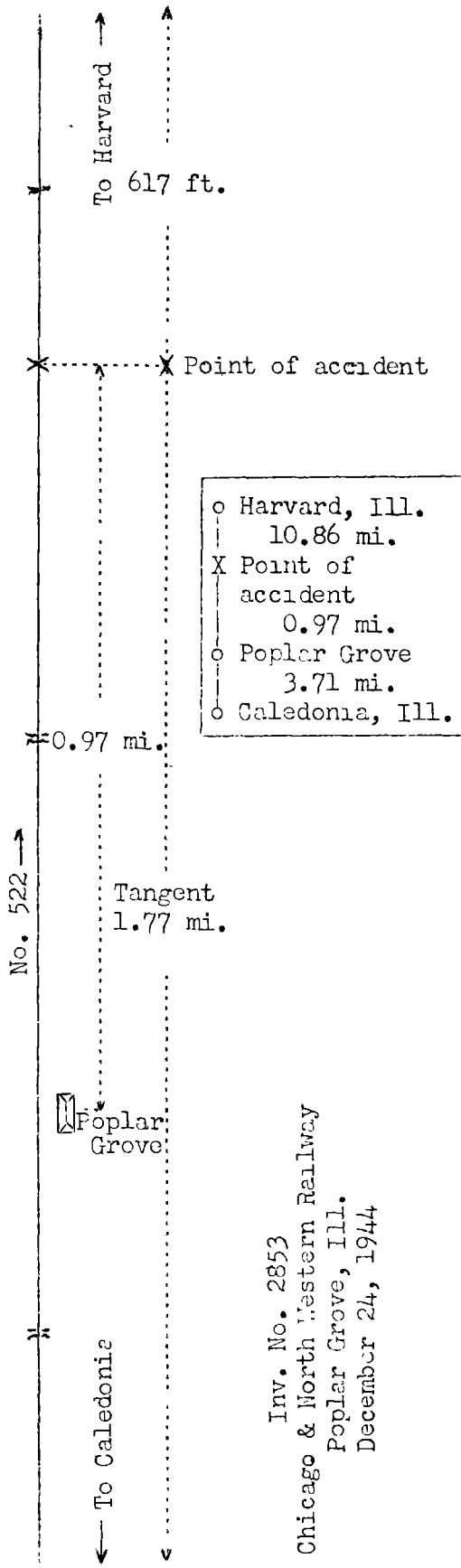
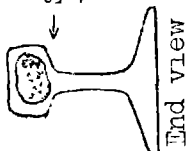
On December 24, 1944, there was a derailment of a passenger train on the Chicago & North Western Railway near Poplar Grove, Ill., which resulted in the death of 2 passengers, and the injury of 35 passengers, 1 dining-car employee and 2 train-service employees. This accident was investigated in conjunction with a representative of the Illinois Commerce Commission.

¹Under 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.



70-percent transverse fissure
 65-percent transverse fissure
 10-percent transverse fissure
 30-percent transverse fissure
 10-percent transverse fissure
 10-percent transverse fissure
 10-percent transverse fissure
 no fissures

← Sketch showing location of 70-percent transverse fissure in head of rail at break No. 1



Inv. No. 2853
 Chicago & North Western Railway
 Poplar Grove, Ill.
 December 24, 1944

Location of Accident and Method of Operation

This accident occurred on that part of the Wisconsin Division designated as Subdivision 2b and extending eastward from Caledonia to Harvard, Ill., 15.54 miles. This was a single-track line over which trains were operated by timetable, train orders and a manual-block system. The accident occurred on the main track 4.68 miles east of Caledonia, at a point 0.97 mile east of the station at Poplar Grove. The main track was tangent throughout a distance of 1.77 miles west of the point of accident and 617 feet eastward. The grade was 0.65 percent descending eastward.

The track structure consisted of 90-pound rail, 39 feet in length, rolled in April, 1930, and laid in September, 1930, on 23 treated ties to the rail length. It was fully tieplated, single-spiked, provided with 4-hole angle bars 26 inches long, and was ballasted with gravel to a depth of 24 inches. The brand of the rail involved was Number 55217-15-C.

The maximum authorized speed for the train involved was 60 miles per hour.

Description of Accident

No. 522, an east-bound first-class passenger train, consisted of engine 2906, one express-refrigerator car, three mail cars, two baggage-express cars, one passenger-baggage car, three coaches, one lounge-dining car and four coaches, in the order named. The first car was of steel underframe construction and the remainder were of steel construction. This train departed from Caledonia, the last open office, at 6:50 p. m., 14 minutes late, passed Poplar Grove, and while it was moving at an estimated speed of 45 miles per hour the twelfth and thirteenth cars were derailed.

Engine 2906 and the first 11 cars, remaining coupled, stopped with the front end of the engine about 2,900 feet east of the point of derailment. The twelfth and thirteenth cars stopped on their sides, down an embankment, south of the track and about 660 feet east of the point of derailment. The fourteenth and fifteenth cars remained coupled and stopped with the rear end 1,120 feet east of the point of derailment. The eleventh to the fifteenth cars, inclusive, were damaged.

The weather was clear at the time of the accident, which occurred about 6:58 p. m.

The train-service employees injured were two brakemen.

Discussion

No. 522 was moving at a speed of about 45 miles per hour in territory where the maximum authorized speed was 60 miles per hour. The enginemen were maintaining a lookout ahead. Prior to the time of the accident the engine and the cars were riding smoothly, and there was no indication of defective equipment or track, nor of any obstruction having been on the track.

When the engine passed over the point where the derailment occurred, the enginemen did not observe any abnormal condition of the track. The helper-conductor was in the eleventh car, and he felt an unusual jar when the rear truck passed over the point where the derailment occurred. The twelfth and thirteenth cars became derailed, and immediately afterward the brakes became applied in emergency.

After the accident a broken rail was found on the south side of the track. The rail was broken into many pieces, eight of which were recovered. The pieces were scattered throughout a distance of about 200 feet east of the point of derailment. The first break occurred between two ties at a point 30 feet 4 inches east of the receiving end of the rail. This piece of rail remained in normal position. At the first break there was a transverse fissure which covered about 70 percent of the cross-sectional area of the head of the rail. At the second break, which occurred 5 inches east of the first break, there was a transverse fissure which covered about 65 percent of the cross-sectional area of the head. At the third, fourth, fifth and sixth breaks there were transverse fissures which, respectively, covered 10, 30, 10 and 10 percent of the cross-sectional area. None of these fissures extended to the outer surface. In the opinion of the division engineer, the failure of the rail at the first and second breaks occurred when the front part of the train passed over this portion of the rail, the piece between these breaks was forced out of proper alignment, and the other fractures occurred as wheels jumped across the gap. The first piece was displaced before the rear truck of the eleventh car passed over this point, then the twelfth and thirteenth cars were derailed. Apparently the fourteenth and fifteenth cars were derailed at this point, but were rerailed when the wheels came in contact with the west end of the portion of the fractured rail, 11 inches long, which remained in normal alignment and attached to the next rail.

The track involved was last inspected by the section foreman about 32 hours prior to the accident, but no defective condition was observed. A rail-detector car was last operated over this territory in December, 1941, at which time there was no indication of a defective rail. The division engineer said that the spacing of tests with a rail-detector car was determined by the record of rail failures and by the amount of tonnage operated over the track. He said the next test will be made during 1945.

Cause

It is found that this accident was caused by a broken rail, as a result of the presence of transverse fissures.

Dated at Washington, D. C., this sixth day of February, 1945.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.