

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3611
GREAT NORTHERN RAILWAY COMPANY
IN RE ACCIDENT
NEAR WEST UNION, MINN., ON
FEBRUARY 11, 1955

SUMMARY

Date	February 11, 1955
Railroad	Great Northern
Location.	West Union, Minn.
Kind of accident	Derrailment
Train involved.	Passenger
Train number	4
Engine number	Diesel-electric units 350C, 350B, and 350A
Consist	12 cars
Speed	71 m. p. h.
Operation	Timetable, train orders, and automatic block-signal system
Track.	Single, tangent, level
Weather	Clear
Time:	7 15 p. m.
Casualties.	85 injured
Cause.	Broken joint cars and a broken rail

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3611

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

GREAT NORTHERN RAILWAY COMPANY .

March 16, 1955

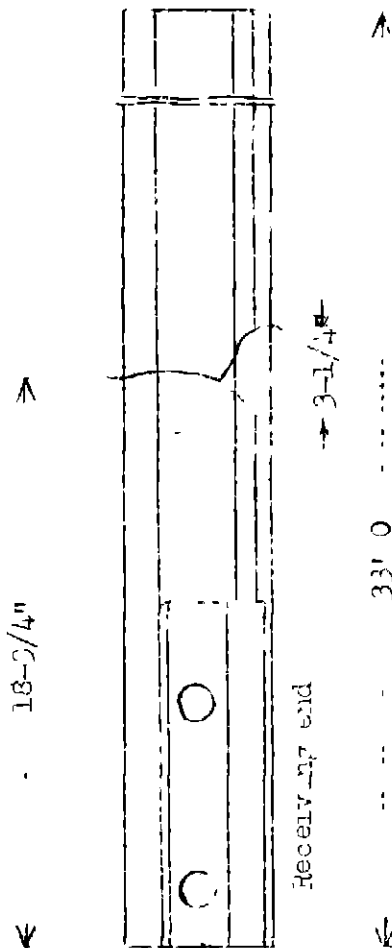
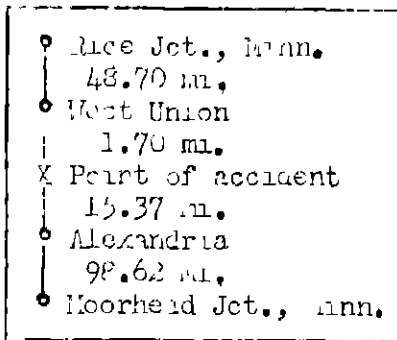
Accident near West Union, Minn., on February 11, 1955,
caused by broken joint bars and a broken rail.

REPORT OF THE COMMISSION¹

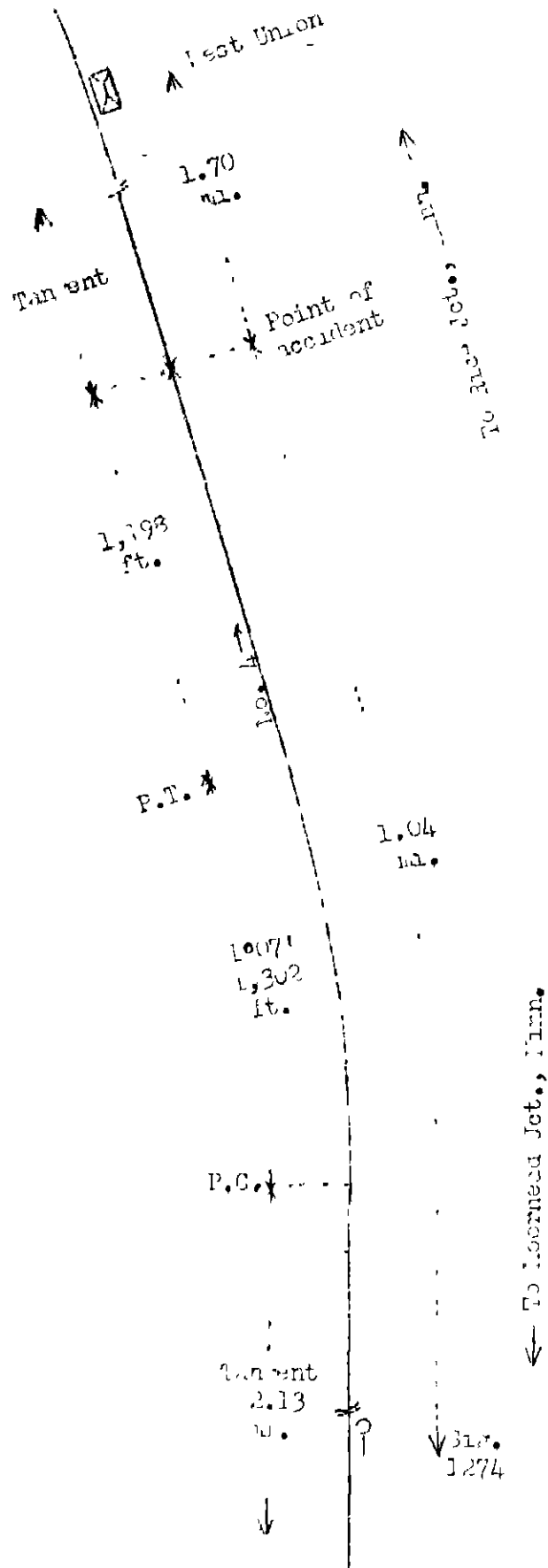
CLARKE, Commissioner.

On February 11, 1955, there was a derailment of a passenger train on the Great Northern Railway near West Union, Minn., which resulted in the injury of 69 passengers, 4 railway mail clerks, 6 dining-car employees, 2 train porters, 2 Pullman Company employees, 1 employee not on duty, and 1 train-service employee.

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



Sketch also in - broken half-north side of track



Location of Accident and Method of Operation

This accident occurred on that part of the Dakota Division extending between Moorhead Jet , and Rice Jet., Minn., 164.39 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 113.89 miles east of Moorhead Jet. and 1.70 miles west of the station at West Union. From the west there are, in succession, a tangent 2.13 miles in length, a 1°07' curve to the left 1,302 feet, and a tangent 1,198 feet to the point of accident and a considerable distance eastward. The grade is level at the point of accident.

In the vicinity of the point of accident the track is laid on a fill approximately 7 feet 6 inches in height. The track structure consists of 90-pound rail, 35 feet in length, laid down in 1913 on an average of 20 treated ties to the rail length. It is fully tieplated with double-shoulder canted tieplates and is spiked with two spikes per tieplate. It is provided with 4-hole 24-inch joint bars and an average of eight rail anchors per rail, and is ballasted with processed gravel to a depth of 12 inches below the bottoms of the ties.

Automatic signal 1274, governing east-bound movements, is located 1.04 miles west of the point of accident.

The maximum authorized speed for passenger trains in the vicinity of the point of accident is 65 miles per hour.

Description of Accident

No. 4, an east-bound first-class passenger train, consisted of Diesel-electric units 350C, 350B, and 350A, coupled in multiple-unit control, one baggage car, one baggage-mail car, one baggage car, three coaches, one lounge-lunch-dormitory car, one dining car, three sleeping cars, and one parlor car, in the order named. The first, eighth, and twelfth cars were of conventional all-steel construction. The other cars were of lightweight steel construction and were equipped with tightlock couplers. This train passed Moorhead Jet at 4.51 p. m., 5 minutes late, departed from Alexandria, 98.62 miles east of Moorhead Jet, and the last open office, at 6.56 p. m., 5 minutes late, and while moving at a speed of 71 miles per hour the second and third Diesel-electric units, the first to the eleventh cars, inclusive, and the front truck of the twelfth car were derailed at a point 1.70 miles west of the station at West Union.

Separations occurred at each end of each of the first seven cars. The Diesel-electric units stopped with the front end of the first unit 1,510 feet east of the point of accident. The second unit stopped approximately in line with the track, and the third unit stopped with the rear end 17 feet north of the track. Each of the first five cars overturned and stopped on its left side. The front end of the first car was 37 feet north of the track, and the rear end was 109 feet north of the track. The rear end of the car was about 50 feet east of the front end and 785 feet east of the point of derailment. The front end of the second car was against the rear end of the first car, and the rear end was 130 feet north of the track. The front end of the third car was near the front end of the first car, and the rear end was 40 feet north of the track. The front end of the fourth car was against the rear end of the third car, and the rear end was 114 feet north of the track. The front end of the fifth car was about 25 feet west of the rear end of the fourth car, and the rear end was 51 feet north of the track. None of the other cars overturned. The sixth car stopped parallel to the track, with the front end near the rear end of the fifth car. The seventh car stopped with the front end about 40 feet east of the rear end of the sixth car and 82 feet north of the track, and the rear end 43 feet north of the track. The other cars stopped approximately in line, with the front end of the eighth car 41 feet north of the track. The rear truck of the twelfth car was not derailed. The first five cars were considerably damaged, and the second and third Diesel-electric units and the sixth to the ninth cars, inclusive, were slightly damaged.

The conductor was injured.

The weather was clear and it was dark at the time of the accident, which occurred about 7:15 p. m. The temperature was 14 degrees below zero.

Discussion

As No. 4 was approaching the point where the accident occurred the speed was 71 miles per hour, as indicated by the tape of the speed-recording device. The engineers were maintaining a lookout ahead from their positions in the control compartment at the front of the locomotive, and the members of the train crew were in various locations in the cars of the train. The headlight was lighted brightly. Signal 1274 indicated Proceed. The engineer said he felt a slight irregular movement of the locomotive which he thought was caused by a low spot in the north side of the track in the

vicinity of the point where the accident occurred, but he thought the movement was not of sufficient violence to be a cause for concern. The fireman did not notice this movement, and neither he nor the members of the train crew noticed any indications of defective track or equipment before the derailment occurred. The enginemen became aware that the rear end of the locomotive was derailed and the brakes became applied in emergency as a result of the derailment at approximately the same time.

Examination of the locomotive and cars after the accident occurred disclosed no condition of the equipment which could have caused or contributed to the cause of the accident. Examination of the track west of the point of derailment disclosed no indication of dragging equipment nor of an obstruction having been on the track.

After the accident occurred both joint bars in a joint in the north rail of the track were found to be broken. Each joint bar was broken between the ends of the rails and at right angles to the base of the rail, and the half sections remained bolted to the ends of the two rails. These joint bars were manufactured by the Lackawanna Steel Company in 1912. Examination of these joint bars disclosed a progressive fracture in the bar on the gage side of the rail which extended downward from a point under the head of the rail and covered approximately 15 percent of the cross-sectional area of the vertical portion of the bar. A progressive fracture in the top of the bar on the field side of the rail covered approximately 3 percent of the cross-sectional area of the vertical portion. The remainder of the breaks appeared to be new. The adjacent ties on each side of the joint were in good condition.

The rail east of the broken joint bars was broken at a point 18-3/4 inches east of the receiving end. The break extended vertically through the head and web to a point near the base. Below this point a triangular section of the web and base 3-1/4 inches in length was broken out. The 18-3/4-inch section of rail had been dislodged from the track, and the remaining portion of this rail had been forced from its normal position. The head of the end of the rail east of the break had been struck near the center, and a 2-inch section of the field side of the head was sheared and broken off. The west end of the head of the rail at the joint was somewhat battered, but there was no batter on the top surface of the head at the broken ends. This rail was manufactured by the Lackawanna Steel Company in 1910 and bore heat number 8519.

It had been in this location in the track since some time prior to the year 1936. According to the report of the chief engineer of the carrier a compound fracture existed in the head approximately 1/2 inch below the top and 5/8 inch from the gage side of the rail at the point of failure. This fracture originated internally from a horizontal split head and covered approximately 2 percent of the cross-sectional area of the head. The chemical composition of the rail was normal.

During the investigation there was some question as to whether the initial failure occurred in the joint bars or in the rail. From the absence of batter on the tops of the broken ends, it appears that the rail was broken as a result of wheels striking the end of the rail after the failure of the joint bars and that the 18-3/4-inch section of rail was dislodged and the derailment occurred immediately after the rail was broken.

A rail-defect detector car was last operated over this territory on October 28, 1954. No defective condition of the rail involved was indicated. The track in the vicinity of the point of accident was inspected by the track inspector about 1 50 p. m. on the day of the accident. No defective condition was observed. A west-bound freight train passed the point of accident about 1 hour before the accident occurred. The crew of this train reported no unusual condition of the track.

Cause

This accident was caused by broken joint bars and a broken rail.

Dated at Washington, D. C., this sixteenth day of March, 1955.

By the Commission, Commissioner Clarke.

(SEAL)

HAROLD D. McCOY,
Secretary.