

BUREAU OF SAFETY

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REPORT NO. 2011

Railroad: Chicago & North Western  
Date: September 18, 1935  
Location: Roxby, Nebr.  
Kind of accident: Derailment  
Train involved: Freight  
Train Number: Extra 2533  
Engine Number: 2533  
Consist: 34 cars and caboose  
Speed: 25 m.p.h.  
Track: 3° curve to right; level track  
Weather: Clear  
Time: 5:40 p.m.  
Casualties: 1 killed and 2 injured  
Cause: Defective track

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN  
ACCIDENT ON THE CHICAGO & NORTH WESTERN RAILWAY NEAR  
ROXBY, NEBR., ON SEPTEMBER 18, 1935.

October 19, 1935.

To the Commission:

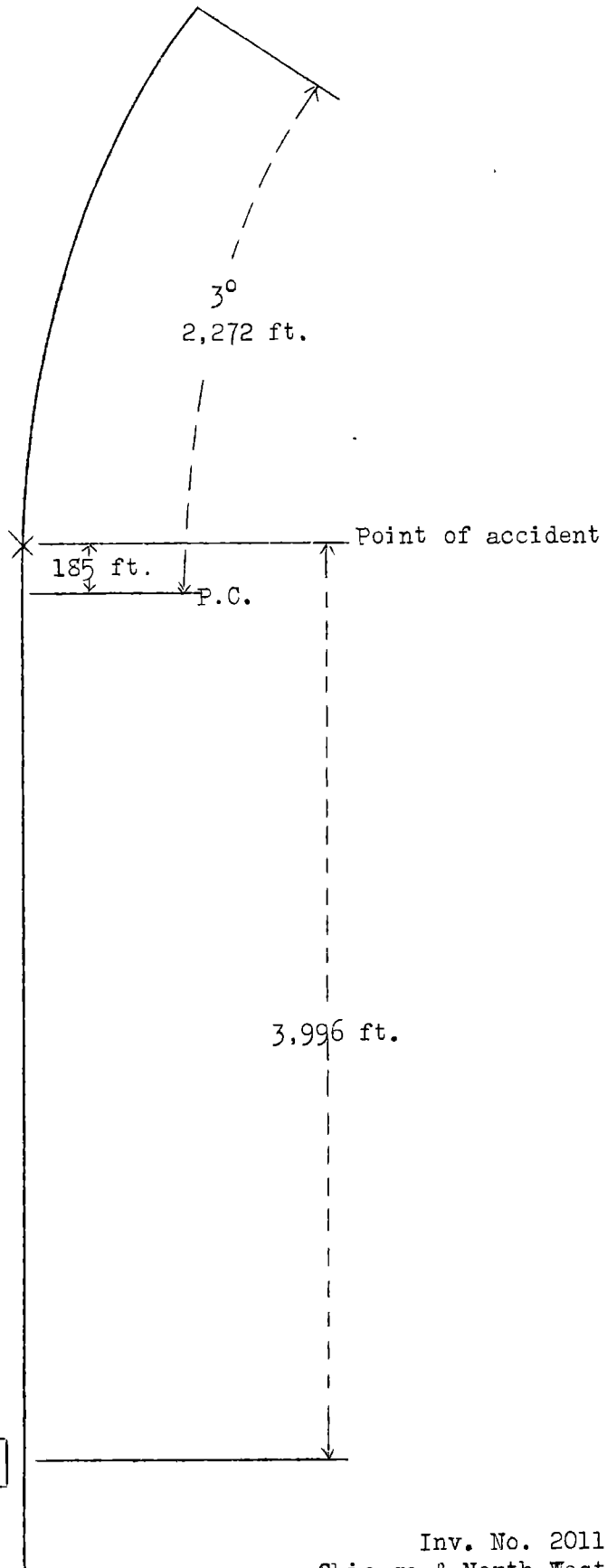
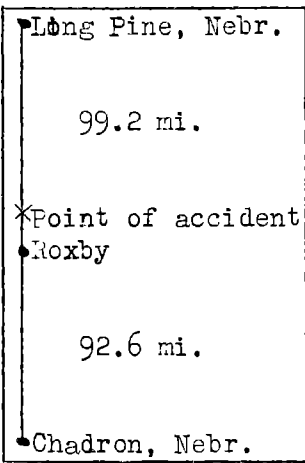
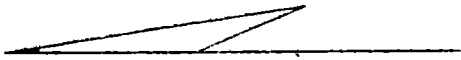
On September 18, 1935, there was a derailment of a freight train on the Chicago & North Western Railway near Roxby, Nebr., which resulted in the death of 1 trespasser and the injury of 2 trespassers.

## Location and method of operation

This accident occurred on Sub-division 1 of the Black Hills Division which extends between Chadron and Long Pine, Nebr., a distance of 101.8 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by time table and train orders, no form of block signal system being in use. The accident occurred at a point 3,996 feet east of the station at Roxby. Approaching this point from the west the track is tangent for more than 1 mile, followed by a 3° curve to the right 2,272 feet in length, the accident occurring on this curve at a point 185 feet from its western end. Normal superelevation of the outer rail of this curve is 3 inches. The grade for east-bound trains is 0.35 percent descending for 2,000 feet to a point approximately 900 feet from the point of accident; it is then level to and beyond the point of accident.

The track is laid with 72-pound rails, 33 feet in length, with an average of 19 ties to the rail length, 60 percent of the ties being of treated hard wood with the remainder soft wood, fully tieplated, single-spiked, and rail anchors are used. The track is laid on a fill 3 feet in height, of local light sand, the ballast consisting of the same sand material surfaced to ballast section. The speed for freight trains was restricted to 25 miles-per hour around curves between 2½ miles west of Cody and Roxby, Cody being located 6½ miles east of Roxby.

The weather was clear at the time of the accident, which occurred about 5:40 p.m.



Inv. No. 2011  
 Chicago & North Western Ry.  
 Roxby, Nebr.  
 September 18, 1935

### Description

Extra 2533, an east-bound freight train, consisted of 34 cars and a caboose, hauled by engine 2533, and was in charge of Conductor Harris and Engineman Kane. This train departed from Chadron, 92.6 miles west of Roxby, at 1:30 p.m.; passed Eli, the last open telegraph office, 7 miles west of Roxby, at 5:23 p.m., according to the train sheet, and was derailed after passing through Roxby, while moving at a speed estimated to have been about 25 miles per hour.

The ninth to twentieth cars, inclusive, were derailed and badly damaged, 5 of these cars being damaged to the extent that they would be destroyed. The ninth car stopped on the north or left side of and practically parallel with the track at a point about 325 feet beyond the point of derailment, the tenth car stopped to the right of the track with one end resting on the track approximately 75 feet beyond the ninth car, while the eleventh to eighteenth cars, inclusive, were jack-knifed between the ninth and tenth cars. The nineteenth car stopped to the right of the track behind these cars and the twentieth car was at an angle across the track.

### Summary of evidence

Engineman Kane stated that when about 1/2 mile west of Roxby he made an 8-pound brake-pipe reduction, reducing the speed to 20 miles per hour at the time he released the brakes. At the time of the accident the speed was about 25 miles per hour and he was working a drifting throttle when he felt the brakes apply; he looked back, saw a cloud of dust and stopped the head portion of the train about 7 to 10 car lengths beyond the wreckage. Engineman Kane stated that he did not notice any rough condition of the track, did not feel any jerks or jars in the running of the train prior to the derailment, and considered the track at that point to be in good condition. He had never noticed an engine swaying from side to side on this track and had ridden on engines of a smaller type than engine 2533 and considered that they all rode about the same. Engine 2533 was in good working condition. The terminal air brake test had been made at Chadron at which time the head brakeman reported all brakes to be cut in and working properly. Two stops were made en route for water and the train was inspected at both points.

Fireman Sharp stated that he thought the speed had been reduced to 10 or 12 miles per hour at the time the engineman released the brakes in the vicinity of Roxby, but estimated

the speed to have been between 23 and 25 miles per hour at the time of the accident. He was of the opinion that the track in the vicinity of Roxby was about the same as that on other parts of the railroad.

Conductor Harris stated that regular inspections of both sides of the train were made at Hay Springs and Gordon and, on leaving Gordon, 46.1 miles west of Roxby, the entire train pulled by him. While he did not notice particularly any rough spots in the track, he did not consider the track in the vicinity of the point of accident to be smooth. At the time of the accident no member of the train crew was in the cupola although both brakemen were in the caboose. After the accident, on his way to the telephone at Roxby, he saw no indication of anything having been dragging.

Head Brakeman Lane estimated the speed of the train to have been from 25 to 27 miles per hour at the time of the accident. He made a running inspection of the train on leaving Gordon and did not notice anything wrong. He considered the track between Eli and the point of accident to be pretty good track; Eli is located 7 miles west of Roxby.

Flagman Canaga stated that he and the conductor rode in the cupola of the caboose, watching the train closely, from Gordon to a point between Siding Sixty-nine and Eli, at which time the conductor got down and sat at his desk while Flagman Canaga went to the south window. There was some swaying of the caboose, but no more than usual.

Section Foreman Garrett, located at Cody, stated that his section extends westward approximately to the east switch at Roxby; he considered that the average condition of the track was fair and he thought that with the three laborers on his section he is able to cover thoroughly every day the 11 miles of main track, with auxiliary tracks and sidings. Thus far this year 1,502 ties had been renewed on the main line; there are about 200 or 300 ties that should be replaced within the next six weeks, and about 2,000 ties are marked for renewal for next year. He checked the curve on which the accident occurred for surface, elevation and alinement about 30 days prior to the accident, and did some alining on this curve about September 11. Section Foreman Garrett stated that there were very few, if any, loose or swinging joints in the track between the east switch at Roxby and the point of accident. He considered swaying joints more dangerous than having any other part of the rail insufficiently supported; so far as possible, with the amount of labor furnished, he has made all reasonable effort to correct this condition. He

believed that, with 80 percent of the ties secured to the rail in each rail length, the track would be safe provided the insecure ties were not located together. In his inspection of moving trains he had observed some churning but believed it to be a normal action of the track under a passing train.

Roadmaster O'Rourke stated that he makes regular inspections of the track in his territory from motor cars as well as from trains; he makes a general inspection twice a year with more frequent periodic inspections. The last annual inspection of the curve on which the accident occurred was made in April and he was last over this track prior to the accident on September 10, at which time the track appeared to be all right; he did not stop at that time. He stated that he had always received sufficient allotment to maintain the track in safe condition and he considered the track to be in fair condition. He believed that, with the amount of traffic in this territory, a section foreman and three laborers should be able to maintain this section in safe condition. Subsequent to the accident a check was made of the track and some irregularities were found; the track had been kicked out of line by the derailment and the gauge was one inch wide west of the point where the track had been torn up. While some of the ties appeared to be bad on top, underneath they are hard and solid. When broken ties and loose tieplates and spikes, and evidence of swinging joints, were called to his attention, however, he admitted that the track was not entirely safe. He stated that low points in the track would cause trains to lurch or sway when passing, but he did not think they would affect trains if the speed was not more than 25 miles per hour.

Road Foreman of Engines Ditton stated that he had ridden on engines in the territory in which the accident occurred and he had observed some indications of churning track, although it had been 30 days since he had made an inspection of that kind and his inspection was made some distance west of the point of accident.

General Car Foreman Beine stated that in company with Assistant Superintendent Smith, Division Engineer Wells, and Road Foreman of Engines Ditton he made a close inspection of the track and equipment soon after the accident occurred. They found a mark on top of the outside rail where the flange had passed over and dropped on the outside of the rail, the wheel having ridden on the ball of the rail for approximately 12 feet before it dropped off and then continued in a straight

line near the ends of the ties for about 22 feet. The ties were somewhat decayed and a few spikes were missing. The rail was somewhat curve worn, and at the point of derailment there were 1 or 2 new ties but the other ties were decayed. He then inspected the derailed equipment, including the trucks as they were picked up from the wreckage, but found no excessive flange wear or other defect which might have caused this derailment. Inspection of the body center plate on C. & N.W. car 10145, the tenth car in the train, showed it to be rusty but the side bearings did not show any indication of having been fouled or of not having the proper clearance; there was no indication of the center plate being bound.

General Car Foreman Beine and other officers of this railroad reported at first to their superior officers that the accident was caused by rigid trucks on C. & N.W. car 10145 failing to straighten up for the curve and complicated by irregularities in the track. A later inspection was made, however, of this car, a tank car, as well as of the other equipment involved, and they were unable to find any defective condition that in any way contributed to the cause of the accident.

Subsequent inspection of the track on both sides of the point of derailment revealed poor maintenance in many places. There were numerous ties with broken or rotten ends in which the spikes were loose and not in contact with the rail; many ties were loose in the roadbed, there being spaces beneath the ties as deep as one inch. Many tieplates were embedded into the upper surface of the ties and were not in contact with the base of the rail, some plates having but one spike and in several instances being so loose that they rattled when a man stepped on the tie. In at least one instance a bolt was missing from an angle bar and in others the nuts were missing from the angle bar bolts. Cross levels of the track and a check of the gauge for a distance of 75 rail lengths west of the point of accident were made more than 60 hours after the occurrence of the accident. There was some unevenness and the gauge generally was from 1/8 to 5/8 inch wide, there being two points at which it was 3/4 inch wide and one point at which it was tight. The curve carried a superelevation of 3 inches which is in accordance with the standards of this company; actual measurements showed it to be from 3 to 3 3/4 inches. Two rail lengths west of the point of accident there was a swinging joint in the south rail with enough free space under the tie to permit the entrance of a man's hand. Some rail anchors were not in place but had become detached from the base of the rail and were lying loose in the sand and ballast under-

neath the rail or in the center of the track. The rail on the north or outside of the curve was curve worn to an extent of from 15 to 20 percent.

The first mark of derailment, apparently a flange mark, was on top of the north rail, 12 feet from the leaving end, extending diagonally across toward the outside of the rail. There was a mark on the nut of an angle bar bolt at the joint, also on the ties, beyond which the track was torn up and destroyed.

#### Discussion

Examination of the derailed equipment failed to disclose any defect which could have contributed to the occurrence of the accident. The track, however, was found to be poorly maintained; ties were loose and broken, spikes were loose and missing, the rail was curve worn to an extent of 15 to 20 percent, angle bar nuts and one angle bar bolt were missing and swinging joints existed on both sides of the point of accident; at a point two rail lengths west of the point of derailment there was a swinging joint in the south rail and at about the same point the gauge was found to be one inch wide immediately after the accident; that this open gauge was not necessarily a result of the derailment but a chronic condition in the track in the vicinity of the point of accident is evidenced by gauge readings taken for 75 rail lengths west of the point of accident showing a variation as much as  $3/4$  inch wide. The derailed cars were loaded tank cars and the position of the wreckage, together with the marks on the north or outside rail of the curve, would indicate that the ninth car was the first to be derailed, and it is believed that movement of the train at maximum authorized speed over this defective track caused the car to rock sufficiently to result in its derailment. On other districts special consideration is given to trains of loaded tank cars, but on the district between Chadron and Long Pine no distinction is made as between tank car trains and ordinary freight trains.

#### Conclusion

It is believed that this accident was caused by defective track which had not been maintained in condition to provide for safe movement of trains at authorized speed.

Respectfully submitted,  
W. J. PATTERSON,  
Director.