

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN
ACCIDENT ON THE CHICAGO, ROCK ISLAND & PACIFIC RAILWAY
NEAR BILLINGS, OKLA., ON JULY 10, 1933.

August 22, 1933.

To the Commission:

On July 10, 1933, there was a derailment of a freight train on the Chicago, Rock Island & Pacific Railway near Billings, Okla., which resulted in the death of 1 employee and the injury of 1 employee.

Location and method of operation

This accident occurred on the Ponca City Branch of the Oklahoma-Southern Division, which extends between Billings Junction and Ponca City, Okla., a distance of 54.8 miles, and is a single-track line over which trains are operated by time table and train orders, no block-signal system being in use. The accident occurred at the entrance to a cut, approximately $2\frac{1}{2}$ miles west of Billings; approaching this point from the west, the track is tangent for a distance of 1,954 feet, followed by a 1° curve to the left 2,154 feet in length, the accident occurring on this curve at a point 587.5 feet from its western end. The grade at the point of accident is 0.50 percent descending for east-bound trains.

The track is laid with 80-pound rails, 30 feet in length, with an average of 18 treated hardwood ties to the rail length, fully tieplated, single-spiked, with four rail anchors to the rail length, and in the immediate vicinity of the point of accident the track is ballasted with shallow cinder and dirt ballast. With an average of one train daily in each direction, and the maximum speed for freight trains limited to 30 miles per hour on tangent track and 25 miles per hour on curves, the track is fairly well maintained.

The weather was clear and it was exceptionally hot at the time of the accident, which occurred about 6:05 p.m.

Description

East-bound third-class mixed train no. 712 consisted of 58 cars and a caboose, hauled by engine 1735, and was in charge of Conductor Elliott and Engineman Matson. This train departed from Billings Junction, 26 miles west of Billings, at 4 p.m., 1 hour late, and was approaching Billings when it was derailed while traveling at a speed estimated to have been between 20 and 25 miles per hour.

The engine, tender, and the first nine cars were derailed; the engine stopped on its left side against the north bank of the cut, practically parallel with the track, with its forward end

approximately 275 feet east of the point of derailment. The employee killed was the fireman and the employee injured was the engineman.

Summary of evidence

Head Brakeman Ward, who was riding on the right side of a tank car about 15 cars from the engine, said a speed of 15 or 20 miles per hour had been maintained between the last station stop and the point of accident, and at the time of the accident the train was traveling at a speed of about 20 miles per hour. His first knowledge of anything wrong was when he felt the brakes apply and upon looking ahead he saw the cars piling up; he immediately jumped off for his own safety. After assisting the engineman and fireman he looked around the wreckage, but the track was torn up and he found nothing that could have caused the accident.

Conductor Elliott was familiar with the speed restrictions in the territory in which the accident occurred and he said that at no time did the train exceed them, estimating the speed at the time of the accident to have been between 20 and 24 miles per hour. He was riding in the caboose and his first intimation of anything unusual was a sudden application of the brakes which threw him from his seat and brought the train to a stop within a distance of about 200 feet. On his way to the head end he watched the track and cars still remaining on the track for some defect that might have caused the accident but found nothing, and when he arrived at the overturned engine he closely inspected the wheels but noticed no defects. East of the first mark of derailment the north rail was overturned and at the point of derailment there was a sun kink in the south rail, the rail being about 3 inches out of line.

Rear Brakeman Shephard did not examine the wreckage but accompanied the injured engineman and fireman to Billings in an automobile, and during the trip the fireman informed him that the accident was caused by a sun kink, the worst the fireman had ever seen, and that it was in the shape of the letter "S".

Section Foreman Slusher stated he has had charge of the section on which the accident occurred since January 9 and that the section is 10 miles in length. Since taking charge he has received seven carloads of ballast and applied it where he thought it was most needed. He had never performed any work on the track in the immediate vicinity of the point of accident as he considered it safe for the traffic handled, but had filled in the track about four poles east of that point. He passed over the track where the accident occurred about 8:30 a.m., on the day of its occurrence and there was no indication of trouble at that time. He further stated that he had received instructions from time to time as to how to handle the track during hot weather in order to avoid sun kinks, the last circular having been received about 3 or 4 weeks prior to the accident, and he said he had loosened the bolts so as to allow the track to expand at different

places, as well as filling in with ballast, and that there still were a few joints which were open. As a whole, the joints in this vicinity were too tight, and were in that condition when he took charge of the section. The only sun kink occurring on his section prior to the date of the accident was during the latter part of May, at a point where he had been surfacing the track. He arrived at the scene of accident about 10 minutes after it occurred and observed a bad kink in the right or south rail where the derailment occurred, but the rail on the opposite side of the track did not kink at that point.

Division Engineer Richards arrived on the scene at 2:15 a.m., July 11, and a short time later he noticed a kinked rail just west of the ninth car in the train. As soon as it became daylight, accompanied by the roadmaster and section foreman, he walked eastward from the point of accident for a distance of about 1 mile, examining the track for expansion, tight bolts, etc., and observed that the rails were all running westward, or up the ascending grade, except in a sag about 1 mile east of the point of accident where the joints had some expansion, and while this inspection was being made the foreman called his attention to numerous places where the bolts had been loosened to allow for expansion. They then went west of the point of accident for a distance of about 3/4 mile and there they found a number of open joints, ranging from 1/16 to 1/8 inch, but he attributed this condition to the momentum of the train while it was descending the grade.

Statements made by Master Carpenter Helwig and Water Service Foreman Stearns were to the effect that they traveled over the branch line on which the accident occurred twice during the day of its occurrence, passing the point of derailment about 9 a.m. and again about 3 p.m., and on neither trip did they notice any unusual track conditions.

Trainmaster Hammack stated that he talked with the engineman and fireman of the train involved about 1½ hours after the accident occurred. The fireman said that he was looking ahead from his position on the inside of the curve when he observed a sun kink in the track about 1½ or 2 pole lengths distant. He immediately shouted this information to the engineman but did not know whether the engineman had time to apply the brakes before the engine encountered the kinked track. The trainmaster quoted the engineman as saying that as soon as the fireman shouted the warning he applied the brakes in emergency and at about the same time the engine began to roll, which was all he remembered until assisted from the cab after the accident.

Prior to the arrival of the Commission's inspectors at the scene of accident the track had been repaired, but the rail shown to them as having caused the accident was deflected a maximum of 4 inches and the opposite rail showed marks on the web its entire length, apparently made by wheels passing over it. Their examination of the track disclosed that there was material expansion in both rails and from the point of accident to a distance of

about 2,000 feet westward a large majority of the rail joints were tight. At several points the rail anchors were away from the ties from 1 to 3 inches, indicating that the rails were creeping westward, the south rail showing the more pronounced creeping. Gauge and level measurements taken for about $\frac{1}{2}$ mile west of the point of derailment showed only slight variations, but in the vicinity of the point of accident there were a number of scattered ties in the track that were very much depreciated, while there was evidence that the original ballast had been very shallow, and that the track through the cut was not much more than skeleton track.

According to the records kept by a federal government special weather observer at Enid, located about 26 miles from the point of accident, the maximum temperatures from June 21 to July 4, inclusive, ranged from 100° to 108° and from July 5 to July 10, inclusive, the maximum temperatures varied from 90° to 105° , with a temperature of 103° at 6 p.m., July 10.

Conclusions

This accident was caused by a sun-kinked rail.

From the statements of the train crew they had no knowledge of anything wrong until the brakes were applied in emergency either just before or at the time the derailment occurred. Statements made to other employees by the injured engineman and fireman were to the effect that the engineman was unaware of any disturbance in the track until his attention was called to it by the fireman; he immediately applied the brakes in emergency, the derailment occurring about the same time; the fireman did not see the kink in the track until it was only $1\frac{1}{2}$ or 2 poles distant and he immediately warned the engineman accordingly.

Investigation revealed that at the point of accident the south rail had been kinked out of line about 4 inches, but the north rail did not show a corresponding kink opposite this point, instead it bore marks on the web indicating that it turned over during the course of the derailment. The majority of the rail joints for some distance west of this point were tight, while at several places the rail anchors were away from the ties, the rails having been creeping towards the west, or upgrade. With the heat at the time and which had prevailed for more than two weeks, it is evident that these conditions caused the rail to kink, resulting in the derailment of the train.

The management had sent out instructions calling attention to the need during hot weather to take extra precautions to avoid sun-kinked rails and the section foreman had loosened many bolts and also filled in with ballast at points where he thought it was most needed. That these precautions were not adequate, however, is evident from what took place.

Respectfully submitted,

W. P. BORLAND
Director.