

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE CHICAGO, ROCK ISLAND & PACIFIC RAILWAY AT AGENDA, KANS., ON AUGUST 3, 1930.

September 17, 1930.

To the Commission.

On August 3, 1930, there was a derailment of a freight train on the Chicago, Rock Island & Pacific Railway at Agenda, Kans., which resulted in the death of three trespassers and the injury of two trespassers.

Location and method of operation

This accident occurred on the Clay Center Line of the Second District of the Kansas Division, which extends between Belleville and McFarland, Kans., a distance of 104.1 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 a point 591.3 feet west of the station, apparently at the west switch of a passing track. Approaching this point from the west, the track is tangent for more than 1 mile, this tangent extending for some distance beyond the point of accident. The grade is 0.5 per cent descending for eastbound trains. The switch involved is a facing-point switch for eastbound trains and the passing track is 3,205.4 feet in length, and parallels the main track on the south.

In the vicinity of the point of accident, the track is laid with 85-pound rails, 33 feet in length, with an average of about 20 ties to the rail-length, fully tie-plated and single-spiked. The track is ballasted with rock, gravel, and cinders, to a depth of about 12 inches, and is well maintained. The maximum speed permitted for freight trains is 35 miles per hour.

The weather was clear at the time of the accident, which occurred at 3.30 p.m., and it was very hot, the official temperature at Belleville, Kans., 16.3 miles west of Agenda, ranging from 103° to 106° between noon and 6 p.m.

### Description

Eastbound freight train No.994 consisted of 54 loaded cars, 5 empty cars, and a caboose, hauled by engine 2696, and was in charge of Conductor Baker and Engineman Doctor. This train departed from Belleville, its initial terminal, at 2.30 p.m., 1 hour and 30 minutes late, and was derailed when approaching Agenda while traveling at a speed estimated to have been between 30 and 35 miles per hour.

Fifteen cars near the rear end of the train were derailed, the first car to derail being the sixteenth car from the caboose; 14 of these cars were turned over and came to rest in a badly-damaged condition at various angles within a space of about 500 feet. The rear track of the first derailed car was found at the frog of the switch. The last derailed car, the second car from the caboose, remained upright at the switch, with only the front truck derailed.

### Summary of evidence

Engineman Doctor stated that approaching Agenda he noticed no irregularity in the track and his first intimation of anything wrong was when the air brakes applied in emergency, and at that time the train was traveling at a speed of between 30 and 35 miles per hour. He made an inspection of the cars and track immediately after the accident and found that under the last derailed car, the second car from the caboose, the track had kinked and was out of line about 12 inches, the ties having shifted with the rails, and that the gage side of the south rail, just west of the west passing-track switch, was burned blue. His inspection of the last car in the forward portion of his train that was not derailed disclosed no defects, nor did his inspection of the remaining equipment reveal that anything had been dragging.

Fireman Garland stated that he noticed nothing unusual until the air brakes applied in emergency, and he estimated the speed of the train at the time of the accident to have been between 30 and 35 miles per hour. He made no examination of the track or the equipment after the derailment.

Conductor Baker stated that when they stopped at Cuba, 6.4 miles west of Agenda, to pick up two cars, he went toward the head end of the train for some waybills, when the train started, he was about 10 car-lengths from the engine, and as the remaining portion of the train pulled by him he watched every car and saw nothing dragging or trailing under the cars. He was sitting at his desk in the caboose when the derailment occurred, and soon thereafter he made an inspection of the track and wreckage which led him to believe that the accident was caused by a sun kink. The rails just west of the caboose were out of line about 2 inches, but he thought the kink that caused the derailment was at the west switch of the passing track, two and one-half car-lengths farther to the west. Both switch points were battered, and he was of the opinion that the track kinked enough under the train to cause a car to split the switch, resulting in the derailment. Conductor Baker further stated that he found no marks on the track west of the passing-track switch which could have been made by derailed wheels or by something dragging. He estimated the speed of the train at the time of the accident to have been about 30 miles per hour.

Rear Brakeman McKinney stated that immediately after the accident he started back to flag, and on his way back he looked to see if there were any marks on the track that would indicate that something had been dragging, but he could find no marks of any kind.

Section Foreman Carpenter, who has charge of the section of track on which this accident occurred stated that he reached the scene of the accident about 15 minutes after its occurrence. His examination of the track disclosed that the first mark of derailment was on the ball of the north rail, west of the west passing-track switch, this mark extending on the next rail eastward. This rail, as well as the opposite rail, were out of line about 6 inches. The first mark he found on the ties was a flange mark 3 feet west of the switch point. Upon inspecting the track for a distance of about 10 pole-lengths west of the point of derailment, he could find no indication that anything had been dragging from the train. Section Foreman Carpenter said that he had been in charge of this section of track for about 6 years and during that time no sun kinks had occurred. He inspects the track daily, but recently had not patrolled the track on Sundays, and the last work that had been done in that vicinity was five

days previous to the time of the accident, when he gaged the switch points of the west passing-track switch and found them less than 1/2 inch wide. The rails in that vicinity had been creeping eastward about 1 inch during the day, but at night they reverted to their original position. He further stated that about 15 minutes prior to the time of the accident, he looked at the thermometer, at which time it showed the temperature as being 110°.

Roadmaster Sinsabaugh stated that the sub-grade in this locality is of gumbo soil ranging from 3 to 5 feet in depth, and that the track at the point of accident is imbedded in a heavy cinder and rock ballast, which he thought would have prevented its displacement by sun heat, although for several days prior to the date of the accident, the weather had been exceedingly hot and the track had gaged a little tight. He arrived at the scene of the accident about 8 hours after its occurrence, and at that time the track had been repaired preparatory to clearing the wreck. He found, however, that the ties for a distance of about 10 feet west of the west passing-track switch had been displaced and had slid from their original location about 6 inches. He also made an inspection of the derailed equipment, but found nothing that might have caused the accident. His first impression was that some defect on the train had caused the accident, but being unable to find any evidence of this, he was led to believe it was caused possibly by a sun kink. Roadmaster Sinsabaugh was off duty on the day of the accident, but Roadmaster Simpson rode over the track on the morning of the accident, at which time he noticed nothing unusual in the track condition.

The first indications of derailment were two short bent rails, which were the first two parallel rails west of the west passing-track switch. The north rail is 16 feet 8 inches in length and the south rail is 13 feet 5 inches in length. These rails were bent to the left, the deflection measured from 1/4 inch to 2 3/8 inches. East of these rails the track was torn up for a distance of about 400 feet. There was a light mark or indentation on the ball of the north rail, which extended its full length, but its cause could not be definitely determined, it might have been caused by the flange of a wheel or by some object dragging. The first tie mark was on the tie just west of the head block tie, 3 inches from the gage side of the north rail, which appeared to be a flange mark. The gage

plate, 6 inches in width, on the tie on the west switch tie, had been bent by wheels passing over it near the gage side of the north rail, and the switch points were bent and battered, showing clear evidence that something had come in contact with them. Measurements were taken of the gage and cross levels of the track, beginning at the second rail west of the west passing-track switch and continuing westward for a distance of 14 rail-lengths, and the gage was found to be a little tight but did not exceed 1/16 inch, while variation of the cross level measurements was also limited to 1/16 inch. The rails showed evidence of creeping eastward or downgrade an average of about 7 inches. Several broken rails were found in the wreckage, and the fragments of these were assembled and inspected for metallurgical defects, but none was found, and their breaking was considered a result of and not the cause of the derailment.

#### Conclusions

It is believed that this accident was caused by the buckling of the track under the train due to the intensive heat prevailing at the time.

Two rails located just west of the west passing-track switch were found deflected or bent to the left from 1/4 to 2 3/8 inches, and testimony of several witnesses was to the effect that the ties under the east ends of these rails had been displaced and shifted northward about 6 inches. Due to the fact that the engine crew noticed no irregularities in the track, and that 42 cars passed over the track safely, it is believed that the rail buckled under the train sufficiently to open one or both switch points enough to allow the forty-third car to split the switch, resulting in the derailment; the rear truck of this car was found at the frog of the passing track switch. The track was maintained in good condition, although the gage was found tight and the rails showed evidence of creeping eastward or down grade an average of about 7 inches. This creeping could easily have caused the track to become very tight in the vicinity of the switch, thus facilitating its buckling under the derailed train. It had been very hot in the vicinity of the accident, the official temperature ranging from 103° to 106° during the afternoon, while the section foreman who lived nearby stated that his thermometer showed 110° at the time of the accident.

The employees involved were experienced men, and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

J.P. Berland,

Director.