

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
METZ, IOWA, ON JULY 2, 1929.

October 16, 1929.

To the Commission:

On July 2, 1929, there was a derailment of a passenger train on the Chicago, Rock Island & Pacific Railway at Metz, Iowa, which resulted in the injury of 17 passengers and 1 employee off duty.

Location and method of operation

This accident occurred on Sub-division 4 of the Iowa Division, extending between Silvis, Ill., and Valley Junction, Iowa, a distance of 188.9 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by time-table, train orders, and an automatic block-signal and train-control system. There is a passing track approximately 3,000 feet in length which parallels the main track on the north, and there is a depot track of the same length on the south side of the main track, the two depot-track switches being located about 100 feet east of the respective passing-track switches. The initial point of derailment was 23.5 feet west of the point of frog of the east passing-track switch. Approaching this point from the east the track is tangent for a distance of 4,000 feet, while the grade for westbound trains is 0.25 per cent descending.

The track is laid with 100-pound rail, 33 feet in length, with 20 treated ties to the rail-length, and is ballasted with gravel to a depth of $1\frac{1}{2}$ feet. The track is well maintained.

The weather was clear at the time of the accident which occurred at 2.45 a.m.

Description

Westbound passenger train No. 13 consisted of two refrigerator cars, one express car, one combination baggage and smoking car, one coach and five Pullman sleeping cars, in the order named, hauled by engine 4007, and was in charge of Conductor Bolster and Engineman Phillips. The cars were of all-steel construction with the exception of the first and second cars, which were of steel under-

frame construction. This train left Newton, 6 miles east of Metz, at 2.35 a.m., five minutes late, according to the train sheet, and was derailed at Metz while traveling at a speed estimated to have been about 50 miles per hour.

The entire train was derailed with the exception of the engine, the first car and the forward truck of the second car. The rear truck of the second car was derailed to the north while the rest of the derailed equipment came to rest on the south side of and parallel with the main track, with the rear end of the train 3,017 feet west of the initial point of derailment, the fifth and sixth cars were on their left sides, while the others were leaning at various angles. All of the cars remained coupled together and were only slightly damaged.

Summary of evidence

Engineman Phillips stated that his train was moving at a speed of about 50 miles per hour and that the first knowledge he had of anything wrong was when he heard three blasts of the air signal whistle at the west end of Metz. When the third blast did not stop he looked back, saw fire coming from under the second car, and applied the air brakes immediately, but found that the brake-pipe pressure had already been exhausted. The train came to a stop without shock or any indication on the engine that the train was derailed. He was working a light throttle and did not shut off the engine until after the train stopped. Engineman Phillips then lighted his torch and walked back to ascertain the trouble, thinking possibly that the train had parted, and found the first car and the forward truck of the second car on the rails and the remainder of the train derailed. His inspection of the second car disclosed what appeared to be a loose wheel on the left side of the front axle of the rear truck, a black mark on the axle looked as though the wheel had slipped over about half an inch, and oil had come through the wheel, indicating to him that the wheel had been loose for some time. He looked at the wheel on the opposite side but saw nothing out of the ordinary. Engineman Phillips further stated that the air brakes were inspected by a car inspector before leaving Rock Island, the initial terminal, and the inspector reported them to be working on all of the 10 cars, the head brakeman also looked over the train at West Liberty, 107.2 miles from Metz, while Engineman Phillips had looked back along the train on the curve east of Metz, without noticing anything wrong. Six stops were made en route, and between Newton and Metz three air-brake applications were made, the air brakes worked properly at all times and Engineman Phillips said he had no difficulty in

handling the train. The statements of Fireman Gotthardt practically corroborated those of the engineman.

Conductor Bolster stated that after leaving Newton he was riding in the rear seat of the combination car, the fourth car from the engine, and the first warning he had of any trouble was when he heard gravel flying under the car. He started to pull the air but the valve was in the baggage end of the car so he gave two blasts of the air whistle signal. It was his opinion that the speed at the time of the accident was 45 or 50 miles per hour. After the accident he examined the rear truck of the second car and found indications of a loose wheel, and that oil had seeped through the wheel on the axle, the opposite wheel appeared to have a worn flange. He was of the opinion that the wheel was not loose when they left Rock Island and did not believe that it had been loose for any length of time. Conductor Bolster also stated that the usual inspection had been made at Rock Island by the car inspectors.

Head Brakeman Teeters stated that he inspected the train at West Liberty and found everything in good condition. Approaching Metz he was riding in the rear end of the combination car, he heard rocks flying and saw the conductor reach for the emergency valve. There was no emergency valve, however, in that part of the car, and Brakeman Teeters ran toward the next car with the intention of applying the brakes from that car. After the accident he was busy assisting the passengers and made no inspection of the derailed equipment.

Rear Brakeman Small stated that he was passing between the sleeping car and the coach, going toward the head end of the train to get information from the conductor about the steam heat valve, when the accident occurred. The sleeping car was swaying considerably and he thought something was wrong, but he had only made a few trips on passenger trains and was unfamiliar with the conditions. After the accident he got his flagging equipment and went back to flag, and on his way back he noticed a wheel mark about 5 or 6 inches ~~from the track frog~~ ~~on the north~~ side of the track, about 4 or 5 ties west of the frog of the east passing-track switch, but he did not observe the condition of the track immediately behind the train.

General Car Foreman Stephans stated that he arrived at the scene of the accident about four hours after its occurrence and made an inspection of the equipment. He found that the forward wheel on the left side of the rear truck of the second car had slipped outward on the axle

about 7/8 inch, but it did not appear to have turned very much on the axle. The pedestals were broken on the right side and the spring was missing, while the truck frame on the right side was sprung downward. With the exception of the loose wheel all of the damage was apparently done after the derailment. The wheel showed marks of oil having seeped through, but did not indicate that it had been loose very long. There was no indication of hot wheels or a sprung axle. He further stated that he noticed the flange of the opposite wheel was considerably worn. General Car Foreman Stephens also stated that the car had passed over the switch and over the frog probably 7 or 8 ties before any wheel marks showed on the ties. Both wheels appeared to be on the ties nearly opposite each other showing that one pair left the track about the same time, continued down to the west depot track switch, and then from there on westward it appeared there were two pairs of wheels off the track. The wheel marks were on the north side of the rails and continued on that side up to the last switch, where they appeared on the other side.

General Superintendent Breheny stated that he thought the wheel in question had slipped outward at least 3/4 inch. There was daylight side-bearing clearance on the front truck but on account of the rear truck being derailed he was unable to determine the clearance on this truck. He found the first marks of derailment about 20 or 25 feet west of the point of frog of the east passing track switch. There was one flange mark visible from that point to the west depot-track switch, and from this latter point to the west passing-track switch there were two flange marks. General Superintendent Breheny stated that he was convinced there were not involved any sharp or worn flanges, but that the lone wheel had caused the accident.

Car Inspector Stover stated that at Rock Island he inspected the first four cars in train No. 13, which included the car involved, and found nothing wrong with them. In his inspection for loose wheels he flashed a light against the opposite wheel from where he was standing. The statements of Car Inspectors Hudson and Johnson, who inspected the remaining cars in train No. 13, brought out nothing additional of importance.

The car involved, I.C. refrigerator car 4817, is a 30,000-pound steel-underframe car, with equalizer trucks equipped with 33-inch steel wheels, the journals are 5 inches by 9 inches. The car was designed for passenger-train service. The forward wheel on the left side of the

rear truck, which was found to be loose, was marked on the hub "U.P. 11714", and on the plate "713-2500 B 4016." Measurements of the gauge of the wheels after the accident showed this wheel to have moved outward a distance of $1 \frac{1}{16}$ inches and it had turned on the axle one-fourth of a turn. When placed in the wheel press this wheel started to move before pressure registered on the gauge and a pressure of only 10 tons was required to force the wheel entirely from the axle. The diameter of the wheel was 31 inches and thickness of the tread $1 \frac{1}{2}$ inches. The full length of the wheel fit was found to be coated with oil. The mate wheel was $30 \frac{7}{8}$ inches in diameter, its flange was worn so that it would take a one-inch gauge at several points but it would not take the $\frac{15}{16}$ inch gauge at any point. It had a vertical flange $\frac{13}{16}$ inch high. The thickness of the tread was $1 \frac{1}{2}$ inches and the metal required to be removed to restore full flange contour was $\frac{5}{16}$ inch. A pressure of 100 tons was required to force this wheel from the axle. There was no evidence of any wheels on this car having been hot.

Conclusions

This accident was caused by a loose wheel.

The wheel had moved outward on its axle a distance of approximately 1 inch and had made about one-fourth of a turn on its axle. It also appeared that there was oil in the wheel fit, and when placed in a wheel press it took very little pressure to force the wheel off the axle. The investigation disclosed that the car on which the loose wheel was found was inspected in the usual manner at Rock Island, the last inspection point, and no defects were found. The car traveled a distance of 147 miles after leaving Rock Island before the accident occurred, passing over numerous switches and railroad crossings, which would seem to indicate that the wheel had not been loose for any great length of time.

The employees involved were experienced men with the exception of the rear brakeman, who had about 9 months' experience in train service. At the time of the accident the crew had been on duty $4 \frac{1}{2}$ hours after having been off duty more than 18 hours.

Respectfully submitted,

W. P. BORLAND,

Director.