

## INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY AT BELL BUCKLE, TENN., ON APRIL 26, 1930.

May 14, 1930.

To the Commission:

On April 26, 1930, there was a derailment of a freight train on the Nashville, Chattanooga & St. Louis Railway at Bell Buckle, Tenn., which resulted in the death of two trespassers.

#### Location and method of operation

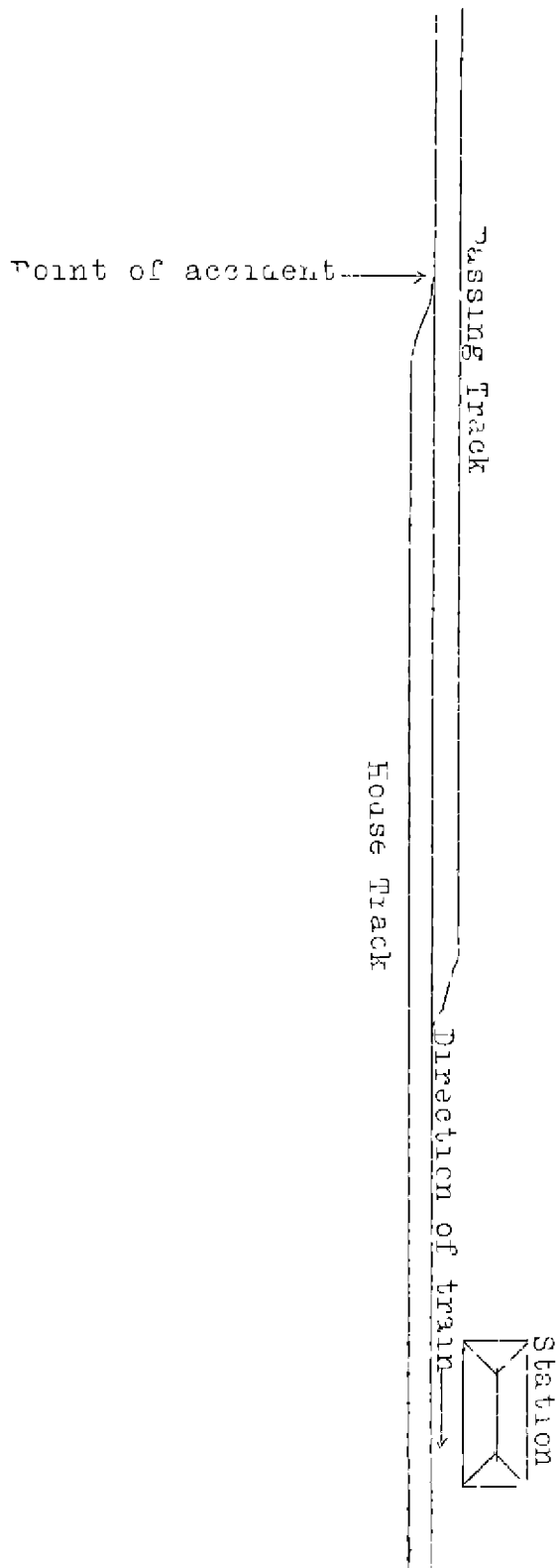
This accident occurred on the Chattanooga Division, which extends between Chattanooga and Nashville, Tenn., a distance of 151.7 miles, and is a single-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The accident occurred at the north switch of the house track at Bell Buckle, this track parallels the main track on the west, and the north switch is located 908 feet north of the station. Approaching this point from the north, the track is tangent for a distance of approximately 3 miles to the point of accident, and for some distance beyond that point. The grade at the point of accident is 0.18 per cent descending for southbound trains.

The track is laid with 90-pound rails, 33 feet in length, with an average of 18 ties to the rail-length, fully tie-plated, single-spiked, and is equipped with anti-rail creepers; it is ballasted with limestone to a depth of about 24 inches. The track is well maintained.

The weather was clear at the time of the accident, which occurred about 1.15 p.m.

#### Description

Southbound freight train No. 41 consisted of 48 cars and a caboose, hauled by engine 569, and was in charge of Conductor Riggles and Engineman McCollum. This train passed Murfreesboro, 19.03 miles north of Bell Buckle, at 12.34 p.m., 9 hours and 15 minutes late, and was derailed at Bell Buckle while traveling at an estimated speed of about 25 miles per hour.



Inv. No. 1633  
Nashville, Chattanooga & St. Louis Ry.  
Bell Buckle, Tenn.  
April 26, 1970

The thirteenth to the twenty-fourth cars, inclusive, were derailed. At the time of the accident, there were three cars standing on the house track near its northern end, and the thirteenth car in the train collided with these cars, destroying one of them. The fourteenth car, with its rear truck derailed, came to a stop 300 feet south of the initial point of derailment, while the remaining derailed cars came to rest in various positions, with some of them overturned, and seven of them badly damaged.

#### Summary of evidence

Engineman McCollum stated that before leaving Nashville, an air-brake test was made, after which the inspector reported that the brakes were in proper working order. There was nothing unusual about the movement of the train until it reached the north house-track switch at Bell Buckle. While approaching this point, he reduced speed from 33 or 40 miles per hour to about 20 miles per hour, and approximately one minute after he had released the brakes they applied in emergency, he immediately placed the brake-valve handle in lap position and closed the throttle, and as soon as the train came to a stop, he looked back and noticed the derailed equipment. He then went back to the scene of accident, but did not examine the track or cars to ascertain the cause of the accident. Fireman Burns concurred in the statements made by Engineman McCollum.

Conductor Riggles stated that he rode on the engine from Nashville to Lavergne, but from the latter point he rode in the cupola of the caboose. The brakes were applied approaching Bell Buckle, reducing the speed from 40 miles per hour to about 25 miles per hour; they were then released and about one-half minute afterwards he felt them apply in emergency and upon looking ahead he saw the cars derailing. He examined the track in the vicinity of the point of derailment and found marks on the rails and ties, 4 or 5 feet north of the north house-track switch, which appeared to have been caused by something dragging, and a truck under what had been the 13th car in the train, W.C.L. tank car 1072, was badly damaged. These conditions caused him to form the opinion that this truck failed just before reaching the switch, and that the car was derailed when it encountered the switch.

Head Brakeman Stovall stated that when the train stopped at Lavergne, 35 miles from Bell Buckle, he went back along the engineman's side of the train about 12 car-lengths, crossed over to the fireman's side and returned to the engine, he did not think that he went back as far as the rear end of the 13th car. After the accident he

went back and noticed what had occurred, but made no examination to determine the cause of the accident.

Flagman Jordan agreed with the statements of the conductor as to what transpired up to the time of the accident. He immediately went back to flag for a distance of approximately 1 mile, and on his way he looked for marks on the track but did not discover anything to indicate that something had been dragging. When he returned to the point of accident, he noticed a flange mark on a tie on the east side of the track about 3 feet from the heel of the switch point; he made no further inspection of the equipment or track.

Car Inspector Brown stated that he inspected the west side of the train which brought W.C.L. tank car 1072 into Nashville, at 7 a.m., and also inspected the west side of train No. 41 when it departed on the trip in which the accident occurred, but took no exception to W.C.L. 1072. He said these inspections were Class 1 inspections, which consisted of looking at all bolts, nuts, arch bars, and other truck equipment, and he was positive that the nuts on the oil box bolts were in place and tight on this car at the time he inspected it.

Wreck Foreman Whitaker stated that when he arrived at the scene of accident, all of the cars which remained on the track had been removed. While clearing away the wreckage he found a truck under W.C.L. 1072 in a collapsed condition, with the box bolts and the oil box missing. This truck was then under the north end of the car, but from the position in which the car was lying and the nature of the accident, it was his opinion that the car had been reversed after having been derailed, and that the broken truck was the leading truck in the direction in which the car was moving in the train, also that a wheel which was loosened from the box, due to the missing box bolts, had been the leading wheel on the west side of this track; this pair of wheels was detached from the truck frame. He inspected the track and noticed marks on the outside of the ball of the west rail, two or three rail-lengths north of the initial point of derailment, which indicated that something had been dragging. In his opinion, there was nothing about track conditions that contributed to the accident, saying that it was caused by the arch bar on this truck dropping down on account of the missing bolts.

Track Supervisor Mahoney stated that he arrived at the point of accident at 4.15 p.m., and made an investigation to determine its cause. He noticed that something had caught on the stock rail on the west side of the

track,  $12\frac{1}{2}$  feet from the point of switch. this mark was about  $\frac{3}{4}$  inch below the top, and on the outside, of the ball of the rail. From this point to a point about 10 feet farther south, the stock rail was canted inward about 1 inch. At a point  $26\frac{1}{2}$  feet from the point of switch, there was a mark on top of the stock rail which ran diagonally across the rail for a distance of  $12\frac{1}{2}$  feet, and from this point southward there were well-defined wheel marks on the ties. An inspection of the switch disclosed that it was in good condition, with the exception of some parts that were damaged as a result of the derailment. Measurements taken of the elevation at the point of accident showed that it was  $\frac{1}{4}$  inch low on the east side, and for a distance of 300 feet northward from the switch there was only a slight variation either in gauge or surface. Mr. Mahoney's further examination of the track showed that there were marks on the outside and a little below the running surface of the west rail which indicated that something had been dragging; these marks extended northward for a distance of  $6\frac{3}{4}$  miles. At the south house-track switch at Forestville, a trailing-point switch located about  $5\frac{1}{4}$  miles north of the point of accident, there were marks on the east side of the stock rail which showed that something had climbed over it at a point  $12\frac{1}{2}$  feet north of the switch point. At the north switch of this same track at Forestville, which is a facing-point turnout to the right, the same marks were found on the outside of the west rail, indicating that something had cleared the stock rail. While the derailed equipment was being removed, he saw the broken truck under W.C.L. tank car 1072, with bolts and an oil box missing. It appeared that the position of the car had been reversed in the wreck, as from the marking on the track it was apparent that the broken part of the truck had been on the west side of the track. He considered that the track was in good condition, and was certain that it did not cause or contribute in any way to the occurrence of the accident.

An inspection made by the Commission's inspectors disclosed that the marks on the track were practically the same as those described by Supervisor Mahoney. The first mark on the east side of the track was a flange mark on a tie, 30 feet 4 inches south of the switch point and 9 inches from the gauge side of the rail. The marks on the outside of the ball of the west rail were not continuous and at different points they were several feet apart. They showed signs of something having rubbed lightly against the rail, except at the switch, where heavy indentations were made. The truck in question was the leading truck under W.C.L. 1072 and was of the arch-bar type. The dimensions of the arch bar were  $1\frac{3}{8}$  x  $4\frac{1}{2}$  inches, the tie bar was  $\frac{5}{8}$  x  $4\frac{1}{2}$  inches, and the top bar was  $1\frac{1}{2}$  x  $4\frac{1}{2}$  inches, with bolts  $1\frac{1}{8}$  inches in diameter. The right

front oil box and bolts were missing and the wheel was detached. The bottom of the tie bar and the inside edges of both bars showed longitudinal abrasions and also burned slivers of metal. The three bars on this side were bent upward and backward, but were not broken. There were two heavy vertical abrasions on the upturned portion of the bottom tie bar and the bolt holes were elongated, measuring  $1 \frac{9}{16}$  inches. On this truck, and also on the other truck under this car, the nuts were secured on the box bolts, but the bolts were not tight, and the nuts rotating with the bolts had countersunk in the bottom of the tie bars to about one-half their thickness, however, this condition did not appear on the car where the bolts were missing. In some instances the box bolt holes in the bottom tie bars were elongated to the extent that they could be seen at the outside edges of the nuts. The brake beams remained intact, except the end of the beam where the oil box was missing; here the shoe was missing, and a part of the brake head broken.

#### Conclusions

This accident apparently was caused by the failure of an arch-car truck under the 13th car in the train.

According to the evidence, the members of the crew had no knowledge of anything wrong until the train was derailed. An inspection of the track disclosed that something had been dragging which had scored the outside surface of the ball of the west rail at intervals for a distance of  $6 \frac{3}{4}$  miles. An examination of the forward truck of W.C.L. tank car 1072, which was loaded with oil, showed that there were abrasions on the bottom of the tie bar and the inside edges of both the tie bar and arch bar on the west side of the leading pair of wheels, and the metal was slivered and burned, while the oil box and box bolts were missing. One of these bolts was found while clearing the wreckage, and on it was a nut, secured by corrosion, but the bolt had been sheared off  $1 \frac{3}{4}$  inches from the top. Car Inspector Brown stated that he closely inspected the west side of the train that handled this car into Nashville, and was certain that there were nuts on all of the oil-box bolts and they were firmly seated. From all of the evidence, however, it would appear that the west side of this truck, at its forward end, became defective in some manner which permitted the arch bar to drop down, and when it encountered the stock rail at the north house-track switch it caused the truck to derail, resulting in the final derailment of the train.

The employces 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,

W. P. BORLAND,

Director.