

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE
LINE OF THE DELAWARE & HUDSON COMPANY NEAR PROMPTON,
PA., ON JUNE 19, 1923.

July 21, 1923.

To the Commission:

On June 19, 1923, there was a derailment of a passenger train on the line of the Delaware & Hudson Company near Prompton, Pa., resulting in the death of one employee and the injury of one employee.

Location and method of operation.

This accident occurred on the Honesdale Branch of the Pennsylvania Division, extending between Lockout Junction and Honesdale, Pa., a distance of 26.68 miles, 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 2,183 feet south of the station at Prompton, approaching this point from the north the track is composed of numerous sharp curves and short tangents, followed by an 11-degree 45-minute curve to the left 458 feet in length, the accident occurring on this curve at a point 249 feet from its northern end. The grade in this vicinity varies from 0.57 to 1.20 per cent descending for southbound trains, being 0.75 per cent at the point of derailment. The track is laid with 80-pound rails, 30 feet in length, 15 to 18 fir and pine ties to the rail-length, single-spiked, tie-plated, and ballasted with cinders. The track is well maintained. On the west side of the track in the immediate vicinity of the point of derailment there is a ragged rock ledge varying in height from 3 to 25 feet, while on the east side of the track there is an embankment, 40 to 45 feet in depth. The weather was clear at the time of the accident, which occurred at about 11.05 a. m.

Description.

Southbound passenger train No. 580 consisted of one baggage car, one smoking car, and one coach, all of wooden construction, hauled by engine 439, and was in charge of Conductor Ward and Engineman Arnold. This train left Fairview, 12.04 miles from Prompton, at 10.35 a. m., according to the train sheet, 11 minutes late, left Prompton, the last open office, at about 11.02 a. m., five minutes late, and after having proceeded almost a half mile was derailed while traveling at a speed estimated to have been 20 miles an hour.

Engine 439, of the 4-4-0 double-cab type, was derailed to the right, and came to rest leaning against the rock ledge, badly damaged, with its head end 171 feet from the initial point of derailment. The tender and first car were also derailed, as was the forward truck of the second car, however, this equipment was only slightly damaged. The employee killed was the engineman.

Summary of evidence.

After leaving Prompton, steam was shut off and the train permitted to drift, the first knowledge members of the crew having of anything wrong being when the accident occurred, at which time they estimated the speed to have been about 20 miles an hour. Fireman McDonnell, who was not the regular fireman, stated he felt the engine leaving the track while on the curve and he immediately jumped; he had noticed nothing unusual en route. Conductor Ward stated he had worked with Engineman Arnold for at least 15 years, and although they had been in the habit of discussing the condition of engines between themselves, he had no recollection of the engineman having commented unfavorably concerning engine 439, and they both considered this particular engine to be all right. Baggage-master Fox stated that immediately after the accident he observed wheel marks on the ties, the first mark appearing on the gauge side of the east rail, and just south of this point marks appeared on the ties on the outside of the west rail, however, he did not notice any marks on the rails.

Fireman Smith, who is regularly assigned to this run but was off duty at the time of the accident, stated the engine had been riding hard and crowding the rail, as if out of tram, and that Engineman Arnold informed him the engine was out of tram, that he thought the engineman made out a report to this effect when the engine was held for a washout, and that he heard the engineman speak about it to General Roundhouse Foreman Wolliver. However, he admitted he did not read the written report, and never personally saw any indication that the engine was out of tram, and an examination of the locomotive inspection report of this date disclosed that nothing to this effect was reported. When the engine was returned to service after the washout it rode much better, but the engineman told him it was no better so far as being in tram was concerned.

Fuel Supervisor Foster, who is a qualified engineman, stated he recently rode engine 439 and at that time there was some lateral motion in the driving wheels, and he made an informal report of this condition to Master Mechanic Brennan, saying the lateral motion in the driving wheels needed attention and that the No. 3 driving wheel flange was cutting slightly; also stated that from the riding qualities there was no indication that the engine was out

of tram, nor did he hear Engineman Arnold remark of any such condition. Engine Inspector Hosie also stated that about the 4th or 5th of June, Engineman Arnold informed him verbally that he thought engine 439 was out of tram, although no formal report was made of this condition. He also stated that he gave engine 439 a thorough inspection every night, and during the course of his inspection on the night prior to the accident no indication was found of a loose wheel on the engine truck.

Superintendent Fairhead said he found a mark on the left rail which looked as if something had been dragged across the top of the rail, while opposite this point on the right rail there was a slight burr, this being followed by a flange mark on the top of the rail about 18 inches in length, extending diagonally toward the outside edge of the rail. Just south of where this mark left the rail there was a wheel-flange mark on a spike head. The ties bore wheel-flange marks beginning about three ties in advance of the first mark on the left rail and two ties in advance of the marked spike on the right rail; these flange marks extended toward the right until they went off the ends of the ties. The right rail was partly overturned, but in view of the fact that it was overhanging the marked spike, Superintendent Fairhead considered that the overturning of the rail was a result of the accident and not its cause. His statements as to marks found on the track were substantiated by Division Engineer Rogers. Superintendent Fairhead also said he examined the engine truck while the work of clearing the wreckage was in progress, and found a loose wheel, apparently the right rear wheel, forced in on the axle between 3 and 4 inches, and was of the opinion the accident was caused by a loose wheel.

Master Mechanic Brennan said the wheel flanges on engine 439 were in practically perfect condition and inspection of the broken parts of the engine truck disclosed the breaks to be new, and there was no indication of any flaw in the metal. The rear pair of engine-truck wheels was found under the ash pan, with the right rear wheel loose, having been moved inward about 3 1/2 inches. Master Mechanic Brennan further stated that on June 14 the driving wheel centers were trammed and measured 102 inches on each side, while after the accident the left side measured 102 1/8 inches and the right side 101 15/16 inches, and he did not think that this condition would have caused the accident if it existed at the time the accident occurred.

General Roundhouse Foreman Wolliver stated that it had been the practice of Engineman Arnold not only carefully to inspect his engine and make proper report of necessary repairs, but in the event of anything particularly wrong to call it to his attention personally. On June 14 he told Engineman Arnold he was going to hold the engine for a washout

and to tell him about anything he wanted to have done; they discussed the condition of the engine, and the engineman called attention to lateral motion in the back driving wheels and the manner in which he wanted the wedges adjusted, but said nothing about the engine being out of tram. General Roundhouse Foreman Wolliver made an inspection of the engine subsequent to the accident, measuring the forward driving wheels in four positions, with the right main pin on the front center, as follows: front center, 52 34/32 inches, tire to tire, back center, 52 25/32 inches, top quarter, 52 25/32 inches, bottom quarter, 52 26/32 inches. Rear driving wheels, with pin on front center, back quarter, 52 29/32 inches; front center, 52 28/32 inches, top quarter, 52 27/32 inches, bottom center, 52 23/32 inches. Forward engine truck wheels, gauge from four points: 53 13/32 inches, and 53 11/32 inches; second movement 53 6/32 inches and 53 10/32 inches. Nothing was found wrong with the forward engine-truck wheels, but one of the rear wheels on this truck was loose; the condition of the truck and the absence of identification marks, however, made it impossible for him to determine whether it was the right or left wheel.

A thorough inspection of the track showed it to be in good condition and well maintained, the gauge, alignment, surface, and super-elevation being practically standard, and the roadbed good, nothing was discovered in this connection which could have contributed to the accident. At the point of derailment there were no marks on ties or rails to indicate the driving wheels had been derailed before they came upon the track that was torn up by the engine truck.

In an effort to determine the cause for the engine truck wheel becoming loose, this wheel was forced off, and then on the axle, with a power press. The pressure gauge on the press was tested and showed correct records from 0 to 250 tons. In pressing the wheel off the axle, no pressure registered on the gauge while restoring the wheel to its original position on the axle, but in forcing it off the end of the axle the gauge showed a variable pressure, 10 tons being the maximum. In replacing the wheel, owing to the bent condition of the axle, the wheel was started on by the use of a 7 or 8-pound sledge hammer, and when the power press was used the gauge pressure varied, the maximum being 65 tons, until the wheel reached a point 2 inches from its original position, and then dropped to zero and remained there while the wheel was being pressed to its original position. The wheel fit of the axle was bright and smooth, except at intervals, varying from 1/4 to 3/4 inch around the axle, then more rough places about 1/8 inch in width lengthwise of the axle that could have been caused by the wheel being pressed off. The inside of the wheel bore was dull in color, and there were scratch marks running lengthwise that were evidently made by the rough places on the wheel fit of the axle when pressed off, but

there was no indication that the wheel fit was tight enough at any time to require a standard pressure of 68 tons or more to press the wheel on.

Conclusions.

This accident was caused by a loose wheel.

Apparently the wheel became loose en route, probably after leaving Prompton, but on account of the broken condition of the engine truck, and the absence of identification marks, it could not be determined definitely whether or not it was the right or left wheel which became loose. Although there was testimony to the effect that Engineman Arnold had stated engine 439 was out of tram, it was also developed that he was very thorough and painstaking in inspecting his engine, and the engine work reports failed to disclose any report made by him in this connection, although these reports did indicate that from the nature of the repairs itemized the engine must have ridden noticeably hard, requiring the use of 1/4-inch liners, and Engineman Arnold may have attributed this condition to the engine being out of tram. However, examination made of this engine subsequent to the derailment disclosed that the engine was not out of tram, and the wheel flanges showed no material sign of wear.

All of the employees involved were experienced men, Engineman Arnold having been in the service of this road since December, 1888, with a clear record. At the time of the accident these employees had been on duty less than $5\frac{1}{2}$ hours, after having been off duty more than $10\frac{3}{4}$ hours.

Respectfully submitted,

W. P. BORLAND,

Director.