

1947

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN
ACCIDENT ON THE MISSOURI PACIFIC RAILROAD AT ADRIAN, MO.,
ON DECEMBER 2, 1934.

January 17, 1935.

To the Commission:

On December 2, 1934, there was a derailment of a freight train on the Missouri Pacific Railroad at Adrian, Mo., which resulted in the death of 1 employee and the injury of 1 employee.

Location and method of operation

This accident occurred on the Pleasant Hill District of the Joplin Division, which extends between Carthage and Pleasant Hill, Mo., a distance of 114.87 miles. In the vicinity of the point of accident this 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 near the south house-track switch, this switch being located 669 feet south of the station at Adrian. Approaching this point from the south, the track is tangent for more than 1 mile, this tangent extending beyond the station. The grade for north-bound trains is descending for approximately one mile and then ascending for approximately 3000 feet to the point of accident and being 1 percent ascending at the point of accident.

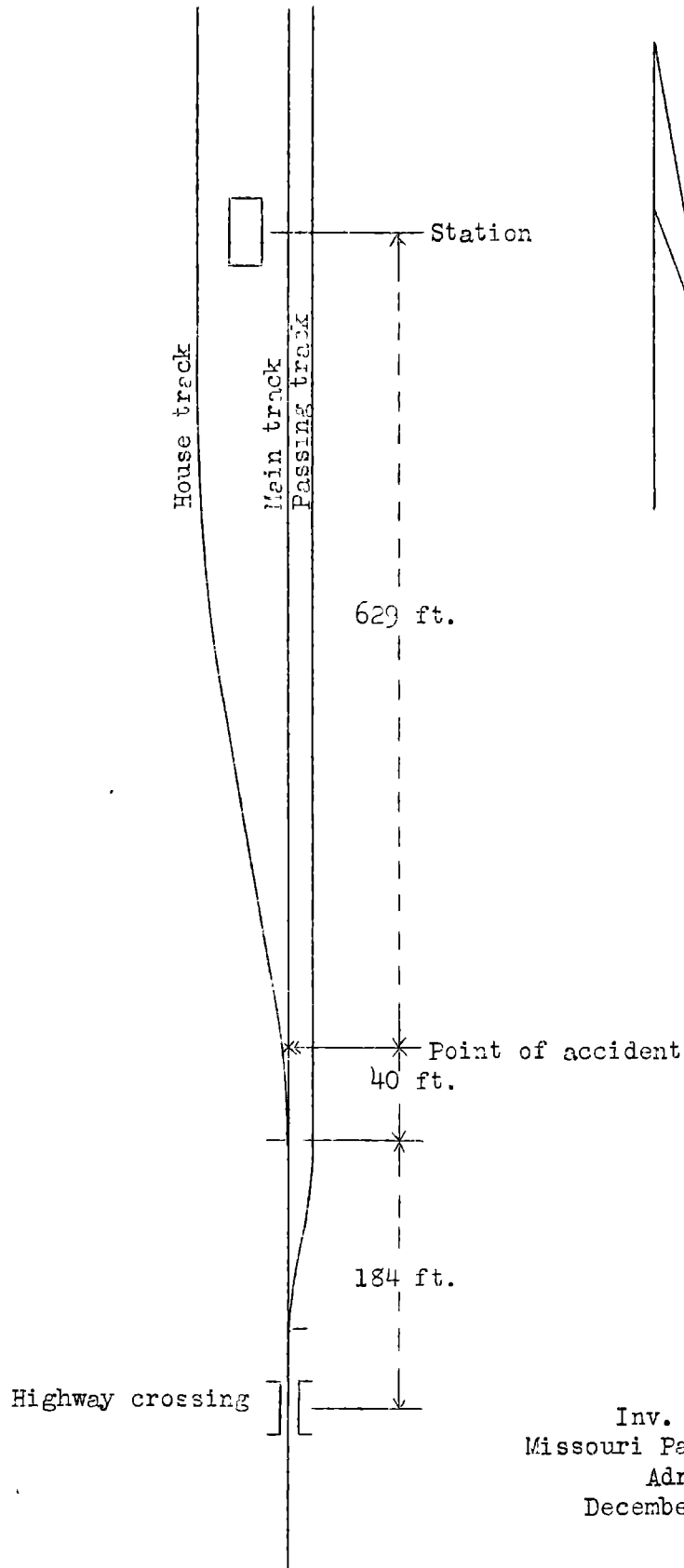
The track is laid with 85-pound rails, 33 feet in length, with 20 treated ties to the rail length, fully tieplated, single-spiked, and ballasted with chatt to a depth of 6 or 8 inches. The speed limit for freight trains in this territory is 45 miles per hour.

The weather was clear at the time of the accident, which occurred at 8:16 a.m.

Description

Train No. 264, a north-bound freight train, consisted of 34 cars and a caboose, hauled by engine 1456, and was in charge of Engineman Grimes and Conductor Botts. This train passed Butler, the last open office, 9.51 miles south of Adrian, at 7:52 a.m., according to the train sheet, 2 hours and 42 minutes late,

• Pleasant Hill, Mo.
28.34 miles
• Adrian
* Point of accident
86.53 miles
• Carthage, Mo.



Inv. No. 1947
Missouri Pacific Railroad
Adrian, Mo.
December 2, 1934

and was derailed at Adrian while traveling at an estimated speed of 35 miles per hour.

The rear car and caboose were derailed and broke loose from the head portion of the train, the car stopping on its side parallel with the main track 300 feet north of the house-track switch, while the caboose stopped on its side at a right angle to the track with the roof of the cupola in contact with the rear end of the car. The employee killed was the flagman and the employee injured was the conductor.

Summary of evidence

Engineman Grimes stated that the train was traveling at a speed of 35 miles per hour when he felt the air brakes being applied in emergency, the engine then being about 25 or 30 car lengths north of the station, and the train traveled about 30 or 35 car lengths before stopping. On going back to the scene of the accident he found a broken arch bar on the derailed car, and inspection of the track disclosed marks on the highway crossing south of the house-track switch, indicating that something had been dragging.

Conductor Botts stated that at Rich Hill, 21.38 miles from Adrian, a stop was made to set out three cars, and Flagman Barnett inspected the train and informed him on leaving that point that he found a warm journal box, which he attended to. Approaching Adrian, Conductor Botts got down from the cupola of the caboose, opened the side door and looked out toward the station, and as the car ahead passed over the frog of the house-track switch he saw fire flying, but the caboose turned over before he could call to the flagman to apply the air brakes. After the accident he found a broken arch bar on what appeared to be the lead truck of MP gondola 69263, the car ahead of the caboose.

Trainmaster Ayler and Division Engineer Smith made an inspection of the track and on a public highway crossing 184 feet south of the house-track switch they found a mark indicating that something had struck the crossing plank on the outside of the west rail and also had marked the ballast along the outside of and about 10 inches from the rail. The next mark was on the outside of the stock rail of the house-track, 15 feet north of the switch point, this mark continuing for a distance of 15 feet. A mark then extended across the top of the east or right rail of the main track 35 feet north of the switch points; this mark appeared to have been made by column bolts, and was followed by wheel marks on the ties 5 feet farther north. These wheel marks indicated that the wheels had straddled the frog of the house track switch and traveled diagonally over the ties until the

wheels on the right side reached the west rail of the main track, tearing out two rails.

Car Inspector Evans stated that he made a regular inspection of the cars on their arrival at the terminal at Nevada, 39.88 miles from Adrian, at 6:10 a.m. He walked up one side and returned on the opposite side, and after the engines had been changed he made a test of the air brakes, starting at the rear end after the brakes had been applied and walking to the head end, where he remained and observed that the brakes were released as the train pulled by him. He stated that he gives arch-bar trucks special inspection and a small mirror is used to inspect the inside of arch bars, but it is not used on through trains unless the arch bars appear to be old and there is a doubt as to their condition.

Inspection of the front truck of IP gondola 60263 disclosed that the bottom arch bar on the west or left side was broken at a point $2\frac{1}{4}$ inches ahead of the column bolt; the lower end of this bolt was broken and detached, the missing part being found on the main track near the frog of the switch. Other portions of the truck assembly appeared to be in servicable condition. The column bolt holes in the top arch bar were slightly worn, the elongation being $1/16$ inch, and in the bottom bar the wear was $1/8$ inch. The box bolt holes in the forward end of the top and bottom arch bars were worn $1/16$ inch, but no excessive wear appeared in the box bolt holes of the tie bar. The exterior of the broken arch bar disclosed no evidence of pre-existing defects that would admit of discovery prior to complete failure, but its fractured surface revealed an interior cavity. The two fragments of the bar were subjected to an examination by the railroad company's engineer of tests; the report of this examination showed this arch bar to be of wrought iron but smaller than specified in the recommendation of the American Railway Association for cars of the capacity of the one involved; its size was $1\frac{1}{2}$ by 5 inches whereas the recommended size would be $1\frac{3}{4}$ by 5 inches or $1\frac{1}{2}$ by 6 inches. This report also stated that the stock in this arch bar was an inferior grade of reworked iron, containing irregular fiber and excessive slag, and that its interior defects caused its failure, which was of the impact type. The car involved was a 50-ton composite high-side gondola, built March 3, 1917, and at the time of the accident was loaded with 102,000 pounds of coal. It left the mine near Cornell, Kans., on December 1 and was taken to Cornell yard, an inspection point, leaving there December 2 and passing through Nevada, another inspection point, shortly before the accident.

Conclusions

This accident was caused by the failure of an arch-bar truck.

The investigation disclosed a broken bottom arch bar on the left side of the front truck of the car immediately ahead of the caboose. The break occurred just in front of the column post and the lower end of the column bolt also was broken off. The marks on the track indicated that this failure occurred a short distance south of the house-track switch, there being marks on a nearby highway crossing, and when the truck reached the house track the lower end of the front column bolt engaged the outside of the stock rail, pulling it eastward and turning it over. The sag in the truck apparently allowed the load it carried to tilt westward and with the west side of the truck down and in contact with the house-track stock rail the wheels were pulled westward and became derailed resulting in the car turning over and breaking away from the front portion of the train. Examination of the broken arch bar by the engineer of tests of the railroad company disclosed that this arch bar was smaller than recommended by the American Railway Association for cars of the same capacity, that the stock was of an inferior grade of reworked iron, containing irregular fiber and excessive slag, and that interior defects caused its failure.

Attention is called to the report covering the investigation of an accident on the Pennsylvania Railroad at Cly, Pa., on September 29, 1934, caused by the failure of an arch bar truck, wherein the following statement was made:

"Within the past 2 or 3 years investigation has been made of several serious accidents which were due to the failure of arch-bar trucks, and attention is called to the fact that in 1931 action was taken by the American Railway Association to bring about the elimination of trucks of this type, which are a menace to safe operation. The result of this action was the inclusion in the A.R.A. interchange rules of a rule providing that cars equipped with arch-bar trucks will not be accepted from owners after January 1, 1936. The close approach to the date beyond which cars with trucks of this type may not be received from the owners should give impetus to the work of making the changes necessary to comply with this rule within the time-limit specified."

Respectfully submitted,

W. J. PATTERSON,
Director.