Inv-2083

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

MISSOURI PACIFIC RAILROAD

OZARK JUNCTION, ARK.

JULY 15, 1936

INVESTIGATION NO. 2083

SUMMARY

Railroad:	Missouri Pacific
Date:	July 15, 1936
Location:	Ozark Junction, Ark.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	Extra 7 north
Engine number:	7
Consist:	37 cars and caboose
Speed:	35 m.p.h.
Track:	Tangent; grade 0.61 percent ascending for north-bound trains..
Weather:	Clear
Time:	2:32 p.m.
Casualties:	1 killed, 1 injured (trespassers)
Cause:	Heavy rectangular metal plate fell off flat car and rolled under truck of following car.

August 26, 1936

To the Commission:

On July 15, 1936, there was a derailment of a freight train on the Missouri Pacific Railroad near Ozark Junction, Ark., which resulted in the death of one trespasser and the injury of one trespasser.

Location and method of operation

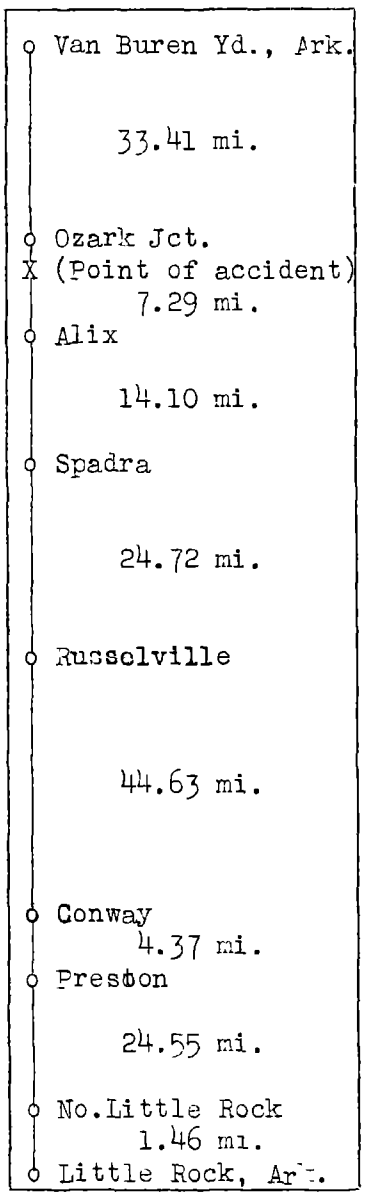
This accident occurred on the Van Buren District of the Southern Kansas and Central Divisions, extending between Van Buren Yard and North Little Rock, Ark., a distance of 153.07 miles; this is a single-track line over which trains are operated by timetable and train orders, no block-signal system being in use. The accident occurred about 2,400 feet south of the board marking Ozark Junction. Between North Little Rock and the point of accident there are many curves, some of which have a 6 inch elevation; approaching the point of accident from the south there is a 2°10' curve to the right, 506 feet in length, followed by a tangent 5,011 feet in length, the accident occurring on this tangent 1,900 feet from its southern end. At the point of accident the grade is 0.61 percent ascending for north-bound trains.

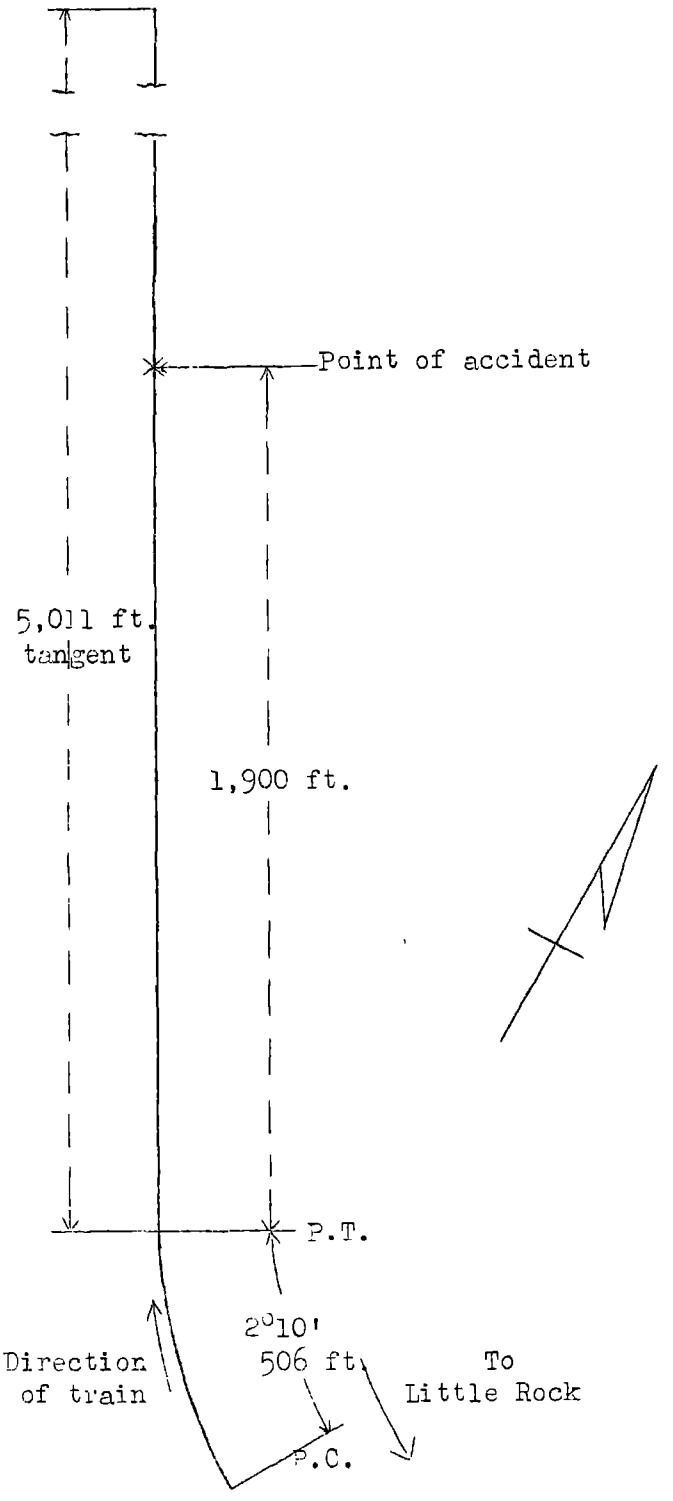
The track is laid with 90-pound rails, 39 feet in length, with 24 ties to the rail length, single-spiked, fully tie-plated, and ballasted with washed gravel to a depth of 8 inches below the ties. The track is well maintained. The maximum speed permitted for freight trains in this vicinity is 40 miles per hour.

The weather was clear at the time of accident, which occurred at 2:32 p.m.

Description

Extra 7, a north-bound freight train, consisted of 37 cars and a caboose, hauled by engine 7, and was in charge of Conductor Brown and Engineman Fowler; the fourth, fifth, sixth and seventh cars were flat cars, twin-loaded with bridge girders. This train left North Little Rock, 119.66 miles south of Ozark Junction, at 8:00 a.m., left Alix, 7.29 miles south of Ozark Junction, at 2:14 p.m., according to the train sheet, and was derailed while approaching Ozark Junction at a speed estimated to have been about 35 miles per hour, due to a heavy metal plate shifting from its position on a flat car and rolling under the truck of the following car.





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Missouri Pacific R.R.
Ozark Junction, Ark.
July 15, 1936

The engine and the 5 head cars stopped 975 feet north of the initial point of derailment with the rear truck of the fifth car derailed; the sixth and seventh cars were turned over to the left and stopped about 625 feet north of the initial point of derailment and 19 feet from the center line of track; the following 13 cars were derailed and badly damaged and stopped in various positions to the left of the track, piled up within a distance of 244 feet, about 235 feet behind the seventh car; the balance of the train was not derailed.

Summary of evidence

Conductor Brown stated that no trouble was experienced with the train between North Little Rock and the point of accident. Between Preston and Conway, some 91 miles south of of Ozark Junction, he rode on the twin-loaded cars for a distance of about 4 miles during which time he inspected both sides of the lading of the car involved in the accident as well as the other twin load but noticed nothing loose or wrong with the loads; the flat cars rode very roughly but were otherwise in good condition so far as he could determine. He again inspected the north side of the train as it pulled by at Russelville, giving particular attention to the twin loads, but found nothing wrong. Another inspection was made at Spadra, and when the train stopped at Alix for water he inspected the rear half of the north side and the head brakeman inspected the south side, commencing at the engine; everything appeared to be in good condition at the time of these inspections. He was in the caboose at the time of the accident and the first intimation he had of anything wrong was when the brakes were applied in emergency. He estimated the speed of the train at that time to have been about 35 miles per hour and stated that the accident occurred at 2:32 p.m.

Head Brakeman Shaffer stated that he inspected the right side of the train at Conway and the steel slabs on the twin loads appeared to be firmly bolted in place; he rode on the head car of the first twin load from Spadra to Alix, during which time he observed the train from both sides several times but saw no indication of any part of the loads shifting. The flat cars rode rather springy but otherwise they were not bad riding loads. He again inspected the train from the right side at Alix and everything appeared to be in good condition. He was standing behind the enginemen when the derailment occurred and the first intimation he had of any trouble was when the air brakes were applied in emergency due to the parting of the train.

Swing Brakeman Hunter stated that he inspected the train at Conway, Russelville, Spadra and Alix, but observed nothing wrong with it nor with the twin loads. He was in the left side of the caboose cupola at the time of accident and the first intimation he had of anything wrong was when he saw dust flying and the air brakes were applied in emergency. He estimated the speed of the train at that time to have been about 35 miles per hour.

Rear Brakeman Timms stated that he inspected both sides of the train at Russelville but noticed nothing wrong with the train or the lading of the cars.

Engineman Fowler stated that the air brakes were tested before leaving North Little Rock and worked properly and he had no difficulty in starting or handling the train en route; his first intimation of trouble was when the air brakes were applied in emergency from the rear. The statement of Fireman Lenz added nothing of importance to the investigation.

Master Mechanic Sykes stated that upon his arrival at the scene of the accident about 5:00 p.m. he inspected the cars containing the twin loads. The first of these loads was placed on M. & O. flat 70260 and Southern flat 116920, and consisted of two girders 80 feet long and 8 feet 9 inches in height, loaded upright and in conformity with A.A.R. rules for this type of lading; these rules, however, do not provide for the method of loading the girder shoes. Four girder shoes, consisting of flat metal plates, measuring 30 inches long, 24 inches wide and 3 inches thick, and weighing 630 pounds each, were loaded on the cars in pairs, one pair on each of the two cars; these plates were laid flat on the car floor, one ahead of the other, and approximately 3 inches apart. A frame, consisting of hardwood cleats 3 inches wide and 1 1/8 inches in thickness, was nailed to the floor on 3 sides of the plates, the outer cleat parallel with and 12 inches from the outer edge of the car, contacted the side of the plates, while the other two cleats were at right angles to the first mentioned cleat, one at each end of the plates; the 3 inch space between the two plates was not filled. Each plate was secured to the car with a 12 by 7/8 inch bolt which passed through a 1 3/8 inch hole in the plate and a 1 1/4 inch hole in the 2 1/4 inch floor boards. The bolt was threaded 2 1/4 inches on one end and 2 1/2 inches on the opposite end. Examination of M. & O. 70260 revealed that the rear plate which had been loaded on this car was missing and marks on the hardwood cleating, floor boards, and stake pockets, indicated that the bolt securing it had become loosened, allowing the plate to set up a movement which ultimately resulted in the plate passing over the cleats and

sliding over the edge of the car. The bolt originally securing the plate was found on the floor opposite the bolt hole, about 20 inches toward the center of the car. The nut was missing from one end and there were indications that this nut had been turned on the bolt approximately 1 1/4 inches. The unthreaded portion of the bolt bore bright spots which indicated that it had been through the plate and the floor boards, and the floor boards also showed similar indications. There was no evidence that nutlocks or cotter keys had been used and no indication that the threads had been burred or the ends of the bolt had been riveted over to prevent the nuts from coming off. Master Mechanic Sykes was unable to say whether a filler of any kind had been used to absorb the slack between the threaded ends of the bolt, but on the bolts which secured the remaining shoes, a sufficient number of 3/8 inch and 1/4 inch washers had been placed above the plates to permit tightening the nuts, which held the plates securely to the floor of the car. He also said that a 7/8 inch bolt used in a 1 1/4 inch or a 1 3/8 inch hole would afford greater possibility for the bolt to become loosened than a snug fitting bolt. An inspection was made of the trucks of M. & O. 70260 and there was no indication of flat or shelled out spots on the wheels, or that the springs had been solidly compressed and no mechanical condition about the car which might have caused excessive vibration. The nature of the load, which rested on a bearing block on one end of each of the two cars, would naturally produce a vibration at the center of the car near which the plates were secured, which might have had a tendency to loosen the nuts. An oil box was broken and the truck-side bent on the rear truck of Southern 116920 and it was his opinion that this damage was caused by the plate falling from M. & O 70260, and striking this oil box, precipitating the derailment.

Division Engineer Bush stated that he inspected the track shortly after the accident; at a point just south of the first point of derailment the ballast on the outside of the track was disturbed as if dug up by some object and there were two slight depressions of a similar nature, but not so deep, in the shoulder of the ballast. At a point 42 feet north of this first mark there were cut marks on the ends of two ties and on the next tie there was a dent 3/8 inch deep and 3 inches wide immediately outside the rail, and the tie plate was bent downward. Leading off at an angle to the right from the dent in the tie, the weeds were knocked down and the ground was disturbed as though something had been violently thrown through the weeds. Following this path through the weeds, a metal bridge-girder shoe was found; a test disclosed that the width of the shoe was nearly an

exact fit to the depression in the tie. The track was tested at joints and quarters, for cross level and gauge, for a distance of 20 rail lengths south of the point of derailment and was found to be in good condition. One of the girder shoes which had been bolted to the floor of the head car of the first twin load, was missing and the right journal box on the rear truck of the following car bore a 3 inch dent which corresponded with the thickness of the girder shoe. It was his opinion that the derailment was caused by this shoe falling from the head car of the first twin load and wedging into the corner of a tie on the outside of the rail where it came in contact with the journal box of the following car and lifted the truck off the rail.

Car Inspector Sandusky, who has had 23 years experience as a car inspector, stated that he closely inspected the two twin loads in Extra 7 at Little Rock on the day of the accident, taking particular notice of the manner in which the lading was secured and he was agreeably impressed with the fastenings of the loads. The girder shoes were secured to the car floor with bolts and, as he had looked at them 3 times at Little Rock, he was quite sure that he would have noticed if there had been a bolt missing from any of the plates.

Inspection of the track by the Commission's inspectors disclosed that the first marks of derailment were three damaged ties on the right side of the track; the first tie had a diagonal mark 3 inches in length, about 14 inches outside the rail which appeared to have been made by a corner of a piece of bar iron; the end of the adjacent tie northward was badly scuffed and broken while the next succeeding tie had a V-shaped impression at the corner of the tie plate, outside the rail, which appeared to have been made by the corner of a metal plate. The first flange mark was between the rails, on the fifth succeeding tie and about 10 inches from the left rail; there was a corresponding mark outside the right rail on the next tie after which the right wheels apparently left the ties and the mark between the rails followed an arc line to the center of the track and then returned close to the left rail near which point flange marks appeared once more on the ends of the ties outside the right rail; the flange marks then followed close to the rails for a distance of about 155 feet, beyond which the track was torn up. Inspection of M. & O. 70260 and Southern 116920, revealed conditions as described by Master Mechanic Sykes and also that there were several old, heavy spike-nails bent over on the floor of M. & O. 70260 on which the missing girder shoe had rested and which prevented it from lying flush upon the floor and had a tendency to assist the block in moving about. An inspection of the metal plate found in the weeds, disclosed

that it was somewhat bruised on edges and sides as though it had come in contact with some metal object and one dent appeared to have been made by a wheel flange or rim striking it.

Discussion

M. & O. 70260 and Southern 116920 were flat cars carrying a twin-load of bridge girders and upon the floors of each car were bolted two flat metal plates to be used as seats for the girders; these plates were secured to the floors of the cars by cleats and bolts. After the derailment the rear plate on M. & O. 70260 was missing from the car and was found in the weeds along the right of way to the right of the track. The bolt which had secured the plate was found on the floor of the car with the nut missing from one end; there were no indications that any precaution had been taken to prevent the nuts from becoming loose other than drawing them tightly against washers, as evidenced by the bolts securing the other plates. The girders themselves were loaded and secured according to the rules prescribed by the A.A.R. for this type of lading but no specific provision is made in these rules for the loading of the girder shoes, other than that they must be securely fastened to the car. The plates were placed 3 inches apart, lengthwise of the car and were surrounded on three sides by a frame made of hardwood cleats, the cleats being 3 or 4 inches wide and 1 1/8 inches thick, but the intervening space between the plates was not filled. Several heavy spike-nails were bent down against the floor boards under the missing plate, and from these conditions and the marks found on the ties and on the rear truck of Southern 116920, it is evident that the nut beneath the floor worked off the end of the bolt securing the plate and permitted the plate to move over the cleats and slide off the edge of the decking, when it struck the ground apparently it rolled on edge until it became caught between a tie and a rear-truck journal box of the following car which it raised sufficiently to derail the truck. The loosening and the final loss of the nut was undoubtedly caused by vibration of the car and the shifting of the plate was probably aggravated by the bent spikes beneath it, together with the loose fit of the bolt.

Conclusion

This accident was caused by a heavy, rectangular metal plate falling off a flat car and rolling under the truck of the following car.

Respectfully submitted,

W. J. PATTERSON,

Director.