

Inv-2097

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT OF THE

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS

ST. LOUIS, MO.

SEPTEMBER 11, 1936

INVESTIGATION NO. 2097

SUMMARY

Railroad: Terminal Railroad Association of St. Louis
Date: September 11, 1936
Location: St. Louis, Mo.
Kind of accident: Yard collision between runaway cars and standing cars
Train involved: Switching movement
Engine number: 118
Consist: 5 mail and baggage cars
Speed: 5-15 m.p.h.
Track: Grade from 0.20 to 2.13 percent descending; 0.67 percent at point of accident
Weather: Clear
Time: 4 p.m.
Casualties: 1 killed; 1 injured
Cause: Cars parted and ran away while being switched, due to defective couplers.

October 30, 1936

To the Commission:

On September 11, 1936, there was a collision between a cut of runaway cars and a cut of standing cars on the tracks of the Terminal Railroad Association of St. Louis at St. Louis, Mo., which resulted in the death of one coach carpenter and the injury of one Pullman car cleaner.

Location and method of operation

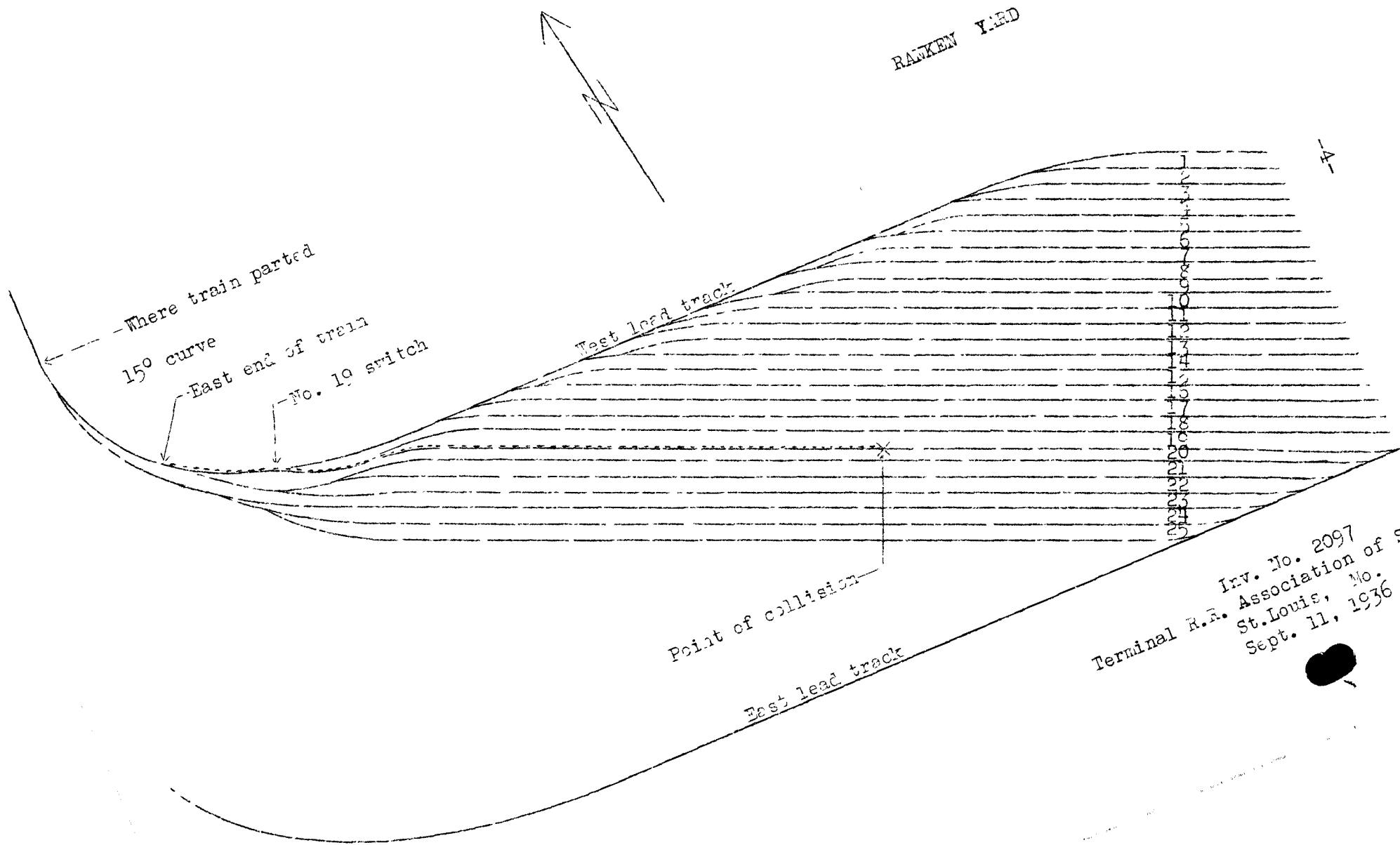
This accident occurred in Ranken yard, which is composed of 28 tracks, each track being about 800 feet in length and extending east and west. Tracks 11 to 23, inclusive, are used by the Missouri Pacific Railroad for repairing and conditioning passenger-train cars. All switching is performed by the T.R.R.A. of St.L. under yard rules. The west lead of the yard extends westward around a 15° curve to the right and then about 500 feet northward; the east lead is at the east end of the yard. The accident occurred on track 19, at a point approximately 150 feet east of the switch leading from the west lead to that track; the grade for eastward movements over the west lead and track 19, varies from 2.15 to 0.20 percent descending, being 0.67 percent at the point of accident.

At the time of the accident there was a cut of seven cars standing on track 19, while a Pullman car stood on the east lead fouling the east switch of track 19.

The weather was clear at the time of the accident, which occurred at 4 p.m.

Description

T.R.R.A. of St.L. switch engine 113, headed west, in charge of Engine Foreman Seglehorst and Engineman Pollock, pulled five mail and baggage cars from track 2, these cars in order from the engine were M.P. 4178, M.P. 4199, M.P. 2051, M.P. 2034 and M.P. 4138, and the air brakes were not coupled between the engine and cars. After moving westward a short distance the train parted between the first and second cars, following which the cars were recoupled and the train proceeded westward on the west lead until the rear car was about 70 feet west of the west switch of track 19, where the train stopped. At this time the train again parted between the first and second cars, as well as between the second and third cars, whereupon, the engineman sounded the whistle, and an engine which had come out of track 16 and was following on the west lead, was hurriedly backed into track 18, after which the switches were lined for track 19. The three rear cars that broke



Where train parted

15° curve

East end of train

No. 19 switch

West lead track

Point of collision

East lead track

RANKEN YARD

Line of Center of Curve

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off, followed by the second car, ran down the west lead into track 19, and while traveling at a speed estimated to have been between 5 and 15 miles per hour, collided with a cut of seven cars standing on that track. The force of the impact moved the cut of standing cars eastward until they collided with the Pullman car which stood on the east lead fouling the east switch of track 19.

None of the equipment was derailed, but it was damaged to some extent. The Missouri Pacific coach carpenter killed was in the third of the five cars being handled by switch engine 118, while the Pullman car cleaner injured was in the vestibule of one of the cars standing on track 19.

Summary of evidence

Engineman Pollock stated that when he stopped his train on the lead west of track 19 switch, by means of the straight air brake, he felt the slack run out and the cars parted, whereupon he sounded the engine whistle. The runaway cars rolled eastward into track 19 and the last he saw of them they were moving about 6 or 8 miles per hour; they then struck the cut of cars standing on that track. Engineman Pollock said that the air brakes were not coupled up, and that unless a dining car was being handled it was not the practice to couple the air when switching cars in Ranken yard. Fireman Amann was on the left side of the engine and did not see the cars break off but he heard the engineman sound the alarm signal.

Engine Foreman Segelhorst stated that he was on the ground near the west lead track when the alarm signal was sounded; he shouted for the light engine to back into clear on track 18 to avoid being struck by the runaway cars; he operated the switches for the movement and the runaway cars passed him at a speed of about 5 or 6 miles per hour. He saw two men making attempts to set hand brakes on the three leading runaway cars, but the hand brakes appeared not to hold, for as they are seldom used they are not in good operative condition. Immediately after the accident he found all knuckles closed on the runaway cars. It was not the practice to use the air brakes while switching passenger cars in Ranken yard, although air brakes were used between Ranken yard and the passenger station; he said that the cars parted on account of the defective condition of the couplers and that the accident would have been averted had the air brakes been in operation on the cars. Engine Foreman Segelhorst further stated that before coupling to the five cars on track 2 he had verbal information from the trainmaster that the cars had parted while being backed in at Union Station, and that they should be

spaced in the yard for inspection. In addition, one of the carmen in Ranken yard also had asked that the cars be cut for inspection for the purpose of determining whether they were in proper shape for service and this was about to be done when the cars parted. The engine foreman did not know positively that the couplers were defective nor was he on the cars when they parted the first time after moving out of track 2, and he did not know of that occurrence until after the accident, having been otherwise engaged at the time.

Switchman Schoenbeck stated that when the cars started to run away he boarded the west cars of the three that were coupled and set the hand brake as tight as he could; he then ran eastward and had the hand brake on the middle car almost fully set when he jumped off just prior to the accident; however, the latter brake did not hold very well; he said that he also noticed someone, whom he thought was a Missouri Pacific employee, on the east car apparently trying to set the hand brake on that car. He thought the first hand brake he set was efficient and it would have stopped one car, but it was not sufficient to hold all three cars. Switchman Schoenbeck estimated the speed of the cars to have been about 8 miles per hour when he boarded the first car and about 9 or 10 miles per hour when the accident occurred. He had never previously known of cars parting on the lead track in this manner; it was not customary to use air brakes when switching passenger cars in this yard, except when moving dining cars to the commissary or when moving cars to spot on the repair track.

Switchman Rush stated that when the train parted between the first and second cars while pulling out of track 2, he recoupled the cars, at which time the knuckle on the east end of the first car was open and the adjoining knuckle was closed; the cars were then pulled westward on the west lead beyond track 19 switch, where he got off. He did not know that the cars parted again when the train stopped, and he was not aware of anything wrong until he heard the engineman sound the whistle; he estimated the speed of the cars at the time of the collision to have been between 12 and 15 miles per hour. After the accident he rode the car coupled to the engine back in on track 19, in order to couple to the runaway cars; at this time the knuckle of the coupler on the east end of the car coupled to the engine was open and the one on the west end of the second car was closed, but he said that the knuckle on the first car might have been opened by someone without his knowledge. The coupling could not be made and it was necessary to use safety chains to move the cars; he did not examine the knuckles between the second and third cars. Switchman Rush further stated that during the 14 years he had been switching at this point he had never had occasion to use hand brakes on

mail or baggage cars, but had used them on passenger cars, and had never found any defective hand brakes; in Ranken yard air brakes are used only when switching dining cars, setting cars on rip tracks, or moving through trains. He said that this accident would not have occurred had the air brakes been in use; in his opinion it was caused by the knuckle at the east end of the first car being sprung and out of line.

Trainmaster Davis stated that as Train No. 20 was backing into Union Station at 7:24 on this morning, the cars parted in two places, ahead of and behind baggage car M.P. 4199, the second car in the train. This was also the second car in the cut of five that were later handled by switch engine 118. The train was recoupled at the station and the five head cars were cut off for placing on track 26, but before this could be done they again parted, between the first and second cars. In each instance he found the knuckles closed on the separated cars; the knuckle at the rear of M.P. 4199 was very loose and he was of the opinion that the knuckle pin was too small. Safety chains were then used at both ends of M.P. 4199 to move the cars. The cars were moved to the yard with safety chains and the air brakes in use; Engine Foreman Segelhorst was given the numbers of the cars in writing and told to notify the car foreman at Ranken yard as to their condition.

Car Inspector Neely, of the Missouri Pacific Railroad, said that after the accident the couplers on the west end of M.P. 2051 and the east end of M.P. 4199 were closed; the coupling was not made and measurements taken showed these couplers to be about $\frac{3}{4}$ inch out of gauge.

Sheet Metal Worker Purdy of the M.P.R.R., was riding in car 4199 as the movement was made westward on the lead track. It was his opinion that the cars parted after the engine had stopped and had started the back-up movement toward Track 19, rather than when the engine first stopped.

Assistant Car Foreman Knight, of the Missouri Pacific R.R., stated that after the accident he and Car Foreman Sack inspected the runaway cars. The couplers were found to be out of gauge on M.P. 4178, M.P. 4199 and M.P. 2051, the indications being that this condition was caused partly by wear and partly by the guard arms being sprung. He had no doubt that the couplers were out of gauge prior to the break-in-two, particularly on car 4199; the couplers on car 2051 may have been knocked out of gauge when struck by car 4199, as there was ample evidence of heavy impact. He removed six couplers from the five cars involved. The night force repaired M.P. 4199 and upon his arrival at work at 6:30 a.m., September 12, the knuckles, knuckle pins and blocks had been thrown into the scrap pile and could not be identified. He had gauged the

couplers at both ends of M.P. 4199 before the parts were removed and they each measured approximately 5 7/8 inches, or $\frac{3}{4}$ inch out of gauge. After these couplers were removed he applied a new knuckle, new pin and new block for the purpose of determining whether they could be brought to gauge, and both were found to be well within gauge after the substitution of these parts, one end measuring $4\frac{3}{4}$ inches and the other 4 7/8 inches; after this was done he was unable to identify the respective ends of the cars from which these couplers were removed. He also applied a new knuckle, pin, and block to the coupler removed from the east or A end of M.P. 4178, which brought it to 4 13/16 inches and well within gauge, as well as to the coupler removed from the west or A end of M.P. 2051, which brought the measurements to 5 1/8 inches. The knuckle in the east end of M.P. 4199 was sprung in such a way as to indicate that it had been caused by a pulling strain rather than by impact, while the coupler at the west end of M.P. 2051 was apparently sprung by impact. He could not say what caused the other couplers to become out of gauge.

Car Foreman Sack of the T.R.R.A. stated that after the accident he inspected the hand brakes on all five cars involved and found them all to be in operative condition; in making this inspection he applied the brake shoes to the wheels with the hand brakes on each end of the cars. With the exception of one car he found the knuckles and lock blocks in good condition. There was one built-up knuckle. The couplers were out of contour on account of worn knuckle pins, worn eyes in the coupler body and worn hole in the knuckles, and also bent guard arms. The uncoupling levers were undercut, side-operated, and the couplers were provided with locking arrangement so that the knuckle could not be opened except by the use of the uncoupling lever. In his opinion the accident was caused by the knuckles slipping; by due to the worn condition of the coupler eye and the shoulder on guard arm, as well as the guard arm itself being bent and worn, all of which contributed to throwing the coupler out of gauge.

The cars involved in the accident were not available for inspection by the Commission's inspectors but all parts of the couplers removed from M.P. 4178 and M.P. 2051 were examined and the measurements obtained from their inspection are shown below:

CAR	END	COUPLER	COUPLER BODY		KNUCKLE
		Out of gauge	Top eye	Bottom eye	Pin hole
4178	East	11/16"	1-11/16 x 1- 5/8"	1-13/16 x 1- 3/4"	1-13/16 x 1 ³ / ₄ (Knuckle pin (1-19/32"
	West	10/16"	1-11/16 x 1- 5/8"	1- 7/8 x 1-11/16"	1-13/16 x 1 ³ / ₄
2051	West	10/16"	1-13/16 x 1- 3/4"	1-7/8 x 1-11/16"	
	East	1/4"	1-13/16 x 1- 3/4"	1-7/8" x 1-11/16"	
*4199	West	10/16"	1-13/16 x 1-11/16"	1-15/16 x 1 ³ / ₄	
	East	10/16"	1 ³ / ₄ " x 1 ³ / ₄ "	1-7/8 x 1-11/16"	

*Measurements taken by assistant car foreman.

While repairs were being made to car M.P. 4199, the knuckles and pins were put into the scrap bin and could not be identified, but the assistant car foreman gauged these couplers before these parts were removed from the cars and his measurements are included in the above. Inspection made by the Commission's inspectors of the hand brakes of seven cars of construction similar to the cars involved disclosed that the brakes on six of these cars could not be operated. This condition appeared to be the result of disuse, corrosion, or brake chains too long, and in some cases worn bolts or rivets on which the pawls were pivoted contributed to their inefficiency. At the time the hand brakes on these cars were inspected a car repairer of the Missouri Pacific Railroad accompanied the inspectors, and he stated that he was able to apply the brakes on one of these cars, but found the hand brakes on the other six cars inoperative and he thought the defective condition had existed for a long time.

Under date of September 22, 1936, the chief mechanical officer of the Missouri Pacific Railroad issued instructions to shop superintendents and master mechanics, relative to hand brakes on passenger cars, as follows:

"It has come to my attention that hand brakes on passenger cars are not being maintained and on investigation I find that gears are rusty, corroded, pawls in some cases not contacting ratchet wheel and brake chains too long.

An intensive drive must be made by all car foremen to test out and put hand brakes on passenger equipment cars in first-class condition. When making the test remove brake shoes from opposite heads on one brake beam so as to increase piston travel and with these shoes removed to make certain that hand brakes are operative, so as to pull other brake shoes tight against the wheels.

Where brakes will not operate on the above test so as to pull brake shoe tight against the wheel, ascertain the cause and make necessary repairs so as to have an effective hand brake.

Give this your immediate attention and personally handle to know that these instructions are complied with."

Discussion

The investigation disclosed that as Missouri Pacific passenger Train No. 20 was being backed into the Union Station at St. Louis, the train parted ahead of and behind baggage car M.P. 4199, the second car in the train. The cars were recoupled at the station and the first five cars in the train, which were later involved in the runaway, were cut off for the purpose of placing them in the yard; after they were cut off the train broke in two between M.P. 4178 and M.P. 4199, the first and second cars; safety chains were then used to handle the cars from the station to the yard. The crew that handled them to Ranken yard was informed of the break-in-two and the foreman of the switching crew involved in the accident was given a written memorandum of the cars and told to notify the car foreman at Ranken yard as to their condition, and he was also told by a Missouri Pacific car inspector to space the cars so that the couplers could be inspected. When switch engine 118 later moved the cars from track 2 they again parted between the first and second cars; a coupling was again made and upon reaching a point on the west lead track beyond track 19 switch they parted again, this time ahead of and behind car 4199. The cars were being handled without the air brakes being in use and after the last break-in-two, 4 of them rolled down the descending grade and into track 19, and on reaching a point about 450 feet east of the switch, collided with a cut of seven cars standing on that track. In consideration of the grade upon which these cars were being moved, and particularly in view of the defective condition of the couplers, and the presence of workmen in and around

cars in this yard, the air brakes should have been in service while making this movement

Statements were made at the investigation to the effect that the hand brakes on the runaway cars were not in good operative condition, and as these cars were not available for inspection by the Commission's inspectors, the hand brakes were inspected on seven cars of similar construction, all of such cars being in service. This inspection disclosed that the hand brakes on six of these cars were inoperative, which adds considerable doubt as to the efficient condition of the hand brakes on the runaway cars at the time of the accident.

Since the occurrence of this accident, an endeavor has been made to ascertain the condition in general of hand brakes on passenger train cars in use throughout the country; inspections were made at 3 different terminals used by 20 operating lines, 226 cars being inspected, including 127 baggage, mail and express cars and 99 passenger-carrying cars, and representing ownership of 31 individual carriers. Of the 127 mail, baggage and express cars, 48 percent were found to have inoperative or inefficient hand brakes; of the 99 passenger-carrying cars, 27 percent were found to have inoperative or inefficient hand brakes and of the combined total of passenger equipment inspected, 59 percent were found with inoperative or inefficient hand brakes.

As a result of the data obtained from this inspection, it is apparent that the maintenance of hand brake equipment on passenger train cars is not being given the attention which it requires and which is provided for by Rule 168 of the A.A.R. Operating and Maintenance Rules, Mechanical Division. Furthermore, it is questionable whether the designs of hand brake equipment as applied to passenger train cars now in service are in all cases adequate to meet present day requirements. In view of these facts, when these devices are called upon for use, as in the case here under investigation, the results may prove disastrous.

The matter of providing efficient and properly maintained hand brakes on passenger train cars should be given careful attention by the proper railroad officials.

Conclusions

This accident was caused by a cut of cars parting, allowing 4 cars to break off and run away, due to defective couplers.

Respectfully submitted,

W. J. PATTERSON,

Director.