

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE
MISSOURI PACIFIC RAILROAD

HEMATITE, MO.

JUNE 11, 1938.

INVESTIGATION NO. 2275

SUMMARY

Inv-2275

Railroad: Missouri Pacific
Date: June 11, 1938
Location: Hematite, Mo.
Kind of accident: Derailment
Train involved: Passenger
Train number: 7
Engine number: 5344
Consist: 14 cars
Speed: 15-20 m.p.h.
Operation: Timetable, train orders and automatic
block-signal system
Track: Single; tangent; level
Weather: Rain
Time: 3:03 a. m.
Casualties: 1 killed
Cause: Washout

July 6, 1938.

To the Commission:

On June 11, 1938, there was a derailment of a passenger train on the Missouri Pacific Railroad near Hematite, Mo., which resulted in the death of one employee.

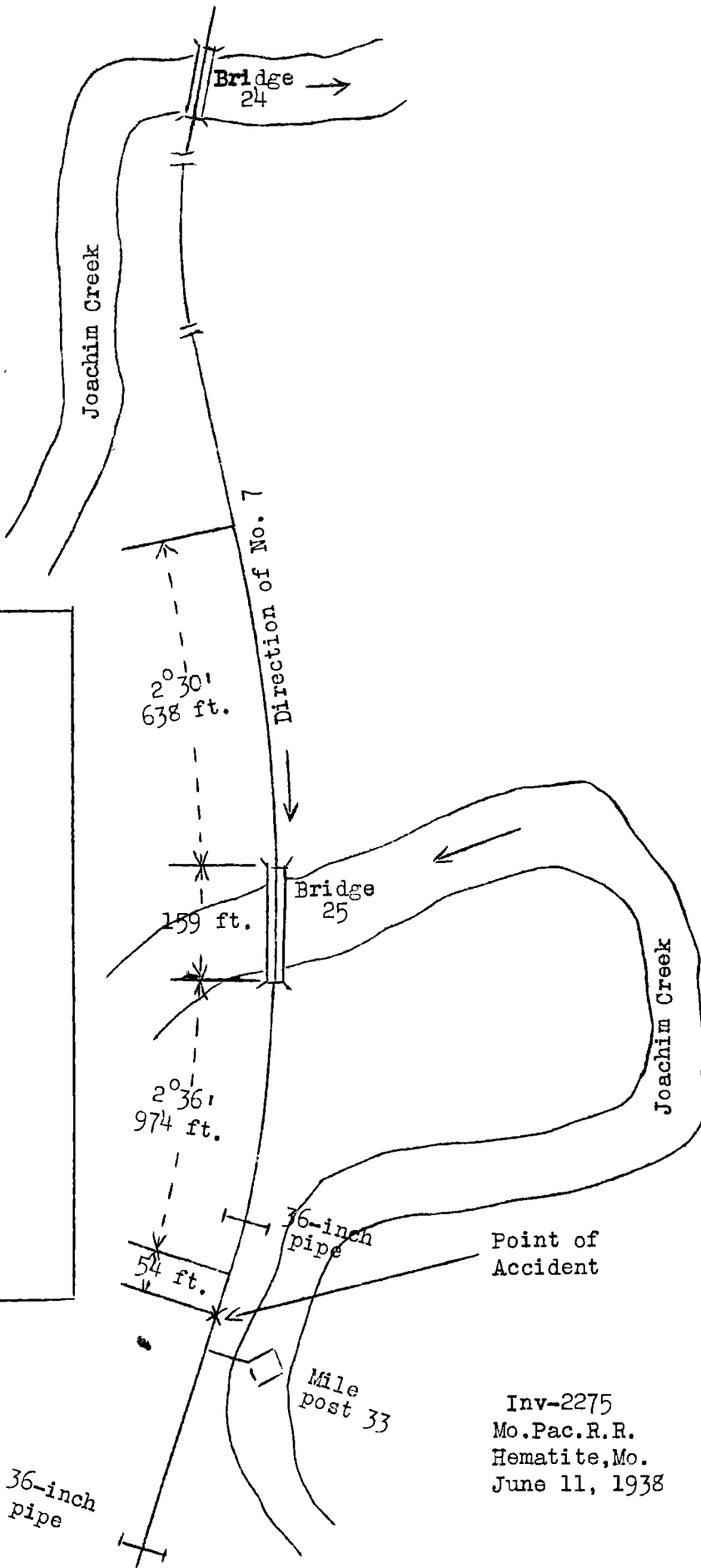
Location and method of operation

This accident occurred on the De Soto District, Missouri Division, which extends between Jefferson Barracks and Poplar Bluff, Mo., a distance of 155.99 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable, train orders and an automatic block-signal system. The accident occurred 2.6 miles north of the station at Hematite. Approaching from the north the track is tangent for a distance of 1,090 feet, followed by a 2°30' curve to the right 638 feet in length, tangent for a distance of 159 feet, then a 2°36' curve to the right 974 feet in length, and tangent track for a distance of 54 feet to the point of accident, this tangent extending for a short distance beyond. The grade for south-bound trains is slightly descending, but the track is level at the point of accident. The speed of passenger trains is restricted to 55 miles per hour between mile posts 20 and 33, within which territory the accident occurred.

The track is laid with 90-pound rails, 39 feet in length, on 24 creosoted oak ties per rail length, fully tie-plated. It is ballasted with mixed gravel and chatt to a depth of 2 feet and is well maintained. In the vicinity of the point of accident the track is laid on a fill 12 feet in height 1,300 feet in length, and two 36-inch pipes laid transversely through this fill drain the low land on the west side of the track.

Between Horine and De Soto, a distance of 12.7 miles, the Missouri Pacific Railroad follows, in general, the valley of Joachim Creek, which flows northward into the Mississippi River at Herculaneum, east of Horine; within this distance the railroad crosses the creek at six points. Water shed areas above the principal sections of the valley are as follows:

St. Louis, Mo.	9.54 mi.
Jefferson Barracks	16.96 mi.
Riverside	0.89 mi.
Pevely	2.11 mi.
Horine	3.53 mi.
X Point of accident	2.6 mi.
Hematite	3.39 mi.
Victoria	3.21 mi.
De Soto	4.91 mi.
Vineland	118.39 mi.
Poplar Bluff, Mo.	



Inv-2275
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		<u>Total area</u> <u>square miles</u>	<u>Increase</u> <u>square miles</u>	<u>Water way</u> <u>square feet</u>
MP 40-33	Bridge 36	55.5		2112
MP 39-25	Above Victoria	63.5	8.0	
MP 39	Leaving Victoria	81.1	17.6	
MP 37-39	Bridge 28	82.1	1.0	2100
MP 32-33	Bridge 25	119.9	37.8	2708
MP 32-2	Bridge 24	127.5	7.6	2611
MP 31	Bridge 23	128.8	1.3	2666
MP 30	Bridge 22	133.7	4.9	3103

Bridges 25 and 24 are located approximately 1,025 and 4,863 feet, respectively, north of the point of accident.

Due to a high bluff on the west side of the track and on the inside of the curve just north of the point of accident, the range of vision of an engineman of a south-bound train is materially restricted.

During the night on which the accident occurred it had been raining almost continuously, and it was raining at the time of the accident which occurred about 3:03 a.m.

Description

No. 7, a south-bound passenger train, consisted of four express cars, one baggage and mail car, four mail cars, two coaches, two Pullman sleeping cars, and one dining car, in the order named, all of steel construction, hauled by engine 5344, of the 4-8-2 type, and was in charge of Conductor Strickland and Engineman Malloy. At its initial terminal the crew received train order 11, Form 19, reading as follows:

Heavy rainfall reported Davis Street Jct to De Soto Run carefully at all points likely to be affected.

This train left St. Louis, at 2:02 a.m., according to the train sheet, 2 minutes late, and on approaching Hematite, 35.63 miles farther south, it ran into water on the track and was derailed while traveling at a speed estimated to have been between 15 and 20 miles per hour.

The engine stopped on its right side practically at right angles to the track, with its front end fouling the track and the rear half submerged in water; the tender was entirely submerged. The first three cars were derailed to the right, leaning to the right, and were partially submerged. One wheel of the lead truck of the fourth car was derailed. The remaining equipment was not derailed, but the trucks were submerged,

and the last car was leaning toward the left account of ballast being washed out from under the track. The employee killed was the engineman.

Summary of evidence

Fireman McRill stated that before leaving St. Louis, an air brake test was made, and the brakes were effective when applied at various points en route. It was raining hard at the time he went on duty, and before leaving St. Louis a train order calling attention to heavy rainfall between Davis Street and De Soto was received; it rained intermittently en route with varying intensity. The maximum allowable speed was never reached although a speed of 50 miles per hour was attained where track conditions justified it. On the curve north of Silica the engineman reduced the speed, a customary practice under normal conditions; but he released the brakes immediately after rounding this curve and the speed was increased to about 40 or 45 miles per hour. Although the water had not reached the ties at bridge 24, the creek was bank full and there was a very swift current; at this point the engineman made an 8 or 10 pound brake pipe reduction, which he increased 5 to 8 pounds as they approached bridge 25. As they entered the curve to the right another heavy brake pipe reduction was made, reducing the speed to between 15 and 20 miles per hour, and just after the engine passed bridge 25 it entered water deep enough to cause a splash. When they had moved only a short distance through the water, not more than 300 feet, the track gave way, the engine lurched to the right, settled in an upright position for a second and then turned over to the right and became submerged. Between bridge 24 and a point about 250 feet north of the point of derailment there was no water close to the track, and there was no indication of bad track conditions prior to the derailment. The water under bridge 25 was turbulent, and was practically up to the ties, and at the point of derailment there seemed to be from 3 to 5 inches of water over the track. He saved himself by perching in the top of a small tree from which he was rescued about $3\frac{1}{2}$ hours later; during that time the water rose about $2\frac{1}{2}$ or 3 feet. He had never before seen the water up to the ballast in this vicinity. Under normal conditions this is a fast piece of track, and since the automatic signal located 2,964 feet north of the point of accident displayed a clear indication, the train would have been operated between 50 and 55 miles per hour. In his opinion the engineman had used good judgment with regard to speed when approaching points where washouts or slides were most likely to occur.

Conductor Strickland stated that he was in the tenth car of the train. Approaching Silica the speed was reduced to about 20 miles per hour; the air brakes were then released, but ap-

proaching bridge 25 another application was made which reduced the speed to about 15 miles per hour, and the train was drifting around the curve when it stopped suddenly. He immediately got off the front end of the coach and stepped in water about ankle deep; he attempted to go to the head end of the train but found it impossible to do so because of the depth of the water. He then went northward to Horine where he communicated with the dispatcher. It was not raining heavily at the time of the accident, but shortly thereafter it came down in sheets, and as he walked back toward Horine he found water up to the ties at bridge 25. North of the bridge there was some water on the track between the ties. While returning from Horine after reporting the accident, he encountered another washout at mile post 32, pole 10, and he was unable to reach his train until about 1:30 that afternoon.

Section Foreman Green, in charge of the section on which this accident occurred, stated that his section extends between mile posts 28 and 38, and his force consists of three men beside himself. He had last been over the track in the vicinity of the point of accident about 4 p. m. on the afternoon prior to the accident. He lives at Hematite and there had been local showers on the evening of June 10, but nothing unusual or alarming. He retired at 8:15 p. m. and slept soundly, until about 4 a. m. when he arose and found that Joachim Creek, which is about 500 yards from his home, had overflowed its banks. He did not learn of the occurrence of the accident until 6:30 a. m. when he called the dispatcher to get a line-up. There is no telephone in his home, and if the dispatcher wants him to patrol the track it is necessary to send some one out from De Soto to notify him. He has instructions, to resume duty at any time in case of emergency, and his men also have authority to patrol the track without instructions from him if necessity arises. He reached the scene of the accident about 7 a. m., and the water started to recede shortly after 7:30 a. m. He has been in charge of this section since 1923 and on only one occasion had Joachim Creek overflowed its banks and washed out the track; that was in 1927 at mile post 33, the point at which this accident occurred.

Section Laborer Pickett, who resides at Hematite, stated that when he retired about 7 p. m. on the night of June 10 a light rain was falling. He was awakened about 10:30 p.m. by thunder, but it was not raining at that time, and apparently there had not been much rain as a small creek near his home had very little water in it at that time, and there was no high water in Joachim Creek. He returned to bed and slept until 6 a. m., and was not aware of any unusual amount of rain until that time.

Section Laborers Ditch and Nies stated that they retired

early on the night of June 10th, slept soundly and were not aware of any unusual weather conditions.

Section Foreman Politte, in charge of the section that adjoins the Hematite section on the south and extends between mile posts 38 and 45, stated that he is located at De Soto. Because of a heavy rain which started about 7:15 p. m. on June 10th, he called his three sectionmen for the purpose of patrolling the section and they left De Soto at 10:10 p.m. They covered the entire section and encountered showers most of the way. They did not find any serious trouble, although at one place, near mile post 43, the water had washed the ballast from between the ties. A short time after he had completed his inspection he called the dispatcher and informed him that the track was all right on that section. His inspection was made on his own initiative.

Dispatcher Keller, on duty at Poplar Bluff from 4 p.m. to midnight, stated that on the evening before the accident he had been informed by the operators at De Soto, Riverside and Davis Street Jct. that it was raining at those points with an occasional heavy fall. He called the section foreman at De Soto to cover the territory between De Soto and Blackwell, and the foreman called back and said that the track was all right. Dispatcher Keller also called the section foreman at Whitehouse, 16 miles south of St. Louis, but that section foreman advised him that it had not rained sufficiently at that time for him to patrol the track. He did not get in touch with the foreman at Hematite as the foreman does not have a telephone in his home, but he expected the foreman would patrol the track without instructions from him. He cautioned the relieving dispatcher concerning the weather conditions.

Dispatcher Hartzel, on duty at Poplar Bluff at the time of the accident, stated that from the information he had received from Dispatcher Keller and from the routine weather reports received at midnight from the various stations, the indications were that there was a heavy rain from De Soto northward. He had also been advised by the dispatcher that the engineman of No. 63 had reported a slide at Vineland and as a result the section foreman at De Soto had been ordered to investigate. Shortly after midnight this section foreman called from Victoria and stated that he had covered his territory and that while there had been considerable rainfall the track was in good condition. About 3:30 a. m. he received a report from a section man at Pevely, 8.24 miles north of Hematite; this section man reported that he had covered the territory from a mile south of Pevely to Riverside, about a mile beyond Pevely, that considerable water had fallen but the

track was all right. He also reported that No. 7 had passed Pevely. Dispatcher Hartzel stated that he did not receive any information concerning conditions between Pevely and Victoria. Dispatcher Hartzel discussed the situation with Roadmaster Rambo on the telephone, and as a result issued a warning order at 1:11 a. m. The last train to pass over the track in the vicinity of the point of accident was No. 55, which passed that point between 12:45 and 12:50 a. m. No. 55 and No. 56 met at Horine and neither train had reported any difficulty.

Roadmaster Rambo stated that he had been in charge of the De Soto District since 1934. On the night of the accident he was in the dispatchers office when the engineman of No. 63 reported that he saw a dirt slide just south of the tunnel at Vineland. The roadmaster told the dispatcher to have the section foreman at De Soto inspect the track, but on account of the heavy rain the section foreman had already gone out on his inspection trip, and later he called and reported everything all right. Roadmaster Rambo stated that inasmuch as the section foreman of the adjacent sections on each side of the section on which the accident occurred had reported that there was no excessive amount of water, he did not anticipate any trouble between those two sections. While he has been roadmaster there has never been any trouble with high water on that portion of the road, but they have had difficulty both north and south of that location with slides and ballast washouts.

Signal Maintainer Englehardt stated that water over the track would not cause the signals to display red indications unless a considerable amount of dirt or mud is carried in the water and extends from rail to rail.

Prin. Assistant Engineer Neptune stated that the flood of June 11 resulted from a series of thunder storms which occurred between 6 p. m. June 10 and sometime in the morning of June 11. While there are no rainfall recording stations in the watershed of Joachim Creek itself, records of adjoining stations indicate that the rainfall during 12 hours was in excess of 6 inches. Evidence of flow from tributary streams shows that the center of intensity of this rainfall passed over the area between bridges 28 and 25, and that the amount of rainfall at the center of the storm area was much in excess of the amounts from reporting stations. The rain gauge at Crystal City, approximately 2 miles east of bridge 25, shows the greatest amount, 7.84 inches on June 11 and 0.31 inch on June 12. The result of this heavy rain was to produce flood stages at bridges 24 and 25 south of Silica exceeding previous records by $1\frac{1}{2}$ feet or more, while the watersheds to the south of Hematite and north of bridge 22 in the vicinity of Horine did not produce flood stages equal to past records.

From information obtainable, the crest of the flood wave occurred at bridge 28 at 1 a. m., June 11, and at bridge 24 between 8:30 and 9 a. m., June 11.

Discussion

The flooding of the track at the point of derailment resulted from a series of storms of such intensity as to cause Joachim Creek to overflow its banks. At Crystal City, the nearest recording station, located about 2 miles east of the point of accident and out of the watershed of the valley, a rainfall of 7.84 inches was recorded between 6:35 p. m., June 10, and 6:20 a. m., June 11. The flow from the tributary streams indicates that the center of intensity of this rainfall passed over the area between bridges 28 and 25, from Hematite to Silica to Crystal City. The result of the heavy rains was to produce flood stages at bridges 25 and 24, exceeding previous records by $1\frac{1}{2}$ feet or more. Just south of bridge 25 water covered the track to a depth of from 3 to 5 inches at the time of the accident, and the surrounding country was inundated. As a result the track was washed out for a distance of 5 pole spaces, the derailment occurring at about the middle of this stretch. The crest of the flood reached bridge 25 approximately 5 hours after the accident.

Due to the heavy rains a train order warning the crews was issued, and the engineman of No. 7 operated the train in accordance therewith. When high water was observed under bridge 24, he reduced the speed of the train, making further reductions as he proceeded, and the speed had been reduced to between 15 and 20 miles per hour when the water was encountered on the tracks, and the train became derailed within a very short distance.

Rule 330 of the rules and instructions for the maintenance of way and structures provides that during heavy storms or high water, whereby tracks or any portions of the company's property becomes liable to damage, foremen and trackmen must be on duty, whether by day or night, and at such times they must carefully patrol their entire sections to make sure that the track is safe, taking stop signals with them.

Where there is any liability or danger to the track, either from freshet or other cause, foremen must make frequent personal examinations of the conditions to insure the safety of trains.

They must see that reliable watchmen are properly detailed to patrol the track, watch bridges, or perform other duties when necessary for the safety of track and structures, and frequently visit these men at such intervals, day or night as may be necessary, to see that their duties are faithfully performed.

They shall go over their sections during, or immediately after, a heavy rainfall taking care of all emergency conditions that they find and "spotting out" locations where ditches have been filled up and where trouble will be experienced unless ditches are cleaned out and made of sufficient capacity to provide proper run-off.

The section foreman in charge of the section on which the accident occurred stated that there had been local showers on the evening of June 10, but nothing unusual or alarming and he retired at 8:15 p. m., sleeping soundly until about 4 a.m. when he arose to find that the Joachim Creek had overflowed its banks; he did not learn of the accident until 6:30 a. m. when he called the dispatcher to get a line-up. The three members of his force also stated they retired early and were not aware of any unusual weather conditions during the night. All of these men live at Hematite, and there is no doubt that at some time prior to the occurrence of the accident conditions at that point were of the character contemplated in rule 330 as requiring special patrolling. Section foremen on the adjacent north and south sections were called by the dispatcher, and, no doubt, Foreman Green, who was in charge of the section on which the accident occurred, would also have been called had it been possible for the dispatcher to communicate with him. It is not unnatural for men to sleep soundly even during heavy storms, and the execution of important night emergency duties should not depend upon the chance that those who are to execute such duties will awaken at the proper moment. Some means of warning all section foremen should be available to the dispatcher at all times.

The last train to move over this track was No. 55 which passed about 12:45 a. m., more than two hours before the accident occurred; and at that time nothing unusual was noted, but subsequently dangerous conditions arose and it is probable that this accident could have been averted had the track been properly patrolled.

Conclusion

This accident was caused by a washout.

Respectfully submitted,

W. J. PATTERSON

Director.