

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT OF THE DIRECTOR
BUREAU OF SAFETY

ACCIDENT ON THE
MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE RY.

OSCEOLA, WIS.

MARCH 22, 1939

INVESTIGATION NO. 2340

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SUMMARY

Inv-2340

Railway:	Minneapolis, St. Paul & Sault Ste. Marie
Date:	March 22, 1939
Location:	Osceola, Wis.
Kind of accident:	Derailement
Train involved:	Passenger
Train number:	62
Engine number:	2721
Consist:	4 cars
Speed:	30-45 m. p. h.
Operation:	Timetable, train orders and manual block system for passenger trains.
Track:	Single, 3 ⁰ curve, 0.30 percent ascending eastward.
Weather:	Clear and warm
Time:	2:50 p. m.
Casualties:	1 killed and 8 injured
Cause:	Landslide

Inv-2340

May 3, 1939.

To the Commission:

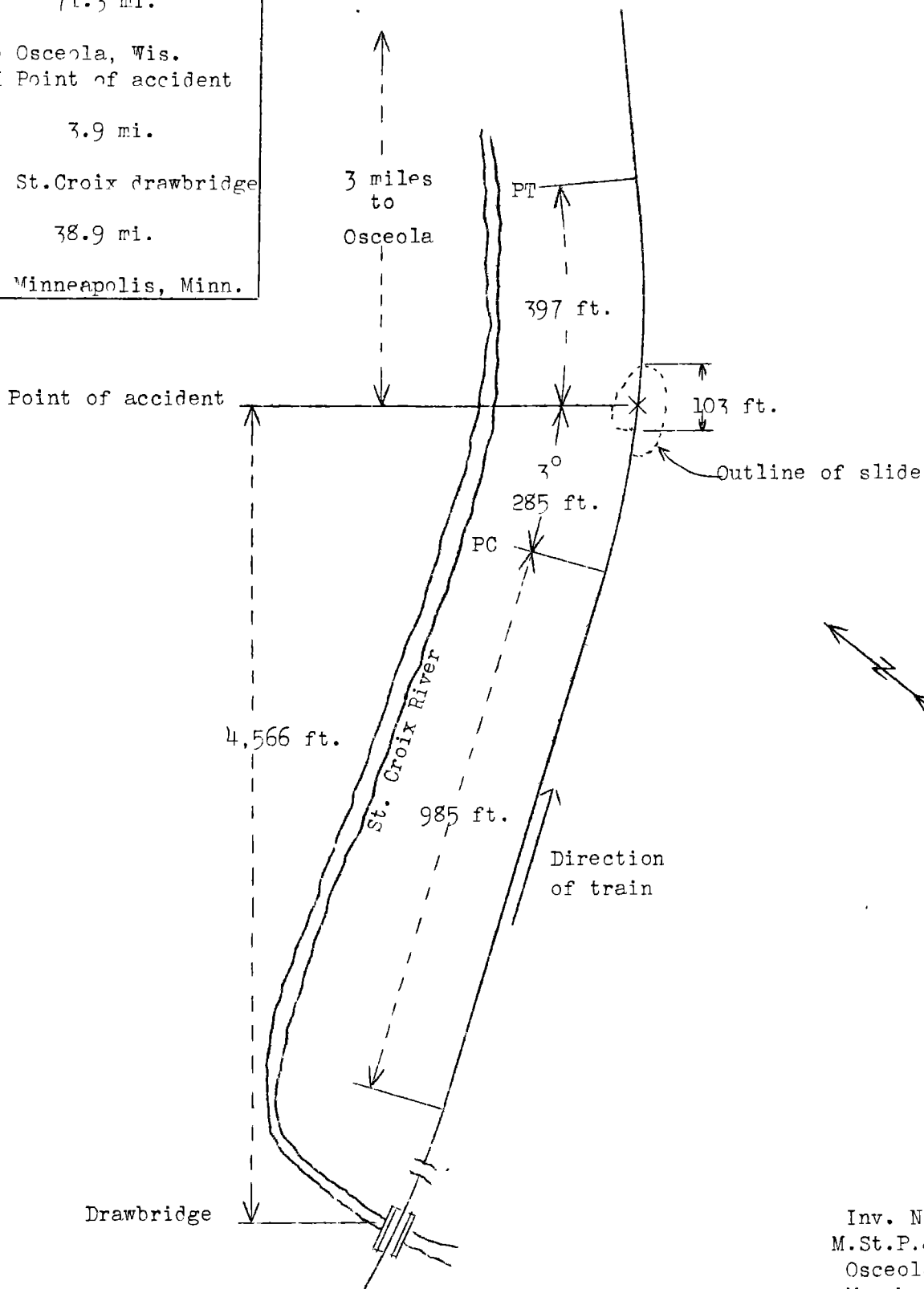
On March 22, 1939, there was a derailment of a passenger train on the Minneapolis, St. Paul & Sault Ste. Marie Railway near Osceola, Wis., which resulted in the death of one employee and the injury of five passengers, two railway mail clerks and one employee.

Location and Method of Operation

This accident occurred on that part of the Wisconsin & Peninsula Division designated as the First Subdivision which extends between Minneapolis, Minn., and Weyerhaeuser, Wis., a distance of 114.1 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 a manual block system for passenger trains. The accident occurred at a point 3 miles west of Osceola. Approaching from the west there is a tangent 985 feet in length, followed by a 3° curve to the left which extends 285 feet to the point of derailment and 397 feet beyond. The grade is 0.30 per cent ascending for east-bound trains.

In the vicinity of the point of accident the track is laid through a side-hill cut 375 feet in length. The top of the cut is about 110 feet from the center-line of the track on the south side, and 74.7 feet above the top of the rail; the slope is at a ratio of 1 to 1 and the foot of the slope at grade is approximately 43 feet from the center-line of the track. From the top of the cut the ground slopes back gradually for 60 feet where the elevation is 91.2 feet above the top of the rail and from this point southward it is almost level for an area of about 10 acres. The formation of the cut consists of stones, some of which are 8 inches in diameter, small gravel, and a large quantity of fine sand; there is an overburden of from 6 to 8 feet of clay with about 1 foot of loam on the surface. The track is ditched for side drainage and 68 feet east of the point of derailment there is a 24-inch concrete pipe culvert. On the north side of the track the embankment is 30 feet wide with a berm about 3 feet high, from which point the bank slopes to the St. Croix River, located about 24 feet below the top of the rail.

o	Weyerhaeuser, Wis.
	71.3 mi.
o	Osceola, Wis.
X	Point of accident
	3.9 mi.
o	St. Croix drawbridge
	38.9 mi.
o	Minneapolis, Minn.



Inv. No. 2340
M. St. P. & S. S. M. Ry
Osceola, Wis.
March 22, 1939

The track structure consists of 85-pound rail, 33 feet in length, laid on an average of 19 treated ties to the rail length; it is single-spiked, fully tieplated, provided with approximately six rail anchors to the rail length, ballasted with 8 inches of gravel, and is well maintained.

In this territory the maximum speed for passenger trains is 50 miles per hour, with a speed restriction of 40 miles per hour on curves.

The weather was clear at the time of the accident, which occurred at 2:50 p. m.

Description

No. 62, an east-bound passenger train, consisted of one baggage car, one combined mail-express car, one coach and one solarium car, in the order named, the first car being of wooden construction and the others of all-steel, hauled by engine 2721, of the 4-6-2 type, and was in charge of Conductor Howell and Engineman Robinson. This train left Minneapolis, 39.8 miles west of the point of derailment, at 1:15 p. m., according to the train sheet, on time, and passed Bald Eagle, the last open office, 21.7 miles west of the point of accident, at 2:23 p. m., 9 minutes late; after entering the cut involved and proceeding a distance of about 115 feet it struck a slide of gravel and sand and was derailed while traveling at a speed variously estimated to have been between 30 and 45 miles per hour.

The engine, badly damaged, stopped on its left side at right angles to the track with its front end 38 feet south thereof and its cab across both rails at a point about 260 feet east of the point of derailment; the tender, slightly damaged, stopped on its left side at right angles to the track and directly behind the engine. The first car, badly damaged, stopped upright at an angle of 45 degrees to the track with its front end north thereof; the second car, slightly damaged, was derailed but stopped upright with the forward end about 8 feet south of the track; the third car, slightly damaged and with its forward truck derailed, stopped with its front end about 10 feet south of the track; the fourth car sustained only slight damage. All the derailed equipment stopped within a distance of 215 feet, and the track was torn up a distance of about 132 feet.

The employee killed was the fireman and the employee injured was the engineman

Summary of Evidence

Engineman Robinson stated that he made several applications of the air brakes en route and they functioned properly. Approaching the cut involved the speed of his train was about 40 or 45 miles per hour; due to the curve being to the left he did not see the obstruction; however, upon observing sand flying he immediately applied the air brakes in emergency and closed the throttle, at which time he felt the front end of the locomotive rise and it then tipped over, throwing him from the cab. He thought that the fireman was working with the fire at the time of the derailment. About two or three years ago, before this cut was widened, he had struck two rocks at this location but no serious damage resulted.

Train Baggageman Krembs stated that he was in the baggage end of the second car and felt the air brakes become applied immediately before the derailment occurred; he did not get much of a jar and the contents of the car shifted but very little. Immediately after the accident he went toward the engine on the right side and observed dirt on the track.

The statement of Conductor Bowell was to the effect that an air-brake test was made before leaving the terminal, and the brakes operated properly at all times. He was near the middle of the third car and the first notice he had of the derailment was when he felt a light jar and a run-in of the slack when the brakes became applied, at which time he estimated the speed of the train from 35 to 40 miles per hour. When the train stopped he went toward the engine and observed that the throttle of the engine was closed and the air-brake valve was in emergency position. His examination of the track disclosed that water had caused rocks, mud, and clay to fall to the track and there were from 4 to 6 inches of sand and mud on the south rail a distance about equal to the length of the train; he attributed the cause of the derailment to this condition. He stated that the accident occurred at 2:50 p. m., and that the weather was clear and warm. He had never known of any slides occurring at this particular point during the time he has been running over this district, which was since 1905.

The statement of Brakeman Johnson, who was seated on the left side in the front end of the third car, and who was the first employee to reach the engine after the accident, corroborated that of Conductor Bowell.

Flagman Hathaway, who was sitting on the right side about the middle of the last car, estimated that the speed of the train was about 30 miles per hour at the time of the accident. He stated that he got off on the left side and when going back to flag he observed that there was sand to a depth of about 4 inches over the rail, extending from the center of this car to a point about 5 feet to its rear, and that sand was being washed down from the hillside.

Fireman Scallon, deadheading on No. 62, stated that he occupied the first seat on the right side of the third car, and felt the brakes become applied just before the derailment occurred. He found the throttle and the air-brake valve to be as previously described by the conductor, and that the reverse lever was three notches forward from the center. He was of the opinion that the engineman could not see the slide until he had almost reached it, but that had the fireman been looking ahead he would have been able to see it a distance of about 900 feet; however, at this point firemen are usually engaged in working with their fires preparatory to ascending the grade.

Assistant Superintendent Keene and General Master Mechanic Buscher stated that they arrived at the scene of the accident at 6:09 p. m.; their joint inspection disclosed that there was no water or sand coming from the embankment at that time.

Track Patrolman E. J. Johnson stated that his territory, to which he has been assigned since 1922, extends westward from Osceola to St. Croix drawbridge, a distance of approximately 4 miles. He patrols the track ahead of all trains by the use of a velocipede. His tour of duty is from 5:45 to 11 a.m., 1:30 to 5 p.m., and from 8:30 to 10:30 p. m., daily including Sundays. On the day of the accident he patrolled the track westward ahead of No. 7, due to leave Osceola at 6:29 a. m., and returned eastward ahead of No. 10, which passed Osceola at 9:12 a. m., and found conditions to be all right; he reported accordingly to the section foreman at noon. After dinner he again went to the drawbridge and returned east ahead of No. 62, and stopped at the cut involved about 2 p. m., where he made an inspection and found the culvert in good condition; there was no water and the drainage ditch was open and clear its full width. He stated that there had been no rainfall for three days prior to the date of the accident, but it had been thawing for several days; during this period he did not observe any snow on the slope or any water running, or rocks or clay sluffing from the bank of the cut; the bank appeared to be solid and he thought the ground was still frozen. It was his opinion that water soaked through the overburden into the sand, causing the sand to become heavy and slide out. He stated that there had been no previous trouble experienced with sand washing over the track in this cut.

Section Foreman C. S. Johnson stated he has been in charge of this section, which consists of 10 miles, since 1932; in addition to the track patrolman he has one laborer. On the day of the accident he had worked up and down the entire section, stopping at the cut involved about 11:20 a. m., when he inspected the wall, the drainage ditches, and the culverts, and found them to be all right and there was no water in evidence. He received a message from the roadmaster inquiring about water conditions, to which, about 11:30 a. m., he made the following report:

Water ways and culverts are O. K.
Only thing so far culverts unable
to handle water at some points.
Everything O. K. at present.

He stated that he saw the track patrolman at noon and again after he had patrolled the track ahead of No. 62; he considers the patrolman to be competent. On his arrival at the scene of the accident, he observed there were a few small rocks mixed with mud and sand, but found no rocks on the track; the slide appeared to have started from the top of the cut and he attributed the cause to be as stated by the track patrolman. There had been about a foot of snow on the level ground in the immediate vicinity of this cut, but due to the warm weather this was about gone; since he did not think the amount of snow was out of the ordinary he gave no special instructions to the track patrolman to watch for water and falling rocks, as he ordinarily would have done had there been an unusual condition. Since the cut was widened in 1936 he has experienced no trouble with slides at this location.

The statement of Roadmaster G. A. Johnson was to the effect that he passed through this cut on No. 62 the day previous to the accident; he observed conditions to be as previously described by the track patrolman and the section foreman. He arrived at the accident between 5 and 5:30 p. m., at which time sand was not being washed upon the track; a mixture of sand and clay about 8 inches deep was removed from the track. He, also, was of the opinion that the slide was caused by the clay becoming water soaked, either on the top or the side of the cut, but evidently more on the slope. He has been in charge of this territory for 20 years and knew of no previous slides at this point.

Maintenance Engineer Whitman stated that the temperature on the afternoon of the day of the accident was approximately 60 degrees in the shade. He arrived at the scene of the accident at 6:15 p. m., and his inspection disclosed that from a location

57 feet west of the point where the engine became derailed to a point 46 feet eastward the track was covered with sand to a maximum depth of 1.7 feet, which had washed from a point two-thirds of the way up the slope or about 50 feet above the rail. The depth of the slide at the bottom wall of the cut was about 5 feet, and 8 feet from the center-line of the track on the north side it was the same elevation as the top of the rail. He estimated that at the time of the derailment 75 cubic yards of material was on the track and about 200 cubic yards in the south ditch, and that approximately 325 cubic yards had washed out of the bank after the accident occurred. The rear truck of the fourth car was buried in sand, but there was no indication on the journal boxes and brake beams that the cars had been pulled through sand, and it was evident that at the time the train entered this cut, the material was over the rails to a depth of only 2 to 4 inches a distance of 15 or 20 feet at the center of the slide. When the engine became derailed its right wheels followed along the south side of the rail on the ends of the ties, a distance of 83 feet, and from this point marks on the ground indicated that it traveled about 95 feet tangent to the curve with the right drivers about 12 feet from the center-line of the track and it then took a gradual curve to the south a distance of 82 feet where its front end struck the bank and overturned. The sand contained considerable water as the slide was quite flat, and difficulty was experienced in removing it due to its saturated condition. Neither rocks nor top soil of the overburden was on the track, and the surface of the break did not show any old cracks; there were no indications on the top of the slope of any large volume of water having passed over the bank and it appeared that the sand and gravel seams back in the face of the cut had become saturated with ground-water; this condition combined with the warm weather resulted in the frost leaving this portion of the slope more quickly than on the adjacent portions. He stated that, other than normal maintenance, no work had been done in the vicinity of this cut since 1936, when approximately 6,000 cubic yards of material were removed.

Discussion

According to the testimony No. 62, traveling at a speed of between 30 and 45 miles per hour, struck a slide consisting of gravel and fine sand and became derailed. Approaching from the west the engineman's view was considerably restricted by the curve and he neither saw nor was aware of the obstruction until he observed sand flying from the wheels, when he immediately applied the air brakes in emergency and closed the throttle.

The fireman, who was killed in the accident, had a view from his side of the engine of about 900 feet; however, the evidence indicated that he was engaged in working on the fire at the time and apparently had no warning.

According to the evidence, for several days previous to and at the time of the accident the weather was warm and about a foot of snow on the level portion of the ground in this immediate vicinity had melted, and due to the frost leaving the ground the fine sand and small gravel seams in the face of the cut became saturated with ground-water. As a result from a point two-thirds of the way up the slope or about 50 feet above the rails, sand and gravel were washed upon the track to a depth of from 2 to 4 inches over the rails a distance of about 15 or 20 feet, aggregating approximately 75 cubic yards of sand and gravel on the track and about 200 cubic yards in the south ditch at the time of the derailment. After the derailment occurred an additional 325 cubic yards of material washed out of the bank to a maximum depth of 1.7 feet; however, none of the top soil or overburden was on the track. The surface of the break did not show any evidence of old cracks. Apparently the slide occurred without warning as the patrolman inspected the cut involved four times during the day of the accident, the last inspection being only 50 minutes before the accident occurred and, according to his statement, everything was normal at that time. The section foreman had inspected it about 3½ hours before the accident occurred and the roadmaster inspected it the day before and everything appeared to be normal. According to the evidence this was the only slide that had occurred at this location.

Conclusion

This accident was caused by a landslide.

Respectfully submitted,

W. J. PATTERSON,

Director.