

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2916
CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC
RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR LE ROY, MINN., ON
AUGUST 5, 1945

SUMMARY

Railroad:	Chicago, Milwaukee, St. Paul and Pacific
Date:	August 5, 1945
Location:	Le Roy, Minn.
Kind of accident:	Derailment
Train involved:	Passenger
Train number:	103
Engine number:	187
Consist:	7 cars
Speed:	50 m. p. h.
Operation:	Timetable and train orders
Track:	Single; tangent; level
Weather:	Raining
Time:	7:02 a. m.
Casualties:	1 killed; 11 injured
Cause:	Undermining of track by flood water

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2916

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC
RAILROAD COMPANY

September 17, 1945.

Accident near Le Roy, Minn., on August 5, 1945, caused by
the undermining of the track by flood water.

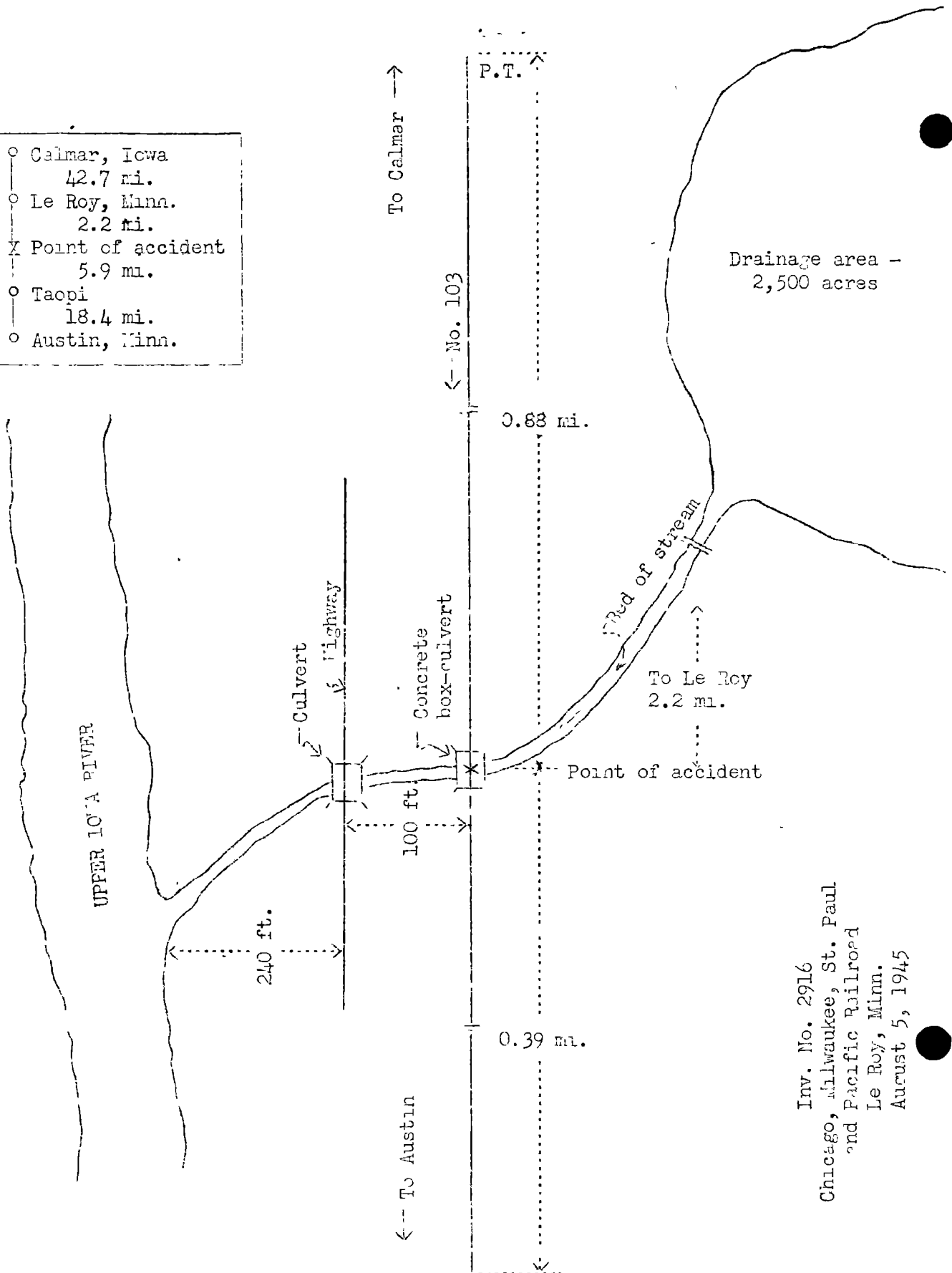
REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On August 5, 1945, there was a derailment of a passenger train on the Chicago, Milwaukee, St. Paul and Pacific Railroad near Le Roy, Minn., which resulted in the death of one employee, and the injury of seven passengers, two railway-mail clerks, one train-service employee on duty and one employee off duty.

¹Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Patterson for consideration and disposition.

- Calmar, Iowa
42.7 mi.
- Le Roy, Minn.
2.2 mi.
- X Point of accident
5.9 mi.
- Taopi
18.4 mi.
- Austin, Minn.



Inv. No. 2916
Chicago, Milwaukee, St. Paul
and Pacific Railroad
Le Roy, Minn.
August 5, 1945

Location of Accident and Method of Operation

This accident occurred on that part of the Iowa and Southern Minnesota Division extending westward from Calmar, Iowa, to Austin, Minn., 39.2 miles, a single-track line over which trains are operated by timetable and train orders. There is no block system in use. The accident occurred on the main track 44.9 miles west of Calmar, at a point 2.2 miles west of the station at Le Roy. The main track is tangent throughout a distance of 0.88 mile east of the point of accident and 0.39 mile westward. The grade for west-bound trains is 0.7 percent descending 2,100 feet, then it is level 99 feet to the point of accident and 3,101 feet westward.

The track structure consists of 85-pound rail, 31 feet in length, laid in 1925 on 19 ties to the rail length. It is fully tieplated, single-spiked, provided with 4-hole angle bars and an average of 6 rail anchors per rail length, and is ballasted with cinders and gravel to a depth of 8 inches. In the immediate vicinity of the point of accident the track is laid on an earthen fill 21 feet high, about 70 feet wide at the bottom and 18 feet wide at the top.

At the point of accident a concrete box-culvert 8 feet high, 14 feet wide and 71 feet 6-1/4 inches long extended under the track. It was built in 1902. At the center of the culvert, the side walls were 3 feet thick at the top and 4 feet thick at the bottom. The footings of the walls extended 3 feet below the normal ground-line. The top of the culvert was 1 foot 8 inches thick at the center, and was reinforced with 59 I-beams placed at right angles to the side walls and upon them. At the normal ground-line 7 concrete struts extended between the side walls. The spaces between the struts were filled with gravel topped by hand-placed stones. The gradient of the floor was 0.014 percent descending northward. Above the top of the culvert, the fill was about 10 feet high, 18 feet wide at the top and about 50 feet wide on the roof of the culvert. A double box-culvert, of about the same over-all dimensions as the culvert under the railroad, extends under a highway located about 100 feet north of the track in the vicinity of the point where the accident occurred. Normally, water from a 2,500 acre tract south of the railroad drains into a stream, the bed of which is about 6 feet wide and 2 feet deep. The stream flows northward through the culvert under the railroad, thence through the culvert under the highway, and empties into Upper Iowa River at a point about 240 feet north of the highway.

Rules for maintenance-of-way employees read in part as follows:

M-101. Section foremen must examine the condition of the tracks, bridges and culverts whenever violent rain or windstorms or sudden rise in streams occur and if found unsafe, * * * report the facts to the chief dispatcher from the nearest available point of communication.

Operating rules read in part as follows:

101 (B). When overtaken by severe storms or indication of high water, or any condition which threatens damage, trains must proceed at restricted speed, so that they can be stopped in time to prevent accident, * * *

982. Operators must advise the train dispatcher promptly * * * as to severity of all storms and extent of damage. * * *

Time-table special instructions provide that in case of heavy rain, the operator must notify the section foreman.

The maximum authorized speed for the train involved was 50 miles per hour.

Description of Accident

No. 103, a west-bound first-class passenger train, consisted of engine 187, one baggage car, one mail-baggage-express car, two coaches and three loaded live-stock cars, in the order named. The first to fourth cars, inclusive, were of all-steel construction, and the remainder were of steel-underframe construction. This train departed from Calmar, the last open office, at 5:57 a. m., 7 minutes late, and while it was moving at a speed of about 50 miles per hour, as indicated by the tape of the speed recorder, the engine and the first 3 cars were derailed.

The engine was derailed to the south and stopped upright and at an angle of about 15 degrees to the track, about 240 feet west of the point of derailment. The front of the engine was badly damaged and the cab was demolished. The first 3 cars stopped practically upright and in line with the track, and were considerably damaged.

It was raining at the time of the accident, which occurred about 7:02 a. m.

The engineer was killed, and the baggageman was injured.

Discussion

No. 103 was moving on tangent track at a speed of about 50 miles per hour in territory where the maximum authorized speed was 50 miles per hour when the engine and the first 3 cars were derailed. There was no defective condition of the engine prior to the accident, and there was no indication of dragging equipment.

The fireman said that he observed water adjacent to the track at several points between Calmar and the point where the accident occurred, but there was no indication of defective track. As the train was approaching the point where the accident occurred the engine was riding smoothly. The enginemen were maintaining a lookout ahead, but visibility was somewhat restricted by rain and mist. The first indication of defective track was when the front end of the engine dropped down. The derailment occurred before any action could be taken to stop the train. The engineer was killed.

After the accident, examination disclosed that the track structure immediately above the culvert had dropped about 4 feet. Flood water had undermined the south ends of the walls of the culvert a considerable distance below the footings. The undermining extended northward to a point below the center-line of the culvert. Each wall and the roof of the culvert were broken into three portions. The central portion of the west wall leaned westward at an angle of about 10 degrees and the central portion of the roof sagged downward about 18 inches at the west wall. A considerable portion of the lower part of the fill immediately adjacent to the outside of each wall was washed away. There were marks which indicated that water on the south side of the fill had risen to a point about 5 feet above the top of the culvert. The condition of the fill and the culvert and the positions of the engine and the equipment after the accident indicated that at the time the train was closely approaching the point where the derailment occurred, the culvert, the upper portion of the fill and the track were in their normal positions. Evidently, the fill and the culvert collapsed under the weight of the engine.

The investigation disclosed that in the territory involved intermittent rainfall had occurred throughout August 4. About 12:30 a. m., August 5, the operator at Taopi, 8.1 miles west of Le Roy, reported to the train dispatcher that a heavy rain was falling. The train dispatcher instructed the foreman in charge of the section immediately west of the section involved to make an inspection of the track. About 4:45 a. m., this foreman reported to the train dispatcher that he had inspected the track eastward to a point about 2 miles west of the culvert involved and, since he had found no evidence of damage to the track in his territory, he did not consider it necessary for

the train dispatcher to call the section foreman at Le Roy. The foreman at Le Roy, who had charge of the section involved, said that he was awakened about 12:30 a. m. He observed that it was raining, but he did not consider the rainfall was of sufficient volume to require an inspection of the track. He again retired about 1:15 a. m., and the first he knew of anything being wrong was when he was notified of the accident.

According to data recorded by the U. S. Weather Bureau at Grand Meadows, Minn., 14 miles north of Le Roy, 2.63 inches of rain fell between 7 a. m., August 4, and 7 a. m., August 5. Records of an unofficial weather observer, located at Le Roy, indicated that 5 inches of rain fell in that vicinity between 12:01 a. m. and 3 a. m., August 5. Officers of the railroad said that the drainage facilities in the vicinity of the point of accident had been adequate previously, and that no damage to the track had occurred during the past 43 years. The division engineer and the chief carpenter inspected the culvert during April, 1945, and no defective condition was observed. The section foreman last inspected the culvert and the fill a few days prior to the occurrence of the accident, and no unusual condition of the culvert or of any debris having fouled the channel through the culvert was observed.

The volume of water flowing toward the fill was greater than the capacity of the culvert, and the water rose several feet above the top of the culvert. In the opinion of the roadmaster, a whirling motion existed at the south end of the culvert when water from a higher level and both sides was directed into the culvert, and earth under the culvert and at both sides of it was carried away by the rapidly flowing water.

Cause

It is found that this accident was caused by the undermining of the track by flood water.

Dated at Washington, D. C., this seventeenth day of September, 1945.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.