

INTERSTATE COMMERCE COMMISSION

WASHINGTON

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INVESTIGATION NO. 3085

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC  
RAILROAD COMPANY

REPORT IN RE ACCIDENT

NEAR SOUDAN, MONT., ON

MARCH 17, 1947

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SUMMARY

Railroad: Chicago, Milwaukee, St, Paul  
and Pacific

Date: March 17, 1947

Location: Soudan, Mont.

Kind of accident: Derailment

Train involved: Passenger

Train number: 16

Engine number: E-13

Consist: 12 cars

Estimated speed: 50 m. p. h.

Operation: Timetable, train orders and  
automatic block-signal system

Track: Single; tangent; 0,3 percent  
descending grade eastward

Weather: Clear

Time: 2:38 p. m.

Casualties: 1 killed; 30 injured

Cause: Landslide

INTERSTATE COMMERCE COMMISSION

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INVESTIGATION NO. 3085

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

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April 14, 1947.

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Accident near Soudan, Mont., on March 17, 1947, caused  
by a landslide.

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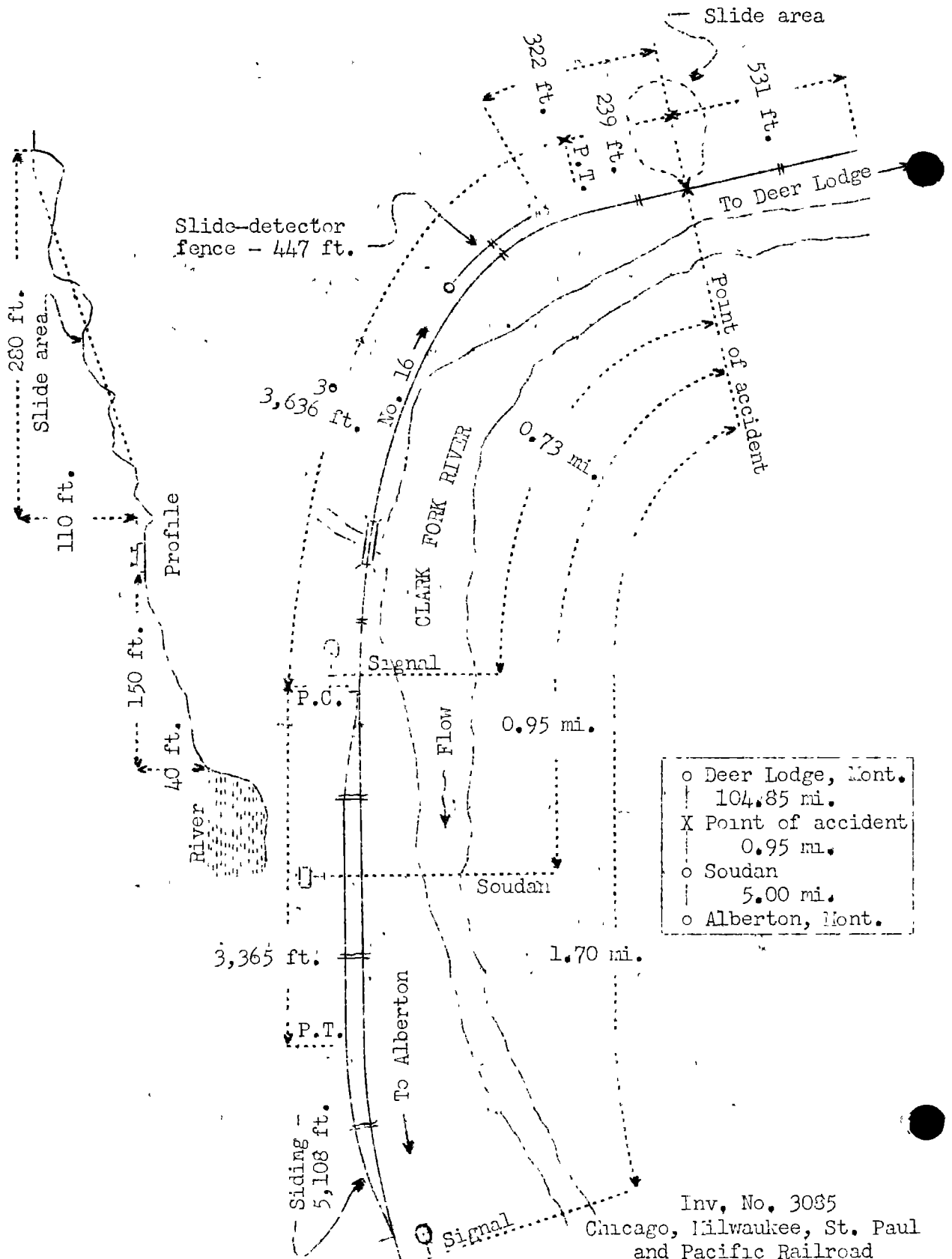
REPORT OF THE COMMISSION <sup>1</sup>

PATTERSON, Commissioner:

On March 17, 1947, there was a derailment of a passenger train on the Chicago, Milwaukee, St. Paul and Pacific Railroad near Soudan, Mont., which resulted in the death of 1 express messenger, and the injury of 17 passengers, 1 Pullman employee, 1 coach attendant, 6 dining-car employees and 5 train-service employees.

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<sup>1</sup>  
Under 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.



Inv. No. 3085  
 Chicago, Milwaukee, St. Paul  
 and Pacific Railroad  
 Soudan, Mont.,  
 March 17, 1947

Location of Accident and Method of Operation

This accident occurred on that part of the Rocky Mountain Division extending between Alberton and Deer Lodge, Mont., 110.8 miles. In the vicinity of the point of accident this is a single-track line equipped with an overhead catenary system for the electric propulsion of trains, over which trains are operated by timetable, train orders and an automatic block-signal system. The accident occurred on the main track 5.95 miles east of Alberton and 0.95 mile east of the station at Soudan. From the west there are, in succession, a tangent 3,365 feet in length, a 3° curve to the right 3,636 feet and a tangent 239 feet to the point of accident and 531 feet eastward. The grade is 0.3 percent ascending eastward.

In the vicinity of the point of accident the track parallels the north bank of the Clark Fork River. The track is laid on a hillside cut and is about 40 feet above the level of the shore-line of the river and about 150 feet horizontally distant. The north shoulder of the roadbed is 8 feet from the centerline of the track. A drainage ditch is provided on the north side of the track at the point where the accident occurred. The toe of the hillside cut is approximately 11 feet north of the centerline of the track. The hillside slopes at a ratio of about 3 to 1 to a height of 110 feet above the level of the rail. The formation of the slope consists of clay, sand and gravel.

The track structure consists of 100-pound rail, 39 feet in length, laid in 1930 on 24 treated ties to the rail length. It is fully tieplated, single-spiked between rail joints and double-spiked at rail joints, provided with 4-hole angle bars 24 inches long, and an average of 10 rail anchors per rail length. It is ballasted with gravel to a depth of 24 inches.

Automatic signals governing east-bound movements are located in the immediate vicinity of the west and east switches of the siding at Soudan and are, respectively, 1.70 miles and 0.73 mile west of the point of accident. These signals are of the color-light type and are continuously lighted. The east end of a slide-detector fence, 447 feet long and located on the north side of the track, is 322 feet west of the point of accident. The controlling circuits are so arranged that if slide material lodges against the detector fence the signals display restrictive indications.

Time-table special instructions prescribe the maximum authorized speed for passenger trains as 65 miles per hour on tangent track and 55 miles per hour on the curve immediately west of the point of accident.

### Description of Accident.

No. 16, an east-bound first-class passenger train, consisted of electric engine E-13, a 4-6-2-2-6-4 type, one mail-express car, one express car, one baggage car, three coaches, two sleeping cars, one dining car and three sleeping cars, in the order named. All cars were of steel construction. This train departed from Alberton, the last open office, at 2:30 p. m., 3 minutes late, passed the automatic block-signals at Soudan, which displayed proceed, and, at a point 0.95 mile east of Soudan, it struck a landslide and was derailed while moving at an estimated speed of 50 miles per hour.

The engine and the first five cars were derailed. The engine and the first two cars stopped on their left sides, across the track and at right angles to it, with the front of the engine 380 feet east of the west end of the slide. The third car stopped practically upright, across the track and at an angle of about 45 degrees to it. The fourth and fifth cars stopped practically upright and in line with the track. The engine and the first three cars were badly damaged, the fourth car was considerably damaged and the fifth car was slightly damaged.

The engineer, the fireman, the baggageman, the front brakeman and the flagman were injured.

The weather was clear at the time of the accident, which occurred about 2:38 p. m.

According to U. S. Weather Bureau records, the precipitation in this area during the 16-day period immediately prior to the day of the accident was 0.26 inch.

### Discussion

No. 16 was moving on the leaving portion of a 3° curve to the right at a speed of about 55 miles per hour, in territory where the maximum authorized speed is 55 miles per hour, when the engineer observed about 750 feet distant a displacement of material from the hillside immediately adjacent to the north rail of the tangent track. At that time the displaced material did not obstruct the track, and the engineer did not observe any movement of the material. He made a service brake-pipe reduction, then when the engine was within a short distance of the displaced material, he observed that the material was moving over the north rail and he moved the brake valve to emergency position. The speed of the train was about 50 miles per hour when the derailment occurred.

After the accident examination disclosed that approximately 25,000 cubic yards of moist clay, sand and gravel had slid from the hillside north of the track. Apparently, the foot of this displaced material moved to the track immediately in front of the approaching train and covered the track a distance of about 204 feet. The greatest depth over the north rail was 3 feet.

The section foreman in charge of the track in this territory had observed conditions in the vicinity of the point where the accident occurred about 4 hours 30 minutes prior to the occurrence of the slide, and he did not see any indication that a slide might occur.

Prior to the present accident, two slides had occurred at this point. The first of these occurred in 1939 and consisted of approximately 30,000 cubic yards. The second occurred in 1943 and consisted of approximately 43,000 cubic yards. After the occurrence in 1943 the area between the track and the foot of a highway fill about 280 feet northward was sloped at a ratio of 3.1 to 1, and it was the opinion of officials of the railroad that this action was sufficient to prevent a recurrence. The last inspection of the area from which the present slide fell was made during October, 1946. At that time there was no evidence that a slide might occur. Very little rainfall had occurred in this territory during a considerable period prior to the present slide. The presence of moisture in the slide material indicates that a subterranean source of water in this area had saturated the material of the slope to the extent that there was no bond in the material at the time the slide occurred.

Cause

It is found that this accident was caused by a landslide.

Dated at Washington, D. C., this fourteenth day of April, 1947.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,  
Secretary.