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MAY - 1941
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C.

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 2480
THE WESTERN PACIFIC RAILROAD COMPANY
REPORT IN RE ACCIDENT
NEAR MERLIN, CALIF., ON
JANUARY 26, 1941

- 2 -

SUMMARY

Railroad: Western Pacific
Date: January 26, 1941
Location: Merlin, Calif.
Kind of accident: Derailment
Train involved: Passenger
Train number: 39
Engine number: 326
Consist: 9 cars
Speed: 5-20 m. p. h.
Operation: Timetable and train orders
Track: Single; 3°45' curve; 1 percent
descending grade westward
Weather: Clear
Time: 4:20 p. m.
Casualties: 1 missing; 1 injured
Cause: Accident caused by damage to the
track, as a result of a rock slide

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 2480

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

THE WESTERN PACIFIC RAILROAD COMPANY

April 1, 1941

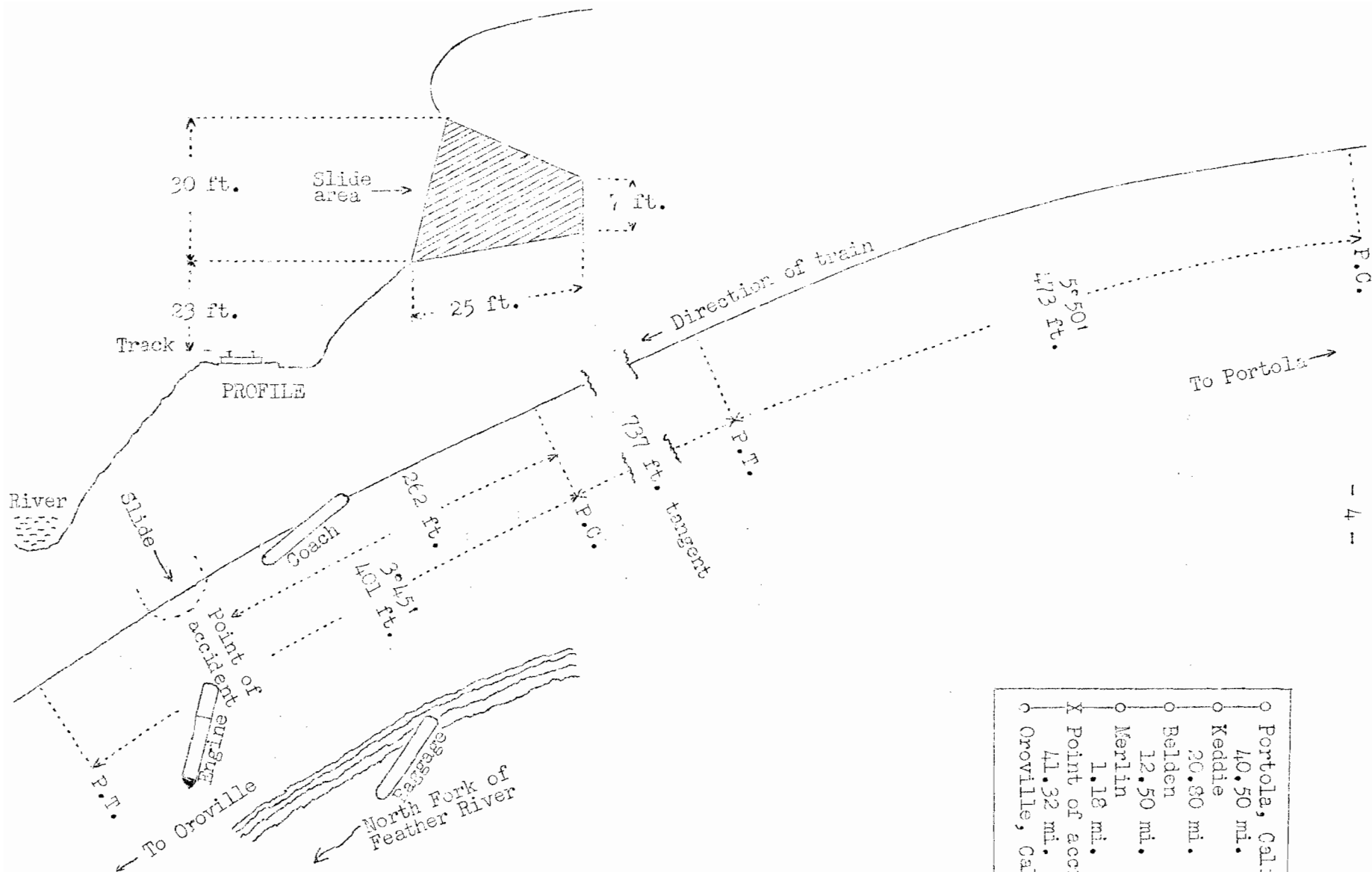
Accident near Merlin, Calif., on January 26, 1941, caused
by damage to the track, as a result of a rock slide.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On January 26, 1941, there was a derailment of a passenger train on the Western Pacific Railroad near Merlin, Calif., which resulted in the probable death of one employee and the injury of one employee.

¹ 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.



○	Portola, Calif.
○	40.50 mi.
○	Keddie
○	20.80 mi.
○	Belden
○	12.50 mi.
○	Merlin
○	1.18 mi.
X	Point of accident
○	41.32 mi.
○	Oroville, Calif.

Inv. No. 2480
 Western Pacific Railroad
 Merlin, Calif.
 January 26, 1941

Location and Method of Operation

This accident occurred on that part of the Western Division designated as the Third Subdivision which extends between Portola and Croville, Calif., a distance of 116.3 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders; no form of block system is in use. The accident occurred about 4,060 feet west of the west siding-switch at Merlin. As the point of accident is approached from the east there are, in succession, a $5^{\circ}50'$ curve to the left 473 feet in length, a tangent 733 feet, and a $3^{\circ}45'$ curve to the left 401 feet. The derailment occurred on the latter-mentioned curve at a point 251 feet from its eastern end. At the point of accident the grade for west-bound trains is 1 percent descending.

In the vicinity of the point of accident the track parallels the north bank of the north fork of Feather River. The track is laid on a hillside cut and is 135 feet above the level of the shore line of the river and 160 feet horizontally distant. The top of the slope is about 12 feet horizontally distant from the center of the track. On the north side of the track, in the immediate vicinity of the point of accident, the toe of a wall of granite is 13 feet from the center of the track. The wall rises to a height of about 60 feet and its top is 32 feet horizontally distant from the center of the track. Above the wall the ground-line slopes gradually northward a considerable distance.

The track structure consists of 112-pound rail, 39 feet in length, laid in 1936 on 24 ties to the rail length; it is double-spiked on the outside and single-spiked on the inside of the rails, fully tieplated, provided with 8 rail anchors to the rail length, ballasted with 12 inches of crushed rock and gravel, and well maintained.

Because of track curvature the view from the right side of the cab of a west-bound engine of the point where the accident occurred was restricted to a distance of less than 200 feet, from the left side of the cab an unobstructed view could be had a distance of about 975 feet, and from a point 1,210 feet distant the view from the left side was partly obstructed by a pole line.

The maximum authorized speed for passenger trains in the vicinity of the point of accident is 35 miles per hour.

The weather was clear at the time of the accident, which occurred about 4:20 p. m.

Description

No 39, a first-class west-bound passenger train, with Conductor Sprinkle and Engineman Loucks in charge, consisted of engine 306, of the 2-8-2 type, one baggage car, one coach, one chair car, two tourist cars, one dining car, two Pullman sleeping cars, and one lounge car, in the order named; all cars were of steel construction. This train departed from Portola, 73.8 miles east of Merlin, at 2:05 p. m., according to the train sheet, 1 hour 10 minutes late, passed Belden, 12.5 miles east of Merlin and the last open telegraph office, at 3:56 p. m., 1 hour 10 minutes late, and was derailed while moving at a speed variously estimated at 5 to 20 miles per hour.

The engine and the tender were derailed to the left and stopped on their left sides down the embankment, at a 45-degree angle to the track. The front end of the engine was 119 feet, and the rear end of the tender 66 feet from the center of the track. The front end of the engine was 98 feet and the rear end of the tender 80 feet below the level of the track. The engine was badly damaged. The first car, badly damaged, stopped practically upright and partially submerged in the river; its front end was 195 feet and its rear end 165 feet horizontally distant from the center of the track. The front truck of the second car was derailed to the south.

After the accident occurred the baggageman was missing and his body probably was carried down the river; the employee injured was the engineman.

Summary of Evidence

Engineman Loucks stated that at Portola a terminal air-brake test was made, a running test was made after the train departed from that point, and the brakes functioned properly en route. When the train was approaching the point where the accident occurred the speed was between 25 and 30 miles per hour, the headlight was lighted, and he and the fireman were maintaining a lookout ahead. The first he knew of anything being wrong was when the fireman called a warning that there was a rock slide on the track ahead. The engineman immediately applied the air brakes in emergency but the distance was too short for stopping the train. As the engine neared the rock slide the engineman observed that the track was out of normal alignment and when the engine, moving at a speed of 5 miles per hour, reached the slide it became derailed to the left; however, the engine did not strike the slide. Because of descending grades and curves, it is necessary to apply and to release the brakes frequently; however, the brakes had been

released long enough for the brake-pipe pressure to be restored to 90 pounds before the emergency application was made. In the late afternoon, shadows materially restrict visibility in the canyon. He said that he had operated trains in the Feather River Canyon territory for 20 years and this was the first instance that he had experienced difficulty on account of a rock slide at this point.

Fireman Hecker stated that as his train approached the point where the accident occurred the speed was about 30 miles per hour and he was maintaining a lookout ahead. The weather was clear; however, shadows in the canyon made it difficult to distinguish objects. Seeing an object ahead, he studied it intently several seconds before he was certain it was a rock slide on the track and that the track was out of normal alignment. He called a warning to the engineman, who immediately placed the brake valve in emergency position. At that time the speed was about 30 miles per hour and the engine was about 700 feet east of the rock slide. The fireman jumped just before the engine became derailed. He said that while traversing the canyon involved he maintains a lookout for obstructions on the track.

Conductor Sprinkle stated that when his train was approaching the point where the accident occurred he was in the fourth car and the speed was about 30 or 35 miles per hour. The first he knew of anything being wrong was when the air brakes were applied in emergency. The train stopped abruptly at 4:20 p. m. Throughout the trip he observed that the brakes controlled the speed of the train properly at all points where they were used. It was his opinion that the wires were torn down by the derailed equipment. He said that the weather was clear. Throughout a period of 31 years the greater part of his service has been in the Feather River Canyon territory; during that time he had seen numerous slides but this was the first instance wherein difficulty had been experienced on account of a rock slide at the point involved.

Front Brakeman Penninger stated that the speed of his train at the time of the derailment was not in excess of 20 miles per hour.

The statement of Flagman Kilgour added nothing of importance.

Superintendent Leary stated that the wires failed at 4:20 p. m.

Car Inspector Thomas stated that he assisted in conducting an air-brake test on No. 39 at Portola and the brakes applied and released properly.

Trackwalker Anderson stated that about 2 p. m., January 26, he passed the point where the slide afterward occurred and at that time he looked at the wall of the cut and observed nothing irregular. Water was trickling from under the rock.

Section Foreman Wilkinson stated that his section is 5 miles in length and his gang consists of three laborers. He arrived at the scene about 1 hour 10 minutes after the accident occurred. He observed that about 65 feet of rail was missing and the track was moved out of normal alignment, toward the river, a distance of about 25 feet. There was no indication that the engine struck the rock. He thought the slide was caused by the rock being loosened by water.

Roadmaster McNeill stated that his duties require him to make numerous trips past the point where the rock slide occurred. He had never found a dangerous condition there. On January 24 and 25 he rode over the track involved and at that time there was no indication of an impending rock slide. The rock formations and the slopes differ in various parts of the canyon. For the most part difficulty with rock slides is experienced at points about 60 or 70 miles east of Merlin. It was his opinion that water washing beneath the rock caused the slide.

Assistant Roadmaster Elliott stated that on January 23 he passed around the curve involved on his track motor-car, and on January 24 he passed that point on an east-bound freight train; on each of those trips no unusual condition of the rock wall was observed. He said the rock slide knocked the track out of normal alignment.

Master Mechanic Gleason stated that he arrived at the scene of the accident about 7 p. m., January 27, and examined the engine. It was his opinion that since the pilot beam was not damaged the engine was derailed before it reached the point where the rock obstructed the track.

Trainmaster Stapp stated that no previous trouble had been experienced from rock slides at the point involved.

Division Engineer Williams stated that the rock slide was approximately 50 feet in length and that it fell from the wall. A seam extended upward and away from the track to a height of from 25 to 38 feet and at an angle of about 45 degrees. Above this seam there was a similar seam which sloped in the opposite direction and reached a height of 55 feet above the track. Vertical seams also were present. Roots had grown into the seams and water had been running through the cracks. This condition

contributed to the slippage of the rock. The rock was composed of practically solid granite, measured approximately 5,420 cubic feet, and, based on a weight of 170 pounds per cubic foot, weighed 460 tons. An overhanging piece of rock which remained in the wall measured approximately 22 feet in depth and from 3 to 32 feet in thickness. There was no indication of decomposition in the rock. He said that before the railroad was constructed there was a solid rock wall at this particular location and this rock was blasted in order to form the roadbed. He thought the seams, on which this piece of rock slipped, probably had been opened during blasting operations at the time the railroad was constructed, then roots grew into the seams and opened them, and water entered the seams; this condition finally resulted in the large piece of rock becoming dislodged. For some time immediately preceding the day of the accident, light blasting operations were being conducted by a public utility company, at a point about 1/4 mile east of the point where the slide occurred and below the level of the track; however, he did not think this blasting contributed to the occurrence of the slide. He said that ordinarily he passes over this section of track about every 2 weeks, and that he was last over it on January 7. A track walker is assigned to inspect this section of track regularly, and all section foremen have instructions to assign as many track walkers as necessary during storms. No trouble had been experienced previously with a slide at this point. He thought the accident would have been averted if the line had been equipped with an automatic block-signal system.

According to information furnished by the carrier, the last train to pass the point involved before the slide occurred was an east-bound train, which passed that point about 2:58 p. m., or 1 hour 22 minutes prior to the time the accident occurred.

The carrier furnished information also that during the past 5 years rock slides on this subdivision, including the rock slide involved in this accident, were the cause of 12 derailments, which resulted in a total property damage of \$107,416.65. Rock slides and mud slides occur frequently each year during the rainy season. Employees designated as rock rollers are assigned to first-class trains during stormy weather for the purpose of removing obstructions. A rock roller boarded No. 59 at Keddie, 23.3 miles east of Merlin. The slide area extends between mileposts 207 and 319, and slides occur most frequently between mileposts 218 and 279; the accident involved occurred at milepost 246.42. On January 30, 1941, the installation of a slide-detector fence was completed at milepost 236.4, which point is 10 miles west of the point of accident.

During the 30-day period prior to the occurrence of the accident, the average daily movement over the point involved was 14.4 trains.

Discussion

According to the evidence, No. 39 was moving at a speed of about 30 miles per hour, which was 5 miles per hour less than the maximum authorized speed, when the fireman gave warning of a slide at a distance of about 700 feet in advance of the engine. The engineman applied the brakes in emergency. The train was moving at a speed variously estimated from 5 to 20 miles per hour at the time the engine became derailed. Examination after the accident disclosed that a slide containing about 200 cubic yards of granite had fallen from the wall on the north side of the track and had shoved the track about 25 feet southward and down the slope which lay between the track and the river; the rails had been broken. The derailment occurred at the point where the rails were broken. No part of the engine had been in contact with the material comprising the slide. Because of track curvature, the engineman could not see, from his side of the engine, the abnormal condition at a distance greater than 200 feet; but the fireman had an unobstructed view a distance of more than 200 feet and he warned the engineman as soon as he was certain that an obstruction existed. Shadows in the canyon made it difficult to see the condition of the track ahead.

The evidence was to the effect that no slide had occurred previously at this point. When a track walker passed the point involved about 2 hours 20 minutes before the accident occurred, he saw no indication that a slide might occur. The last train prior to No. 39 passed this point 1 hour 22 minutes before the accident occurred. The division engineer thought that seams were formed in the solid granite during blasting operations when the railroad was being constructed and then roots grew into the seams and widened them sufficiently to permit water to enter; this condition eventually resulted in the rock slipping from its original position.

There was no slide-detector fence in the vicinity of the point of accident; however, the carrier has installed this device elsewhere. Since the rails were broken as a result of the slide, an automatic block-signal system would probably have prevented the accident, as the signals would have displayed restrictive indications, because of the damaged condition of the track. During the past 5 years there have been 12 accidents caused by slides occurring between points 59 miles and 73 miles,

respectively, west and east of the point of accident; the property damage amounted to more than \$100,000.00.

Cause

It is found that this accident was caused by damage to the track, as a result of a rock slide.

Dated at Washington, D. C., this first day of April, 1941.

By the Commission, Commissioner Patterson.

W. P. BARTEL,

Secretary.

(SEAL)