

INTERSTATE COMMERCE COMMISSION
WASHINGTON

INVESTIGATION NO. 3130
SPOKANE, PORTLAND AND SEATTLE RAILWAY COMPANY
REPORT IN RE ACCIDENT
NEAR CLIFTS, WASH., ON
SEPTEMBER 28, 1947

SUMMARY

Railroad: Spokane, Portland and Seattle
Date: September 28, 1947
Location: Cliffs, Wash.
Kind of accident: Derailment
Train involved: Passenger
Train number: 4
Engine number: 702
Consist: 12 cars
Estimated speed: 60 m. p. h.
Operation: Timetable, train orders and automatic
block-signal system
Track: Single; 2° curve; 0.02 percent
ascending grade eastward
Weather: Raining
Time: 12:38 a. m.
Casualties: 1 killed; 28 injured
Cause: Rock slide

INTERSTATE COMMERCE COMMISSION

INVESTIGATION NO. 3130

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

SPOKANE, PORTLAND AND SEATTLE RAILWAY COMPANY .

November 7, 1947

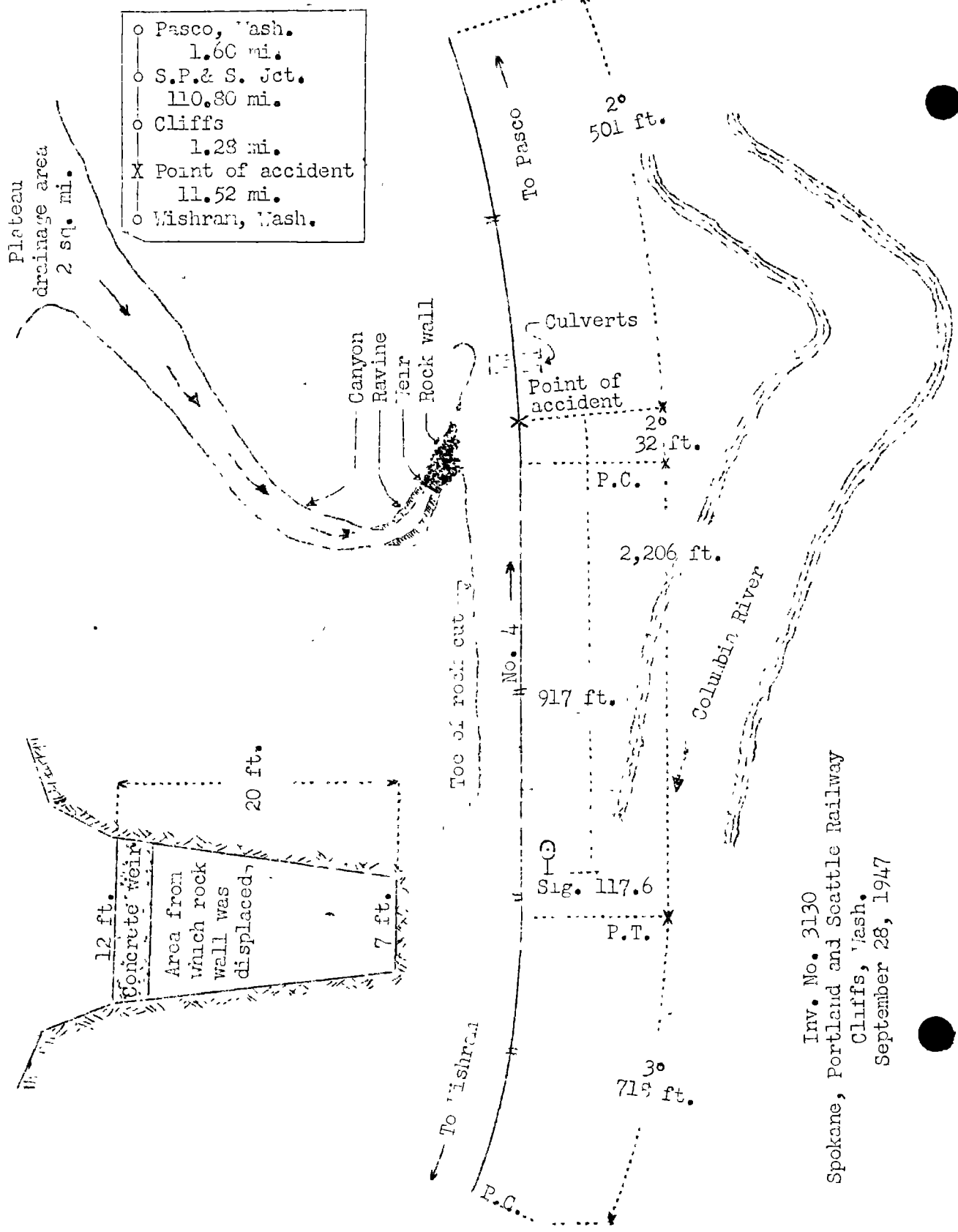
Accident near Cliffs, Wash., on September 28, 1947,
caused by a rock slide.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On September 28, 1947, there was a derailment of a passenger train on the Spokane, Portland and Seattle Railway near Cliffs, Wash., which resulted in the death of 1 train-service employee, and the injury of 23 passengers, 1 railway-mail clerk, 1 express messenger, 1 coach attendant and 2 train-service employees.

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.



Inv. No. 3130
Spokane, Portland and Seattle Railway
Cliffs, Wash.
September 28, 1947

Location of Accident and Method of Operation

This accident occurred on that part of the Vancouver Division extending between Wishram and S.P. & S. Jct., near Pasco, Wash., 123.6 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 on the main track 11.52 miles east of Wishram and 1.28 miles west of the station at Cliffs. From the west there are, in succession, a 3° curve to the left 718 feet in length, a tangent 2,206 feet and a 2° curve to the left 32 feet to the point of accident and 501 feet eastward. The grade is 0.02 percent ascending eastward.

In the vicinity of the point of accident the track parallels the north bank of the Columbia River. The track is laid on a hillside cut and is about 43 feet above the level of the shore-line of the river and about 350 feet horizontally distant. The north shoulder of the roadbed is 12 feet from the centerline of the track. In this vicinity a drainage ditch is provided on the north side of the track. At a point 42 feet east of the point of accident, two cast-iron culverts 36 inches in diameter and 36 feet long extend under the roadbed. The wall of the hillside cut is irregular in contour and elevation and rises almost perpendicularly to a maximum height of 30 feet above the level of the track. Above the wall the hill slopes northward at a ratio of about 5 to 1 to a height of about 1,500 feet above the level of the track. The formation of the wall consists of several layers of lava rock. At the point of derailment the toe of the wall is about 25 feet north of the centerline of the track, and at a point 25 feet westward it is 35 feet north of the centerline of the track. Between these points there is an offset in the face of the wall. Immediately above the offset a ravine extends northward a considerable distance, then there is a canyon extending northward to a plateau. A concrete weir 2.5 high, 12 feet long and 2 feet thick had been constructed in the ravine at the point where the ravine terminated at the face of the wall. Normally, water from a drainage area of about 2 square miles flows through the canyon and the ravine, spills over the weir and into the drainage ditch, then flows through the culverts to the river.

The track structure consists of 112-pound rail, 39 feet in length, laid in 1939 on an average of 23 treated ties to the rail length. It is fully tieplated, single-spiked, provided with 4-hole joint bars, and an average of 16 rail anchors per rail length. It is ballasted with crushed stone to a depth of 8 inches.

Automatic signal 117.6, governing east-bound movements, is 917 feet west of the point of accident. This signal is of the three-indication, color-light type, and is approach lighted. There is no slide detector fence in the vicinity of the point of accident.

The maximum authorized speed for the train involved was 65 miles per hour.

Description of Accident

No. 4, an east-bound, first-class passenger train, consisted of engine 702, a 4-8-4 type, one express car, two baggage-express cars, one mail-baggage car, three coaches, four sleeping cars, and one buffet-sleeping-observation car, in the order named. The first car was of steel-underframe construction, and the remainder of the cars were of all-steel construction. This train departed from Wishram, the last open office, at 12:23 a. m., 18 minutes late, passed signal 117.6, which displayed proceed, and at a point 1.28 miles west of Cliffs it struck a rock slide and was derailed while moving at an estimated speed of 60 miles per hour.

The engine and the first five cars were derailed and badly damaged. Separations occurred between the tender and the first car, and at each end of the second, third and fourth cars. The engine and tender, remaining coupled, overturned to the right and stopped on their right sides, down the embankment and at an angle of about 45 degrees to the track, with the front of the engine 63 feet south of the track and 333 feet east of the point of accident. The first car stopped on the embankment and in line with the engine, and leaned to the south at an angle of 30 degrees. The second car stopped practically upright and at right angles to the track, with the front end on the roadbed and the rear end down the embankment. The third car stopped practically upright on the roadbed, immediately north of the track and in line with it. The fourth car stopped upright and at an angle of about 45 degrees to the track, with the front end down the embankment and the rear end on the roadbed. The fifth car stopped upright on the roadbed, and in line with the track. The sixth car was not derailed, but was considerably damaged.

The engineer was killed. The fireman and the conductor were injured.

It was raining at the time of the accident, which occurred about 12:38 a. m.

Discussion

No. 4 was moving on the entering portion of a 2° curve to the left at a speed of about 60 miles per hour, in territory where the maximum authorized speed for this train was 65 miles per hour, when the fireman observed an obstruction on the track about 300 feet distant. He called a warning to the engineer, who immediately moved the brake valve to emergency position, but the engine struck the obstruction and the derailment occurred before the speed of the train was materially reduced. The engineer was killed.

After the accident, examination disclosed that approximately 1,000 cubic yards of rock and soil had become displaced from the wall of the hillside cut and from the ravine immediately north of the wall, and this material covered the track a distance of about 210 feet. The greatest depth on the rails was 3 feet. It is not known when the slide occurred. However, the last train prior to No. 4 passed this point west-bound about 3 hours before the time the accident occurred, and the members of the crew did not observe any unusual condition.

The investigation disclosed that an unusual rainfall had occurred throughout this territory during a period of approximately 2 hours immediately prior to the time the accident occurred, and that an excessive amount of flood water had drained through the ravine north of the track. The water had displaced a considerable amount of material from the ravine and had undercut the rock wall immediately below the concrete weir, located immediately north of the track. The section foreman had observed conditions in this vicinity about 10 hours before the accident occurred and saw no indication that a slide might occur. Prior to the present instance no displacement of material had occurred at this location. According to records of the U. S. Weather Bureau, the average yearly rainfall in this territory is 16 inches, and the average rainfall during September and October is 0.93 inch. During the 24-hour period immediately prior to the time of the derailment, about 1.25 inches of rain fell in the vicinity in question.

Cause

It is found that this accident was caused by a rock slide.

Dated at Washington, D. C., this seventh day of November, 1947.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.