

INTERSTATE COMMERCE COMMISSION
WASHINGTON

REPORT NO. 3452
CAMAS PRAIRIE RAILROAD COMPANY
IN RE ACCIDENT
NEAR GRANGEVILLE, IDAHO, ON
JANUARY 11, 1952

SUMMARY

Date: January 11, 1952
Railroad: Camas Prairie
Location: Grangeville, Idaho
Kind of accident: Derailment
Train involved: Work extra
Train number: Work Extra UP 2714
Engine numbers: NP 1521, UP 2504, NP 1383, UP 2714
Consist: Snow plow, caboose, 2 cars
Estimated speed: 5 m. p. h.
Operation: Timetable and train orders
Track: Single; tangent; vertical curve
Weather: Clear
Time: 1:50 a. m.
Casualties: 1 killed; 4 injured
Cause: Use of snow plow improperly designed for service in which it was here used.

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3452

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

CAMAS PRAIRIE RAILROAD COMPANY

April 4, 1952

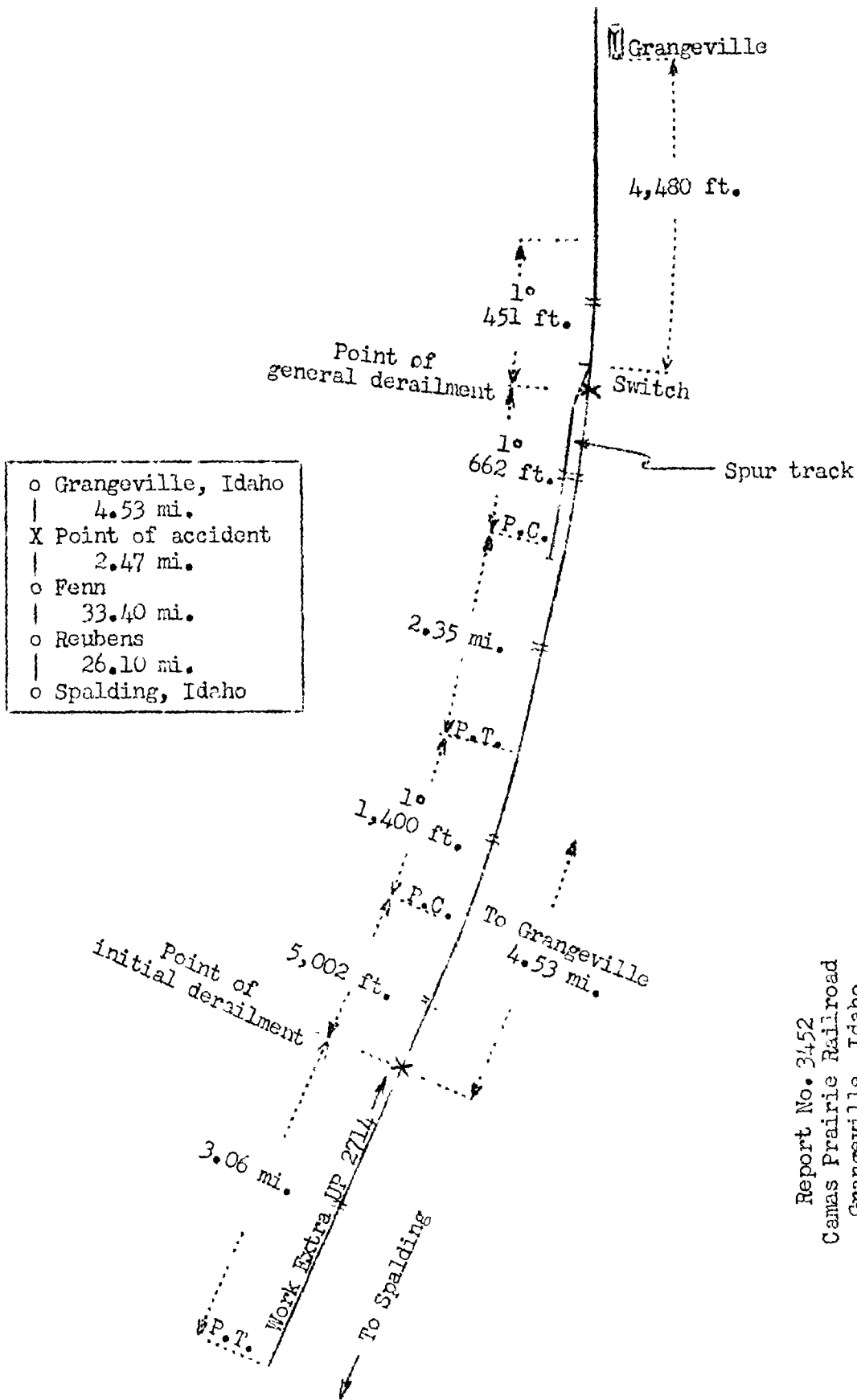
Accident near Grangeville, Idaho, on January 11, 1952,
caused by the use of a snow plow improperly
designed for the service in which it was here used.

REPORT OF THE COMMISSION¹

PATTERSON, Commissioner:

On January 11, 1952, there was a derailment of a
work train on the Camas Prairie Railroad near Grangeville,
Idaho, which resulted in the death of one employee and the
injury of four employees.

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



Report No. 3452
Camas Prairie Railroad
Grangeville, Idaho
January 11, 1952

Location of Accident and Method of Operation

This accident occurred on that part of the Second Subdivision extending between Spalding and Grangeville, Idaho, 66.5 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. There is no block system in use. Union Pacific Railroad and Northern Pacific Railway engines regularly are used to haul Camas Prairie Railroad trains over this Subdivision. Near Grangeville, a spur track parallels the main track on the north. The switch of this spur track is 4,480 feet west of the station and is trailing-point for east-bound movements. The initial derailment occurred on the main track 4.53 miles west of the station at Grangeville, and the general derailment occurred at the frog of the spur-track switch. From the west there are, in succession, a tangent 3.06 miles in length to the point of initial derailment and 5,002 feet eastward, a 1° curve to the left 1,400 feet, a tangent 2.35 miles and a 1° curve to the left 632 feet to the point of general derailment and 451 feet eastward. The grade varies between 1.05 percent descending and 1.28 percent ascending eastward throughout a considerable distance west and east of the point of accident. The initial derailment occurred on a vertical curve. At the point of general derailment the grade is 1 percent ascending eastward.

In the vicinity of the point of accident the track structure consists of 90-pound relay rail, 33 feet in length, laid in 1943 on an average of 20 treated ties to the rail length. It is fully tieplated, single-spiked, and is provided with 24-inch joint bars, and an average of 12 rail anchors per rail. It is ballasted with pit-run gravel to an average depth of 9 inches below the bottoms of the ties.

In the vicinity of the point of accident the maximum authorized speed for freight trains was 30 miles per hour.

Description of Accident

Work Extra UP 2714 consisted of snow plow NP 442, engines NP 1521, UP 2504 and NP 1383, one caboose, engine UP 2714, one baggage-mail car and one coach, in the order named. This train was assembled at a point approximately 1/2 mile west of the point of initial derailment. It departed eastward and entered a snow drift at an estimated speed of 25 miles per hour. At a point approximately 175 feet east of the west end of the drift the front pair of wheels of the

rear truck of the snow plow was derailed to the south. At this point the speed of the train was about 5 miles per hour. The depth of the drift at the point of derailment varied from 3 feet on the north rail to 9 feet on the south rail. The general derailment occurred 3.68 miles east of the point of initial derailment.

The snow plow, the first three engines, the caboose and the fourth engine were derailed. The snow plow stopped on its right side, 215 feet east of the point of general derailment, and south of and parallel to the track. The first engine stopped on its right side, parallel to the track and against the snow plow. The tender of this engine stopped on its right side, across the track and at right angles to it. The second engine stopped on its right side, across the track and at right angles to it. The third engine stopped with the front end against the tender of the second engine. It leaned to the south at an angle of about 15 degrees. The caboose stopped upright and across the track. The fourth engine stopped in line with the track. The snow plow and the first three engines were badly damaged. The caboose and the fourth engine were somewhat damaged.

Snow plow NP 442 was placed in service in November, 1949. It consisted of an all-steel hopper-type ore car, with the plowing device rigidly attached to one end. The plowing device consisted of a mould board, two blades, two shoes and supports and braces. The mould board was a flat steel plate extending across the track. It was attached to the end of the car at an angle of 30 degrees to the rails. The leading edge extended 7 feet 2 inches from the end sill and was 4 inches above the rails. The outer edges extended 3 feet 4 inches outside the gage side of each rail. A V-shape opening was provided in the mould board for the plow blades. This opening extended the entire width of the mould board at the rear and tapered to a point on the longitudinal center-line 1 foot 10 inches behind the leading edge. A curved blade was attached to each of the inside edges of the mould board, and the front edges of these blades were joined on the extended longitudinal center-line of the car. The blades extended upward and outward throughout the distance from the point of the V-shape opening to the rear of the mould board. The tops of the blades were 9 feet 3 inches above the tops of the rails. A convex-shape shoe was provided over each track rail. The centers of the shoes were located about 5 feet behind the leading edge of the mould board. The bottoms of the shoes normally were 2-1/2 inches above the tops of the rails. In operation, the device deflected

snow upward and outward from the center of the track structure. The device was so constructed that when moving through a snow drift the shoes contacted the rails. The shoes bore a portion of the downward thrust and prevented the leading edge of the mould board from contacting the rails. The car to which the plowing device was attached was 22 feet 1 inch in length over the end sills. It was provided with two 4-wheel trucks, having 5-1/2-inch by 10-inch journals, 33-inch steel wheels and U-section side frames. The front body-bolster center plate projected into the front truck-bolster center plate 1-1/2 inches. The rear body-bolster center plate projected into the rear truck-bolster center plate 1-3/4 inches. The length between truck centers was 14 feet 8 inches. The car was loaded with gravel for ballast. The total weight of the ballasted snow plow was 134,740 pounds, distributed as follows: front truck, 73,080 pounds; rear truck, 61,660 pounds. The calculated center of gravity was 7-1/2 inches ahead of the center of the car. The maximum tractive efforts of engines NP 1521, UP 2504, NP 1383 and UP 2714 were, respectively, 46,600 pounds, 53,628 pounds, 35,700 pounds and 53,628 pounds.

The engineer of the second engine was killed. The engineer of the third engine, and the fireman of the first, second and third engines, were injured.

The weather was clear at the time of the accident, which occurred about 1:50 a. m.

Discussion

No. 344, an east-bound first-class passenger train, consisted of engines UP 2714 and NP 1333, one baggage-mail car and one coach, in the order named. This train arrived at Reubens, 35.87 miles west of the point of accident, at 10:14 a. m., January 10, where snow plow NP 442 was coupled to the front end. This train departed from Reubens at 10:28 a. m., 6 minutes late, departed from Fenn, 2.47 miles west of the point of accident, at 11:52 a. m., 25 minutes late, and stalled in a snow drift about 1.25 miles east of Fenn. The crew of Extra 1521 East, an east-bound freight train, received instructions at Reubens about 1:23 p. m., January 10, to proceed to Fenn to assist No. 344. When this train departed eastward from Fenn, it consisted of engines NP 1521 and UP 2504, and a caboose, in the order named. No. 344 was pulled from the snow drift by Extra 1521 East and the equipment of both trains was returned to Fenn. The second engine and the two cars of No. 344 remained at Fenn. The

snow plow, three engines and the caboose then were assembled in the order named. This train departed eastward and stalled in a snow drift about 2 miles east of Fenn. The dispatcher then annulled No. 344 and issued an order to the crew of that train to operate the equipment as a work extra. Work Extra UP 2714 consisted of engine UP 2714 and the two cars. This train departed from Fenn, proceeded eastward and pulled the stalled equipment from the snow drift. The snow plow, three engines, the caboose, one engine and the two cars were then assembled in the order named. This train proceeded eastward and while moving through a snow drift at an estimated speed of 5 miles per hour the front wheels of the rear truck of the snow plow were derailed to the south. The train proceeded eastward a distance of 3.68 miles to the turnout of the spur track, where the general derailment occurred. The cab windows of the four engines were closed, and the enginemen were not aware that the snow plow had become derailed.

Inspection of the equipment after the accident occurred disclosed no defective condition which could have caused or contributed to the cause of the derailment.

Examination of the track structure after the accident occurred disclosed that the alignment, gage and surface were well maintained. There was no indication of dragging equipment nor of an obstruction other than snow having been on the track. The track in the vicinity of the point of accident was last inspected by a section foreman on January 8, and it was found to be in good condition. The first marks of derailment were flange marks on the ties at the point of initial derailment made by one pair of wheels, which had become derailed to the south. The flange mark of the north wheel was about 7 inches south of the gage side of the north rail, and a companion flange mark appeared south of the south rail. These marks continued throughout a distance of about 3.45 miles, and then flange marks on the ties indicated that a second pair of wheels had become derailed to the south. These marks continued on the ties to the point of general derailment.

It is apparent that when this plow was operated through the snow drift the pressure exerted by the snow on the mould board forced the front end of the plow downward, with the front bolster as a fulcrum, until the shoes of the plowing device contacted the rails. The overall length of this unit was 29 feet 3 inches and the front bolster was located

3 feet 9 inches ahead of the center of the unit. The forces exerted on the plow by snow on the front end and by the four engines pushing at the rear end tended to raise the plow from the rear truck. While operating through the drift of unequal cross-sectional depth, the force exerted on the south blade was greater than that exerted on the north blade, because of deeper snow over the south rail. The resultant force acted ahead of the center plate of the front truck and tended to turn the plow around that center plate. As a result, the north wheels of the front truck were forced against the north rail and the south wheels of the rear truck were forced against the south rail. The vertical forces on the mould board tended to raise the rear end of the car, and the horizontal forces on the blades tended to force the rear end of the car to the south. The combination of the two forces caused the right front wheel of the rear truck to mount the rail. Apparently, the design of the snow plow was such that it would not track properly with the amount of power being used at the time of the derailment.

Cause

It is found that this accident was caused by the use of a snow plow improperly designed for the service in which it was here used.

Dated at Washington, D. C., this fourth day of April, 1952.

By the Commission, Commissioner Patterson.

(SEAL)

W. P. BARTEL,
Secretary.