INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

COLORADO AND SOUTHERN RAILWAY

BOREAS, COLO.

JANUARY 21, 1936

INVESTIGATION NO. 2034

SUMMARY

Railroad:	Colorado and Southern
Date:	January 21, 1936
Location:	Boreas, Colo.
Kind of accident:	Derailment
Train involved:	Snow plow
Engine numbers:	73 and 75
Consist:	Flanger-plow between engines 73 and 75
Speed:	20 m.p.h.
Track:	Narrow gauge, tangent, grade 4 percent descending
Weather:	Snow
Time:	3:40 a.m.
Casualties:	1 killed
Cause:	Striking frozen snowdrift.

Inv-2034

March 17, 1936.

To the Commission:

On January 21, 1936, there was a derailment of a snow-plow train on the Colorado and Southern Railway near Boreas, Colo., which resulted in the death of 1 employee.

Location and method of operation

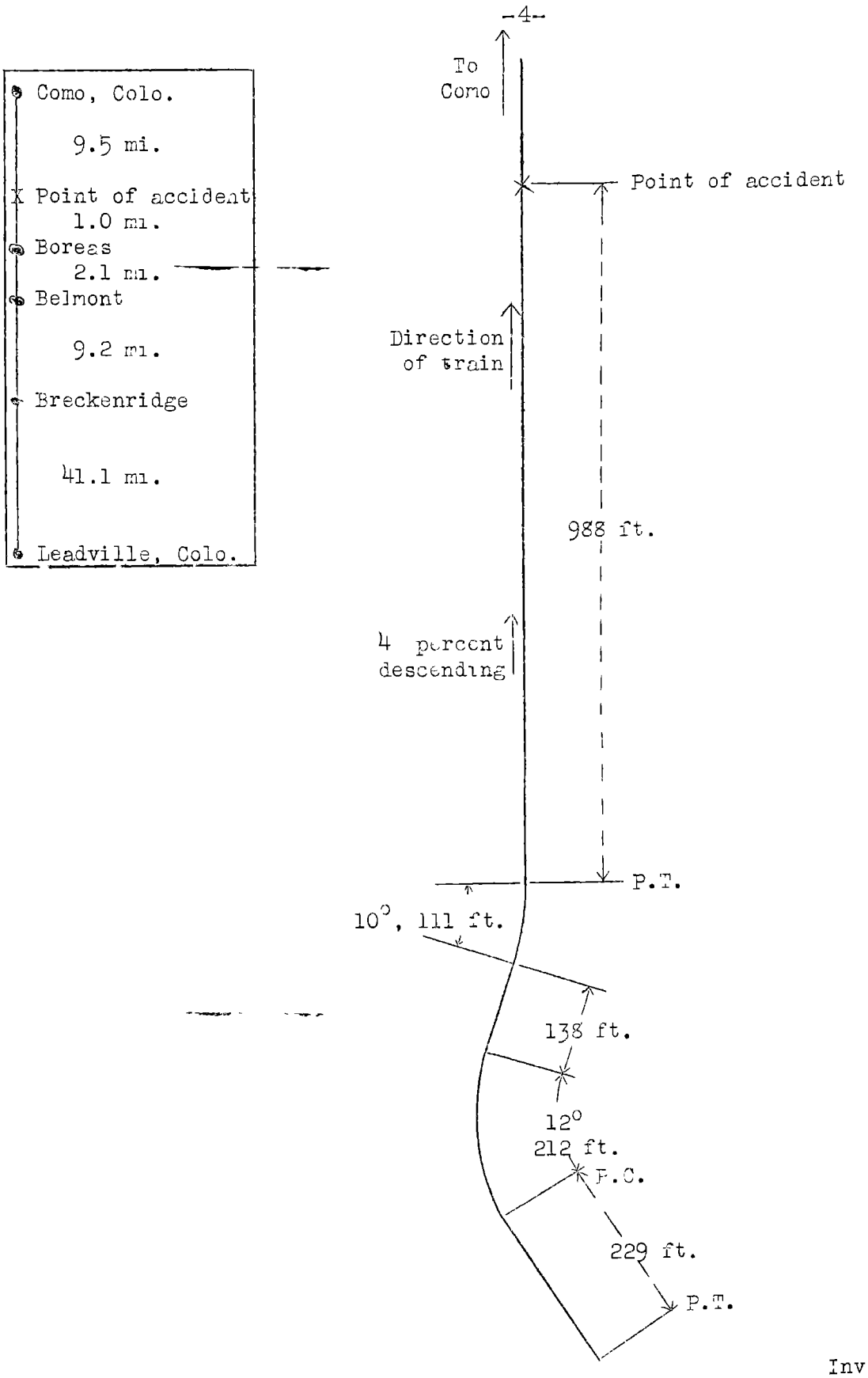
This accident occurred on that part of the South Park Division extending between Leadville and Como, Colo., a distance of 62.9 miles; in the vicinity of the point of accident this is a single-track line over which trains are operated by time table and train orders, no block-signal system being in use. The first mark of derailment was at a point 4,750 feet east of the east end of the snow shed at Boreas; approaching this point from the west, there is tangent track for a distance of 138 feet, followed by a 10° curve to the left 111 feet in length and then a tangent of 1,235 feet, the accident occurring on this latter tangent at a point 923 feet from its western end. The grade for a considerable distance on each side of the point of accident is 4 percent descending for east-bound trains.

The track, which is 36-inch gauge, is located on a bench cut in the north side of a hill sloping at an angle of about 22° and is laid with 52-pound rails, 30 feet in length, with 18 untreated pine or pinon ties to the rail length, single-spiked, tieplated on curves and renewed ties, and is ballasted to a depth of about 3 inches with cinders mixed with dirt; the track is fairly well maintained. The speed limit is 22 miles per hour for passenger trains and 12 miles per hour for freight trains.

It was snowing and a high wind prevailed at the time of the accident, which occurred about 3:40 a.m.

Description

Extra 537, an east-bound freight train, consisted of engine 73, a flanger plow, engine 537, six loaded ore cars, engine 75, two loaded ore cars, and a caboose, in the order named, and was in charge of Conductor Sanches and Enginemen Thomas, Gibbony and Williamson. This train departed from Breckenridge, the last open office, 11.3 miles west of Boreas, at 9:50 p.m., according to the train sheet, and subsequently encountered snow conditions which necessitated sending engines 73 and 537 ahead with the



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plow in order to plow out the drifts between Belmont and Boreas, a distance of 2.1 miles, and then doubling the train into Boreas, these movements being completed about 3:15 a.m. At Boreas, which is the summit of the divide, engine 73, the flanger plow, and engine 75, coupled in the order named, departed about 3:30 a.m., and were derailed about 1 mile east of Boreas while traveling at a speed estimated at about 20 miles per hour. Engine 537, following with the freight cars and caboose, was not involved in the derailment.

The two engines and plow were derailed to the right of the track toward the downward slope of the hill, engine 73 stopping on its right side 200 feet from the track and from 75 to 90 feet below it. Engine 75 stopped on its right side 50 feet from and about 25 feet below the track and parallel to it. The plow lay upside down immediately ahead of engine 75 and at a right angle to the track. The employee killed was the engineman of engine 75.

Summary of evidence

Engineman Thomas, of engine 73, stated that he went on duty at Leadville at 11:30 a.m. and departed from Breckenridge at 9:50 p.m., nothing unusual having occurred during that time, nor did snow hamper the movement until they reached Belmont, where it became necessary to cut off the leading engines and plow and to clear out the drifts between Belmont and Boreas, and then to double the train into Boreas, following which engines 73 and 75, with the plow between them, left Boreas at about 3:30 a.m., at which time the storm was such that the view was almost totally obscured. Engineman Thomas said considerable snow was encountered in a cut just east of Boreas and that he whistled the second engine to help him in getting through it; snow also was encountered at the curve at mile post 98, which is just west of the tangent track on which the accident occurred, and the speed was about 20 miles per hour, the throttle being closed when he caught a glimpse of a drift ahead, which appeared to be 3 or 4 feet in depth on the left side, the derailment occurring immediately after his engine encountered it. He said that placing the plow between the engines was an established practice and that he had never experienced trouble on that account, nor did he believe that the plow contributed to this accident; his engine was the first to leave the track and he thought the cause of the derailment lay in the hardness of the snow and in the slope of the drift, which was much higher on the left rail. Engineman Thomas further stated that the blades of the plow could be raised and lowered, but were set in a fixed position when in actual operation, at a height affording necessary

clearance of crossing planks; his engine was equipped with a flanging device which he could raise and lower by means of an air valve, this device cleaning the snow from the inside and below the ball of the rail; it was in the lowered position at the time of the accident. It was his opinion that the track was good at the point of accident and he had often used it at speeds much higher than in this instance. He further stated that the delay due to the snow between Belmont and Boreas was unexpected, and without this delay there would have been ample time to complete the trip to Como, their terminal, before the expiration of their 16 hours on duty. Engineman Thomas had had engine 73 on the trip west-bound into Leadville, and he said it had been working all right and that he last examined it at Boreas, at which time he found nothing wrong.

The statements of the other engine-service employees contributed no additional information and substantially agreed with the statements noted except that Fireman Eshe, of engine 75, thought that the speed of the train at the time of the accident was from 12 to 15 miles per hour, which estimate was based on the motion of the engine, inasmuch as the storm completely obscured his vision; Fireman Eshe also said that his engine was working steam when the accident occurred. Engineman Thomas Gibbony, of engine 537, said that he had been on duty about 16 hours and 20 minutes when he departed from Boreas, but that it was customary to proceed under such circumstances, due to no eating or sleeping accommodations being available at any point east of Breckenridge. Engineman Gibbony saw the damage done to the track but did not see any evidence of dragging equipment, nor would he have thought that the small drift at the point of accident, 18 or 20 inches deep, would have caused trouble.

Conductor Sanches stated that at Breckenridge, which was the last place where food or hotel accommodations were available until they reached Como, it was snowing a little and the wind was blowing, but they thought they could reach Como without violating the Federal hours of service law, although he said that under good weather conditions it would take about 4 hours to make the trip, a distance of 21.8 miles. An unexpected delay was encountered, however, after his arrival at Belmont, the storm being very bad and the track blocked with snow, requiring three trips to get the train to Boreas. At that point he arranged engines 73 and 75 with the plow between them, which was the practice, and they departed about 3:30 a.m., and after waiting 10 or 15 minutes, he followed with engine 537 and the eight cars and caboose. Conductor Sanches examined the track at the point of accident after its occurrence

and found some rails and ties torn up, but only a very slight drift of snow, about 18 inches in depth, and he was unable to form any opinion as to the cause of the accident. In respect to the details of the trip involved, the statements of the brakemen disclosed nothing new; the head brakeman, however, said that the snow on the left side of the track at the point of accident was about 3 feet in depth, and packed hard enough to enable him to walk on top of it.

Track Supervisor Jones stated that upon his arrival at the point of derailment he found it necessary to replace 29 ties and to install 2 rails on the right side of the track. One rail showed a light mark which indicated that a pony-truck wheel had passed over it, and a wearing or grinding mark, extending for a distance of about 60 feet, was found on the rails on the right side of the track. The drift of snow lay in the lee of a small bank, which was caused by a cut on the left side of the track, and was about 90 feet in length and varied in depth from 18 inches at the ends to about 5 feet, nearest the left rail. This snow was hard enough to enable him to walk on it, and it was his opinion that the hard-packed snow threw the engine to the right, although possibly it first lifted the pony truck. Track Supervisor Jones had last inspected the track in this vicinity on January 18, finding it to be in satisfactory condition, and his examination after the accident failed to reveal anything wrong with it.

As shown by blue prints furnished in connection with this investigation, the flanger plow was a machine consisting of two upright blades, extending outward and backward, and located between the trucks and underneath the floor of a flat car, which was especially constructed for the purpose and which had an overall length of 19 feet 8 inches and a weight of 18,900 pounds. A device was provided for raising the blades or lowering and locking them in position for use and, due to a notch in the lower edge of each blade, they could be operated at a level below the tops of the rails, in which case the machine performed the dual functions of flanger and plow, but when the blades did not extend below the rails, as in this case, the machine served as a plow. The engines were equipped with rigid plows attached to the pilot beams, having a width of 9 feet, and were also equipped with a flanging blade on each side of the engine, located directly ahead of the front wheels, which blades were adjustable from the cab. It appears that this machinery for clearing snow, and the method of assembling it in trains, had been successfully used for many years.

Discussion

A blinding storm of snow and wind was in progress at the time of the accident, with the visibility such that estimates of speed were made almost entirely by guess, while the train was being operated on a descending grade of 4 percent, and immediately west of the drift involved the track was free from snow for a distance of about 1,600 feet; these facts coupled with the further fact that the second engine was working steam at the time of the accident, make it appear very probable that the speed of the train may well have been much higher than the employees realized. The investigation further disclosed that the train struck a drift of hard snow, deeper on the left rail than on the right rail, and it seems probable that this hard-packed snow, combined with speed at which the movement was being made, resulted in some of the wheels of the lead engine being raised above the rails, and at the same time the engine swerved to the right, causing the derailment.

Attention is called to the fact that at 3:40 a.m., the approximate time of the accident, the crew of this train had been on duty 16 hours 10 minutes, contrary to the provisions of the Federal hours-of-service law, considerable delay having been encountered after leaving Breckenridge on account of snow conditions which existed for 2 miles west of Boreas.

Conclusion

This accident was caused by two light engines, with a flanger plow coupled between them, encountering a drift of hard-packed snow.

Respectfully submitted,

W. J. PATTERSON,

Director.