INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE CHICAGO, BURLINGTON AND QUINCY RAILROAD NEAR WHITE-TAIL SUMMIT, S DAK , ON DECEMBER 30, 1927.

February 1, 1928.

To the Commission:

On December 30, 1927, there was a derailment of a freight train on the Chicago, Burlington and Quincy Railroad near Whitetail Summit, S Dak , which resulted in the death of two employees

Location and method of operation

This accident occurred on the Nemo and Lead Sub-Division of the Alliance Division, extending between Nemo and Lead, S Dak , a distance of 28 miles. In the vicinity of the point of accident this is a single-track line, so arranged that it can be utilized for both standard and narrow-gauge equipment, over which trains are operated by time-table, train orders and a manual block-signal system The accident occurred at a point approximately 1 mile west of Whitetail Summit, approaching this point from the east, beginning at Whitetail Summit, there is a series of sharp curves and short tangents followed by a compound curve to the right 424 6 feet in length having a maximum curvature of 36°, the point of accident being on this curve at a point 147 feet from its eastern end where the curvature is at its maximum The grade is descending for westbound trains from Whitetail Summit to and beyond the point of accident, the maximum gradient being 3.9 per cent, while at the point of accident it is 3 per cent The speed of freight trains descending grades of 3 per cent or more is restricted to 15 miles per hour The track is laid with 65-pound rails, 30 feet in length, with 18 ties to the rail-length, the majority of which are hardwood ties, and fully tie-plated The narrow gauge rails were laid in 1902 and the standard gauge in 1924

The weather was cloudy and the temperature was about 20° below zero at the time of the accident, which occurred at about 7.15 p.m

Description

Westbound freight train extra 537 consisted of five freight cars and a coach, hauled by engine 537, all narrow-gauge equipment, and was in charge of Conductor Webb and Engineman Baschky This train arrived at Englewood, 21.96 miles west of Nemo and 3.16 miles east of Whitetail Summit at 5.10 p.m After setting out some cars and taking water, the train departed from Englewood at 6.45 p.m , according to the conductor, and it was derailed shortly afterwards while traveling at a speed estimated to have been about 25 miles per hour

The engine, its tender, and all of the freight cars were derailed. The engine came to rest on its right side at the foot of a 25-foot embankment on the outside of the curve with its head end 104 feet west of the first marks of derailment, while the tender came to rest bottom up about 10 feet in the rear of the engine, both the engine and tender were badly damaged. The first three cars came to rest on top of the engine and tender and were practically demolished, the fourth car passed by the engine coming to rest partly down the embankment, while the fifth car remained on the roadbed The employees killed were the engineman and fireman

Summary of evidence

Conductor Webb stated that the air brakes were tested at Nemo, including an inspection of the piston travel on each car, which was from 6 to 8 inches Several stops were made at various stations between Nemo and Englewood, the train arriving at the latter point at about 5 10 p.m After considerable delay on account of switching and difficulty in securing water due to the extreme cold weather the train finally was coupled up and the air tested while standing on a siding in the lower yard Conductor Webb then started to turn up the retaining valves but before he had completed this task the train started, at about 6 45 p.m., and after entering the main track it was brought to a stop, probably with the independent brake, for the purpose of picking up the brakeman who had remained to close the switch, the train then proceeded towards Whitetail Summit In the meantime Conductor Webb had completed turning up the retaining valves and had entered the coach at the rear of the train where he observed that the air gauge registered about 80 pounds brake-pipe pressure At the time the train reached Whitetail Summit he again noticed that the gauge still registered a pressure of 80 pounds, or possibly a little more Conductor Webb said the train started down the grade at this point at a speed of about 15 miles per hour, which speed he thought at the time was a little ex-

cessive on account of the heavy descending grade beginning beyond that point When the train had reached a point about twice its own length beyond the summit he felt an application of the air brakes but there appeared to be no reduction in speed and he looked at the air gauge again and saw that it then registered around 40 or 45 pound brake-pipe pressure, and becoming alarmed he secured a brake club and set the hand brake on the forward end of the coach but on account of the rocking of the car immediately ahead of the coach, a flat car loaded with timbers, he was unable to reach the hand brake on this car which was located at its forward end. Conductor Webb thought the engineman released the brakes at one point, while traveling 15 miles per hour and said he had no knowledge that they were reapplied after that time, but on the other hand he said that when he jumped off, at about the time the engine entered the curve, he noticed sparks flying from the wheels of the car ahead of the coach, indicating that the air brakes were applied, he estimated the speed at that time at about 25 miles per hour Conductor Webb attributed the accident to the failure of the brakes to hold properly due to the extreme cold weather, this condition being due to the fact that the engineman did not begin braking soon enough after passing the summit in order to get the brake shoes warmed sufficiently to enable them to take hold properly when starting down the steepest portion of the grade He said he did not open the emergency valve in the coach, being of the opinion that by doing so it might interfere with the handling of the brakes by the engineman He also stated there was no difficulty experienced in controlling the speed of the train en route, with two additional cars, down other grades equally as steep as the grade on which the accident occurred, and that he did not hear the engineman whistle for brakes although he had heard other whistle signals sounded at different times along the line Conductor Webb further stated that while performing work at a station east of Englewood the engineman complained that on account of escaping steam he could not see what was going on, and asked the conductor to ride on the engine with him, the conductor refusing to do so Conductor Webb was standing near the cab of the engine when this statement was made and also rode on the engine while it was cut off at Englewood and said he could not see any unusual amount of steam and that there had been no difficulty in transmitting signals from the rear of the train to either the engineman or the fireman Conductor Webb was not on the engine, however, when it was working steam to any extent. It also appeared from the statements of Conductor Webb that although it was customary to use the retaining valves on the steep grades in this vicinity it was not the practice to make any tests of the retaining valves

Brakeman Steen stated that after setting out two cars and getting a supply of fuel and water at Englewood the engine was coupled to the train and he was about to couple the air hose between the tender and the first car when he discovered an accumulation of snow in the hose coupling attached to the car, which he removed, there was no snow in the tender-hose coupling. The coupling was then made, and the brakes were tested and found to be working properly, in making this test Brakeman Steen inspected the front portion and Conductor Webb the rear portion of the train While the conductor was turning up the retaining valves Brakeman Steen proceeded to the switch for the purpose of permitting the train to head out on the main track. As soon as the train had entered on the main track the speed was reduced to permit him to close the switch and as soon as he boarded the train he gave the engineman a proceed signal which signal was acknowledged by means of the engine whistle Brakeman Steen said he then went into the coach and looked at the air gauge which registered 80 pounds brake-pipe pressure at that time, he did not look at it again prior to the accident. The train passed Whitetail Summit at a speed of about 15 miles per hour and it then seemed to be under control. Shortly after the train started down the grade the brakes were applied and they checked the speed of the train to some extent, but later they were released and the speed began to increase. When the train had reached a point a little farther down the grade he mentioned to the conductor that he believed the train was traveling a little too fast but the conductor replied in the negative. A few moments later he again called the conductor's attention to the speed; the conductor then looked at the air gauge and remarked "he has only 40 pounds " The conductor immediately picked up a brake club and they both proceeded to the front platform of the coach and applied the hand brake Brakeman Steen said that shortly afterwards the conductor jumped from the train but that he remained on the coach until he felt the jar as the front portion of the train was derailed, when he also jumped off, he estimated the speed at that time at not less than 25 miles per hour Brakeman Steen further stated that he had been riding on the fireman's side of the engine cab for a portion of the distance en route from Nemo, during which time no mention was made either by the engineman or by the fireman of any defects existing, and at no time did he notice any unusual amount of escaping steam He corroborated the statements of Conductor Webb as to having noticed no unusual handling of the train prior to passing Whitetail Summit, that no whistle signal was sounded calling for hand brakes, and that he saw fire flying from the rear wheels of the first car ahead of the coach before he jumped from the train, which caused him to think that the engineman had applied the brakes again after having released them shortly after starting down the grade When questioned as to the piston travel observed by him when the

brakes were tested at Nemo, Brakeman Steen said that the pistons were out their full length, but on further questioning it was developed that he had no idea as to what constituted proper piston travel although he had more than seven years' experience on the Alliance Division. He also had been examined on the book of rules three times within the past seven years

Roadmaster Gilmore stated that he arrived at the scene of the accident at about 8 15 p.m , made an inspection of the equipment, and found the retaining valves set in the holding position except one which had been broken as a result of the accident so that he could not determine its position prior to that time, he did not know on which car this particular valve was located He also stated that he had not been over the track in that vicinity for about 30 days but had talked with the section foreman on whose section the accident occurred, and had been informed that the section foreman had patrolled the track during the day of the accident and at that time found the track in good condition, no exceptions being noted.

Car Repairer Korneman stated that he arrived at the point of accident at 8.20 p.m , examined the retaining valves on the coach and the last two freight cars and found all of them turned up, he did not examine the retaining valves on the remaining cars as material was being unloaded from them and they could not be reached without stopping the work

Master Mechanic Pauley said he made an inspection of the engine as to the condition of the tires and did not find any of them that would take the gauge, the flange of the right pony-truck wheel showed slight wear but he did not consider it to be in a dangerous condition and did not think its condition contributed to the occurrence of the accident Master Mechanic Pauley further stated that engine 537 was equipped with a clear-vision window on the engineman's side of the cab and in his opinion there was no reason for the failure of an engineman to be able to determine his location in so far as visibility was concerned, even though the side windows were not used for that purpose He also stated that engine 537, which is of the 2-8-0 type, received Class 2 repairs in April, 1925, and since that time it had been run a distance of 13,758 miles, which he did not consider excessive. On December 14, 1927, this engine received a monthly inspection and this showed a maximum lateral of 1/4-inch on the driving wheels and 3/8 inch on the pony-truck wheels. No report had been made of any unusual amount of escaping steam.

The air brakes on the coach and the rear car of the train were tested subsequent to the accident, which test developed that the brakes on these cars applied with a service application and held two minutes with good braking pressure With the retaining valve on the coach set in the holding position it permitted the brakes to be released in 30 seconds while the retaining valve on the car was still holding the brakes applied at the expiration of two minutes.

Conclusions

This accident was caused by the fact that the engineman lost control of his train on a heavy descending grade.

It is clear from the statements made by Conductor Webb and Brakeman Steen that no difficulty was experienced with the air brakes between Nemo and Englewood, although there were more cars in the train and there was also a longer grade, fully as steep, between Woodville and Englewood. At the latter point the two head cars were set out and considerable delay was experienced in obtaining water, the train remaining at this point for a period of approximately 1 hour and 35 minutes. The evidence indicated that the retaining valves were turned up before the train departed from Englewood and that the brakes were applied twice between that point and the point of accident The train started down the grade at a speed of 15 miles per hour, and the second application of the air brakes, made a short distance beyond Whitetail Summit, did not appear to have been sufficient to reduce the speed of the train to any great extent, although both the conductor and the brakeman stated that they observed fire flying from the wheels of the car immediately ahead of the coach just before they jumped from the train Apparently the engineman lost control of the train because he permitted it to start down the grade on which the accident occurred at the maximum rate of speed permitted by the rules without first making a proper effort to determine the holding power of the brakes. The train had been standing at Englewood for a considerable length of time and the extreme cold weather which was prevailing undoubtedly had caused the brake cylinder packing leathers to lose flexibility, and good judgment should have required one or more test applications of the brakes to determine their efficiency before the train broke over the top of the hill No such test was made, however, and with piston packing stiff with cold and with the brake shoes and car wheels cold and covered with frost, the failure of the engineman to control the speed of his train approaching the 36° curve on which the accident occurred was inevitable

The employees involved were experienced men, and at the time of the accident they had been on duty 10 hours and 45 minutes after having been off duty 14 hours or more

Respectfully submitted,

W. P BORLAND,

Director