INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE GREAT NORTHERN RAILWAY NEAR RED EAGLE, MONT., ON NOVEMBER 12, 1927.

January 7, 1928.

TO THE COMMISSION:

On November 12, 1927, there was a derailment of a mail train on the Great Northern Railway near Red Eagle, Mont., which resulted in the death of two employees and the injury of five mail clerks. This accident was investigated in conjunction with a representative of the Montana State Railroad Commission.

Location and method of operation

This accident occurred on the First Sub-division of the Kalispell Division extending between Cut Bank and Whitefish, Mont., a distance of 128.95 miles, in the vicinity of the point of accident this is a double-track line over which trains are operated by time-table, train orders and an automatic block-signal system. The accident occurred at a point approximately $1\frac{3}{4}$ miles east of Red Eagle, approaching this point from the east the track is tangent for a distance of 1,967.4 feet, followed by a 3° 30' curve to the right 561.4 feet in length, 257.5 feet of tangent, and then a 10° curve to the left 842.8 feet in length, known as curve 187, the accident occurring on this curve at a point 674 2 feet from its eastern end. The grade is descending for westbound trains, being 0.40 per cent at the point of accident. The speed limit for first-class trains in the territory in which the accident occurred is restricted to 45 miles per hour, in addition, there is a speed-limit sign on the engineman's side of the track further restricting the speed to 25 miles per hour on the curve on which the accident occurred, this sign being located 1,720 feet east of the curve.

At the point of accident the track is laid with 130-pound rails, 33 feet in length, laid in 1923, with 20 ties and 8 rail anchors to the rail-length, tie-plated, and ballasted with about 12 inches of gravel, the rails are double-spiked on each side. The gauge on

the curve on which the accident occurred varied from 4 feet 8⅛ inches to 4 feet 8¾ inches, while the elevation was nearly uniform at 4 inches. The track was maintained in excellent condition.

It was snowing at the time of the accident, which occurred at about 1.33 p.m.

Description

Westbound mail tain No. 27 consisted of one refrigerator car, three baggage cars, one mail car and three baggage cars, in the order named, hauled by engine 1717, and was in charge of Conductor Martinson and Engineman Plank. This train passed Walton, the last open office, 15.88 miles east of Red Eagle, at 1.16 p.m., two hours and one minute late, and was approaching Red Eagle when it was derailed while traveling at a speed estimated to have been between 35 and 40 miles per hour.

The engine came to rest on its right side at the bottom of a 35-foot embankment and about 70 feet from the track, with its head end 259 feet from the point of derailment, and was badly damaged. The tender cistern was torn from its frame and came to rest a short distance in the rear of the engine, the tender frame remained coupled to the engine. The first car came to rest partly down the embankment, at right angles with the track, immediately in the rear of the tender. The second car continued along on the ties a distance of 348 feet before going down the embankment and coming to rest at right angles with the track in an upright position, approximately 90 feet beyond the head end of the engine. The following five cars were also derailed but remained on the roadbed in an upright position. The engine truck was found on the top of the fill, bottom up, 57 feet beyond the second car. The employees killed were the engineman and fireman.

Summary of evidence

Conductor Martinson stated that the speed of the train was about 40 or 45 miles per hour when it approached curve 167, and that the brakes were applied east of the curve on which the accident occurred but were released when the train had reached a point about 400 or 500 feet distant from the curve. At that time he did not know what curve the train was approaching but inferred from the releasing of the brakes that the engineman had the train under control. He estimated the speed at the time of the accident at 35 miles per hour, and said he

looked at his watch about one minute after it occurred and that the time then was 1.37.30 p.m. Conductor Martinson further stated that the train was well handled while en route and although he was not familiar with this particular engineman's method of braking he noted that the brakes were applied when approaching all curves where it was customary to use the brakes, but as nearly as he could judge the engineman seemed to release the brakes before passing around the curves and did not seem to steady the train as was the practice with the regularly assigned engineman. Conductor Martinson said the speed limit had not been exceeded prior to reaching curve 187 except when passing over a gauntlet-track bridge about 10 miles to the eastward, the train passing over this bridge at a speed of 10 or 15 miles per hour while the speed limit was 5 miles per hour. He further stated that it was snowing quite hard at the time of the accident but he did not think the visibility of signals and speed-limit signs was obscured to any great extent, there was approximately 1 foot of snow on the ground at the time of the accident.

Head Brakeman Schneider stated that for a portion of the trip he had been riding in the cab of the engine and during this time he had not noticed anything unusual with the engineman or any unusual speed when rounding curves, and he was of the opinion that there was no unusual handling of the train from the time it left Cut Bank until the accident occurred. At the time of the accident he was riding in the rear car and he said that an application of the brakes was made on approaching curve 187 and that this application was not released until the engine was a considerable distance around the curve. He estimated the speed of the train at the time of the accident to have been 35 or 40 miles per hour. He did not think signals, signs, etc., were obscured on account of the snow which was falling at the time of the accident. Brakeman Schneider further stated that as soon as the train came to a stop the conductor looked at his watch and stated the time, which he understood to be either 1.36 or 1.37 p.m., he did not look at his own watch until some time afterwards.

Rear Brakeman Whitney stated that the train seemed to be handled properly between Cut Bank and the curve on which the accident occurred and that he did not notice any unusual rate of speed. He paid no attention to the number of applications of the brakes en route but did notice that the brakes were released just about the time the engine entered on curve 187. He could not closely estimate the speed at the time of the accident, but thought it was in the neighborhood of 40 miles per hour.

Dispatcher Watson, on duty at the time of the accident, stated that the train sheet indicated there was no unusual movement of train No. 27 between Cut Bank and Walton, Walton is 76.82 miles from Cut Bank and 15.88 miles from Red Eagle. He said there is a bell circuit on the westbound track for the purpose of announcing trains to the operator at Red Eagle when they reach a point about 3 miles east of that station and the operator immediately notifies the dispatcher accordingly. About one or two minutes after Dispatcher Watson had been notified that train No. 27 had entered the circuit something happened which caused his telephone receiver to become noisy, at 1.33 p.m., and he noted the time of the disturbance on the train sheet. Being unable to call any office east of Red Eagle and realizing that something had happened to the wires he notified the wire chief to this effect. He was positive as to the time the first indication of wire trouble occurred as he noted the time by his watch, which was 25 seconds fast when observatory time was received at 10 a.m. that day.

Wire Chief Morgan stated that the telephone circuit in the territory in which the accident occurred was lost at 1.37 p.m., and shortly afterwards the dispatcher also notified him that there was wire trouble. He then went to the switchboard and about five minutes later, after ascertaining the location of the trouble, he made a notation in his log book to that effect, noting the time at which he first learned of the trouble, this time having been ascertained from a clock the time of which was checked as correct by the time signals received at 10 a.m. on that date.

Section Foreman Pettinato stated that when train No. 27 passed him he was working at a point approximately 4 miles east of where the train subsequently was derailed, and he noticed that it was running pretty fast but not faster than usual in that locality. As soon as he learned of the accident he proceeded to the scene and tested the gauge and elevation of the track on the curve east of where the train was derailed. He found the gauge to be generally 4 feet 8½ inches, with a few places where it was 4 feet 8¾ inches, while the elevation was 4 inches except in two or three places where he found it to be 4¼ inches. He said the last work performed on this curve was about three weeks prior to the accident, he had passed over it, however, at about 8.15 a.m. on the day of the accident, at which time the track appeared to be in good condition.

The statements of Roadmaster Deighton corroborated those of Foreman Pettinato as to track conditions. He said the first marks of derailment were wheel marks which appeared on a tie, on the outside of the outer rail, about

2 feet west of a rail joint and 660 feet from the eastern end of the curve; these marks were 6½ inches from the rail and there were similar marks on the inside of the opposite rail, all of them leading toward the outside of the curve. Some of the rails were turned over but the fastenings remained intact and when making repairs these rails were all replaced in the track except one which was slightly kinked. He said that the track is maintained in good condition and was of the opinion that the curve was safe for a speed of 35 miles per hour. It also appeared from his statements that one telegraph pole had been broken by the wreckage and that all the wires were down.

Master Mechanic Lowney stated that engine 1717 was given class 5 repairs in May, 1927. After the accident he inspected all wheels of the engine and tender and found the flanges showing only slight wear. The engine truck was intact, but the No 2 axle was bent as a result of the accident to such an extent that the wheels could not be again placed on the rails, all the other parts were in first-class condition, and his inspection disclosed nothing that could have contributed to the cause of the accident. The engine was equipped with a speed recorder but this was detached from the engine in the accident, the tape had been blown from the instrument by steam and was found in pieces in the vicinity with no legible marks on the tape to indicate the speed of the train. Master Mechanic Lowney said it was possible that the releasing of the brakes at the beginning of the curve could result in the bunching of slack against the engine and contribute to the occurrence of the derailment on the sharp curve. In his opinion, however, the accident was due to excessive speed.

Superintendent LaBerter stated that at the time he arrived at the scene of accident there was about 1 foot of loose snow on the track but that it was not packed down in the flangeway. He was of the opinion that the accident was caused by excessive speed, basing his conclusions on the wheel marks found on the ties and the absence of any flange marks on the rails.

Examination of the track disclosed that the first marks of derailment were flange marks on the ties about 6¾ inches from the rails leading towards the outside of the curve. These marks extended for a distance of 180 feet to the point where they ran off the ends of the ties, indicating that it was in this immediate vicinity that the engine went down the embankment. There were

several broken ties and four rails were overturned on the high side of the curve There was no indication of dragging equipment or of any obstruction on the rails, in fact, nothing was found to indicate either that track conditions or the condition of the equipment could have contributed to the occurrence of the accident.

There was considerable conflict in the evidence as to the exact time at which the accident occurred The train dispatcher noticed an interruption of the wire service at 1.37 p.m. and noted this time on his train sheet, the engineman's watch stopped at 1.35 p m., the conductor of train No. 27 said he looked at his watch very shortly after the train came to a stop and estimated the time of the accident at about 1 36.30 p.m., while the wire chief noted the time as 1.37 p.m. According to the record of the dispatcher the train covered the distance between Walton and the point of accident, slightly more than 14 miles, at an average speed of nearly 50 miles per hour, while from the record of the wire chief it traveled between these points at an average speed of slightly more than 40 miles per hour. According to the statements of the dispatcher, indicating that the accident occurred at 1.37 p.m , and then allowing three minutes for the train to have traveled the distance of less than 2 miles from the point of accident to Red Eagle, it would appear that the run from Walton to Red Eagle would have been made in 20 minutes, a gain of nine minutes over the time-table schedule, and yet between Cut Bank and Walton, a distance of 76.92 miles, train No. 27 had made up only four minutes on its scheduled running time The dispatcher was sitting at his desk with his watch and the train sheet directly in front of him, with a loud speaker which greatly amplified all conversation or noise, and it is believed his figures are more nearly correct.

Conclusions

This accident was caused by excessive speed on a sharp curve.

Two westbound trains had passed over the track a short time prior to the occurrence of the accident and the crews of those trains reported nothing unusual as to track conditions in the vicinity of the point of accident, while careful examination of the track after the accident disclosed nothing that would have contributed to its occurrence. Careful examination of engine 1717, as well as the other equipment involved, failed to develop anything which could have caused the accident. On the other hand,

however, it is clear that train No. 27 had been making up considerable time after passing Walton, and according to the statements of the three members of the train crew the speed was between 35 and 45 miles per hour at the time of the accident, although the speed limit for curve 187 is only 25 miles per hour. The elevation of the curve was maintained between 4 and 4¼ inches, which is in line with the recommended practice of the American Railway Engineering Association, the exact elevation according to their formula being 4 1/8 inches. For a speed of 35 miles per hour, however, an elevation of 8 1/8 inches would have been needed, while a speed of 45 miles per hour would have called for an elevation of more than 13 inches, something which is obviously impossible. It seems apparent that Engineman Plank failed to restrict the speed as required by the speed-limit board and attempted to round the curve at an excessive rate of speed.

There is a rule in effect requiring enginemen in passenger-train service to make a light application of the air brakes for the purpose of steadying their trains when rounding sharp curves, especially when running at high rates of speed. There was evidence to indicate that Engineman Plank applied the air brakes and then released them either prior to reaching the curve or as the train started around the curve, resulting in the slack running in against the engine. Regardless of the effect of handling the air brakes in this manner, however, it is believed the speed was sufficiently high to account for the accident without the aid of other influences, although it is barely possible that had the brakes been kept applied this rate of speed might have been reduced sufficiently to enable the train to round the curve in safety.

The employees involved were experienced men and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully, submitted,

W. P. Borland,

Director.