

IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE  
GREAT NORTHERN RAILWAY NEAR CRATER, WASH., ON  
AUGUST 26, 1917.

On August 26, 1917, there was a derailment of a mail train on the Great Northern Railway near Crater, Wash., which resulted in the death of one employee and the injury of one employee. After investigation of this accident, the Chief of the Division of Safety reports as follows:

The part of the Great Northern Railway on which this accident occurred is a single-track line, over which train movements are governed by time-table and train orders, no block signal system being in use. Approaching the point of accident from the east there is a curve to the right, followed by 4,226 feet of tangent track, a 4-degree curve to the right 599 feet long, 360 feet of tangent track, a 4-degree curve to the right 200 feet long, and then there is a 10-degree compound curve to the left, 1,520 feet long. It was 468 feet west of the eastern end of this last mentioned curve that the accident occurred. The grade approaching the point of accident is 1 per cent, descending for westbound trains, but on the 10-degree curve the gradient reduces to .45 percent descending. The point of accident is in the center of a deep cut, the walls of which are 35 feet in height. About 1,650 feet east of the point of accident there is a "slow" board intended to call attention of the engineers of approaching trains to the 10-degree curve. The word "slow" is all that is painted upon this board. The speed of passenger trains between Crater and Vulcan, which includes the point of accident, is restricted by special time-table rule to 35 miles an hour, while the speed of freight trains on this division is restricted to 30 miles an hour. The weather at the time of the accident was clear.

The track in the vicinity of the point of accident is laid with 90-pound rails, 33 feet in length, laid in 1912, with about 20 pine and tamarack ties under each rail, six-inch spikes, Goldie tie plates on both inside and outside of rail, while an anti-creeping device attached in the center of all rails is used to fasten the track. The track is ballasted with 4 feet of gravel and the curve on which the accident occurred has 4 inches elevation. The track was in good condition with the exception of a slight variation in the degree of curvature.

Westbound mail train No. 27, consisting of locomotive 1009, 2 baggage cars, 1 mail car and 1 baggage car, in the order named, en route from St. Paul, Minn., to Tacoma, Wash., was in charge of Conductor Coleman and Engineman DeRush. It left Spokane, Wash., at 2:10 a. m., 8 hours late, arrived at Wilson Creek, 98.8 miles from Spokane at 4:16 a. m., having made up 34 minutes in time. It left Wilson Creek at 4:21 a. m., stopped at Adrian, 13.1 miles west, at 4:37 a. m., left Adrian at 4:39 a. m. and stopped at Naylor, 15 miles west, for time, as per train order No. 14, which reads as follows:

"Run 7 hrs. 20 minutes late Wilson Creek to Quincy. 7 hrs. 10 min. late Quincy to Monitor. 7 hrs. late Monitor to Leavenworth."

Train No. 27 left Naylor at 5:00 a. m., 7 hours and 20 minutes late, passed Quincy, 11.7 miles west at 5:19 a. m., and at 5:30 a. m. was derailed on the 10-degree curve previously mentioned at a point 2 1/2 miles west of Crater, or 7:16 miles west of Quincy, while traveling at a speed, according to the speed recorder, of 42 miles an hour.

After leaving the track the locomotive <sup>ran</sup> 287 feet before coming to a stop, going through the cut and a short way out on to a high fill. The locomotive, first baggage car and the forward trucks of the second baggage car were derailed. The locomotive came to rest down the side of the fill about 25 feet below the tracks, was partly turned around and lay on its left side; the tank rested close behind the locomotive. The first baggage car was partly on the roadbed in a tipped-over position. The second car remained upright on the roadbed with its forward trucks off the rails. The locomotive was badly damaged, the tank practically destroyed while the first baggage car received serious damage. The second baggage car sustained but slight damage while the remaining portion of the train sustained no damage. No marks were found on the rails to indicate that the locomotive jumped the track. The evidence and the position of the wreck indicated that the short distance which the train ran after the derailment was partly due to the fact that the locomotive turned crosswise after coming out of the cut and that the head baggage car was grinding against the north side of the cut.

Engineman DeRush died soon after the accident.

Fireman Ellis stated that the train slowed down near a tunnel located about 1 1/2 miles east of the point of derailment but that the train again picked up speed

after leaving the tunnel and he thought the speed at the time of derailment was about 20 or 25 miles an hour. He was looking back toward the train just before the accident occurred and Engineman DeHush called out to him. He also stated that there was a service application of the brakes on the train at the time it was derailed.

Conductor Coleman estimated the speed of the train at the time of derailment to have been 30 to 35 miles an hour and he stated that he did not consider this speed unsafe when entering upon the 10-degree curve. He was familiar with the location of the curve but on the night of the accident did not realize when they came on to it; however, he was not alarmed at the speed of his train at any time. He also stated that he did not consider Engineman DeHush a fast runner; in fact of the three enginemen who handled this run he considered Engineman DeHush the slowest. Conductor Coleman further stated that he did not interpret the special time-table rule restricting the speed of passenger trains to 35 miles an hour between Crater and Vulcan as applying to this mail train. He stated that he did not notice any emergency application of the air brakes at the time of derailment but thought that a service application was on at the time. He also stated that after the accident he did not notice any defect in the track or any obstruction of any kind on the track that might have been the cause of the derailment and he had no idea as to what was its cause.

Head Brakeman Murphy and Rear Brakeman Herman both stated that on the night of the accident they did not notice any unusual rate of speed; they recalled going through the tunnel east of the point of accident and were familiar with the location of the 10-degree curve on which the accident occurred. Rear Brakeman Herman stated that it was customary to slow down for this curve and he estimated the speed at the time of the derailment to have been about 35 miles an hour while Brakeman Murphy estimated it to have been between 30 and 35 miles an hour.

Superintendent Gavin stated that the slow board east of the 10-degree curve is a land-mark to indicate this curve and the speed around the curve is left to the judgment of the enginemen. He said that it is not the intention of the Great Northern Railway to run passenger trains around a 10-degree curve, with 4 inches elevation, at 35 miles an hour and that it is not being done. He also stated that the special time-table rule covering speed restrictions for passenger trains between

Crater and Vulcan does not apply to train No. 27. He stated that there are no instructions in effect regarding the speed of this train but that the oldest engine-men are used on it and it has been customary to allow them to use their own judgment as to the speed at all places. He said that curves are elevated for speed at 35 miles an hour, which they figure is the maximum speed for safety at any time on curves, but that on straight track between Crater and Vulcan train No. 27 exceeds the rate of 35 miles an hour. He stated in conclusion that he thought this accident was due to high speed.

Section Foreman Schrupps stated that he arrived at the scene of the accident shortly after it occurred, made a careful investigation of the track and found everything in good shape.

A careful investigation was made to ascertain whether or not any obstacles, such as rocks or foreign substances had been placed on the track; also to ascertain whether or not this accident might have been caused by a broken rail or sun kink. There was no evidence to indicate that the accident was due to any of these causes.

The last record on the tape of the speed recorder showed the speed of train No. 27 to have been 42 miles an hour, but there is some question as to its accuracy. On the trip in question it registered  $1\frac{1}{2}$  miles short between Hillyard and Naylor, a distance of 131.8 miles, while between Naylor and the point of accident, a distance of 18.6 miles, it registered 2 miles short. On a previous trip, made August 22d, the recorder on this locomotive registered .2 mile short in a distance of 23.2 miles, and checking over the tapes of the recorder on this locomotive for 30 days prior to the accident, it was found that on July 30th there was some discrepancy causing doubt as to the correctness of the tape.

The direct cause of this accident could not be positively determined, but in the absence of any other contributing factors, it is believed to have been due to excessive speed on the sharp curve. Owing to the inaccuracy of the speed recorder there is some doubt concerning the speed of train No. 27 at the time of the accident. Taking into consideration the testimony of the crew and the position of the wreck, as well as the distance run after the derailment, it would appear that Enginemen Belush was not running his train at a speed as high as 42 miles an hour. It is believed, however, that the speed was sufficiently high to cause the derailment.

While Engineman DeRush probably used poor judgment in operating his train at an unsafe rate of speed on the curve where the derailment occurred, he violated no rule, as it appears that there were absolutely no speed restrictions in force which applied to his train; in fact there were no special speed restrictions on this curve for any train.

The statements of Superintendent Gavin and Conductor Coleman indicate that the rule restricting the speed of passenger trains to 35 miles an hour between Crater and Vulcan does not apply to train No. 27, a mail train. Mr. Gavin stated that they did not intend to permit trains to run around the curve at a speed as high as 35 miles an hour, but according to his interpretation of the speed rule, together with the absence of any definite speed restrictions on the slow board, the rate of speed is left entirely to the judgment of the engineman.

In its reports covering the investigation of accidents, the Commission has frequently said that it is the duty of railroad officials to promulgate safe rules for the guidance of their employees and to see that they are enforced. Under the practices now in existence on this part of the Great Northern Railway, it is evident that as long as accidents fail to occur, enginemen may run at least 35 miles an hour around such curves without encountering censure. This is a condition that demands immediate correction in the interest of safety.