INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE DELAWARE, LACKAWANNA & WESTERN RAILROAD NEAR HALLSTEAD, PA., ON OCTOBER 19, 1927.

November 30, 1927.

To the Commission:

On October 19, 1927, there was a derailment of a passenger train on the Delaware, Lackawanna & Western Railroad near Hallstead, Pa., resulting in the death of two employees and the injury of eight passengers, one mail clerk, one express messenger and four employees.

Location and method of operation

This accident occurred on that part of the Scranton Division extending between Washington, N. J., and Binghamton, N. Y., a distance of 135.53 miles; in the vicinity of the point of accident this is a four-track line over which trains are operated by time-table, train orders and an automatic block-signal system. The accident occurred at a point 2.68 miles east of Hallstead; in this vicinity eastbound tracks 2 and 4 are separated from westbound tracks 1 and 3 by a distance of about 400 feet, and the train involved in this accident was running on track 2, the eastbound high-speed track. Approaching the point of accident from the west there is a 1° curve to the right 615 feet in length, including spirals, followed by more than 2,000 feet of tangent, the accident occurring on this tangent at a point approximately 400 feet from its western end. The grade is 0.6 per cent ascending for eastbound trains. Track 2 is laid with 105-pound rails, 33 feet in length, with about 18 ties to the rail-length, and is ballasted with stone to a depth of 18 inches; heavy tie plates and screw spikes are used.

The fill or embankment on which the accident occurred is 2,300 feet in length and its extreme western end is located approximately 100 feet east of the western end of the tangent on which the accident occurred. This fill was built in 1914 and was placed on the natural ground surface; the slope of the natural ground rises gradually toward the south to a height of from 200 to 300 feet, the slope of the natural ground at the point of accident being 1 foot in 3.7 feet. The top of the fill is 43 feet wide and the fill is 17½ feet in depth under track 4, on the south side of

the fill, and 21½ feet deep under track 2. The material in the fill consists principally of rock and gravel, obtained from cuts on either end of the fill. At a point about 120 feet east of the point of derailment there is a culvert, with concrete head-walls and a 24-inch cast-iron pipe extending under the tracks, which was put in when the roadbed was constructed in order to take care of any surface water coming down the slope immediately south of the fill and also water coming from the top of the side-hill cut located just west of the fill.

It was dark and partly hazy at the time of the accident, which occurred at about 6.18 p. m.

Description

Eastbound passenger train No. 28, en route from Elmira, N. Y., to Scranton, Pa., consisted of one milk car, three express cars, one baggage and mail car, and four coaches, in the order named, hauled by engine 1118, and was in charge of Conductor Thomas and Engineman Easterbrook. The first car was of wooden construction, the fifth of steel-underframe construction and the remainder were of all-steel construction. This train departed from Hallstead at about 6.11 or 6.12 p. m., 11 or 12 minutes late, and shortly afterwards it was derailed while traveling at a speed estimated to have been between 30 and 40 miles per hour.

At the point of derailment a portion of the fill slid out from under both tracks. Engine 1118, its tender, the first four cars and the forward truck of the fifth car were derailed. The engine came to rest at the bottom of the opening, badly damaged, in an almost upright position, headed north at an angle of about 45° to the track, with its head end about 20 feet to the left or north of the original track location; the tender came to rest on top of the engine, bottom up. The first car was demolished, the second was badly damaged and the third was practically demolished, while the fourth car stopped with its forward end in the opening and its rear end on the edge of that part of the fill which remained in place. The employees killed were the engineman and fireman.

Summary of evidence

Conductor Thomas stated that when the accident occurred he was riding in the sixth car in the train; it appeared as though the air brakes applied in emergency, followed by a severe shock apparently due to the resistance of the cars as they dropped into the opening in the track. He did not know whether the emergency air-brake

application was due to the breaking of the train line or whether it was made by the engineman, but he was of the opinion that the engineman had no warning prior to the occurrence of the accident. Conductor Thomas also said that to the best of his knowledge the headlight was burning brightly and he was of the opinion that even though the embankment had slid out from underneath the tracks before his train approached that point the engineman would not have been aware of it, provided the track on which his train was traveling remained suspended in the air, intact, as was the case with track 4. Conductor Thomas further stated that it had rained more or less continuously for several days prior to the accident but that he saw no indication of excessive water in the vicinity of the point of accident after its occurrence. He estimated the speed of the train to have been between 35 and 40 miles per hour between Hallstead and the point of accident. The statements of Baggagemaster Gilhooley, who was riding in the fifth car, and of Flagman McDonnell, who was riding in the last car, practically coincided with those of Conductor Thomas, except that the statements of the flagman indicated the brakes might have been applied two or three seconds before the accident occurred.

Roadmaster Duffy stated that he arrived at the scene of the accident about three hours after its occurrence and found that a large portion of the fill had slid out from under the tracks and that track 4 still remained suspended in the air. There was no accumulation of water in the vicinity of the point of accident but the ground was soft and spongy where the engine came to rest. He also found that the cast-iron pipe in the culvert was amply taking care of what water was draining from the slope above the embankment, while leaves on the ground nearby indicated that the culvert had not been blocked, causing the water to accumulate against the fill. Roadmaster Duffy produced two reports, one from Section Foreman Giangreico and one from Track Walker Kearney, to the effect that the track in the vicinity of the point of accident had been patrolled on the morning of the day of the accident and that these two men had met, shortly after 9 a. m., at the point where the accident afterwards occurred, at which time nothing unusual was observed. Roadmaster Duffy stated that this particular piece of track did not require any special attention, nor had it received it, but that during bad weather it is patrolled more often than during good weather, which is also the case with the rest of the track.

Division Engineer Wheaton stated that the culvert was ample to dispose of any surface water which might accumulate and that there was a surface ditch to intercept any water that ran off the side of the mountain and to conduct it to the culvert without washing the side of the embankment or creating any dangerous condition. The ditch appeared to have been free and open at the time the slide occurred and apparently was carrying all the water it was intended to carry. In his opinion there seemed to be a soft clay underneath the sod of the old natural surface of the land, which would indicate that there was a pocket of clay under the embankment at the point where the slide occurred, and he thought that possibly this clay became saturated and slippery as a result of continuous rains, and that the vibration of trains on the embankment caused the clay to give way and slide under the embankment, carrying the embankment with it; this condition could not have been detected by visible observation before or after the embankment was constructed.

Principal Assistant Engineer Neafie stated that the entire fill slid out for a distance of about 100 feet under track 4 and from 100 to 125 feet under track 2. Division Engineer Wheaton thought this occurred before the engine reached it but Mr. Neafie thought it occurred at the time the engine reached it, due to the fact that the track on which train No. 28 was running was carried toward the north of the center line of the original track location; the rails of this track were not deflected downward but toward the north or left. He said it had rained for three days prior to the accident and the indications were that the fill not only was thoroughly saturated with water but that a large amount of surface water from the slope on the south side of the fill had seeped into an under the fill so as to soften the original ground surface and cause the fill to slip. The original soil opposite the point of accident is of a clay-loam consistency and would tend to carry water along the surface of it rather than to absorb it readily, thereby carrying a surplus of water into and under the fill. Mr. Neafie also said that the flow line of the pipe through the culvert showed that it had never been filled to capacity, indicating that there had not been an accumulation of water on the south side of the fill.

It was developed that Towerman Cassidy, stationed at Hallstead Tower, and Clerk Fitzgerald, stationed at Hallstead, as well as Engineman Razey, who was on westbound engine 1167 when it passed train No. 28 west of Hallstead, saw the headlight of engine 1118, of train No. 28, burning brightly when the train passed them, while Superintendent Mullaghy produced statements from members of the crews of extras 1247 and 1158 to the effect that extra 1247 passed

the point of accident on track 4 between 5.15 and 5.20 p. m., and that extra 1158 passed that point on track 2 at about 4.50 p. m., and at the time those trains passed the members of their crews noticed nothing unusual.

Conclusions

This accident was caused by a portion of a fill sliding out from under the tracks.

The evidence indicated that a portion of the fill, 100 or more feet in length, slid out from under tracks 2 and 4, resulting in the occurrence of the accident. It further appeared that the facilities provided for draining the water from the slope above the track were adequate for that purpose, but that as a result of continuous heavy rains the material of the fill probably had become more or less water-soaked, particularly at the point where it came in contact with the natural line of the ground, and that the softening of the material at this point coupled with a corresponding softening of the soil of the natural ground, some of which appeared to have consisted of clay, resulted in its sliding out from under the tracks. Trains had passed this point on each track within two hours of the occurrence of the accident, at which time the crews of those trains noted nothing wrong, and from the other evidence produced it was impossible to determine definitely whether the fill slid out from under the train or whether it slid out prior to the time the train reached that point.

All of 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. BOPLAND,

Director.