

1921

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN  
ACCIDENT ON THE DENVER & RIO GRANDE WESTERN RAILROAD  
NEAR ECHO, COLO., ON JULY 26, 1934.

August 18, 1934.

To the Commission:

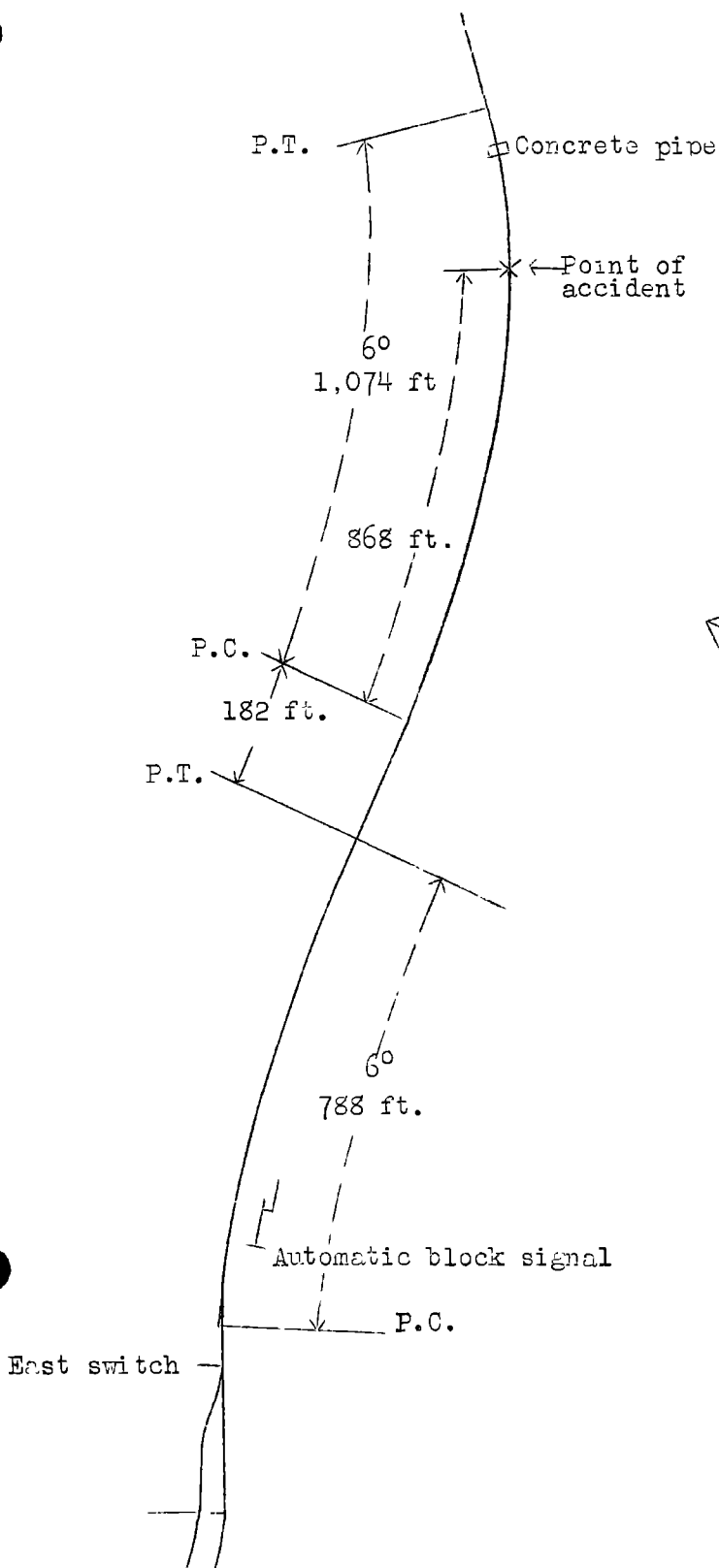
On July 26, 1934, there was a derailment of a passenger train on the Denver & Rio Grande Western Railroad near Echo, Colo., which resulted in the death of 1 trespasser and the injury of 34 passengers and 7 employees.

Location and method of operation

This accident occurred on that part of the Pueblo Division extending between Salida and Pueblo, Colo., a distance of 95.8 miles; between Canon City and Echo the track follows the course of the Arkansas River through the Royal Gorge. In the vicinity of the point of accident this is a single-track line over which trains are operated by time table, train orders and an automatic block-signal system. The accident occurred approximately 1,863 feet east of the east switch of the siding at Echo; approaching from the west there is a 6° curve to the right 788 feet in length, then 182 feet of tangent, followed by a 6° curve to the left 1,074 feet in length, the accident occurring on this latter curve at a point 868 feet from its western end. The grade is descending for east-bound trains, varying from 0.12 to 1.24 percent, being at its minimum at the point of accident.

The track is laid with 100-pound rails, 39 feet in length, with an average of 24 ties to the rail length, fully tieplated, double spiked, ballasted with crushed slag to a depth of 10 inches, and is well maintained. Approaching the point of accident the track is laid in a side cut, a drainage ditch about 15 feet in width at the foot of a mountain being located immediately north of the track. Water flowing eastward in this ditch is carried through a 48-inch concrete pipe, located 156 feet east of the point of accident, under the track to the Arkansas River on the south side of the track. Between Texas Creek, 4.2 miles west, and Parkdale, 8.7 miles east of Echo, the track follows the course of the river, running through deep gorges of granite, broken at various places by gulches on each side of the river.

Inv. No. 1921  
 Denver & Rio Grande Western R.R.,  
 Echo, Colo.  
 July 26, 1934



|   |                          |          |
|---|--------------------------|----------|
| • | Pueblo, Colo.            |          |
|   |                          | 60.6 mi. |
| × | Echo (Point of accident) | 4.2 mi.  |
| • | Texas Creek              | 4.5 mi.  |
| • | Fernleaf                 | 3.1 mi.  |
| • | Cotopaxi                 | 4.0 mi.  |
| • | Pleasanton               |          |
|   |                          | 7.7 mi.  |
| • | Howard                   | 4.6 mi.  |
| • | Swissvale                | 4.4 mi.  |
| • | Clora                    | 2.7 mi.  |
| • | Salida, Colo.            |          |

These gulches drain vast areas of the divide. The largest of these gulches is at Echo, having a width of approximately  $\frac{1}{2}$  mile at its outlet to the river and draining the territory from the north for a distance of about 50 miles. About  $1\frac{1}{2}$  miles east of this outlet there is another large gulch; high water is often encountered at both of these points, even during times when there has been no evidence of storms in the immediate vicinity. At the point of accident between these two gulches there is a smaller gulch extending north of the track upward to a height of about 1,000 feet; the granite wall of this gully is relatively smooth, with little vegetation or loose rock to impede the flow of water. Near the bottom of this gully and about 200 feet north of the track the rock formation spreads out and water reaches the ditch at various points, then flows eastward in the ditch to the concrete pipe above mentioned and under the track to the river.

Owing to rock formations on the inside of the curve the view of the point of accident around the mountain from the fireman's side of the engine cab was restricted to 200 feet, while the engineer's view was completely obstructed.

At the time of the accident, which occurred about 3:42 p.m., the weather was clear at Echo but there had been hard rains at Howard, 23.5 miles west of Echo.

#### Description

East-bound passenger Train No. 2 consisted of 2 baggage cars, 1 combination mail and baggage car, 2 coaches, 1 diner, 5 Pullman cars, and 1 observation car, in the order named, all of steel construction, hauled by engine 1703, and was in charge of Conductor Metz and Engineman Miller. This train left Texas Creek, 4.2 miles west of Echo, at 3:37 p.m., according to the train sheet, 7 minutes late, and shortly after passing the east switch of the siding at Echo and while traveling at a speed variously estimated to have been between 28 and 40 miles per hour, it was derailed by sand and gravel that had been washed upon the track.

Engine 1703, the tender and the first five cars were derailed. The engine stopped on its right side, south of and parallel with the track, with its front end 325 feet east of the point of derailment; the tender stopped behind the engine, the cistern being torn from its frame. Both baggage cars were derailed to the south, the mail and baggage car was diagonally across the track, headed northeast, and the two coaches were in line with the track. The employees injured were the engineman, fireman, 2 mail clerks, express messenger, news-agent and diner cook.

### Summary of evidence

Engineman Miller was severely injured and no statement was obtained from him.

Fireman Laizure said that after passing Cleora, 3.7 miles east of Salida, it started to rain and from Badger Creek to Howard, 9 miles east of Cleora, all of the streams and crevices on the north side of the track were full of water and it was raining so hard that it practically obscured vision. On reaching the east switch of the siding at Howard, the rain stopped. Approaching Cotopaxi, 11.7 miles east of Howard, it sprinkled slightly, then stopped, and in the vicinity of Texas Creek, 7.6 miles east of Cotopaxi, the weather was practically clear. West of the east switch and north of the siding at Echo, 4.3 miles east of Texas Creek, there were two or three places where holes had been washed in the roadbed, while weeds and debris were washed upon the track. An automatic block signal located 213 feet east of the east switch at Echo was displaying a clear indication. After passing over the east switch the engineman applied the brakes and reduced the speed from about 32 miles per hour to about 28 to 30 miles per hour; while rounding the curve just west of the accident Fireman Laizure said he was looking ahead and saw the sand and gravel on the track just as soon as it was possible to have done so; he shouted a warning to the engineman and also gave a stop signal with his hand, and the engineman immediately made an emergency air brake application, but before the speed was materially reduced, the accident occurred. He estimated the pile of sand and gravel on the track to have been about 2 or 2½ feet deep and said that practically all of the water had drained out of it. He and the engineman had talked about the possibility of water at the east switch of the siding at Echo and they saw considerable water running under a small bridge located just west of the water tank at Echo or 2,683 feet west of the east switch, but no trouble was anticipated at the point where the accident occurred; Fireman Laizure had been working in this territory for 50 years and so far as he knew no previous trouble had been experienced at this particular point.

Conductor Metz said the weather was clear when the train left Salida and that a rather heavy rain was encountered near Swissvale, 7.1 miles east of Salida, which continued until the train reached Pleasanton, 12.3 miles east of Swissvale. It was partly cloudy then, but no more rain was encountered, nor was there any indication of previous rainfall east of Pleasanton until Echo was reached, at which point water was running under the bridge west of the water tank and there was some water in the ditch at the east switch of the siding. Conductor Metz was riding in the seventh car and estimated the speed of the train to have been between 25 and 30 miles per hour just before the air

brakes were applied in emergency. The accident occurred about 3:42 or 3:43 p.m. Statements of Brakemen Dunbar and Alberts were similar to those of the conductor and fireman as to water conditions at Echo; Brakeman Alberts estimated the speed to have been between 35 and 40 miles per hour just before the air brakes were applied in emergency.

On the day of the accident Section Foreman Allison proceeded westward over his section on the main track, with his crew of four men, from mile post 179 to mile post 185, passing the point 1,788 feet west of mile post 179, where the accident later occurred. There was nothing wrong at that time and he returned to Texas Creek, at 8:50 a.m., to install ties on a branch line. There was no sign of rain at this time, but shortly before 3 p.m. he noticed a dark cloud in the vicinity of Echo and knowing that trouble had been previously experienced near the water tank there he loaded the tools on the section car and started for that point. However, he encountered a rock slide on the branch line about 3 miles from Texas Creek and stopped to remove these rocks, which prevented him from arriving at Echo ahead of Train No. 2. He went to the scene of the accident about 4:15 p.m. and estimated the pile of sand and gravel on the track to have been approximately 78 feet in length, 3 feet deep on the low rail of the curve and 2 feet deep on the high rail. No previous trouble had been experienced at this particular location.

Roedmaster Johnson stated that no previous water trouble had been experienced at this point, the nearest locations where trouble had occurred being  $3/4$  mile east and 4,000 feet west of where the accident occurred.

Division Engineer Puder stated that the sand and gravel on the track covered the north rail to a maximum depth of 5 feet and the extreme width of the wash was 96 feet. The water which carried the material down came from a gully some 200 feet north of the main track; the gully empties upon a heavy rocky formation and during previous rain storms the water, after leaving the gully, spread out over the rocky formation and reached the ditch at various points along the track, then flowed eastward and through the concrete pipe under the track to the river. The extremely heavy rain on this occasion, however, resulted in the water being forced to the track at one point, carrying with it sand from the edge of the cut, which was deposited on the track.

Trainmaster Decker arrived at the scene of the accident about 3 hours after its occurrence. At that time the water was not running and the sand on the track was not too wet to handle with shovels. En route from Solida on the derrick he watched closely for indications of water. There were indications of a heavy rain at Howard, but east of that point there were no indications of recent rain either in the draws or culverts under the track or on the public highway, and he noted that automobiles were raising dust. At a bridge in the vicinity of Fernleaf, 8.7 miles west of Echo, the bottom of the draw was wet, but no water was running. At a bridge just west of Texas Creek there was no indication of water, while the bridge at Texas Creek was dry and the agent at that point told him that only a light shower had fallen there, barely enough to wet the ground. The first indications of heavy rain was at the west switch of the siding at Echo, although no water was then running, and at a point about 500 feet west of the east switch the section men were filling in a washout under the passing and main tracks, and water was standing on the north side of the track. From there to the point of accident indications of water having been standing were observed and in the vicinity of the point of derailment the ground was covered with slime left by high water.

Superintendent Bowen stated that from all indications the concrete pipe under the track had carried full capacity of water and was clean.

West-bound Train First No. 81, passed the point of accident about two hours earlier; Engineman McIntire noted nothing unusual and the ground was dry. No rain was encountered until his train reached Howard, at which point Train No. 2 was met. During his 52 years in this territory Engineman McIntire had never experienced water trouble at the point where the accident occurred.

#### Conclusions

This accident was caused by the train striking sand and gravel which had been washed upon the track, due to an unusually heavy rain storm.

A storm of cloudburst proportions occurred a short time before the accident. The volume of water in the mountain gully was so great that it overflowed its usual course and washed down a large quantity of sand and gravel from the embankment, covering the track. No trouble had been previously experienced at this location. The country in this vicinity is uninhabited and no information was obtainable as to the exact time the storm

occurred. The last train passed that point within less than 2 hours prior to the accident, at which time nothing unusual was noted and the ground was then dry. The section foreman saw a storm gathering in the vicinity of Echo about 3 p.m. and started for that point with his crew, but delay due to a rock slide on the branch line prevented his arrival at Echo ahead of Train No.2. Sand and gravel were washed upon the track for a distance of 96 feet, covering the low rail of the curve to a depth of 3 feet and the high rail to a depth of 2 feet. The obstruction did not shunt or break the circuits controlling the automatic block signal and the crew had no warning of danger at the last signal location, while the rock formations limited the view of the point of accident from the fireman's side to a very short distance, and the engineman's view was completely obstructed; it appears that the engine crew was fully on the alert and that the fireman called a warning as soon as the obstruction came into his range of vision, but it was then too late to avert the accident.

Respectfully submitted,

W. J. PATTERSON

Director.