

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN
ACCIDENT ON THE DENVER AND RIO GRANDE WESTERN RAILROAD
NEAR RUBY, COLO., ON AUGUST 4, 1935.

October 8, 1935.

To the Commission:

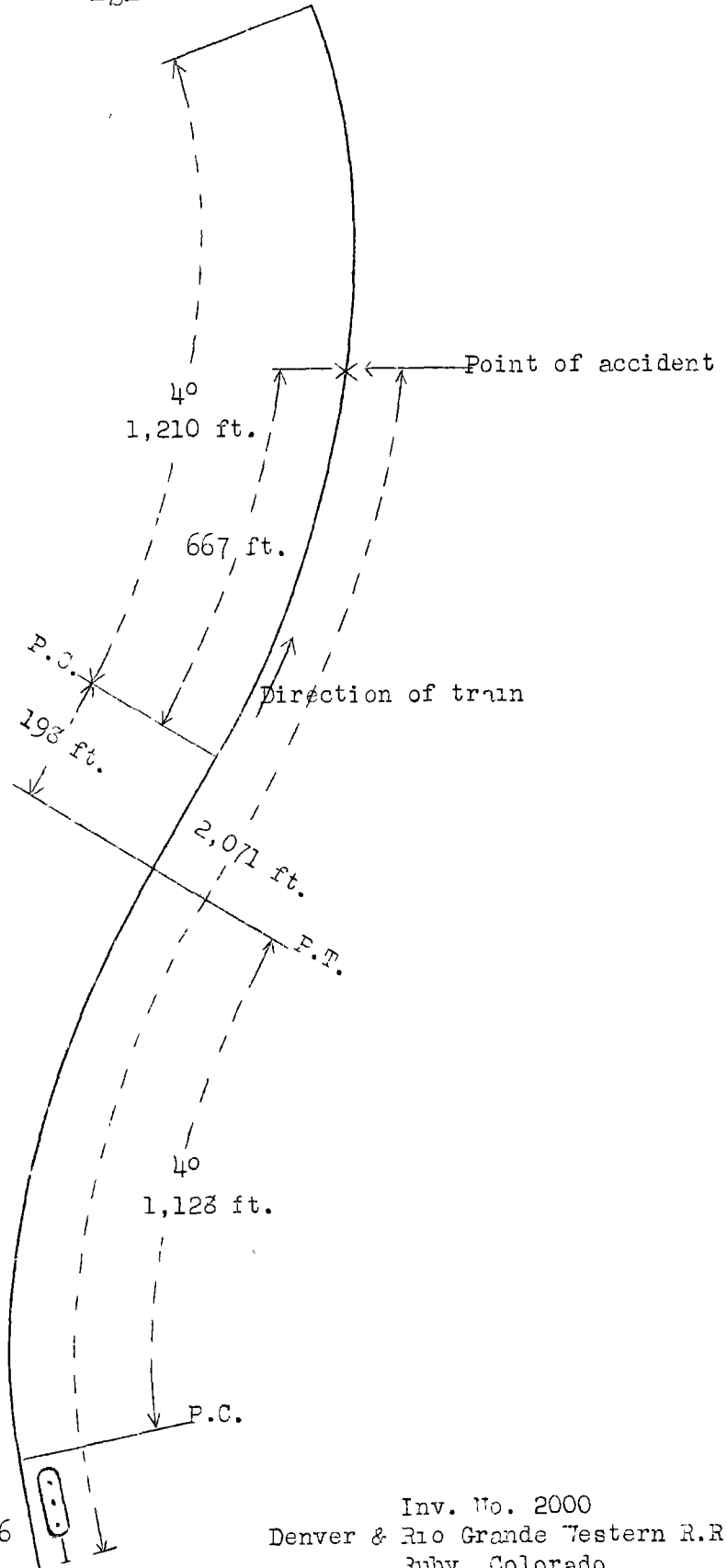
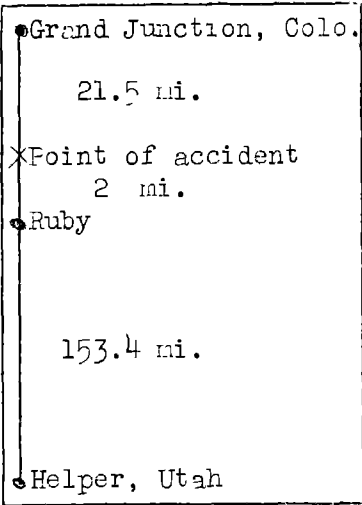
On August 4, 1935, there was a derailment of a freight train on the Denver and Rio Grande Western Railroad near Ruby, Colo., which resulted in the death of 1 employee and the injury of 1 employee.

Location and method of operation

This accident occurred on Sub-Division 5 of the Grand Junction Division, which extends between Helper, Utah, and Grand Junction, Colo., a distance of 176.9 miles; 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 in a cut about 2 miles east of Ruby and 1,635 feet west of mile post 471; approaching this point from the west, there is a 4° curve to the right, 1,128 feet in length, followed by 198 feet of tangent and then a 4° curve to the left 1,210 feet in length, the accident occurring on this latter curve at a point 667 feet from its western end. The grade for east-bound trains is 0.54 percent ascending at the point of accident. The last east-bound automatic signal is signal 4716, located 2,071 feet west of the point of accident. The maximum permissible speed for freight trains is 45 miles per hour.

The track is laid with 90-pound rails, 24 ties to the rail length, fully tieplated, double-spiked, and ballasted with 8 to 10 inches of slag; the track is well maintained except that a drainage ditch on the north side had become filled up and was scarcely discernible. The accident occurred in a cut about 415 feet in length; on the north side of this cut there is a cliff, composed largely of sandstone and shale, with numerous boulders embedded in its slopes, approximately 60 feet in height. This cliff drops precipitously until within 28 feet of the center of the track, where the slope tapers off until within about 10 feet of the track, and then the ground line is nearly level with the track. The south slope of the cut is about 25 feet in height.

The weather was clear at the time of the accident, which occurred about 10:15 a.m.



Inv. No. 2000
 Denver & Rio Grande Western R.R.
 Ruby, Colorado
 August 4, 1935

Description

Train First No. 34, an east-bound freight train, consisted of an auxiliary water tender, 41 loaded cars and a caboose, hauled by engine 1609, and was in charge of Conductor Carter and Engineman Cutting. This train passed Cisco, the last open office, 31.3 miles west of Ruby, at 9:20 a.m., 1 hour and 49 minutes late, according to the train sheet, and was derailed at a point about 2 miles east of Ruby on striking a rock on the track while traveling at a speed estimated to have been about 40 miles per hour.

The engine pushed the rock ahead for a distance of 65 feet before being derailed, and then continued on the ties for a distance of 300 feet until it struck the girder on the left side of bridge 471-A, an 84-foot through plate-girder bridge spanning a stream known as Salt Wash, stopping on its left side with its front end in the stream bed, about 18 feet below and 24 feet north of the track structure. The rear end of the engine was lying on the west abutment of the bridge, approximately 15 feet north of the track. The tender did not break loose from the engine and remained upright. The auxiliary water tender and the next 11 cars were derailed, several of them being badly damaged. As a result of the impact, bridge 471-A was pushed ahead for a distance of about 6 feet, the girder which was struck by the engine being considerably damaged. The employee killed was the fireman and the employee injured was the head brakeman.

Summary of evidence

Engineman Cutting stated that signal 4716 was displaying a proceed indication as his engine passed it, and as the engine rounded the curve approaching the cut, at a speed of about 40 miles per hour, the fireman called to him to stop; he immediately placed the brake valve in emergency position and cut in the driver brakes; an instant later he felt the engine strike something and it became derailed. After the derailment he found that the engine had struck a rock and apparently pushed it along on the ties approximately 20 feet, shoving the ties ahead and burying the rock in the ground; this had caused the rails to spread sufficiently to derail the engine. He and Roadmaster Quinn discovered that the rock left the side of the cut at a point about 15 feet above and 20 feet from the inside rail.

Head Brakeman Pizza, who was riding in the engine cab, stated that he had observed signal 4716 in proceed position. He was standing behind the engineman when the fireman called a warning of danger just before the engine became derailed. After the accident he went back along the track and discovered a rock wedged between the ties.

Conductor Carter stated that he was in the cupola of the caboose when he felt a sudden application of the brakes; the speed of the train at that time was about 40 miles per hour. He went to the head end of the train and ascertained that the engine had struck a rock just before getting out of the cut. A piece of the rock had been broken off and the remaining part had been pushed along the track about three car lengths before any wheel marks were visible on the ties.

Section Foreman Keffalos, in charge of the track where the accident occurred, stated that it is his practice to inspect this section every day. He passed through the cut about 9 a.m. and again at 4:45 p.m. the previous day and found it to be in good condition, with no indication of loose dirt or anything falling. There had been no rain in this vicinity for about 10 days prior to the accident.

Roadmaster Quinn stated that on his arrival at the scene of the accident about 12:30 p.m. he found marks indicating that a rock had come down from a point about 15 feet high and 25 or 30 feet from the track, sliding part of the way down the side of the cut and then rolling into the middle of the track, carrying some small rocks and dirt with it. After being struck by the engine the rock apparently was pushed ahead about 30 or 40 feet and then caught and bunched the ties ahead, finally derailing the engine to the left. He said his instructions were to watch such slopes and take down any loose rock considered dangerous; he had made a casual running inspection of the cut on the day prior to the accident and noticed nothing unusual.

Division Engineer Darby stated that the rock had fallen from a small ledge at a point 15 feet above and 30 feet horizontally from the center line of the track. The cut is a formation of stratified sand rock and shale and the ledge from which the rock fell was approximately 3 feet thick, being exceptionally hard, and was supported by from 10 to 12 feet of blue shale; above the ledge were alternate strata of shale and sand rock. The rock was wedge-shaped, measured 4 by 2.5 by 1.1 feet, and weighed about 950 pounds. The rock strata of this cut were considerably shattered, this condition existing throughout the canyon, and he thought that the disintegration of supporting shale caused the rock to fall; the condition might have been discovered before the accident, but on the other hand the shale is liable to slide at any time. There had been a slight slide of loose material in this cut 3 years previously but it was of no consequence. He said the ditch in this cut had been filled up with slou n, that ditching had been recommended for the whole canyon, and that a ditch might have had a tendency to retard the rock, although he was unable to say whether it would have prevented the accident.

Signal Maintainer Fisher stated that he made an inspection of the automatic signals shortly after the derailment and found them to be functioning properly, no damage having been done to the track circuits by the falling rock.

A vision test showed that the point of accident could have been seen from the fireman's side of the engine a maximum distance of 351 feet.

Discussion

The investigation developed that a rock weighing about 950 pounds became dislodged from a point about 30 feet from and approximately 15 feet above the track, rolled down the slope, and stopped in the center of the track. It seems probable that the fireman observed the rock on the track as soon as it came within his range of vision; he called a warning but it was then too late to avert the accident. After having been struck by the engine the rock appeared to have been pushed ahead for a short distance and then caught in the ties, bunching them and damaging the track sufficiently to result in the derailment of the engine. It further appeared from the evidence that the rock fell because of the disintegration of the underlying shale formation which supported it.

The shale formation seemed to be more or less in progress of disintegration throughout the north side of the cut involved in this accident, and the existence of such a condition results in continual exposure to the danger of similar slides in future. The drainage ditch at the foot of the slope of the cut had become filled up, and the division engineer said a recommendation had been made that ditching be done; ditching of this cut, together with close examination of the slope and the removal of material from various points where danger might develop, should result in providing a safer condition for the operation of trains through this cut.

Conclusion

This accident was caused by a rock slide.

Recommendation

It is recommended that the slope of the cut be examined with a view to eliminating any condition of possible danger which might develop because of the disintegration of the various strata of shale which appear in the surface of the slope, and that provision be made for ditching which the division engineer said had been recommended.

Respectfully submitted,

W. J. PATTERSON,

Director.