1953

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN ACCIDENT ON THE DENVER AND RIO GRANDE WESTERN RAILROAD AT NIGER, COLO., ON DECEMBER 12, 1934

January 19, 1935

To the Commission:

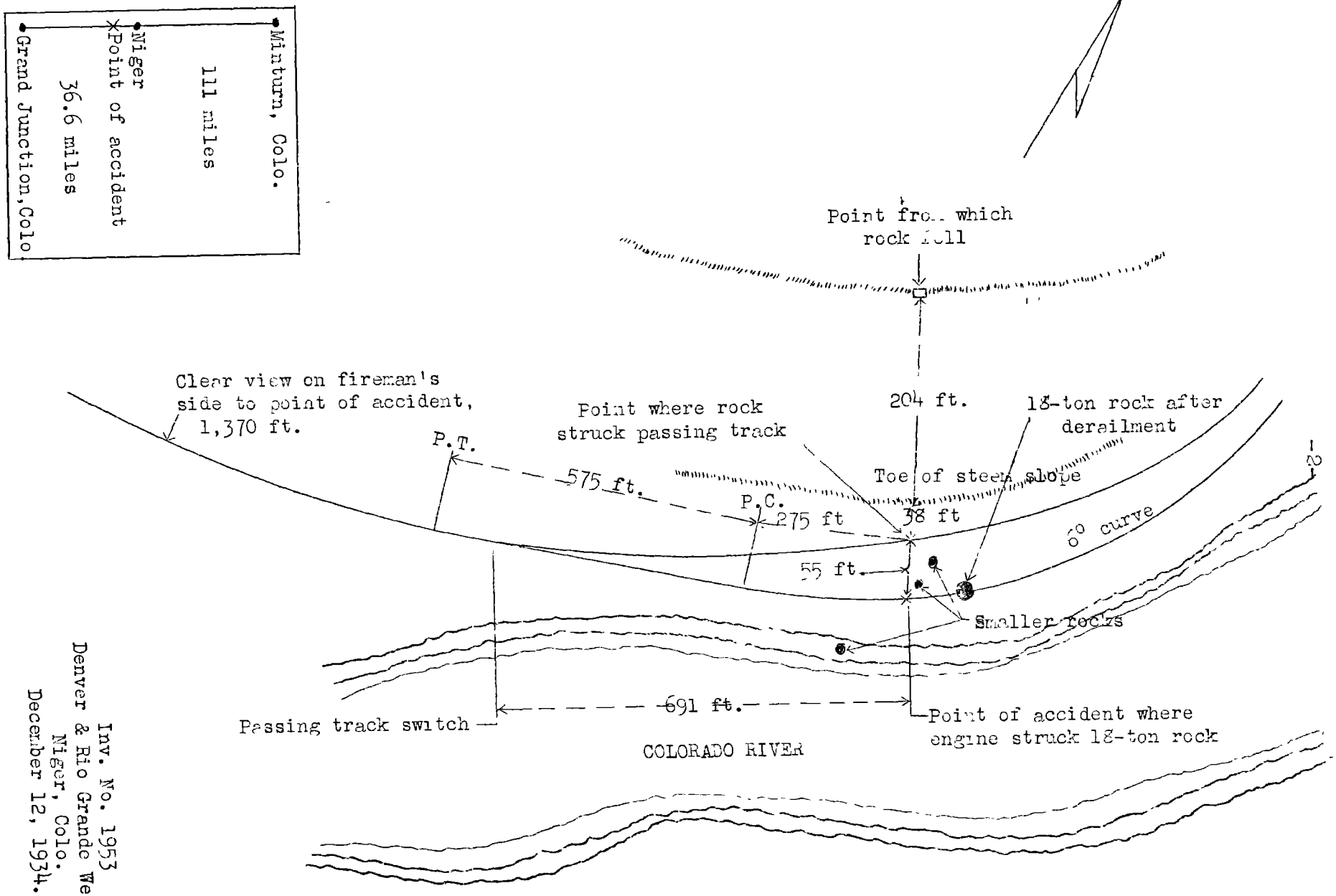
On December 12, 1934, there was a derailment of a passenger train on the Denver and Rio Grande Western Railroad at Niger, Colo., which resulted in the death of two employees.

Location and method of operation

This accident occurred on Sub-division 4 of the Grand Junction Division, which extends between Minturn and Grand Junction, Colo., a distance of 147.6 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. A passing track 2,430 feet in length parallels the main track on the north, and the accident occurred on the main track 691 feet east of the west passing-track switch, the distance between the two tracks being 55 feet at the point of accident. Approaching this point from the west, there is a 1° 38' curve to the left, followed by 575 feet of tangent and then a 6° curve to the left, 1,500 feet in length, the accident occurring on this latter curve at a point about 275 feet from its western end. The grade is level to within 80 feet of the point of accident and then it is 0.6 percent ascending for east-bound trains.

The east-bound automatic signal, of the color-light type, governing movements within the block in which this accident occurred, is located 3,454 feet west of the point of accident. A slow board governing the speed of trains on the curve at Niger is located 1,800 feet west of the western end of the curve and limits the speed of passenger trains to 35 miles per hour.

The track is laid with 90-pound rails, 39 feet in length, with 24 ties to the rail length, fully tieplated, double-spiked on the inside, and ballasted with about 16 inches of slag; the track is well maintained. In the vicinity of the point of accident the track is laid on a fill and parallels the north bank of the Colorado River; on the north side of the passing track there is a cliff which rises approximately 200 feet. The cliff drops precipitously to within 38 feet of the passing track,



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Denver & Rio Grande Western
Niger, Colo.
December 12, 1934.

from which point there is then a steep slope leading to that track. This cliff is composed largely of sand stone and there are numerous large boulders lying on its slopes.

It was daylight, clear and frosty at the time of the accident, which occurred about 7:10 a.m.

Description

Train No. 6, an east-bound passenger train, consisted of 1 baggage car, 1 coach, 1 dining car, 1 Pullman sleeping car and 1 lounge car, in the order named, all of steel construction, hauled by engine 1700, and was in charge of Conductor Scougale and Engineman Young. This train departed from Grand Junction at 6:13 a.m., on time, passed DeBeque, the last open telegraph office, 3.6 miles west of Niger, at 7:05 a.m., according to the train sheet, 3 minutes late, and was derailed at Niger on encountering a rock on the track while traveling at a speed variously estimated to have been from 25 to 40 miles per hour.

The engine was derailed to the right down a 30-foot embankment and stopped on its right side, 61 feet from the center of the track, with its front end submerged in the river. The tender also was on its right side in line with the engine but clear of the water. The first car was headed down the embankment but remained upright with its front end alongside the tender, and the second car was derailed but remained in general line with the track, while the right front wheel of the front truck of the third car was the only other part of the equipment to be derailed. The employees killed were the engineman and fireman.

Summary of evidence

Conductor Scougale stated that he thought the speed was 25 or 30 miles per hour when he felt the brakes applied in emergency, followed almost immediately by the impact. He noticed a large kink in the inside rail of the passing track where a rock had struck it and it appeared to him that at the time the rock struck the main track it consisted of one large piece and that when the engine struck it the rock broke into several pieces; there was one section on the left side of the track, a smaller piece on the river side, and it appeared that the engine had pushed the remaining piece ahead of it, tearing up the track. It was his opinion that this rock came down in front of the train or else the fireman would have seen it in time to warn the engineman, as the fireman knowing the curves and the conditions along the river bank would be on his seatbox looking ahead.

Head Brakeman Trechter stated that approaching Niger the speed was 35 or 40 miles per hour and he noticed a light application of the air brakes just before reaching the curve on which the accident occurred; this was followed by the emergency application. After the accident he saw freshly torn up ground within 2 or 3 feet of the ties on the main track where the rock had struck and then apparently tipped over upon the rail without breaking it; he also was of the opinion that the rock was in one piece before the engine struck it.

Baggageman Stilwell, who was in the first car, stated that the train traveled about 75 feet from the time the air was applied in emergency to the time he felt the impact, and the train then traveled from 200 to 250 feet before stopping. A large piece of rock was just clear of the track on the left side, opposite the point where the rock first landed; a smaller piece was about 40 feet beyond and about 30 feet to the left of the track, while another large piece was in the center of the track about 250 feet east of the first piece mentioned. The bluff appeared to be of sand stone, with some cracks in it, but it seemed to be solid and did not appear to be dangerous. He saw where the rock had broken off from the perpendicular side of the bluff and then the path it followed after striking the sloping ground. After striking the north rail of the passing track it apparently bounced over from one track to the other as the ground between the tracks was not disturbed. There was a light coating of dust on the rail of the passing track and the ground was frosty but there was no frost on the rock, and he concluded that the rock had not been on the track very long prior to the time of the accident.

Section Foreman Fox stated that he had been over this track at 5 p.m. the previous evening and found it to be in good condition and there was no indication of any rocks slipping. He had inspected the hillside during the month of October and was satisfied at that time that there was no danger. Section Foreman Fox had been in charge of this section for the past 2 years and during that time no rocks had fallen on the main track although there had been two small ones on the passing track.

Roadmaster Moriarty stated that during 1926 and 1927 a large fill was placed at this point and the main track was moved away from the bluff about 50 feet, and since that time no trouble had been experienced with rocks falling on the main line and only a very few had fallen on the passing track. It was his opinion that the rock which had been shoved ahead of the train was part of the one farther back along the track, the sides matching as though they had been one rock.

Division Engineer Darby made an inspection of the cliff from which the rocks came down, about 400 feet north of the main line and about 200 feet above the track. He thought approximately 100 tons of rock broke off but that only 30 or 40 tons reached the track, the balance having wedged in behind other rocks. Apparently there had been a crack behind the rock, as he could see dirt left hanging to the cliff; he did not consider that that indicated anything, however, saying that there are many rocks in that condition all along the railroad, in fact, there are several near this point in the same condition but at the same time they do not look as if they would fall. The rock in question followed a small gulch and apparently did not veer from its general course until it struck the passing track. As nearly as he could tell, the rock was in one piece until that time, when it appeared to split into four pieces, each of which then took a different course; one section turned abruptly to the west, crossing the main track and dropping into the river; another, about 18 tons in weight, apparently continued straight ahead and settled on the main track; a third portion of the rock, weighing about 12 tons, veered slightly to the east and stopped about 10 feet north of the center of the main track and about 8 feet east of where the 18-ton rock landed, while the fourth section, weighing about 5 tons, veered still farther eastward and landed about half way between the passing track and the main line, about 60 feet east of where the original rock struck the passing track. It appeared that the engine struck the 18-ton portion and shoved it ahead for a distance of 134 feet, the rock apparently staying between the rails, as at the final location of the rock the track was shifted towards the hill about 6 feet, the engine going to the right and into the river. This rock measured about 6 by 7 by 8 feet. In his opinion the engine did not break a large rock in two at the time of impact.

Superintendent McPherson expressed the same opinion as Division Engineer Darby as to the manner in which the rock fell and broke and also expressed the opinion that no doubt the rock came down in front of the train.The last movement over this track prior to the accident was about 1:05 a.m.

Master Mechanic Cunningham inspected the engine as it lay down the embankment on the day of the accident and again on the following day after the tender had been pulled away. The brake valve was in emergency position, the throttle lever about one-fourth open, and the reverse lever near the center of the quadrant. The pilot beam was broken and the front coupler was broken in the middle and lodged under the left No. 2 driving wheel. Master Mechanic Cunningham stated that the view had by the fireman was unobstructed for a distance of at least 1,250 feet and he was of the opinion that the rock fell down in front of the train;

the fact that the emergency application of the brakes was made almost simultaneously with the striking of the rock afforded addition indication that such was the case.

Assistant Signal Engineer Gallinger and Signal Maintainer Pittman stated that after the track had been repaired the block signals functioned properly without further repairs or adjustments; the only damage caused to the signal system by falling rock was the breaking of line wires used for charging storage batteries.

A vision test made by the officials of the railroad after the accident showed that an unobstructed view of the point of accident can be had for a distance of 1,370 feet from the left side of the cab of an east-bound engine; the view from the right side is entirely obscured by the curvature of the track.

Conclusions

This accident was caused by a rock slide.

The slide consisted of about 100 tons of rock which broke loose from the edge of the cliff at a point about 200 feet above the track. In its descent a portion of this slide struck the north rail of the passing track, located 57 feet north of the main track, where apparently the rock broke into several pieces, which scattered in different directions, the largest piece, weighing approximately 18 tons, landing on the main track, and the evidence indicated that the engine shoved a piece for a distance of approximately 134 feet before going down the embankment and into the river.

It was noted by a member of the train crew immediately following the accident that although the ground was frosty yet there was no front on the rock involved, indicating that it could not have been exposed any length of time, and it is possible that it came down directly in front of the approaching train; apparently the engine crew had little warning of danger, an emergency application of the air brakes being made just before the impact occurred, although the fireman had an unobstructed view for a distance of 1,370 feet, and as this engine being stoker-fired it is probable that the fireman, experienced in mountain territory, would be maintaining a lookout at this point.

Respectfully submitted,

W. J. PATTERSON,

Director.