

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY CONCERNING AN
ACCIDENT ON THE VIRGINIAN RAILWAY NEAR HARDY, VA., ON
DECEMBER 31, 1933.

March 6, 1934.

To the Commission:

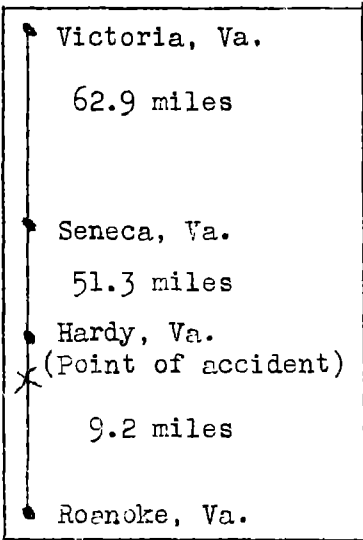
On December 31, 1933, there was a derailment of a freight train on the Virginian Railway near Hardy, Va., which resulted in the death of 2 employees and the injury of 1 employee. This accident was investigated in conjunction with the Virginia State Corporation Commission.

Location and method of operation

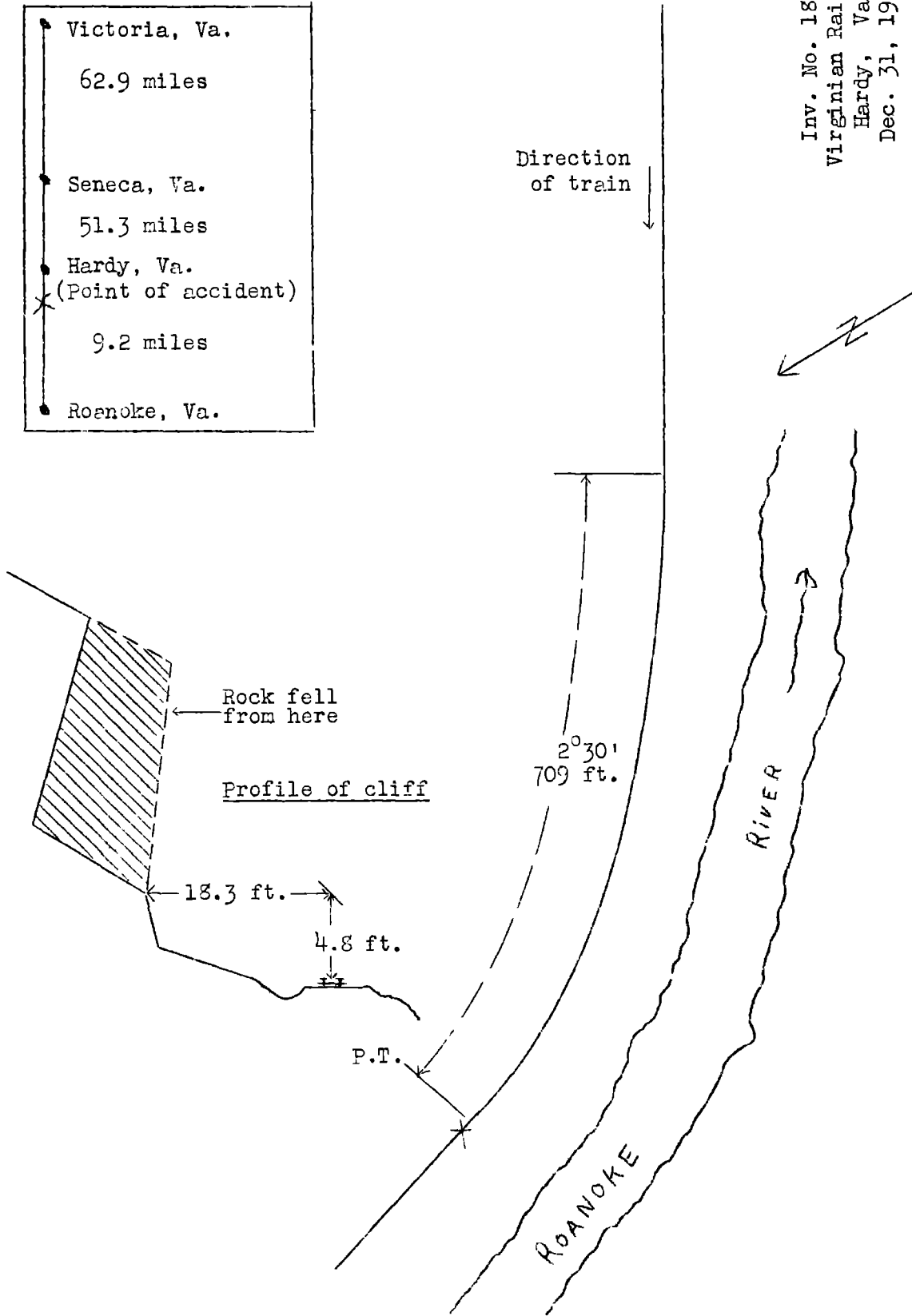
This accident occurred on the Second Subdivision of the Norfolk Division, extending between Victoria and Roanoke, Va., a distance of 123.4 miles; in the vicinity of the point of accident this is a single-track line over which trains are operated by time table and train orders, no block-signal system being in use. The accident occurred at a point 2.93 miles west of Hardy; approaching this point from the east, there are numerous short curves and tangents, followed by a 2° 30' curve to the right 709 feet in length, and 237 feet of tangent, the accident occurring on this tangent just beyond the end of the curve. The grade is practically level.

The track is laid with 130-pound rails, 39 feet in length, with an average of 22 ties to the rail-length, fully tieplated and spiked, ballasted with crushed stone, and well maintained. In this vicinity the track parallels the north bank of the Roanoke River, in the Blue Ridge mountains, and is laid in a side-hill cut at a point 96 feet above the river and 148 feet therefrom. The face of the slope on the north side of the track is precipitous and the top of the slope is 25 feet above the rails; it is composed of a low grade granite formation.

Owing to the curve and also to overhanging rock, the view of an engineman from the cab of a west-bound engine at night by means of the reflection from the headlight is restricted to a distance of about 150 feet.



Inv. No. 1881
Virginian Railway
Hardy, Va.
Dec. 31, 1933



The weather was foggy and it was dark at the time of the accident, which occurred about 6:27 a.m.

Description

West-bound freight train Extra 472 consisted of 39 cars and a caboose, hauled by engine 472, of the 2-8-2 type, and was in charge of Conductor Chambers and Engineman Holbrook. This train left Seneca, the last open office, 51.3 miles east of Hardy, at 4:04 a.m., according to the train sheet, and after passing Hardy, it struck a large rock while traveling at a speed variously estimated to have been between 25 and 50 miles per hour.

Engine 472, its tender and the first 3 cars in the train were derailed; the fourth and fifth cars were not derailed, but the next 14 cars and the forward truck of the twentieth car were derailed. The engine went down the embankment toward the river and stopped on its right side with its front end about 20 feet from the river; the tender frame was behind the engine while the cistern was torn from the frame and stopped on the edge of the river. Three of the derailed cars stopped at the edge of the river and 3 other cars stopped down the embankment, while the remainder of the derailed cars stopped in various positions across and north of the track, with the second car on top of the rock which caused the accident. Some of the derailed cars contained gasoline and oil, which became ignited and the first 20 cars were badly damaged by fire. The employees killed were the engineman and head brakeman.

Summary of evidence

Fireman Foor stated that he was sitting on his seat box looking ahead around the outside of the curve, but was unaware of anything wrong until the engineman shouted a warning and applied the air brakes, at which time he estimated the speed to have been between 25 and 30 miles per hour; the fireman had time only to cross over to the engineman's side before the engine struck something and was then derailed; he was positive the engine was not derailed until after it had struck the object in question. Fireman Foor could not say definitely whether the engineman closed the throttle or reversed the engine prior to the accident. The air brakes had been tested and worked properly, and the headlight was burning brightly.

Conductor Chambers was in the cupola of the caboose when the air brakes were applied in emergency, at which time he estimated the speed to have been about 30 miles per hour, and he thought the train traveled about three car lengths before it stopped. On account of fire breaking out immediately he could

not get up to the head end of the train to see what had happened, and being unable to go around the wreckage on the mountain, he went back to Hardy, without knowing that the engine had been derailed. Later he returned to the scene of the accident and this time he succeeded in reaching the head end of the train and saw the derailed engine and cars. Conductor Chambers said that he had been working in this territory for 27 years but had experienced no previous trouble with fallen rocks at this point, and that he would not have expected to encounter trouble from that source at this location. Flagman Warthan was also riding in the caboose and he estimated the speed to have been between 45 and 50 miles per hour at the time of the accident; he also said he thought the blaze and the application of the brakes came about the same time.

East-bound freight train Extra 805 left Roanoke at 3:25 a.m., according to the train sheet, and about 3:45 a.m. it passed the point where the rock afterwards fell, none of the members of that crew noticing anything unusual. On arrival at Seneca, 51.3 miles east of Hardy, they learned of the accident to Extra 472 and received instructions to return to that point with their engine and move the rear portion of Extra 472 back to Hardy, which was done.

Section Foreman Harrison stated that his section was 10 miles long, extending from mile post 233 to mile post 243, with a total of $2\frac{1}{2}$ miles of rock cut, and the accident occurred just east of mile post 237; he had been foreman of this section for 10 years. The track was last patrolled during the afternoon of the day before the accident, but no report was made of anything wrong. Most of the rock trouble he had experienced had been due to periods of alternate freezing and thawing, and to rain; about the first part of the week of the accident there had been freezing weather, followed by a little rain, but he did not think it sufficient to have brought about a thaw sufficient to loosen rock and he said no rock came down anywhere else on the section. Conditions in other rock cuts were slightly different from this particular cut, in that the rock in the other cuts was not as solid as in the cut where the accident occurred, which appeared to be good and solid. Section Foreman Harrison did not know of any track condition which could have caused the accident and appeared to think that possibly a car or some other object might have struck the rock and knocked it down when the accident occurred.

Roadmaster Hanson arrived at the scene of the accident within $2\frac{1}{2}$ hours after its occurrence and found no evidence, at the point where the rock fell, of any condition that could have been detected prior to the accident, it apparently being solid rock, and there had been no blasting at this point when the road was graded. Periods of alternate freezing and thawing occurred within the 2 weeks prior to the accident and this might have had something to do with the rock becoming dislodged; however, it was difficult to advance any reason for this particular rock falling as the back part of it was solid. In discussing precautions which are taken, Roadmaster Hanson said cuts are scaled every winter or in the spring, depending upon weather conditions, and after heavy rains and periods of freezing and thawing all cuts having any indication of loose rock are scaled; slow orders also are put out whenever adverse weather conditions prevail, or during periods of alternate freezing and thawing, and watchmen are used, and no trouble of consequence has been experienced with rock slides for many years. As a result of his investigation to determine the cause of the accident, it was his opinion the rock fell, and knocked the track off the roadbed, bending the rails, and the engine probably struck the rock a glancing blow as it left the track and plunged down the embankment.

Division Engineer Charlton stated that no trouble had been previously experienced from falling rock in this vicinity, and he did not notice any indication of openings or side seams that could have been detected prior to the accident. The crack behind the rock which fell was for the most part a small rain crack and not an open seam, and at the east end of the opening from which the rock fell the surface appeared to be solid and without crevices or cracks; he did not notice any shale seam underneath the rock that would have a tendency to cause it to slide. At other points where slides have occurred the cuts have been scaled, and inspections are made from time to time of various places where it is thought there is a possibility of slides occurring; in the event it is decided that such places are dangerous it is recommended to the superintendent that they be scaled; in his opinion there was nothing about this particular cut to indicate danger. He estimated that approximately 40 cubic yards of granite was displaced at the point where the rock fell.

Mr. L. M. Clifton, who resides across the river about $\frac{1}{4}$ mile from the railroad track, stated that about 2 or 3 hours prior to the occurrence of the accident he was awakened from his sleep on hearing an unusual noise, such as would be made by something falling, and got up from bed and looked around,

but on not seeing anything he concluded it must have been due to a tree having fallen in the woods. Later, his wife awakened him and at this time he saw the blaze of the burning wreckage. After learning that a rock had fallen on the track he was of the opinion that the unusual noise that awakened him was due to the rock falling.

Conclusions

This accident was caused by a large rock having fallen on the track.

Fireman Foor said the engineman called a warning of danger and applied the brakes, this being followed by a collision with some object and then the derailment of the engine. Coupled with the statement of the resident across the river who was awakened by some falling object 2 or 3 hours prior to the accident, and also in view of the manner in which the wreckage came to rest, with the engine, tender, and first car down the bank and the second car on top of the rock, it seems clear that the rock fell on the track before the train reached that point and then was seen by the engineman as soon as it came within his range of vision, too late to avert the accident.

The rock that fell consisted of about 40 cubic yards of hard rock of a low grade, granite formation. It became dislodged from the north face of the cut, was irregular in form, and measured approximately 14 by 15 by 7 feet. The bottom of the section of displaced rock, before it fell from its position in the cut, sloped toward the track with its nearest edge 4.8 feet above the top of the rails and 18.3 feet from the center of the track; the top of the rock at the edge nearest the track was 20 feet above the top of the rails. It was necessary to blast the fallen rock before it could be removed from the track. The last train which passed the cut prior to the accident was east-bound freight train Extra 805, which passed that point about $2\frac{3}{4}$ hours before the accident occurred, at which time members of the crew noticed nothing wrong.

Subsequent to the derailment engine 805 was cut off from its train and sent back westward from Seneca to the point of accident in order to move the rear portion of Extra 472 eastward to Hardy, and after completing this movement light engine 805 continued eastward to Seneca. During this return trip eastward it had two separate collisions with west-bound section motor cars which were en route to the scene of accident; both of these cars were carrying several men, but fortunately no personal injuries of consequence occurred as a result of the

accidents, one of which occurred in a tunnel, although one of the section motor cars was demolished. No investigation was made to ascertain why these accidents occurred, but it is obvious that the movement of the motor cars was not properly safeguarded.

Respectfully submitted,

W. J. PATTERSON,
Director.