Inv-2344

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

PITTSBURGH & WEST VIRGINIA RAILWAY

ROCKDALE, W. VA.

APRIL 9, 1939

INVESTIGATION NO. 2344

SUMMARY

Inv-2344

Railway:	Pittsburgh & West Virginia
Date:	April 9, 1939
Location:	Rockdale, W. Va.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	99
Engine number:	1000
Consist:	43 cars and caboose
Speed:	30-40 m.p.h.
Operation:	Timetable and train orders
Track:	Single; tangent; 0.44 percent ascending westward
Weather:	Foggy with intermittent rain and snow
Time:	1:45 a.m.
Casualties:	1 killed and 1 injured
Cause:	Rock and shale slide.

May 26, 1939.

To the Commission:

On April 9, 1939, there was a derailment of a freight train on the Pittsburgh & West Virginia Railway near Rockdale, W. Va., which resulted in the death of one employee and the injury of one employee.

Location and Method of Operation

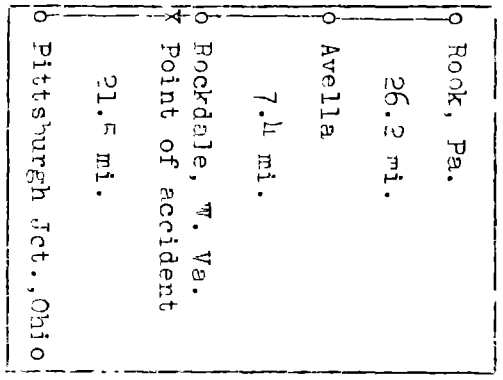
This accident occurred on the Pittsburgh Division which extends between Rook, Pa., and Pittsburgh Junction, Ohio, a distance of 55.1 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable and train orders, no block system being in use. The derailment occurred at a point 840 feet west of Rockdale. Approaching from the east there is a tangent 6,322 feet in length to the point of accident and 139 feet beyond. The grade is 0.44 percent ascending for west-bound trains.

In the immediate vicinity of the point of accident the track is laid in a hillside cut 1,400 feet in length. At the point of derailment this cut rises on the north side of the track to a height of 65 feet, from which point the hillside extends upward on a 1½ to 1 slope a distance of 155 feet to the summit. The toe and the top of the cut are 13 feet and 59 feet, respectively, from the north ends of the ties, the slope being less than 1 to 1. The formation consists of thinly bedded shale with the exception of a stratum of limestone 7 feet thick, the bottom of which rests on the shale at a point 18 feet above the ties. The faults in the limestone are approximately at right angles to the track. An embankment about 12 feet high, created from material removed in ditching, parallels the track on the south. This embankment is approximately 16 feet from the track. Between the toe of the slope and the ballast shoulder there is a ditch 2½ feet deep and about 11 feet wide.

The track structure consists of 100-pound rail, laid on 18 or 19 oak ties to the rail length; it is single-spiked, provided with 4-hole angle bars, ballasted with 12 to 18 inches of granulated slag and 4 inches of cinders, and is well maintained.

The maximum authorized speed for freight trains is 40 miles per hour.

The weather was foggy at the time of the accident, which occurred at 1:45 a.m.; there had been intermittent rain and snow just prior to the accident.



Inv. No. 2344
P. & W.Va. Ry
Rockdale, W.Va
April 9, 1939

Description

No. 99, a west-bound second-class freight train, consisted of 43 cars and a caboose, hauled by engine 1000, of the 2-8-2 type, and was in charge of Conductor Powell and Engineman Daugherty. This train departed from Rook, 33.6 miles east of Rockdale, at 11:55 p.m., April 8, according to the train sheet, 8 hours 25 minutes late, passed Avella, the last open office, 7.4 miles east of Rockdale, at 1:33 a.m., April 9, 8 hours 40 minutes late, and at a point 800 feet from the east end of the cut involved it struck a rock and shale slide and was derailed while traveling at a speed variously estimated to have been between 30 and 40 miles per hour.

The engine and the first ten cars were derailed. The engine, badly damaged, stopped with the front end about 80 feet west of the point of derailment and with its left side against the south bank, parallel with and about 6 feet from the track. The tender, also badly damaged, remained coupled to the locomotive and stopped practically upright at right angles to the engine and across the roadbed. The first nine cars, somewhat damaged, stopped parallel with the tender within a space of 200 feet. The tenth car was derailed and stopped with its rear portion on the roadbed. The track was torn up a distance of 225 feet. The employee killed was the engineman and the employee injured was the fireman.

Summary of Evidence

Fireman Luscher stated that the air brakes were tested prior to leaving Rook and they functioned properly en route; the first stop was made at Avella for water. Approaching the point of accident the engineman was working a drifting throttle and the speed of the train was about 30 or 35 miles per hour. He occupied the left seat-box ahead of the brakeman and was looking out the front cab window. He turned his head for about 30 seconds, to operate the injector, when the engineman called a warning, made an emergency application of the brakes and jumped out the left gangway. He glanced ahead and saw an obstruction on the track about 200 yards distant. The collision occurred immediately thereafter as he tried to climb into the tender. He could not say whether the speed of the train had been reduced prior to the accident. He stated that at the time of the accident the illumination of the headlight was good. There were no steam leaks which would interfere with the view, but visibility was materially restricted by a light fog or haze; there was some snow on the ground. He was of the opinion that he could not have seen the obstruction very much sooner even though he had not been engaged in oper-

ating the injector. He said that he watches for rocks along the track but did not expect to find any large rocks at the point involved as he did not consider this point to be dangerous.

Head Brakeman Heckman estimated that the train was traveling at a speed of about 40 miles per hour and stated that he was on the fireman's seat-box looking out the front cab window and the engineman had his head out the side window and was looking forward. The first knowledge he had of anything wrong was when the engineman stood up, called a warning, closed the throttle and applied the brakes in emergency; simultaneously in the reflection of the headlight he saw the obstruction about ten car lengths distant. When the brakes were applied in emergency the speed of the train was reduced but he could not say to what extent. The brakeman conversed with the engineman en route and he appeared to be normal. Approaching the point of accident, fog and falling snow restricted the view to a distance of about ten car lengths. He has had extensive experience on this division and did not consider that there was any probability of a dangerous rock-fall or slide at the point of accident; there was ample space between the track and the side of the cut to accomodate an ordinary fall of rock.

Conductor Powell, who was in the caboose, stated that the train was moving at a speed of 38 to 40 miles per hour when the emergency application of the brakes was made and this was followed by three distinct shocks. The caboose moved about seven car lengths before stopping. He immediately observed the time as 1:45 a.m. While accepting a train order at Avella, 12 minutes prior to the time of accident, he observed that snow and rain were falling intermittently. Some time after the accident he observed a large slide of rock on the track. He has been employed on this division many years and he has never had any reason to suspect that a large rock-fall or slide might occur at this point.

Flagman Showman stated that at the time of accident there was a slight drizzle of rain.

Car Inspectors Camp and Balsinger, located at Rook, stated that they made a test of the air brakes on this train and found all brakes to be functioning properly. Inspector Balsinger stated that he observed that the engine had a bright headlight.

The testimony of the crew of Extra 925 East, which passed through the cut involved about 7:40 p.m., April 8, and the last train to do so prior to the accident, was to the effect that

they observed no unsafe conditions existing at the point of derailment.

Trainmaster McHugh stated that he accompanied Superintendent Dambach through this cut on a motor car about 3 p.m., April 7, and there were no indications of a slide or falling rocks at that time. Since 1913 he had never observed either a slide or a rock-fall at this point that would have interfered with a train passing. He considered the ditch, which was constructed last fall, to be wide enough and deep enough to hold an ordinary fall of rock and dirt.

Section Laborer Holmes, who has been employed on this section about 2 years, stated that he walks through this cut en route to and from work and had not noticed any rocks falling. He did not observe anything wrong on his last trip through about 5 p.m., April 8.

Section Foreman Walters stated that he has been assigned to this territory for the past 17 years and has been instructed to look for loose rocks or possible slides. He patrols the track at times and passes through this cut practically every day. His gang consists of five men. On April 8 he worked about 100 feet east of the point where the slide occurred and passed through this cut about 10 a.m., and no unsafe condition was observed. About five years ago a slide consisting of a pile of shale and rock, the dimensions of which were about 3 by 3 by 8 feet, occurred at this point. This slide was of sufficient size to have interfered with the passage of trains, but with this exception the quantity of material which fell from the cut was small, the maximum in any single case being about 600 pounds of material which consisted mostly of shale. The ditch was of sufficient dimensions to accomodate any quantity of material which might reasonably be expected to fall from the bank.

Division Engineer Cruikshank passed through the cut involved on March 30 and observed no indication of a probable rock fall or slide.

Engineer Maintenance of Way Riddle stated that this cut was made in 1902 or 1903. The limestone stratum which is exposed in a horizontal bed throughout its length, slopes from south to north; with the exception of one point immediately west of the slide it projects not more than 4 feet. As the faults in the rock are almost at right angles to the track he considered that there was little probability of the rock becoming detached. In his opinion, there had existed over a period of years a concealed fissure at least 8 feet back of

the face of the rock, and the frost action and the softening of the shale below was the probable cause of the slide. The area of the slide extended from the top of the cut downward through the rock stratum a total distance of about 50 feet and it was approximately 40 feet wide. The slide consisted of about 850 tons of rock and shale and inspection of the locomotive indicated that it had covered the track to a depth of 8 or 9 feet. The largest rock which fell was about 5 by 8 by 30 feet; it was somewhat broken in falling and in being struck by the engine. He stated that the slide revealed a crack behind the rock west of the section which fell and it was "shot" down four days after the accident and the section foreman was instructed to proceed with the removal of all jutting rock in this cut. He inspected this cut during the middle of March, and there were no indications of either a slide or a rock-fall and he regarded this to be one of the least dangerous cuts on the division.

Observations of Commission's Inspectors

The Commission's inspectors observed that a section of the limestone, of the dimensions previously described by the engineer maintenance-of-way, had broken off between 18 and 23 feet above the level of the ties and, accompanied by a large amount of shale and dirt, had slid down the side of the cut and had filled the ditch. The debris covered the track to a depth of more than 6 feet. After the derailment a portion of the rock about 3 by 8 by 10 feet in size, remained on the track at the east end of the slide. As the rock was of a light gray color it appeared that because of the weather conditions existing at the time of the accident it would have been difficult to distinguish it readily from the moving west-bound train.

Discussion

The investigation developed that prior to the derailment a section of limestone about 5 feet thick, 8 feet wide, and 30 feet long had broken off on the north side of a hillside cut between 18 and 23 feet above the level of the ties and, with a large amount of shale, slid from the side of the cut. The slide was about 40 feet in width, consisted of approximately 850 tons, filled the 13-foot space between the track and the wall of the cut, and covered the track to a depth of from 6 to 9 feet. Apparently the large rock fell on the track, but was broken in falling and in being struck by the engine; however, after the accident a piece about 3 by 8 by 10 feet remained on the track at the east end of the slide.

According to the testimony, there was fog, and intermittent snow and rain when No. 99 approached the point of accident at a speed of from 30 to 40 miles per hour. The headlight of the engine was burning brightly, and the obstruction was not observed by the members of the crew, who were maintaining a lookout, until within a distance of from 400 to 600 feet. As the rock was a light gray color, because of the existing weather conditions it was difficult to detect it from the moving train and it was not discovered in time to prevent the accident. The evidence indicates that with the exception of a slide which occurred at the point involved about 5 years prior to the date of this accident there had been no rock-falls or slides in this cut, of sufficient quantity to be dangerous, for more than 26 years. The engineer maintenance-of-way inspected this cut approximately three weeks prior to the occurrence of this accident and there was no indication at that time that a rock-fall or slide might occur; he considered this cut to be one of the least dangerous on this division. A wide ditch which was excavated between the track and the toe of the slope at this point was considered sufficiently large to accomodate any quantity of rock and shale which might reasonably be expected to fall from the slope.

The trainmaster and the superintendent rode through this cut on a motor car about 3 p.m., April 7, and on April 8 the section foreman passed the point involved about 10 a.m., and a section laborer walked through the cut about 5 p.m.; none observed any indications of a rock-fall or slide. The last train movement through this cut prior to the accident was an eastbound freight train about 7:40 p.m., April 8; the crew of this train observed no unsafe condition.

It was the opinion of the engineer maintenance-of-way that there had existed over a period of years a concealed fissure about 8 feet behind the face of the rock; this, combined with frost action and the softening of the shale below the limestone, caused the slide to occur. There were indications of a crack behind the face of the rock west of the section which fell; this rock has since been blasted down and arrangements have been made to remove all jutting rocks throughout this cut.

Conclusion

This accident was caused by a rock and shale slide.

Respectfully submitted,

W. J. PATTERSON,

Director.