Inv-2258

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

NORFOLK AND WESTERN RAILWAY

HULL, W. VA.

MARCH 3, 1938

INVESTIGATION NO. 2258

SUMMARY

Inv-2258

Railroad:	Norfolk and Western
Date:	March 3, 1938.
Location:	Hull, W.Va.
Kind of accident:	Derailment
Train involved:	Freight
Train number:	Extra 2020 west
Engine number:	2020
Consist:	138 cars and caboose
Speed:	15-20 m.p.h.
Track:	4°17' right curve; 0.13 percent descending grade westward.
Weather:	Raining and foggy
Time:	1:35 a.m.
Casualties:	1 killed and 2 injured
Cause:	Striking rock which had fallen upon the track.

March 25, 1938.

To the Commission:

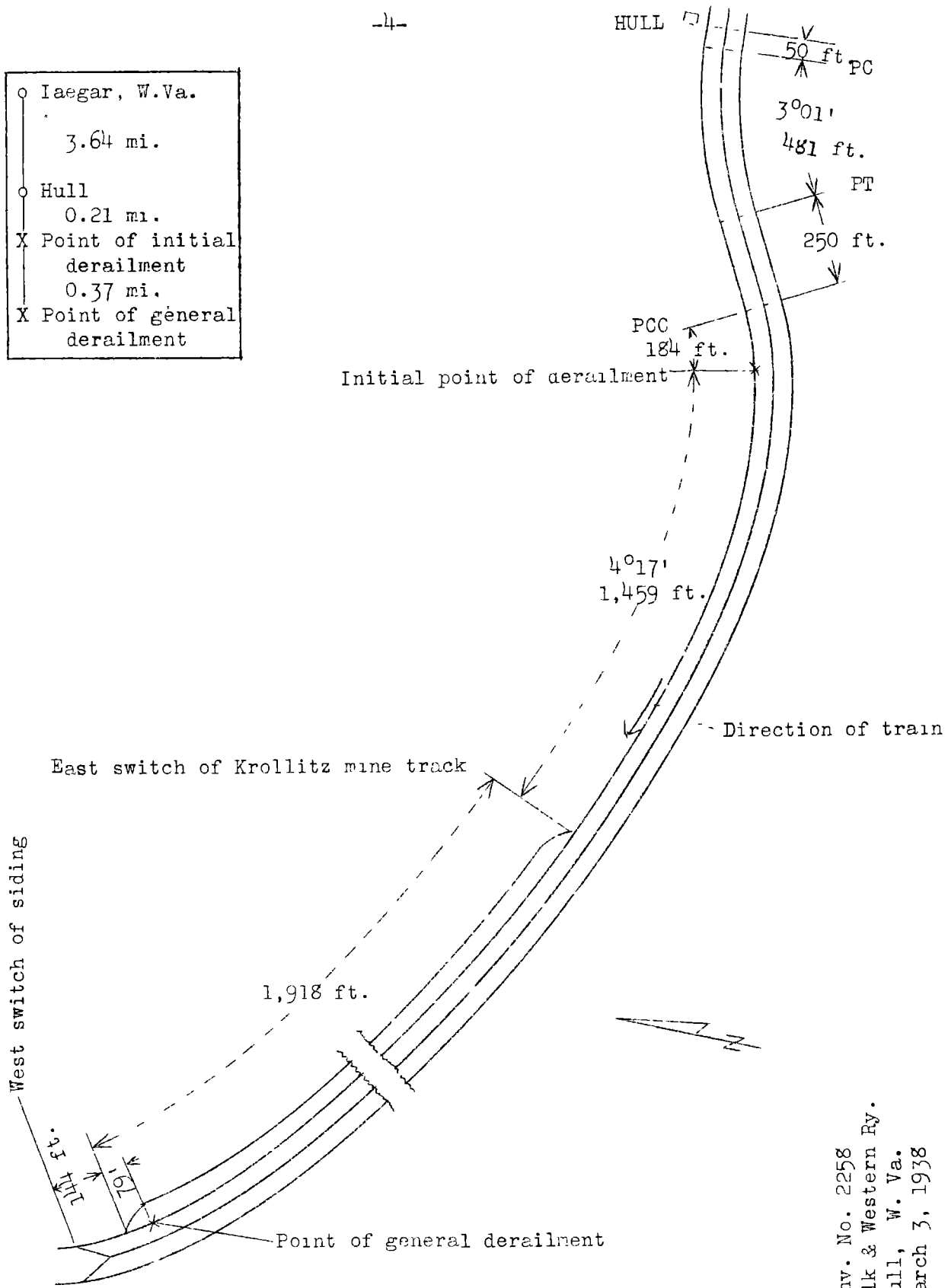
On March 3, 1938, there was a derailment of a freight train on the Norfolk and Western Railway near Hull, W.Va., which resulted in the death of one employee and the injury of two employees.

Location and method of operation

This accident occurred on that part of the Pocahontas Division which extends between Bluefield and Williamson, W.Va., a distance of 99.57 miles. In the vicinity of the point of accident this is a double-track line over which trains are operated by timetable, train orders, and an automatic block-signal system. The initial point of derailment is on the westward track 965 feet west of Hull. Approaching from the east there is a 3°01' curve to the left 481 feet in length, then a tangent for a distance of 250 feet, followed by a 3,771-foot compound curve to the right varying from a maximum curvature of 4°17' at the eastern end to a minimum curvature of 0°08' at the western end. The initial derailment occurred on this compound curve 184 feet from its eastern end where the curvature is 4°17' and the superelevation is 3¾ inches. The general derailment occurred 3,298 feet beyond, where the curvature is 0°08' and the superelevation is ¼ inch. The grade for westward trains is 0.13 percent descending at the point of accident.

In the vicinity of the point of accident the tracks are laid on a hillside cut and parallel the north bank of the Tug River. At the initial point of derailment the embankment north of the westward main track rises at an angle of about 60 degrees to a height of approximately 60 feet; there is a space of about 10 feet between the toe of the slope and the north rail of the westward main track. A siding 8,924 feet in length is located between the main tracks at the point of accident, the west trailing-point switch of which is located about 4,485 feet west of Hull. The Krollitz Mine track, 1,918 feet in length, parallels the westward main track on the north and its east switch is located 2,425 feet west of Hull and its west switch 144 feet east of the west siding-switch. The general derailment occurred at the west switch of the Krollitz Mine track and the west switch of the siding.

Due to the curvature and the embankment to the north of the track approaching the scene of the accident, the view had by an engineman of a west-bound train is restricted to a distance of about 150 feet.



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Norfolk & Western Ry.
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The main tracks are laid with 130-pound rail, 39 feet in length, with 24 treated oak ties to the rail length. It is fully tie-plated, equipped with 24 rail anchors per panel, and is well maintained. The tracks are ballasted with crushed stone to a depth of 24 to 30 inches.

Rule 106(a) reads as follows: "During storms or bad weather, where slides or washouts are liable to be encountered, all trains will be handled under control without regard to maintaining schedule time".

The maximum authorized speed for freight trains in the vicinity of the point of accident is 40 miles per hour.

It was raining and the weather was foggy at the time of the accident, which occurred at 1:35 a.m.

Description

Extra 2020, a west-bound freight train, consisting of 138 cars and a caboose, hauled by engine 2020, of the 2-8-8-2 type, was in charge of Conductor Bailey and Engineman Boyd. This train departed from Iaeger, 3.64 miles east of Hull, at 1:22 a.m., according to the train sheet, and was derailed just west of Hull while traveling at a speed estimated to have been between 15 and 20 miles per hour.

The engine, tender, and first six cars were derailed. The engine and tender stopped north of the westward main track and leaning against an embankment at an angle of about 50 degrees. The first four cars stopped in an upright position at right angles to the tracks, fouling the eastward main track and knocking it out of alinement. The other two derailed cars remained upright and parallel with the westward track, which was torn up from the frog of the Krollitz Mine switch to the point where the engine stopped, a distance of 259 feet. The employee killed was the engineman and the employees injured were the fireman and the head brakeman.

Summary of evidence

Fireman Moody stated that an air-brake test was made after the train was assembled at Auville, approximately 5 miles east of Hull, and that the brakeman said all brakes were working. There were no brake applications made between Auville and the point of accident. A Form 19 train order, received at Iaeger, called attention to Rule 106(a). The headlight was burning brightly. The engineman who was normal and alert

had cautioned him to watch closely for slides. When approaching the curve on which the initial derailment occurred he was looking ahead from his seatbox and at the time of entering this curve he went to the tender to loosen coal for the stoker. He had just returned to his seatbox when the engine struck the west siding switch where he, and apparently the engineman too, heard a noise and saw fire flying; this was his first intimation of the derailment. The engineman closed the throttle and applied the brakes in emergency; at that time the speed was about 20 miles per hour, and the engine ran about twice its length before stopping. Rain and fog which prevailed approaching the point of accident restricted the vision to a distance of 10 or 15 car lengths. Fireman Moody had had 23 years experience running through this territory and he previously had never seen any evidence of slides or falling rock in this vicinity and said that Rule 106(a) was being fully complied with approaching the point of accident. He made no observations subsequent to the accident to ascertain its cause.

Head Brakeman Dillon, who, at the time of approaching the scene of the accident, was in the brakeman's cupola, which is located on top of the tender, corroborated the statement of the fireman in all essential details. He could see forward from his position but had no warning of the impending accident. Based on his knowledge of physical characteristics of the vicinity of the point of accident he said he had no reason to anticipate a rock on the track at this particular point and said that Rule 106(a) was being fully complied with at the time of the accident.

Conductor Bailey, who was in the caboose, corroborated the statement of the fireman with respect to events up to the time of the accident, which he said occurred at 1:35 a.m. He said that the caboose traveled 200 to 250 feet after the emergency application of the brakes was made, and the caboose came to an unusually rough stop. About an hour later he walked to the rear of the train and found a flat rock which had bounced from the adjacent hill and stopped on the south, or high, rail of the curve. This, he said, had caused the engine truck to become derailed and then the truck ran on the ties until the drivers became derailed at the frog or switch at the west end of the siding. He had worked in this immediate vicinity for more than 30 years and had known of no landslides, washouts, or falling rock at this particular point during this time, and, based on his past experience, there was no reason for the engineman to anticipate such an occurrence. It was his opinion that in this case compliance with Rule 106(a) did not require

stopping or a further reduction of the speed of the train. He said it had been raining continuously for more than three hours prior to the time of the accident.

Superintendent Tabor stated that as an extra precaution during bad weather it is a general practice to issue a train order calling attention to Rule 106(a).

Assistant Superintendent Dawson stated that at about 7 a.m. he examined the track from the point where the engine was lying to a point about 3,575 feet east thereof, and observed flange marks inside the north rail of the westward track and outside the south rail over the entire distance. At the initial point of derailment he found a rock or sandstone formation lying adjacent to the gauge side of the south, or high, rail. This rock was broken in a manner which indicated that it had been struck by the south engine-truck wheel. The unbroken portion was 2½ inches thick and the top surface was quadrangular in form, the lengths of the sides being 30, 26, 21, and 16 inches. After examining the bluff to the north of the track he concluded that this rock came from a flat shelf at a point 47 feet north of and 49 feet above the westward track. In his opinion, a shallow stream of water which was flowing over the table rock on this shelf, dislodged the rock and it then rolled on edge to a point 4 feet above the track and 2 feet north of the ditch line, where a mark on the bank indicated it had struck and then bounded across to the south rail where it stopped and was later struck by the engine. In his opinion the view of both the engineman and the fireman was materially restricted by the curve and the rock cliff on the inside of the curve at the point where the rock was struck.

Roadmaster Smith stated that as a result of an examination which he made a few hours after the accident occurred, it was his opinion that a small rock fell from the north embankment and landed on the south rail of the westward track in the manner described by the assistant superintendent. On February 25, in company with the section foreman, he inspected this particular cut with a view to scaling it or installing a detector fence. No loose rocks were found and no scaling was necessary, hence no need for a detector fence. Again on March 2, he observed this cut and saw no unsafe condition. During the six years he has been roadmaster on this territory there has never been a slide, or a rock fall at this point, and it is the last place on his district to expect such an occurrence, even in rainy weather, and he considered it absolutely safe.

Mastern Mechanic Brown, who arrived at the scene of the accident about 4:30 a.m., found several broken parts of the engine truck, all of which were new breaks, and none, in his opinion, contributed to the derailment. He later examined the track and the bank near the initial point of derailment and as a result thereof corroborated the statement of the assistant superintendent. He stated that a device for detecting engine-truck derailments has been installed for test on six engines but the 2020 was not one of those so equipped.

Observations of the Commission's inspectors

At the initial point of derailment there was a rock of sandstone formation 2½ inches thick which was quadrangular in shape, the length of its sides being 30, 26, 21, and 16 inches, and from this rock small pieces had been broken and crushed. There was a well defined mark on this rock apparently made by the flange of the left-front engine-truck wheel. This rock evidently had fallen from an adjacent ledge 47 feet north and 49 feet above the westward main track. The first mark on the ties appeared at a point 7 feet west of this rock and 7 inches from the gauge side of the north rail. This was a well defined flange mark, and similar marks continued on each tie, varying from 7 to 12 inches from the gauge side of the north rail for a distance of 3,309 feet to the west switch of the Krollitz Mine track, where the track was torn up. South of the south rail there were intermittent marks on angle-bar bolts and on top of spike heads for an equal distance.

Inspection of the embankment adjacent to the initial point of derailment disclosed that it was composed of clay and sandstone, the latter forming overhanging ledges of various thicknesses. There is very little vegetation on the embankment. At the foot of this embankment there is a drainage ditch, which is well maintained.

The engine-truck wheels showed indentations on the outer edges of the tires, but the flanges and contour were in good condition. The male center-casting and truck-box pedestals were broken, and the radius rod was badly twisted and bent. The pilot and pilot beam showed no signs of having been struck or damaged in any manner. The trailing truck was badly damaged, as was the right top side of the engine cab, and other minor parts of the right side were slightly damaged. Nothing was observed to indicate the existence of any defects prior to the time of the derailment.

Discussion

After the derailment a rock of sandstone formation 2½ inches thick, quadrangular in shape, the length of its sides being 30, 26, 21, and 16 inches, was found lying near the south rail of the westward track at a point about 3,575 feet east of the derailed engine. This rock had stopped on the south rail where it was run over by Extra 2020, resulting in the flange of the left engine-truck wheel mounting the high rail of the curve and falling to the outside of this rail. The engine followed close to the rails for a distance of about 3,500 feet where it contacted the frog and switch points of a trailing-point switch and then the general derailment followed.

Employees in train, engine and track service, whose services in the vicinity of the point of accident varied from 6 to 30 years, had never known of a slide or of a rock falling at the point of derailment and therefore had no reason to anticipate such an occurrence. It had been raining heavily for more than three hours just prior to the derailment.

The crew of the train had in its possession a train order directing its attention to Rule 106(a). The train was being operated not in excess of 20 miles per hour while the maximum speed limit for freight trains in this vicinity is 40 miles per hour. This indicates that the requirement of the train order was being observed. The headlight was burning brightly but the weather was foggy, the rock small, and the view restricted due to the track curvature and the adjacent embankment on the inside of the curve.

Conclusion

This accident was caused by the train striking a rock which had fallen upon the track.

Respectfully submitted,

W. J. PATTERSON,

Director.