

INTERSTATE COMMERCE COMMISSION.

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE BALTIMORE & OHIO RAILROAD NEAR LOCUST GROVE, OHIO, ON MARCH 29, 1924.

April 28, 1924.

To the Commission:

On March 29, 1924, there was a derailment of a freight train on the Baltimore & Ohio Railroad near Locust Grove, Ohio, which resulted in the death of four employees, and the injury of two employees. This accident was investigated in conjunction with representatives of the Public Utilities Commission of Ohio.

Location and method of operation.

This accident occurred on the Straitsville Sub-Division of the Newark Division, extending eastward from Newark to Shermans, Ohio, a distance of 43.7 miles; this is a single-track line over which trains are operated by time-table, train orders, and a manual block-signal system. The point of accident was about $\frac{1}{2}$ mile east of Locust Grove, at bridge No. 545, spanning a stream known as Hog Run; approaching this point from the west there is a 2° curve to the left 848 feet in length, followed by 1,430 feet of tangent, which ends on the bridge at a point 65.3 feet from its western end, from which point there is a 2° curve to the right for a considerable distance. The grade is practically level. In the immediate vicinity of the point of accident the track is laid with 75-pound rail, 32 feet in length, with 15 to 17 ties to the rail-length, single-spiked and ballasted with cinders. The rails are joined with four hole angle bars and rail braces are used on curves. The rail was relaid after use on other subdivisions; it was badly kinked and at some points out of surface. Although track conditions were generally bad in this vicinity, the track on the bridge was in good condition. Time-table direction is used in this report.

Bridge No. 545 was a piled river trestle 111 feet 2 inches in length and 15 feet in height. It consisted of both frame and pile bents, spaced about 18 feet apart, each bent made up of about 8 piles, driven to a depth of approximately 17 feet actual penetration. Steel beams rested on the caps of the piles, and the ties in turn rested on the beams; the beams were joined with iron rods and struts. At each end of the bridge there was a bulkhead and

a fill of about 8 feet, there being dirt and cinders directly behind the bulkheads. The fill extended for about 20 feet from the center of the bridge on the upstream side. The bridge was equipped with outer guard rails. The stream flows under the bridge from north to south.

It was cloudy at the time of the accident, which occurred at about 8.30 a. m.

Description.

Eastbound freight train No. 184 consisted of 21 cars and 2 cabooses, hauled by engine 2355, and was in charge of Conductor Farabee and Engineman Kastia. It left Newark, 4.5 miles from Locust Grove, at 8.30 a. m., according to the train sheet, 2 hours late, and shortly after passing Locust Grove while traveling at a speed estimated to have been between 8 and 15 miles an hour was derailed at bridge No. 545.

Engine 2355 came to rest on the bottom of the creek leaning to the right, with its rear end about a foot west of where the bulkhead stood, parallel to and about in line with the south rail. The tender cistern was bottom-up on top of the boiler, reversed. Seven cars were also thrown into the creek, on both sides of the engine. Eight bents of the bridge were knocked down, the piles having been broken off below the water line and apparently shoved toward the east. Most of the bridge wreckage was washed away. The employees killed were the engineman, fireman, and two brakemen.

Summary of evidence

There was a heavy rainfall in the vicinity of bridge No. 545 on the night of March 28th, the U. S. Weather Bureau record showing that at Granville, Ohio, about 8 miles distant, between the hours of 3.30 p.m., March 28th, and 7.30 a.m., March 29th, the precipitation was 2.1 inches. This resulted in the creek being swollen to such an extent that it overflowed its banks, and large trees were uprooted and washed down the stream. Two trees lodged a short distance north of the trestle and diverted the force of the stream against the east bank, partly washing away the fill above the trestle. Another large tree lodged against the trestle, and this, together with driftwood washed against the eastern end of the bridge, diverted the force of the water toward the western end of the bridge, apparently undermining the roadbed for a distance of from 6 to 15 feet back of the bulkhead. The water rose to a point 3 feet above the banks of the stream, reaching

its highest point about 3.30 or 4 a. m., the day of the accident.

Conductor Farabee stated that leaving Newark he rode on the engine, and Engineer Kastla informed him that he would take no chances, and if there were any places along the track that looked questionable he would bring the train to a stop and look the ground over before proceeding. Conductor Farabee said he was riding in the caboose at the time of the accident, which occurred at 8.50 a. m. He thought the engine reached a point about the center of the bridge before the accident occurred. He further stated that they had orders to reduce speed to 10 miles an hour five poles west of Hog Run, also to look out for high water at any places it may occur. The air brakes were tested and worked properly. He estimated the speed to have been 12 or 15 miles an hour at the time of the accident. Flagman Oakleaf stated that he went to the head end of the train immediately after the accident, and the water had washed out the fill behind the west bulkhead for a considerable distance.

Supervisor Mahurd was also riding in the caboose at the time of the accident, and he estimated the speed at this time to have been 8 or 10 miles an hour. He immediately proceeded to the head end of the train and when he arrived there the engine was submerged. There was no indication of the engine or cars having been derailed before reaching the bridge. He thought that not more than 5 or 6 feet of the west bank was washed out at the time of the accident, and that the cars dammed the stream to such an extent that the current was diverted to the west bank, causing additional wash. In his 18 years' experience as supervisor he had never experienced any trouble from high water at this point.

Section Foreman Bushew passed over bridge No. 545 on his car about 4 p.m. the day prior to the accident, and at that time he noticed nothing unusual. He was also riding on train No. 184 at the time of the accident, in a car about the middle of the train. Although he went to the head end just after the accident, he did not know whether the bank was washed out behind the west abutment before the accident or not. He had never experienced trouble with high water at this point.

Master Carpenter Zinsmeister stated that the physical condition of the bridge was good, the pile bents having been renewed in October, 1920, the bulkhead at the western end of the bridge also being renewed at this time. It was last inspected about 40 days prior to the accident and at that time was found to be in good condition. He said the accident was caused by the eastern end of the bridge being

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blocked with driftwood and a large tree lodged against the trestle diverting the flow of water, which undermined the west side of the bridge. He did not know how much of the west bank was washed away at the time of the accident, but about 30 feet was washed away subsequently.

Mr. O. W. Davis, who lives near the scene of the accident, stated he was watching train No. 184 on the morning of the accident, and when he first noticed it the speed was about 8 miles an hour, but it increased to about 15 miles an hour at the bridge. He immediately went to the scene of the accident and at this time the engine was submerged, and the roadbed was washed out at the west end of the bridge.

The last train to pass over the bridge prior to the accident was a freight train which left Newark at 11.45 p.m., passing the point of accident shortly after midnight.

Examination disclosed there were no marks of derailment west of the point of accident.

Conclusions.

This accident was caused by high water weakening bridge No. 545 to such an extent that it collapsed under the weight of train No. 184.

All of the employees involved were experienced men. At the time of the accident the crew had been on duty less than 3 hours, prior to which they had been off duty more than 12 hours.

Respectfully submitted,

W. P. BORLAND,

Director.