

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE YADKIN RAILROAD AT GOLD HILL, N.C., ON JULY 23, 1930

August 27, 1930

To the Commission

On July 23, 1930, there was a derailment of an extra freight train on the Yadkin Railroad at Gold Hill, N.C., which resulted in the death of one employee and the injury of four employees.

Location and method of operation

This accident occurred on that part of the Yadkin Railroad which extends between Yadkin Junction and Morwood, N.C., a distance of 40 miles, and is a single-track line over which trains are operated by time-table and train orders, no block-signal system being in use. Trains on this railroad are operated by employees of the Charlotte Division of the Southern Railway. The accident occurred at the north switch of a passing track located 313 feet north of the station, although the initial derailment occurred at a highway grade crossing located 2.14 miles north of this switch. Approaching this crossing from the north the track is tangent for a distance of 268 feet, followed by a 4° curve to the left 882 feet in length, the crossing being located approximately in the center of this curve. This curve is then followed by 943 feet of tangent track, a 6° curve to the left 734 feet in length, tangent track for a distance of 386 feet, a 2° curve to the right 1,544 feet, tangent for a distance of 1,633 feet, a 2° curve to the right 1,084 feet in length, followed by 4,418 feet of tangent track to the point of switch where final derailment occurred, this tangent extending for some distance beyond. The grade for southbound trains, approaching and for some distance beyond the crossing, is 1.25 per cent ascending, the ascending grade continues for a distance of 2,775 feet having a variation of 1.16 per cent to 1.4 per cent, there is then 320 feet of level track, followed by 1.39 per cent ascending grade for 2,007 feet, a vertical curve for a distance of 400 feet, then 1.37 per cent descending for 2,400 feet, 0.5 per cent descending for 808 feet, then 1.38 per cent ascending for 1,360 feet, followed by 672 feet of level track to final point of derailment and for some distance beyond.

In the vicinity of the point of accident the track is laid with 75-pound rails, 33 feet in length, with an average of 20 oak ties to the rail-length, single-spiked, tie-plated on the outside rail of the curves, and ballasted with sand. The track is maintained in fair condition

The highway crosses the track at an angle of approximately 30°, it consists of sand and clay and has recently been widened to 22 feet. Approaching on the highway from the west there is a descending grade averaging 4.6 per cent for a distance of about 750 feet to within 30 feet of the crossing where it is 7.8 per cent. The highway then slopes away from the roadbed on the east side. There are ditches on each side of the highway which drain into ditches along the railroad right-of-way. There is very little crown to this highway and surface water has a tendency to follow wheel ruts and drain into flangeways, while during a heavy rain considerable soil is carried down into the flangeways of the roadbed. The crossing is not blanked and except for flangeways all space between the rails is filled with dirt to the level of the top of the rails. There are two 15" x 12" x 42.5" wooden box-culverts under this crossing.

There had been a heavy rain just prior to the occurrence of the accident and it was dark and raining at the time of the accident, which occurred about 9:30 p.m.

Description

South-bound freight train extra 392-401, consisting of 39 empty refrigerator cars and a caboose, hauled by engines 392 and 401, was in charge of Conductor Young and Enginemen Bost and Cruse. This train departed from Salisbury, its initial terminal, 15 miles north of Gold Hill, at 8:40 p.m., according to the train sheet, and was derailed at Gold Hill while traveling at a speed estimated to have been between 22 and 25 miles per hour.

Engine 392, the first engine, followed the stock rail of the passing track to the right, coming to rest in an upright position, at an angle to the main track with the front end of the engine 50 feet from the main track and 213 feet from the switch point, with the tender across the main track. Engine 401, the second engine, came to rest on its left side to the left of the main track about opposite engine 392, its tender coming to rest on top of the tender of engine 392, both tenders being destroyed. The first four cars were derailed and came to rest in various positions behind the engines, the first two being entirely destroyed, while the third and fourth cars were considerably damaged. The front truck of the fifth car was derailed, none of the remaining equipment was derailed or damaged. The employee killed was the fireman of the first engine.

Summary of evidence

Engineman Cruse, of engine 401, the second engine, stated that he noticed nothing unusual with the operation of the

train at any time prior to the accident and his first intimation of anything wrong was when he saw fire as engine 392 struck the switch of the passing track at Gold Hill, followed immediately by the derailment. He shut off the throttle, but did not have time to take any other steps to bring the train to a stop. He made no examination of the engines after the accident, but he did walk back over the track with the superintendent and master mechanic and found that the engine truck had derailed and dropped off at the highway crossing, and that the flangeways were filled with fresh loose dirt. He stated that he noticed no unusual riding qualities of engine 401 at the highway crossing, stating that the lead engine had most likely cleared the tails of dirt. Engineman Cruse stated that the headlight on engine 392 was burning at the time of the accident and that he heard the engineman of that engine sound the highway crossing whistle signal. He estimated the speed of the train at the time of the derailment to have been 25 miles per hour.

Conductor Young stated that he was riding in the caboose and noticed nothing unusual in the operation of the train prior to the accident, that the headlight was burning, but he was unable to state whether or not he heard any whistle signals after leaving Yadkin Junction. After the occurrence of the accident he inspected the track for a distance of about 1 mile to the rear of his train and noticed wheel marks on the ties apparently made by the pony truck of the first engine. He estimated the speed of the train at the time of the accident to have been from 22 to 25 miles per hour.

Flagman Hopp stated that on his way back to flag after the occurrence of the accident he noticed wheel flange marks on the ties, and a cellar box and grease on the roadbed. He estimated the speed to have been 25 miles per hour at the time of the accident.

Superintendent Archer stated that he was riding in the caboose of extra 392-401 and did not observe anything unusual in the operation of the train from the time it left Yadkin Junction until it came to a sudden stop. He immediately started toward the front end of the train where he found the derailed cars and engine. He examined the north switch of the passing track and found it locked in position for the main line movement, the right switch point fitting close to the stock rail, the left switch point having been struck and bent and bridle bar broken, but showing no evidence of having been split or opened. He then went back to the rear of his train, continuing northward to the highway crossing where he found evidence of the front engine truck wheel having mounted the west or right rail, which, in his opinion, was caused by sand and dirt washing down the center of the highway upon the track. There were very plain indications that the dirt had come from the surface of the highway and that water had followed the wheel tracks of vehicles washing ruts from 3 to 5 inches in depth. Superintendent Archer stated that after leaving Yadkin Junction the rain was so heavy for a time that it necessitated closing the caboose windows. He further stated that he inspected engines 392 and 401 and found no mechanical defects other than those

caused by the accident.

Section Foreman Culp, of the Yadkin Railroad, who has charge of the section on which this accident occurred, stated that it had rained in that vicinity on the night of the 22nd and thinking that dirt and sand might be washed in the flangeways at the crossing involved he went to the crossing, flagged a train and rode over the crossing on the engine, but nothing unusual occurred. On the night of the accident, about 8.30 or 9 p.m., he decided to again patrol the track as there had been another heavy rain. As he was driving his automobile on the highway, which practically parallels the track, extra 392-401 passed him when he was about one-half mile from the crossing, so he then returned home without making any further effort to protect this crossing or to examine it for dangerous condition, assuming that the passage of extra 392-401 had been negotiated safely, and his first knowledge of the accident was received several hours later. When he examined the track the next morning he found about $1\frac{1}{4}$ inches of dirt and a little rock in the flangeways and noted wheel marks on the ties and tie-plates. Section Foreman Culp thought that if he had started earlier he could have flagged this train and perhaps prevented the accident, although the rain had increased at about the time or shortly before the extra passed. He said that the culvert on the west side of the track was filled with sand and dirt and the east cylvert was partially filled. Section Foreman Culp further stated that this crossing could be made safer by cutting the highway down below the level of the track for a distance of about 200 feet west of the roadbed.

Master Mechanic Cantwell stated that he arrived at the scene of the accident a few hours after its occurrence. He found the switch point at the passing track fitting tight to the stock rail and showing no evidence of having been run through. He then followed wheel flange marks that showed on the ties northward for more than 2 miles to a highway crossing where he found the flangeways filled with dirt and marks indicating that a pair of wheels had been derailed. He did not find any water on the tracks, it had run off and washed all the dirt out between the ties on the south side of the crossing. He also found along the roadbed two cellar boxes and a helical spring, and an examination of engine 392 disclosed these parts missing from the lead truck of this engine, which led him to believe that the lead truck of this engine had been derailed at this crossing and had run along over the ties until it struck the switch at Gold Hill, which

was the final point of derailment. He was of the opinion that the engine must have been riding on dirt at this crossing and not on the top of the rails, but could advance no theory as to why Engineer Bost had not noticed the unusual conditions unless the windows were all closed, which would have lessened his chances of noticing anything wrong. Master Mechanic Cantwell stated that engines 392 and 401 were in good mechanical condition when they left the roundhouse at Spencer on the night of the accident and an inspection of these engines after the occurrence of the accident disclosed no defects that could have contributed to the accident.

At the time of the examination made by the Commission's inspectors of the track in the vicinity of the crossing to the final point of derailment, some of the dirt had been scraped away from the surface of the highway so no marks could be seen on the highway crossing or on the rails at this point. The first marks of derailment appearing on the roadbed were wheel flange marks, about 5 inches from the gauge side of the east rail and about 5 feet south of the crossing, this mark continued with slight variation to the switch point at Gold Hill where the tread of the wheel had struck the floating switch point tearing it up. There were similar marks outside of the west rail on the tie-plates, spikeheads, angle-bar bolt heads and ties, which marks paralleled the course of the marks on the gauge side of the east rail. The switch and frog had been removed at the time of this examination. The surface of the highway at the grade crossing on the west side of the roadbed showed ruts caused by water running down the hill. Examination of the two engines disclosed no defects that could have contributed to the cause of the accident. Both cellar boxes and a helical spring, however, were found missing from the lead truck of engine 392 and as this material was found along the roadbed between the initial and final points of derailment it is evident that this lead truck was derailed at the highway crossing.

Conclusions

This accident was caused by the flangeways at a highway crossing being filled with dirt and stones.

The evidence indicates that there had been heavy rain storms in the vicinity of the crossing involved on the night previous to the occurrence of the accident as well as just prior to the arrival of extra 392-401, resulting in dirt and stones being washed down upon the track, filling the flangeways to such an extent that the lead truck of the first engine became derailed.

No explanation can be made of the fact that the derailment was apparently unnoticed by the crew of the first engine from the initial point of derailment to the point where the equipment finally came to rest, a distance of 2.14 miles, as the fireman was killed and the engineer and brakeman on the first engine were too seriously injured to be interviewed. It is probable that the cab windows of engine 392 were closed due to the heavy rain, which may have hindered them from hearing anything unusual.

The statements of Section Foreman Culp clearly show that he realized the danger existing at this crossing in bad weather and that he was on his way to inspect the crossing at the time of the accident, yet when he saw extra 392-401 pass over the crossing, he returned home and made no further attempt to ascertain the condition of the track at that time.

All of the employees were experienced men and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully submitted,

W. P. BORLAND

Director