INTERSTATE COMMERCE COMMISSION.

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE NORFOLK SOUTHERN RAILROAD NEAR HERTFORD, N. C., ON MAY 18, 1923.

June 9, 1923.

To the Commission:

On May 18, 1923, a bridge collapsed under a freight train on the Norfolk Southern Railroad near Hertford, N. C., resulting in the death of two employees and the injury of two employees.

Location and method of operation.

This accident occurred on that part of the Norfolk district, Northern Division, extending between Berkley, Va., and Marsden, N. C., a distance of 129.5 miles, this being a single-track line over which trains are operated by time-table and train orders, no block-signal system being in use. Approaching from the north the track is tangent for a distance of more than 4,000 feet; the grade is slightly descending, varying from 0.05 to 0.235 per cent. The bridge at which the accident occurred is 418 feet in length, and consists of a pile trestle 147 feet in length on the northern end, a draw span 77 feet in length, and another pile trestle 194 feet in length on the southern end. The track is laid with 70-pound rails, 30 feet in length, with 17 or 18 oak ties to the rail-length, and is single-spiked. The weather was clear at the time of the accident, which occurred at about 9.40 p. m.

Description.

Southbound second-class freight train No. 63 consisted of 47 cars and a caboose, hauled by engine 226, and was in charge of Conductor Grant and Engineman Warren. It left Berkley at 6.20 p.m., 20 minutes late, and at about 9.35 p.m. stopped for water at a tank located about 100 feet from the north end of the bridge. At about 9.40 p. m. the train proceeded upon the bridge, which collapsed under the head end of the train while it was moving at a speed of about four miles an hour.

The engine and first car fell to the bed of the river, the engine being in about 30 feet of water, toward the left side of the bridge, and leaning to the left at an angle of about 45°. About 113 feet of the bridge went down with the engine. The employees killed were the conductor and the fireman, both of whom were on the engine at the time of the accident.

Summary of evidence.

Engineman Warren said the engine began to settle when it reached a point about 50 feet beyond the north abutment. His first impression was that the front of the engine was rising, but he expressed the opinion that this was due to the left side of the engine settling at a point near the gangway, saying that when looking across the cab he noticed that the left side of the cab appeared to be lower than the right side. The engine did not seem to slide off to the left, but rather to settle vertically. Engineman Warren further stated that he had been running engine 326 for the past seven months, that it was in good condition, and that no difficulty of any kind had been experienced in the operation of the train on this trip. Head Brakeman Bernard verified the engineman's statement about the engine seeming first to settle at the rear end, and added that the headlight was burning brightly as the engine approached the bridge, and that at that time he did not notice anything wrong.

Bridge Tender Nixon said he had been in the habit of walking over the bridge several times daily, observing its general dondition, and making any repairs within his ability, and that he had been over the bridge about two and one-half hours prior to the accident and noticed nothing wrong.

Trainmaster Hawkins was on an extra train consisting of engine 324, of a type similar to engine 326, and two cabooses, crossing the bridge about 15 or 20 minutes ahead of train No. 63. He was riding in the caboose next to the engine and stated that he noticed nothing unusual.

K. Everts, a diver employed by the railroad in connection with this accident, said he found the engine leaning to the left at an angle of about 45° with piling on each side of it, that on the left partly supporting the engine in its tilted position. He expressed the opinion that the engine crushed the piling as it went down.

Road Foreman of Engines Bobbitt said engine 226 was a very easy riding engine, and that on examining it after it had been raised from the river, he found no defects which could have contributed to the occurrence of the accident. The throttle was open, while both brake valves were in the release position. General Foreman Frye said engine 226 was overhauled in November, 1922, and that when he examined it after it was raised from the river, he found it to be in good condition.

The section of this bridge which collapsed, 147 feet in length, consisted of 13 bents, and after the accident only the first four bents remained, although the piling of the fifth bent and on the right sides of the seventh, ninth, twelfth, and thirteenth bents, remained in place. The bridge was constructed originally in 1881 with four piles supporting each bent and in 1890 three additional piles were placed under each bent. The tops of the piles are 18 inches below the surface of the water, and on them are base sills 12 inches by 13 inches by 24 feet, drifted to each pile. Bents are on top of the base sills and above the bents are two stringers 8 inches by 16 inches by 25 feet, extending longitudinally under each rail, the ties being fastened to these stringers. The bents are cross-braced, while the entire structure is braced longitudinally. The superstructure was rebuilt in 1900, and again in 1920, at which latter time some new piles were driven under the southern end of the bridge, but none under the northern end, the piling in use under this end at the time of the accident being the original piles driven in 1881 and 1890.

Section Foreman Whitehead examined the bridge two days prior to the accident, and Roadmaster Phillips examined it about two weeks previously, above the water line, neither of these examinations developing anything wrong. The roadmaster also said he examined the timbers which came to the surface after the accident, found no sign of decay, and considered them good enough to be used in repair work on other bridges. On the portion of the northern end which remained standing after the accident, he found the ties to be in good condition, although they had been pulled forward on the left side until they were at an angle with the track of about 45°.

He also found that the guard timbers had been pulled forward. Roadmaster Phillips further stated that he was unable to find any reason for its collapse. Chief Engineer Nicholson stated that the bridge was designed for a greater load than that of engine 226, which was a total weight, engine and tender, of 298,500 pounds, and that he considered the bridge to be absolutely safe.

In the vicinity of this bridge the current of the river is not sufficient to cause any heavy floating object to strike the bridge with sufficient force to cause damage. There was no evidence that any part of the train buckled or was derailed, while the inspection of the piling and timbers after the accident showed that they were sound.

Conclusions.

This accident was caused by the collapse of a bridge, the cause of which was not definitely ascertained.

Inspection of the equipment and track failed to disclose anything indicating a derailment, while inspection of the bridge itself failed to bring out the reason for its collapse. It is possible that one of the bents slid from the top of the piling under the surface of the water, allowing the stringers to sag under the weight of the engine and produce the effect described by the engineman and the head brakeman.

At the time of the accident the crew of train No. 63 had been on duty 4 hours and 10 minutes, after 15 hours off duty.

Respectfully submitted,

W. P. Borland,

Director.