INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON A LINE OWNED AND OPERATED JOINTLY BY THE NEW YORK CENTRAL RAILROAD AND THE CHICAGO, ROCK ISLAND & PACIFIC RAILWAY, AT CHICAGO, ILL., ON OCTOBER 13, 1928.

November 1, 1928.

To the Commission:

On October 13, 1928, there was a rear-end collision between a New York Central switch engine and a Rock Island road engine, running light, and the wreckage was collided with by a New York Central express train running in the opposite direction on an adjoining track, on a portion of line owned and operated jointly by the New York Central Railroad and the Chicago, Rock Island & Pacific Railway, this accident resulting in the death of one New York Central employee and the injury of two New York Central employees.

This accident was investigated in conjunction with representatives of the Illinois Commerce Commission.

Location and method of operation

The joint track on which this accident occurred extends from LaSalle Street Station, Chicago, to Englewood, a distance of 6.65 miles; this accident occurred approximately midway between those points, near 29th Street. In this vicinity the track is located on a fill and passes over the city streets on viaducts. For a considerable distance in each direction from the point of accident the track is tangent and the grade is slightly descending northward.

At the point where this accident occurred this is a four-track line extending north and south, the corresponding time-table directions being west and east for New York Central trains and east and west for Rock Island trains. The tracks are numbered 2, 3, 4 and 5, beginning at the east, tracks 2 and 5 being signalled for traffic in both directions, track 3 being signalled for traffic northbound and track 4 for southbound traffic. The light engines involved in this accident were northbound on track 3 and the express train was southbound on track 4. Tracks 2 and 3 are maintained by the New York Central; tracks 4 and 5 are maintained by the Rock Island. The signals on all four tracks between Englewood and the point of accident are maintained by the Rock Island.

The signals on this line are automatic block signals of the color-light type, electrically lighted, mounted upon signal bridges spanning the four tracks, the color indications for stop, caution and proceed, respectively, being red, yellow and green. Direct current track circuits and signal lighting circuits are used, current being supplied from storage batteries and trickle-charges connected to a power line. The signals directly involved in this accident are located on signal bridges at or near 29th, 32nd and 35th Streets, the signals on these bridges which govern traffic on track 3 being numbered 293, 323 and 353.

At the time of the accident a light mist was falling, but this did not obscure signal indications or materially restrict the range of vision.

Description

The light engines involved in this accident were New York Central switch engine 4553 and Rock Island road engine 4009. Engine 4553, headed north, was enroute from Englewood to LaSalle Street Station; it was proceeding at a low rate of speed and had just passed signal 293 when it was struck by the Rock Island engine. Engine 4009, headed west, was on route from the Rock Island roundhouse at 51st Street to LaSalle Street Station; it entered upon the joint track at 47th Street and was proceeding at a rate of speed variously estimated at from 20 to 30 miles per hour when it struck engine 4553. This accident occurred at about 10.50 or 10.51 p.m. Several minutes later express train No. 128, eastbound on track 4, collided with the wreckage, this train, however, having been brought nearly to a stop before this collision occurred.

A mark on the ties indicated that the point of collision was 26 feet north of signal 293. Engine 4553 came to rest with its front end 264 feet north of signal 293, both the engine and tender being derailed and leaning toward the left or west at an angle of about 45°. The tender frame was crushed and the trucks broken; the tender cistern was thrown forward against the boiler-head and the engine cab was completely destroyed. The tender cistern on engine 4009 was knocked forward on its frame a distance of 3 or 4 inches, the rear end was bent inward and the sides bent outward to some extent, and the frame was slightly damaged. This tender was derailed and overturned. The front end of engine 4553 fouled track 4, after being derailed, and was struck by the engine of train No.128, the front ends of both of these engines being slightly damaged. The employee killed was the engineman of engine 4553.

Summary of evidence

Towerman Hiltmeyer, who was on duty at the Root Street or 41st Street tower, stated that on the night of the accident engine 4553 passed his tower at 10.39 p.m., engine 4009 at 10.48 p.m., and New York Central engine 3322 at 10.50 p.m., all being westbound on track 3. On account of a train from the station crossing over, engine 4009 stopped or came nearly to a stop before he lined up the route and cleared the signal for it. He noticed nothing unusual about these engines or the rates of speed at which they were being operated; he could not recall whether or not the rear headlight on engine 4553 was burning. He was relieved and left the tower shortly before 11 p.m.; at that time a light rain was falling but it did not interfere with the view of signals.

Fireman Weaver, of engine 4552, stated that he went on duty at 10 p.m. at the roundhouse; this engine is known as the depot passenger yard engine and it was due to begin work at the station at 11 p.m. Before leaving the roundhouse both headlights were tested and found to be working properly, but he did not know whether or not the rear headlight was burning after leaving the roundhouse. While going toward the station he had some trouble with his fire and both steam and water got low; he called the engineman's attention to this condition, and the engineman shut off so as to give the steam a chance to pick up a little. The fireman put on his injector, but it failed to work properly, and then the engineman started to put on his injector.

At this time the engine was moving along at a low rate of speed, thinking something might be coming, he looked back and saw the rear end of the approaching engine. He then picked up red and white lanterns, leaned out the gangway and gave stop signals but there was no response to these signals, and he called a warning to his engineman just before the collision occurred. He stated that there was a light burning in the cab which could have been seen from the rear over the tender, but he did not know whether or not the tank headlight was burning; he did not remember seeing any light on the rear of the approaching tender. He said his engine had not come to a stop but was moving along at such a low rate of speed that he could have gotten off easily. Approaching the point where the accident occurred, the signals for his engine were clear.

The statements of Engineman Kingsbury and Fireman Ogier, of Rock Island engine 4009, were substantially identical in all essential features. They were due to

leave LaSalle Street Station on Rock Island train No. 5 at 11.30 p.m. and on the night of the accident they left the coal dock at the roundhouse at about 10.30 p.m. They entered upon the main line at 47th Street, crossed to track 3 at 45th Street, had nearly stopped at 41st Street when the signal changed from red to green, and all the signals between 41st Street and the point of accident were green. Engineman Kingsbury stated that approaching the point of accident he was standing up, looking out the side window of his cab; Fireman Ogier stated that he himself was sitting on his seat box, and both of them were positive in their statements that they saw all signals, that they were green, and that they called these signal indications to each other. The first intimation either of them had of anything wrong was as they were closely approaching signal 293, when a dark object, which it later developed was the rear of the tender of engine 4553, appeared to loom up in front of them. Apparently Engineman Kingsbury saw it first and he applied the brakes in emergency. Both of them stated that they did not see any lights of any description, either the tank headlight or the cab lights or lanterns. Engineman Kingsbury estimated the speed of his engine at about 20 miles per hour and Fireman Ogier thought the speed at the time of the accident was about 15 or 20 miles per hour. The light mist which was falling did not interfere with their view of signals, there were other trains and engines on track 2 and they were certain that they had not mistaken the signal indications displayed for track 2 for the signals governing the movement of their engine on track 3. Fireman Ogier stated that before leaving the roundhouse he hung a white lantern on the rear end of the tender.

According to the statements of Engineman Staley and Fireman Hammond, of train No. 128, Fireman Hammond saw the cloud of escaping steam at the scene of the accident as their train approached. He called a warning to Engineman Staley; however, the engineman failed to understand what the fireman said, and the fireman crossed the cab and applied the brakes in emergency. The fireman then jumped off and the engineman started to follow him but was on the step when his engine struck the wreckage and the shock was not sufficient to knock him off. Engineman Staley said that when he went from the roundhouse to the station to get his train at about 10.30 p.m. he went down track 3 and he had clear signals all the way. On the night of this accident his train left LaSalle Street Station at 10.50 p.m.

Fireman Hartman stated that shortly before this accident occurred he was going from the station to the roundhouse on engine 3297 on track 2, having come in on train No. 609, and he met the switch engine as it was ap-

proaching 29th Street. At that time the switch engine was moving along at a rate of about 10 miles per hour and the front headlight was on dim; the cab lights were burning but he did not notice the tank headlight. Farther along, near 33rd Street, he met engine 4009, and he thought that engine was running at the rate of 35 or 40 miles per hour. He said that train No. 609 on which he went into the station, used track 3, arriving there at about 10.30 p.m.; they followed some one in as he could see yellow signals some distance in advance but they cleared as his train approached them.

New York Central engine 3322 followed Rock Island engine 4009 on track 3 from 47th Street to the point of accident. Engineman Eisen of that engine stated that the signals at 41st, 39th, 35th and 32nd Streets all were yellow and the signal at 29th Street was red. As he was stopping for the red signal at 29th Street he was also flagged by some one on the ground near that signal; shortly afterwards train No. 128 approached on track 4 from the opposite direction and by the light of that headlight he could see the wreckage. He said that approaching this point he had been running at a speed of from 20 to 30 miles per hour and he thought the engine ahead of him must have been running at about the same rate of speed as he did not see the signal indications change and apparently the preceding engine was keeping about the same distance ahead of him.

Road Foreman of Engines Vanman stated that after the accident, when the tender had been removed from the cab, he made an examination of the equipment of engine 4553 and found the throttle open about 4 inches on the quadrant, the power reverse lever about half way between forward motion and center, and the headlight switches in the positions which would give bright headlights. These facts he said would indicate that the engine was getting steam and running along at about the usual rate of speed for a light switch engine operating in that territory, with both front and rear headlights turned on bright. He said he had inspected this engine on the day before the accident and that it had just been given a general overhauling and was in first class condition. He said there is a light in the roof of the cab which is always burning when the generator is running, and this cab light should be in view from an engine approaching from the rear.

Assistant Signal Supervisor Bacon of the New York Central and Signal Supervisor Zahmen of the Rock Island made an inspection and test of the signals involved shortly after the accident occurred. These tests were begun at

about 12.45 a.m., October 14, and continued until about 6.00 a.m. They included insulation tests of line and light circuits, and pick-up and drop-away of all relays involved in the operation of signals 293, 323 and 353. All apparatus was found to be in proper operating condition, and no condition was found which could have resulted in false clear signal indications. These light signals were placed in service in 1924, and since that time there has been no record of any false clear signal failure in this territory.

Conclusions

This accident was caused by the failure of the engineman and fireman of engine 4009 to observe and obey caution and stop indications of automatic block signals, and to maintain a proper lookout of the track ahead when operating in congested territory.

According to the evidence in this case, engine 4553 passed 41st Street tower at 10.39 p.m., and the accident occurred at about 10.50 or 10.51 p.m. It therefore consumed 11 or 12 minutes in running the distance of 1½ miles between those points. Engine 4009 passed 41st Street tower at 10.48 p.m., 9 minutes behind engine 4553 and 2 or 3 minutes before the accident occurred. Approaching the point of accident the signal bridges are approximately half a mile apart. Engine 4009 must have passed signals 353 and 323 when engine 4553 was between signals 323 and 293, and engine 4009 should therefore have received a yellow signal indication at signal 353 and a red signal indication at signal 323. However, Engineman Kingsbury and Fireman Ogier of engine 4009 stated definitely and positively that the indications of both of these signals were green. It is apparent, therefore, either that the signals failed to display proper indications, or that Engineman Kingsbury and Fireman Ogier failed to see or correctly to interpret the indications of these signals. In order to display green signal indications at signals 353 and 323 when engine 4553 was between signals 323 and 293 it would be necessary for the track relay for this section to remain closed; the circuit for the clear indication of signal 323 passes through the front contact of the track relay for this section. To bring this about it would be necessary either for the switch engine to fail to shunt the track circuit, or for the track relay to stick closed. Either is a very remote possibility. This is a busy track, the rails are bright and an excellent electrical contact should be formed by the engine wheels, the track is frequently used by light engines and no trouble has been experienced in the operation of signals for the protection of such movements.

In this instance another engine followed engine 4009 within a period of two minutes and the signals were then functioning properly. The possibility of failure of engine 4553 to shunt the track relay controlling signal 323 is clearly too remote to merit further consideration. The relay was carefully examined to ascertain whether there was any condition which might have caused it to stick in the clear position mechanically. It was found that the armature moved freely, it had sufficient side clearance, there was no evidence of pitting at the contacts or of corrosion or dirt at the trunnion supports. The relay contacts and bearings were, as is customary practice, enclosed in a sealed glass case, and it is scarcely credible that any mechanical obstruction of the free movement of the armature could have existed for the short period of time involved and then correct itself without leaving any trace. After the track damaged by the accident had been repaired the signals functioned properly without any adjustments or repairs being made. It is therefore believed that these signals operated properly at the time the engines involved were operated over this portion of the line, and that for some reason which has not been disclosed the engineman and fireman of engine 4009 failed to observe or obey the caution and stop signals displayed for them.

The evidence is conclusive that the signals were not obscured by the light rain or mist which was falling. Engineman Kingsbury himself said he could see the signal lights on three or four signal bridges ahead, and this fact is confirmed by the statements of other employees. Inspection afterwards also showed that the signal lights were bright and easily seen for considerable distances. The belief that Engineman Kingsbury and Fireman Ogier failed to observe some of the signal indications is supported in a measure by the fact that they failed to see the switch engine on the track ahead of them until an instant before the accident occurred. It was definitely established that there were lights in the cab of engine 4553 which could have been seen from a following engine, while the condition of the tank headlight could not be conclusively determined, it was known to have been tested and functioning properly before the switch engine left the roundhouse, and the position of the switches after the accident indicated that it had been burning at the time of the accident. It is believed that had Engineman Kingsbury and Fireman Ogier been maintaining a proper lookout they would not only have seen the caution and stop indications of the block signals but they would also have seen the switch engine on the track ahead of them. They estimated the speed of their engine at from 15 to 20 miles per hour, other employees stated that engine 4009 was being operated at a speed of from 30 to 40 miles per hour. If the accident occurred at 10.50 p.m., engine 4009 traveled the distance of $1\frac{1}{2}$ miles from 41st Street tower to 29th Street in two minutes

or at the rate of 45 miles per hour; or if it occurred at 10.51 p.m., it traveled this distance in three minutes or at the rate of 30 miles per hour. In view of the damage to the switch engine and the distance it was driven after it was struck and derailed, it is believed the estimate of 20 miles per hour as the speed of engine 4009 at the time of the accident is too low.

This accident is of the type which automatic train stop or train control devices are designed to prevent. Both the New York Central and the Rock Island are equipped in part with automatic train control devices, the track installation of the New York Central device terminating at Englewood, and the track installation of the Rock Island device terminating at Blue Island. The joint track is not equipped with any automatic train control device, although engines of both roads equipped with automatic train control apparatus are operated over this joint track. The devices used by the two companies are not interchangeable, and the installation of either on the joint track would interfere with the clearances of the other. Moreover, the Rock Island engine was equipped with automatic train control apparatus but it was not arranged to provide protection for a reverse movement such as was being made in this instance.

All of the employees involved in this accident were experienced men; at the time of the accident all of them had been on duty less than one hour after off-duty periods varying from ten and one-half to thirty hours.

Respectfully submitted,

W. P. BORLAND,

Director.