

INTERSTATE COMMERCE COMMISSION

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REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PENNSYLVANIA RAILROAD NEAR HARRISON, N.J., ON JULY 11, 1923.

August 2, 1923.

To the Commission:

On July 11, 1923, there was a side collision between a passenger train and a deadhead equipment train on the Pennsylvania Railroad near Harrison, N.J., resulting in the death of 1 passenger, and the injury of 22 passengers and 3 employees. This investigation was held in conjunction with representatives of the New Jersey Board of Public Utility Commissioners.

Location and method of operation.

This accident occurred on that part of the New York Division extending between "N" interlocking station and Park Place, Newark, N.J., a distance of 1.1 miles, in the vicinity of the point of accident this is a double-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The accident occurred at the frog of a switch located approximately 975 feet west of "N" interlocking station, on the westbound track, this switch is a trailing-point switch for westbound trains, and leads to a siding connecting with Manhattan Transfer loop track, the siding being between two main tracks. Approaching the point of accident from the east the track is tangent for a considerable distance, followed by a curve of $120^{\circ} 54'$ to the right 260 feet in length, then 274 feet of tangent, followed by a curve of 80° to the left 146 feet in length, the accident occurred on tangent and level track, at the extreme western end of this last-mentioned curve, and just over the peak of a 3 per cent ascending grade, for westbound trains, about 620 feet in length.

The signals involved in this accident were westbound signals 40-L and 52-L, and dwarf signal 52-R. Signal 40-L is a three-arm signal located 1,074 feet east of the point of accident; the two top arms are stationary, while the bottom arm, a slow-speed signal which governs movements to all routes, operates in three positions, stop, caution, and proceed, the caution position requires trains to proceed at low speed, prepared to stop, while the route

may or may not be clear, the clear position indicates that the route is clear to the next signal, 52-1, which latter signal may be displaying either a proceed or caution indication. The maximum speed permitted under a clear indication is 15 miles an hour.

Signal 52-1 is also a three-arm signal, and is located about 104 feet east of the point of accident, the top arm is of the three-position, semiautomatic type, the middle arm is stationary, and the lower arm is a two-position, calling-on signal. The top arm governs movements as far as signal H-81, the first automatic signal en route to Park Place, when this top arm is in the stop position, signal 40-1 can display only a caution indication.

Dwarf signal 52-R, a two-position, non-automatic, low-speed signal, is located 230 feet west of the point of accident, it governs back-up movements from the west-bound track either to the siding or to the eastbound track. Under the rules, when this signal displays an indication authorizing such a back-up movement, no flag protection is required, the rule which applies in such an event is interlocking signal rule 661-b, which provides that within home signal limits rule 152 need not be observed, rule 152 being the rule requiring flag protection when crossing over to or obstructing another track.

The view of signal 52-1, from the motorman's cab of a westbound train, is unobstructed from a point just east of "N" interlocking station, however, on reaching the foot of the heavy ascending grade, located immediately east of the point of accident, the east end of a train, standing where the deadhead equipment train was on this occasion, can not be seen until a point near the top of this incline is reached. The weather was clear at the time of the accident, which occurred at about 10.58 a.m.

Description.

A westbound deadhead equipment train, consisting of eight motor cars, of all-steel construction, en route from Jersey City to Manhattan Transfer loop track, was in charge of Conductor Post and Motorman Gross, Hudson & Manhattan Railroad Company employees. This train entered upon the tracks of the Pennsylvania Railroad at "SC" interlocking station, 4.7 miles east of "N" interlocking station, at 10.46 a.m., passed "N" interlocking station at 10.54 a.m., and was brought to a stop just west of dwarf signal 52-R, for the purpose of pulling back through the switch leading to the siding connecting with Manhattan Transfer loop track. Shortly afterwards the dwarf signal displayed a proceed indication and while

pulling back, train No. 3273 was observed approaching; as it passed signal 52-L, the deadhead equipment train was at once brought to a stop, the first car being over the frog, and immediately afterwards this car was struck by train No. 3273.

Westbound passenger train No. 3273, consisting of seven motor cars, of all-steel construction, en route from Hudson Terminal, Cortlandt Street, New York, to Park Place, Newark, was in charge of Conductor Kohler and Motorman Herbert, Hudson & Manhattan Railroad Company employees. This train also entered upon the tracks of the Pennsylvania Railroad at "SC" interlocking station, at 10.49 a.m., passed signal 40-L, which was displaying a caution indication, passed "N" interlocking station at 10.56 a.m., passed signal 52-L, which was displaying a stop indication, and, after traveling approximately 104 feet farther, collided with the deadhead equipment train while traveling at a speed estimated to have been between 15 and 20 miles an hour.

The north side of the first car in the deadhead equipment train and the left corner of the first car in train No. 3273 were badly damaged, while the forward truck of this last mentioned car was derailed to the right. Two other cars were slightly damaged.

Summary of evidence.

Immediately after the deadhead equipment train was brought to a stop on the westbound main track just west of dwarf signal 52-R, Flagman Charles started back to flag, as this signal was then displaying a stop indication. However, on reaching a point about 30 feet distant, the indication of this signal changed to proceed, which, under the rules, relieved him of any further flagging duties connected with the intended reverse movement onto the siding, and he boarded his train and turned the markers. In the meantime Motorman Gross had walked through the cars and reached the east end of the train, and shortly after starting he observed the roof of the first car in train No. 3273 coming up the hill, it then being about 20 feet east of signal 52-L, moving at a speed of about 15 miles an hour. Motorman Gross remarked to Flagman Charles that he did not think train No. 3273 was going to stop, and as it passed signal 52-L Motorman Gross held out his hand and then sounded a stop signal on the whistle, applied the air brakes in emergency and brought his train to a stop, the accident occurring practically simultaneously. Flagman Charles stated the

first knowledge he had of anything wrong was when he saw train No. 3273 pass signal 52-L, which was displaying a stop indication, and shortly afterwards Motorman Gross sounded the whistle, he estimated the speed of train No. 3273 to have been about 20 miles an hour at the time it passed signal 52-L. Flagman Charles further stated when making reverse movements of this nature, approaching westbound trains stop, as required by the rules, before reaching signal 52-L, and he expected train No. 3273 was going to do this. Conductor Post, who was riding in a car at the west end of the equipment train, stated that the stop made for the intended reverse movement was of not more than one minute duration, the first intimation he had of anything wrong was when he heard the whistle sounded and the air brakes went on in emergency, at which time his train was traveling at a low rate of speed; immediately after the accident he observed signal 52-L displaying a stop indication.

Motorman Herbert, of train No. 3273, stated that when approaching signal 40-L it was displaying a caution indication, however, just before reaching it, when about 50 feet away, the indication changed to the clear position, and he proceeded expecting to find signal 52-L also displaying a clear indication. He said that from this point the view of signal 52-L was entirely unobstructed, but that he did not observe the indication of that signal until within 100 feet of it, at which time it was displaying a stop indication, and the speed of his train was about 15 miles an hour. About this time he also saw the deadhead equipment train, and he immediately shut off the power, and applied the air brakes in emergency, the accident occurring shortly afterwards. He had not heard a stop signal sounded by the motorman of the equipment train. Motorman Herbert stated that the air brakes on his train were working properly, no trouble being experienced in making the various stops en route, that he was familiar with the physical characteristics, switches and signals in this vicinity, and was aware that reverse movements were made at this point.

Conductor Kohler, of train No. 3273, stated he was riding in the rear end of the first car in his train, and the first knowledge he had of anything wrong was when some passengers commenced yelling, and he heard a whistle signal sounded, the accident occurring about 15 seconds later. He estimated the speed at about 10 miles an hour approaching signal 52-L, said that power was being used when the passengers yelled, and that the air brakes were applied about two seconds before the collision occurred,

the air brakes were tested and worked properly en route. Other members of this crew stated the speed was about normal approaching signal 52-L, and they were not aware of anything wrong until the air brakes were applied in emergency, the accident occurring immediately afterwards.

Train Director Hefferon, Operator Carlon, and Leverman Williams, on duty at "N" interlocking station at the time of the accident, stated that signal 40-L was displaying a caution indication at the time train No. 3273 approached, and a stop indication after it passed this point, at which time this train was traveling at about 10 or 15 miles an hour. All of these employees said they saw signal 52-L displaying a stop indication shortly before the accident occurred.

Subsequent to the accident the air brakes were tested on train No. 3273, and they were found to be operating and in good condition on all cars, while examination and test of the signal apparatus involved showed it to be in good working order.

On July 13th, tests were made with a train similar to train No. 3273, all conditions prevailing at the time of the accident being duplicated as nearly as possible. Approaching the point of accident the speed was approximately 15 miles an hour, and on reaching a point 100 feet east of signal 52-L, power was shut off and an emergency air brake application made, the train coming to a stop in 86½ feet, this being 106½ feet east of the siding clearance point on the westbound main track. A drifting test was then made, the speed being the same, and the power being shut off at the same point, and the train came to stop of its own accord after traveling 292 feet, 99 feet west of the clearance point.

Conclusions.

This accident was caused by the failure of Motorman Herbert, of train No. 3273, properly to observe and obey signal indications.

The movement being made by the deadhead equipment train is made six times daily, with six daily movements in the opposite direction, and Motorman Herbert was thoroughly familiar with the physical characteristics, signals and switches in this vicinity. Although Motorman Herbert emphatically stated that signal 40-L was displaying a clear indication at the time he passed it, all evidence is to the effect that it was displaying a caution indication and that for some unknown reason Motorman

Herbert either misread or failed to observe this indication. As to signal 52-L, however, Motorman Herbert admitted that his view of this signal was entirely unobstructed from a point east of "N" interlocking station, but that he failed to observe its indication until he reached a point about 100 feet east of it, and at that time it was displaying a stop indication. Had he maintained a proper lookout for the indication of signal 52-L, and obeyed its indication, even after misreading or not observing signal 40-L, he could have stopped his train in time to prevent the accident.

On August 31, 1920, there was another side collision at this point, also due to the motorman in charge of the westbound train failing properly to observe and obey the stop indication of signal 52-L, the motorman had been looking back toward the rear of his train and when he observed the indication of the signal it was only a car length distant and it was then too late to stop. No casualties resulted from this accident, which occurred at night, in clear weather, and no investigation of it was made by this Commission. On October 28, 1921, there was a rear-end collision between two passenger trains just west of signal 64-L, which is operated from "S" interlocking station, at the eastern end of Manhattan Transfer station and only 0.4 mile east of "N" interlocking station. This Commission made an investigation of that accident, which was caused by an engineman failing to observe and obey signal indications, and in the Commission's report covering that investigation it was pointed out that the signal system furnished all the protection that could be provided by modern railroad signaling, that automatic train-stop devices were in use on a portion of the line, and that the extension of the system could be made by installing additional track devices, inasmuch as the motors were equipped with the necessary apparatus, and it was recommended that the automatic train-stop system be extended to cover the territory between New York and Manhattan Transfer. While the location of the accident here under investigation is not within the territory covered by that recommendation, its occurrence at a point where a similar accident occurred about three years previously emphasizes once more the necessity for the use of some form of automatic train control to bring a train to a stop when a motorman or engineman fails to observe and obey a signal indication. Had such a system been in use at this point, this accident would not have occurred.

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Motorman Herbert entered the service of the Hudson & Manhattan Railroad in August, 1909, as a guard, and was made a motorman in April, 1911. At the time of the accident none of the employees involved had been on duty in violation of any of the provisions of the hours of service laws.

Respectfully submitted,

W. P. BORLAND

Director.