REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PENNSYLVANIA RAILROAD NEAR PORTAGE, PA., ON OCTOBER 9, 1929.

October 26, 1929

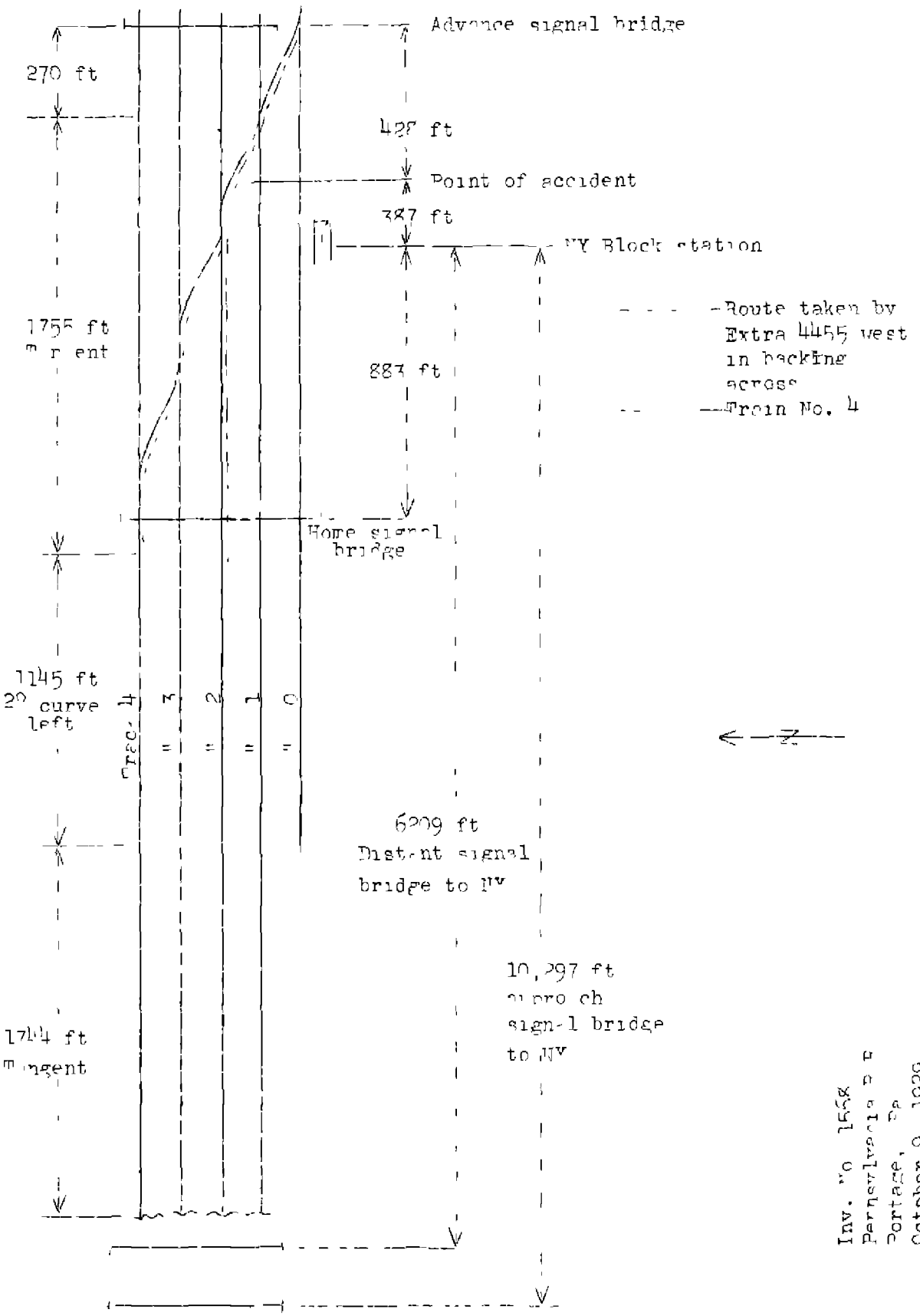
To the Commission

On October 9, 1929, there was a collision between a passenger train and a freight train on the Pennsylvania Railroad near Portage, Pa., which resulted in the death of three employees. The investigation of this accident was made in conjunction with a representative of the Public Service Commission of the State of Pennsylvania.

Location and method of operation

This accident occurred on that part of the Pittsburgh Division extending between Altoona and Pittsburgh, Pa., a distance of 113.8 miles. In the vicinity of the point of accident this is a four-track line over which trains are operated by time-table, train orders, and an automatic block-signal system. The tracks are numbered from north to south, 4, 3, 2 and 1, tracks 4 and 3 are for westbound traffic and tracks 2 and 1 for eastbound traffic. Track 0 is on the south side of track 1. The accident occurred at the facing-point crossover leading from track 2 to track 1, located 2,273 feet west of the station at Portage and within the limits of NY interlocking. Approaching this point from the west there are 1,744 feet of tangent, a 2° curve to the left 1,145 feet in length, and then 1,755 feet of tangent, the accident occurring on the last-mentioned tangent at its leaving end. Except in the vicinity of the track water pans at Wilmore, 2 miles west of NY Block Station, the grade is generally ascending for eastbound trains, being 1.15 per cent at the point of accident.

The mechanical interlocking plant at this point is operated from NY Block Station, located 387 feet west of the point of accident. At this point there is a series of crossovers connecting tracks 4 and 3, 3 and 2, 2 and 1, and 1 and 0, the last-mentioned crossover being at the extreme eastern end of the interlocking limits, with the first-mentioned crossover at the western end of the interlocking limits. The home signal bridge at the western end of the interlocking limits spans all five tracks and is 883 feet west of NY Block Station; the home signals



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mounted on this bridge for eastbound tracks 2 and 1 are of the position-light type. The signal bridge on which the eastbound distant signals are located is 6,209 feet west of NY Block Station and spans the four main tracks, these distant signals also are of the position-light type, the normal indication being "approach next signal prepared to stop". There is another signal bridge 10,297 feet west of NY Block Station, when an eastbound train on track 2 passes this point the approach locking with which NY interlocking is equipped becomes effective and prevents the towerman from changing the route unless he releases the lock by manually operating the clockwork mechanism which is set to run down in 2 minutes and 35 seconds. At the eastern end of the interlocking limits at a point about 815 feet east of NY Block Station or 428 feet east of the point of accident, there is another signal bridge which spans the four main tracks, on this bridge are mounted what are known as the eastward advance signals, these being three-position automatic signals of the semaphore type. These advance signals are so controlled, however, that they display a stop indication whenever the route is lined for a movement through the crossovers to track 0. Under the interlocking rules, certain home-signal limits which are protected by home and distant signals, their indications supersede superiority of trains and crews are relieved from observing rule 152, which requires flag protection when making a crossover movement and which also provides that such movements must not be made when a superior train is due.

The weather was clear at the time of the accident, which occurred at about 11.07 p.m.

Description

Westbound freight train extra 4455 consisted of 65 cars and a caboose, hauled by engine 4455, and was in charge of Conductor Hippo and Engineman Read. This train arrived at NY Block Station on track 4 at 10.34 p.m. Helper engine 2353, in charge of Engineman Howard, arrived on track 4 at 10.38 p.m. and coupled to the rear of extra 4455. Shortly afterwards the route was lined for a back-up movement across all of the main tracks to track 0, and at 10.59 p.m. the dwarf signal indication was displayed to authorize the movement. The train was backed through the various crossovers and finally was brought to a stop with engine 4455 on the crossover leading from track 2 to track 1, and it was while it was standing at this point that it was struck by train no. 4.

Eastbound passenger train No. 4 consisted of two express cars, one combination car, two coaches and four Pullman sleeping cars, all of steel construction, hauled by engine 3672, and was in charge of Conductor Smith and Engineman Johnson. This train, which was being operated on track 2, passed W Tower, 4.6 miles west of NY Block Station, at 11.01 p.m., practically on time, arrived at NY Block Station at 11.07 p.m., and collided with extra 4455 on the crossover leading to track 1 while traveling at a speed estimated to have been about 35 or 40 miles per hour.

Engine 4455, which was driven backward a distance of about 84 feet, was derailed and badly damaged, while six cars immediately back of the engine were also derailed, the wreckage blocking all four main tracks. Engine 3672, of train No. 4, was entirely derailed and badly damaged, but remained upright with its front end interlocked with the front end of engine 4455. The tender of engine 3672 telescoped the first express car in this train, the car coming to rest on its right side in a badly-damaged condition. The second car in this train was partly derailed, but none of the other cars in the passenger train was derailed, and only one of them sustained any damage. The employees killed were the engineman and fireman of train No. 4 and the engineman of extra 4455.

Summary of evidence

Fireman Flenner, of engine 4455, stated that after the passage of eastbound train No. 52 he noted that the home signal on track 2 was displaying a stop indication. His own train then started to back across from track 4 to track 0 and he did not again notice the indications displayed by any of the signals on the home signal bridge, as he was working on his fire. A train-line leak seemed to develop after the movement had been started, and when the brakes were applied from helper engine 2353, which was handling the movement, this application being made for the purpose of slowing down for a street crossing, the gauge on engine 4455 indicated a 12-pound reduction. The engine came to a stop on the crossover leading from track 2 to track 1, with the pilot of the engine about on track 2, and shortly afterwards Fireman Flenner saw train No. 4 at the western end of the interlocking plant. He then told his engineman to sound a back-up whistle, which was done, and he said the engineman then looked out towards train No. 4 and called to him to get off, which he did just before the collision occurred. Fireman Flenner further stated that the headlight on his own engine had been dimmed but that the headlight on the engine of train No. 4 was burning brightly. He did not think that train No. 4 was traveling at a very high rate of speed, estimating it to have been not more than 30 or 35 miles per hour.

No other member of the crew of extra 4455, with the exception of the engineman, who was killed in the accident, was at the head end of the train at the time it started to back through the crossovers. Head Brakeman Wampler had gotten off when the train arrived at NY Block Station, going back to the caboose in order to eat, and he said he was riding on the head end of the caboose when the back-up movement was started. He had noted that the home signals on tracks 2 and 1 were in the clear position just prior to the passage of train No. 52, but he did not notice their position after that time; although when the back-up movement started he had noted that the advance automatic signals governing tracks 2 and 1 were in the stop position. Middle Brakeman McKinley, who was riding on the last car in his train when it started the back-up movement, had not noticed the indications of any of the signals. Conductor Hippo did not notice the indications of the home signals at any time, but after the helper engine had coupled to his train and the back-up movement had started, he noticed that the advance automatic signals governing tracks 2 and 1 were in the stop position. Conductor Hippo also stated that the back-up movement was stopped in order to permit the flagman to protect the movement of the train over a street crossing, the air going on shortly afterwards, as if an emergency application of the brakes had been made, and at the same time he heard the noise of the collision. Flagman Sayler said that when his train stopped west of the eastbound home signal bridge, he was stationed at the bridge on which the eastbound advance automatic signals are located and therefore was not in position to observe the home signal indications governing tracks 2 and 1. The advance automatic signals were in the proceed position prior to the passage of train No. 52, and the next time he noticed them was when his own train was backing through the crossovers, at which time both of these automatic signals were in the stop position.

Engineman Howard, of helper engine 2353, stated that after coupling to the rear of extra 4455 and while waiting at that point for a signal to cross over, he noted that both the home and the advance automatic signals governing tracks 2 and 1 were in the stop position at all times except during the movement of train No. 52 on track 2. These statements were corroborated by those of his fireman.

Conductor Smith, of train No. 4, said he was riding in the fourth car in the train and that he did not notice anything wrong until the collision occurred, there having been no application of the air brakes, he estimated that his train had been moving at a speed of 40 or 45 miles per hour. It also appeared from Conductor Smith's statement that Engineman Johnson was a man who always used good judgment in the handling of his train and it seemed to him

that the engineman must in some way have become incapacitated prior to the occurrence of the accident. The statements of Baggagemaster Roland, Head Brakeman Goodwin, and Flagman Cochrane, all of train No. 4, corroborated the statement of Conductor Smith about there having been no application of the brakes prior to the occurrence of the accident. Flagman Cochrane also stated that when he went back to flag he noticed that the home signal governing track 2 was in the stop position and that the distant signal showed an approach indication; this indication meant "approach next signal prepared to stop".

Signalman-Operator Cullen, on duty at NY Block Station, stated that extra 4455 arrived at 10.34 p.m. on track 4, followed by helper engine 2353 at 10.38 p.m. Westbound train No. 21 passed on track 3 at 10.55 p.m. and eastbound train No. 52 on track 2 at 10.58 p.m. After the passage of train No. 52 he lined the crossovers for the extra to back across from track 4 to track 0 and the movement was started, he having previously talked with the dispatcher about the movement and the latter having authorized it to be made. Signalman-Operator Cullen said he stood at the levers following up the movement of the train, restoring the switches of the crossovers to their normal position as soon as the extra had cleared the crossovers. He had closed the crossovers leading from track 4 to track 3 and from track 3 to track 2, and was waiting at the levers in order to close the crossover leading from track 2 to track 1, so as not to delay train No. 4. While standing at the levers he saw train No. 4 approaching on the curve between the distant and home signal locations, and he said he watched it until it passed the home signal. He then called it to the attention of the third trick signalman-operator, who had arrived in the tower, and the latter obtained a fusee and endeavored to light it with the idea of trying to warn the engine crew of train No. 4, but was unsuccessful in lighting the fusee; in the meantime, Signalman-Operator Cullen was sounding the emergency tower whistle. Train No. 4 proceeded, however, with the engine still working steam and with no noticeable reduction in speed prior to the accident, nor was there any fire flying from the wheels. He did not, however, notice the position of the engineman and fireman as the engine passed the tower. Signalman-Operator Cullen further stated that the headlight on the engine of train No. 4 was burning brightly, that the night was clear and dark with nothing to obscure visibility, and that the advance automatic signal governing track 2, located just east of the point of accident, was also in the stop position.

Signalman-Operator Ferron said he came into the tower about 11.04 or 11.05 p.m., at which time extra 4455 was backing through the crossovers, finally stopping with the engine on the crossover leading from track 2 to track 1. Signalman-Operator Cullen was standing at the levers controlling this particular crossover, and at about the same time he saw train No. 4 about half a mile distant and remarked to Signalman-Operator Cullen that it might be delayed. Shortly afterwards, however, train No. 4 passed the home signal without stopping, and he then picked up a fusee and started for the front window, while Signalman-Operator Cullen sounded the emergency tower whistle. Signalman-Operator Ferron was unable to light the fusee, however, by the time the train passed the tower, at which time he could see the engineman in the cab, but could not see what he was doing; he did not recall seeing the fireman. He corroborated statements of Signal-Operator Cullen to the effect that the engine on train No. 4 was working steam when it passed the tower.

Engineman Riblett, in charge of engine 3076, was sent from Conemaugh, 13.1 miles west of NY Block Station, to handle the undamaged portion of train No. 4 eastward to Altoona. He said he arrived at NY Block Station on track 2 at 12.15 a.m. and received an approach indication on the distant signal and a stop indication on the home signal. He then coupled to the rear end of train No. 4, charged the train line, tested the brakes and found them working properly, and then pulled the rear end of the train back as far as W Tower, a distance of 7.6 miles. At this latter point he ran around the train with his engine, tested the brakes again, and proceeded with the train to Altoona, the brakes working properly at all points. His statements were corroborated by those of his fireman.

Signal-Maintainer Keil said he was called about 11.15 p.m. and reached the scene of the accident about 20 minutes later, finding both the second and the third-trick operators in the tower. He checked the positions of the levers and found them in the proper positions for the routes involved, examined the seals on the electric locks and found them intact, and then went to the home signal governing track 2 and found it in the stop position. No tests or adjustments were made at the tower or at the home signal, and a check of the electric locking showed that it was working as intended. Observers then were placed at the home and distant signals and these signals were kept under observation during the completion of tests on the afternoon of October 12. These tests, as well as examinations of the track relays, interlocking machine, etc., failed to disclose the presence of anything which could have caused an improper signal performance.

An examination of the records showed that the chart covering the track water pans located just east of Wilmore, or about 2 miles from NY Block Station, indicated that train No. 4, moving on track 2, scooped approximately 3½ inches of water from the pan at about 11.03 p.m.

Among the data furnished in connection with the investigation of this accident was a brief statement from Dr. C. J. Bibb, surgeon of the Pennsylvania Railroad, to the effect that he was called to attend Engineman Johnson of train No. 4, and he stated: "It is my professional opinion that death was due to accident caused by the wreck."

Conclusions.

This accident was caused by the failure of Engineman Johnson, of train No. 4, properly to observe and obey signal indications.

The evidence indicated that the signal system was in proper working order and displaying the proper approach and stop indications as train No. 4 approached NY Block Station on track 2. Under the rules, an "approach" indication requires a train to "Approach next signal prepared to stop", while the speed must be reduced at once until it is not more than one-half the maximum authorized speed at the point involved. Apparently no action was taken by Engineman Johnson, however, in obedience to these provisions of the rules, and the evidence further indicated that he passed the home signal in the stop position without any reduction in speed and would have passed the advance auto- ic signal in the stop position had the accident not occurred. According to the records, water was taken at the track water pans at Wilmore, about 2 miles from the point of accident, indicating that there was nothing wrong with the engine crew at that time, and while no definite reason can be assigned for the failure of Engineman Johnson to obey the signal indications which were displayed for his train as it was approaching the point of accident, the fact that the engine was working steam even after passing the home signal, with no application of the air brakes having been made, the fact that the weather was clear and favorable to the observance of signal indications, which in this case could have been seen for a considerable distance, and the further fact that the air brakes on train No. 4 were in good working order both before and after the accident, would make it seem more than probable that Engineman Johnson became incapacitated in some way as his train was approaching NY Block Station and that he was unable to take the proper steps towards bringing his train to a stop.

While of course no definite information is available as to why Fireman Burkholder, of train No. 4, did not know that Engineman Johnson was not operating the train in accordance with the signal indications which were displayed, it seems reasonable to suppose that after water had been taken at the Wilmore track pans, the fireman began to work on the fire and that he was still so engaged at the time of the accident, since his body, together with his shovel, was found in the coal pit after the occurrence of the accident.

The occurrence of this accident recalls the accident which occurred on this same railroad near Short Lane, Md., on January 17 of this year. In the case of the Short Lane accident there was a very dense fog, which undoubtedly caused the engineman of one of the trains involved to fail to see the signal indications, the result being the occurrence of a disastrous accident. In the present instance, it seems probable that the engineman was in some way incapacitated and for that reason failed to observe the signal indications, the result being the occurrence of another disastrous accident. As was the case with the Short Lane accident, it is probable that there would have been no difficulty at NY Block Station had the line been equipped with an automatic train stop or train-control system, and it is also possible that the accident would not have occurred had the line been equipped with a system of visible and audible cab signals.

As a result of the Short Lane accident, the railroad arranged to install a system of visible and audible cab signal in that territory. This system repeats inside of the cab within view of the fireman the indications displayed by the wayside signals, and there is also within the cab an audible signal which gives ample warning to any one in the engine in case the wayside signals are set against the movement of the train. In this particular case, such a system would have resulted in warning Fireman Burkholder that Engineman Johnson was not obeying the signal indications and would have given the fireman an opportunity to bring the train to a stop before the accident occurred.

The average daily train movement past NY Block Station for the 30 days preceding the date of the accident was 216, of which 53 were on track 2. The density of traffic on this line is amply sufficient to warrant the installation of some system which will aid in the prevention of accidents due to the failure of enginemen either to observe or to obey signal indications, and this is particularly so where train movements are such that when an accident does occur there is the accompanying danger of involving other trains moving on adjacent tracks. It is recommended, therefore, that this railroad proceed as quickly as practicable with the installation of further safety devices, not only on this particular division, but on other portions of its main trunk lines where there is a very heavy traffic movement, and where no additional pro-

tection has yet been supplied in addition to that afforded by the automatic block-signal system.

Engineman Johnson was a man 53 years of age, and had been in engine service for a period of nearly 30 years, practically all of which had been on the Pittsburgh Division. He had last been given a physical examination, as well as an examination on vision, color sense and hearing, less than one month prior to the occurrence of the accident, being approved in all of these respects. All of the other employees involved in this accident also were experienced men, and 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.