In Re Investigation of an Accident which Occurred on the New York, New Haven & Hartford Railroad, near Atlantic, Mass., August 4, 1915.

Oct. 16, 1915.

On August 4, 1915, there was a rear-side collision between two passenger trains on the New York, New Haven & Hartford Railroad at Atlantic, Mass., which resulted in the injury of 20 passengers, two employees and one employee of the express company. After investigation of this accident the Chief of the Division of Safety submits the following report:

This accident occurred on the Boston Division of the New York, New Haven & Hartford Railroad, at a crossover leading from track 4 to track 2, located about 800 feet north of Atlantic station. At the point of accident there are 4 tracks extending north and south. Adjoining the center line on the east is track 2, with track 4 on the outside, both of which are used for northbound trains. Adjoining the center line on the west is track 1, with track 3 on the outside, both being used by southbound trains. The movement of trains is governed by time-table, train orders and an automatic block signal system.

The tracks in the vicinity of the accident are controlled by two interlocking plants, about 3,000 feet apart, the southerly one located about 600 feet south of Atlantic station, known as Atlantic Tower, and the northerly one known as Neponset Tower, located at the North end of the draw bridge over the Neponset River. These two towers are independent of each other, but are connected by telephone.

Located 1,300 feet north of Atlantic Tower and 1,700 feet south of Neponset tower, under an overhead highway bridge, is a facing-point crossover from the south leading from track 4 to track 2. This crossover is controlled by Neponset Tower entirely independent of Atlantic Tower, and it was at this point that the accident occurred.

At Atlantic Tower the double track main line from the south emerges into a 4-track section which extends northward to Boston. Just north of the tower the Quincy Branch (double track), enters the four-track main line from the southwest. The interlocking plant at Atlantic contains a Saxby and Farmer machine, having 41 working levers and 11 spare levers. It controls the connection of the two-track section with the four-track section; the junction of the West Quincy Branch with main line tracks 1, 2 and 4; and the end of the double track on the West Quincy Branch located about 1,000 feet southwest of the tower. All signals controlled from this plant, except those located at the end of double track on the West Quincy Branch, are electrically operated. There are no derails in connection with this plant, but indicators show whether or not any of the track sections are occupied. Annunciators are installed to announce the approach of trains, those for northbound trains being located 5100 feet south of distant signal 51. This circuit also announces the approach of northbound trains to Neponset Tower.

The interlocking tower at Neponset contains a Union Switch & Signal Company all-electric machine having 41 working three-position levers and 4 spare spaces. These control the drawbridge,

the junction of a branch with the main line just north of the bridge, the crossovers between tracks 1 and 3 and 2 and 4, north of Atlantic, on the latter of which this accident occurred. Derails and smash boards in the form of electrically operated highway crossing gates are used at this point to protect the drawbridge. A moving diagram is provided in the tower which indicates what sections of track are occupied. The approach of trains is indicated by annunciators.

Train 5125, en route from Cohasset, Mass., to Boston, Mass., via the West Quincy Branch, consisted of engine 1419, three coaches, 1 combination car and one baggage car, and was in charge of Conductor Hadley and Engineman Launsbury. It left Cohasset at 10.28 a.m., on time, passed Atlantic Tower at 11.16 a. m., where it left the Quincy Branch, crossed the main line tracks 1 and 2, and entered track No. 4, its regular scheduled track between Atlantic and Boston. The train made the regular station stop at Atlantic station and proceeded to the crossover north of the station, where it was crossed over from track 4 to track 2. The train was in the act of passing through this crossover when the baggage car, the rear car of the train, was struck by train No. 5126 running on track 2.

Train 5126, en route from Plymouth, Mass., to Boston, consisted of engine 1264, baggage car, mail car, smoking car, 3 coaches and a combination car, and was in charge of Conductor Robinson and Engineman Barton. It left Plymouth at 10.00 a. m., on time, was delayed 6 minutes at Kingston,

meeting an opposing train, and passed Braintree, 4.65 miles south of Atlantic at 11.10 a. m., 5 minutes late, passed Atlantic tower, on track 2, at 11.17 a. m., and, while running at a speed of about 40 miles per hour collided with the rear of train 5128 as it was pulling through the crossover from track 4 to track 2, north of Atlantic station.

The force of the collision drove train 5128 forward about 128 feet. The baggage car on the rear of the train was turned over on its right side and pushed across track 4, against the pier of the overhead bridge. The second car in the train was tipped to an angle of about 45 degrees, the center pin bent and the platform crushed against the end of the car. The third car from the rear had its rear platform torn off and rear end telescoped for about five feet. Engine 1234, on train 5128, had its right steam chest broken off and pilot and running board bent.

The weather at the time of the accident was clear.

Investigation develops that on the day of the accident there was a work train working on track 4, north of Atlantic, and upon the request of the crew of this train, the train dispatcher instructed the towermen at Atlantic and Neponset towers to cross train 5128 over from track 4 to track 2 at the crossover north of Atlantic station, and it was in connection with this movement that the accident occurred.

Approaching the point of accident from the south, the track is tangent for over two miles. This tangent is followed

by a 3-degree curve to the right 662 feet in length, at the north end of which Atlantic tower is located. This curve is followed by a tangent 438 feet in length, which in turn is followed by a compound curve to the left ranging from 1 degree 25 minutes to 3 degrees, and having a length of 950 feet. Following this curve the track is tangent for more than a mile. It is at the beginning of this tangent that the crossover where the accident occurred is located. The tracks at this point are practically level.

Following the course of train 5126, the first signal involved in this accident is a two-arm signal. The top arm is a home automatic, while the bottom arm is the distant signal, No. 51, for 3 home signals, namely; 49a, operated from Atlantic Tower, and 38L and 36L, operated from Neponset Tower. Home signal 49a is located 1,986 feet north of distant signal 51 and protects the junction of the West Quincy Branch with main line track No. 2. Home signal 38L governs northbound movements on track 2 and protects the crossover from track 4 to track 2. It is located 927 feet north of signal 49a and 233 feet south of the southern end of the crossover, and is supported on the left hand doll of a double bracket mast located at the right of track 4.

On the right-hand doll of the brack are two arms, the top arm governing the high speed route on track 4 and the bottom arm governing the route through the crossover. Signal 38L can only be seen a distance of about 700 feet from an approaching northbound train. Home signal 36L is located 1,239 feet north of signal 38L. It is the top arm on the left-hand

dell of a double bracket mast at the right of track 4, and protects the drawbridge over Neponset river on track 2. These signals are connected in such a manner that signals 49a, 36L and 36L must be in the clear position, and levers in both Atlantic and Neponset towers reversed before distant signal 51 can be cleared.

All of the signals involved are high, electric slotted signals, of the center-hung two-position type. The home signals are red, with white bands and round ends. The distant signals are yellow, with black bands and forked ends. Both track circuits and detector bars are used to protect the switches. Approach locking and annunciators are provided for both towers in each direction on the main line.

Train Dispatcher Comer stated that on the morning of the accident the conductor of the work train, through the operator at Neponset, requested the use of track 4 between Atlantic and Savin Hill, a station about two miles north. Permission was granted and the operators at Neponset and Atlantic were instructed to cross train 5123 over from track 4 to track 2 at the crossover north of Atlantic and permit it to use track 2 into Boston. Dispatcher Comer stated that it was left to the judgment of the operators which train was to go ahead. He also stated that this movement had been made on three or four occasions recently and was one which is liable to be made at any time should conditions require.

Towerman Atkins, of Neponset tower, stated that upon receiving the instructions from the train dispatcher he con-

home signals was in stop position. He immediately applied the brakes, making a nine-pound reduction. Shortly after, he saw train 5128 crossing the main track from the Quincy Branch to track No. 4. When he came in sight of signal 49a, it was in the stop position; he then made a further application of the brakes of about 6 pounds. As he neared the signal it cleared. He then released the brakes and opened the throttle, and accelerated his speed. Expecting that signal 38L would be clear, he did not look for it until just before reaching it; he then discovered it to be in a stop position. He immediately made an emergency application of the brakes, but was unable to stop before colliding with train 5128, which was pulling through the crossover. He estimated his speed to have been about 40 miles per hour. Engineman Barton stated that he has been running over this section of track for the last 35 years and on this particular train for nearly two years. He stated that while running that train, this was the first time train 5128 had been crossed over and run on track 2 ahead of him, and until the day of the accident he did not know that signal 49a could be cleared while the crossover was set from track 4 to track 2. However, Engineman Barton admits that he assumed signal 38L would be clear and that train 5128 would continue on track 4, as it usually did, and under this assumption he did not look for signal 38L, and permitted the speed of the train to become such that he was unable to stop in time to avoid accident when he discovered it to be in the stop position.

The direct cause of this accident was the failure of

of Engineman Barton properly to observe and obey signal indications. He approached signal 38L at a higher rate of speed than permitted him to bring his train to a stop before passing it when in the stop position.

When he found distant signal 5L in a caution position, Engineman Barton should have expected to find any one or all of the three succeeding home signals controlled by it in a stop position, and should have so governed the speed of his train that it could be stopped before passing any of the signals.

Engineman Barton was employed as an engineman June 1, 1881, and has practically a clear record.

An undesirable condition exists in the track layout at Atlantic, in that the crossover north of Atlantic station is handled and controlled from Neponset tower, when its location in relation to the other switches would seem to indicate that it belonged to Atlantic tower. It is out of sight of Atlantic tower and in plain view of Neponset tower, and makes possible a misunderstanding, as the Neponset towerman can make just such a move as resulted in this accident without the knowledge or consent of the towermen at Atlantic. To divide the control of a location, which, from an operating standpoint, should be considered a unit, between two towers, cannot be considered, in the light of present day practice, a desirable plan, and such conditions should not be allowed to exist when they can be remedied.