INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE WEST SHORE RAILROAD AT IONA ISLAND, N.Y., ON JULY 5, 1927.

August 4, 1927.

To the Commission:

On July 5, 1927, there was a rear-end collision between a passenger train of the New York, Ontario & Western Railroad and a freight train of the West Shore Railroad, on the tracks of the latter road, at Iona Island, N.Y., resulting in the death of four passengers and the injury of five passengers. This accident was investigated in conjunction with a representative of the Public Service Commission of New York.

Location and method of operation

This accident occurred on that part of the River Division of the West Shore Railroad extending between Cornwall, N.Y., and Weehawken, N.J., a distance of 52.27 miles, over which line trains of the West Shore and the New York, Ontario & Western railroads are regularly operated. 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 on a siding located between the main tracks known as the eastbound middle siding, at a point 290 feet east of the west switch. Approaching from the west the track is tangent for a distance of about 1,435 feet, then there is a 2° curve to the left about 750 feet in length, followed by a tangent about 325 feet in length, and then a slight reverse curve to the switch involved, about 150 feet distant, the track is tangent for a considerable distance beyond the switch. The grade is practically level.

The signals involved in this accident are signals 414 and 420, located 48 and 3,803 feet west of the switch respectively. Signal 414 is a two-arm, upper-quadrant signal, the upper arm governing main track movements and the lower arm governing movements from main line into the siding. With the upper arm in the horizontal position and the lower arm in the 45° position, it indicates that the switch is set for the siding, and authorizes a train to proceed at slow speed prepared to stop. When a train enters the west switch of the siding signal 414 cannot be cleared until the train is east of the derail and the switch

closed. Signal 420 is a one-arm, three-position, upper-quadrant semaphore; with the main track clear and the west switch to the east-bound middle siding open, signal 420 would be in its 45° position, which indication under the rules authorizes a train to proceed at reduced speed not exceeding one-half its maximum authorized speed at that point (not exceeding 30 miles per hour) prepared to stop at next signal. There is a high Ramapo switch-stand on the south side of the west switch of the eastbound middle siding and a Hayes derail on the north rail of the siding at a point 246½ feet east of the switch, this derail is pipe-connected with the switch. A view of signal 420 can be obtained from the engineman's side of an eastbound train for a distance of 1,856 feet; signal 414 can be seen for a distance of 937 feet by the engineman and for a distance of 1,625 feet across the inside of the curve by the fireman. Approaching the point of accident from the west the track is laid on a trestle about 1,300 feet in length and then on a fill about 7 feet in height; signal 414 is located on this fill about 225 feet east of theeastern end of the trestle.

The weather was clear at the time of the accident, which occurred at about 11.34 a.m.

Description

Eastbound West Shore freight train extra 3070, known as the Newburgh-Haverstraw switcher, consisted, from east to west, of 6 freight cars, NYC engine 3070, 18 freight cars and 4 unoccupied coaches, and was in charge of Conductor Havens and Engineman Carroll. This train left Newburgh, 15.37 miles west of Iona Island, at 8.13 a.m., worked at various points en route and stopped at the west switch of the eastbound middle siding at Iona Island at about 11.30 a.m. After the switch was lined for the siding the train proceeded in upon it and when the rear car reached a point about 390 feet east of the switch, at which time the speed of the train was estimated to have been about 6 or 8 miles per hour, it was struck by train No. 134.

Eastbound New York, Ontario & Western passenger train No. 134 consisted of one baggage car, one coach, one parlor car, two coaches and one combination passenger and baggage car, hauled by NYO&W engine 246, of the double-cab or Mother Hubbard type, and was in charge of Conductor Cross and Engineman Brandt. The first car was of steel-underframe construction while the remainder were of wooden construction. This train left Cornwall, 11.26 miles west of Iona Island, at 11.18 a.m., two minutes late, passed signal 420, which apparently was displaying either a stop or a proceed-at-reduced-speed indication, passed the flag-

man of extra 3070, passed signal 414, which was displaying a proceed-at-slow-speed-prepared-to-stop indication, entered the west switch of the siding and while traveling at a speed estimated to have been between 8 and 15 miles per hour collided with extra 3070.

The rear platform of the rear coach in extra 3070 was broken and bent upwards. The brake pipe was also broken, applying the air brakes in emergency. The rear end of the steel-underframe baggage car, the first car in train No. 124, telescoped the head end of the following wooden coach for a distance of 18 feet, all of the casualties occurred in the wooden coach. The coach was equipped with metal braces intended as a non-telescopic device. The only wheels derailed in train No. 124 were those of the rear truck of the baggage car, these wheels being raised upward with the body of the car.

Summary of evidence

Conductor Havens, of extra 3070, stated that after departing from Newburgh switching was performed at various points en route, the last point worked being Bear Mountain, 0.89 mile west of Iona Island. He said that his train arrived at Bear Mountain at 11.10 a.m., made one switching movement, took water and departed at 11.35 a.m., at which time train No. 124 was due to leave the next station in the rear where time is shown, namely, Highland Falls, 4.51 miles west of Bear Mountain. Approaching the eastbound middle siding at Iona Island, the west switch being only about 40 or 50 car lengths from Bear Mountain, he was riding on the engine and his two brakemen, Radcliffe and Cameron, were riding on the leading car ahead of the engine. One of the brakemen got off to open the switch and then got back on the leading car, after which Conductor Havens dropped off to close the switch when the train had pulled in far enough to clear the derail. As the last coach in his train passed the switch he noticed train No. 124 following closely, about 200 feet in the rear, traveling at a good rate of speed. He said that he attempted to close the switch directly in front of train No. 124 but was unable to do so, saying that the wheels of the cars in his train probably were over the derail at the time, and shortly afterwards the accident occurred. He said that train No. 124 passed him at a speed of about 12 or 15 miles per hour, with the brakes applied, apparently in emergency, and the speed being reduced considerably. Conductor Havens further stated that he had no knowledge of where Flagman Palmatier was other than that he was somewhere in the rear, as he had not seen him since leaving Newburgh, that there was not enough room for his train to get into clear at Bear Mountain and he figured that he had sufficient time to do the work at that point, then proceed to Iona Island and clear for train

No. 124; he knew his train was close on the time of train No. 124 as he had seen that train about four miles back after his train left Bear Mountain and he called the engineman's attention to it, although the distance from Bear Mountain was too short to get up much speed he thought that his train would be clear in ample time. Conductor Havens said that he was not depending on the block signals for protection but was depending upon his flagman who should have been affording protection from the time that extra 3070 left Bear Mountain. Conductor Havens also stated that he did not say anything to Engineman Carroll about whistling out the flagman nor did he remember whether the engineman whistled him out after knowing that they were on the time of train No. 124. When his train passed signal 420 he noticed the signal go to the stop position and he saw signal 414 displaying a stop indication as train No. 124 approached. The statements of Engineman Carroll, Fireman Post, and Brakemen Radcliffe and Cameron, were practically similar to those of Conductor Havens. Engineman Carroll also stated that he knew his train should have been in the clear on the eastbound middle siding at Iona Island when train No. 124 was due out of Highland Falls. According to statements of these employees signals 420 and 414 functioned properly, none of them recalled whether or not the flagman was called in at Bear Mountain.

Flagman Palmatier, of extra 3070, stated that he is 46 years of age, has been employed as a brakeman on the West Shore for 18 years and has been working on the Haverstraw switcher job for about three years. He said that he was called in at Bear Mountain, and as he could see a distance of two miles or more and did not see any sign of the following train he ran in and got on the rear end of the train just as it started to pull out. He stood on the rear platform looking back and saw train No. 124 approaching at the time his train started to head in at the west switch of the eastbound middle siding, he stayed on the rear platform until he saw Conductor Havens get off at the switch, and then he got off about opposite signal 414, walked back to the east end of the trestle and flagged train No. 124 with a red flag; his flag signals were acknowledged by two blasts of the whistle when train No. 124 was about halfway over the trestle. Train No. 124 passed him at a speed of about 15 or 20 miles per hour, he did not know whether the air brakes were applied. Flagman Palmatier said that he put down torpedoes when he was called in at Fort Montgomery, 0.93 miles west of Bear Mountain, also at Morgans middle, west of Fort Montgomery, but that he did not put down torpedoes when called in at Bear Mountain, as he did not consider it necessary in view of having previously put them down at two places. He said he knew that train No. 124 was due out of Highland Falls at the time he was called in, at 11.25 a.m. according to his watch, at Bear Mountain and according to the rules it was not proper for him to have returned to his

train, however, he figured that there was plenty of time for his train to get into clear on the eastbound middle siding at Iona Island and there was no sign of train No. 124 in sight, no smoke or anything, when extra 3070 left Bear Mountain. Flagman Palmatier also stated that signal 420 was displaying a stop indication all the time while he was out flagging west of Bear Mountain.

Engineman Brandt, of train No. 124, stated that he had been employed by the N.Y.,O.& W.R.R. as a fireman for about 15 years and as an engineman for about 5 years, he had been running train No. 124 for about 10 days. He had qualified for engine service on the West Shore road in August, 1928, and had been running or firing on that road continuously since that time. He said that on the morning of the accident his train did not encounter any torpedoes at Morgans middle or Fort Montgomery, nor at any point between Cornwall and the point of collision. He had received clear block signal indications until he approached signal 420; as he was going through the tunnel at Fort Montgomery, the east portal of which is about 1,800 feet west of signal 420, he said he saw the light of that signal and that it was displaying a yellow indication, but he could not see the arm of the signal at that time. Just before the engine reached the signal, however, a proceed indication was displayed, the arm of the signal going to the 90° position and the light changing to green. The speed of his train at this time was about 25 or 30 miles per hour. On approaching signal 414, at a speed of about 30 miles per hour, the upper arm of the signal was horizontal and the lower arm in the 45° position. He said he saw this signal when the engine was at about the middle of the trestle, he shut off steam and made a service air brake application; on reaching a point near the east end of the trestle he said that he saw Flagman Palmatier down at signal 414, giving a flag signal which he considered a slow speed signal, he said he thought that the flagman would have given a quicker signal had he meant to stop. He acknowledged the flagman's signal and said he left his brake valve in service position for the purpose of bringing his train to a stop to find out the reason for being flagged. He said he did not notice the position of the switch target and did not know the switch was open until he felt the engine head in, he did not remember seeing anyone at the switchstand. As his engine started into the siding he immediately moved the brake valve from service to emergency position, reversed the engine and opened the sanders, but it was too late to avert the accident. He estimated the speed of his train at the time of collision to have been about 8 miles per hour. Owing to the service air brake application he did not think that an emergency effect was obtained when he moved the brake valve to emergency position. The air brakes had been tested, and worked properly en route. There was nothing out of order about the engine to distract his attention. When he passed

the flagman the speed of his train had been reduced but very little and he estimated it to have been about 30 miles per hour. Engineman Brandt interpreted the indication displayed by signal 414 to mean to proceed at slow speed prepared to stop within range of vision after passing the signal, he thought probably the main track was obstructed at Iona Island station. When he first saw the rear end of extra 3070 the last car was about a car length from the derail, which gave him an unobstructed view of the main track for about one half mile from a point near the east end of the trestle, or nearly to the station. He did not know that the indication displayed meant that the switch was open, he said the meaning of this signal indication had never been explained to him. He thought he could have brought his train to a stop in time to have averted the accident had he made an emergency air brake application when he first saw signal 414, but at that time he saw no reason for taking such action, on account of seeing no obstruction ahead, and he did not want to unduly jar the passengers. He also said that had he been properly flagged and been given unmistakable warning that the switch was open he thought that he could have brought his train to a stop. He acknowledged that there are no provisions made in the book of rules distinguishing between a quick signal and a slow signal by a flagman, but that it was the customary way to flag. Engineman Brandt further stated that the rules require the engineman and fireman to call to each other the signal indications displayed, and that engines of the Mother Hubbard type are equipped with speaking tubes for that purpose; however, he and his fireman were not in the habit of doing so, and did not do so on this trip, as it requires too much time and takes his attention away from the track ahead as it is necessary for him to turn around and blow the whistle through the tube before talking. When on an engine of the single cab type, it is customary for him to call signal indications to the fireman.

Fireman Atwood, of train No. 134, stated this was his first trip on that train since the new time card became effective on June 26, 1927. He said no torpedoes were exploded on route between Cornwall and the point of accident. On reaching Morgans middle he looked ahead from his side of the engine and saw smoke, apparently from a train a considerable distance away. After passing through the tunnel at Fort Montgomery he started to work on the fire and he did not see the indication displayed by signal 430. When about in the middle of the trestle he looked ahead and saw extra 3070 but thought that it was in the clear on the eastbound middle siding, then he saw signal 414 displaying a slow speed indication and the flagman waving stop signals, which were acknowledged and an air brake application made. As far as he could see the main track was clear, but he could not see the switch target as it was behind the signal pole. He thought that his train was

going down the main track and the first he knew of anything wrong was when the engine headed in at the west switch, the train was nearly stopped before the collision occurred. He said that he had not had occasion for a long time to enter a siding where a signal of this type is installed, and he mistook signal 414 for a tonnage signal He also said he saw the signal given by Flagman Palmatier, and he considered it a stop signal.

The first intimation other members of the crew of train No. 124 had of anything wrong was when the service air brake application was made, at about which time the flag was answered, after which the air brakes were applied in emergency and then the collision occurred. They did not hear any torpedoes exploded between Cornwall and the point of collision.

Assistant Superintendent Relyea, of the West Shore Railroad, River Division, stated that there are other signals of the same type as signal 414 on this division, they are generally located on ascending grades and are known as tonnage or grade signals; their purpose is to avoid stopping trains on grades but to allow the train to proceed into the block prepared to stop short of another train or obstruction. He also stated that the primary object of the lower arm of signal 414 was to permit a freight train to pull into the siding at slow speed without coming to a full stop at the signal, some years ago, the trestle watchman at Iona Island opened the switch for eastbound freight trains to pull into the siding but that practice has been discontinued and the trainmen now operate it for their own trains. While this is the only signal of that type located on level grade on this division, and the switch happens to be quite close to the signal he considered it safe provided the signal indication was properly observed. He said that he qualified Engineman Brandt as an engineman to operate over the River Division on August 19, 1926, and he had been requalified in June, 1927. The employees of the N.Y.,O.& W.R.R. in addition to qualifying on their own road are subject to the same examinations as the West Shore R.R. employees are, for the purpose of making certain that employees of the N.Y., O.& W.R.R. are competent to operate trains on the West Shore Railroad. He said that in qualifying enginemen it was not his practice to pick out a signal at any particular location, but the several signal indications, and their meaning are fully gone into. If absent from the division for 45 days enginemen are requalified, and then any changes in types of signals or signal locations are gone over with them.

Signal Engineer Elliott stated that signal 414 is what is called a two-arm automatic signal. The top arm is controlled exactly the same as any other automatic signal; the bottom arm is used for either of two purposes, namely, first, on a grade where there would be difficulty in start-

ing after stopping for a signal the second arm is put on in place of the marker light and the controls are so arranged that it will go to the 45° position if the block in advance of the signal is occupied, thus permitting a train closely following another train to proceed at low speed, and secondly, where it is desired to permit a freight train to enter a siding without coming to a stop for the signal the second arm is provided and the controls so arranged that when the switch is set for the siding it will move to the 45° position, giving a slow-speed indication. In the second instance it is not material, so far as the engineman is concerned, whether the arm giving the slow-speed indication is operated manually, as is done in many locations, or automatically as was the case at Iona Island. He stated there was nothing unusual about this signal indication as it is used at practically all sidings where it is likely there may be a man to set the switch for a train to go into the siding, and it is similar to the signal indications for taking siding at interlockings and other points. He said this indication might have been used at Iona Island for the passenger train in case it was desired to have that train use the siding for the purpose of running around a train or obstruction on the main track, but in this instance, as the siding was already occupied by the freight train, it should have been apparent to Engineman Brandt that it was not intended for him to enter the siding and he should have brought his train to a stop before passing the signal. The signals involved are of the normal-danger type, clearing only upon the approach of a train, provided the track ahead is clear, and Mr. Elliott stated that with the lower arm of signal 414 in position for a movement to be made to the siding it was practically impossible for signal 420 to go to the 90-degree or clear position as power to operate it from the 45° to the 90° position would be cut off. After the accident both of these signals were examined, thoroughly tested, and kept under close observation for 72 hours and were found to be in proper and good operating condition. Signal Engineer Elliott was asked whether automatic train control would have prevented this accident and he replied that it would have done so provided the engineer did not forestall its operation.

Conclusions

This accident was caused primarily by the failure of Flagman Palmatier, of extra 3070, to afford proper flag protection to the rear of his train, and the failure of Engineman Brandt, of train No. 124, properly to observe and obey signal indications. A contributing cause was the failure of Conductor Havens and Engineman Carroll, of extra 3070, to clear the main track for a following superior train and to provide protection as required by the rules.

Under the rules, when a train is moving or stops under circumstances in which it may be overtaken by another train, the flagman must take such action as is necessary to insure full protection. Unless otherwise provided, an inferior train must clear the time of a superior train, in the same direction, not less than five minutes; but must be clear at the time a first-class train, in the same direction, is due to leave the next station in the rear where time is shown, also, in case of failure to clear the main track in the time specified, it must be protected as required in the flagging rule.

Flagman Palmatier, of extra 3070, admitted that he was aware that train No. 134 was due out of Highland Falls, 4.51 miles west of Bear Mountain, at the time he was called in at the latter station, and that according to the rules it was not proper for him to have returned to the train, but instead that he should have remained at Bear Mountain and afforded proper flag protection. Yet he returned to his train without putting down torpedoes, his statement that he had put down torpedoes at two other near-by points is contradicted by other evidence, and even when he knew that train No. 134 was closely approaching his train at Iona Island he did not promptly and diligently perform his paramount duty of flagging. He was an experienced employee, and had he complied with the flagging rules this accident probably would not have occurred.

While Engineman Brandt, of train No. 134, stated that signal 420 was displaying a caution indication when he first saw it while coming through the tunnel and that it then went to clear just before his engine reached it, he undoubtedly is mistaken, that signal was observed to be functioning properly shortly before his train approached it, tests made subsequent to the accident disclosed the signal apparatus to be in proper working order and functioning properly, and under these circumstances it could not have cleared for his train. It is possible, however, that the signal indication changed from stop to caution just before his train reached it. He did not fail to see the indication of signal 414, or the flagman's signal as he approached Iona Island, but there was no justification for his assumption that the slow-speed indication at signal 414 referred to some condition farther down the track, or that the signals of Flagman Palmatier were intended for slow speed signals. He admitted that he failed to see the switch target, which would have given him earlier definite information that the switch was set for the siding. Had he been maintaining a proper lookout ahead and controlled the speed of his train in accordance with signal indications, the switch target included, the accident probably would have been averted.

Conductor Havens and Engineman Carroll, of extra 3070, were fully aware that they had not cleared the main

track for train No. 124 as required by the rules, and that they were occupying the main track on the time of that train, yet they made no effort to see to it that proper protection was afforded. They had ample time at their disposal to have provided proper protection, and had they done so the accident probably would have been prevented.

The superiority of steel equipment as compared with wooden cars in passenger trains has often been pointed out in prior publications of the Commission. Had the equipment in train No. 124 been of all-steel construction probably no fatalities would have occurred.

All of the employees involved were experienced men; at the time of the accident 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.