No. 182.
February 28, 1914.

In re: Investigation of accident on the Pennsylvania Railroad near Conemaugh, Pa., on January 29, 1914.

On January 29, 1914, there was a rear-end collision on the Pennsylvania Railroad near Conemaugh, Pa., resulting in the death of three employees and the injury of three passengers and one employee. The trains involved were regular westbound passenger train No. 19 and westbound freight train extra 2957.

After investigation of this accident and the circumstances connected therewith the Chief Inspector of Safety Appliances reports as follows:

The Pittsburgh division of the Pennsylvania Railroad, upon which this accident occurred, extends between Altoona and Pittsburgh, Penna., a distance of 113.6 miles. On that portion of the division where this accident occurred it is a four-track road equipped with automatic block signals. The four main tracks, extending east and west, are numbered and used as follows: from south to north the tracks are numbered 1, 2, 3, and 4, tracks 1 and 2 being for eastbound freight and passenger trains respectively, and tracks 3 and 4 for westbound passenger and freight trains respectively. Thus, the two inside tracks, Nos. 2 and 3, are passenger tracks for trains in opposite directions, and the outside tracks, Nos. 1 and 4, are freight tracks for trains in opposite directions. Owing to the requirements of traffic it is often necessary for freight trains to use the passenger tracks and vice versa. Trains are, therefore, frequently crossed over from one track to another, these cross over movements being usually made at interlocking plants, operated by signalmen from switch towers.

On the date of the collision train No. 19 left Altoona, the eastern terminal of the Pittsburgh division, at 4:34 a. m., two minutes late. It was hauled by engines Nos. 1184 and 2428, and consisted of eleven cars, namely, 1 mail car, 1 combination passenger and baggage car, 1 dining car, and 8 Pullman sleeping cars all of steel construction. The train was in charge of conductor Smith and enginemen McNally and Fer or, engineman McNally being on the leading engine, No. 1184, in charge of the train brakes. Leaving Altoona, a third engine was coupled on a rear of the train to assist in hauling it to the summit of a grade which extends westward from Altoona to Gallitzin, a distance of about 18 miles. At Gallitzin the helper engine was cut out, and the train proceeded westward from that point at 4:58 a. m., about 4 minutes late. A running test of the brakes was made after the train left Gallitzin, and they were found to be in proper working condition. The train had proceeded a distance of about 21.8 miles west from Gallitzin when, at 5:22 a. m., it collided with the rear end of extra 2957, at a point about 600 feet east of AO signal tower, or 200 feet east of signal bridge 2710. At the time of the accident extra 2957 was making a cross-over movement from track No. 3 to track No. 4, and was moving at a speed of not more than 2 or 3 miles per hour. The speed of train No. 19 was 35

or 40 miles per hour. A dense fog prevailed at the time, making it impossible to distinguish signal lights more than 3 or 4 car lengths away.

The force of the collision drove extra 2957 ahead about 700 feet, and entirely demolished caboose 485,219, killing the conductor of the train and two of the three brakeman, who were riding in the caboose at the time, and seriously injuring the third brakeman. The leading engine of train No. 19 was partially derailed and the second engine was wholly derailed. None of the cars in train No. 19 suffered any serious damage, and but three passengers were slightly injured.

Extra 2957, consisting of engine No. 2957 and caboose No. 485,219, left Altoona at 2:00 a. m. on the date of the collision, in charge of conductor Richey and engineman Wingart. It acted as a helper to freight train extra 3048 from Altoona to Gallitzin, and followed extra 3048 from Gallitzin westward, using track No. 3, which is the running track for westbound passenger trains.

At AO block station, 21.8 miles west of Gallitzin, there is a tower from which interlocking switches used for cross-over movements at that place are controlled. The home signals governing these cross-over movements on the westbound tracks are located on signal bridge No. 2710, about 400 feet east of AO tower, and the distant signals are on signal bridge No. 2703, which is located 4348 feet east of signal bridge No. 2710. Extra 2957 passed SO block station, 5.1 miles east of AO tower, at 5:02 a. m. When this train reached signal bridge 2695, about 2½ miles east of bridge 2710, the signal governing movements on No. 3 track was found in the caution position. The signal on bridge No. 2695, about 4500 feet farther west, was also in the caution position. On account of the dense fog, engineman Wingart was unable to see this signal a distance of more than 2 or 3 car lengths. When within about 30 car lengths of signal bridge 2703, the train was stopped by a burning fusee. The train proceeded cautiously from this point and upon arrival at bridge 2703 the signal was found in the stop position. After stopping at this point the train proceeded with caution, and upon arriving at a point where the signals on bridge 2710 could be observed. They were found to indicate that the switches were set for the cross-over movement to track No. 4. It was while the train was moving slowly ahead in making this cross-over movement that the collision occurred.

From SO block station westward the track follows the Conemaugh River, and has many curves. Approaching the point of the accident from the east there is a 6 degree curve about 1590 feet long, upon which there is a speed limit of 40 miles per hour. Proceeding westward from this curve there is a tangent about 2,000 feet long at about the center of which AO tower is located. Sign 1 bridge 2710

is about 600 feet from the east end of this tangent. The grade at this point is .85 per cent, descending westward.

Train No. 19 passed SO block station at 5:16 a. m., fourteen minutes behind extra 2957. No. 19 was then two minutes late. The schedule time of this train between SO and AO towers is approximately 37.5 miles per hour. Notwithstanding the dense fog, however, the distance from SO tower to the point of collision, 8.1 miles, was covered in 6 minutes, or at an average speed of 80.7 miles per hour. With extra 2957 at the point where the collision occurred with train No. 19 should have received a caution signal at bridge 2695, a distance of 6868 feet east of bridge 2710 and a danger signal at bridge 2703, about 4150 feet from the point of collision.

The signal system between AO and SO towers has been in use since September 20, 1913. The signals are of the normal clear semaphore type operating in the upper quadrant, and have three positions, namely, clear, caution, and danger. The night indications are red (danger), green (caution), and white (clear). No overlap is used. Both track and signal circuits are operated by alternating current. An examination of these signals disclosed that they were installed in a first-class manner and maintained in excellent condition. It was stated by Mr. Pollock, supervisor of signals, that these signals had made approximately 1,655,080 movements since their installation, with no clear failures and but 13 failures on the side of safety.

Engineman McNally, who ran the leading engine of train No. 19, stated that from Gallitzin to the point of collision he got nothing but clear signals, and they were so called by him and his fireman. The distant signal for AO tower on bridge 2703 he found in the clear position. He called to his fireman, "Did you get that?", and the fireman replied, "No". McNally then said "I did, it was white". Approaching AO tower he saw the red lights on the rear end of extra 2957 before the home signal on bridge 2710 came into view; he at once applied the brake in emergency, and the collision occurred immediately thereafter. Engineman McNally did not go back after the collision to ascertain the position of the signals in the rear. He was positive in his statement that all the signals were white; neither did he receive any warning of the position of extra 2957 by fusee, torpedoes, or flagman. He stated that he was running 33 to 35 miles per hour at the time of the accident, and that the signals could be distinguished a distance of 3 or 4 car lengths only.

Fireman Schidel, of No. 19, was unable to say whether or not he saw or called any signals between SO tower and the point of the collision. He said, however, that if he did see any signals they were white. He stated positively that he did not see the distant signal on bridge 2703; that engineman McNally asked him "Did you get that?" and he replied, "No".

Engineman Ferron and Fireman McCann of engine 2428 both stated that they did not see any of the signals between 60 and the point of the accident. They looked for the signals, but were unable to see them on account of the fog and smoke.

Conductor Smith and flagman Wilson of train No. 19 were unable to say anything about the signal indications. Neither of them noted the position of the signals after the accident. After the accident flagman Wilson went back to within a short distance of signal bridge 2703, but did not get near enough to the bridge to see the signal.

Brakeman Todd of extra 2957 the only surviving member of the crew of that train, stated that to his knowledge no steps were taken by conductor Richey to protect his train as required by rule No. 99.

Engineman Wingart of extra 2957 stated that he received clear signals until his train reached signal bridge 2685, just west of Mineral Point. At this place he found the signal in the caution position. He also found the next signal on bridge 2695 in the caution position, and was unable to see this signal for a greater distance than about 3 or 4 car lengths. When his train was within about 30 car lengths of signal bridge 2703 he found a fusee burning, for which he came to a stop and again proceeded under control. The signal on bridge No. 2703 was in the stop position, he brought his train to a stop and then proceeded under control. The home signal for AO tower on bridge 2710 was set to allow his train to cross over from track 3 to track 4; he was making this movement when the collision occurred. He did not know whether any member of his train crew took any steps to protect the rear of his train while this movement was made.

Engineman Black of westbound extra 2968, running on track 4, stated that train No. 19 passed his train at a point about 1400 feet east of signal bridge 2695, and that when he reached bridge 2695 the signal governing track 3 was in the caution position. The signal governing track 3 xxx on bridge 2695 was also in the caution position, while the next signal governing track 3 on bridge 2703 showed red, or stop. Shortly after passing this signal he was stopped by the flagman of train No. 19, who informed him of the accident. He stated that the fog was so dense that he could not see the signals until within 2 or 3 car lengths of them. In explanation of the caution signal on bridge 2685 just west of Mineral Point station, engineman Black stated that owing to the greater speed at which train No. 19 was running it would have been possible for that train to have cleared the block ahead before his train approached signal bridge No. 2685 close enough to enable him to observe the signal governing track No. 3.

Fireman Youler of extra 2968, stated that he saw the signal governing track 3 on bridge 2685 before train No. 19 reached it and it was green. He also saw it after No. 19 passed, and it was then red. In all other respects his statement agrees with the statement

of engineman Black.

Towerman Gould and Leverman Campbell who were on duty at AO tower, stated that the switches and signals were lined up properly for extra 2957 to make the cross-over when the collision occurred, and that they had been in the position since extra 3048 crossed over, about 20 minutes earlier. They stated that at the time of the accident the fog was so dense they could not see one-half way across the four tracks in front of their tower.

The primary cause of this accident was the failure of engineman McNally to observe and obey the indications of the block signals on bridges 2695 and 2703. Although this engineman claimed that the two signals east of the accident showed white as he passed them, which would mean that they were not working properly, the fact remains that they were working properly about 20 minutes before and a few minutes after he passed them, as stated by three engine crews. They also worked properly when examined shortly after the accident. The question engineman McNally asked his fireman immediately after passing the distant signal on bridge 2703 raises at once a doubt that McNally saw the signal himself. If he did, why did he not call the signal as usual instead of asking the fireman if he got it? Engineman McNally also operated his train at an unsafe rate of speed, considering the existing weather conditions.

Contributing materially to the accident was the failure of conductor Richey of extra 2957 to protect his train as required by rule 99. For this failure there can be no excuse, especially in view of the unfavorable weather conditions prevailing at the time. Had conductor Richey taken the necessary precaution to protect the rear of his train it is probable that the collision would have been averted, even though engineman McNally failed to observe and obey the automatic block signal indications.

With respect to the primary cause, this accident is a duplicate of the collision which occurred on the Pennsylvania Railroad at Tyrone, Penna., on July 30, 1913. Both of these collisions occurred on track that is protected by automatic block signals of the most modern type, recently installed as an improvement over signals that had previously been used. In neither case does there appear to have been any question that the signals were in good condition and that they operated properly, yet they were inadequate to prevent these collisions, thus affording cumulative evidence of need for the use of automatic appliances which will assume control of a train and bring it to a stop whenever an engineman fails to obey the indication of a fixed signal in the danger position.

As has been pointed out in previous reports, particularly in the report on the accident at Wallingford, Conn., on the New York, New Haven & Hartford railroad, it is a dangerous practice to permit the operation of trains at high speed when fog is so dense that signals can be seen but a short distance. Definite and positive

instructions should be issued and enforced by railroad operating officials requiring a reduction of speed during foggy and stormy weather.

Engineman McNally has had about 13 years experience as a freight engineman, principally on through trains. He was promoted to passenger engineman January 11, 1911, since which time he has run many fast trains, and No. 19 on several occasions. His discipline record is good.

Conductor Richey had had 2 years experience as a brakeman, 3 years as flagman, and 9 years as conductor. His record shows that he had been disciplined on numerous occasions mostly for minor offenses. During 1910 he was disciplined twice for failure to know that the rear of his train was properly protected.

None of the employees involved were working in violation of the hours of service law.