COMMISSIONER

IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE BALTIMORE & OHIO RAILROAD AT LAUGHLIN JUNCTION NEAR PITTSBURGH, PA., ON FEBRUARY 22, 1919.

March 26, 1919.

On February 22, 1919, there was a side collision between a passenger train and a light engine on the Baltimore & Ohio Railroad at Laughlin Junction near Pittsburgh, Pa., which resulted in the death of 8 passengers and 1 employee and the injury of 81 passengers and 6 employees. After investigation of this accident, the Chief of the Bureau of Safety submits the following report.

The River Subdivision of the Pittsburgh Division is a double-track line, train movements being governed by time table, train orders, and an automatic block signal system. The double-track line from New Castle Junction comes in from the north and makes a "Y" connection at Laughlin Junction with the tracks of the River Subdivision. The western leg of the "Y" connects at a point about 800 feet west of the interlocking tower located at that point, while the eastern leg of the "Y" connects at a point just east of the tower. About 300 feet east of the switch points at the western leg of the "Y" is a semi-automatic signal, No. 36, governing westbound movements on the main line. At the point where the eastbound track of the New Castle Branch crosses the westbound track of the River Subdivision, there is a No. 7 movable point crossing. Approaching this point from the west, there is a 1-degree curve to the left, the track being tangent on either side. The view of signals is unobscured. At the time of the accident it was

raining.

Eastbound passenger train No. 166, en route from Pittsburgh to Versailles, Pa., consisted of 1 combination baggage and smoking car and 3 coaches, hauled by engine 860, and was in charge of Conductor Zearfoss and Engineman Berg. It left Pittsburgh at 8.51 p.m. and at about 8.58 p.m., while opposite the movable point crossing, the left side of the train was struck by the tender of engine 2034, which had been running backward on the westbound track. The speed of train No. 166 was about 25 miles an hour.

Westbound extra 2034 consisted of engine 2034, in charge of Engineman Donahue, and was backing up on the westbound track toward the passenger station at Pittsburgh for the purpose of moving a train out of the station. It entered upon the westbound track at Wheeling Junction, 2.1 miles east of Laughlin Junction, leaving Wheeling Junction at 8.46 p.m. It arrived at Laughlin Junction at 8.58 p.m. and instead of continuing on the westbound track, was diverted toward the eastbound track at the movable point crossing, the tender colliding with the side of train No. 166. The speed of engine 2034 is believed to have been about 5 miles an hour.

The tender struck train No. 166 at a point 34 feet from the east end of the first car, breaking some of the windows. The vestibules at the rear of this car and at the forward end of the first coach were then encountered, the cistern of the tender being pulled nearly 3 feet from its foundation and the plates bent upward and outward. The windows and window posts of the

next two cars were torn out completely. None of the wheels in either train was derailed. The bent tender plates of engine 2034 extended outward from the side of the cistern foundation a distance of 7 feet 6 inches.

At about 3.45 p.m. on the day of the accident, engine 5032 was derailed while en route from the eastbound main track to the western leg of the "Y", and as a result of this derailment, both of the movable points of the crossing were damaged and the connecting rods bent and broken. Engine 5032 was rerailed at about 7.05 p.m., 2 new movable points were put in place and spiked in normal position, which is for movements on the westbound main track of the River Subdivision. At 8.15 p.m., Track Supervisor Donahue reported that the westbound track was safe for the movement of trains at a speed of 10 miles an hour, and a slow order was issued accordingly at 8.18 p.m. The balance of the work on the movable points was turned over to the Signal Department, W. D. Carroll, Division Signal Supervisor, in charge, this being done for the reason that some of the signal mechanism was slightly damaged.

After the slow order was issued, the track was passed over by westbound passenger train No. 65 at 8.34 p.m. and by engine 5026 at 8.41 p.m. After extra 5026 had passed, Signal Maintainer Christian ordered the spikes to be drawn from the movable points so that the lugs used in connecting the bridle rods could be bolted to the points. The spikes had been removed, the movable points moved over, and the men were at work when en-

gine 2034 approached and was diverted toward the eastbound track by reason of the points being open.

Engineman Donahue, in charge of engine 2034, stated that at Wheeling Junction he was given an order to run at a speed of 10 miles an hour over the west leg of the "Y" at Laughlin Junction. On arrival at Laughlin Junction, he heard someone, he thought it was the voice of Train Master Grow, call out: "Ten miles an hour over the west leg of the 'Y'." The fireman repeated the message to him. He saw some men working on the track, and when about one or two engine lengths beyond the tower, he saw signal No. 36 change from stop to caution and immediately to clear. After the warning given by the train master, he reduced speed to 5 miles an hour. The fireman was on the left sideoof the engine in the gangway and suddenly called to him. He at once applied the brakes, the collision occurring at about the same time. He did not know how the fireman realized the danger before he himself did, unless the men on the ground had given a signal to stop. He stated that there was a white lantern on the rear of his tender but that neither this nor the headlight on train 166 obscured his vision in any way. Engineman Donahue also said that he was standing up in the cab looking out of the window, but saw no stop signals of any kind, and that the engine bell was being rung by the automatic bell ringer.

Fireman Johnson stated that at the tower at Laughlin Junction someone said to go at 10 miles an hour over the west leg of the "Y". He thought it was Train Master Grow and told the engineman what had been said. After passing the tower, he

saw signal No. 36 in the clear position. When within a few feet of the movable points, he heard someone standing at the crossover call out: "That will do," at the same time giving a stop signal. He told the engineman to stop, and the latter at once applied the air brakes. The speed of his engine was about 5 miles an hour. Fireman Johnson also stated that the stop signal was the only light he saw around the switches.

Engineman Berg of train No. 166 stated that the distant signal approaching Laughlin Junction was in the caution position and he shut off steam, drifted around the curve, and applied the brakes in order to stop at the next signal. The speed was reduced to about 8 or 10 miles an hour, and he then saw both the upper and lower signal blades in the stop position. The signal changed to caution and then to clear, and he began to work steam and had increased the speed to 20 or 25 miles an hour when he heard a crash and the fireman called to him. He applied the air brakes in emergency, there was a second crash, and the train came to a stop. He stated that he had seen the light engine backing up on the westbound track a few car lengths from him but did not pay any particular attention to it and did not know how fast it was traveling.

Fireman Kalfas of train No. 166 stated that after the signal approaching Laughlin Junction changed to clear, the engineman began to work steam and increase the speed. The fireman stated that he was sitting on his seat on the left side of the cab and saw the light engine backing up on the westbound track. He did not notice any workmen around the switches. He looked

back, saw the tender of the light engine colliding with the cars of his train and called to the engineman, who at once applied the air brakes.

General Supervisor Donahue stated that he arrived at the scene of the derailment of engine 5032 shortly after its occurrence, looked around to ascertain its cause, arranged for what material was necessary to make repairs, and with Train Master Grow went to the telegraph office to make out an accident report. He told Train Master Grow the track work would be done by 8.30 p.m. and the interlocking employees would complete their work by 11.30 p.m. He told Track Supervisor McGregor to look after the track. In the meantime, Train Master Grow was advised that another engine had been derailed at Glenwood and he at once went to that point.

Terminal Train Master Grow stated that he arrived at Laughlin Junction at 4.05 p.m. After engine 5032 had been rerailed, he found the movable points damaged and the connections disarranged. At 8.17 p.m. he was advised by the general supervisor that the westbound track was ready for service with a speed restriction of 10 miles an hour, but that trains could not run to or from the "Y" on the westbound track. Accordingly he notified the train dispatcher to issue the necessary orders restricting speed. He then waited with the signal supervisor and operator until sufficient time had elapsed for the slow order to be issued by the dispatcher to all interested trains, the arrangement being that the block signal would not be cleared for any train until it had reduced to a speed of 10 miles an hour.

In addition to this, he called to each engine crew not to exceed that speed. When engine 2034 approached, the signal was in the stop position and from the platform outside of the tower he called to the engine crew from the fireman's side not to exceed a speed of 10 miles an hour. At that time, the speed of the engine was not over 8 or 10 miles an hour, and it was then further reduced. After getting an acknowledgment of his message from the crew, he went into the tower and on looking out saw signal No. 36 displaying a caution indication. The first he knew of the accident was when the operator remarked: "What has happened now," the latter having seen train No. 166 stop. Train Master Grow said that he was not looking out of the tower all of the time and did not see any stop signals given to engine 2034; neither did he hear Engineman Donahue sound the whistle. He knew that the interlocking mechanism was out of order, but did not know that the spikes would have to be withdrawn from the movable points or that the track would be made unsafe while the mechanism was being repaired, neither did he know that signal No. 36 could be operated with the movable points out of place. At no time did he make any inspection of the track, and at no time did anyone say anything to him about drawing the spikes from the movable points.

Track Supervisor McGregor stated that he arrived at Laughlin Junction at 6.20 p.m. but was unable to make any repairs to the track until engine 5032 had been rerailed, which was at 7.06 p.m. The repair work was completed at about 8.15 p.m., the movable points being replaced under his direction, lined up

and spiked for movements on the westbound main track of the River Subdivision. The spiking of the points was necessary on account of having to disconnect all of the bridle rods and foot rods when the damaged points were removed. After the track work had been completed, he sent the trackmen home, went to the tower and said the track was all right and left on a light engine at 8.30 p.m. He stated that there were 5 signalmen on the ground and he expected that they would remove the spikes from the movable points in order to connect them and that they would report when the movable points were ready for service. He considered them competent to attend to this.

Signal Supervisor Carroll stated that upon arriving at Laughlin Junction at about 4.30 p.m. he found the connecting rods of the movable points completely torn out, as well as the connecting rods to the switch instruments. Some of the connecting rods had to be replaced, while others could be straightened. The cranks in the machine which operates the switch were also bent. No repairs to the interlocking apparatus could be made until after engine 5032 had been rerailed. The maintenance of way people had issued a 10-miles-an-hour speed restriction, and at about 8.00 p.m. he told the operator he could let westbound trains pass at low speed, but that in order to protect the men working on the switch, to let approaching trains stop or almost stop at the signal before clearing it. He then notified his men that westbound trains would be moved over the track at low speed and that they would protect themselves while working on the track.

He did not think he issued any instructions about drawing the spikes from the movable points for the purpose of completing the repairs, and he said that he had not intended that they should be in any but their normal position, no heavy repairs to be made until various important passenger trains had passed. He did not, however, give any definite instructions to his men as to when this would be done. At the time engine 2034 approached, he was within a few feet of the movable points talking with the signalmen. As he turned and started back to the tower, he saw the westbound home signal at caution and called to the repairmen to look out for a light engine. He saw this engine about opposite the tower, and the repairmen called to stop it. The engine was then 50 or 60 feet west of the tower, and at about that time the signal returned to the stop position and he thought one of the men had opened the circuit or that the towerman had thrown it. He ran toward the engine to flag it, and at about that time the engineman sounded two short blasts on the whistle. He looked back, saw someone at the frog waving a lantern, and supposed that they were answering the engineman's signal. The engine was then close to the automatic signal and when he saw it was going to pass the signal he swung his lantern two or three times, after which it went out. He continued toward the engine and called to the crew to stop. He saw someone jump to the other side of the engine and at about that time it went by him. Supervisor Carroll estimated that he was 200 feet west of the signal when he began to give stop signals and about 100 feet from the signal when the engine passed him, moving at a speed of 5 or 10 miles an

hour. After the accident, he tried to find out from his men how it occurred, but could get nothing definite. His own opinion was that the spikes were drawn and the points moved over, that the men had the switch instrument set to hold the signal at stop, and while working at the switch had kicked the instrument accidentally, thus enabling the towerman to clear the signal. Supervisor Carroll further stated that he did not know when the movable points were opened, saying that when he went there to talk with the repairmen the points were in their proper position. Supervisor Carroll afterwards modified his original statement by saying that when he went to talk with the men at the switch he thought the points were closed, but that men were bent over them at work. He also changed his previous statement by saying that he was not positive the whistle he heard came from engine 2054. He afterwards estimated the speed to have been 7 or 8 miles an hour. He did not hear any orders given to draw the spikes, and also stated that he had not issued instructions that they were not to be drawn.

Signal Maintainer Christian stated that he was instructed by Supervisor Carroll to apply the connecting rods. When ready to connect one of the rods, no trains being due, he ordered Repairman Foose to draw the spikes, having already opened the circuit so as to hold the westbound signal in the stop position. He heard Supervisor Carroll say a light engine was coming, saw it east of the tower and said to stop it. He then tried to get out the rods and bolts. One of the helpers said the light engine was still coming, and he again said to stop it.

He then tried to get the points back to their normal position but was unable to do so before he had to jump from the track. Maintainer Christian stated that in pulling these spikes the protection he was depending upon was the arrangement with the operator for bringing trains to a stop before proceeding across the switches, together with the switch instrument opening the circuit. Every time a westbound train approached, he would open the circuit, thus holding the signal at stop, and would not close the circuit until the train had nearly reached the signal and everything at the switch was in condition for use. He did not know whether the circuit was open or closed when the light engine approached, but said he had previously fixed it so that the signal would show a stop indication. He himself was busy trying to get the points lined up, but said he saw Repairman Spangler flagging the light engine. He did not see Spangler going toward the engine a second time, neither did he hear the engineman acknowledge the stop signal in any way. He did not observe the indication of the signal and did not know how it could have indicated clear unless the circuit had been closed accidentally, but he said that afterwards he thought possibly he might in some way have touched it himself. He did not know of anyone examining the signal immediately after the accident.

H. T. Foose, signal repairman helper, stated that Maintainer Christian instructed Repairman Spangler to draw the spikes. The latter drew two of them and he drew the other two. Supervisor Carroll was present when the spikes were drawn, about 8 or 10 minutes previous to the accident. He thought Mr.

Carroll was the first he see the light engine coming, it then being only 30 feet away. He estimated its speed at 10 miles an hour and said Carroll ran up the track on the left side to flag it, while he himself got off the track. There was no time to give stop signals, but everyone called to the engine crew to stop. He further stated that just previous to this, Carroll had remarked that he thought there was an engine coming, but the engine stopped for a few minutes near the tower. He said he saw Repairman Spangler giving signals with a lantern but did not see Carroll giving any signals and said that he did not hear any whistle or bell. There was no time to make any attempt to restore the points to their original position. He also stated that Maintainer Christian had sent one of the men named Baker to the tower and told him to stay there, and he thought he was flagging. He did not know whether or not the circuit had been opened in order to hold the signal at stop.

P. M. Spangler, signal repairman, stated that the spikes were drawn only a couple of minutes before the light engine approached. He did not know who authorized it. He thought Supervisor Carroll was the first to see the light engine approaching and saw someone giving stop signals with a lantern, the engine at this time being within 50 or 60 feet of the automatic signal. He himself began to give stop signals, and he saw the automatic signal go from the clear to the stop position. The engine was brought to a stop about 10 feet from the signal, and he went on with his work. About 2 minutes afterward, someone saw the light engine was coming and began to give stop signals. He said he

did not know who drew the spikes or what protection was afforded. He did not hear the engineman sound the whistle.

C. H. Trichtinger, signal repairman, was at a shop near the tower when engine 2034 passed. He said that when he looked at the signal it was in the caution position, but that he did not observe it all of the time. After engine 2034 had passed the block, he saw some one, he thought it was Repairman Spangler, swinging a white lantern across the track.

H. J. Baker, signal repairman helper, stated that he had no instructions to do any flagging on account of the men working at the switches and that at the time of the second accident he was at a point farther east, attending to some lights, having been sent there by Mr. Carroll about 10 minutes previously. His statements as to what happened at the scene of the accident brought out nothing new.

J. J. Joyce, signal repairman off duty, stated that he was in the tower for about 20 minutes preceding the second accident. He did not hear Supervisor Carroll give any instructions about protection while the work was being done at the switches. After engine 2034 passed, the signal was red. He called Train Master Grow's attention to it and later went out of the tower. He did not know whether or not the signal remained at stop until after engine 2034 passed it, as he did not continue to watch it. He did not know whether or not engine 2034 stopped and did not notice any stop signals being given.

Operator Jenks, on duty at Laughlin Junction tower, stated that nothing was said to him about the movable points

being out of order, but he understood they were in that condition. The track was pronounced safe for a speed of 10 miles an hour, and he was notified by the dispatcher that there was a restriction of that kind issued. No arrangement was made with him by anyone regarding the handling of the signal governing westbound movements. In answer to a question as to whether or not anyone had given him instructions to hold the home signal in such a way as to absolutely insure trains approaching it at very low speed, he said that the block was held for only one particular engine on account of that engine having left the preceding station before the slow order was issued. When the track was pronounced safe for a speed of 10 miles an hour, he assumed that it had been temporarily repaired and was not in first-class shape for high speed. He did not inquire as to the condition of the switch. Other trains passed before engine 2034 approached and were given a clear signal. Engine 2034 passed the tower at a speed of 4 to 6 miles an hour. He did not see it stop, but said that its speed was not increased between the tower and the home signal. The signal was red when the engine passed the tower, and he pulled the lever to place the signal in the clear position. He looked at the indicator after he did this, and the indicator showed the signal to be in the clear position. He did not observe the signal itself and did not know whether or not it returned to the stop position after this. He also stated that he did not see hand signals of any kind given to the crew of the light engine. Rule No. 625 of the rules and regulations of the operating department of the Baltimore & Ohio Railroad reads as

follows:

> When switches or signals are undergoing repairs, signals will not be displayed for any movements which may be affected by such repairs until it has been ascertained from the repairmen that the switches are properly set for such movements.

When asked if he complied with that rule, he said that he did not know what the repairmen were doing and that as he had not been informed that the track was out of order he considered he had complied with the rule.

In connection with this accident there is a conflict in the testimony on several important points. Among these may be mentioned the location of engine 2034 when it was first observed by the men working at the crossing, the stopping of the engine after passing the tower, and the position of signal 36. It is believed that engine 2034 passed the tower at low speed, that a proceed signal was displayed, and that the engine continued at low speed without stopping until very close to the crossing when it was suddenly discovered too late to avert the accident. In determining the question of responsibility, the whole matter can be sifted down to the fact that no definite instructions were given to the repairmen as to when they were to complete their work. Signal Supervisor Carroll knew the work was to be done, but had not intended having it done until after various important passenger trains had passed, at which time he said he intended to disconnect signal 36 so that it could not be cleared from the tower. The signal would thus remain in the stop position and afford protection until the work was completed. According to his own statements, he did not indicate definitely to the signal main-

tainer and his assistants when they were to proceed with the work. Signal Maintainer Christian said he had received orders to repair the switch and accordingly he ordered the spikes removed from the movable points. This work should not have been started until it was known that signal 36 could not be cleared from the tower. The question of whether the operator had instructions to hold the signal at stop for all trains or whether these instructions applied only to one particular engine does not affect the question of responsibility, as all the evidence indicates that engine 2034 was running at low speed approaching the crossing.

This accident was caused by the spikes being removed from the movable points at the crossing without adequate protection against approaching trains, for which Signal Supervisor Carroll is directly responsible. He was in full charge of all of the signal work, knew what had to be done, and should have known beyond any question just when the spikes were to be drawn and have seen to it that all concerned were properly and definitely instructed and that signal 36 was disconnected so that it could not be cleared by the towerman. A contributing cause was the failure of Signal Maintainer Christian to know that proper protection was afforded before he ordered the spikes withdrawn from the movable points.

Signal Supervisor Carroll was employed as a laborer in the Signal Department in 1906, promoted to lineman in 1907, foreman in 1908, general foreman in 1910, and signal supervisor in 1911. Signal Maintainer Christian was employed as yard clerk in 1903 and as a lampman in January, 1912. In May, 1912, he was

made a signal repairman helper. He had been a signal maintainer during the past 4 years. The records of both of these employees were good.

G.Y.L.