The Chairman

5/2/19

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IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PHILADELPHIA & READING RAILROAD AT LOCUST DALE JUNCTION, PA., ON APRIL 10, 1919.

April 23, 1919.

On April 10, 1919, there was a collision between the rear portion and the locomotive of a parted train, on the Shamokin Division of the Philadelphia & Reading Railroad, at Locust Dale Junction, Pa., about 12 miles south of Shamokin, Pa., resulting in the death of three employees and the injury of one employee. After investigation of this accident the Chief of the Bureau of Safety submits the following report.

The Shamokin Division at this point is a double track line running north and south by timetable direction. Trains are operated by time table and train orders, and on the mountain grade southward from Locust Summit a telegraph block system is in use, while on other parts of the division the automatic block system is in use. Approaching the scene of accident from Locust Summit the track is straight for a distance of 4399 feet, then there is a curve of 1° 11' towards the east 500 feet in length, followed by a tangent of 2392 feet extending to where the accident occurred. From Locust Summit southward for a distance of 5300 feet to a point about 2000 feet north of Locust Dale Junction there is a descending grade of 2.54%; from that point southward for a distance of a little more than two miles the grade is 2.11% descending, and from that point to Gordon at the bottom of the grade there is a descending grade of .35%.

The train involved in this accident was southbound

freight train extra 1050, consisting of locomotive 1050, 34 loaded cars and caboose, in charge of Conductor Sassler and Engineman Cartmell. Extra 1050 passed Shamokin at 12.55 a.m., and passed S U block station, at Locust Summit, at 3.05 a.m. In accordance with the customary practice on this grade, retainers were turned up and a number of hand brakes set when extra 1050 started down the grade. It is customary to control the speed of trains on this grade by hand brakes, the air brakes being reserved as a supplementary means or for emergency use. When this train started down the grade, the engineman thinking that the speed was too high made an application of the air brakes and held them applied until he felt the speed was being checked. He then released the brakes but although he used steam the train stalled. After the train stalled a number of hand brakes were released and the engineman made two attempts to start the train, taking the slack each time. On the second attempt the knuckle on the north end of the eighth car from the engine was broken. Having no spare knuckle that would fit to replace the broken knuckle, it was necessary to set out this car. The conductor, head brakeman, engineman and fireman proceeded to Locust Dale Junction with the locomotive and eight cars, leaving the rear portion of the train standing on the 2.54% grade on the straight track south of Locust Summit, the rear end being about 50 car lengths south of S U office. The rear portion of the train was left in charge of middle brakeman Lishman, who set a number of hand brakes and then took a position at the head end of the

out of cars to await the return of the locomotive.

On account of the heavy grade, Conductor Bassler thought that if the car with the broken knuckle was set out at Locust Dale Junction his locomotive could not push the remaining seven cars back up the grade to the point where the rear portion of his train was left. It was therefore decided to proceed to Gordon at the foot of the grade where the eight cars were set out, and the locomotive returned light on the southbound track. In the meantime the rear portion of the train had started to move, and rapidly gained momentum. Locomotive 1050 while backing up collided with the runaway rear portion of the train about 500 feet north of Locust Dale Junction block station at about 4.20 a.m. The conductor, head brakeman and fireman were killed, and the engineman was slightly injured.

The locomotive with a portion of the tender dragging was driven southward clear of the wreckage, and ran down practically to the foot of the grade, where it stopped on the main line. The tender was entirely demolished, 2 box cars were destroyed, 2 box cars derailed, and 15 steel cars loaded with coal were derailed and piled up across both tracks and in the ditch on the west side of the track. The wreckage of these cars was piled up in a distance of about 12 rail lengths, and both tracks were torn up for practically that distance. The employees who were killed and injured were all riding in the locomotive cab.

The first marks of derailment found were about four

rail lengths north of the wreckage, and this was probably the point of collision. It is estimated that the locomotive was running about 12 or 15 miles per hour when the collision occurred. No estimate of the speed of the runaway cars could be obtained, although the flagman who was on the rear end at the time said the speed was so high he did not dare to jump off. The damage which resulted also indicates high speed. At the time of the accident it was dark and the weather was clear.

Engineman Cartmell stated that as he considered the speed of the train passing Locust Summit too high, he applied the air brakes and held them applied until he felt the speed of the train being checked; he then released the air brakes, but the application which he had made, the retainers being turned up, together with the hand brakes which were applied, stalled the train. He made two attempts to start the train, and the second time a knuckle on the eighth car was broken. The train parted, causing an emergency application of the air on both portions of the train. The spare knuckle carried on the locomotive would not fit the damaged coupler, making it necessary to set out the car. They proceeded to Locust Dale Junction and the conductor went into the office and notified the operator of what had happened. On account of the heavy grade at that point, no attempt was made to set the car out at Locust Dale Junction, but they did make an unsuccessful attempt to set it out at Siekel's, an industrial siding at Locust Dale, then proceeding to Gordon where the eight cars were set out. He had some conversation with the conductor relative to their

right to return on the southbound track; he was assured that the operator at Locust Dale Junction understood the movement they were making and would not allow anything to enter the block between the two portions of the train. He also understood this movement was authorized by rule 101 relating to parted trains. He stated that the light engine was running backward at the rate of about 12 miles per hour, and that approaching Locust Dale Junction a lantern hanging on the rear of the tender swung around into his view and he was unable to see beyond it. When about opposite the block office the conductor, who was on the left side of the cab, called to him to take it easy. He thought the conductor must have seen something on the track ahead as they were still about three quarters of a mile from the point where they had left the rear portion of their train. He closed the throttle and applied the independent brake. The collision occurred almost immediately and he knew nothing more until he found himself in the ditch beside the track with the cars piling up around him.

Brakeman Lishman stated that when starting down the grade the head brakeman and the conductor were out on the head end of the train, each having ten cars, and he and the flagman had fourteen cars. He said that after starting down the grade he had set the hand brakes on seven cars, working back from the 20th car. After the train stalled he released these brakes in order to permit the engineman to start again. When the train parted he heard the air brakes apply in emergency, and went for-

ward. When it was found they were unable to replace the broken knuckle and it would be necessary to set out the car, it was arranged that the conductor would go with the head portion of the train and he would remain with the rear portion; he said he told the conductor he would "tie down" the rear portion of the train. He stated the conductor told him the hand brakes were set on the first six cars of the rear portion of the train, and he then set the hand brakes on additional cars, starting with the seventh, until a total of fifteen brakes were applied. He then returned to the head end of this out of cars, built a small fire to keep warm, and waited for the engine to return. He thought it was about an hour after the forward portion of the train had departed when he heard a noise which he stated sounded like a detached portion of the train colliding with the standing cars. The cars then began to move down the grade, quickly gaining momentum. He ran back along the track and got on the first car on which he did not hear the grinding of the brake shoes. He then set hand brakes on two more cars, the 16th and 17th cars, but as the speed continued to increase he considered it useless to set more brakes and jumped off. He was unable to give any estimate of speed at that time, but stated the cars were running about as fast as he could get off without being thrown. After all the cars had passed him, he ran down the track, met the flagman and told him to go back to S U office, notify the dispatcher and hold all trains.

Flagman Scheidly stated that after the train had stall-

ed he went back to flag; a helper engine came through the crossover at the summit and took on the southbound track; he put down torpedoes and had returned to within a couple rail lengths of his caboose when he heard a noise and noticed the train was moving. He thought at once that the slack had run in, starting the cars down the grade, and that the train was running away. He had to run several car lengths to catch the train. When he entered the caboose he looked at the brake pipe gauge and noted that there was no air pressure. He started out immediately to set hand brakes and had set the caboose brake and the brakes on two cars at the time the collision occurred. He could give no definite estimate of the speed at the time of collision but stated the cars were running too fast for him to get off.

Operator Morrissey, who was on duty at Locust Dale Junction block station, stated that extra 1050 entered the block at Locust Summit at 3.05 a.m. They did not show up at his office for some time, but the engine arrived with eight cars at 3.27 a.m. He related the conversation with the conductor, and stated that he notified the dispatcher of the situation. G K block office at the north end of Gordon Yard reported engine 1050 by northbound at 4.07 a.m. On its return engine 1050 passed Locust Dale Junction block station at 4.20 a.m., and almost immediately he heard the crash of the collision.

Chief Dispatcher Williams stated that under the interpretation of rule 101, relating to parted trains, the return movement of engine 1050 on the southbound track to the rear por-

tion of its train was proper and in accordance with the established practice on this line.

The investigation of this accident disclosed that when extra 1050 was stalled on the grade south of Locust Summit, the train was stretched owing to the application of the air brakes and a number of hand brakes being applied toward the rear end, as well as the fact that the engineman used steam before the train stalled in endeavoring to keep it moving. When the engineman took slack and tried to start the train the rear end was not moved. The emergency application of the brakes which resulted from the train parting held the cars for a considerable period of time; but as the hand brakes on the rear portion of this cut of cars had been released after the train stalled, when the air brakes eventually leaked off it is apparent that the slack ran in, imparting sufficient momentum to this portion of the train to start it moving down the grade. Brakeman Lishman stated that he was on about the 20th car when the knuckle on the eighth car was broken. He also stated that in either attempt to start the train the cars back where he was were not moved; furthermore, after the accident the rear seven cars remained intact and coupled together. Therefore there is no foundation for the theory advanced by Brakeman Lishman that the train may have parted at some other point farther back and that the runaway was caused by the detached rear end running into the standing cars.

According to Brakeman Lishman's statement, it appears

there were fifteen hand brakes set. Brakeman Lishman said the conductor told him the hand brakes were set on the first six cars and he did not try the brakes on those cars. It is possible that there may have been some misunderstanding in this matter. In any event, it is apparent that there was not a sufficient number of hand brakes applied to hold the rear portion of extra 1050 on this grade.

This accident was caused by failure to set a sufficient number of hand brakes on a portion of a train left standing on a steep mountain grade.

Brakeman Lishman has had thirteen years' experience in train service on the Shamokin Division and was perfectly familiar with operating conditions on the grade where this accident occurred. He had ample time to apply all the brakes necessary to insure the safety of the train, and the results show that he exercised poor judgment in not setting an adequate number of brakes to provide a liberal margin of safety.

At the time of the accident the engine crew of extra 1050 had been on duty 10 hours and 35 minutes, after a period off duty of 8 hours and 40 minutes; they were on duty the preceding trip 13 hours and 5 minutes. The train crew had been on duty 10 hours and 5 minutes, after a period off duty of 9 hours and 10 minutes; they were on duty the preceding trip 12 hours and 35 minutes.

In connection with the practice of controlling trains with hand brakes, Superintendent Fisher stated that he had been

employed as train dispatcher, train master and superintendent on the Shamokin Division since 1889, and that it had always been the practice to control trains on Locust Summit Grade by means of hand brakes, the instructions being that trains on all descending grades shall be operated and controlled by the hand brakes , the air brakes being used only for emergency purposes. There were no recent printed instructions to this effect, but all men were instructed before being assigned to duty and these instructions repeated from time to time as the men were promoted. Superintendent Fisher stated that the regular assignment of crews to all freight trains consisted of an engineman, fireman, conductor, two brakemen and a flagman, and the car limit for such a crew was fixed at 35 cars. Additional brakemen were stationed at Locust Summit, and if, in the conductor's opinion, more brakemen were needed in order to control the train by means of the hand brakes, they would be furnished or else the length of the train reduced. During the examination of Engineman Cartmell, Superintendent Fisher asked him if, when he was promoted to engineman, he recalled anyone giving him advice as to safety precautions, and he said that he remembered the superintendent asking him where the conductor rode on a train. He replied that it was up to the conductor and the superintendent then instructed him to see that the conductor was out on the train; at the time of the examination the superintendent also impressed upon him that hand brakes were to be used to control trains, the air brakes being reserved for emergency purposes. Trainmaster Farrell

stated he was satisfied every man in train or engine service on the Shamokin Division thoroughly understood that trains were to be moved down grades by means of hand brakes, as this fact had been impressed upon them very thoroughly.

Attention is called to the fact that the methods and practices employed in controlling trains on this grade are contrary to the provisions of the safety appliance law. To correct the conditions disclosed by the investigation of this accident, the practice should be changed and trains on this grade should be controlled by means of the air brakes.

G. V. L.