

## INTERSTATE COLLISION COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE  
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE  
PENNSYLVANIA RAILROAD AT AVONMORE, PA , ON NOVEMBER  
28, 1931.

December 23, 1931.

To the Commission:

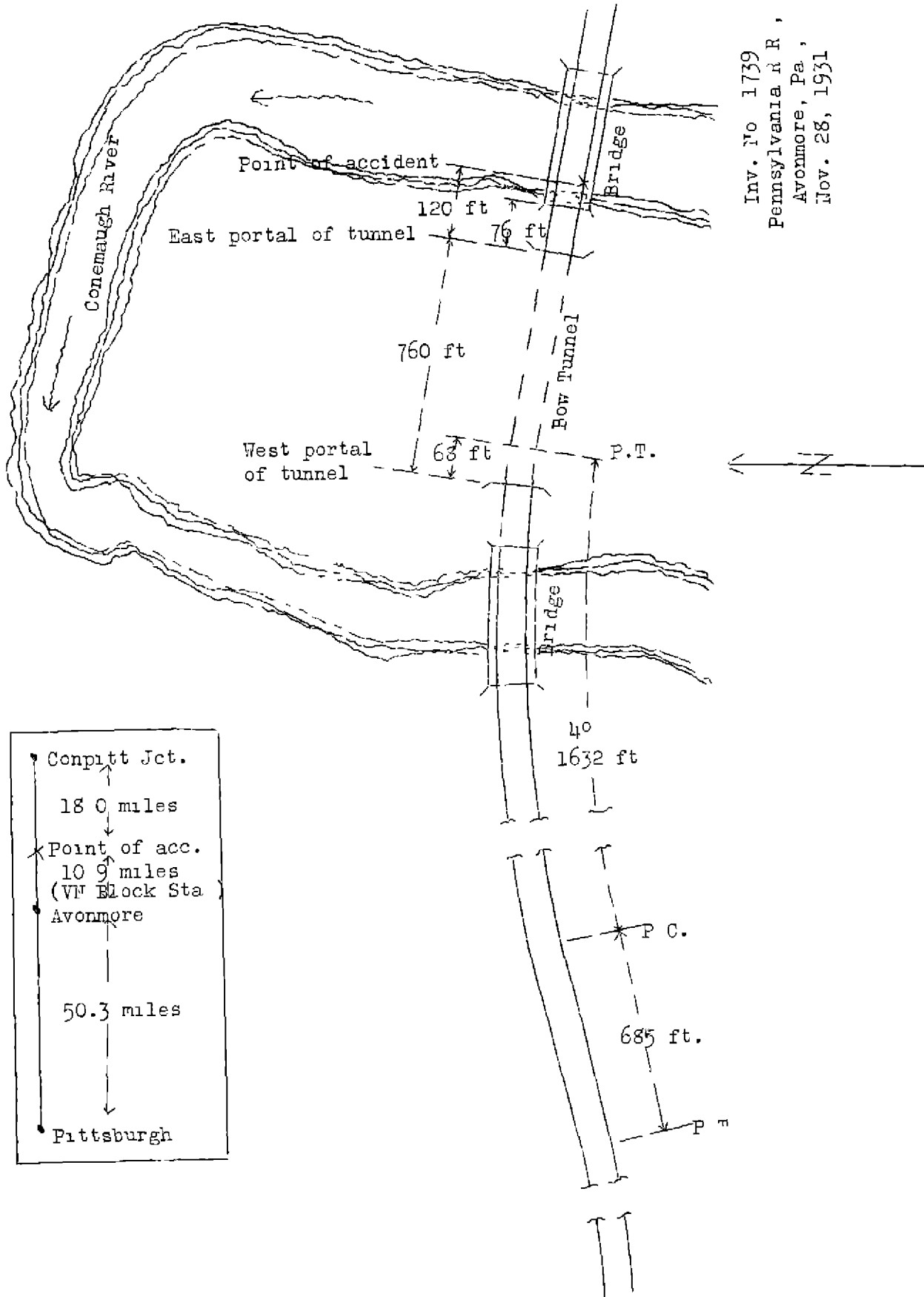
On November 28, 1931, there was a rear-end collision between two freight trains on the Pennsylvania Railroad near Avonmore, Pa., which resulted in the death of three employees. The investigation of this accident was made in conjunction with a representative of the Pennsylvania Public Service Commission.

#### Location and method of operation

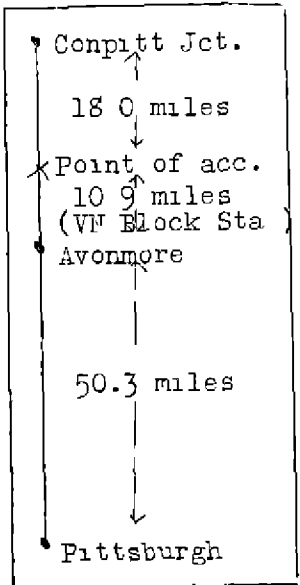
This accident occurred on that part of the Conemaugh Division extending between Federal Street, Pittsburgh, and Conpitt Junction, Pa., a distance of 79.2 miles, in the vicinity of the point of accident this is a double-track line over which trains are operated by time-table, train orders, and a manual block-signal system. The accident occurred at a point 10.9 miles east of VN Block Station at Avonmore, approaching this point from the west, there is a long curve to the left, followed by 385 feet of tangent track and then a 4° curve to the right 1,632 feet in length, the eastern end of which is 68 feet within the west portal of Bow Tunnel, at which point begins 7,500 feet of tangent track. The tunnel is 750 feet in length, and 76 feet east of its east portal is the beginning of a five-span stone-arch bridge across the Conemaugh River, this bridge is 530 feet in length and approximately 55 feet above the stream.

The point of collision was 120 feet east of the east portal of the tunnel and 44 feet from the western end of the bridge. The grade for eastbound trains is level on the last-mentioned curve to the point in the tunnel where the tangent track begins, the grade is then 0.31 per cent ascending to and beyond the point of accident. The first view that can be had of the west portal of the tunnel by the engineer of an eastbound train is just before he enters upon the 4° curve, an approximate distance of 1,702 feet, the first view through the tunnel is at a point 173 feet west of it, while at a point 110 feet west of the west portal a clear view can be had through the tunnel to and beyond the east portal. The block section in which the accident occurred extends eastward from VN Block Station, located .04 of a mile east of Avonmore Station, to BI Block Station, a distance of 15.3 miles.

It was dark and cloudy at the time of the accident, which occurred about 5:41 a.m.



Inv. No 1739  
 Pennsylvania R R,  
 Avonmore, Pa.,  
 Nov. 28, 1931



### Description

Eastbound freight train extra 7236 consisted of 42 loaded cars of coal and a caboose, 3,682 tons, hauled by engine 7236, and was in charge of Conductor McIntire and Engineman Long. This train departed from VN Block Station at 4:55 a.m., according to the train sheet, under a clear block-signal indication, and had just passed through Bow Tunnel, traveling at a speed estimated to have been about 10 miles per hour, when its rear end was struck by extra 6868.

Eastbound freight train extra 6868, Symbol F W 8, consisted of 52 loaded cars, 28 of which were live stock and a caboose, 2710 tons, hauled by engine 6868, and was in charge of Conductor Mabon and Engineman St. Clair. This train passed VN Block Station at 5:19 a.m., according to the train sheet, where it was given a permissive block signal indication, which, under rule 280 of the book of rules, required it to "Proceed with caution prepared to stop short of train or obstruction." The train proceeded through the block at an average speed of nearly 30 miles per hour, and the engine had just emerged from Bow Tunnel when it collided with the rear end of extra 7236 while traveling at a speed estimated to have been between 15 and 20 miles per hour.

The caboose of extra 7236 was telescoped under the rear end of the car ahead of it and was demolished. The three rear cars partially telescoped and were badly damaged, but remained upright in line with the track. Engine 6868 was not derailed or damaged to any great extent, and came to a stop 263 feet east of the point of collision. Following the collision the debris of the caboose caught fire and the remains of the wooden superstructure were entirely consumed. The employees killed were the conductor, brakeman and flagman of extra 7236, all of whom were riding in the caboose.

### Summary of evidence

Engineman Long, of extra 7236, stated that he stopped at Avonmore for coal and water and departed from there at about 4.50 a.m. Between that point and the west end of Bow Tunnel his train traveled at the rate of about 15 miles per hour, and from that point until the accident occurred he judged the speed had decreased to about 10 miles per hour, on account of the ascending grade, but at no time from the time he departed from VN Block Station did he think that the speed was low enough for the flagman to get off, place torpedoes on the rail, and then regain his train. The first intimation he had that something was wrong was when he felt the shock caused by the rear end being driven forward and also noticed that the fireman had been thrown back against the coal gates. After the shock his engine moved ahead four or five car-lengths. He did not look at his watch at the time of the accident, but understood the fireman to say that it was 5:30 a.m. Engineman Long further

stated that this train generally consumed about one hour on the run between VN and BI. The train in this particular case appeared to be rather heavy and hard to haul, but he did not experience any difficulty in operating it. The weather was misty but he could see through the tunnel and his visibility in the tunnel was interfered with only when the smoke and steam, which appeared to roll back along the train, got in and around the cab of the engine, but it was not of such volume as to make it necessary for him to close the windows. He did not think there was any smoke or steam hanging in the tunnel or around the east portal of it as a result of a westbound light engine having passed through a short time prior to his arrival.

Fireman Lydio, of extra 7236, stated that after leaving VN Block Station the average speed of the train was about 15 miles per hour until the grade in the vicinity of Bow Tunnel was reached, where it began to decrease until it was approximately 10 miles per hour, just prior to, and at the time of the accident, which he said occurred at 5:40 a.m. While he thought they were making a normal run that night, the speed might have been a little lower than usual as the train was heavy, 40 cars being the average train as against 42 at the time of the accident. The weather was misty and occasionally there would be some fog but these conditions were not bad enough to interfere with his view of the track ahead and he was able to see through the tunnel, there being no smoke or mist in it that he noticed, and if there had been any lights at the east end of the tunnel he could have seen them, as the smoke from the engine rolled back along the train and did not interfere with his view. He further stated that he looked back on the curve west of Tunnelton, a station located about a mile and a half west of the point of accident, and noticed the light burning in the caboose marker lamp on his own side of the train, and at a point between Tunnelton and the station west of it, he looked back on the engineman's side and noticed the marker light was also burning on that side of the caboose.

Engineman St. Clair of extra 6888, stated that approaching VII Block Station he was traveling at a speed of about 25 or 30 miles per hour and after receiving a permissive block-signal indication at that point he maintained about the same rate of speed, except on several curves where he reduced the speed, until near the west entrance of Bow Tunnel, at which point he eased off on the throttle and on entering the tunnel closed it entirely. He could see all the way through the tunnel until within about two car-lengths of the east portal, where he noticed a wall of smoke and steam, but he said it was not unusual to find that condition at one end or the other of the tunnel, under similar weather conditions, and so he did not further reduce the speed of the train. After entering the wall of smoke he found it much heavier than he thought it was when he first sighted it, but before he could take any action to check the speed of the train it collided with the rear

end of extra 7236. The shock of the collision displaced him from his seat, causing a slight delay before he could reach the brake-valve handle and apply the air brakes, during this interim the momentum of the train forced it ahead about six or seven car-lengths before it came to a stop. He estimated the speed of his train to have been 20 or 25 miles per hour when he eased off west of the tunnel, and 15 miles per hour when the accident occurred. He stated that he had plenty of rest prior to leaving the terminal and was fully alert at the time of the accident, that the headlight was burning brightly, and that the visibility was good considering the weather, which he said was hazy. Engineman St. Clair stated that he felt that he was operating at a safe rate of speed, as he could see the track ahead for a distance of approximately 80 car-lengths when on tangent track, and while he thought that possibly the train ahead of him was the coal train, as there usually was one in that vicinity after midnight, he did not see anything of it between Avonmore and the point of accident. He did not look at his watch at the time of the accident, but Conductor Mabon told him that they passed VN Block Station at 5:19 a.m., and that the accident happened at 5:41 a.m.

Fireman Reilly, of extra 6868, stated that he had been keeping a sharp lookout around curves on his side of the train after leaving Avonmore and at no time saw anything of the train ahead. The visibility was such that the tunnel could be seen a considerable distance in advance, and he was of the opinion that the train ahead of them had probably passed Blairsville, a station located 1.6 miles west of BI Block Station. He estimated the speed at which his train was traveling between VN Block Station and the west approach of Bow Tunnel to have been between 20 and 25 miles per hour, at the latter point the engineman shut off steam and drifted through the tunnel, and when the collision occurred he judged the speed to be about 15 miles per hour. Just before the engine entered the tunnel he had been back on the coal pile and as they entered it he came into the cab and turned on the blower in order to keep the smoke and steam from enveloping the cab, and as he turned to get up on his seat box he looked ahead and saw a lot of smoke at the east end of the tunnel, but as he had seen this same condition frequently on previous trips, with no train close, he did not connect it with the extra ahead. At the time of the collision he was standing by the seat box looking ahead over the shoulder of the brakeman and they were still in the cloud of smoke, he was not aware that they had struck a rear end but from the way the engine lurched he thought that it was derailed. He further stated that he was a qualified engineman and he considered 15 miles per hour as a safe rate of speed for a train to travel through a block under a permissive block-signal indication. He also stated that a tonnage coal train, in his opinion, could not travel faster than 10 or 12 miles per hour in the vicinity of the accident, and that it was not customary for a stock train to be behind a heavy coal train.

Head Brakeman Shank stated that he was riding on the seat box on the left side of the engine between VN Block Station and Bow Tunnel and the weather did not obscure his view of the track ahead between those points. As they neared the west entrance to the tunnel he observed a thin haze of smoke a short distance inside of it and after their own engine entered, the smoke from it filled the tunnel to such an extent that by the time they reached a point about half way through it he was unable to see anything clearly ahead of the engine. He was watching ahead all the way through the tunnel, and if it had been possible to see the rear end of a train he would have seen it. Head Brakeman Shank was unable to say if the engineman was working steam when the collision occurred, but was of the opinion that he had snut off a short time previously and then opened up again shortly before they struck the rear end, and he estimated the speed at the time of the accident to have been between 15 and 20 miles per hour. He did not look at his watch until four or five minutes after the collision and it was then 5:45 a.m. Head Brakeman Shank also had the idea that it was the coal train ahead, as that train passed through there about that time every day, and he further stated that he saw a large red light fly through the air at the time of the accident and thought that possibly it was one of the marker lamps off of the wrecked caboose.

Conductor Mabon, of extra 6868, stated his train passed VN Block Station at 5:19 a.m. and the accident occurred at 5:41 a.m. The weather was heavy and damp but he could see ahead a reasonable distance. The train brakes were not applied between VN Block Station and Bow Tunnel and the maximum speed attained between these points was about 18 miles per hour, this speed being reduced by the engineman on the curves. He estimated the speed at which the train was traveling at the time the collision occurred as about 15 miles per hour. He also stated that he understood the rule requiring a train to stop short of a train or obstruction when operating through a block under a permissive block-signal indication, and felt that his train was so operated on the morning of the accident.

Flagman Jones, of extra 6869, estimated the speed of the train between VN Block Station and Bow Tunnel to have been between 20 and 25 miles per hour, and between 15 and 20 miles per hour when the accident occurred.

Operator Shuster, on duty at VN Block Station, stated that extra 7236 arrived at 4:33 a.m., took coal and water, and departed at 4:55 a.m., at which time he noticed that the marker lights on the caboose were burning and properly displayed. Extra 3928 passed his station at 5:19 a.m., traveling at a speed that he estimated to have been between 20 and 25 miles per hour. Operator Shuster also stated that the average running time of the coal train between his station and BI Block Station was about one hour.

### Conclusions

This accident was caused by the failure of Engineman St. Clair, of extra 6868, properly to control the speed of his train while moving through an occupied block under a permissive block-signal indication.

Under the rules, when an engineman is given a permissive block-signal indication, he is required to proceed with caution, prepared to stop short of a train or obstruction. The speed at which extra 6868 was traveling at the time of the accident was variously estimated to have been between 15 and 20 miles per hour, and an examination of the derailed equipment and the distance the train traveled after the collision, indicated that the train probably was not traveling at a less rate of speed than the highest estimate given. This is supported to some extent by the fact that extra 6868 traveled from VN Block Station to the point of accident, a distance of 10.9 miles, in approximately 22 minutes, or at an average of nearly 30 miles per hour, during which time the engineman reduced speed on curves, not, however, using the train brakes for this purpose. Such a rate of speed may not have constituted a violation of the rule while en route, but in view of the fact that the evidence is clear that the east end of the tunnel was seen to be filled with smoke and steam, it then became necessary for Engineman St. Clair immediately to reduce speed, if he was to comply with the rule, and this is particularly true since he had reason to believe that the train ahead was a coal train, as it was, he made no attempt to apply the brakes until the collision occurred.

Statements were made at the investigation to the effect that a fusee dropped off west of Bow Tunnel, by the train crew of extra 7236, might have prevented the accident. Inasmuch as this entire crew was killed in the accident, just what action was taken, if any, must remain unanswered, however, an examination of the records for a period of two weeks prior to the accident, covering the speed made by the coal train between VN Block Station and BI Block Station, disclosed the fact that the average run consumed in excess of one hour for the distance of 15.3 miles. The average speed on the date of the accident had been 14 miles per hour, and it was estimated to have been under this average at the time of the accident, due to the ascending grade east of the tunnel. There is nothing to indicate, however, that the train was not making practically a normal run.

Opinions expressed during the investigation by the members of the crew of extra 6868, to the effect that they were traveling at a safe rate of speed, under the conditions that existed at the time of the accident, leads to the conclusion that the responsible operating officials of this railroad should at once institute a vigorous campaign among its employees to secure a more literal observance of the rule, if a train is to run prepared to stop short of

a train or obstruction, it is obvious that speed must be reduced materially when the view is cut off by smoke and steam or for any other reason.

All of the employees involved were experienced men, and 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.