INTERSTATE COMMERCE COMMISSION

REPORT OF THE CHIEF OF THE BUREAU OF SAFETY IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE BALTIMORE & OHIO RAILROAD NEAR ELLWOOD CITY, PA., ON AUGUST 6,1922.

August 22, 1922.

To the Commission.

On August 6, 1922, there was a rear-end collision between a passenger train and a freight train on the Baltimore & Ohio Railroad near Ellwood City, Pa., which resulted in the injury of 31 passengers, and 5 dining car employees.

Location and method of operation.

This accident occurred on the P. & W. Sub-Division of the Pittsburgh and Pittsburgh Terminal Divisions extending between Laughlin Junction and New Castle Junction, Pa., a distance of 56.9 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 an automatic block-signal system. About one-half mile east of Ellwood City there is a tunnel 694 feet in length known as Ellwood Tunnel; the accident occurred in this tunnel at a point 444 feet from the eastern portal. Approaching this point from the east there are 2,592 feet of tangent, followed by a compound curve to the left 1,828 feet in length, the accident occurring on this last mentioned curve at a point 861 feet from its eastern end where the curvature is 2-degrees 1-minute. On the tangent, the grade is practically level while through the tunnel it is 0.43 per cent ascending for westbound trains.

The automatic block signals are of the normal-danger, three-position, upper-quadrant type, the circuits are so arranged that with the track ahead unoccupied the signal clears when an approaching train enters the second block in rear. Automatic block signal W 43-24 is located on a 3-degree 6-minute curve to the right, 224 feet east of the above mentioned tangent, or 3,677 feet east of the point of accident. To avoid stopping westbound trains on the ascending grade a second arm, known as a permissive signal, is installed on the same mast, which is arranged to assume the 45° or caution position, with the block occupied and the upper arm in stop position, when a train enters the clearing section beginning at the second signal east of signal W 43-24 and 13,640 feet distant therefrom. A train receiving this signal indication is not required to stop, but under the rules may "Proceed at slow speed prepared to stop short of train or obstruction". The weather was clear at the time of the accident, which occurred at 10.13 a.m.

Description.

Westbound freight extra 4045 consisted of 60 cars, and a caboose, hauled by engine 4045, and was in charge of Conductor McClintock and Engineman Cart. At Callery, 19.3 miles from Ellwood City, the crew received a message to clear train No. 9 one hour late. Extra 4045 departed from Callery at 9.13 a.m. passed Eidenau, 5.6 miles west of Callery and the last open telegraph office, at 9.24 a.m., stopped just west of Goehring, at a point about 5 miles from the scene of the accident, on account of an overheated journal, leaving this point about 9.49 a.m. Near North Sewickley, just east of signal W 43-24, speed was reduced on account of the brake-pipe pressure falling, and while traveling through Elwood tunnel at a speed of 5 or 6 miles an hour the rear end was struck by train No.9.

Westbound passenger train No. 9 consisted of 1 storage mail car, 1 mail car, 1 baggage and express car, 3 coaches, 4 Pullman sleeping cars, and 1 dining car, hauled by engine 5222, and was in charge of Conductor McMahon and Engineman Welty. All of the cars were of all-steel construction with the exception of the storage mail car. Train No. 9 passed Eidenau at 9 53 a.m., 59 minutes late, passed signal W 43-24 with the top arm in stop position and the bottom arm or permissive signal displaying a caution indication, and collided with extra 4045 while traveling at a speed variously estimated to have been between 5 and 25 miles an hour.

Engine 5222, the dining car, and 1 freight car were slightly damaged, while the caboose and another freight car were destroyed by fire which broke out after the collision.

Summary of evidence

Considerable trouble was experienced with the steam-gauge, stoker, and one of the air pumps on the engine of extra 4045 during this trip. Engineman Cart stated that speed was reduced in the vicinity of North Sewickley on account of the brake-pipe pressure falling, however, he proceeded through the tunnel, expecting to clear for train No. 9 at New Castle. Flagman Beatty of extra 4045 stated that he knew train No.9 was getting close behind them, and approaching Ellwood Tunnel he was riding on the rear platform of the caboose. When he was on a bridge 300 or 400 feet east of the tunnel, he saw the permissive signal go to caution position, the upper arm being in stop position, which indicated to him that No. 9 was approaching. He threw off a lighted fusee just as the caboose entered the tunnel but it fell between the ties, and he threw off another immediately afterwards, but this one also failed to remain upright. Looking back, he saw train No. 9 on the curve about 35 or 40 car lengths away, at which time he estimated the speed to have been between 40 or 50 miles an hour. He lighted a third fusee and ran back with it, reaching a

point about 2 car lengths from the east end of the tunnel when train No. 9 passed, the fusee signal being acknowledged by a whistle signal; he thought the engine was working steam when it entered the tunnel, and the air brakes were applied in emergency just before the accident occurred, he estimated the speed of train No. 9 at the time of the collision to have been between 20 and 25 miles an hour

Conductor McClintock noticed the low rate of speed at which the train passed through Frisco, just east of the point of accident; he said the flagman threw off two fusees, the second one when they were about a car length inside the tunnel, and then got off with a fusee in his hand when six or eight car lengths inside the tunnel. He saw train No. 9 when it entered the tunnel running pretty fast and jumped just before the accident occurred. He estimated the speed of No. 9 at the time of the accident at 20 or 25 miles an hour. He had instructions to clear train No. 9 one hour late and was on the time of train No. 9 when the accident occurred. He knew train No. 9 was approaching as the flagman told him when the permissive signal went to caution, but torpedoes were not put down as his train was moving, however, he stated his train was moving slowly enough so that the flagman could have dropped off and placed torpedoes on the rail before entering the tunnel.

Engineman Welty of train No. 9 said two torpedoes were exploded near Goehring. When train No. 9 passed signal W 43-24 the permissive signal was in the caution position and the upper arm in stop position, speed was reduced while crossing the bridge just east of the tunnel, and the air brakes had just been released when Fireman Gleckler gave warning of danger, at which time the engine was just entering the tunnel, the collision occurring immediately afterwards He estimated the speed of his train at Frisco crossing, about 1,800 feet east of the tunnel, at 20 miles an hour, and at the eastern portal of the tunnel at about 12 miles an hour. Engineman Welty said he thought the tunnel was clear, as no torpedoes or lighted fusees were encountered before the eastern portal was reached, and he saw no smoke issuing from it, but he admitted that on receiving the caution signal he should have expected to find the track ahead occupied and speed should have been reduced so that the train could have been stopped within range of vision, also that he should not have entered the tunnel until he knew positively the track ahead was clear.

Fireman Gleckler of train No. 9 stated that when they passed the permissive signal the engineman applied the brakes and reduced speed to about 15 miles an hour. As they came up to the mouth of the tunnel he saw a lighted fusee and called "Flag" to the engineman; as they entered the tunnel he saw the flagman four or five car lengths ahead running toward them carrying a lighted fusee; he called another warning to the engineman and braced himself for the shock of collision. He thought the speed of his train at the time of the collision was

about 5 miles an hour.

Other members of the crew of train No. 9 estimated the speed of their train at 15 miles an hour at the eastern portal and 10 or 12 miles an hour at the time of the collision. The train came to a stop with engine and 5 cars inside the tunnel. The evidence disclosed that the air brakes on train No. 9 had been tested and were working properly.

Conclusions.

This accident was caused by failure of Conductor McClintock and Flagman Beatty to provide proper protection for their train and by the failure of Engineman Welty of train No. 9 to properly control the speed of his train in compliance with the permissive signal indication.

Conductor McClintock and Flagman Beatty knew extra 4045 was occupying the main track on the time of train No. 9 and that their train was being delayed under circumstances in which it was likely to be overtaken. They were fully aware that No. 9 was approaching as the flagman saw the permissive signal assume the caution position when No. 9 entered the clearing section approximately two miles away and according to his own statement he saw the following train when it was about half a mile away. Rule 99 provides that,

> "When a train is moving under circumstances in which it may be overtaken by another train, the flagman will take such action as may be necessary to insure full protection. By night, or by day when the view is obscured, lighted fusees will be thrown off at proper intervals."

In this case the only protection afforded was the display of fusees a moment or two before the collision occurred; the flagman did not "take such action as may be necessary to insure full protection", and the conductor, although fully advised of the circumstances, neglected to see to it that proper flag protection was provided.

Engineman Welty knew the block was occupied on receiving the caution indication displayed by the permissive signal. Under the rule this signal indication authorized him to proceed "at slow speed prepared to stop short of train or obstruction". His statement and the comparatively high rate of speed at which he permitted his train to enter the tunnel, where the view was restricted owing to the curvature, indicated that he assumed the tunnel was clear; any such assumption was wholly unwarranted and had he observed the rule concerning the permissive signal indication this accident would undoubtedly have been averted notwithstanding the fact that the preceeding train was not properly protected.

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. PORLAND,

Chief, Bureau of Safety.