Inv-2135

INTERSTATE COMMERCE COMMISSION

WASHINGTON

REPORT OF THE DIRECTOR

BUREAU OF SAFETY

ACCIDENT ON THE

LEHIGH VALLEY RAILROAD

PHILLIPSBURG, N. J.

JANUARY 9, 1937

INVESTIGATION NO. 2135

SUMMARY

Inv-2135

Railroad:	Lehigh Valley		
Date:	January 9, 1937		
Location:	Phillipsburg, N.J.		
Kind of accident:	Rear-end collision		
Trains involved:	Freight	:	Freight
Train numbers:	Extra JA-1	:	Extra JS-3
Engine numbers:	464	:	282
Consist:	40 cars, caboose	:	70 cars, caboose
Speed:	Standing	:	8-12 m.p.h.
Track:	Tangent, then 4^{o} right curve 300 feet to point of accident		
Weather:	Dense fog		
Time:	7:23 a.m.		
Casualties:	1 killed; 1 injured		
Cause:	Failure of first train to be properly protected by flag; failure of following train to be operated in accordance with automatic signal indications		

To the Commission:

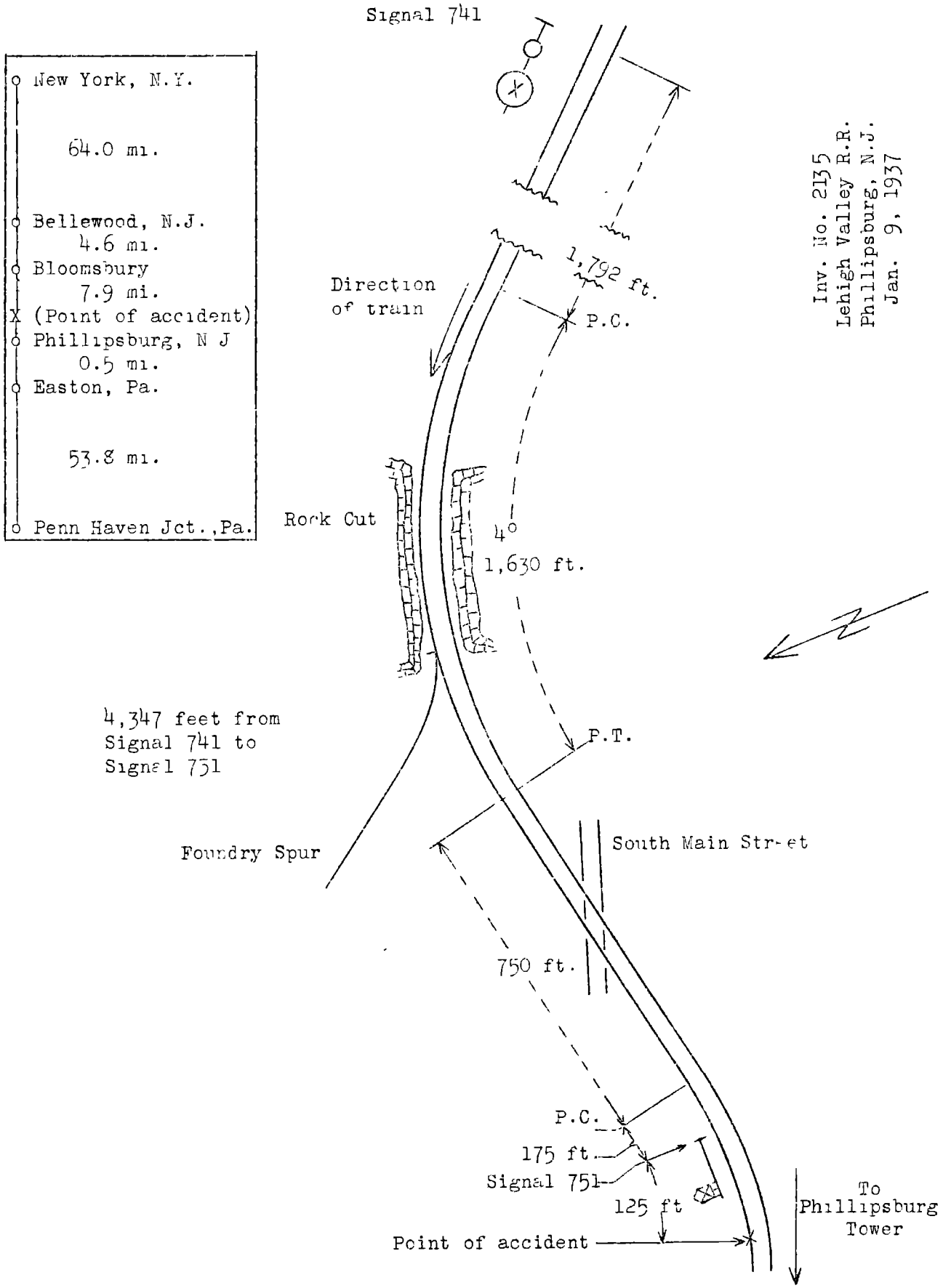
On January 9, 1937, there was a rear-end collision between two freight trains on the Lehigh Valley Railroad at Phillipsburg, N.J., which resulted in the death of 1 employee and the injury of 1 employee. This accident was investigated in conjunction with the New Jersey Board of Public Utilities Commissioners.

Location and method of operation

This accident occurred on the Lehigh Division, extending between New York, N.Y., and Penn Haven Junction, Pa., a distance of 130.8 miles; in the vicinity of the point of accident this is a double-track line over which trains are operated by timetable, train orders, an automatic block-signal system and an automatic train-stop system of the intermittent inductive type. The accident occurred within yard limits on track 1, the west-bound main track, at a point 125 feet west of signal 751, on a 30-foot fill near Mercer and McKeon Streets; approaching this point from the east there is a 4° curve to the left 1,630 feet in length, then 750 feet of tangent, followed by a 4° curve to the right 1,080 feet in length, the accident occurring on this latter curve at a point 300 feet from its eastern end. The grade for west-bound trains is descending for several miles, being 0.45 percent at the point of accident.

Stockton Street is located three city blocks, or about 2,000 feet, west of signal 751; just west of Stockton Street and south of the tracks there is a telephone box; Phillipsburg tower is located about 2,200 feet west of Stockton Street. The tracks run through a rock cut around the 4° left curve east of the point of accident. This cut is locally known as Black Dan's cut, and it is about 600 feet in length; its western end is located about 1,600 feet east of the point of accident; and at this end of the cut there is a facing-point spur track switch leading off track 1 to the northwest to a foundry.

The signals involved in the accident are automatic signals 741 and 751, located 4,472 feet and 125 feet, respectively, east of the point of accident. Signal 741 is a position-light signal displaying a distant indication for automatic signal 751 and Phillipsburg interlocking signals 1 and 38. Signal 751 is of the upper-quadrant, semaphore type; it is the approach signal for interlocking signals 1 and 38. Phillipsburg tower is equipped with annunciators and the control circuit actuating the annunciator for west-bound movements on track 1 beings at signal 721, located about 4 miles east of Phillips-


New York, N.Y.
64.0 mi.
Bellewood, N.J.
4.6 mi.
Bloomsbury
7.9 mi.
(Point of accident)
Phillipsburg, N J
0.5 mi.
Easton, Pa.
53.8 mi.
Penn Haven Jct., Pa.
Signal 741
Direction of train
1,792 ft.
P.C.
Rock Cut
4°
1,630 ft.
P.T.
4,347 feet from Signal 741 to Signal 751
Foundry Spur
South Main Street
750 ft.
P.C.
175 ft.
Signal 751
125 ft
Point of accident
To Phillipsburg Tower
Inv. No. 2135
Lehigh Valley R.R.
Phillipsburg, N.J.
Jan. 9, 1937

burg tower. The integrity of the automatic train-stop and the signal apparatus is not involved in the cause of this accident.

Phillipsburg is within yard limits, and rule 93, relating to movement of trains within yard limits, dispenses with flagging requirements under certain conditions. On the contrary, however, employees are instructed to disregard this provision of rule 93 and to afford protection within yard limits in accordance with the requirements of rule 99, the flagging rule.

There was a dense fog at the time of the accident, which occurred about 7:23 a.m.

Description

Extra JA-1, a west-bound freight train, consisted of 40 cars and a caboose, hauled by engine 464, and was in charge of Engineman Grube and Conductor Angst. At the time of the accident, however, Fireman Vaughn, a qualified engineman, was operating the engine. This train left Bellewood, the last open office and 11.5 miles east of Phillipsburg, at 6:21 a.m., according to the train sheet, passed signals 741 and 751, both of which were displaying caution indications, following which a stop was made, at about 6:55 a.m., with the engine east of Stockton Street and the rear end of the caboose 125 feet west of signal 751. Engineman Grube went to the telephone to notify the towerman at Phillipsburg of the arrival of his train; he communicated with the towerman about 7:18 a.m. and was told to proceed. The engineman then crossed the tracks and signaled his train ahead, and the fireman sounded the engine whistle to recall the flagman, but only two blasts had been sounded when the caboose was struck by Extra JS-3.

Extra JS-3, a west-bound freight train, consisted of 70 cars and a caboose, hauled by engine 282, and was in charge of Conductor German and Engineman Reppert. This train passed Bellewood at 7 a.m., according to the train sheet, passed signal 741, which was displaying a caution indication, and the engineman operated the forestalling device and prevented an automatic brake application; however, instead of approaching the next signal prepared to stop, in the dense fog, the engine passed signal 751 in the stop position and collided with Extra JA-1 while traveling at a speed estimated to have been between 8 and 12 miles per hour.

The caboose of Extra JA-1 stopped down the embankment at the foot of the slope and was destroyed by fire, and four cars in that train were damaged. Engine 282 headed down the embankment and stopped on its right side, badly damaged; the first car and the forward truck of the second car in Extra JS-3 were derailed. Tracks 1 and 2 were blocked by the wreckage. The employee killed was the head brakeman of Extra JS-3, and the employee injured was the flagman of that train.

Summary of evidence

Engineman Grube, of Extra JA-1, stated that when his engine stopped at Stockton Street he went to the telephone and called the towerman. The first he knew of anything wrong was on starting toward his engine; he gave a proceed signal to the fireman, who was operating the engine, but while the train was still standing and the flagman was being recalled, the engineman heard the explosion of two torpedoes, this sound being followed in a few seconds by the accident. He said that when a stop is made at this location under conditions similar to those in this instance, instructions require the engineman to whistle out a flag, and also require the flagman to go back immediately whether or not he is whistled out; the engineman could not definitely recall whether the fireman whistled out a flag when the stop was made at Stockton Street. Fireman Vaughn gave testimony similar to that of Engineman Grube; the stop was made east of Stockton Street, as is customary in foggy weather, so as to avoid blocking street crossings. As it is not possible to see the position of the home signal at Phillipsburg interlocking plant under such conditions, telephone inquiry is made of the towermen as to the position of the signal. Fireman Vaughn estimated that vision was restricted by fog to about 500 feet; he did not recall whether he whistled out a flag. The train brakes were released and the independent brake only was applied when the collision occurred.

Conductor Angst, Head Brakeman Hager and Flagman McDonnell, of Extra JA-1, were in the caboose, the head brakeman having boarded the caboose at Bloomsburg, 7.9 miles east of Phillipsburg. Conductor Angst said that Flagman McDonnell was his regular trainman but had been acting in the capacity of flagman for a few trips while the regular flagman was off. Speed was reduced to about 5 or 6 miles per hour through the rock cut, in order to bring the train under control approaching signal 751, and if it was displaying a caution indication it was customary to stop at Stockton Street and telephone the towerman, asking for the home signal at Phillips-

burg interlocking plant. He said he had never dropped off lighted fusees when the train was in motion, regardless of weather conditions. The conductor at first said that as soon as the train stopped he got off the caboose and started ahead on the left side of the train. He did not know why he did this other than to see if his train had the home signal, and said that the head brakeman preceded him on the same side of the train. When he got off the caboose he saw Flagman McDonnell walking toward the east with lighted red and white lanterns; as vision was restricted by the dense fog to about three or four car lengths, the flagman disappeared from view at that distance. As the flagman had been in the service a number of years, the conductor felt assured that he would go back a sufficient distance to provide full protection and for this reason he did not tell him how far back he should go. Later, however, the conductor said that he did not get out of the caboose at once, but remained there until several minutes before the accident occurred, and that when he did start ahead he did not know whether the flagman was back, nor did he look to see, although he felt positive that he had gone back. After reaching a point about five or six car lengths from the caboose, he heard a train approaching from the rear and he thought it was a pusher engine; he started walking very slowly toward the rear end, on track 2, the east-bound main track, and had walked about one car length when the collision occurred. Conductor Angst said that his train stopped about 6:55 or 7 a.m., and that the accident occurred about 7:10 or 7:12 a.m. After the accident occurred he did not immediately go back to the rear of his train, but stopped west of the fourth car ahead of the caboose, which car was fouling track 2; the first person he saw after the crash was the head brakeman, who came back to that point. He did not see his flagman at this time and he then went ahead to the telephone at Stockton Street; he did not hear any one call to him before he started ahead to telephone. The head brakeman went to Stockton Street ahead of him and obtained a red lantern to protect the east-bound track, and the conductor telephoned the dispatcher and reported the accident. After taking the undamaged portion of his train to Easton, 0.5 mile west of Phillipsburg, he returned to the scene of the accident with his engine; he could not find his flagman then, but several minutes later the flagman came to him, and several hours after the accident the flagman told him that he was back to the foundry switch in the rock cut, and that he had torpedoes down, but the conductor did not ask him where the torpedoes were placed or whether he had lighted a fusee, the flagman saying that he flagged the engine when it went by him. Conductor Angst said that he heard two torpedoes

explode within less than one minute prior to the accident, and that he did not see the reflection from the headlight of the following engine until it had nearly reached the caboose. He did not hear the approaching engineman answer any flagging signals.

Head Brakeman Hager said that when his train stopped he saw the flagman start through the rear door of the caboose with full flagging equipment but he did not follow his movements further. At first the head brakeman said that when his train stopped he got off the front end of the caboose and started ahead of the conductor, on the right side, and reached a point within six car lengths of the engine when the collision occurred, but later he said that he remained on the caboose for some time after it stopped and then started ahead at 7:05 a.m. On hearing the crash he waited about two or three minutes and then crossed over to the opposite side of the train at the sixth car from the engine and walked back along track 2 for about three car lengths, where he met his conductor, and the conductor told him to protect track 2 as their caboose had been struck. The head brakeman said that he did not go back at any time to see what happened at the rear end; he estimated that vision was restricted in the dense fog to about one car length.

Flagman McDonnell stated that he is a qualified flagman, but not a qualified conductor. He had been acting as flagman for about two weeks on this run, and was a regular member of the crew. It is customary to receive a caution indication at signal 751, which indicates that the home signal at the interlocking tower is not clear; the speed of his train was about 6 or 7 miles per hour through the rock cut. He did not think that his train was going to stop at Phillipsburg, and while he should have dropped off a lighted fusee in the cut it did not occur to him to do so, although he was out on the back platform and knew the instructions required that lighted fusees be dropped off at regular intervals when his train was liable to be overtaken by a following train. Vision was restricted from 40 to 200 feet in the fog. He knew there were cars to be set out at Easton, but none at Phillipsburg. When the caboose stopped just west of signal 751 at 6:55 a.m. he said that he was the first one to get off and had red and white lanterns, torpedoes and fusees, and he immediately started back to protect, as fast as he could walk; he did not see the conductor or head brakeman get off. On reaching a point east of South Main Street he placed one torpedo on the rail and about three or four car lengths farther east he placed another torpedo opposite the points of the foundry track switch. He lighted a fusee as he reached the switch and heard the rumble of an approaching train, and about two

minutes afterwards he saw the reflection of its headlight; he waved stop signals, with his red and white lanterns and the lighted fusee, on the engineman's side, but received no answer to these signals and the train passed him drifting at a speed of about 35 or 40 miles per hour and with no brakes applied; the torpedoes were then exploded and about 45 seconds later the collision occurred, at about 7:10 a.m. The air brakes were applied shortly before the train stopped. His fusee was about half burned when the train passed him; it burned out completely as he walked toward his caboose. He did not see anyone at that point except the student fireman of Train JS-3 with whom he talked, this being about 10 minutes after the accident; he then continued ahead and flagged the east-bound track until his conductor came along, about 35 or 40 minutes later. Flagman McDonnell also said that he heard his own engine whistle sounded to recall him and about the time two blasts were completed the accident occurred; he said that he was not back a sufficient distance to afford proper protection. He was last examined on book of rules August 7, 1936, and at that time the necessity for strict observance of rule 99 was stressed. Flagman McDonnell stated that his train was moving slowly enough for him to have gotten off in the cut, but he did not think it safe to do so in the fog on account of the height of the caboose steps from the ground and the poor footing afforded by the stone ballast.

Engineman Reppert, of Extra JS-3, stated that the air brakes and automatic train-stop apparatus were tested and worked properly. The automatic train-stop was cut in and sealed. Approaching signal 741 the speed was about 55 to 60 miles per hour; this signal was displaying a caution indication and the head brakeman called it. Engineman Reppert forestalled an automatic brake application with the acknowledging lever and the audible signal of the automatic train-stop device sounded. After making a 16-pound brake pipe reduction the speed was reduced to about 20 miles per hour; the engineman released the brakes just west of signal 741, and passing through the cut the speed was about 15 miles per hour and he placed the reverse lever in center, closed the drifting valve and used the independent engine brake. He had his head out of the side cab window, maintaining a lookout ahead. The first he knew of anything wrong was on being flagged with a red lantern from the left side of the track when about one or two car lengths east of signal 751. The speed was about 8 or 10 miles per hour and he immediately applied the air brakes in emergency, shouted a warning of danger, saw signal 751 displaying a stop indication, then the caboose markers and some colored lights in the caboose about 100 feet away; he also saw a man in the caboose doorway apparently trying to light something, and the man jumped off the left side of

the caboose just before the collision occurred. Engineman Reppert did not see a lighted fusee or hear any torpedoes exploded prior to the accident, but he did hear an explosion similar to a torpedo at the time the collision occurred. He also heard someone calling for the conductor shortly after the accident and asking whether he had gotten out all right, and he thought this was one of the firemen. Engineman Reppert said that his headlight was burning brightly, but he misjudged his exact location in the fog and thought he would be able to see signal 751 sooner than he did; he was expecting to find that signal displaying a stop indication and was watching closely for it and thought he would be able to stop before reaching it.

Statements of Instructor Fireman Parsons and Student Fireman Gesford of Extra JS-3, were similar to those of Engineman Reppert; within less than two minutes after the accident Flagman McDonnell came to them on the left side of their train and said that Extra JA-1 had been stopped there about 5 minutes, immediately following which the flagman went west on track 2 with red and white lanterns. At no time between the cut and the point of accident did they see a burning fusee or hear torpedoes exploded. Conductor German and Flagman Beck were in the caboose and were not aware of anything wrong until the accident occurred; the conductor immediately looked at his watch and it was 7:25 a.m.

Road Foreman of Engines Reichard arrived at the scene of the accident shortly after 8. a.m. He looked for indications of exploded torpedoes east of the point of accident and found where two had exploded, both on the south or high rail of track 1; the first one was at a point 8 feet west of signal 751, at the insulated rail joint, and the other was 80 feet west of the first torpedo, the accident occurring 125 feet west of signal 751. The remains of these torpedoes being blue and dry and free from rust, indicated that they had been recently exploded. He then walked back as far as the east end of the cut, but could not find the remains of any burned out fusee.

Assistant to General Manager Hartenstein stated that he is a member of the rules examining committee which conducts examination classes on the current book of rules for employees in the operating department. He said that rule 93, the yard limit rule, is not adequate in its present form in that its provisions do not satisfactorily cover flagging within yard limits and it is proposed to have this rule rewritten so as to require the same protection within yard limits as that required at any other point. At each instruction class conducted during the last two examinations, covering a period of

four years, the employees were instructed that they must furnish the same protection within yard limits as is required at any other point on the railroad, regardless of the present provisions of rule 93. Instructions were given in each class during two separate examinations, to protect in yard limits as required by rule 99, and to drop off fusees while moving at slow speed during inclement weather.

Tests made of the automatic train-stop and signal apparatus involved after the accident disclosed it to be in proper working order.

Discussion

Under the rules, block signals govern the use of the blocks, but, unless otherwise provided, do not supersede the superiority of trains nor dispense with the use or the observance of other signals whenever and wherever they may be required. Trainmen acting as flagmen must protect the rear of their trains in strict accordance with the rules, and must allow nothing to interfere with the prompt and efficient discharge of this duty. Conductors must invariably require their flagmen to act with the utmost promptness and in strict accordance with the rules. In this instance Extra JA-1 stopped at Phillipsburg about 6:55 a.m., and the accident did not occur until about 7:23 a.m., or 28 minutes after the train stopped. Flagman McDonnell said that he placed two torpedoes on the rail east of South Main Street and flagged the following extra with a burning fusee from a point opposite the switch leading to the foundry track, this switch being located about 1,600 feet east of the point of accident. There was stronger evidence, however, to indicate that the two torpedoes were placed on the south rail at points only 37 feet and 117 feet, respectively, behind the caboose, or between the caboose and signal 751, and that the flagman stationed himself at a point about one or two car lengths east of signal 751 and flagged from the left side of the track, with red and white lanterns only. There was ample time at the disposal of the flagman to have afforded proper protection and he should have gone back a sufficient distance to insure full protection. The conductor should also have required the flagman to afford full protection, and should have instructed him accordingly, regardless of the flagman's length of service.

Engineman Reppert, of Extra JS-3, was familiar with conditions in this locality; the automatic train-stop apparatus and the air brakes were working properly and the headlight was burning brightly. The evidence indicates that approaching Phillipsburg the speed was about 55 or 60 miles per hour, signal 741 was displaying a caution indication and the engineman

forestalled an automatic application of the brakes by operating the forestalling device; speed was reduced to about 15 miles per hour passing through the cut and Engineman Reppert was expecting to find signal 751 displaying a stop indication but he misjudged his location in the dense fog and was not aware of anything wrong until he was flagged with a red lantern from the left side of the track when about one or two car lengths east of signal 751. It was then too late to stop and Extra JS-3 passed signal 751 displaying a stop indication, and collided with the caboose of Extra JA-1, which was standing 125 feet west of the signal. He did not see any lighted fusee prior to the accident, nor did he hear any torpedoes exploded, but there was a sound similar to exploding torpedoes just as the crash occurred.

The present book of operating rules in use by this railroad was adopted in July; 1924; Rule 93 of the operating rules reads as follows:

> "Within yard limits the main track may be used, protecting against first-class trains.
>
> Second-class and extra trains and yard engines must move within yard limits prepared to stop, unless the main track is seen or known to be clear.
>
> First-class trains must not exceed schedule speed within yard limits.
>
> Trains carrying passengers are not relieved from observance of Rule 99 within yard limits.
>
> Yard limits will be designated on the timetable and indicated by yard limit signs."

Special General Instruction No. 8 in the current timetable modifies operating rule 93 by requiring yard engines, while using main tracks under rule 93, to observe the requirements of rule 99 at all times; nothing is said, however, with respect to other trains doing so. Rule 99 of the book of rules makes no provision for rear end protection to a slowly moving train other than that the flagmen must go back immediately with flagman's signals and proceed rapidly to a distance sufficient to insure full protection, etc.; there are no provisions calling for fusees to be dropped from the rear of a slowly moving train as added protection. However, a member of the rules examining committee stated that during all examination classes conducted within the past four years, all employees were instructed that flag protection must be provided for all trains occupying the main track within yard limits, as required by rule 99; in addition in these examination classes rule 99 was interpreted as requiring that when a train is moving under circumstances in which it may be

overtaken by a following train, lighted fusees must be dropped off as may be necessary to insure protection. These requirements are not included in the rules as written. It is not doing justice to employees to place a verbal interpretation on a rule during examination classes and then, for reference and study, present them with books containing rules reading at variance with the verbal interpretation placed upon them. The member of the rules examining committee also stated that rule 93 in its present form has not been satisfactory for the past four years and is to be rewritten. There is no justification for allowing an unsatisfactory rule to remain in the book of rules for such a length of time without supplementing it with an appropriate rule in a manner such that it may be constantly before employees whose duties are affected thereby.

It is to be noted that the current timetable in which rule 93 is modified with respect to yard engines, took effect on September 27, 1936; if it was intended that the rule should also require flag protection to all trains while occupying the main track within yard limits, the modified rule appearing in the timetable should so state; the same principle applies to rule 99.

Conclusions

This accident was caused by failure of the first train to be properly protected by flag, and of the following train to be operated in accordance with automatic block-signal indications.

Recommendations

It is recommended that the rules of this railroad be revised to correspond with the verbal modifications placed upon them.

Respectfully submitted,

W. J. PATTERSON.

Director.