

INTERSTATE COMMERCE COMMISSION

REPORT OF THE CHIEF OF THE BUREAU OF SAFETY COVERING INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE LINE OF THE SOUTHERN PACIFIC COMPANY NEAR BERTHA, OREG, ON MAY 9, 1920

JULY 3 1920

To the Commission

On May 9, 1920, there was a head-end collision between two passenger trains on the Southern Pacific Company's line near Bertha, Oreg, which resulted in the death of 5 passengers and 3 employees, 2 of whom were off duty, and the injury of 92 passengers, 1 of them fatally, and 10 employees, 5 of whom were off duty. This accident was investigated jointly with the Public Service Commission of Oregon, and as a result of this investigation I respectfully submit the following report:

This accident occurred on the West Side Branch of the Junction City Subdivision of the Portland Division, a single-track electric line extending between Portland and Whiteson, Oreg, a distance of 55.7 miles. Trains are operated by time-table and train orders transmitted by telephone, no block-signal system being in use. The accident occurred 571 feet east of the east passing-track switch at Bertha. Approaching this point from the east there is a short tangent, followed by a curve to the right of $10^{\circ} 42'$, this curve being 943 feet in length, the accident occurred on the curve at a point 174 feet from its western end. Approaching the curve from the west the track is tangent for a distance of 1,754 feet. There is an embankment on the inside of the curve which obscures the view, and a test indicated that one train could not be seen from the opposing train until the trains involved were within 433 feet of each other. The grade at the point of accident is 1.02 per cent descending for east-bound trains. About 1,400 feet west of the point of accident is a slow board restricting the speed of eastbound trains while rounding the curve to 20 miles an hour. Illustration No. 1 is a view showing how far the point of accident is visible from a train approaching from the east, illustration No. 2 is a view approaching the curve from the west, the man in the middle of the track on the curve is standing approximately at the point of accident. The weather at the time of the accident was clear.

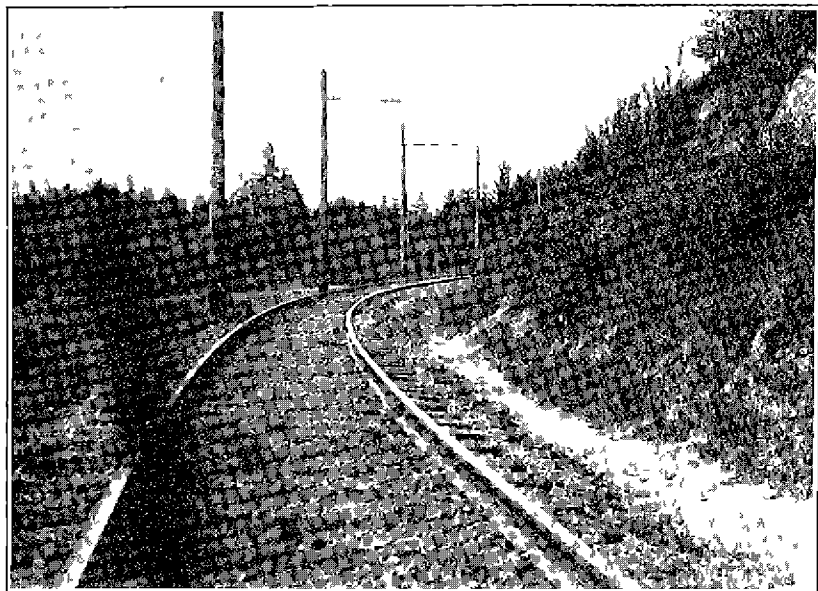


FIG. No. 1—View approaching point of accident from east

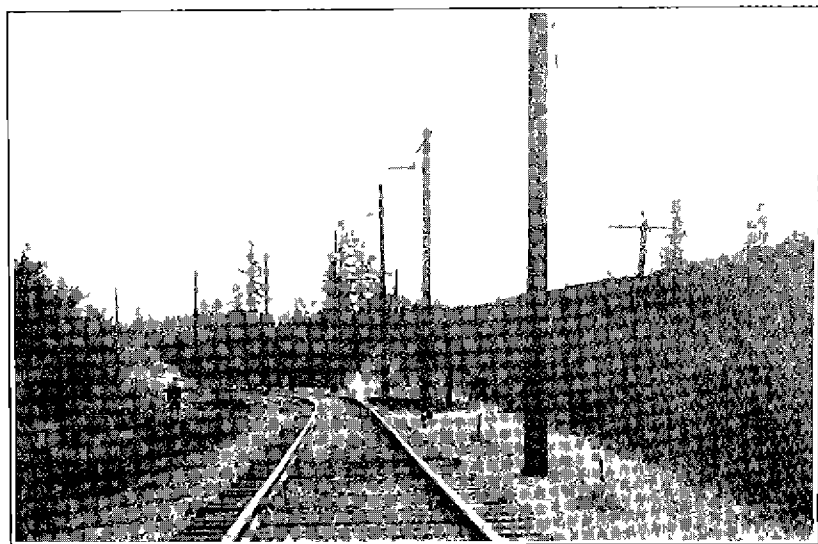


FIG. No. 2—View approaching point of accident from west

Westbound electric passenger train No 107 consisted of one motor combination coach, one trailer coach, and one motor coach, all of steel construction, in charge of Conductor Johnson and Engineman Bland, and was en route from Portland to McMinnville, near Whiteson. It left Portland at 10 a m, with a copy of train order No 204 which provided that train No 107 should take siding and meet train No 124 at Bertha. This order read as follows:

To C & E No 123

No 107

Motor 515 Reedville care No 123

No 124 Reedville care extra 515 east

Motor 515 run extra Reedville to Main Street and return to Reedville has right over No 234 Reedville to Hillsboro and wait at Reedville until nine twenty (9 20) a m. No 107 take siding and meet No 124 at Bertha. No 123 wait at Portland until eight forty (8 40) a m for No 106.

Train No 107 was due to arrive at Bertha at 10 22 a m and was approaching that station, traveling at a speed estimated to have been about 15 or 20 miles an hour, when it collided with train No 124 at about 10 23 a m.

Eastbound electric passenger train No 124 was en route from Reedville to Portland, on its return trip, when the accident occurred. This train is operated as train No 123 from Portland to Reedville, a nontelephone station 15.5 miles from Portland, from Reedville it is operated as an extra to Main Street and return, Main Street is 4 miles beyond Reedville and is also a nontelephone station. On its return to Reedville the train assumes the schedule of train No 124 for the remainder of the return trip to Portland. The arrangement extending this run from Reedville to Main Street and return had been in effect since April 29, 1920. Before leaving Portland on train No 123, Conductor Pharis received a copy of train order No 204, quoted above, this order being made complete to him at 8 33 a m, together with a copy of train order No 218, reading as follows:

Motor 502 instead of 515 run on order 204

Leaving Reedville en route to Portland as train No 124 the train consisted of one motor combination coach and one motor coach, both of steel construction, in charge of Conductor Pharis and Engineman Willett. It left Beaverton, 5.5 miles west of Bertha and the last open telephone office, at 10 10 a m, made several stops en route, including a scheduled stop at Bertha, and about half a mile east of the station at Bertha it collided with train No 107 while traveling at a speed believed to have been at least 20 miles an hour.

The front ends of the two leading cars were torn from their trucks and forced toward the outside of the curve. The front end of car 503, the leading car of train No 107, was raised above the

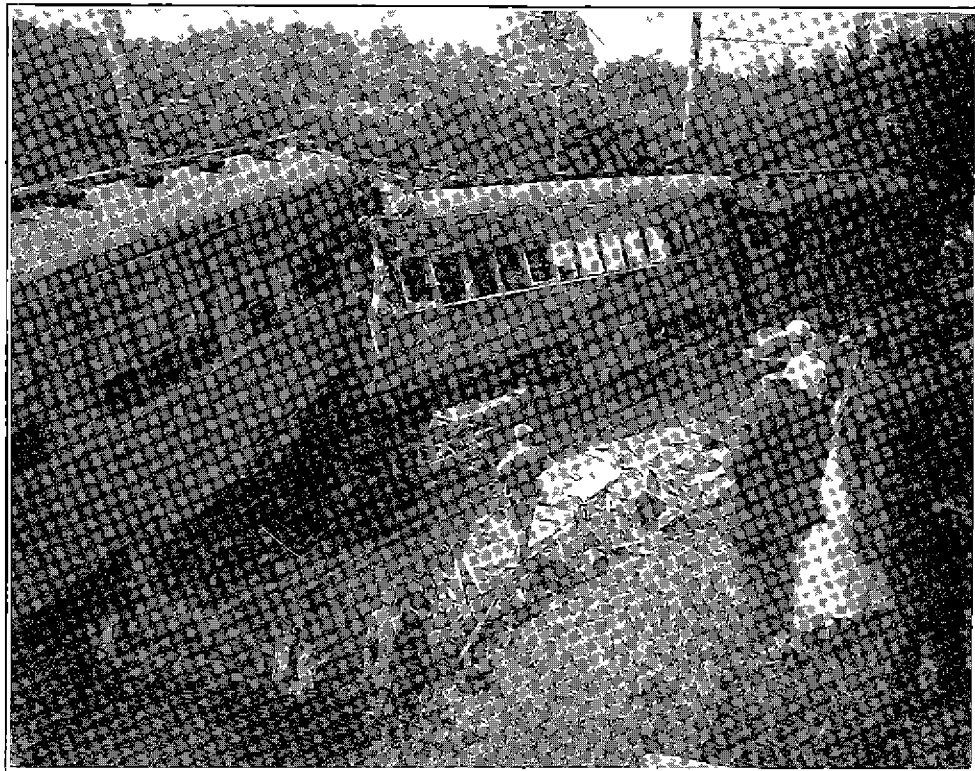


FIG. No. 3—General view of wrecked equipment taken shortly after occurrence of accident

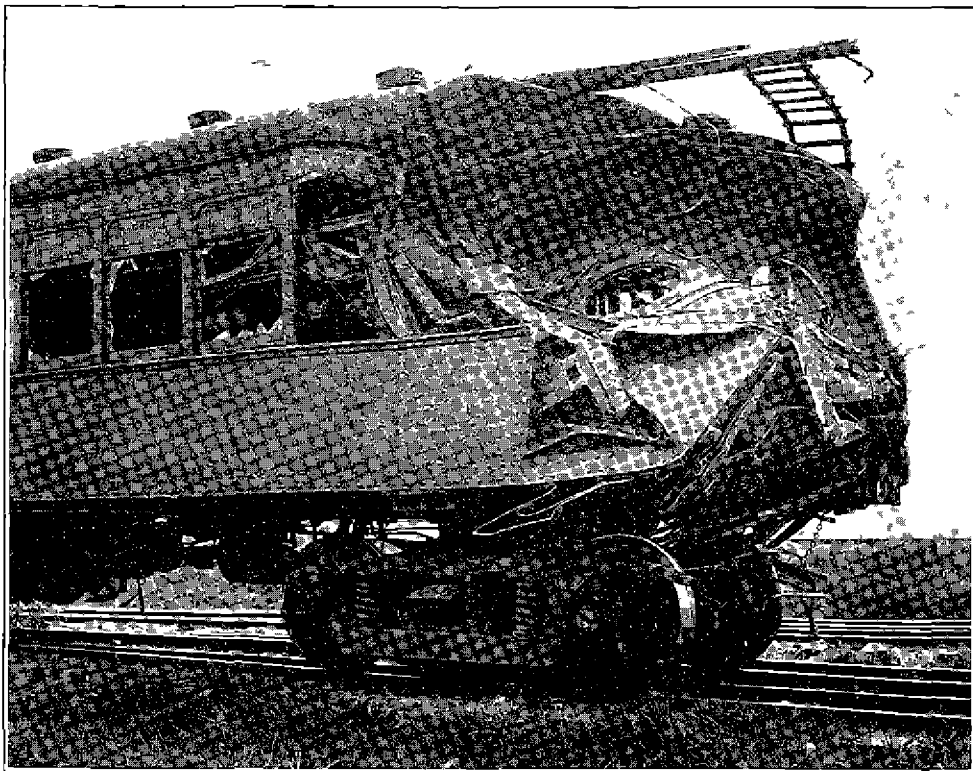


FIG No 4—Front end of car 50 of train No 107

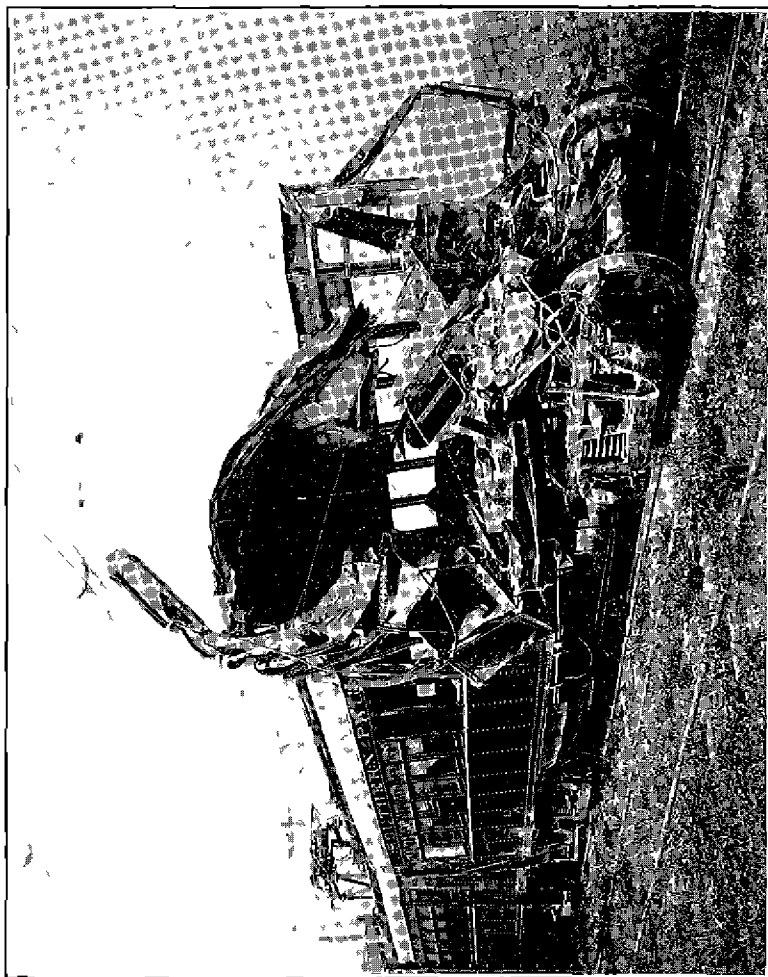


FIG. No 5—Car 502, of train No 124, after its removal to the shops

floor of car 502, of train No 124, telescoping that car a distance of about 19 feet on its right side and about 13 feet on its left side. None of the other cars was badly damaged. Illustration No 3 is a general view, taken from the embankment on the inside of the curve showing the leading car of train No 107 on the left and the two cars of train No 124 on the right. Illustration No 4 shows the manner in which the front end of car 503 was bent, which undoubtedly contributed to the telescoping of car 502. Illustration No 5 shows the condition of car 502 after it had been moved to the shops. With the exception of an employee off duty, who was riding in the front end of car 503, all of the persons killed were riding in car 502. The employee on duty who was killed was Engineman Willett, of train No 124.

The crew of train No 107 estimated the speed of their train approaching Bertha to have been from 20 to 25 miles an hour. Engineman Peebler, who was off duty, was riding on the left side of car 503, and due to his position on the outside of the curve he was the first to see train No 124 approaching, he called to Engineman Bland, who at once applied the air brakes in emergency. Engineman Bland estimated train No 124 to have been about six car lengths distant when he first saw it. The conductor of train No 107 estimated that the speed just before the brakes were applied was about 25 miles an hour, the accident occurred within a very few seconds after the brakes were applied, and he thought the speed at the time of the accident was only 8 or 10 miles an hour. According to these employees, Bertha was the usual meeting point for these trains and there was nothing unusual about train order No 204, similar orders had been issued for several years, while Engineman Bland stated that the receipt of orders of this character had recently been a matter of daily occurrence.

Conductor Pharis received train order No 204 before leaving Portland on train No 123 and clearly understood the contents of the order, which he considered to be in proper form and similar to other orders he had received to meet train No 107 since he had been on this run. When Engineman Willett whistled for the station at Bertha, Conductor Pharis pulled the signal cord once for the purpose of calling attention to the fact that the train was approaching a meeting point, this signal being acknowledged by the engineman. The train stopped at the station, some passengers were received, and a test of the air brakes was made, after which Conductor Pharis gave a proceed signal by means of the air whistle. Although he was looking out for the purpose of identifying train No 107, Conductor Pharis first realized that the train was running by the meeting point when it was about at the east passing-track switch, traveling at a speed of about 35 miles an hour. He knew that train No 107 had

not arrived, and although he said he had intended to pull the emergency cord he was unable to say whether or not he did so or whether he even reached the cord, his only definite statement as to his actions at that time being that he started toward the head end of the train, and that the brakes were applied just as the accident occurred. Conductor Pharis' statement that he gave the orders to Brakeman Fisch at Portland was denied by the brakeman, who claimed that he had not seen the orders and had had no conversation about them with the conductor although he knew that it was customary to meet train No. 107 at Bertha. Brakeman Fisch stated that a test of the air brakes was made at Bertha and he thought the train attained a speed of about 40 miles an hour after leaving that point. He did not notice any application of the air brakes before the accident occurred. The statements of Conductor Pharis indicated that when coming into Reedville on the return trip to Portland he had talked with Engineman Willett about meeting train No. 107 and that Engineman Willett appeared to be in good health, although he had complained about not feeling well the previous night and of not having had a good night's rest.

The statements of a bridge carpenter who had been employed since January, 1920, an assistant bridge foreman of seven years' experience, and of a passenger who had had experience in train service, all of whom were passengers on train No. 124 indicated that the speed of that train approaching the point of accident was 40 or 45 miles an hour, while Engineman Senders, also a passenger on that train, did not think the speed exceeded 30 miles an hour. Engineman Senders had talked with Engineman Willett before leaving Main Street and at that time Engineman Willett appeared to be in normal physical condition and did not say anything about not feeling well.

The evidence is not clear as to whether the air brakes were applied on train No. 124 prior to the accident. Conductor Pharis thought they were applied at the time of the accident, Brakeman Fisch and the two bridge employees said they were not applied, while two enginemen who were deadheading and four passengers, one of whom had had previous experience in train service thought they were applied a few seconds prior to the occurrence of the accident.

Dispatcher McLardy stated that while he cleared train No. 123 at Portland, train order No. 204 had been issued by the dispatcher on the previous trip. Dispatcher McLardy considered train order No. 204 to be correct and proper in every respect and stated that since April 29 he had issued a similar order to train No. 123 nearly every day. According to Dispatcher McLardy the reason for issuing one order covering the round trip of the crew on trains Nos. 123 and 124 was that the terminals of train No. 123 at Reedville and of the extra at Main Street are nontelephone stations.

This accident was caused by the failure of Conductor Pharis and Engineman Willett of train No 124 to obey train order No 204, which established a meeting point between their train and train No 107 at Bertha

The evidence indicates that Conductor Pharis had talked with Engineman Willett about the order and that the engineman fully understood its contents, that Engineman Senders had talked with Engineman Willett at Main Street, at which time he seemed to be in normal physical condition, that Engineman Willett acknowledged the conductor's meeting-point signal when approaching Bertha, and that a stop was made at that time and a test of the air brakes made. In view of these facts, and also in view of the fact that the controller of car 503 was equipped with a device known as "dead man's control," which cuts off the current and applies the brakes in case the engineman becomes physically incapacitated and his hand is removed from the controller, any attempt to assign a definite reason for the failure of Engineman Willett to comply with train order No 204 and bring his train to a stop before passing the east passing-track switch, at which point train No 107 was to have taken the siding for his train, resolves itself into a matter of mere conjecture. That Conductor Pharis was not paying proper attention to the operation of his train was evident from the fact that his train was near the east passing-track switch, running at a speed estimated by him to have been about 35 miles an hour, before he realized that the requirements of the meet order were not being observed, while the accident occurred before he had taken any effective steps toward bringing his train to a stop. Knowing that after leaving the station at Bertha his train would have to stop within a distance of less than one-half mile for the purpose of meeting train No 107, it is inconceivable how Conductor Pharis could have returned to the inside of his train and have become so engrossed with other matters as not to know that the meet order was being disregarded.

Engineman Willett was employed as a fireman in April, 1898, and promoted to engineman in 1902. He had been disciplined on two occasions for improper handling of train orders. Engineman Willett was considered to be an unusually efficient engineman, while investigation failed to disclose anything to indicate that he had not made proper use of his period off duty. Conductor Pharis was employed as a brakeman in 1900 and promoted to conductor in 1904. His record was good. At the time of the accident the crew of train No 124 had been on duty nearly 5 hours, after about 12 hours off duty.

Cars 502 and 503, the leading cars on the two trains involved in this accident, were built in 1913. They were 55 feet 4 inches in length over the buffer beams and weighed 100,200 pounds. Their front ends were not equipped with vestibules, thus placing the engineman

at the extreme front of the car. The passengers in each car were separated from the front end of the car by a baggage compartment 10 feet $\frac{3}{4}$ inch in length.

This accident again directs attention to the inherent weaknesses of the time-table and train-order method of operation as compared with the block system. Two other head-end collisions occurring on the lines of the Southern Pacific Co. in this locality have been investigated, one in 1915 and one in 1918, which were due to similar causes.

The accompanying sketch indicates the arrangement of the tracks of the Portland division in the vicinity of Portland. Over these

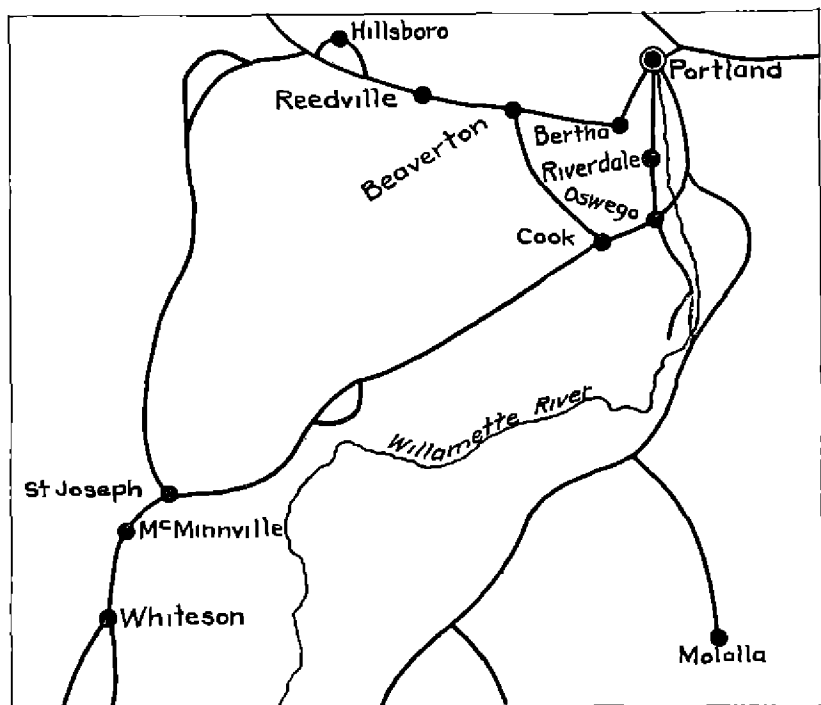


FIG. No. 6.—Tracks of Portland Division in vicinity of Portland

lines there is a large volume of traffic, including a considerable number of suburban trains. Following the Riverdale accident in 1915 the block system was installed on the line from Jefferson Street Depot, Portland, to Oswego, and at the time of the accident near Oswego in 1918 an appropriation had been made for extending the block system west of that point. The traffic on these lines is of such character, including trains making frequent stops and attaining comparatively high speed between stations, that proper protection can be furnished only by block signals and a code of block rules adequate to meet the traffic requirements. In this vicinity, in electric train service, the volume of traffic fluctuates from day to day,

particularly at week ends and in holiday seasons, and it was brought out at the investigation that it is frequently necessary to extend schedules in electric zones. Under these circumstances the train orders for directing the movement of traffic are particularly susceptible to misunderstanding, misinterpretation, or other error, and the necessity for the block system is apparent. The Southern Pacific Co. has recognized this necessity by the installation of the block system on a portion of these lines. On the line where this accident occurred, between Portland and Reedville, there are 20 first-class trains operated daily in both directions, in addition to six other first-class trains which are operated over a portion of this territory. With the exception of one train, which leaves Portland late in the evening, all of these 26 trains are operated within a period of approximately 17 hours. Traffic of this density on a single-track road warrants the installation of an adequate block-signal system, and it is recommended that such a system be promptly placed in operation on this line, in order to insure proper protection for the operation of trains.

Respectfully submitted

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Chief, Bureau of Safety