

Inv-2379

INTERSTATE COMMERCE COMMISSION

WASHINGTON

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REPORT OF THE DIRECTOR

BUREAU OF SAFETY

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ACCIDENT ON THE  
CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILROAD

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AVERY, IDAHO

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SEPTEMBER 15, 1939

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INVESTIGATION NO. 2379

SUMMARY

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Inv-2379

Railroad: Chicago, Milwaukee, St. Paul and Pacific  
Date: September 15, 1939  
Location: Avery, Idaho  
Kind of accident: Rear-end collision  
Trains involved: Passenger : Passenger  
Train numbers: Passenger Extra : 16  
250 East  
Engine numbers: 250 : 251  
Consist: 13 cars : 12 cars  
Speed: Standing : 10 m.p.h.  
Track: Single; compound 4° curve to right;  
grade 0.24 percent ascending eastward  
Operation: Timetable, train orders, and automatic  
block system  
Weather: Clear  
Time: 11:25 a.m.  
Casualties: 180 injured  
Cause: Failure to provide proper flag pro-  
tection for first train and failure  
to control speed of second train  
properly within subdivision terminal  
because of depending upon a signal  
which displayed a false proceed  
indication.

December 6, 1939.

To the Commission:

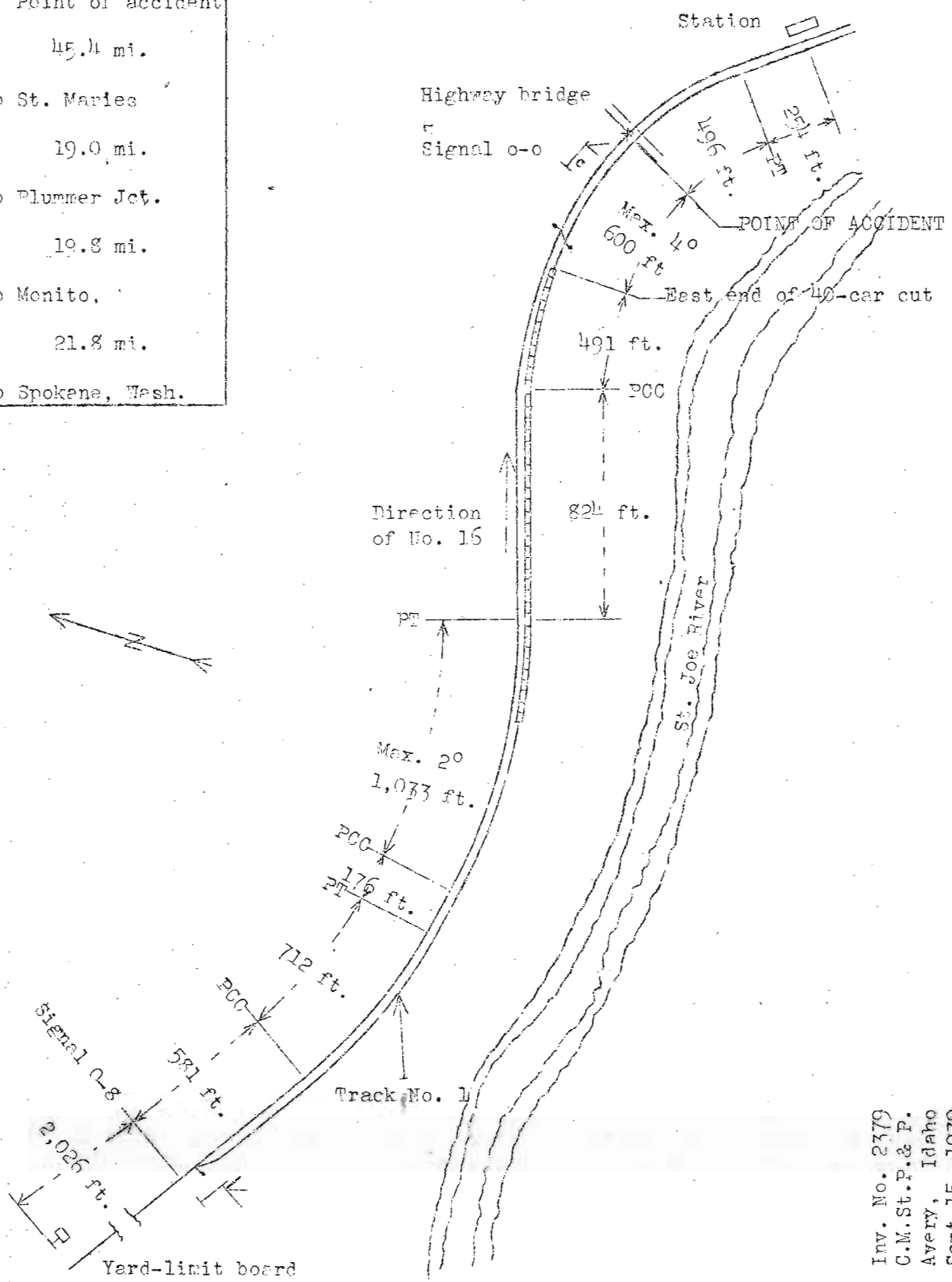
On September 15, 1939, there was a rear-end collision between two passenger trains on the Chicago, Milwaukee, St. Paul and Pacific Railroad at Avery, Idaho, which resulted in the injury of 164 passengers, 2 train-service employees, 3 train porters, 9 dining-car employees, and 2 sleeping-car employees.

#### Location and Method of Operation

This accident occurred on that part of the Rocky Mountain Division designated as the Fourth Subdivision which extends between Avery, Idaho, and Alberton, Montana, a distance of 100.3 miles. Trains arriving at Avery from the west are operated over that part of the Coast Division designated as the First Sub-division which extends between Plummer Jct. and Avery, Idaho, a distance of 64.4 miles. In the vicinity of the point of accident this is a single-track line over which trains are operated by timetable, train orders, and an automatic block system. The accident occurred within yard limits on the main track at a point 750 feet west of the station at Avery. Approaching from the west there is a series of tangents and curves, followed by a tangent 824 feet in length, and then a compound curve to the right with a maximum curvature of  $4^{\circ}$ , which extends 1,091 feet to the point of accident and 496 feet beyond. The grade for east-bound trains is generally ascending, being 0.24 percent at the point of accident. A yard track 3,800 feet long, designated as track No. 1, is located to the south of and parallel to the main track; its east switch is located 404 feet west of the point of accident; at the time of accident the east end of a cut of 40 box cars was located on this track at a point about 600 feet west of the point of accident. The tracks are laid on a hillside cut and generally parallel the north bank of the St. Joe River. The west yard-limit board is located 6,389 feet west of the point of accident.

Automatic signals O-8 and O-0 governing eastward movements are located 4,417 and 169 feet, respectively, west of the point of accident. Signal O-8 is located on the south side and signal O-0 is located on the north side of the main track. Signal O-8 is a 3-position, upper quadrant, semaphore signal, continuously lighted, and is controlled by a D. C. polarized relay; its indications are:

o	Avery, Idaho
x	Point of accident
	45.4 mi.
o	St. Maries
	19.0 mi.
o	Plummer Jct.
	19.8 mi.
o	Monito.
	21.8 mi.
o	Spokane, Wash.



Inv. No. 2379  
 C.M.St.P.& P.  
 Avery, Idaho  
 Sept 15, 1979

Proceed. Name - Clear signal.

Proceed preparing to stop at next signal. Train exceeding medium speed must at once reduce to that speed. Name - Approach signal

Stop, then proceed at restricted speed. Name - Stop and proceed signal.

Signal 0-0 is a 2-indication, color-light signal, continuously lighted, and its indications are:

Red: Stop then proceed at restricted speed. Name - Stop and proceed signal.

Yellow: Proceed preparing to stop at next signal. Train exceeding medium speed must at once reduce to that speed. Name - Approach signal.

Rule 93 of the operating rules provides in part as follows:

Within yard limits the main track may be used, clearing first-class trains when due to leave the last station where time is shown, but not less than five minutes. In case of failure to clear the main track protection must be given as prescribed by Rule 99. \* \* \* the main track may be used without protecting against second and inferior class, extra trains and engines. \* \* \*

Special Rules provide in part as follows:

G-93-(A). Within yard limits, trains carrying passengers must be protected at all times as prescribed by Rule 99. \* \* \* Yard limits will be designated by yard limit boards or by special instructions.

G-93-(B). Trains must approach the passenger station at sub-division terminals prepared to stop expecting to find other trains occupying the main track and move as the way is seen or known to be clear.

Fixed signal. A signal of fixed location indicating a condition affecting the movement of a train or engine.

Note. -- The definition covers \* \* \* yard limit boards. \* \* \*

Rule 99 of the operating rules reads in part as follows:

When a train stops under circumstances in which it may be overtaken by another train, the flagman must go back immediately with flagman's signals a sufficient distance to insure full protection placing two torpedoes and when necessary, in addition, displaying lighted fuses. When recalled and safety to the train will permit, he may return. When the conditions require, he will leave the torpedoes and a lighted fuse. \* \* \*

Rule 505. Block signals \* \* \* Govern the use of blocks, but, unless otherwise provided, do not \* \* \* dispense with the use or observance of other signals whenever and wherever they may be required.

Rule 519. After passing a signal displaying a proceed indication, the indication of the next signal may change to stop and engineman and trainman must be on the alert to observe it.

The weather was clear and the sun was shining at the time of the accident, which occurred at 11:25 a.m.

#### Description

Passenger Extra 250, an east-bound passenger train, consisted of one baggage car, one tourist car, three coaches, one dining car, four tourist cars, one dining car, and one observation car, in the order named, all of all-steel construction, hauled by engine 250, and was in charge of Conductor McAuley and Engineman Stocking. At Manito, 84.2 miles west of Avery, the crew received order No. 30, Form 19, reading as follows:

Eng 250 run passenger extra Manito to Plummer Jct and Plummer Jct to Avery has right over Extra 50 West Plummer Jct to St. Maries has right over No 263 Plummer Jct to Avery and run ahead of No. 16 Manito to Plummer Jct and Plummer Jct to Avery Wait at Plummer Jct until 8:55 a.m.

This train departed from Manito at 8:52 a.m., according to the train sheet, passed St. Maries, 45.4 miles west of Avery, at 9:59 a.m., stopped at the station at Avery at 11:11 a.m., received electric locomotive E-11 in place of steam engine 250, and soon thereafter the rear end of this train was struck by No. 16.

No. 16, an east-bound passenger train, known as the Olympian, consisted of one mail-express car, one baggage-express car, two coaches, two tourist cars, one dining car, four Pullman sleeping cars, and one observation car, in the order named, all of all-steel construction, hauled by engine 251, and was in charge of Conductor Foley and Engineman Berg. This train departed from Spokane, 106 miles west of Avery, at 8:03 a.m., according to the train sheet, 3 minutes late, received order No. 30 at Manito, departed from St. Maries at 10:10 a.m., 23 minutes late, passed signal O-8, which was displaying a proceed indication, passed signal O-0 displaying a stop-and-proceed indication, and while moving at a recorded speed of 10 miles per hour collided with the rear end of Passenger Extra 250.

The impact drove Passenger Extra 250 ahead a distance of 5 feet. The rear end of the observation car was badly damaged and the body of the car was lifted about 2 feet above the rear truck; other cars in the train were but slightly damaged.

The front end of engine 251 was considerably damaged; the air compressor was loosened and the headlight was knocked off. Several cars in this train were slightly damaged.

The train-service employees injured were the engineman and the flagman of No. 16.

#### Summary of Evidence

Conductor McAuley, of Passenger Extra 250, stated that at Spokane he gave the train orders to the flagman and cautioned him to be alert in the performance of his duties, as No. 16 would be following closely. Order No. 30 was received at Manito and, after reading it, he gave it to the flagman. The train stopped on the main track at the station at Avery at 11:11 a.m., and a change of motive power was made. He knew that No. 16 was due and that Passenger Extra 250 should either take siding or afford protection. As it was not customary to whistle out a flagman in terminals, it was not done in this instance. On previous freight trips the same flagman had worked with him and had performed his duties satisfactorily; he assumed that the flagman would afford protection properly in this instance. Conductor McAuley was engaged with various duties in and about the station and did not observe the approach of No. 16 until

he returned from the station restaurant where he had gone to announce the departure of his train to the passengers who were eating; almost immediately afterward No. 16 collided with the rear end of his train, at which time it was 11:25 a.m. He was thoroughly familiar with the rules and operating practices in effect at this point. He said that it had always been his custom to instruct enginemen to recall flagmen at sub-division terminals and that the flagman was aware of this custom. He did not know what practice was followed by regular crews, as he was an extra conductor. It was his opinion that the flagman failed to afford proper protection.

Flagman Hall, of Passenger Extra 250, stated that he had read the orders addressed to his train and understood their provisions. Knowing that No. 16 would follow closely, he provided proper flag protection at all intermediate stops; he did not observe the approach of No. 16 at any of these points. When approaching Avery a lighted fusee was dropped off; after his train stopped at the station, he went back with full flagging equipment to a point where a clear view of an approaching train could be had; he remained there until a short time before the accident occurred. As there was no indication of an approaching train he started toward the rear of his train, although no signal had been given for him to return; he did not leave either torpedoes or a lighted fusee. When at a point about 200 feet to the rear of his train, observing the rapid approach of No. 16, he ran back to where he could be seen by the crew of that train, and gave stop signals with the red flag. At this time No. 16 was about 8 or 10 car lengths distant, and its speed was about 40 miles per hour. He estimated that the speed at the time of collision was about 25 miles per hour. He said that it is the practice for flagmen to go back but a short distance to flag in sub-division terminals, as they are not recalled unless the engineman is specifically instructed to do so. He was aware that Conductor McAuley had so instructed the engineman in this instance, but had walked in toward his train in order not to cause delay when it was ready to depart. It was his opinion that the flag protection he furnished was adequate if No. 16 had been operated in compliance with the provisions of Special Rule G-93-(B).

The statements of other members of the crew of Passenger Extra 250 added nothing of importance.

Engineman Berg, of No. 16, stated that a terminal air-brake test was made at Spokane and a running test after departure, and the brakes functioned properly en route. Apparently his train had followed Passenger Extra 250 closely for a considerable distance, as the block signals were displaying caution indications



at a number of places. At St. Maries he was informed by his conductor that Passenger Extra 250 had departed from that station at 10 a.m. When approaching Avery, at which time the speed was 42 miles per hour, as indicated on the speed recorder; the distant signal was displaying a proceed indication, which he believed indicated that Passenger Extra 250 had cleared the main track. It was 11:24 a.m. when No. 16 passed the west switch, which is 36 feet east of signal O-8, and he thought his train would stop at Avery about 11:26 a.m. About 10 or 12 car lengths west of the east end of the cars on track No. 1 he made a brake-pipe reduction of about 8 pounds, preparatory to making the station stop at Avery. There was scarcely time for the brakes to become applied when he observed that the passenger extra was standing at the station and its flagman, about 150 feet to its rear, was waving a red flag and running toward No. 16. At the same instant he saw that signal O-0, 169 feet in the rear of the passenger extra, was at stop. At this point No. 16 was moving about 30 miles per hour and he made an emergency application of the brakes but too late to avert the collision. He estimated that the speed of his train at the time of collision was 20 miles per hour. He was thoroughly familiar with the provisions of Rule 93 of the operating rules, and Special Rules G-93-(A) and G-93-(B) but stated that he failed to approach Avery prepared to stop short of train, obstruction, or anything that might require the speed of a train to be reduced, because the block signals indicated that the main track was unoccupied and the way was clear. He failed to stop short of signal O-0, because of receiving a proceed instead of an approach indication at signal O-8. His view ahead was obscured by track curvature and box cars on track No. 1. He said that had there been no block signals, he would have operated his train under control in compliance with the yard rules which were applicable at sub-division terminal points. Between St. Maries and Avery no torpedoes had been exploded and there was no indication of fuses burning. The fireman did not give him any warning of anything unusual. He was familiar with the location of signals and general arrangement of the tracks at Avery.

Fireman Boyle, of No. 16, stated that he understood the orders and knew that Passenger Extra 250 was running closely ahead. The signal at the west end of Avery yard displayed a proceed indication, which led him to believe that the track was clear to the station. He understood the provisions of Rule 93 and special rules G-93-(A) and G-93-(B). As the speed of his train when approaching the station was similar to that maintained by other enginemen for whom he had fired, he was not alarmed and did not think it necessary to caution the engineman in this instance. He knew of no engineman having been criticized on account of the speed at which his train was operated in Avery

yard. He did not see the flagman, the passenger extra, or the indication of signal O-O. He corroborated the statements of Engineman Berg with regard to the brake-pipe reductions and the locations at which they were made.

Conductor Foley, of No. 16, stated that at St. Maries he informed his engineman that Passenger Extra 250 had departed from that station about 10 a.m. and the engineman had said that he would look out for that train. When entering Avery yard the speed was reduced to about 40 miles per hour, which he considered safe; however, when the engineman did not reduce speed further he went to the rear vestibule of the third car, convenient to the conductor's valve, and from the left side-door he was looking for indications of the passenger extra, which he thought they might overtake. Being questioned further, he said the speed of his train through the terminal was too fast. He had been instructed that within yard limits block-signal indications could not be construed as superseding restrictions placed by rule and that the most restrictive rule must apply. It was his opinion that he was complying with special rule G-93-(B) when he placed himself in a location convenient to a conductor's valve and in position to observe conditions ahead. He felt a service application of the brakes, which was not released, following which the brakes were applied in emergency at a point about 300 feet west of the point of accident; the speed was reduced to about 20 miles per hour at the time of collision. He said that Engineman Berg appeared to be in normal condition.

The statements of Brakeman Gano and Baggage-man Mott, of No. 16, contained no additional information.

Traveling Engineer Wright stated that the speed-recorder tape removed from engine 251 disclosed that the range of speed of No. 16 as it approached Avery was downward from 45 to 41 miles per hour until it reached a point about 500 to 600 feet west of the point of collision, where an emergency application of the brakes occurred. The recorder speed at the time of collision was about 10 miles per hour.

Car Foreman Medley stated that the air brakes on No. 16 were tested under his supervision at Spokane on September 15 and all brakes were functioning properly; the piston travel on all cars was correct.

Signal Supervisor Allen stated that he tested signal O-8 after the accident and found that the polar relay lead wires were attached in such manner that the signal could display "proceed" and "stop" indications only; the "caution" indication was eliminated. After the proper connections were made, the signal functioned properly.

Signal Maintainer Leibel stated that signal O-8 is the only semaphore-type signal which he maintains, and that the relay wiring is somewhat different from that of color-light signals. He had changed relays on signal O-8 on July 17, 1939, and tested it by pulling the fuse, which caused the signal to assume a "stop and proceed" indication. He knew of no person but himself having access to the signal case and said that to his knowledge no other person had made changes on this signal. It is customary to report relay changes to the signal supervisor, but it is not necessary to report results of signal function tests after a change is made.

Division Superintendent Sorensen stated that a clear signal indication at the entrance to a sub-division terminal yard did not authorize non-compliance with special rule G-93-(B), but added that enginemen must observe all signal indications and be prepared to obey them. According to his statement, the sub-division terminal extended between the yard-limit boards.

After the accident a series of visual tests was conducted in which engine 251 was used. These tests disclosed that if a flagman were stationed 769 feet west of the point of accident he could be seen distances of 1,251 feet and 1,423 feet, respectively, from the right and left sides of an engine cab. Signal O-0 could be seen by an engineman looking directly ahead through the front cab-door window a distance of 761 feet; when an engineman was looking ahead from the right side cab window it could be seen a distance of 652 feet.

#### Observations of the Commission's Inspectors

The Commission's inspectors were present when signal O-8 was tested by making the connections of the wires to the polar relay in the manner in which they were found immediately after the accident. A track circuit shunt was used and the signal displayed a clear indication when it should have displayed an approach indication.

#### Discussion

Passenger Extra 250 East arrived at Avery at 11:11 a.m. and its rear end was struck by No. 16 at 11:25 a.m. When approaching the station the flagman dropped a lighted fusee, and immediately after his train stopped he went back with flagging equipment to afford flag protection. After some time, although aware that No. 16 was due, he returned toward the rear of his train without having been recalled, and he did not leave either a lighted fusee or torpedoes. He was thoroughly familiar with the requirements of the rules which were applicable to

flagging duties at sub-division terminal stations. The conductor of the first train stated that the flagman had always performed his duties satisfactorily. On this trip he had reminded the flagman to watch out for No. 16. The flagman's reason for being out a short distance only, when No. 16 arrived was that it is not customary to recall flagmen in sub-division terminal stations; his train having stood at Avery 14 minutes, he was apprehensive of its departure and desired to avoid delay; however, he knew that his conductor followed the practice of personally instructing enginemen to recall flagmen at this point. The flagman said that he was depending upon No. 16 being operated prepared to stop, expecting to find other trains occupying the main track in the sub-division terminal, and that the flag protection he provided was adequate if this train had complied with the sub-division terminal rule.

No. 16 passed the west yard-limit board at Avery at a recorded speed of 45 miles per hour; 2,000 feet farther east it passed signal O-8 displaying a proceed indication, and at a point about 950 feet west of the station at Avery, at which time the speed was 41 miles per hour, the engineman made an initial brake-pipe reduction of about 8 pounds preparatory to stopping at the station. As the brakes started to apply, the engineman observed that signal O-0 was displaying a stop indication, Passenger Extra 250 was standing at the station, and its flagman, about 150 feet to its rear, was running toward No. 16 and waving a red flag. The air brakes were immediately applied in emergency, but too late to avert the collision.

Both trains involved were carrying passengers; under these conditions the first train was required by rule to protect fully within sub-division terminal limits; the second train was required to move within these limits prepared to stop unless the way was seen or known to be clear. According to the evidence sub-division terminal limits extended between the yard-limit boards. The engineman of No. 16 said that he depended upon the clear indication of signal O-8 as indicating that the way was clear. The engineman was familiar with the rules applicable in sub-division terminal limits and stated that had there been no signals he would have operated his train under the provisions of these rules. Other members of the crew were not alarmed at the speed maintained through the yard limits, and the fireman said that it was the speed usually maintained by other enginemen for whom he had fired. The conductor of No. 16 was familiar with the sub-division terminal rules. He stationed himself at a vestibule door on the left side and was not alarmed at the speed being maintained; this is evidenced by the fact that he did not pull either the train-signal or the conductor's emergency brake valve.

Although the division superintendent stated that block-signal indications did not authorize non-compliance with the rules applicable in sub-division terminal limits, apparently it is a practice of long standing, as evidenced by the testimony, for passenger train crews to depend upon block-signal indications as information of the way being clear, and of not observing the more restrictive requirement of the sub-division terminal rule. This practice indicates inadequate instruction and lack of proper supervision by operating officials.

Tests made subsequent to the accident disclosed that signal O-8 displayed a false-proceed indication for No. 16. On July 17, a relay at this signal was replaced and control circuit connections were made in such manner that this signal could not display an approach indication but displayed a proceed indication instead. If this relay had been wired properly, undoubtedly signal O-8 would have displayed an approach indication and the accident probably would have been prevented as the engineman of No. 16 was operating in accordance with signal indications instead of observing the sub-division terminal rules.

The engineman of No. 16 said that he was not expecting a short flag and the flagman of the passenger extra said that he was expecting No. 16 to be operated under control. This situation resulted in each of these employees placing dependence upon the rule affecting the other employee, rather than upon the proper performance of his own duty.

#### Conclusion

This accident was caused by failure to furnish proper flag protection for the first train, and by failure properly to control the speed of the second train within sub-division terminal limits because of depending upon a signal which displayed a false proceed indication.

#### Recommendation

It is recommended that responsible officials of this railroad immediately take steps to correct the conditions disclosed by this investigation, which resulted from lack of proper enforcement of the operating rules.

Respectfully submitted,

S. N. MILLS,

Director.