

Accident Involves Signaling

THE Interstate Commerce Commission has recently issued a report concerning a head-on collision which occurred October 9, 1942, between two freight trains at Marionville, Mo., on the St. Louis-San Francisco. A part of this report discusses the improper handling and understanding of train orders which resulted in the fact that two opposing trains entered a section of single track and were not stopped until they collided. The following information was abstracted from that part of the report which discusses the factors involved with reference to the automatic signaling.

This accident occurred on a single track line over which trains are operated by time table, train orders and an automatic block signal system. The automatic block-signal system is arranged on the overlap principle and consists of double-location signals near the ends of sidings and intermediate signals between stations. The

The assigned fireman was on the deck of the engine. All members of the crew who were on the engine, called the signal indication to each other. When First 32 passed signal 2648, the speed was about 47 m.p.h., and soon afterward the engineer made a service brake-pipe reduction. According to the statement of the front brakeman, as his train was moving on the curve to the left he observed that signal 2634 was displaying Stop, and that Fourth 33 was on the main track just beyond the signal. He called a warning to the engineer, who immediately placed the brake valve in emergency position, but First 32 collided with Fourth 33 at a point 976 ft. west of signal 2634. According to the speed-recorder tape, the speed of First 32 was 43 m.p.h.

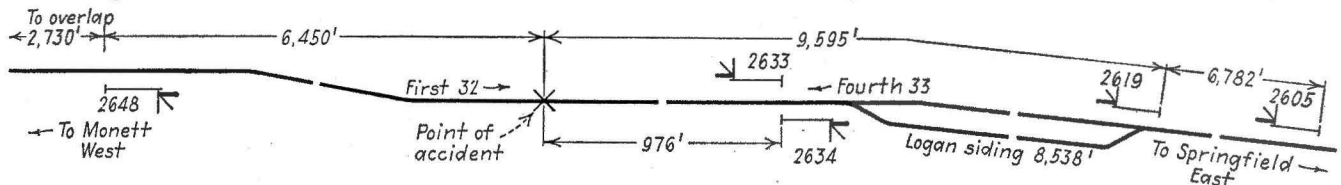
As Fourth 33 was approaching Marionville, the speed was about 50 m.p.h. and the enginemen and the front brakeman were maintaining a

ceed and signal 2633 to display Stop for one of two opposing trains but the other will receive an Approach and a Stop indication. Since Fourth 33 received a Clear indication at signal 2619, the crew of that train had no warning of the approach of an opposing train until the fireman saw signal 2633 displaying Stop. After this observation was made the distance was not sufficient for Fourth 33 to stop short of signal 2633. First 32 received an Approach indication at signal 2648 but the collision occurred before that train reached the next signal.

The automatic block-signal system at this location was in violation of section 207 of the Commission's order of April 13, 1939.

207. On track signaled for movements in both directions, signals shall be so arranged and controlled that proper restrictive indications will be provided to protect both following and opposing movements.

The investigation of this accident disclosed that the signal system involved was not in conformity with



signals are of the one-arm, three-position, upper-quadrant, semaphore type, and are approach-lighted. Tests made after the accident indicated that the signals involved functioned as intended. The controls of these signals are so arranged that when a westbound train reaches a point 18,754 ft. east of signal 2634, signals 2648 and 2634 display yellow, and when it reaches a point 10,959 ft. east of signal 2634, that signal displays red. When an east bound train reaches a point 19,008 ft. west of signal 2619, signals 2605 and 2619 display yellow and signal 2633 displays red.

Eastbound freight train First 32, consisting of a locomotive, 66 loaded cars and a caboose, passed signal 2648, which was displaying the Approach aspect, and while traveling at 43 m.p.h., as indicated by the speed recorder, it collided with Fourth 33.

The westbound freight train Fourth 33, consisting of a locomotive, 74 empty cars and a caboose, passed signal 2619, passed signal 2633, which was displaying Stop, and while traveling at an estimated speed of 5 to 10 m.p.h., it collided with First 32.

As First 32 was approaching Marionville, signal 2648 displayed Approach and the engineer sounded the whistle in acknowledgment of that indication.

lookout ahead. According to their statements signal 2619 displayed Proceed for their train. When this train was about 1,200 ft. east of signal 2633, the fireman and the front brakeman observed that it was displaying Stop and called that indication to the engineer, who made a service brake-pipe reduction. Soon afterward the engineer saw signal 2633 and First 32, and he moved the brake valve to emergency position, but the train passed signal 2633 and collided with First 32. Tests after the accident disclosed that in clear weather signal 2633 could be seen from the left side of a westbound engine a distance of 3,000 ft. The engineer said that since signal 2619 had displayed Proceed for his train, he did not consider an emergency existed at signal 2633 and did not apply the brakes in emergency until he observed First 32. The speed was about 5 or 10 m.p.h. at the time of the collision.

In the vicinity of the point of accident the signal system is arranged on the overlap principle. According to the statement of the signal engineer, in the vicinity of the point of accident the signal arrangement is such that two opposing trains should receive Approach indications in advance of a Stop signal; however, if it is possible for signal 2619 to display Pro-

ceed and requirements prescribed by the Commission and currently in effect. This carrier has 1,326.2 miles of single-track line equipped with the automatic block system. On 1,292.3 miles the system in use is of the overlap type and requires modification to comply with the standards prescribed by the Commission as minimum safety requirements. To effect the required changes, the carrier proposes to change the controls and convert the system to the A.P.B. type on 1,244.9 miles of line and to install a C.T.C. system on 47.4 miles of line. During 1942, four applications covering respacing of automatic signals and changing the signal controls on the single-track lines of this carrier were denied by the War Production Board. Since the occurrence of the accident at Marionville, the carrier has undertaken to provide double-approach indications for the protection of trains at meeting points, and this temporary arrangement has been placed in effect on a large percentage of its single-track automatic block-signal mileage. Had this arrangement been in effect at Marionville, it is probable that this accident would have been averted.

Dated at Washington, D.C., February 9, 1943. By the Commission, Commissioner Patterson.