Train Control Ordered on 92 Roads

I. C. C. Latest Order Requires an Additional Division on 47 of the Original List and Includes 1 Division on 45 Other Roads

THE Interstate Commerce Commission on January 14 issued an extension of its train-control order of June 13, 1922, requiring 45 additional railroads to install automatic train control devices on a full passenger locomotive division by February 1, 1926, and also requiring 47 of the 49 roads named in its original order to make an installation on an additional division. The two roads excepted are the Richmond, Fredericksburg & Potomac and the West Jersey & Seashore, which have but one division.

Whereas the original order named roads having operating revenues of $25,000,000 annually, the new order and the old order together now take in 94 of the 194 Class I roads. (Those having annual revenues of over $1,000,000.)

The order as issued by the Commission is as follows:

Order

No. 13413--In the matter of automatic train-control devices, it appearing that the commission, under the provisions of section 26 of the interstate commerce act, after full investigation of the matters and things involved, determined the practicability of and necessity for automatic train-stop or train control devices; and, by order entered herein on June 13, 1922, prescribed specifications and requirements for automatic train-stop or train-control devices and designated certain carriers and the portion or portions of their lines upon which installations of such devices should be made and required installation to be made thereon in accordance with the said specifications and requirements;

And it further appearing, that safety of operation and of persons and property require the extension of the protection afforded by such devices as rapidly as possible by the installation of such devices on other portions of the lines of the carriers specified in said order of June 13, 1922, and also upon the lines of other carriers by railroad subject to the interstate commerce act not heretofore designated:

It is ordered, that the following carriers by railroad subject to the interstate commerce act be, and each of them is hereby, required to install on or before the first day of February, 1926, automatic train-stop or train-control devices applicable to or operated in connection with all road engines running on or over at least one full passenger-locomotive division included in the part of the main line of each such carrier by railroad between the points hereinafter designated; and the installations herein required shall be made in addition to the installations, if any, heretofore ordered in this proceeding to be made between the same points or upon any other portion of the line or lines of any of the carriers named;

*Atchison, Topeka & Santa Fe, between Chicago, Ill., and Newton, Kan.
*Atlantic Coast Line, between Richmond, Va., and Charleston, S. C.
*Baltimore & Ohio, between Baltimore, Md., and Pittsburgh, Pa.
Bangor & Aroostook, between Northern Maine Jct., Maine, and Van Buren, Maine.
Bessemer & Lake Erie, between Erie, Pa., and East Pittsburgh, Pa.
*Boston & Albany, between Boston, Mass., and Albany, N. Y.
*Boston & Maine, between Boston, Mass., and Portland, Maine.
*Buffalo, Rochester & Pittsburgh, between Buffalo, N. Y., and Butler, Pa.
Carolina, Clinchfield & Ohio, between Elkhorn City, Ky., and Irwin, Tenn.
Central New England, between Hartford, Conn., and Millerton, N. Y.
Central of Georgia, between Atlanta, Ga., and Savannah, Ga.
*Central of New Jersey, between Jersey City, N. J., and Scranton, Pa.
Charleston & Western Carolina, between Augusta, Ga., and Port Royal, S. C.
*Chesapeake & Ohio, between Richmond, Va., and Clifton Forge, Va.
*Chicago & Alton, between Chicago, Ill., and St. Louis, Mo.
*Chicago & Eastern Illinois, between Chicago, Ill., and Evansville, Ind.
*Chicago & Erie, between Chicago, Ill., and Salamanca, N. Y.
*Chicago & North Western, between Chicago, Ill., and Omaha, Neb.
*Chicago, Burlington & Quincy, between Chicago, Ill., and Omaha, Neb.
*Chicago, Indianapolis & Louisville, between Chicago, Ill., and Louisville, Ky.
*Chicago, Milwaukee & St. Paul, between Chicago, Ill., and St. Paul, Minn.
*Chicago, Rock Island & Pacific, between Chicago, Ill., and Omaha, Neb.
*Chicago, St. Paul, Minneapolis & Omaha, between Minneapolis, Minn., and Omaha, Neb.
*Cincinnati, New Orleans & Texas Pacific, between Cincinnati, Ohio, and Chattanooga, Tenn.
*Cleveland, Cincinnati, Chicago & St. Louis, between Cleveland, Ohio, and St. Louis, Mo.
Colorado & Southern, between Wendover, Wyo., and Denver, Colo.
*Delaware & Hudson, between Wilkes-Barre, Pa., and Albany, N. Y.
*Delaware, Lackawanna & Western, between Hoboken, N. J., and Buffalo, N. Y.
Denver & Rio Grande Western, between Denver, Colo., and Ogden, Utah.
El Paso & Southwestern, between El Paso, Tex., and Tucson, Ariz.
*Erie Railroad, between Jersey City, N. J., and Buffalo, N. Y.
Florida East Coast, between Jacksonville, Fla., and Key West, Fla.
Fort Worth & Denver City, between Texline, Tex., and Ft. Worth, Tex.
Grand Trunk Western, between Chicago, Ill., and Port Huron, Mich.
*Galveston, Harrisburg & San Antonio, between El Paso, Tex., and Houston, Tex.
*Great Northern, between St. Paul, Minn., and Glasgow, Mont.
Gulf & Ship Island, between Jackson, Miss., and Gulfport, Miss.
Gulf, Colorado & Santa Fe, between Galveston, Tex., and Purcell, Okla.
Gulf, Mobile & Northern, between Jackson, Miss., and Mobile, Ala.
Hocking Valley, between Toledo, Ohio, and Columbus, Ohio.
Houston & Texas Central, between Houston, Tex., and Denison, Tex.
*Illinois Central, between Chicago, Ill., and Memphis, Tenn.
International-Great Northern, between Laredo, Tex., and Longview Jct., Tex.
*Kansas City Southern, between Kansas City, Mo., and Texarkana, Tex.
Kansas, Oklahoma & Gulf, between Denison, Tex., and Joplin, Mo.
Lehigh & New England, between Swartswood Jct., N. J., and Campbell Hall, N. Y.
*Lehigh Valley, between Jersey City, N. J., and Buffalo, N. Y.
*Long Island, between Jamaica, N. Y., and Montauk, N. Y.
Louisville & Nashville, between Louisville, Ky., and Birmingham, Ala.
*Louisiana & Arkansas, between Hope, Ark., and Alexandria, La.
Louisiana Western, between Lafayette, La., and Vinton, La.

Louisville, Henderson & St. Louis, between Evansville, Ind., and Louisville, Ky.
Maine Central, between Portland, Me., and Bangor, Me.
Midland Valley, between Wichita, Kan., and Fort Smith, Ark.
*Michigan Central, between Chicago, Ill., and Detroit, Mich.
Minneapolis & St. Louis, between Minneapolis, Minn., and Peoria, Ill.
Minneapolis, St. Paul & Sault Ste. Marie, between Chicago, Ill., and Minneapolis, Minn.
Missouri, Kansas & Texas, between St. Louis, Mo., and Denison, Tex.
Missouri, Kansas & Texas Railway Company of Texas, between Denison, Tex., and Galveston, Tex.
*Missouri Pacific, between St. Louis, Mo., and Herington, Kan.
Mobile & Ohio, between Mobile, Ala., and St. Louis, Mo.
Nashville, Chattanooga & St. Louis, between Nashville, Tenn., and Atlanta, Ga.
*New York Central, between Albany, N. Y., and Cleveland, Ohio.
*New York, Chicago & St. Louis, between Chicago, Ill., and Buffalo, N. Y.
*New York, New Haven & Hartford, between New York, N. Y., and Providence, R. I.
New Orleans Great Northern, between Jackson, Miss., and New Orleans, La.
New Orleans, Texas & Mexico, between Sabine River, La., and New Orleans, La.
Norfolk Southern, between Norfolk, Va., and Raleigh, N. C.
*Norfolk & Western, between Roanoke, Va., and Columbus, Ohio.
*Northern Pacific, between St. Paul, Minn., and Mandan, N. Dak.
Northwestern Pacific, between Sausalito, Cal., and Eureka, Cal.
Oregon Short Line, between Pocatello, Idaho, and Huntington, Ore.
*Oregon-Washington Railroad & Navigation Company, between Portland, Ore., and Pendleton, Ore.
*Pennsylvania Railroad Company, between Philadelphia, Pa., and Pittsburgh, Pa.
*Pere Marquette, between Grand Rapids, Mich., and Detroit, Mich.
*Philadelphia & Reading, between Philadelphia, Pa., and Harrisburg, Pa.
*Pittsburgh & Lake Erie, between Pittsburgh, Pa., and Brownsville, Pa.
*Pittsburgh, Cincinnati, Chicago & St. Louis, between Pittsburgh, Pa., and Indianapolis, Ind.
Rutland Railroad, between White Creek, N. Y., and Rouses Point, N. Y.
*St. Louis-San Francisco, between Springfield, Mo., and Tulsa, Okla.
St. Louis Southwestern, between St. Louis, Mo., and Texarkana, Ark.
Seaboard Air Line, between Richmond, Va., and Jacksonville, Fla.
*Southern Pacific, between Oakland, Cal., and Los Angeles, Cal.
*Southern Railway, between Washington, D. C., and Atlanta, Ga.
Spokane, Portland & Seattle, between Spokane, Wash., and Portland, Ore.
Texas & Pacific, between Dallas, Tex., and El Paso, Tex.
*Union Pacific, between Omaha, Neb., and Cheyenne, Wyo.
Virginian, between Norfolk, Va., and Roanoke, Va.
Wabash, between East St. Louis, Ill., and Buffalo, N. Y.
*Western Maryland, between Baltimore, Md., and Cumberland, Md.
Western Pacific, between San Francisco (Western Pacific Mole), Cal., and Salt Lake City, Utah.
Yazoo & Mississippi Valley, between Memphis, Tenn., and New Orleans, La.

*Roads named in original order. (Asterisks ours—Editor.)

It is further ordered, that the said installations be, and they are hereby, required to be made in accordance with the specifications and requirements adopted and prescribed for the said devices by the commission in its said order entered in this proceeding on June 13, 1922.

It is further ordered, that each of the said carriers shall submit to the commission complete and detailed plans and specifications for the installation of the aforesaid devices prior to the installation thereof;

It is further ordered, that each of the said carriers shall file with the commission on or before May 1, 1924, complete plans of the signal systems in use on the designated portion or portions of line, and report of the number and type of locomotives assigned to or engaged in road service thereon; each carrier shall proceed without unnecessary delay to select and install the devices as specified herein; and each carrier shall file with the commission on or before May 1, 1924, and on the first day of every month thereafter, full and complete reports of the progress made with reference to the installation of such device or devices under this order.

It is further ordered, that each installation made pursuant to this order shall, when completed, be subjected to inspection by and the approval of the commission or any division thereof to which the matter may be referred

And it is further ordered that a copy of this order be served upon the carriers herein named.

By the commission.

Specifications

The specifications and requirements for automatic train-stop or train-control devices, adopted and prescribed by the Commission in its order of June 13, 1922, also formed a part of the recent order, and, for reference purposes, are given herewith.

The purpose of this general specification is to define automatic train-stop or train-control devices and to outline essential features involved in their design, construction, and installation on railroads.

Definition of Automatic Train-Stop or Train-Control Devices

A system or an installation so arranged that its operation will automatically result in either one or the other or both of the following conditions:

First. Automatic train stop; the application of the brakes until the train has been brought to a stop.

Second. Automatic speed control; the application of the brakes when the speed of the train exceeds a prescribed rate and continued until the speed has been reduced to a predetermined and prescribed rate.

Functions

In prevailing practice the primary function of automatic train-stop or train-control devices is to enforce obedience to the indications of fixed signals; but the feasible operation of essentially similar devices used without working wayside signals may be regarded as a possibility. The following features may be included, separately or in combination, in automatic train-stop or train-control systems:

1. Automatic train stop: Without manual control by the engineman, requiring the train to be stopped; after which the apparatus may be restored to normal condition manually and the train permitted to proceed.

2. Automatic train control or speed control:

(a) Automatic stop, after which a train may proceed under low-speed restriction until the apparatus is automatically restored to normal or clear condition by reason of the removal of the condition which caused the stop operation.

(b) Low-speed restriction, automatic-brake application under control of the engineman who may, if alert, forestall application at a stop-indication point or when entering a danger zone and proceed under the prescribed speed limit, until the apparatus is automatically restored to normal or clear condition by reason of the removal of the condition which caused the low-speed restriction.

(c) Medium-speed restriction, requiring the speed of a train to be below a prescribed rate when passing a caution signal or when approaching a stop signal or a danger zone in order to forestall an automatic-brake application.

(d) Maximum-speed restriction, providing for an automatic-brake application if the prescribed maximum speed limit is exceeded at any point.

General Requirements

1. An automatic train-stop device shall be effective when the signal admitting the train to the block indicates stop, and so far as possible when that signal fails to indicate existing danger conditions.

2. An automatic train-control or speed-control device shall be effective when the train is not being properly controlled by the engineman.

3. An automatic train-stop, train-control, or speed-control device shall be operative at braking distance from the stop-signal location if signals are not overlapped, or at the stop-signal location if an adequate overlap is provided.

Design and Construction

1. The automatic train-stop or train-control device shall meet the conditions set forth under general requirements applicable to each installation.

2. The apparatus shall be so constructed as to operate in connection with a system of fixed block or interlocking signals, if conditions so require, and so interconnected with the fixed-signal system as to perform its intended function, (a) in event of failure of the engineman to obey the signal indications, and (b) so far as possible, when the signal fails to indicate a condition requiring an application of the brakes.
3. The apparatus shall be so constructed that it will, so far as possible, perform its intended function if an essential part fails or is removed, or a break, cross, or ground occurs in electric circuits, or in case of a failure of energy.
4. The apparatus shall be so constructed as to make indications of the fixed signal depend, so far as possible, upon the operation of the track element of the train-control device.
5. The apparatus shall be so constructed that proper operative relation between the parts along the roadway and the parts on the train will be assured under all conditions of speed, weather, wear, oscillation and shock.
6. The apparatus shall be so constructed as to prevent the release of the brakes after automatic application until the train has been brought to a stop, or its speed has been reduced to a predetermined rate, or the obstruction or other condition that caused the brake application has been removed.
7. The train apparatus shall be so constructed that, when operated, it will make an application of the brakes sufficient to stop the train or control its speed.
8. The apparatus shall be so constructed as not to interfere with the application of the brakes by the engineman's brake valve or to impair the efficiency of the air-brake system.
9. The apparatus shall be so constructed that it may be applied so as to be operative when the engine is running forward or backward.
10. The apparatus shall be so constructed that when two or more engines are coupled together, or a pushing or helping engine is used, it can be made operative only on the engine from which the brakes are controlled.
11. The apparatus shall be so constructed that it will operate under all weather conditions which permit train movements.
12. The apparatus shall be so constructed as to conform to established clearance for equipment and structures.
13. The apparatus shall be so constructed and installed that it will not constitute a source of danger to trainmen, other employees, or passengers.
14. The apparatus shall be so constructed, installed and maintained as to be safe and suitable for service. The quality of materials and workmanship shall conform to this requirement.

Disregard of Grade Signal on D. L. & W.

On November 25, 1923, there was a rear-end collision between two freight trains on the Delaware, Lackawanna & Western near Paradise, Pa., which resulted in the death of one employee and the injury of seven employees.

This accident was caused by the failure of Engineman Huff, of extra 1104, to operate his train under proper control after passing a non-stop grade signal indicating that the block was occupied. An abstract of the report of this accident by the chief of the Bureau of Safety is as follows:

"This accident occurred on that part of the Scranton division extending between Washington, N. J., and Binghamton, N. Y., a distance of 125.12 miles; in the vicinity of the point of accident this is a double track line over which trains are operated by timetable, train orders and an automatic block-signal system. The grade for more than 4,000 ft. is ascending for westbound trains varying from 1.410 to 1.534 per cent, being 1.534 per cent at the point of accident.

"Automatic block-signals 961 and 969, involved in this accident, are of the two-arm, two-position, lower-quadrant type. On the heavy grades in this particular territory the top arm, or home signal, displays a yellow light instead of a red light, and when the arm of such a home signal is horizontal, with a yellow light showing, a train may pass such an indication without stopping, proceeding under control, at a speed not in excess of 10 miles an hour, expecting to find a train in the block, broken rail, obstruction or switch not properly set. This avoids stopping a train on the heavy grade, which would be necessary in case the ordinary stop-and-proceed signal were used. Signal 969, the last westbound signal approaching the point of accident, is of this type, and is located about 3,570 ft. east of the point of accident. There is a water tank located about 1,350 ft. west of signal 969. The weather was clear and it was daylight at the time of the accident, which occurred at about 6:38 a. m.

"Westbound freight train extra 884 consisted of engines 884 and 358, and a caboose, passed West Henryville, the last open telegraph office and approximately 7.83 miles east of the point of accident, at 5:44 a. m., and at about 6:38 a. m., while running at a low rate of speed near the eastern end of the east crossover at Paradise, the caboose was struck by extra 1104.

"Westbound freight train extra 1104 consisted of engine 1104 and a caboose, and was in charge of Conductor Higgins and Engineman Huff. This train passed West Henryville at 6:31 a. m., passed signal 961, displaying a caution indication, passed signal 969, which was displaying its most restrictive indication, proceed under control, and collided with the rear-end of extra 884 while running at a speed estimated to have been 25 or 30 miles an hour.

"The force of the collision demolished the caboose of extra 884, knocked the cistern of the tender of engine 358 from its frame into the ditch on the right side of the right-of-way, and pushed the tender frame under the firebox. Engine 1104 was but slightly damaged, while only one pair of driving wheels was derailed. The employee killed was a brakeman of extra 884.

"Conductor Henderson, of extra 884, stated that his train was stopped by a flagman of extra 1179 east of the water tank, on account of that train taking water. As soon as his train had stopped Flagman Conn, of extra 1104, went back to flag, and he said that when recalled he left two torpedoes on the rail and also left a green fusee burning. Extra 1179 then moved forward a train length so that its helper engines could take water. Extra 884 followed closely behind, stopped, and Flagman Conn again went back to flag, and when recalled did not leave any torpedoes, but left a green fusee burning.

"Engineman Huff, of extra 1104, said that at the time his train passed signal 961 it was displaying green and yellow light, which indicated that the block governed by signal 969 was occupied or otherwise obstructed. Signal 969 was displaying two yellow lights, indicating that the block was occupied, and he knew that under the rules he could pass this signal with his train under control, prepared to stop, moving at a speed not in excess of 10 miles an hour. He also knew there were two light engines and a caboose ahead of him because at the time of passing signal 969 he saw extra 884 about half a mile ahead. After passing the water tank he reduced the speed to about 20 or 25 miles an hour, and continued at this rate of speed until he saw the caboose of 884 about two engine lengths distant; he immediately shut off steam and applied the air brakes in emergency, but was unable to stop his train in time to avert the collision. Engineman Huff said he did not see any fusees burning.

"This accident again directs attention to the necessity for automatic train control. The engineman failed to reduce the speed of his train as required by the signal indication which he received. Had an adequate automatic train-control system been in use this accident would have been prevented."