

Editorial Comment

Track Circuits on Passing Tracks in C.T.C. Territory

THE earlier installations of centralized traffic control did not include track circuits on passing tracks, and it has been within only the last few years that certain railroads have provided such circuits on some large installations. Within the last year, increasing interest has been evident in this practice; therefore, an analysis of the use of track circuits on passing tracks should be of interest at this time. On some of the earlier as well as on some of the recent installations which included no track circuits on the sidings, the locations of trains on these sidings are indicated by tokens which are inserted by hand in holes on the lines representing these tracks on the diagram on the control machine.

Track circuits on passing tracks in C.T.C. territory serve two distinctly different purposes: (1) to operate automatically controlled track-occupancy indications on the C.T.C. control machine, so that the man in charge will be reminded of the locations of trains which he is holding on such sidings, and (2) to control the signals which govern train movements into the siding so that different aspects can be displayed to inform the engineer whether the passing track is already occupied or unoccupied.

Siding Occupancy Indication

The following discussion deals first with the consideration of track-occupancy indications on passing tracks. This type of information is of decided benefit where an extensive territory, as for example an entire engine district, is controlled from one machine, or where the machine for a shorter territory is controlled by a man who also has other duties, such as dispatching trains by train order on other districts. In such instances, the track-occupancy indications serve to remind the dispatcher of the locations of trains which he may be holding on sidings, and thus, over a period of time, obviate a sufficient number of delays to justify the expense for installing and maintaining the track circuits and other apparatus required in connection with the transmission and control of the indications. Some of the more extensive projects on which track circuits on passing tracks were provided for the sole purpose of controlling track-occupancy indication, include 65 miles on the Seaboard Air Line between Savannah, Ga., and

Thalman, and on 175 miles on the Union Pacific between Las Vegas, Nev., and Daggett, Cal. On both of these installations, the control machine includes an automatic train graph but the recordings on this chart are not considered adequate as reminders of the locations of trains being held on sidings.

For the Control of Signals

Turning now to the second category, track circuits on passing tracks can be used also to control the signals which govern train movements into the siding to display aspects to inform the enginemen whether the passing track is occupied. Whether such signaling will be of benefit depends on several factors. If the turnouts are No. 10, the speed when making diverging moves must be limited to approximately 15 m.p.h., and this is also the maximum for "Restricted Speed" applying to train movements into non-track-circuited tracks which may be occupied. Therefore, if the speed is limited by the length of the turnout, signaling for higher speeds would be of no benefit. On the other hand, if longer turnouts are provided to permit speeds up to about 30 m.p.h., signaling aspects to authorize trains to enter at that speed, with knowledge that the passing track is unoccupied, will provide the means for saving considerable train time.

One of the large railroads has calculated that a turnout good for 30 m.p.h., as compared with one good for 10 m.p.h., will save at least 3 min. for an 85-car train when entering a siding, where the normal main line speed is 32 to 35 m.p.h. An assumption in this case is that the siding is longer than maximum train length, so that a speed of 30 m.p.h. can be maintained until the rear end passes through the turnout. Thus, on a project including high-speed turnouts and long sidings, for example twice train length, signaling to direct trains to use the turnouts at the speeds for which they were designed is a necessary part of the project. Among the installations of this character which have been described in *Railway Signaling* are those on 90 miles of the Texas & Pacific between Texarkana, Ark., and Longview, Tex., and on 47 miles of the St. Louis-Southwestern between Illmo, Mo., and Dexter Junction.

Thus, the decision to provide track circuits on passing tracks, on a proposed C.T.C. project, depends on whether the local conditions are such that benefits can be derived from the track circuits, and on whether the traffic density is such as to warrant the provision of every possible means to aid in preventing even short delays to trains.