

EDITORIAL COMMENT

Releases for Automatic Interlockings

DURING the development of automatic interlockings, it was apparent that time releases had to be provided, the same as in manually-controlled interlockings, so that a release could be effected and a signal cleared for a train in case another train had stopped or a track circuit had failed in an approach section on the conflicting road. In the same manner as at a manually-controlled plant, before it is safe for a train on the first road to move over the crossing at an automatic plant, the signals on the conflicting routes must have been set to display the stop aspect for a period long enough for any approaching train to come to a stop short of the crossing, after observing the signal at stop.

At some automatic interlockings, where trains occupy approach control sections for considerable time while making station stops or switching, time-element cutouts are provided, by means of which the signal which had been cleared will revert to the stop aspect after a certain period, say four minutes, thus releasing the plant for trains which may be approaching on the conflicting routes. If no train approaches on the conflicting route, some action is necessary to cause the signal for the standing train on the first road to be cleared again.

Various Types of Releases

To accomplish the result of releasing at automatic interlockings under these various circumstances, the majority of the roads use a clockwork time release located at the crossing, which must be operated by a trainman. To simplify the operation, some roads use a push button in combination with a time-element relay, so that the only manipulation, on the part of the trainman, is to push a button. Where time cutouts are used in station areas, some roads locate a push button at the station so that when a train has already consumed more than its four minutes, the signal can again be cleared by a trainman pushing this button at the station. Buttons can be provided at switch or other locations as required.

In order to eliminate delays, as well as the necessity for trainmen to manipulate devices either at the crossing or at the place where trains may stop, at least one road uses an automatic releasing arrangement that includes an extra track circuit in approach to the home signal, the occupancy of which causes the home signal to clear again, providing no train has approached on a conflicting route in the meantime. Where space is available, this releasing,

or in other words second clearing, section should be 800 ft. or more in length, so that if the train, having completed its station work, starts but has not yet entered the clearing circuit at the end of the measured period, it will still be braking distance from the signal when the aspect changes to stop. In other words, there will be no chance that a proceed aspect will be taken away suddenly from a train closely approaching the signal. Where stations or switches are located closer to the crossing, the clearing section may have to be shorter than 800 ft. An important point is that the clearing section is also a holding section in that once a train enters on this track circuit it holds the signal at clear.

Pre-conditioning of Release

At a manually-controlled interlocking, when a train stops in an approach section or a track circuit is out of service in such a section, the leverman can take the signal away from that route, if it has been cleared, and, by operating a time-release, he can then clear the signal for a route on the conflicting road, and, in the majority of instances, avoid a train stop. Thus, the releasing operation is accomplished prior to the approach of the second train; in other words, the release is "pre-conditioned."

At an automatic interlocking protecting a crossing of two single-track lines, where automatic time cutouts are used in station or switching areas in approach control sections, "pre-conditioning" of releases can be accomplished automatically. If a train stops in an approach section longer than the specified time, its signal can be so controlled so that it reverts to the stop aspect, a changeover period of two minutes can be provided by a time-element, and then the controls can be set up to clear a signal for a train on the conflicting road, providing a train approaches on that road. The two-minute changeover period accomplishes the equivalent of a manually-operated clockwork release. Thus, the control circuits for the opposing road have been automatically "pre-conditioned," and the use of the manually-operated release, with the attendant delay, is not required for normal movements.

Eliminating Release for One Track

This brings out the point that it may be practicable in certain types of automatic interlocking layouts to eliminate releases on at least one road. This possibility has been utilized for the westward track of a double-track line crossing a single-track line at Winfield, Kan., as explained in an article elsewhere in this issue. In other words, no release arrangement such as clockwork releases or track section releases are provided for use in connection with the operation of trains on this track, because there is no switching on the westward approach. The

