



What's the Answer?

If You Have a Question That You Would Like to Have Someone Answer, Or If You Can Answer Any of the Questions Shown Below, Please Write to the Editor.

Signal Aspects at an Automatic Interlocking Plant

At an automatic interlocking, should the aspect of the home signals indicate "stop and stay" the same as an ordinary interlocking or should a special aspect be used indicating that a train can proceed after certain precautions have been observed.

Pilot Lamp Recommended

J. R. Coles

Signal Engineer, Western Pacific, Oakland, Cal.

On the Western Pacific, we have two automatic interlockings at crossings with electric lines in city limits, most of the traffic on the electric lines consisting of street cars. Between home signals, train speed is limited to 10 m.p.h. for the electric trains, and 15 m.p.h. for the steam trains. In case the Western Pacific home signal is at the "stop" position, and no train on the intersecting line is passing through the plant or seen to be approaching the crossing, interlocking rule No. 663 together with special time-card instructions govern further movement of a train through the plant.

On the intersecting lines, in case a home signal fails to clear, a member of the train crew goes to the crossing, and, after satisfying himself that no train is approaching, he operates a time release, which permits the home signal to change from red to green after the expiration of 90 sec., providing the home signals on the steam line are at "stop." In case the signal does not change to green, certain special instructions cover the method of handling the train over the crossing.

However, I am of the opinion that where it is practicable, a more modern and safer operation would be to provide three-position home and distant signals (home signals to be equipped with red marker lights) and to operate as follows: In case a home signal is at "stop" with no train passing through the plant, or seen to be approaching the crossing on the intersecting line, a member of the train crew operates a time release, which immediately lights up a pilot light located in the time-release box, indicating to the flagman that all opposing signals and all signals on intersecting or conflicting lines are at the "stop" position. After the release has completed its run-down cycle, the home signal changes from "stop" to "caution." In case operation of the release does not change the home signal indication from "stop" to "proceed with caution," after a predetermined time has elapsed, the red marker light, located on the home signal, lights up.

Under the above conditions our rules would require that as soon as a pilot-light indication was received, the

To Be Answered in a Later Issue

(1) *When underground wires or cable is run to a switch machine, what sort of a pot-head should be used and what kind of conduit or protection extends from the pot-head to the switch machine?*

(2) *What is the best circuit arrangement to use in order to prevent false operation of a crossing signal for a train pulling out of a passing siding switch located in the ringing section receding from the crossing?*

(3) *How do you make a test to determine the resistance to ground of a ground rod?*

(4) *What sort of an arrangement can be used effectively to remove the pin from the bearing and crank of a rotary or so-called turtle-back switch circuit controller?*

flagman must proceed in accordance with automatic block system rules, and where no automatic block signals are involved, the flagman should remain at the crossing until the train arrives. Should the pilot light fail to appear, the train movement must be protected in each direction on the intersecting line.

Special Aspect Is Necessary

C. H. Tillett

Signal Engineer, Canadian National, Toronto, Ont.

I do not think the home signal at an automatic interlocking should carry the aspect of the "stop" indication of a manually-operated plant. An engineman having stopped at a signal does one of three things: he proceeds "at once under full control," etc.; or he proceeds "when preceded by a flagman," etc., usually one of his own crew, or, lastly, he waits for the authority given to him by a signalman, either by hand signal or clearance form, or by telephone communication. In other words, he proceeds on either his own authority, the authority given to him by one of his crew, or by authority given to him by a signalman. One thing he is not expected to do is to stay there if it is at all possible for him to proceed.

In the case in question, we want him to proceed on the authority given to him by one of his own crew, therefore, he should be given the indication which tells him that.

I do not believe such indication is provided for in the Standard Code, but such provision was made in the operating rules of the Canadian National, which were adopted July 1, 1929. The aspect is a red light over a lunar-white light, and is known as Rule 501-A, in which a reference is made to "see Rules 503 and 505." These rules read as follows:

"503. When a train affected by it approaches a "Stop" signal it must be stopped before reaching the signal and not more than 200 ft. from it. If not cleared it must—

"(a) When the signal is part of an automatic block system, stay until authorized to proceed, or in case of absence or failure of communication it may, after waiting five minutes, proceed when preceded by a flagman to the next signal displaying a less restrictive indication.

"(b) When the signal is for the protection of a railway crossing at grade, stay until signaled to proceed by a flagman at the crossing. The flagman, before giving the signal to proceed, must comply with the requirements of the special instructions which are in effect for that crossing."

"505. When the train enters a block against a "Stop" or "Stop and Proceed" signal as provided for in Rules 503 and 504, the movement through that block must in every case be made in the expectation of finding the main track occupied, a broken rail, an open switch, or other obstruction."

From this it will be seen that the same "Stop" indication is used for the railway crossing at grade as is used for the so-called "absolute" signal in a single-track automatic block signal system, which is quite consistent.

Signals Cut Out By Flagman

H. J. Foale

Signal Engineer, Wabash, Decatur, Ill.

Our men are instructed that they must stop at all "danger" automatic interlocking signals, and send a flagman ahead to the crossing, where he will cut out all signals by throwing a control switch at the crossing booth. Then, if no other train is approaching, he will flag his train over, restoring the switches after the train has passed over the crossing. The dispatcher is notified at the first open telegraph office.

Special Aspect Not Good Practice

W. F. Zane

Signal Engineer, Chicago, Burlington & Quincy, Chicago

I can see no difference between handling trains through an automatic interlocking plant and through a manually-controlled plant; consequently I believe that the home signal should be a "stop and stay" signal and movement past it, when it is displaying its most restricted position, should be by hand signals and then only after the prescribed handling of the emergency apparatus has been made and the precautions prescribed by rule have been followed.

I do not believe that it would be good practice to use a special aspect or in any way make the home signal become a "stop-and-proceed" signal upon the sole authority of the enginemen, as there would be more danger at an automatic plant than at an unprotected crossing, due to the fact that, not only the train receiving the stop indication, but the trains on the opposing road are operating under the impression that the plant is automatic.

If a special aspect were added to the signal to display an indication only in case of failure of the regular interlocking, there is the same chance for this special aspect to fail as there is for the rest of the installation; thus I am of the opinion that in case of failure of a plant, the train crew should be responsible for flagging their train

through the plant and also protecting it against opposing moves on the other road.

There is one point in regard to operation through an automatic interlocking plant that I believe should be improved, and that is that all railroads use the same operating rules. This possibly can only be accomplished by such rules being incorporated in either a standard code or by mutual agreement of the different railroads, as I have found in some cases both the operating rules and special instructions issued at plants are not the same on the different railroads. This being an operating problem it does not, naturally, come under the scope of the signal department but, at the same time, the signal departments have developed and practically standardized upon the material and installation practice for automatic plants, and in order to get still further benefit from these plants I believe that each signal engineer would be glad to see standard rules and instructions adopted.



Track Circuit Adjustments with the Improved Relays

In what way have you revised your requirements of pick-up and drop-away for track relays as well as for limiting resistances in the feed in order to take advantage of the use of the improved types of track relays as installed?

Adjust to Most Severe Conditions

I. A. Uhr

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For successful operation track circuits must have sufficient liberal allowance in adjustment to take care of various adverse conditions, some of which are not constant. We have not attempted to bring out all these things in our instructions for the adjustment of limiting external resistance, regulating the feed of battery to the track. Instructions have been issued, that it is desirable to have as much limiting resistance in each track circuit as can be inserted, and still secure successful operation under the most severe operating conditions.

We have adjusted track circuits in fair weather by use of coils bridged across the track circuit, attempting artificially to produce wet-weather conditions. Fairly good results may be obtained but not as good as under the actually adverse wet-weather conditions; therefore, our adjustments are made when the track circuit is operating under about its most adverse conditions.

With the older type relays, where recommended working current is considerably more than the pick-up, and especially those which have been in service for a number of years with the iron becoming aged, adjustment of resistance is made so that there will be about 25 per cent more current flow through the relay than the actual pick-up. In the later improved-type track relays where pick-up and recommended working current is about the same, adjustment is made for about 10 per cent more current flow than the actual pick-up.

We find that by changing out an old-type track relay and installing the later improved type, enough additional limiting resistance can be inserted which will result in about doubling the life of the track battery. This results in enough saving to make a return of about 25 per cent on the investment.