

signal is cleared and the train does not accept it, the time release must be operated before a conflicting route is lined up. This hampers operation at busy plants and is detrimental in testing the plant, because whenever a signal is cleared for test purposes, the stick locking is made effective, and the time release must be operated to release the locking after restoring the home signal to normal.

Approach and stick locking are sometimes combined to good advantage. When this is done, the locking of the route does not occur until the signal is cleared and a train is actually on the "outside" or approach circuit. If the train comes on the approach circuit and no home signal is cleared, there is no reason for locking the route, as obviously the train will be prepared to stop at the home signal. Likewise, if the signal is cleared and no train comes on the approach section, there is no reason for locking the route. In this way maximum flexibility is obtained.

Transformer Ground Connection

"What advantage is there, if any, in connecting a transformer ground to a signal arrester ground in territory where signals are operated direct from alternating current?"

Transformer Case Is Grounded, But Not Any Secondary Power Wires

By W. J. Eck

Assistant to Vice-President, Southern, Washington, D. C.

WE have found that it is almost impossible to have too many grounds or too good a ground, and it is our practice to run separate grounds for the high-tension lightning arresters and the low-tension arresters, as these are usually some distance apart. We do not ground any of the power circuit wires, but we do ground the transformer case on the lightning arrester ground, because the high-tension wires, the lightning arresters and the transformers are on the same poles. Originally, we installed lightning arresters one pole span away from the transformers, but later found that we did not get as good protection with this arrangement, as when the lightning arresters were on the transformer poles.

The Southern does not use a three-wire distribution system with a neutral, and, hence, we have had no occasion for grounding any of the circuit wires. It is our belief that, as far as possible, grounds should be kept off of the signal control wires.

Transformer Ground Should Never Be Connected to Signal Arrester Ground

By W. F. FOLLETT

Assistant Signal Engineer, New York, New Haven & Hartford, New Haven, Conn.

THERE is a great disadvantage in connecting a transformer ground lead to a signal arrester ground connection. This disadvantage lies in the hazard that would be created by the breaking of the common connection to the ground, or the ground connection developing a high resistance. With the transformer ground lead connected to the signal arrester ground, and the insulation on the primary coil broken down, so that the coil is in contact with the core or case, there would be a direct connection from the high-tension circuits to the low-voltage signal circuits, except for the air gap obtaining in the signal arrester. This air gap offers

but little resistance to high-tension signal circuits such as 2,200 to 11,000 volts. We always specify that the transformer ground must be separate and independent from the grounds provided for the signal lightning arresters.

Control Schemes for Take-Siding Indicators

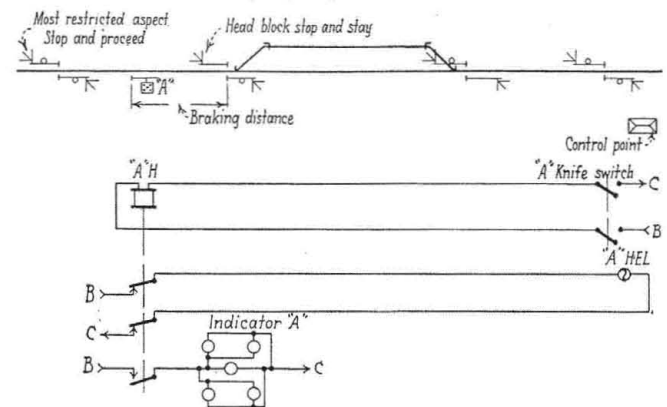
"Where take-siding signals are added to existing automatic signals to direct trains to enter passing tracks equipped with hand-throw switches, how are the take-siding signals controlled, and is an indication of the signal repeated or checked in any way at the point of control?"

Believes Simple Control Circuit Adequate

By E. T. WEAVER

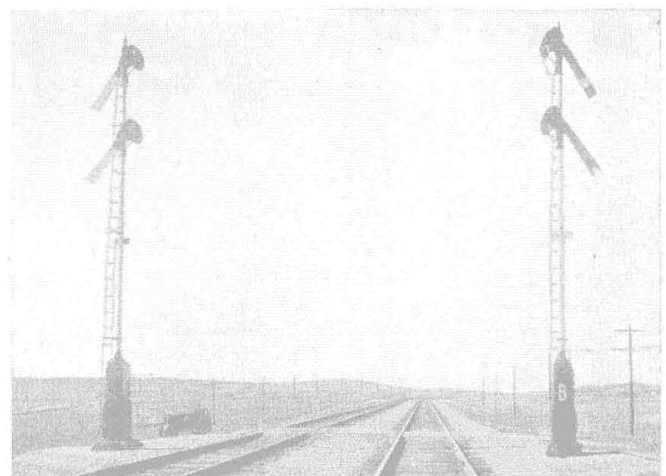
Signal Draftsman, Pennsylvania, Chicago

MY interpretation of a take-siding signal or indicator is that such a signal is just another form of a train order, the control of which does not necessarily have to be incorporated in the control circuits of the automatic signals. I believe a knife switch control, as shown in the accompanying sketch, is all that is neces-



Take-siding indicator control circuit

sary. I also believe that an indication of the working of the take-siding indicator is superfluous. However, a light or an annunciator can be installed as shown through the back contact of the control relay, thus being on the safe side if a failure of either light or control relay occurs.



Lower-quadrant semaphores on the Union Pacific