passing track in absolute permissive block territory. It is not known whether this practice increases the safety of operation so far as trains are concerned but it does to a certain extent increase safety insofar as motor cars are involved. Motor car operators can thus determine whether any of the single track is occupied by a train and furthermore whether the train ahead is traveling in the same or opposite direction. That is, a motor car operator encountering a caution signal after a green signal, or a red signal after a caution signal, knows that he is approaching a train moving in the same direction. On the other hand, if the head block signal is displaying a "stop" indication the chances are likely that a train is approaching in the reverse direction in which case all opposing signals are red.

Louisville, Ky. W. H. STILWELL,
Acting Signal Engineer, Louisville & Nashville.

Can See No Additional Safety If Stop Indication Is Prolonged—Might Be Cheaper to Light Signals Continuously

I AM unable to see any additional safety resulting from showing a red light as long as a train is in the block on an installation of this kind, as long as there is no train approaching. It would be the same as putting out a flagman to flag a train that had stopped even though it was known positively that there was no other train on the road. The name "approach-lighting" indicates that the light will be shown only when a train is approaching.

Of course, there would be no harm in displaying a light continuously in these signals if the current for these lights is so small that it would not pay to put in "approach-lighting." It would be cheaper, on account of less apparatus, to leave the light burn continuously, but then it would not be approach-lighting.

St. Paul, Minn. C. A. CHRISTOFFERSON,
Signal Engineer, Northern Pacific.

Other Comments

SINCE the "stop" indication of a color-light automatic signal is of no use unless a train is approaching the signal, it would seem uneconomical to provide the circuit arrangement for displaying a "stop" indication at all times while the block is occupied, in the opinion of T. S. Stevens, signal engineer system, of the Atchison, Topeka & Santa Fe. Similarly, C. H. Tillett, signal engineer, of the Canadian National, Central Region, believes that nothing is gained by displaying a "stop" indication as long as the block is occupied. His opinion is expressed as follows, "This gets back to the old argument that if there were no ears to hear there would be no sound. Consequently, if there is no train approaching and thus no one to see the signal, why light it?"

Sees No Advantage in Prolonged Stop Indication

I CAN see no particular advantage in controlling signals in such a manner as to maintain a red stop indication as long as the block is occupied. On our lines, the approach lighting scheme is used on several thousand miles of automatic signals, both of the semaphore and color-light type, and the light is extinguished as soon as the train enters the block.

No real advantage would accrue from displaying the red light while the train was passing through the occupied block. Our experience indicates that lighting of the signal on approach only fills every possible operating requirement.

Omaha, Nebr. A. H. MCKEEN,
System Signal Engineer, Union Pacific.

Checking Up on Signal Observance

"Do operating rules on your road require signal supervisors or maintainers to report any irregular observance of signals by enginemen which may be noted?"

Signal Supervisors and Signal Maintainers Are Required to Report Irregular Observance of Signals on the A. C. L.

ON the Atlantic Coast Line it is our practice to conduct periodical surprise tests, a record of which is made on our Form 4009, as shown herewith, for the purpose of determining the observance of signals by trainmen. These tests are carried out jointly by the supervisor of signals and the trainmaster. This procedure is in accordance with our instructions which require that signal supervisors or signal maintainers report all instances of irregular signal observance which may come to their attention. This form (No. 4009) is filled out in triplicate, the original being sent to the superintendent.

It will be noted that the train number, engine number and whether or not the train stopped at a "stop" signal, is recorded on this form. In the event that the train passes a "stop" signal, the information is noted, giving the number of the signal which was not observed and the speed at which the train passed the "stop" signal.

Wilmington, N. C. C. J. KELLOWAY,
Superintendent of Signal, Atlantic Coast Line.

Atlantic Coast Line Railroad Company

.....192.....

Surprise Tests of Automatic Signals between..... and.....

Signals No.....and.....were set at stop at.....M.,.....and
Day and Date

again set at Normal at.....M.,.....
Day and Date

Tests by:.....

Train No.	Engine No.	Stopped at Signal No.	Passed Signal No.	At miles per hour	Time A. M.	Time P. M.	Remarks

A. C. L. Form 4009 for reporting periodical surprise tests of signal observance

Signal Department Employees Are Expected to Report all Irregular Signal Observance

ON the Canadian Pacific there is nothing in our operating rules which requires that signal supervisors or signal maintainers shall report any irregularity of observance of signals by enginemen. However, there is in effect an unwritten rule which I believe all our employees are acquainted with, including all of the supervisors, which is to the effect that should any signal department employee notice any irregular observance of signals, he is expected to make a report. If he fails to do so, he becomes a party to the non-observance of the signal and is really as guilty as the engineman.

Montreal, Que. E. S. TAYLOR,
Signal Engineer, Canadian Pacific, Eastern Lines.

Other Comments

L. A. Guthrie, acting signal engineer, Canadian National, Western Region, states that the practice of having supervisors and maintainers report irregular observance of signals on the part of enginemen is very strictly carried out on his road.

While there is no rule requiring signal department employees to report any irregularities in this respect on the Chicago Great Western, superintendents have issued instructions to supervisors and maintainers to make such reports when occasion demands, it is stated by G. O. Perkins, superintendent of telegraph and signals.

How to Locate Grounds

How do you locate grounds at an interlocker?

A Lamp or Voltmeter Recommended for Locating Grounds—Special Magneto-Operated Instruments Can Be Used Independently of Other Source of Power

ALL electric plants on which I have been employed have had a ground detector of some form mounted on the panel board. The most common of these and the one that is generally used is the lamp type. A lamp is connected to the blade of a S. P. D. T. switch, one position of which indicates a positive ground, the other a negative ground. I have used this ground detector as a means of locating a ground, by leaving a helper at the lamp with instructions to signal to me any change in the indication of same, while I traced out and disconnected at intervals the circuit that was grounded.

Occasionally a ground will be found in the control and common leads, but is more apt to be found in the mechanism of some signal, derail, or switch. Once in a while, a ground will occur in the control machine in the tower and sometimes in the panel board itself. I know of one plant where the ground detector indicated both positive and negative grounds, not "heavy," but sufficient to give a dim light on the ground detector.

I have used several different methods of locating grounds, among these being the finder coil and head phones. The latter method gives varying success, but is not accurate. A visible indication on a lamp, voltmeter or magneto instrument is better as a ground locating device, in my opinion. The voltmeter and test lamp are the instruments that are used mostly, as either of these are to be found at an electric plant and when used with the 110-volt tower battery are effective in locating grounds. The lamp and voltmeter have to be used in series with the grounded circuit, as shown on page 355 of the September issue of *Railway Signaling*.

Some manufacturers are producing a combination magneto with a voltmeter. This meter has two scales, one is calibrated for voltage readings, and the other for megohm readings. This device should be excellent for locating grounds in field coils, armatures and pole-changers. The magneto instruments have a decided advantage in that they furnish their own e. m. f. for testing purposes, and can be used independently of any other source of power. The magneto is used by disconnecting the circuit from the tower battery and connecting one lead of the magneto to the circuit and grounding the other lead.

Gibson City, Ill. CHAS. ROBISON,
Signal Maintainer, Illinois Central

Should Track Circuit Polarities Be Staggered?

"What benefit is derived by transposing the polarity of adjacent track circuits?"

Alternating the Polarity of Adjacent Track Circuits Reduces Possibility of False Clear Failures With Broken Down Insulated Joints

THE advantage in transposing the polarity of adjacent track circuits becomes apparent when abnormal conditions exist such as broken down insulated rail joints, broken rails, broken bond wires, or a combination of these. Many different combinations of conditions may exist, but the matter can be illustrated by using two sketches, one showing the same polarity and the other transposed polarity on adjacent track circuits.

Figure 1 illustrates two adjoining track circuits with transposed battery polarity, both relays being located adjacent to each other. The insulation in insulated rail joint *J* is broken down, and there are broken bond wires or broken rails at *X* and *Y*. A train occupies the track at *S*. The flow of current from battery *B* is indicated by the arrows, from which it may be noted that current flows through relay *R1* through the broken down insulated rail joint *J* and back to battery via ground. Since

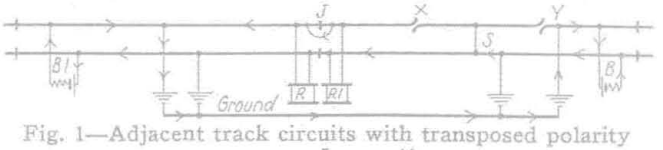

Fig. 1—Adjacent track circuits with transposed polarity

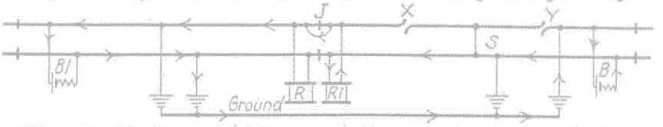

Fig. 2—Similar conditions with same battery polarity

the train first shunted out track relay *R1*, it is very doubtful whether there would be enough current to pick it up again when the train reached a point between broken bonds *X* and *Y*.

Figure 2 illustrates similar conditions, except that the battery polarity of both track circuits is the same. The current flow is again indicated by arrows. By tracing the circuit it is seen that relay *R1* is in series with both batteries *B* and *B1* and also with the ground. Therefore the current in *R1* will probably be sufficient to pick it up, resulting in a more unsafe condition than where the polarity is transposed.

Mansfield, Ohio. J. B. WEIGEL,
Engineer, Railroad Materials Division,
Ohio Brass Company.