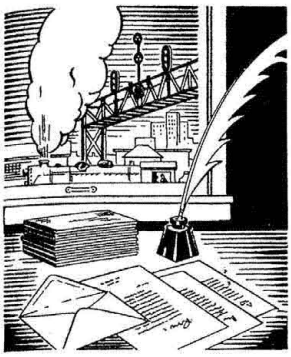

What's the Answer?

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.

Use of Dwarf Calling-on Signals

"Some roads have adopted certain restrictions regarding the indication of a call-on signal governing a train movement into an occupied block, and, on this premise, what procedure is in effect with respect to a dwarf signal when used to advance a train into an occupied block?"

Rule Requires Stop

R. A. Sheets
Signal and Electrical Engineer, Chicago & North Western, Chicago

We have adopted a rule, setting up a requirement in automatic block districts, that trains or engines must be brought to a stop before a call-on signal is cleared to permit the movement of such train or engine on a main-track route through an interlocking plant, when the high home signal is for any reason not used. In view of this rule it seemed that we could not with entire propriety, overlook the necessity of requiring extra precaution when a train or engine was to make a movement from a siding or secondary track to a main track.

A rule substantially as follows is now in effect:

"A dwarf signal (or call-on signal) shall not be cleared for the movement of a train or engine through a route leading from a siding or secondary track to a main track when such movement is immediately following a passenger train on the main track or when the home block signal indicator indicates that the main-track block is occupied, until after such train or engine has been stopped."

Train Must Be Stopped

W. M. Post
Assistant Chief Signal Engineer, Pennsylvania Railroad, Philadelphia, Pa.

The Standard Code does not contain any reference to a "call-on signal." Answering the last part of the question as to what procedure is in effect with respect to a dwarf signal when used to advance a train into an occupied block, the practice on the Pennsylvania is as follows: In automatic block territory a dwarf signal would be displayed to govern through the limits of the interlocking and to the next automatic signal. Generally a "Caution Slow Speed" signal is displayed, but under some conditions a "Clear Slow Speed" or a "Slow Speed" (Approach) signal might be displayed. Rule 507 (P.R.R. Book of Rules) is as follows:

"Signalmen must not admit a train to an occupied track between a home-signal and the next signal in advance, without first stopping the train."

A dwarf signal is a low home and Rule 507 applies. In manual or controlled-manual block territory, a dwarf signal would govern to the block signal (if there is one) at the exit end of the interlocking. Otherwise, the block indication is given either by green or yellow flags or lights. It may be given by word of mouth.

Slow-Speed Signal Used

Leroy Wyant
Signal Engineer, Chicago, Rock Island & Pacific

The signal used on the Rock Island for this purpose is designated as a "slow-speed signal" rather than "calling on." Dwarf signals as well as high signals coming in this class, therefore, are used in the same way. The indication for a slow-speed signal is "Proceed at slow speed, prepared to stop."

Our Rule 605a. describes a slow-speed signal as follows:

"A slow-speed signal, Rule 601g, governs over all possible routes within interlocking home signal limits."

Rule 605b. reads, as follows:

"Home interlocking signals, except slow-speed signals located in automatic block signal territory are also automatic block signals; therefore, a leverman's authorization to proceed against such a signal by hand or slow-speed signals, or otherwise, while displaying 'stop' relates only to its interlocking functions, see Rules 625, 628, 629, 663 and 670, and movements continued beyond the home signal limits into automatic block signal territory must be made as provided by (a), (b) or (c) of Rule 509. A stop will be made at home signal limits leaving the

To Be Answered in a Later Issue

(1) "Do you find it more satisfactory to operate your motor-generator sets at interlocking plants on a floating-charge basis or a cycle charge? What conditions determine your policy? Under what circumstances would it be economical to replace a motor-generator with a rectifier?"

(2) "Why should not specification No. 5833 in the A. R. A. manual require a sensitivity of greater than 50 or 100 ohms per volt for portable direct-current voltammeters in order to get a true voltage reading on line relays?"

(3) "Some railroads have had trouble with black paint peeling off of the galvanized backgrounds of color-light signals. What methods have you used to make such paint jobs more permanent?"

plant, when necessary to comply with (a) of Rule 509."

This is duplicated as a paragraph of Rule 509 for emphasis. It will be noted that a train finding a slow-speed signal indicating proceed under any condition will "proceed at slow speed, prepared to stop," through the home signal limits of the plant—then stop at the leaving signal limits and be governed by Rule 509, (a), (b) or (c), which are the usual rules for proceeding by an automatic block signal at "stop."

Uses Short Releasing Track Circuit

G. K. Thomas
Assistant Signal Engineer, Atchison, Topeka & Santa Fe, Topeka, Kan.

We do not use call-on signals on the Santa Fe but where it is necessary to provide for movement into an occupied block this is done by installing a short releasing track circuit, usually about three rails long, immediately in advance of the home signal, with control circuits so arranged that in case the signal is at stop, due to track occupancy beyond the interlocking limits, a train, by stopping on the short releasing track circuit, causes the home signal to assume the 45-deg. aspect, meanwhile holding conflicting or opposing signals at stop. In other words, the interlocking home signal becomes in effect a stop-and-go signal, providing its controlling lever is reversed.

▼ ▼ ▼

Primary Battery Consumption

"What improvements has your railroad made in recent years as to primary battery consumption? What special campaign or methods have effected these savings?"

Improvement Clearly Shown

Leroy Wyant
Signal Engineer, Chicago, Rock Island & Pacific, Chicago

I am not able to give any data on a specific zone, say some 50 miles, as our records are not detailed that much; further, in a short zone we would not be able to obtain average conditions. Below is a statement of the number of cells used on the entire railroad in the years 1927 to 1932, inclusive.

Year	Renewals
1927	48,000
1928	52,000
1929	66,000
1930	42,400
1931	43,200
1932	43,200

For many years prior to 1929 we averaged about 50,000 renewals annually. We did a lot of temporary work, such as change of line, grade revision, etc., during 1929, requiring duplicate batteries which could not be completely exhausted in many cases, which increased the number that year. Since then we have dropped down to about 43,000 per year, notwithstanding the fact we have gradually changed from oil to electric lamps until we now have about 90 per cent of our signals electric lighted from the signal batteries. To the material savings in batteries should be added the savings in kerosene oil. The savings in labor involved in the renewal of a lesser number of cells, as well as in the care of oil lamps, is a big item.

These savings in batteries and oil are due to various improvements involving a relatively small outlay of money. They include gradual substitution of the more efficient type track relays for the older types, which has permitted the use of a larger "dead" resistance at the track battery; the use of so-called compound battery operation of signals whereby a reduced number of cells is used to hold the signal clear; and the substitution of trickle-charged storage batteries at a relatively few locations here and there where the load was particularly heavy as at interlocking plants where a number of local circuits, including electric locks, were served from one battery.

In addition to the above we started, and have consistently conducted, a campaign with our maintainers to obtain maximum life out of their renewals. We worked up some special instructions and have followed these with frequent inspection of the exhausted elements which we find in the scrap boxes. We break apart the oxide plates and check the amount of unused oxide. This detailed inspection on the part of our supervisory forces has caused maintainers to take a special interest in obtaining maximum life from the cells.

▼ ▼ ▼

Applying Aluminum Paint

"What is the best method of applying aluminum paint, with a brush or with a spray machine? What are the advantages and disadvantages of each method?"

Depends on the Type of Job

H. W. Jones
Assistant Commercial Engineer, Western Railroad Supply Co., Chicago

We find that the spraying method generally gives a slightly more brilliant finish, which is, of course, free from any brush marks.

Spraying undoubtedly gives the closest approach to a "continuous coat of metal" film with correspondingly better protection against weather. Exposure tests check this statement. It is necessary to thin some paint to permit it to be sprayed. Such thinning sacrifices durability, and if over-thinned, makes the resulting spray job less durable than might be obtained from an unthinned brush job.

For maximum durability on steel, a good priming coat such as the best grade of red lead, basis lead, chromatic or sublimed blue lead, should be preferably used, with two top coats of aluminum. As far as economy is concerned, the best method of application depends on the type of job, and may favor either method.

For additional information on this question see page 98 of February 1934 issue.

▼ ▼ ▼

Hidden Defective Bonds

"How do you locate broken bond wires quickly when the tracks are covered with snow and ice?"

Voltmeter Method and Fall Inspection

L. A. Guthrie
Signal Engineer, Canadian National, Winnipeg, Man., Canada

The voltmeter method is generally used on the Western region of the Canadian National. Of course, this method can only be used to advantage when the track circuit is actually open, or when the joint on which the bond is broken is acting as a high resistance. If, in checking up, it is found that the track relay is down, the maintainer generally reads the track circuit voltage every four or five rail lengths, working towards the