

is constant, thus causing a complete breakdown of the magnetic field and a setting up of a magnetic field in the opposite direction. This will occur quicker in the electromagnetic field of the relay than in the armature and will cause a repulse action to be given to the armature momentarily, or just long enough to drop it.

Let us assume the right pole of the relay to be "north" and the left pole to be "south," then the right end of the neutral armature would be "south" and the left end "north," or just the opposite of the poles. Now, assume that the magnetism in the poles suddenly reverses. Before the magnetic flow in the armature can reverse, like poles will be together, that is the "north" pole of the relay and the "north" pole of the armature will be together and similarly the "south" pole of the relay and "south" pole of the armature. This will cause the relay magnet poles to repel the armature, due to the slower reversal of the magnetic field in the iron of the neutral armature.

Other Comment

J. W. Callender, signal maintainer, Cleveland, Cincinnati, Chicago & St. Louis, Greensburg, Ind., explained the dropping of the neutral armature in substantially the same manner as did Mr. Guigue. He further pointed out, however, that the time lag is due to molecular friction in the iron core and iron armature. This characteristic of iron is frequently designated as magnetic hysteresis.

Motor Cars for Branch Line Maintenance

"Should traveling signal maintainers on branch lines, and who look after interlocking and crossing signals only, use motor cars?"

Believes a Motor Car Would Be a Good Branch Line Investment

By LEROY WYANT

Signal Engineer, Chicago, Rock Island & Pacific, Chicago

EACH maintainer's territory must be analyzed on its individual merits before the question can be answered. Practically all of our branch line maintainers are provided with motor cars which they use whenever their work is lined up so that they can make better time by using their motor car than by using train service.

The per cent of time that motor cars can be used on the various territories depends upon the relative location of the apparatus, train service, etc. The investment in a motor car is small and it is my opinion that most any branch line territory can well support a motor car even though used less than one-half the time.

Reduced Train Service on Branch Lines and Other Factors Make It More Essential to Use Motor Cars

By H. W. COOPER

Signal Maintainer, Wabash, Forrest, Ill.

WHETHER or not a traveling signal maintainer on branch lines, with only interlocking plants and crossing signals to look after, should be provided with a motor car depends on a number of factors. First, train service must be sufficient not only for maintenance work but also for whatever necessary emergency work may arise. A second factor is the location of the work in relation to the local branch line train stops. A

third factor is the distance between the different locations requiring the service of a maintainer. In my early experience as a traveling maintainer, I covered about a thousand miles of territory with jumps of from 20 to 100 mi. About 20 years ago, local train service was much more frequent than now and a motor car, then, would not have been of much value. Today, however, a traveling maintainer's district probably does not exceed 125 mi. and with the reduced train service now available, a motor car is essential to take care of the work properly, especially when setting up primary batteries, renewing trunking, bonding rails, or doing any work that requires a large amount of tools and material to be transported quite a distance. A motor car is also particularly valuable in cases of emergency, such as may show up shortly after the local train has left.

Other Comment

I. A. Uhr, signal engineer, St. Louis-San Francisco, believes that the branch line train service available governs the answer to the question. In his judgment, traveling signal maintainers on branch lines should use a motor car if the signal equipment they maintain is not too widely scattered, because much time can be saved in waiting for branch line trains. Branch line service usually is limited to about one or two trains each way per day.

Are Call-On Signals Safe?*

"Do you believe that call-on signals at an interlocking expedite traffic without sacrificing too much in safety?"

Fifteen Years' Experience with Call-On Signals on the Brooklyn-Manhattan Transit System has Demonstrated Their Value in Relieving Congestion

By J. J. LARKIN

Superintendent of Signals, New York Rapid Transit Corp., New York

THE call-on when displayed on a home signal conveys the same information to the engineman or motorman as an automatic block signal indicating "stop," namely, that there is a train in the block or the signal for some reason is out of order, and that it is permissible to proceed, but only with the train under control prepared to stop within the limits of vision. If the control of the call-on is broken through the signal lever in the reverse position, which of course is the proper method, it insures both to the engineman, or motorman, and the towerman that the route is properly set up. This should be considered a requirement before a train is permitted to proceed past a home signal indicating "stop."

We have used call-on signals with color-light signals for the past 15 years on the subway and other lines of the Brooklyn-Manhattan Transit system, and they have worked out most satisfactorily. They have assisted greatly in relieving congestion and delays during track circuit and other failures in a manner which could not be accomplished in any other way. Furthermore, they obviate the necessity of flagging, and leave the responsibility of permitting trains to pass home signals which have failed to clear, entirely in the hands of the towerman, instead of dividing it with the maintainer or someone else. They also leave the towerman at the machine to take care of the movements of other trains.

*See page 109 of March issue for other answers on this subject.