

the lights are burning, without the blocking of any signals.

We are maintaining a record of all lamps, voltage applied, etc., used for signal lighting, and the lamps are replaced when they have exceeded the estimated life hours.



Checking the "D" Relay

"In terminal signaling, involving three-position color-light or searchlight signals, should the indication lock circuit of a particular signal be extended to check the D relay (de-energized), or the caution position, of the signal in the rear, having in mind the numerous selections that may be necessary in the back-lock circuit on account of the fact that there are various routes leading to the particular home signal in question?"

Not Necessary With Light Signals

E. K. Post

Signal Engineer, Pennsylvania Railroad, Philadelphia, Pa.

The practice of providing a lock circuit for home signals was first used when pipe connected home signals were abandoned and power operated signals were substituted and as the signal operating mechanisms first used were not entirely dependable, most dwarf signals being forced normal by coil springs, it was quite necessary to provide a check lock to give immediate information if the signal did not respond to the movement of the lever and it was general practice to extend the lock circuit to check the approach signal.

The light signals as now used are not subject to failures of moving parts that caused most of the false clear signals heretofore, and with the double wiring now usually used, very little if any additional safety is obtained by extending the lock circuits to check the "D" relay and it is quite probable that the additional wire required and numerous selections necessary in the interlocking machine increase the complications to such an extent that reliable operation is impaired rather than increased if the circuits check the "D" relay.

Future Maintenance To Be Considered

J. P. Muller

Signal Engineer, Boston & Maine, Boston, Mass.

The question can be discussed from many angles with various reasons for or against, depending on the responsibility as to maintenance, organization, design, apparatus, material, standards, speed of trains, cost and method of installation, operation, and especially the cost of maintenance, which will be expensive when complicated protective circuits are added. This maintenance expense will increase each year as material and apparatus become worn and damaged.

The reason for checking the approach or D aspect, in my opinion, was primarily based on the old electric approach-signal apparatus and single-wire control circuits in trunking of often doubtful quality and frequently subjected to the weather. The advisability of using the checking circuit was, therefore, not open to doubt or question. Furthermore the apparatus and circuits for checking the aspects were sometimes more reliable than the apparatus checked.

The above reasoning has been frequently questioned since the introduction of the modern light signal and its protected, highly-developed and simplified mechanism, and there is wide-spread doubt among men of practical experience regarding the necessity of making the sometimes elaborate circuit design to check the aspect.

The whole thing resolves itself into the question of degree of reliability of the apparatus to respond as it should. Furthermore, when additional apparatus of no greater reliability and also with complicated circuit design, is used to check equally good or even better and simpler apparatus and circuits, it merely complicates a complicated situation instead of adding security. At the best, the checking circuits are just as liable to false failure as the aspect.



Painting Cable

"How often should ordinary braided aerial cable be painted and what kind of paint do you use?"

No Fixed Schedule for Painting

G. E. Beck

Supervisor of Signals, New York Central, Toledo, Ohio

The frequency of application of paint to aerial cables will vary considerably with climatic and atmospheric conditions. Cables, in the open country, subject to the elements, will not require painting as often as those in towns and cities, especially where industrial activities foul the air with corrosive gases. We have no set time for painting but do it often enough to preserve the outer covering. We use Elaterite No. 45 cable paint for aerial braided cables, applying the paint with a brush or sprayer. Some cables are painted by a man riding the messenger, some by the use of a ladder, and others by lowering the messenger and cable to within four feet of the ground. Good second-hand cable received at our storehouse is matched up and spliced, the bad spots are taped, and the entire cable is drawn through a trough of paint before being reeled up.



Ballast Lamps

"What has been the experience in the signaling field as to the use of ballast lamps for limiting and regulating the voltage of primary batteries used as a source of energy for signal-operating and signal-control circuits, as well as track circuits?"

Merits of Ballast Lamps

A. W. Fisher

Engineering Department, Union Switch & Signal Company, Swissvale, Pa.

It is our impression that the use of ballast lamps in signal circuits in this country has been very limited up to the present time, except to a certain extent in train control engine equipment where they have been used to regulate the filament current of plotron tubes.

Voltage regulation for signal lamps operated from primary battery is very desirable, and it seems probable that ballast lamps will give quite satisfactory results in this service. Preliminary studies in this connection indicate