EDITORIAL COMMENT

Modernization of Terminal Interlocking Plants

DURING the last five years, numerous roads have made extensive changes in automatic block signaling, as well as in outlying interlockings, to meet the new requirements brought about by higher train speeds and modern train equipment. However, in certain cases, the railroads have been slow to extend these rehabilitation programs to include terminal areas, where some of the older interlockings include equipment, circuits, and types of construction which are obsolete, or at least subject to decided improvement.

Signal engineers face changing problems in providing equipment that will properly withstand present-day demands for rapid operation of interlockings. Many of the large terminals are crowded to maximum capacity. Furthermore, with the increasing demands for reductions in overall time between termini, delays in terminal areas for arriving or departing trains cannot be tolerated. For these reasons, operating officers are insisting that levermen rush their work of operating the interlocking machines to change line-ups as rapidly as possible. As a result, the levermen "crowd" the machines by grasping the switch levers and "taking" the lock as soon as they can get it, without regard to the position of the train as indicated on the track chart or as they might possibly see the train through a window. Although this is recognized as a bad practice that should be discouraged, nevertheless it represents a condition which interlocking is designed to guard against, and if the present facilities do not meet the requirement in full, it is high time to discard the antiquated or worn apparatus and provide new equipment and circuits.

At some of the larger plants which have been in service at busy layouts for many years, the interlocking machines have become worn, especially such parts as the mechanical locking, latches, electric locks, etc. In some instances, especially where forced-drop locks are not in use or cannot be applied, the most logical procedure is to install a new interlocking machine rather than spend any considerable sum for repair parts and then still be handicapped with a machine of obsolete design. Under some conditions, it might be advisable to replace the interlocking machine with a miniature-lever type machine in combination with an all-relay control system. Where rapidity in changing line-ups is desirable, the most modern route-control machines are available.

One of the important features that requires attention in many old interlockings is to provide modern electric, approach, route, and detector locking. In view of the height of modern rails, the weight of present-day equipment, and the increased space between car trucks, the use of detector bars is indeed antiquated, and it is surprising that detector bars have been continued in service at some large plants until quite recently. On certain other plants where track circuits have been in service for years, accidents have occurred for reasons which can be corrected, in part, by improvements. Especially in complicated track layouts, where considerable difficulty is encountered in locating insulated rail joints properly to secure maximum protection, the track forces, when making rail changes, are quite apt to shift the joints to meet their convenience, unless the signal department is insistent. Relinquishing a few feet here and there from time to time, eventually brings about a condition in which the detector locking is not effective for certain sections.

Reliable Track Circuit Performance

In so far as faulty track circuit operation or layout is concerned, the first objective is to get the insulated joints back where they belong, thus reducing dead sections to a minimum. In complicated layouts where double-rail track circuits cannot be arranged, it may be possible to secure complete track-circuit protection by using single-rail track circuits and thus eliminate non-track-circuited sections entirely. Some roads are arranging the detector lock circuits to hold through two or more consecutive track circuits. This scheme provides safety in instances in which a train, when stopped, may, when taking up slack, allow the rear car to drift back. Another advantage is that the shunt may be lost by a single-car truck in crossing over frogs or switches, and, therefore, the added safety of the scheme is an advantage.

In some terminal interlockings, track circuits must be operated under adverse conditions such as: Dirty ballast up to the base of the rails; sand, dirt and scum on the rails; and the operation of light-weight passenger car equipment. Under such circumstances, various means have been used to improve the reliability of track-circuit operation. On the basis that a pulsating current is shunted more readily than a steady current, some roads are feeding d-c. track circuits from rectifiers. Other roads are installing the primary-secondary relay track circuit scheme to insure that a track circuit will shunt readily and stay shunted without momentary pick-ups.

Years ago, when interlockings were installed at some of the large terminals, trains were much shorter and were operated in these areas at very low speeds, therefore, the signaling was arranged and controlled accordingly. For example, in some instances no time locking was in effect on the slow-speed dwarf signals. With the operating conditions that prevail today, it