

EDITORIAL COMMENT

Track-Occupancy Indications in C. T. C. Territory

IN THE earlier types of C.T.C., in which one wire, in connection with common, was used for the control of each switch and surrounding signals, this wire was also used to bring in an indication of the track occupancy of the OS track circuit at the switch. However, if indications of the occupancy of other track sections were desired, an additional line wire was required for each track circuit or pair of track circuits. Therefore, except where information as to the approach of trains was desirable, the illuminated track diagram did not continuously indicate the locations of trains. With the thought that it was desirable that the man in charge should have continuous reminders as to the location of each train, indications, or peg tokens, were provided to be moved along the diagram as trains progressed. An advantage of these tokens was that each carried a card on which the identification of the train was marked, thus giving not only the location but also the identification of each train, which is a thought that should be kept in mind.

Further development soon brought out the graphic recorder, the earlier types being operated by the insertion of the peg tokens. Later, the operation of the graphic recorder was made automatic, and a record of train identification was marked on the graph sheet by the operator.

As a general rule, the graphic train chart indicates when a train passes the OS section at each switch, the operator depending primarily on the illuminated track diagram to note the progress of trains, so that he can decide ahead of time how to route them. On several comparatively short C.T.C. installations, the use of graphic train charts has not been considered necessary or desirable, and here the operator depends entirely on the lights of the illuminated track diagram to know the location of trains.

Whereas, with the single-wire system of C.T.C. control, the indication of each track circuit or pair of track circuits required an additional line wire; with the development of the code systems of control, using two or three line wires for the transmission of control and indication codes over an entire territory, it became practicable to provide indications on the control machine as to track occupancy for the OS sections at each switch, and also the approach sections, including at least one track section in the approach of the distant signal at each switch layout.

On first thought, it would seem that, if operators and dispatchers can, under train-order and time-table operation, keep in mind the location of trains, there should be but little chance to overlook the location of trains when

indicated for the approaches and at the switches of every passing siding. However, where a C.T.C. installation is handled by an operator, he usually has other duties, such as handling orders for adjacent territories, selling tickets, and other station work, while a dispatcher usually issues train orders for adjacent main line territory or branch lines. With several trains moving on the C.T.C. territory, a question might arise as to the progress being made by certain trains in territory not indicated on the diagram, between station layouts. This is especially important in lining up for close or non-stop meets. On territories including sections of single track connecting sections of double track, on which trains are operated in either direction on both tracks, if two trains on the two-track section are running parallel in the same direction toward the end of the double track, the operator should be informed of the progress of each train, so that he will know how to handle them to avoid stopping either train.

Observation of the operation of several control boards for periods of an hour or more during peak traffic periods, seems to indicate that continuous track-occupancy indication may be desirable. However, before deciding on such a policy, it may be well to consider some of the problems involved in securing such indications, as well as the disadvantages of too many indications on the panels.

One of the first questions to arise is whether the additional benefits from an operating standpoint will justify the expense for the extra equipment that may be required. On certain existing C.T.C. installations, the operation of sending the track-occupancy indication control codes from the field to the office for the OS sections at switches and adjacent approach sections, can, in the majority of instances, be accomplished by the field line coding units required at the switch layouts for other purposes. If the occupancy of additional outlying track circuits is to be indicated on the control machine, it may necessitate additional field storage units, or their equivalent. The added expense for this equipment and the installation will depend on local conditions, and the total cost should be compared with the benefits to be derived. On some C.T.C. projects the code line may be operated at a high percentage of capacity, and it would, therefore, be objectionable to increase the number of indications to be handled, because, when several trains are on the territory, the indication codes from intermediate track circuits might hold out, and thereby delay receipt of indications for more important functions. If the code system is working near capacity, it might thereby result in delay to trains because certain changes in lineups were not made soon enough. Furthermore, some authorities contend that too many indications are detrimental, in that the more indications there are, the less arrestive each becomes.

Thus, it is evident that there are some obstacles to securing continuous indication of the occupancy of all

track circuits, as well as perhaps some disadvantages of such operation. However, consideration should be given to the fact that the Delaware & Hudson provided continuous track-occupancy on its recent C.T.C. installation near Albany, N. Y., and the Chicago, Burlington & Quincy is including track-occupancy indications for all main line track on a 112-mile project now under construction. Evidently ways and means can be devised to secure the track-occupancy indications, providing the operating results are considered desirable. Therefore, it is evident that the subject deserves consideration when planning a proposed C.T.C. installation.

OPEN FORUM

This column is published to encourage interchange of ideas on railway signaling subjects. Letters published will be signed with the author's name, unless the author objects. However, in order to encourage open discussion of controversial matters, letters may be signed with pen names at the request of the author. In such instances, the correspondent must supply the editor with his name and address as evidence of good faith. This information will not be disclosed, even on inquiry unless the correspondent consents.

Making Good

Chicago.

To the Editor:

Frequently when we ask the management to approve the purchase of a tool, with a statement that we can make certain economies, they question whether our statements are exaggerated due to enthusiasm.

I have just had an experience with a specially designed power grinder for bonding drills. I admit my economy statement to the management in recommending its purchase was influenced by enthusiasm. However, I have found that my enthusiastic prediction has been substantiated many times over.

It is really surprising the reduction in the number of bonding drills we have had to purchase for large rail-re-lay and new construction projects since we purchased the grinder. In fact, we have completed rather large rail-re-lay jobs with second-hand drills collected from the system, which otherwise would not have been considered as usable. It was also surprising to note the number of miscellaneous bits which we collected from maintainers' tool houses, which had been "set aside" by them as not fit for use, and which have been put back into service after regrinding with this machine.

All bonding drills for both construction and maintenance work are sent to our signal shop for regrinding. We endeavor to give one day service in the shop, so that the "revolving quantity" necessary on rail-re-lay and new installation projects is relatively small.

A READER

Signal Inspection Bill

(Continued from page 505)

this section used by any such carrier and to determine whether such systems, devices, and appliances are in proper condition to operate and provide adequate safety. For these purposes the Commission is authorized to employ persons familiar with the subject. Such persons shall be in the classified service and shall be appointed after competitive examination according to the law and the rules of the Civil Service Commission governing the classified service. No person interested, either directly or indirectly, in any patented article required to be used on or in connection with any of such systems, devices, and appliances or who has any financial interest in any carrier or in any concern dealing in railway supplies shall be used for such purpose.

(e) It shall be unlawful for any carrier to use or permit to be used on its line any system, device, or appliance covered by this section unless such apparatus, with its controlling and operating appurtenances, is in proper condition and safe to operate in the service to which it is put, so that the same may be used without unnecessary peril to life and limb, and unless such apparatus, with its controlling and operating appurtenances, has been inspected from time to time in accordance with the provisions of this section and is able to meet the requirements of such test or tests as may be prescribed in the rules and regulations hereinbefore provided.

(f) Each carrier shall report to the Commission in such manner and to such extent as may be required by the Commission, failures of such systems, devices, or appliances to indicate or function as intended; and in case of accident resulting from failure of any such system, device, or appliance to indicate or function as intended, and resulting in injury to person or property which is reportable under the rules of the Commission, a statement forthwith must be made in writing of the fact of such accident by the carrier owning or maintaining such system, device, or appliance to the Commission; whereupon the facts concerning such accident shall be subject to investigation as provided in sections 3, 4, and 5 of the Act entitled, "An Act requiring common carriers engaged in interstate and foreign commerce to make full reports of all accidents to the Interstate Commerce Commission, and authorizing investigations thereof by said Commission," approved May 6, 1910 (U.S.C., 1934 ed., title 45, secs. 40, 41, and 42).

(g) It shall be the duty of the Commission to see that the requirements of this section and the orders, rules, regulations, standards, and instructions made, prescribed, or approved hereunder are observed by carriers, and all powers heretofore granted to the Commission are hereby extended to it in the execution of this section.

(h) Any carrier which violates any provision of this section, or which fails to comply with any of the orders, rules, regulations, standards, or instructions made, prescribed, or approved hereunder shall be liable to a penalty of \$100 for each such violation and \$100 for each and every day such violation, refusal, or neglect continues, to be recovered in a suit or suits to be brought by the United States attorney in the district court of the United States having jurisdiction in the locality where such violations shall have been committed. It shall be the duty of such attorneys to bring such suits upon duly verified information being lodged with them showing such violations having occurred; and it shall be the duty of the Commission to lodge with the proper United States attorneys information of any violations of this section coming to its knowledge.