



H. D. Shipe, a former yard conductor, is the instructor on the car

Reading develops model board for use in lessons on special car in charge of instructor

Instructions in Signal Aspects and Indications to New Employees

THE increasing demands for railroad transportation has required the hiring of so many new employees in the Transportation Department that special education and training are necessary to fit these men for their duties. During normal periods, the ratio of new men employed, to the total in service on any railroad, is relatively small so that their first assignments place them with experienced men with the opportunity of acquiring essential railroad knowledge and experience before being placed in positions of responsibility. This situation has radically changed under existing war conditions so that it becomes necessary to accelerate the training of numerous new employees in the fundamentals of railroad operation. The management of the Reading Company, in line with a policy of promoting safe practices and educating its employees, has equipped a Safety Instruction Car, which is manned by an assigned instructor and is placed at various stations and yards where employees are given the opportunity of attending lectures and demonstrations in safe railroad practices.

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A wood-type passenger coach has been reconditioned and fitted with various types of handbrakes, 11 in number; standard drawhead couplings; air, steam and signal hose couplings, and numerous charts indicating character of accidents which occur most frequently. In addition, miniature models of locomotives, cars and yard layouts are arranged to reproduce conditions which obtain in accidents caused by carelessness, such as a car pushed over a derail, fouling the yard lead, and accidents due to shifted lading.

Signal Aspect Model Board

A feature of the car which should prove of interest to readers of *Railway Signaling* is a model board signal exhibit, used to demonstrate aspects and routes in the approach to and through an interlocking, all co-ordi-

nated with a recorded lecture. The arrangement of tracks in the interlocking diagram permits the display of typical signaling for train movements such as:

Three-track to four-track branch
Junction of double-tracked signaled branch

Junction of single-track non-signaled branch

Typical lead to non-signaled yard track

This track layout permits display of all modern aspects and indications. The diagram includes signals shown by symbols adjacent to the tracks and, immediately below, a front view of the same signal with aspects displayed by lighted lamps. In addition to the lighted signal display, the related routes governed by the signals are indicated by lamps within the track circuit in advance of the signal, and the direction of an approaching train by lighted lamps and an arrow in the approach to the home signal. For the purpose of identification, the home signals are designated by letters and numbers which in actual practice do not appear on the mast.

In the course of the lecture, routes are set up as indicated by lighted lamps in the track diagram and, in the front view, the actual signal indications are shown governing movements over these routes. Stress is placed on the requirements of interlocking home signals, the aspect of which provides red lights in the same vertical line when "Stop" is displayed, requiring a train to stop and remain stopped until the signal clears, as compared to an automatic signal displaying "Stop Then Proceed," an aspect which can always be identified by the staggered red lights.

It is the purpose of the signal exhibit to show the conditions under which all of the various aspects will be displayed, particularly the use of the "Approach Medium," which in every case requires that a train proceed prepared to pass next signal at not exceeding medium speed. With this provision, the "Approach Medium" may be encountered approaching an interlocking where a medium speed route is set, or approaching an automatic signal displaying the "Approach" aspect on account of a "Stop" aspect at next signal. In each case, a train must be operated so as to pass the next signal in advance of the "Approach Medium" at not exceeding medium speed.

Where curvature of turnouts is such that a speed of 15 m.p.h. or less is imposed, the condition will be reflected by a "Slow Clear" signal at the interlocking, provided there are two blocks clear and an "Approach Slow" at the automatic approaching the interlocking. When "Slow Clear" is displayed, requirements are that a train "Proceed at slow speed within interlocking limits." Slow speed is defined as "one-quarter the normal speed, not to exceed 15 m.p.h."

With an "Approach Slow" displayed at the automatic signal approaching the interlocking, the requirements are that trains "proceed approaching next signal at slow speed, trains exceeding medium speed must at once reduce to that speed."

The use of an "Advance-Approach" is demonstrated under conditions whereby it is assumed that the block of one signal is not of sufficient length to permit reducing speed of train to 30 m.p.h. before passing the next signal, but where there is sufficient stopping distance in the two blocks to permit stopping at the second signal in advance.

The "Advance-Approach" indication requires that a train proceed prepared to stop at the second signal in advance. Its use will be limited to locations where the block length is too short to reduce from normal speed to 30 m.p.h. as would otherwise be re-

quired by the "Approach Medium." The "Advance-Approach" aspect can be distinguished by staggered lights.

Track Layout of Board

The exhibit demonstrates the signaling at a junction with a double-track signaled branch where the curvature of turnout is such that all movements are restricted to at least medium speed; when these conditions obtain, the top unit in a three-light home signal is inoperative, all indications governing movement of trains being displayed in the middle and bottom units.

The signaling encountered in the approach from a non-signaled single-track branch to an interlocking in signaled territory is demonstrated by the display of a route through the interlocking which, with the interlocking route clear, will permit the display of an "Approach Medium" when the route is clear and a "caution" indication at the distant signal when the home signal displays stop. The requirement of a "caution" indication is stressed in that a "train exceeding restricted speed must at once reduce to that speed on passing the distant signal and approach the home signal prepared to stop."

The reproduction of actual signal aspects on the model board calls attention to the arrangement of yellow lights which are in the same vertical plane when "caution" indication is

displayed and staggered, as on a signaled branch, when "Advance Approach" indication is displayed.

The lecture is concluded by a review of the requirements of the indications of automatic signals most frequently encountered in operation.

Classes Well Attended

Classes are scheduled so as to give crews an opportunity to visit the car just prior to or after their assignment. Attendance is not compulsory; nevertheless, more than 8,000 employees have witnessed the demonstrations and taken part in discussions during the period the car has been on the road. H. D. Shipe, a former yard conductor, has been assigned as instructor, much of the success being due to the fact that the men are being instructed by one of their own, who speaks their language, and who has had practical experience in handling the devices which he demonstrates.

The interest of the employees in voluntarily attending demonstrations is evidenced by frequent discussions which generally terminate with their returning to the car to ask further questions and to settle points of controversy, all of which results in better training of employees.

The signal exhibit was designed, constructed and installed by J. E. Hillig, Leader in the system relay repair shop under the direction of E. W. Reich, Signal Engineer.

Small lever on the end of the case are used to control the lamps in signals.

