Editorial Comment

Continued Improvement In Signal Performance

THE design, construction and maintenance of signaling facilities can be gaged by the number of failures of the signaling facilities as a whole. False-restrictive failures cause unnecessary train stops, and false-proceed failures may result in accidents. The railroads in the United States report such failures to the Bureau of Safety, I.C.C., which issues an annual report, as is shown in abstract elsewhere in this issue. In brief, the number of false-restrictive failures in the year ended June 30, 1949, was 35,860, a decrease from 42,282 in the previous year. The number of false-proceed failures in the year ended June 30, 1949 was 156, a decrease from 223 in the year before. In making such comparisons, some consideration should be given to variations in the number of trains operated and to the increases in signaling mileage in service each year. On the whole, however, the figures cited indicate a general improvement in the performance of signaling facilities.

Tabulation of total annual failures of signaling on the railroads of the United States as compiled by the Bureau of Safety, Interstate Commerce Commission

Year Ending June 30	False Restrictive Failures	False Proceed Failures	Potential False Proceed Failures
1945	43,599	224	35
1946	41,182	201	18
1947	39,990	227	21
1948	42,282	223	25
1949	35,860	156	16

The figures on failures in the Bureau of Safety report do not include information on the miles of signaling, number of interlockings, etc., in service on each railroad, nor is information available on the volume of traffic, weather conditions, age of equipment in service and other factors applying on different railroads. However, each railroad can determine these variables for its own signaling and maintain comparative records to indicate whether an improvement is being made in signal performance. For example, during a period of nine years, one railroad gradually reduced the number of failures from an annual average of 2,167 to 522. Where the traffic varies a great deal, the difference in the number of trains may cause a small percentage of error in signal performance records. In such territories, some roads secure statements from dispatchers to show the number of through trains operated on each division every month. On this basis, the signal performance is figured in terms of signal operations per train interruption. In a 10-year period, one road increased the average number of signal operations per interruption from 54,693 to 184,436. In the same period, the average number of signal operations per false-proceed aspects were increased from 2,468,307 to 8,078,281.

The gradual betterment in the performance of signaling throughout the last several years has been brought about by improvements in: (1) design of equipment and circuits; (2) field construction practices; and (3) maintenance methods. Each of these three factors—like the separate legs of a three-legged stool—must perform its function or the whole program fails. Looking back over the years, we may recall railroads which had excellent maintenance but continued to install semaphore signals long after most of the other roads had adopted light signals. Other railroads which were fortunate in having adopted light signals years ago and installed them throughout, may have included in their construction certain practices which have proved to be troublesome. At least one road has comparatively modern signaling and excellent maintenance, but has been handicapped by numerous failures of line wires and line poles on a pole line that was poorly constructed and is inadequately maintained. In any event, by maintaining detailed performance reports, each road should be able to determine the defective elements in its signaling and, based on this information to make such changes and improvements as may be required to improve the performance, thereby reducing the number of unnecessary train delays.

Centralized Train Dispatching

BY USING modern communications equipment, several railroads are effecting economies and improving train dispatching by centralizing dispatchers' offices at a mid-point on an entire railroad or in a major district of a railroad. For many years, a general practice on many railroads has been to assign a dispatcher for each sub-division of perhaps 100 mi. to 150 mi., and each dispatcher's office was at the end or near the middle of his respective territory. With this arrangement, on a division of three sub-divisions, at least two of the dispatchers are remote from division headquarters, thereby resulting in some lack of coordination in the planning of train movements.

Now, with modern carrier apparatus available, the dispatchers for three or more subdivisions can be located in division offices which may be at one end or a central point in the entire division. Carrier on existing wires is used to bridge the gap between the office and the nearest end of a remote subdivision. With the dispatchers of an extended division all in one or adjacent offices, operations of trains can be coordinated to a maximum extent.

Some of the technical communications problems involved in so-called centralization of dispatching were discussed in a paper presented by L. A. W. East of the Canadian Pacific at the 1947 annual meeting of the Communications Section, A.A.R. (See page 703 of this magazine for November, 1947). An application of this method on a division of the Western Pacific at Sacramento, Cal., was discussed in an article in the February issue. In a somewhat different manner the Chicago Great Western has used carrier to consolidate its train dispatchers at a central location at Oelwein, Ia. Also, the Lehigh Valley has a project including new communications facilities, permitting the location of train dispatchers at a central point on the railroad as a whole. These and other similar projects may well deserve consideration and study by other railroads which could adopt this practice with benefit.