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road Safety Act of 1970. The task is complex, and FRA's initial efforts have been directed toward the adoption of track and equipment standards. These areas have received the most publicity for contributing to train accidents and they also are the areas in which it is possible to provide measurable standards. The accident data presented in this study indicate that the prevention of accidents attributed to employee negligence also warrants priority consideration.

FRA currently is considering the promulgation of standards covering operating rules and procedures for the Nation's railroads. FRA also is studying the human factors involved in train operation, which should improve the insights into causal factors. Our study suggests that a marked reduction in train accidents attributed to employee negligence may be obtained through a concentrated consideration of the problems involved in a relatively limited number of areas. For example, significant safety benefits may be realized through revision of a small number of operating rules. It does not appear necessary that all rules of all railroads be revised. An assessment of the risks is warranted and priority consideration should be given to the most hazardous.

The design and maintenance of equipment and appurtenances also are involved in accidents attributed to employee negligence. Significant safety benefits may be realized through priority consideration and the promulgation of standards for relatively few items. In most instances where changes in design appear warranted, alternatives seem available within the limitations of current technology and economic conditions.

Finally, the promulgation of any standard necessitates a review to determine its impact on the entire railroad system of management, man, machine, and media. For instance, FRA has recently established standards for train speeds for various track conditions. Operating rule standards relating to train speed must be compatible with the track standards. Without consideration of the interface, a standard advanced to promote safety in one area may

result in the degradation of safety in another area.

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VI. RECOMMENDATIONS

(The National Transportation Safety Board recommends that the Federal Railroad Administration promptly undertake an analysis of the 10 most severe accident causes attributed to "Negligence of Employees," as identified in this report. This analysis would have the purpose of learning whether and how often other, more basic, system operating deficiencies may underlie alleged negligence. The suspected factors which may induce negligence or be mistaken for negligence include inadequacies in operating rules or practices, inadequate instruction or rule enforcement procedures, shortcomings of equipment design or maintenance, in addition to actual negligence.. Many of these factors are identifiable from a brief review without detailed and lengthy study. Upon identification of the problem areas, an assessment of the current safety efforts and controls in these areas can be made. Appropriate action in the form of research, the acceleration and unification of industry efforts, or the promulgation of regulations then should be instituted.)

The Safety Board previously has addressed many of the problem areas illustrated in this report through recommendations that resulted from accident reports and special studies. In some instances, these recommendations have been directed to specific railroad companies; however, those recommendations are applicable to the entire railroad industry. The relevant Safety Board recommendations are reiterated below:

New York Central Railroad Company, New York, New York, May 22, 1967

"A wide variety of inadequacies in rules, operating practices, and personnel training were revealed by the investigation of this accident . . . The investigation also identified ineffective organization, inadequate use of modern

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