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Operating Practices Working Group

Fatigue Management Program Requirements

Abstract: This document provides standard requirements for rail transit agencies in establishing and implementing a fatigue management program and related systems.

Keywords: fatigue, fatigue management program, fatigue risk management program, fitness for duty, health, hours of service, rest

Summary: This standard provides rail transit agencies with the baseline requirements for fatigue management programs (FMPs) in order to mitigate the impacts of fatigue on their operations and thereby improve the quality and safety of rail service. It also includes recommendations regarding the use of fatigue risk management systems. APTA recognizes that each rail transit agency has unique design and operating characteristics and that each rail transit agency will therefore have different titles and roles that its program would need to focus on.

Foreword

The American Public Transportation Association is a standards development organization in North America. The process of developing standards is managed by the APTA Standards Program's Standards Development Oversight Council (SDOC). These activities are carried out through several standards policy and planning committees that have been established to address specific transportation modes, safety and security requirements, interoperability, and other topics.

APTA used a consensus-based process to develop this document and its continued maintenance, which is detailed in the manual for the APTA Standards Program. This document was drafted in accordance with the approval criteria and editorial policy as described. Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

This document was prepared by the Operating Practices Working Group as directed by the Rail Standards Policy and Planning Committee.

This document represents a common viewpoint of those parties concerned with its provisions, namely transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. APTA standards are mandatory to the extent incorporated by an applicable statute or regulation. In some cases, federal and/or state regulations govern portions of a transit system's operations. In cases where there is a conflict or contradiction between an applicable law or regulation and this document, consult with a legal adviser to determine which document takes precedence.

This document supersedes APTA RT-OP-S-23-17, which has been revised. Below is a summary of changes from the previous document version:

- Reformatted to align with the new APTA Rail Transit standards.
- Updated committee membership.
- Replaced all instances of "Rail Transit System (RTS)" with Rail Transit Agency.
- Technical edits made to sections 1.1, 1.2, and 1.7
- Technical edits made to sections 2.1, 2.2, 2.3
- Added Section 4 "Additional fatigue resources."

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Introduction

This introduction is not part of APTA RT-OP-S-23-17, "Fatigue Management Program Requirements."

APTA recommends the use of this document by:

- individuals or organizations that operate rail transit systems;
- individuals or organizations that contract with others for the operation of rail transit systems; and
- individuals or organizations that influence how rail transit systems are operated (including but not limited to consultants, designers and contractors).

Scope and purpose

This standard applies to rail transit agencies that operate light rail, heavy rail or rail subway systems. It does not apply to commuter railroads that operate on the general railroad system regulated by the Federal Railroad Administration. The goal of a fatigue management program is to put in place policies and procedures that support optimal personnel alertness and performance while reducing the likelihood and frequency of negative impacts due to fatigue (including fatigue-related incidents, as well as impacts to personnel, transportation agencies and the public at large). Managing fatigue also promotes personnel health and safety while reducing the likelihood that impairment due to fatigue will compromise public safety. The initial development and implementation of the FMP shall include a series of formal steps designed to ensure that critical perspectives and knowledge are included in the FMP and that its potential benefits are fully realized.

Note on alternate practices

Individual rail transit systems may modify the practices in this standard to accommodate their specific equipment and mode of operation. APTA recognizes that some rail transit systems may have unique operating environments that make strict compliance with every provision of this standard impossible. As a result, certain rail transit systems may need to implement the standards and practices herein in ways that are more or less restrictive than this document prescribes. A rail transit system may develop alternates to APTA standards so long as the alternates are based on a safe operating history and are described and documented in the system's safety program plan (or another document that is referenced in the system safety program plan).

Documentation of alternate practices shall:

- identify the specific APTA rail transit safety standard requirements that cannot be met;
- state why each of these requirements cannot be met;
- describe the alternate methods used; and
- describe and substantiate how the alternate methods do not compromise safety and provide a level of safety equivalent to the practices in the APTA safety standard (operating histories or hazard analysis findings may be used to substantiate this claim).

Fatigue Management Program Requirements

1. Purpose of fatigue management programs

In light of scientific evidence that personnel fatigue can result in impaired performance and that this is a risk to safe operations, the rail transit agency shall establish a fatigue management program (FMP) that aims to reduce the likelihood of personnel impairment due to fatigue. The rail transit agency shall develop a formal FMP that, at a minimum, applies to operators, controllers and any other person identified as relevant and/or safety-sensitive by the rail transit agency. The rail transit agency shall consider the role of the FMP in its Safety Management System (SMS).

The rail transit agency shall require all individuals who may operate a train during their time on duty or who meet other criteria established by the rail transit agency to comply with FMP program requirements.

In this standard, the term “FMP-covered employee” is used as a means of identifying individuals governed by the FMP.

The goal of an FMP is to reduce the frequency of fatigue-related incidents and impacts to personnel, the rail transit agency and the public at large. The development and implementation of the FMP shall include a series of formal steps designed to ensure that critical perspectives and knowledge are included in the FMP and that its potential benefits are fully realized. This process shall include the following elements.

1.1 Assemble an FMP steering committee

The rail transit agency shall create an FMP steering committee or similar group responsible for:

1. Planning the FMP.
2. Developing the FMP.
3. Writing any associated policies and procedures.
4. Monitoring and managing the implementation of the FMP.
5. Ensuring that needed support is available for employees.

Although the size and/or structure of the FMP steering committee will vary across transit agencies, the rail transit agency shall include representatives from relevant levels of the rail transit agency and shall include representation by members of FMP-covered employee groups, including the employee collective bargaining unit(s) and other rail transit agency groups that manage or address employee wellness.

The rail transit agency shall determine if the steering committee is standalone or may be a component of another established committee.

Once the FMP has been established, the rail transit agency shall routinely convene the steering committee to review FMP-related metrics, evaluate the effectiveness of the FMP and recommend customized strategies to reduce fatigue risk.

1.2 Conduct a pre-implementation study

The rail transit agency shall conduct a pre-implementation study to understand workplace conditions and procedures that contribute to fatigue risk. A pre-implementation study shall consider the following:

- Implementing a survey of personnel on fatigue and fatigue-management strategies.
- Analyzing exposure to fatigue risk on work schedules (e.g., biomathematical fatigue modeling).
- Auditing existing fatigue-management strategies (e.g., scheduling practices, sleep disorder screening and treatment support).
- Auditing existing scheduling and planning policies and procedures.
- Identifying safety-critical/sensitive work groups that should be considered FMP-covered employees.
- Identifying work groups/schedules at higher risk of fatigue-related impairment.
- Identifying practices and procedures that contribute to fatigue risk.
- Considering collective bargaining agreements.
- Identifying external requirements and practices.
- Identifying industry best practice.
- Identifying Federal Transit Administration guidance.

Programs introduced in the FMP shall be tailored to the risk associated with FMP-covered employees and work schedules. The information gathered in the study shall also be used in evaluating the success and outcomes of the FMP. The FMP steering committee shall make strategic recommendations for the development of the FMP core elements based on the results of the pre-implementation study.

Once the FMP has been established, the steering committee shall periodically reevaluate FMP program metrics against the results of the pre-implementation study or subsequent results to evaluate improvements resulting from the program.

1.3 Develop an FMP policy

The rail transit agency shall create an FMP policy that clearly identifies and defines all program elements, including the following:

- scope, purpose and goals of the FMP
- FMP roles and responsibilities (i.e., steering committee, manager, other)
- ownership of the FMP
- personnel covered by the FMP
- compliance, exceptions and enforcement
- communication plan
- program reporting, monitoring and review

The FMP policy shall be developed in consultation with the FMP steering committee and shall integrate all fatigue-related safety systems and plans employed by the rail transit agency. The FMP shall be developed to complement the rail transit agency's hours of service program, which is developed in accordance with APTA RT-OP-S-015-09, "Train Operator Hours-of-Service Requirements." The policy shall delineate which operations and classifications of employees are covered by FMP procedures. The FMP policy shall be periodically reviewed and updated as needed.

The FMP policy shall reflect the following principles:

- **Maintain shared responsibility:** The rail transit agency shall ensure that the FMP emphasizes the importance of both individual and organizational responsibility.
- **Factually proven:** The rail transit agency shall ensure that the steps taken to reduce fatigue risks are based on empirical and scientific information, including models used by fatigue risk consulting firms.
- **Performance-driven:** The rail transit agency shall develop data-based metrics that indicate employee fatigue and risk, and that can be used to assess risk reduction outcomes.
- **Continuous improvement:** The rail transit agency shall collect data to be periodically reviewed to make system adjustments and improvements.
- **Customized approach:** As appropriate, the rail transit agency shall implement more than one program to cater to different needs and operations within the organization.

1.4 Develop FMP roles and responsibilities

The rail transit agency shall delineate FMP roles and responsibilities in its FMP to fit its own needs. Across all rail transit agencies, management shall be held fundamentally responsible for regulating operations to prevent and account for potential fatigue (e.g., through scheduling), while employees governed by the FMP shall be required to hold a personal responsibility to use fatigue-management strategies that reduce the risk of fatigue they may experience on the job (e.g., striving for proper rest and securing needed treatment for fatigue-related medical treatment). FMP roles and responsibilities in the policy will focus on establishing and maintaining FMP element accountability.

1.5 Develop an FMP implementation timeline

The rail transit agency shall develop and adhere to a timeline for the development and implementation of the FMP. The timeline shall be designed to focus on achieving effective control measures and implementing needed mitigation strategies as quickly as possible. The FMP steering committee shall be required to closely monitor and support the execution of these plans to ensure that the timeline is followed.

1.6 Ongoing FMP communication

The rail transit agency shall develop an FMP communication plan in order to maintain consistent, employee-focused communication and messaging regarding the criticality of the FMP. This FMP communication plan shall include processes and/or policies for the following:

- Maintaining both formal and informal communication channels regarding fatigue and fatigue management.
- Actively soliciting employee feedback on fatigue and the FMP.
- Encouraging fatigue-related discussions between employees and their families.
- Supporting compliance with policies of the FMP.
- Promoting awareness of the FMP.
- Increasing awareness of fatigue-management strategies for personnel.

1.7 Monitor and evaluate the FMP

The rail transit agency shall gather data on FMP performance and analyze the FMP's effectiveness. This should include regular evaluation based on consistently used metrics and management of change. The rail transit agency shall review the FMP when:

- operating plans, schedules, rules, procedures or other aspects of system operations are modified or changed;
- staffing levels are altered or work groups are reorganized;

- line extensions or new lines are developed; or
- new technologies, tasks or equipment with a potential impact on employee fatigue are adopted.

2. Core FMP elements

The rail transit agency shall develop an FMP that focuses on realigning the organizational culture to support fatigue management, including but not limited to providing training and education to FMP-covered employees to improve sleep habits, introduce personnel to a sleep disorder screening and treatment program, and address dispatching practices that hinder personnel from obtaining adequate sleep.

2.1 Fatigue considerations in incident investigation

The rail transit agency shall update its existing incident investigation procedures to additionally consider the potential role of fatigue in incidents. Investigation of the potential role of fatigue in incidents should consider the work and sleep schedule in the days leading up to the event, as well as any evidence of loss of alertness at the time of the incident.

The rail transit agency shall provide appropriate training for incident investigators.

Metrics such as the proportion of incidents that involve fatigue may be reviewed by the steering committee as an indicator of fatigue risk in the rail transit agency.

The rail transit agency should develop a standardized method to gather fatigue information in relation to any incident investigation. The rail transit agency may consider enrolling investigators in the National Transportation Safety Board's Training Center courses on accident investigation.

2.2 Personnel work scheduling

The rail transit agency shall implement work schedules and models in accordance with APTA RT-OP-S-015-09, "Train Operator Hours-of-Service Requirements," that focus on mitigating factors that contribute to fatigue development. The rail transit agency shall identify for all FMP-covered employees maximum on-duty hours, duty tour length, consecutive working days and minimum off-duty hours. The scheduling model shall balance a range of logistical considerations including regulatory requirements, workload, staffing, operating environment/conditions and rest periods.

2.3 Fatigue management education

The rail transit agency shall establish education and training programs to educate FMP-covered employees on the FMP and fatigue-management strategies. Training and education topics shall include, at a minimum:

- the basics of sleep, fatigue and the circadian clock
- effects of fatigue on performance, health and wellness
- relationship between fatigue and operational performance and incidents
- factors that contribute to the development of fatigue
- fatigue warning signs
- strategies to manage fatigue and sustain alertness
- the rail transit agency's sleep disorder screening and treatment program

The rail transit agency shall provide managers of FMP-covered employees with the same training as the FMP-covered employees and include additional resources to help identify fatigue and support fatigue management in FMP-covered employees.

The rail transit agency shall provide formal FMP training to employees responsible for developing and managing the schedules of FMP-covered employees.

The rail transit agency shall identify its requirements for the frequency of FMP training programs for all FMP-covered employees.

The rail transit agency shall consider programs, toolboxes or other resources to assist in developing and/or providing initial training for their instructors in the FMP.

2.4 Fatigue-related absences and reports

The rail transit agency shall evaluate fatigue-related absences to assess risks across the workplace.

2.5 Rest areas

The rail transit agency shall consider and evaluate methods to provide dedicated areas for FMP-covered employees to rest or take breaks in accordance with rail transit agency policies, rules and FMP requirements. Any rest areas or spaces shall be placed at appropriate locations, based on rail operations, schedules and other applicable factors. The rail transit agency shall consider alternative options for allowing FMP-covered employees to engage in rest activities.

2.6 Sleep disorder screening and treatment

The rail transit agency shall require FMP-covered employees and applicants to see a qualified medical healthcare provider to determine whether the employee is at risk for sleep disorders or other possible fatigue-related conditions. The rail transit agency shall identify in its policy how it will respond to the results of the medical screening. The rail transit agency may include fatigue-related materials in its employee wellness programs.

2.7 Data assessment metrics

The rail transit agency shall collect data from FMP-covered employees before, during and after implementation of the FMP to monitor and evaluate fatigue and risk levels. The rail transit agency shall consider gathering this data from FMP-covered employees through an organization-wide survey. The rail transit agency shall review data in real-time to determine if fatigue is being managed appropriately.

The rail transit agency shall determine if any job classifications have higher fatigue risks that should be engaged in further data gathering.

3. Fatigue risk management system (FRMS)

The rail transit agency shall consider evaluating the use of a commercially available computerized system to analyze data on fatigue levels and identify fatigue risk factors. This system often incorporates a computer-based system that can track the changes in these metrics and evaluate the effectiveness of policies used to address them.

4. Additional fatigue resources

The rail transit agency should consider additional resources, including but not limited to the Transit Advisory Committee for Safety 14-02 Report, “Establishing a Fatigue Management Program for the Bus and Rail Transit Industry.”

Related APTA standards

APTA RT-OP-S-015-09, "Train Operator Hours of Service Requirements"
APTA RT-OP-S-018-12, "Fitness for Duty (FFD) Program Requirements"

References

Federal Transit Administration, Transit Advisory Committee for Safety (TRACS) 14-02 Report, "Establishing a Fatigue Management Program for the Bus and Rail Transit Industry," July 2015. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/TRACS_Fatigue_Report_14-02_Final_(2).pdf

Definitions

For the purposes of this standard, the following terms and definitions apply. The job titles listed below are used in this standard for informational purposes only. It is up to the individual rail transit agency to determine and use titles as it finds appropriate.

fatigue: A physiological state characterized by a lack of alertness and reduced mental and physical performance that is often accompanied by sleepiness.

operator: The onboard employee who controls the movement of a train or other on-track equipment.

rail transit agency: An organization that operates passenger train service and its supporting activities.

train: A rail mounted vehicle that is used or intended to be used in revenue service.

Abbreviations and acronyms

FMP fatigue management program
FRMS fatigue risk management systems

Document history

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