



RESEARCH REPORT AND FINDINGS: EVENT DATA RECORDERS FOR RAIL TRANSIT SYSTEMS

Background

Since the mid-1990s, the Federal Transit Administration (FTA) has financed, supported, and participated in the development of safety and technical standards and recommended practices for the public transportation industry. FTA has supported the transit safety standard program coordinated through the industry's official Standards Development Organization (SDO) and the American Public Transportation Association (APTA) and also has partnered closely with other Department of Transportation (DOT) Modal Administrations, including the Federal Highway Administration (FHWA), the Federal Railroad Administration (FRA), the National Highway Traffic Safety Administration (NHTSA), and the Federal Motor Carrier Safety Administration (FMSCA) on multimodal regulations and rulemakings to adopt standards that affect, or have the potential to affect, public transportation.

In 2012, Federal transit law was amended to authorize a new public transportation safety program to provide FTA with a new mandate for public transportation safety authority. FTA was directed to take into consideration "relevant recommendations of the National Transportation Safety Board (NTSB)" and "recommendations of and best practices standards developed by the public transportation industry." FTA's Safety Program was further strengthened in the Fixing America's Surface Transportation (FAST) Act in 2015 and in 2021 through the Bipartisan Infrastructure Law.

Objectives

Objectives of this study were to identify current EDR standards that exist for rail transit systems and relevant standards that may exist in other transit modes or industries. Researchers reviewed and identified existing rail transit systems and other relevant EDR standards, gaps that may exist related to EDR standards in the public transportation industry, and possible new EDR standards or the adoption of existing standards that may be used to improve rail transit accident reconstruction and associated activities.

Findings and Conclusions

Findings support future FTA efforts in providing guidance to the industry on specifications for and use of EDRs, including developing a common data download format to allow for easy viewing of EDR data and establishing specifications on the length of time the agency should retain data from an EDR after download for accident/incident investigation.

Evaluation of the industry need for EDR standards was completed through review of NTSB and research reports and by the CUTR Transit Safety Standards Working Group established for industry stakeholder input. Available standards were compared against industry needs to evaluate the effectiveness of the standards to address those needs and to determine if any modifications are necessary to make them applicable to transit rail.

In 2017, EDR implementation information was collected from transit agencies in the U.S. through safety oversight (SSO) managers to update information collected during a 2007 survey (used as a benchmark for this project) performed by FTA. Data collected indicated that although EDR use in transit vehicles has increased

since the first survey in 2007, EDRs are implemented in approximately only 40% of transit vehicles of agencies that participated in the data collection effort. Transit vehicles equipped with EDRs include 67% of light rail vehicles, 35% of heavy rail vehicles, and 14% of streetcars.

Findings include the following:

- IEEE 1482.1 provides EDR standard criteria that may be used for new or rehabilitated transit rail vehicles.
- There is a need for a common data download format to allow for easy viewing of EDR data, which would be useful for both agencies and for NTSB investigators. Data collection from agencies indicated that multiple types of special software are required to view the data based on the type/maker of EDR.
- Public transit agencies may choose to define local operational/maintenance EDR data collection based on their needs, including how the data are used and how long they are retained after download.
- EDR specifications do not list any requirements for security of data related to download via the use of WI-FI enabled EDRs.
- There is currently no written specification specifically related to transit rail EDR data retention, and states currently have different data retention policies due to different state requirements. Public transit agencies may consider establishing specifications on the length of time the agency will retain data from an EDR after download for accident/incident investigation.

Benefits

Findings support future FTA efforts in providing guidance to the industry on the specifications and use of EDRs. This report can be used as a resource for public transit agency decision-making and their Safety Management System practices.

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This project was conducted by the Transportation Technology Center, Inc., under contract with the Center for Urban Transportation Research in support of FTA's Standards Development Program. For more information, contact FTA Project Manager Raj Wagley at (202) 366-5386 or Raj.Wagley@dot.gov.

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