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Rail Transit Standards Vehicle
Inspection and Maintenance Working
Group

On-Board Recording Equipment Periodic Inspection and Maintenance

Abstract: This *Recommended Practice* covers basic procedures for periodic inspection and maintenance of data, audio and video recording equipment on rail transit vehicles, with emphasis on maintenance of safety-critical components.

Keywords: periodic inspection and maintenance, recording equipment

Summary: This document establishes a recommended practice for solid state/digital data, audio and video recording equipment inspection and maintenance. Individual rail transit systems should tailor these recommended practices to accommodate their specific equipment and mode of operation.

Scope and purpose: This *Recommended Practice* includes all essential periodic inspection and maintenance requirements for data, audio and video recording equipment used on rail transit vehicles. It is intended for use by rail equipment maintenance organizations.

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Introduction

This introduction is not part of APTA RT-VIM-RP-015-03, Rev. 2, “On-Board Recording Equipment Periodic Inspection and Maintenance.”

This document describes the basic inspection and maintenance requirements for solid state/digital audio and video recording on-board recording system’s on rail transit vehicles. 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).

On-Board Recording Equipment Periodic Inspection and Maintenance

1. Frequency of conduct

Maintenance tasks on the data, audio and video recording equipment should be performed on a regular schedule to ensure proper operation of the equipment. The sections listed in **Table 1** provide detailed procedures for each identified maintenance task.

TABLE 1
Recommended Maintenance Intervals

Inspections and Maintenance	Recommended Inspection Intervals (Not to Exceed)	Section
Vehicle Data Recording System (VDRS)	180 days	2.5.1
Vehicle Video Recording System (VVRS) – Tape	60 days	2.5.2
Vehicle Video Recording System (VVRS) – Solid state	180 days	2.5.3
Video Cab Voice Recording System (VCVRS) – Tape	60 days	2.5.4
Video Cab Voice Recording System (VCVRS) – Solid state	180 days	2.5.5
All recording systems	60 days	2.5.6

The frequency of inspection and maintenance tasks shall comply with all applicable federal, state and local regulations. Further, in the conduct of a rail transit system’s periodic inspection and maintenance program, frequencies for individual tasks may be established based on a number of additional factors, including but not limited to the following:

- original equipment manufacturer (OEM) recommended intervals
- industry experience
- operating environment/conditions
- historical data
- performance requirements
- failure analysis
- rail transit system’s testing and experience
- reliability-centered maintenance programs

2. Requirements and specific tasks

2.1 Materials

The following materials are normally required for on-board recording systems inspection and maintenance:

- Portable test unit capable of downloading playback capability and interpreting data vehicle data recording system (VDRS)
- Reference OEM maintenance manuals for additional materials.

2.2 Devices and tools

The following tools are normally required for on-board recording equipment inspection and maintenance:

- standard tools carried by the maintenance personnel
- portable test unit specified by the OEM

2.3 Safety/personal protective equipment

Appropriate personal protective equipment, meeting minimum ANSI standards and as required by the rail transit system, shall be worn at all times in the performance of these inspection and maintenance tasks.

2.4 Training requirements

Rail transit systems and/or their maintenance contractors should develop and execute training programs that provide employees with the knowledge and the skills necessary to safely and effectively perform the tasks outlined in this *Recommended Practice*.

2.5 Inspection and maintenance

2.5.1 Vehicle Data Recording System (VDRS) periodic maintenance

- a) Where applicable, verify that the current wheel size setting input to the recording system is accurate.
- b) Verify that recorder time/date information is correct. Calibrate as required in accordance with rail transit system procedures.
- c) Download all recorded data from the VDRS using equipment and/or software provided by the recorder OEM, and following the prescribed steps dictated by the recorder OEM.
- d) Review downloaded data and verify that all recorded parameters are being recorded within prescribed tolerances. If some parameters would not normally be recorded due to the rarity of occurrence, then a reasonable attempt should be made to trigger the parameter on the vehicle before the data is downloaded.
- e) If any devices are not recording properly, repair or replace as required in accordance with the rail transit system's procedures.

NOTE: Many stand-alone data recorders currently in production are equipped with a self-test feature that verifies that the data being recorded by the unit is exactly as presented to the recorder. This feature can help determine if any irregularities in data recording are being caused by the recorder itself (the self-test feature will indicate a failure) or by the sensor and wiring system feeding information to the recorder (no failure will be indicated by the self-test feature).

2.5.2 Solid state Vehicle Video Recording System (VVRS) periodic maintenance

- a) Review current recorder time and date and recalibrate recorder to reflect the correct time and date.
- b) Download all recorded data from the VVRS software provided by the recorder OEM, and following the prescribed steps dictated by the recorder OEM.

- c) Review the most recent downloaded video, and verify that the video is being recorded as designed.
- d) Repair as necessary or replace malfunctioning components.

2.5.3 Solid state Vehicle Cab Voice Recording System (VCVRS) periodic maintenance

- a) Review current recorder time and date and recalibrate recorder to reflect the correct time and date.
- b) Download all recorded data from the VCVRS using equipment and/or software provided by the recorder OEM, and following the prescribed steps dictated by the recorder OEM.
- c) Review the most recent downloaded audio, and verify that the audio is being recorded as designed.
- d) Repair as necessary or replace malfunctioning components.

2.5.4 General on-board recording systems inspection

- a) Inspect all cameras, camera housings and recording stations for any condition that would prevent intended operation of the recorder.
- b) Clean the camera lens.
- c) Replace missing or damaged equipment/hardware, and tighten any loose hardware.

2.6 Correction of deficiencies

Any deficiencies uncovered during the inspections required in Section 2.5.1 through Section 2.5.6 should be corrected and documented in accordance with rail transit system procedures and OEM recommendations.

References

This document should be used in conjunction with the following publications:

- OEM's specifications for cab signal control equipment inspection and maintenance
- rail transit system procedures for cab signal control equipment inspection and maintenance
- Institute of Electrical and Electronics Engineers, IEEE Standard for Rail Transit Vehicle Event Recorder, IEEE 1482.1-1999
- Federal Transit Administration, FTA-VA-26-7004-98-1 – "Event Recorders for Rail Rapid Transit Systems"

Definitions

vehicle cab voice recording system (VCVRS): An installed system, consisting of an audio recording mechanism, recording medium and any sensors and wires that feed audio to the recording mechanism.

vehicle data recording system (VDRS): An installed system, or a capability integrated into another functional system, consisting of a data recording mechanism, a recording medium, processing software and hardware, and any sensors and wires that feed vehicle performance data to the recording mechanism.

vehicle video recording system (VVRS): An installed system, consisting of a video recording mechanism, recording medium, and any sensors and wires that feed video to the recording mechanism.

Abbreviations and acronyms

ANSI American National Standards Institute
NATSA North American Transit Standards Association

OEM original equipment manufacturer
VCVRS vehicle cab voice recording system
VDRS vehicle data recording system
VVRS vehicle video recording system

Summary of document changes

- Document formatted to the new APTA standard format.
- Sections have been moved and renumbered.
- Scope and summary moved to the front page.
- Sections of definitions, abbreviations and acronyms moved to the rear of the document.
- Two new sections added: “Summary of document changes” and “Document history.”
- Some global changes to section headings and numberings resulted when sections dealing with references and acronyms were moved to the end of the document, along with other cosmetic changes, such as capitalization, punctuation, spelling, grammar and general flow of text.

Document history

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