



Safety and Operations Committee

Board Information Item III-B

Collector Shoe Assemblies Update

Washington Metropolitan Area Transit Authority

Board Action/Information Summary

☒ Action ☐ Information

Document
Number:
205737

Resolution:
☐ Yes ☒ No

Presentation Name:

Collector Shoe Assemblies Update

Project Manager:

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Project Department:

Operations/Rail Services

Purpose/Key Highlights:

This presentation provides an update on the incident at Eastern Market on Thursday, February 15, 2024 and resulting investigation and actions.

The program aligns with our Strategic Transformation Plan's goal of Service Excellence.

Interested Parties:

There are no interested parties in this item.

Background:

On Thursday, February 15, a fire and smoke event happened at Eastern Market Metrorail station. A collector shoe assembly (draws electric power to the train by contacting the third rail) dislodged, dragged and grounded, causing a second collector shoe on the same railcar to fail within station limits.

Discussion:

After-Action Review

A multi-agency after-action review was conducted on February 23, 2024. The incident had a unified incident command established between DC Fire Department, Metro Transit Police Department, and Metropolitan Police Department. The after-action review found that:

- Incident command coordinated well with the Metro Integrated Command and Communications Center
- Rapid evacuation of customers from the train and station
- Fans were activated as per procedure

The after-action review found that opportunities to improve include:

- Radio communications
- Continued maturation of Incident Management Framework
- Enhanced ventilation fan training for fire departments

Actions to find a probable cause

Railcar Maintenance & Engineering immediately started fleet inspection of all railcars after the incident. The fleet inspection included new procedures for inspection and quality review. After inspection, no-trouble-found rates are 88% for 2K & 3K, 96% for 6K, and 98% for 7K-series fleets. All assemblies with fractures or other anomalies are replaced before putting the railcar back into service.

Railcar Maintenance & Engineering staff engaged the Original Equipment Manufacturer (OEM) on the visible fractures found and will continue with data analysis to determine a root cause of the collector shoe failures. Metro has also brought in outside consultants to support the investigation.

In parallel with the fleet inspection, Track & Structures performed visual inspections and deployed the Track Geometry Vehicle to inspect all lines. Track & Structures have continued inspections focusing on the heights of each end of the third rail. If a third rail end approach is too high, the collector shoe assembly may hit it, causing a fracture.

Railcar Maintenance & Engineering and Track & Structures are collaborating on a test program using specialized instruments. The test program is expected to start the week of March 10, 2024 to measure third rail height, third rail current, and thermal imagery of the entire system.

While engineering groups continue to investigate a root cause, Rail Services and Metro Integrated Command and Communications Center (MICC) staff are on alert for related incidents. Coordination calls are held immediately for incidents that could be related to the Eastern Market incident. In addition, a multi-disciplinary group meets every day to discuss all efforts related to the investigation and proactive response.

Other incidents

Recent incidents were evaluated for possible connection to the Eastern Market incident. Investigations into each of those incidents did not identify a relationship with the Eastern Market collector shoe assembly incident. These include:

- Mt. Vernon Sq. Metrorail station smoke incident caused by debris

- Collector shoes found on the track on the Silver Line
 - While collector shoe assemblies are the concern, collector shoes themselves are supposed to be designed to break off and not cause a failure.
- Findings of third rail being too high through inspections

To mitigate incidents like these, Metro will continue to, as part of normal rail operations:

- Clean track bed to remove trash
- Look for missing collector shoes during daily inspections
- Measure and correct track heights

Funding Impact:

This presentation is informational and not a request for action or funding.

Previous Actions:

- Completed fleet inspection of all railcars
- Improved procedures for inspections, including quality review
- Engaged the Original Equipment Manufacturer and outside consultants
- Completed Track Geometry Vehicle inspections on all lines
- Completed walking inspections on all lines

Next Steps:

- A test program is expected to start the week of March 10, 2024 to measure third rail height, third rail current, and thermal imagery of the entire system.
- Operations and Infrastructure staff on alert for related incidents
- Coordination calls held immediately for incidents that could be related
- Multi-disciplinary group meets every day to discuss all efforts

Recommendation:

Information Only

Collector Shoe Assemblies Update

Safety & Operations Committee
March 7, 2024



Service Excellence, a strategic goal from Your Metro, the Way Forward

Focus today



Service excellence

Deliver safe, reliable, convenient, equitable, accessible, and enjoyable service for customers.



Talented teams

Attract, develop, and retain top talent where individuals feel valued, supported, and proud of their contribution.



Regional opportunity & partnership

Design transit service to move more people and equitably connect a growing region.



Sustainability

Manage resources responsibly to achieve a sustainable operating, capital, and environmental model.

Objectives of Service Excellence

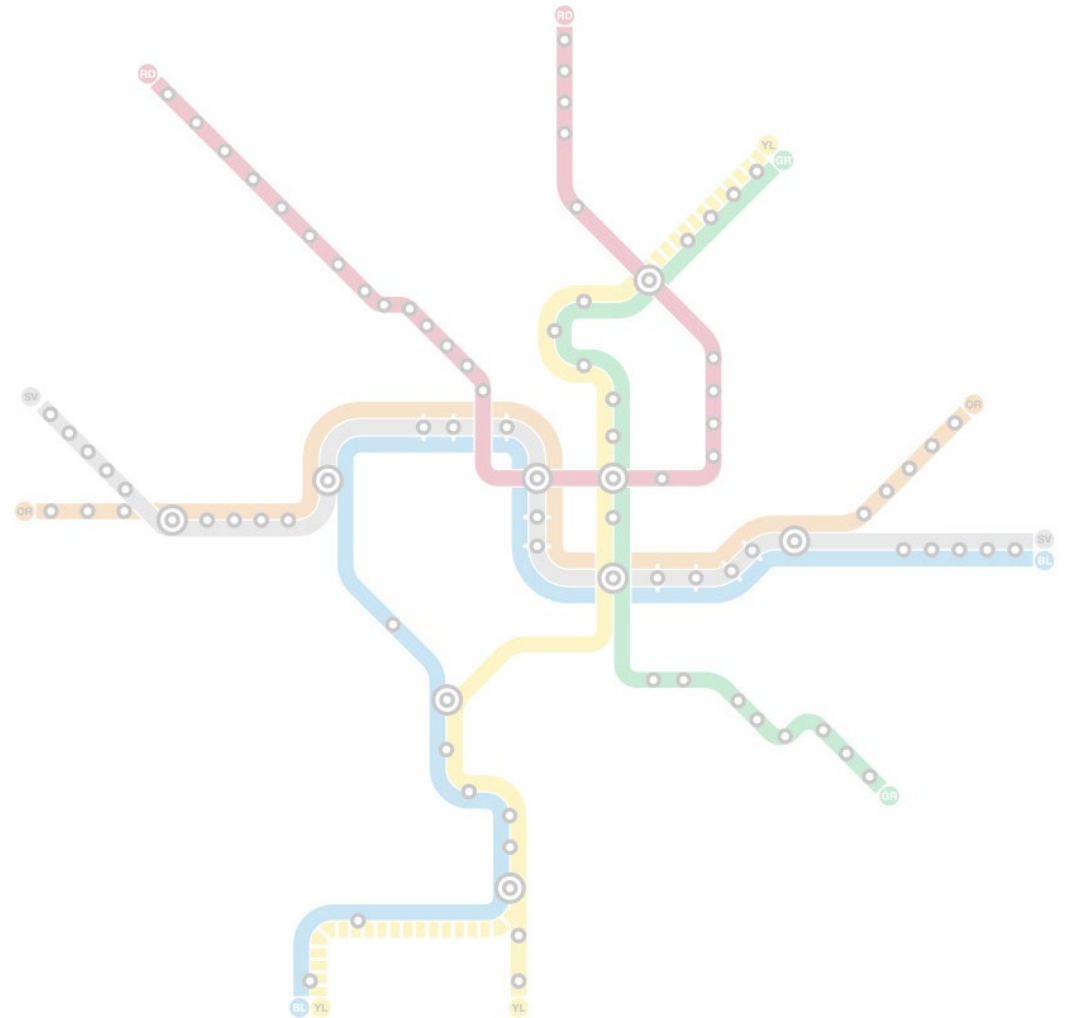
Safety & security | Ensure all customers and employees feel safe and secure using and delivering services

Reliability | Provide dependable service that the community trusts

Convenience | Deliver frequent and accessible service that modernizes and enhances the customer experience

Agenda

- Reminder of incident details
- After-action review results
- Actions taken to find a probable cause
- Other unrelated incidents



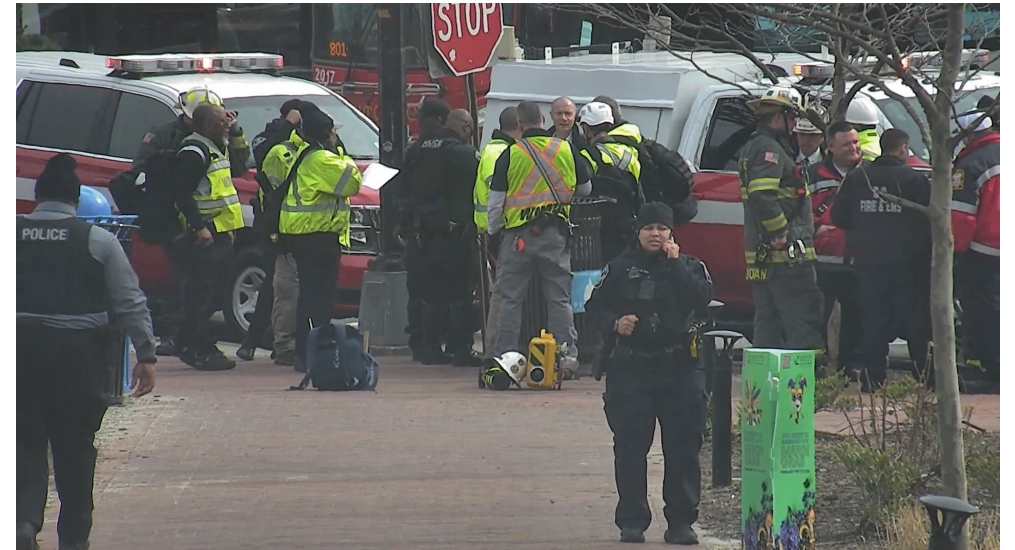
Eastern Market Incident on Feb.15, 2024

- Collector shoe assembly (draws electric power to the train by contacting third rail) dislodged
- Dragged and grounded causing second collector shoe on same railcar to fail in station limits
- Resulted in smoke and fire
- Rail Operations and Metro Transit Police personnel immediately evacuated the train and station



Post-Incident Actions

- Multi-agency after-action review conducted on February 23
- Unified incident command established between DC Fire, Metro Transit Police, and Metropolitan Police departments
- Incident command coordinated well with the Metro Integrated Command and Communications Center
- Rapid evacuation of customers from the train and station
- Fans were activated as per procedure
- Opportunities to improve:
 - Radio communications
 - Continued maturation of Incident Management Framework
 - Enhanced ventilation fan training for fire departments



Actions to find a probable cause

Railcar Maintenance & Engineering Actions

- Completed fleet inspection of all railcars
- Improved procedures for inspections, including quality review, completed
- Engaged the Original Equipment Manufacturer and outside consultants
- Ongoing review vehicle and maintenance data
- **Coming:** A test program will start week of March 10 to measure third rail height, third rail current, and thermal imagery of the entire system

Track & Structures and Power Actions

- Completed Track Geometry Vehicle inspections on all lines
- Completed walking inspections on all lines
- Engaged an outside consultant
- **Ongoing:** Measuring the height of every end of the third rail

Ongoing Operational Actions

- Operations and Infrastructure staff on alert for related incidents
- Coordination calls held immediately for incidents that could be related
- Multi-disciplinary group meets every day to discuss all efforts



Other incidents not related to collector shoe assemblies

Other incidents have known root causes

- Debris fire
- Collector shoes found on tracks
- Track height anomalies

Operational mitigations in place

- Clean track bed to remove trash
- Look for missing collector shoes during daily inspection
- Measure and correct track heights

