



Massachusetts Bay Transportation Authority

Report from the General Manager and Deputy General Manager

Fiscal and Management Control Board

September 16, 2019

Red Line Vehicle Investigation

Background:

- On June 11, 2019, a Red Line No. 1 Car derailed at the JFK station
- This derailment caused significant damage to infrastructure and created service disruptions over the summer



Red Line Vehicle Investigation

- Engineers have determined the cause of the derailment
- Derailment occurred because of an axle fracture on car 1602
- Analysis concluded that the axle fracture **was NOT due to:**
 - Age of axle
 - Material flaw or defect in axle
 - Failure of bearings that allow the axle to rotate

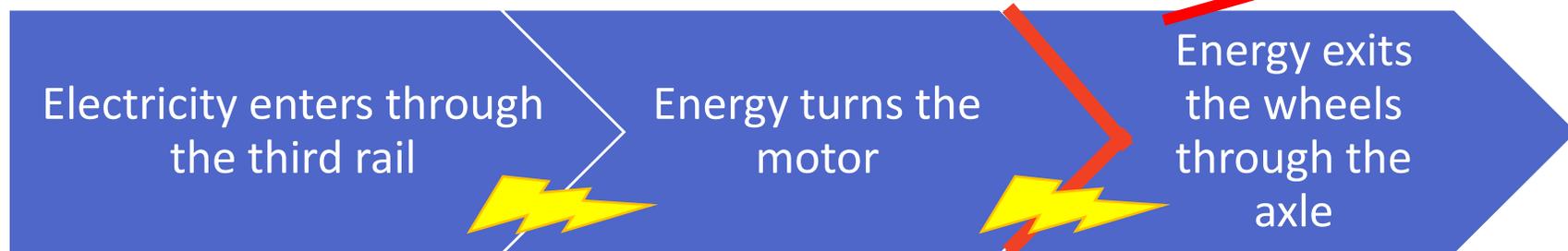
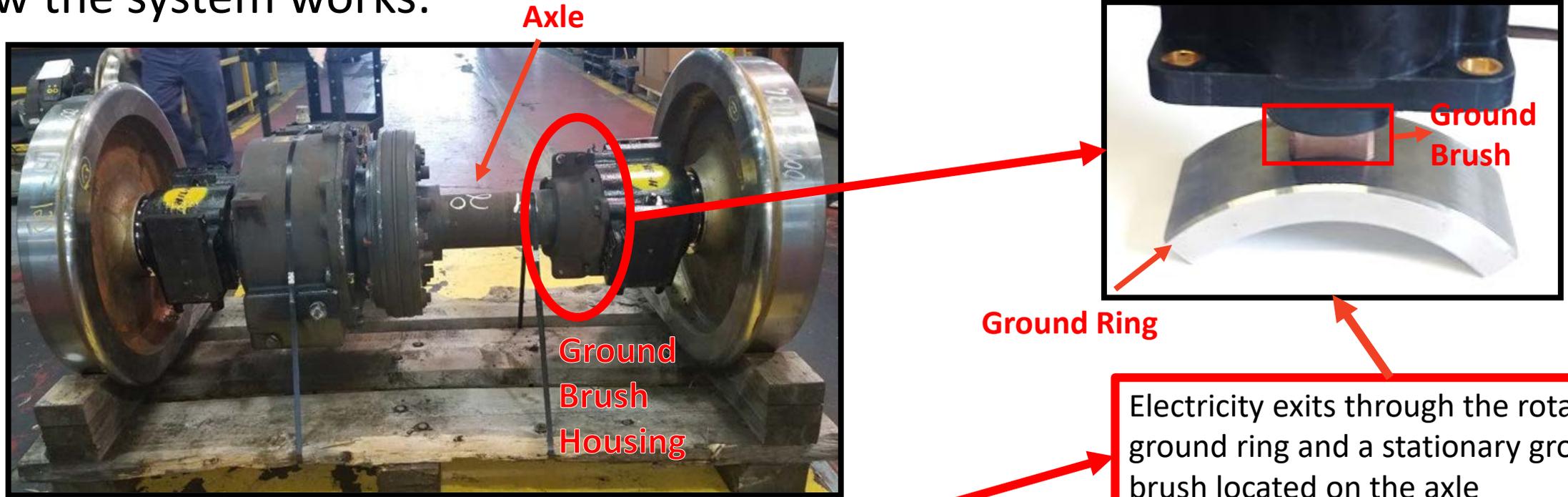


Failed axle



Red Line Vehicle Investigation

How the system works:



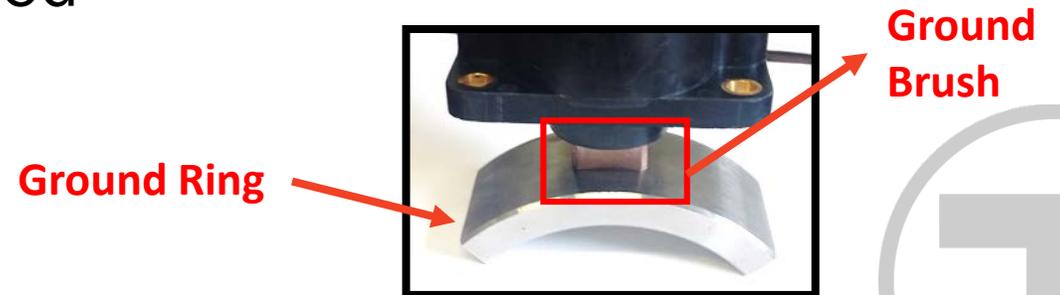
Red Line Vehicle Investigation

The incident was caused by:

- Poor electrical connectivity between the ground brush and ground ring, causing stray electrical arcing on the surface of the axle
- Over a prolonged period, this weakened the axle and caused the failure

Good Ground Ring

Failed Ground Ring



Red Line Vehicle Investigation

Preliminary Corrective Actions:

- Immediately after incident, an ultra-sonic inspection was completed on all of the Red Line car fleet
- Orange, Blue, and Green Lines ultra-sonic inspection will be completed in three weeks
- Ground ring inspections were completed on entire Red Line No. 1 and No. 2 Fleet
- Ground ring inspections on remainder rail fleet are underway

Going forward:

- 8,500 mile preventative maintenance inspection procedure modified to include detailed ground ring inspection
- Annual engineering axle inspection modified to include full ground ring inspection
- All rail car axle ultra-sonic inspection interval is changing from every two years to yearly



Red Line Service Resumption Update

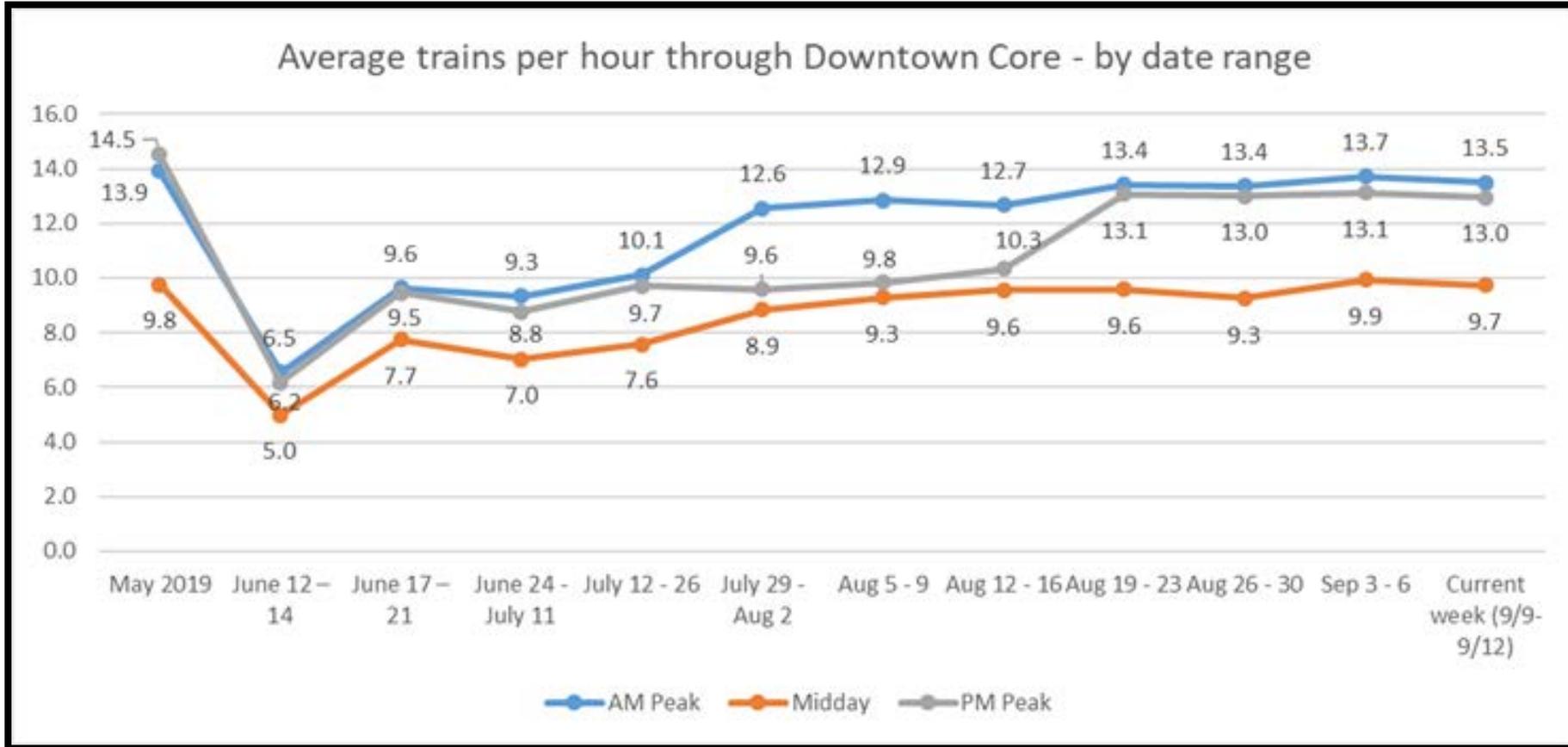


Service Restoration is being completed in four phases:

1. Remote control of Columbia Junction switches and access to Cabot Yard: **Completed** July 11th
2. Restoration of signal control between Broadway to JFK: **Completed** July 31st
3. Restoration of signal control between Fields Corner to JFK: **Completed** September 11th
4. Restoration of signal control between North Quincy to JFK: expected completion in October



Red Line Service Resumption Update



- The Red Line is **running at normal capacity with 28 trains** during rush hour
- With continuous improvement, **train frequency of approximately 13.5 trains per hour** during the AM rush
- Train frequency of 13 trains per hour during the PM rush



New Orange Line Cars



- 6 new Orange Line cars were put into service on August 14, 2019
- These cars are the first of 152 new cars that will completely replace and expand the current Orange Line fleet
- Once all cars have entered passenger service, 30,000 additional riders per day can be accommodated and headways will be reduced from 6 minutes to 4.5 minutes once all



Wollaston Station Re-opening



- Wollaston Station re-opened on August 16, 2019
- New features include elevators, additional customer paths, upgraded stairways, new bathrooms, additional lighting, and a rebuilt parking lot
- The entire Red Line is now **100% accessible** to people of all abilities



Chelsea Commuter Rail Station Groundbreaking

- The MBTA held a groundbreaking ceremony for the Chelsea Commuter Rail Station on Friday, September 13.
- When complete, the new \$32M station will be accessible for customers of all abilities with easy access to the adjacent SL3 Chelsea stop.
- The station is scheduled to open in 2021.



Weekend Work Update: 9/7 – 9/8

- **Green Line**

- Replaced 1,278 feet of track

- **Orange Line**

- Completed 8 track pads
- Replaced 24 cores
- Welded 3,354 feet of rail
- Replaced 819 feet of track
- Removed 2,300 feet of scrapped rail

- **Commuter Rail**

- PTC program performed Automatic Train Control (ATC) installation, testing, and commissioning on the Needham and Franklin lines



Weekend Work Update: 9/14 – 9/15

D Branch Track and Signal Replacement

Replacement of 24,000 feet of track and 6.5 miles of signals on the Green Line D Branch

Weekend Work Completed:

- ✓ *1,010 ft. track replaced, Brookline Hills Station*
- ✓ *Two pedestrian crossings upgraded, Brookline Hills Station*
- ✓ *6,000 ft. of signal cabling & 18,000 ft. of cable tray installed*

Benefits:

- *Increase on-time performance*
- *Mitigate risk of service interruptions*
- *Improve ride comfort for passengers*

Fenway Portal Flood Protection Project

Addition of large steel doors to the entrance of the Green Line tunnel near Fenway Station to prevent flooding, and installation of an updated pumping station

Weekend Work Completed:

- ✓ *Two posts for floodgates installed*
- ✓ *Installed watertight hatches at pump stations*
- ✓ *Excavated for floodgate foundation slab*
- ✓ *Installed track circuits for signals*

Benefits:

- *Mitigate risk of damage from flooding on the Green Line; fewer weather-related service interruptions*



The RIDE: Software Accomplishments and Risks

Recent Accomplishments

A dedicated team has been hard at work to plan for the transition:

- Held weekly **product demos** with Routematch, MBTA, and Transdev
- **Delivered core product** on 8/28 for training and testing
- Analyzed 1.5 years of trips to **customize travel speeds**
- Providing **ongoing training** of over 1,000 TRAC staff and drivers

Risks for Transition

Plans are in place to mitigate risks and communicate them to customers, including:

- Increased **travel times**
- **Different passengers/drivers** combinations
- Confusion with **new notifications**
- Initially **longer call hold times/reduced OTP**
- Confusion with **new self service features**



The RIDE: Software Go-Live

Go-Live Checklist

- Successful **testing of all software and hardware** components
- Call center staff and drivers **trained to proficiency**
- ✓ **Additional staffing** planned during transition for drivers and call center
- ✓ **Routematch and MBTA support staff on site** during transition
- ✓ Validation of **accuracy of reporting** for FTA and TRAC reports
- Communications sent out** to all customers and key stakeholders
- Completion and testing of a **post go-live fallback plan**

Go-Live Process

- **Before go-live**
 - Continue to monitor transition progress, including stakeholder readiness
 - Complete go-live checklist prior to final approval
 - Provide customers go-live notification communication 1 week prior to go-live
- **After go-live (estimated within next 2-4 weeks)**
 - Report back on KPIs (go-live plus 1 month, quarterly afterwards)

