

**Washington Metropolitan Area Transit Authority
Board Action/Information Summary**

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TITLE

Red Line Incident Response

PRESENTATION SUMMARY

This presentation provides an overview of the response to the Red Line incident of September 30, 2014, including efforts to make customers aware of the delay and the results of a post-incident survey of impacted customers.

PURPOSE

To inform the Committee of Metro's operational response to the incident and provide feedback from impacted customers.

DESCRIPTION

Key Highlights:

- Excessive moisture in this section of track caused damage to the rail over time, and contributed to the September 30th incident.
- Metro conducts ultrasound inspections of the rail five times per year with the Track Geometry Vehicle, and conducts walking inspections twice per week. This section of the track was tested on September 17, 2014 and surface defects were identified, however the crew could not verify any internal defects.
- Following this incident, the Maintenance Department has determined that similar inspections will result in high priority on the rail installation program.
- Metro informed customers about the incident using a variety of tactics, including MetroAlert emails and text messages, in-station kiosk screens and Passenger Information Displays (PIDs), announcements over the public address system and front-line employee notifications.
- Two-thirds of customers said Metro made the right amount of announcements; closer to three-fourths of those on the train. Just four percent of customers lodged a complaint, with 81 percent of customers who provided feedback using social media to do so.

Background and History:

On September 30, 2014, Red Line riders experienced delays during the morning rush due to a cracked rail at the Dupont Circle station.

Incident Chronological Timeline

- 05:53 AM - A failed track circuit alarm received in Rail Operations Control Center
- 06:58 AM - First MetroAlert advises customers of delays on Red Line
- 07:24 AM - Automatic Train Control (ATC) technicians arrive at Dupont Circle
- 07:43 AM - ATC technician reports that a section of running rail was broken
- 07:44 AM - Emergency Response Team (ERT) was dispatched to Dupont Circle
- 07:47 AM - Single tracking implemented
- 07:49 AM - Second MetroAlert notifies customers of single tracking
- 08:35 AM - Third MetroAlert sent to customers to consider alternate routes
- 08:38 AM - ERT requests to enter roadway
- 10:17 AM - Supervisor reports temporary repairs made and crew clearing
- 10:18 AM - Fourth MetroAlert advises customers that trains are no longer single tracking
- 11:10 AM - Normal service restored

Customer Communications

The MetroAlerts system allows for simultaneous, efficient communication across multiple communication channels including email and text message alerts, digital kiosk screens at all station entrances, wmata.com, third-party smartphone apps, and Twitter.

In addition, the MetroAlerts message is communicated on all Passenger Information Displays (PIDs), internally to station managers, other front-line employees, and announced over station public address (P/A) systems.

The first MetroAlert to customers advising of delays on the Red Line was sent at 6:58 a.m. The delay was initially attributed to a "signal problem outside Dupont Circle," because at that point, the underlying cause of the signal problem (i.e. cracked rail) had not yet been determined.

Within two minutes of the cracked rail being identified, an updated MetroAlert was issued to more than 60,000 email and text message subscribers advising of single tracking between Van Ness and Dupont Circle and attributing the cause to a track problem.

Supplemental messaging was issued at the 8:00 hour advising customers that some trains would bypass Woodley Park and Cleveland Park stations to reduce delays, and also encouraging customers to consider alternate travel options.

At 10:18 a.m., the message was updated to show trains no longer single tracking, but operating with residual delays in both directions. Normal service was restored at 11:10 a.m. with appropriate messaging transmitted at that time.

Discussion:

Cause of Incident, Challenges Faced and Remediation

Subsequent investigation concluded that the type of defect on the cracked rail was a compound fissure, which is defined as a progressive fracture in the head of the rail.

Excessive moisture in this track section had caused damage to the rail over time. Calcite contained in the water promoted corrosion and accelerated deterioration of the rail. This caused a surface area defect to the rail that eventually migrated internally, developing an internal fissure and ultimately breaking the rail under the load of railcar traffic.

The emergency response team made temporary repairs during revenue service by installing a set of joint bars and two emergency rail clamps. After revenue service, crews removed the section of cracked rail and installed a 39-foot section of rail.

Some of the challenges faced by Metro during the incident that caused delays in returning to normal service quicker were:

- Rush-hour traffic on local roads caused Metro crews to arrive at the location 41 minutes after being dispatched. A street protest taking place close to the incident contributed to traffic congestion.
- A miscommunication between personnel led to the delay in completing the repair work and reopening the track for service. The team on site was preparing for one repair plan, but when the order was given to install emergency bars and clamps, a crew member had to return to the truck on street side to retrieve additional equipment.

Metro Inspection Practices

According to the Code of Federal Regulations (CFR) under the Federal Railroad Administration (FRA) Standards 213.234, Metro is required to conduct an ultrasound test once per year. However, ultrasound tests are conducted five times per year using the Track Geometry Vehicle (TGV).

Walking inspections are performed twice per week on all mainline tracks, and the data collected is captured in our tracking system called Maximo.

Metro tested this track section using the TGV on September 17, 2014 and found that the rail had surface defects. When the TGV detected the potential issue, technicians hand tested the rail. The test was documented as a “negative hand test,” which means the crew could not verify any internal defects.

Following the incident on September 30, 2014, the track maintenance department has decided that negative hand-tested rail will receive a high priority for replacement – the same level of priority for replacement as “non-testable” rail. Non-testable rail is

documented when the TGV detects many surface issues of a specific rail track section. This result places the rail as high priority for replacement since it cannot be tested successfully by the TGV.

Metro detects an average of 40 to 50 “negative hand-test” rails throughout the system during a test period lasting a month and a half.

Customer Feedback

Twenty-four hours after Red Line customers experienced excessive delays due to a cracked rail at Dupont Circle, the Office of Customer Research sent an electronic survey to customers seeking additional information about their experience for future improvement.

Nearly 70,000 customers with a SmarTrip® card entered a Red Line station between 7am and 9:30am on September 30th, and about half of those customers had an available email address. A survey invitation was sent to these customers and Metro received completed surveys from nearly 8,000 customers.

Most customers learned of the delay while waiting on a platform (42%) or on a train (29%). Slightly less than half (46%) of customers were knowledgeable of what caused the delay and most were able to accurately identify the delay was due to a cracked rail.

MetroAlerts and commuter reports on the radio contributed to customer awareness of the delays prior to arriving at the station. These early notifications were reinforced through verbal and digital announcements being made in the station. Fifty percent of customers heard or saw an announcement about the delay prior to passing through the gates.

Riders who were already in the system benefited from repeated announcements while they waited. Those on the train were more likely than those on the platform to hear and understand what was going on (49% vs. 39%). In both scenarios, customers felt the right number of announcements was made.

Four percent of customers affected by the delay lodged a complaint. A total of 56 complaints were received by Metro’s call center. If a customer complained, they were most likely to do so through social media outlets (81%), such as Twitter.

Customers cited additional announcements, mostly by station managers, more information on alternate routes, and additional personnel to help with crowding as ways to improve their experience during these incidents.

The Office of Customer Research is developing a standardized protocol, instrument and reporting for future events.



Washington Metropolitan Area Transit Authority

Red Line Incident Response

Safety and Security Committee

October 23, 2014



Red Line Service Delay Timeline

On September 30 2014, Red Line riders experienced delays during the morning rush due to a cracked rail at the DuPont Circle station

05:53 AM - A failed track circuit alarm received in ROCC

07:24 AM - Automatic Train Control (ATC) technicians arrive at Dupont Circle

07:43 AM - ATC technician reports that a section of running rail was broken

07:44 AM - Emergency Response Team (ERT) was dispatched to Dupont Circle

07:47 AM - Single tracking ordered

07:49 AM - Metro Alerts notify customers

08:35 AM - Additional Metro Alert sent for riders to consider alternate routes

08:38 AM - ERT requests to enter roadway

10:17 AM - Supervisor reports temporary repairs made and crew clearing

Cause of Incident and Challenges Faced

Cause of Incident

- Defect rail was a compound fissure
- Water leaks have caused damage to the rail



Challenges Faced

- Rush-hour traffic caused the crew to arrive 41 mins after dispatched
- Miscommunication between personnel



Remediation

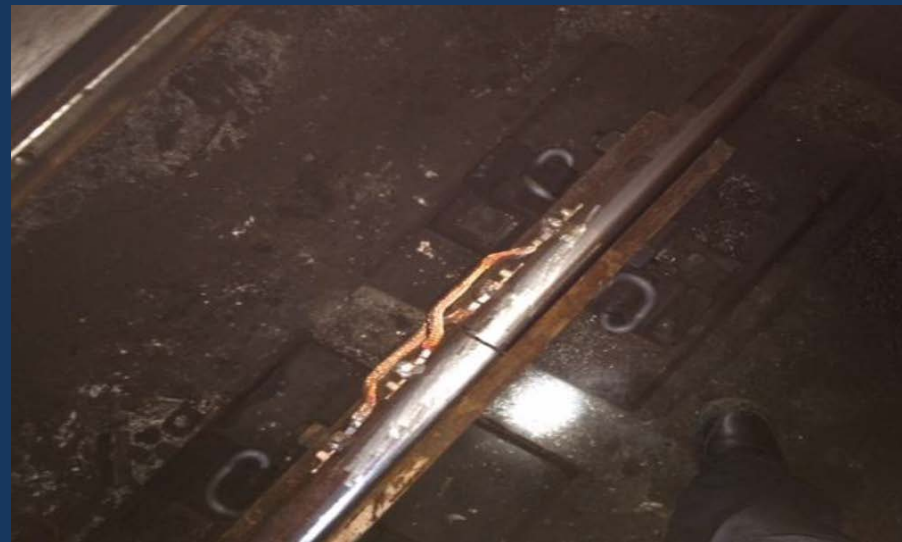
During Revenue Service

- ✓ Installed set of joint bars and two emergency rail clamps



After Revenue Service

- ✓ Removed cracked rail and installed 39 foot section of rail





Metro Inspection Practices

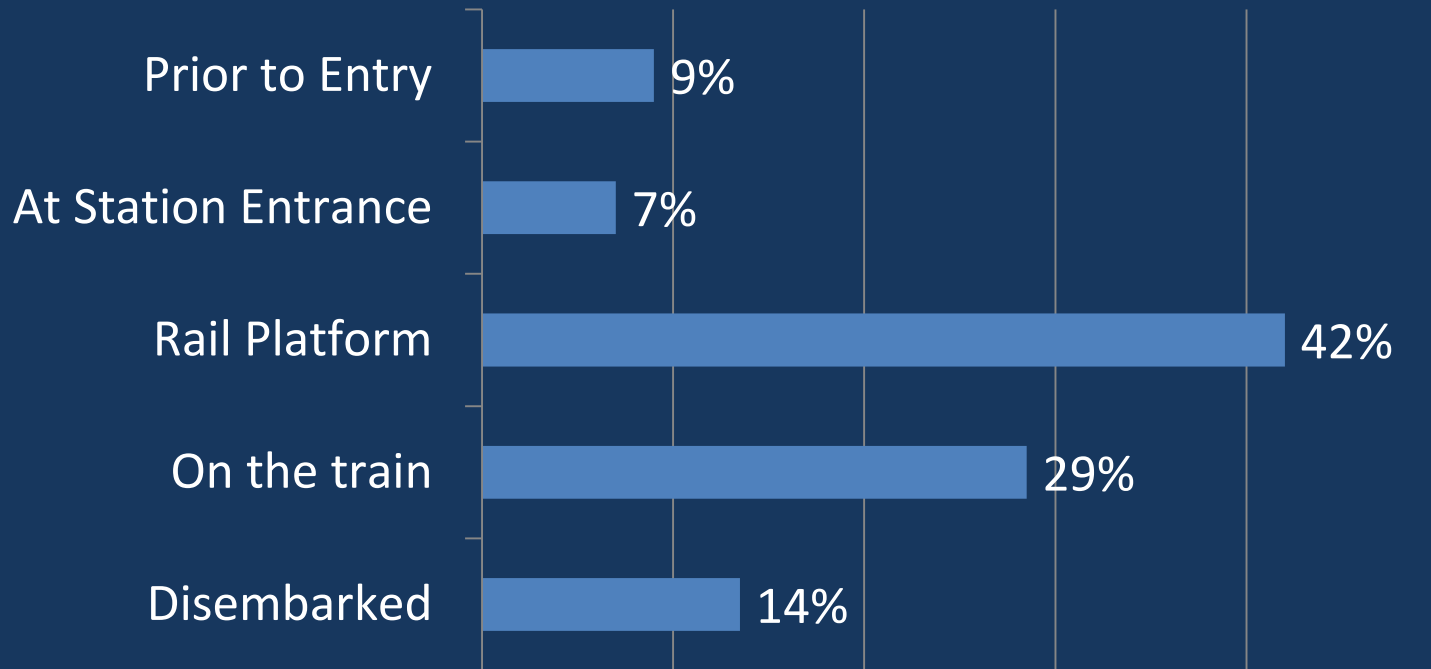
- ✓ Ultrasound tests conducted 5 times per year with the Track Geometry Vehicle
- ✓ Walking inspections performed twice per week
- ✓ Track Circuits tests conducted regularly





Red Line Incident Survey

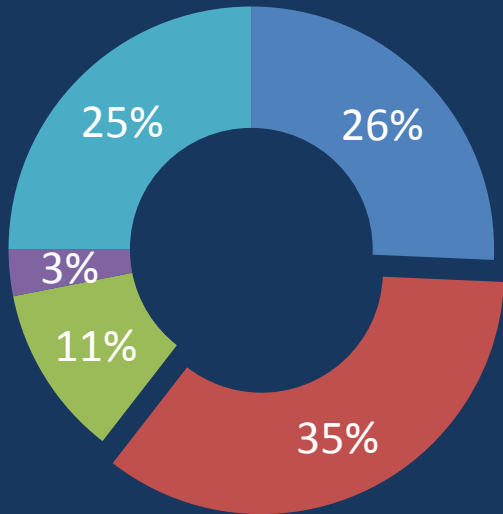
- Electronic survey sent 24 hours following incident; 7,843 riders completed survey
- Customers first learned about the delay:





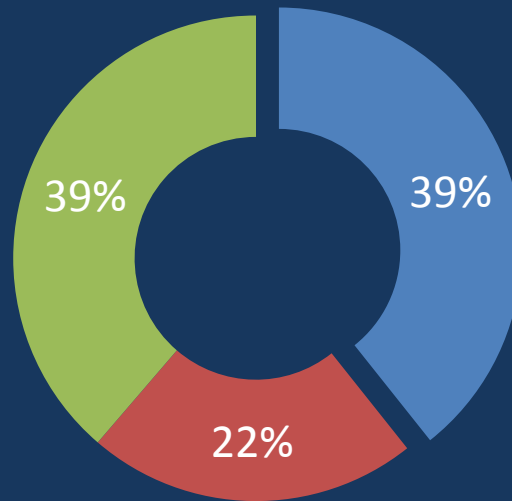
Digital Displays Helped Reinforce Other Channels

Prior



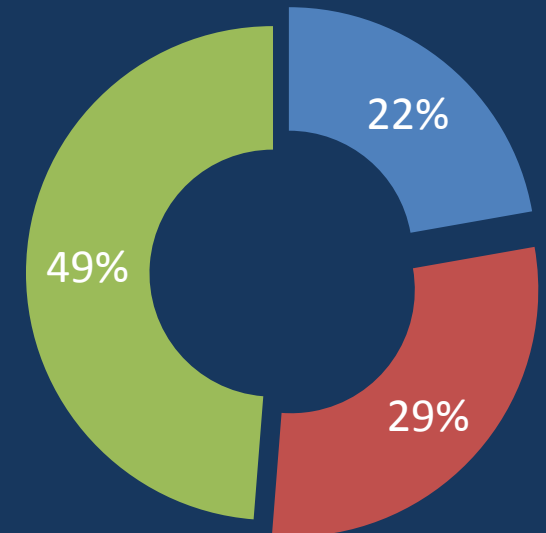
- Radio
- MetroAlerts
- Television
- wmata.com
- Other

Arriving



- Heard/Understood
- Heard/No understanding
- Didn't hear or recall

Digital Reinforcement

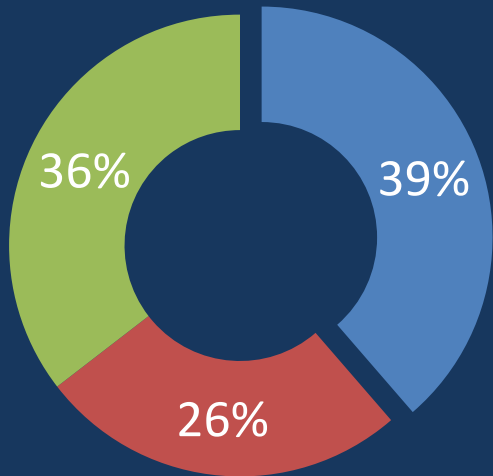


- Heard and Seen
- Seen Only
- Blind



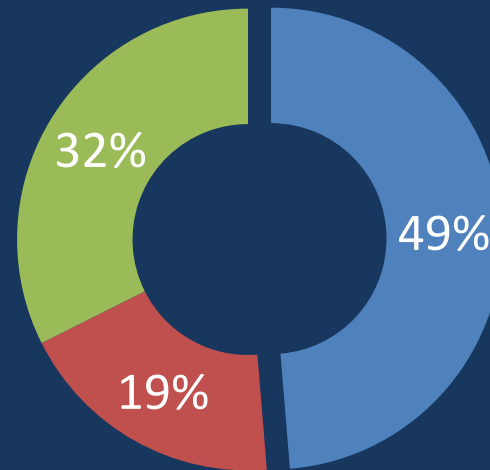
Onboard Announcements More Effective

On Platforms



- Heard/Understood
- Heard/No understanding
- Didn't hear or recall

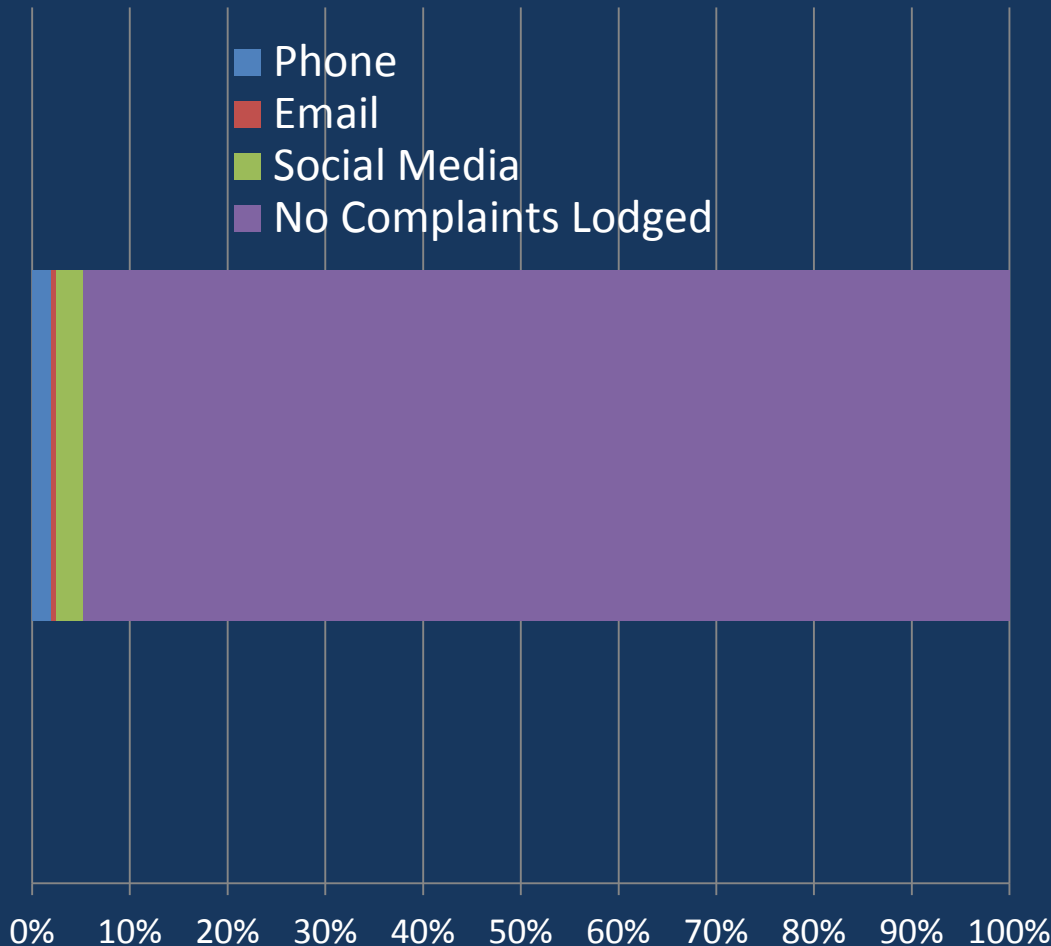
In Trains



- Heard/Understood
- Heard/No understanding
- Didn't hear or recall



Other Feedback Channels



4%

Affected customers
who lodged a
complaint

56

Number of
complaints received
by Call Center