



Customer Services, Operations, and Safety Committee

Board Action/Information Item III-B

January 10, 2008

August 2007 Blue Line Power Issues

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

Action
 Information

MEAD Number:

Resolution:
 Yes No

PURPOSE

To provide the Committee a briefing on the findings and recommendations of the August 2007 Blue Line power issues.

DESCRIPTION

An overview is provided on the five separate issues – track fires, loss of Potomac Yard substation, Ronald Regan Washington National Airport fire, Pentagon City operational issues and loss of power to multiple trains. Information includes the root cause and implementation status of corrective actions.

FUNDING IMPACT

Estimated cost for implementation of all recommendations is approximately \$31M.

RECOMMENDATION

None



August 2007 Blue Line Power Issues

Presented to the Board of Directors:

*Customer Service, Operations and Safety
Committee*

January 10, 2008





Power Issues

- In late August a series of interrelated failures occurred disrupting service on the Blue / Yellow Line between the Pentagon and Braddock Road Stations.
- In September the Committee was briefed on the circumstances surrounding the failures.
- The detailed analysis to determine the root cause of the failures has been completed.
- Steps have been taken to correct the initial failures with additional corrective action in progress.
- This effort reduces risk, but will not eliminate it. The specifics will be addressed in each of the issues.



Issue #1 - Track Fires

Root Cause: Two types of fires

- Papers and other flammable debris
- Track fastener / stud bolts

Corrective Actions:

Immediate:

- Thorough cleanup of underground system to remove debris
- Increased stray current testing to detect and replace track fasteners and stud bolts
- Initiation of infrared detection program for early detection of potential problem areas

In Progress:

- Testing and installation of debris collectors in station track area
- Thermal imaging testing integrated into rail test vehicle



Issue #2 - Loss of Potomac Yard Traction Power Substation

Root Cause:

- Substation operating at 50% capacity due to one failed transformer.
- Internal failure of brushing connection in second transformer.

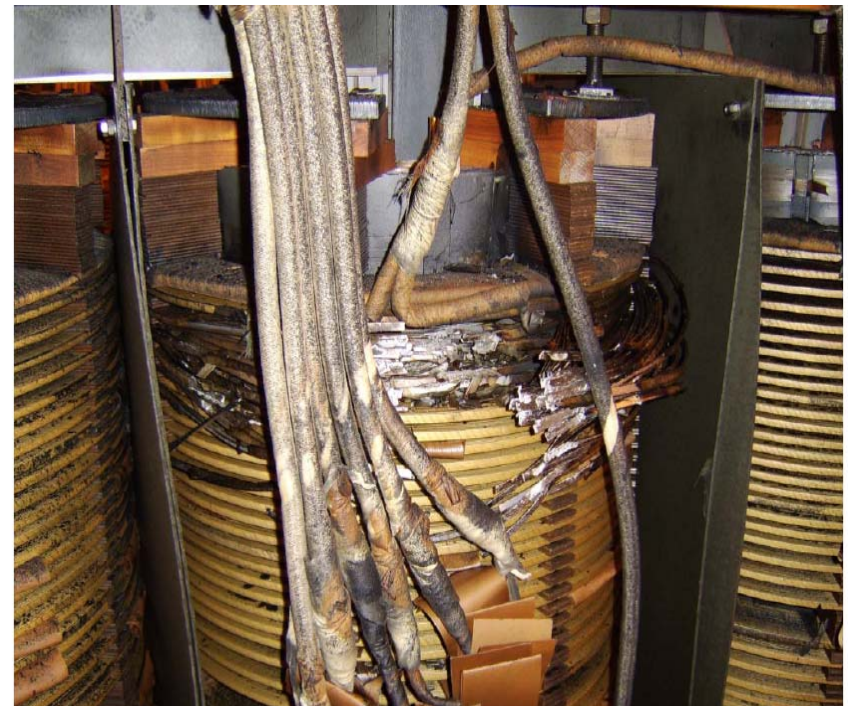
Corrective Actions:

Immediate:

- Both transformers replaced
substation returned to service

In Progress:

- Procure spare transformers to allow for immediate replacement in the event of future failures





Issue #3 – National Airport Fire

Root Cause:

- Transformer failure at Potomac Yard created surge into substation ground system.
- Surge followed path along cable between Potomac Yard and National Airport causing fire in communications room.

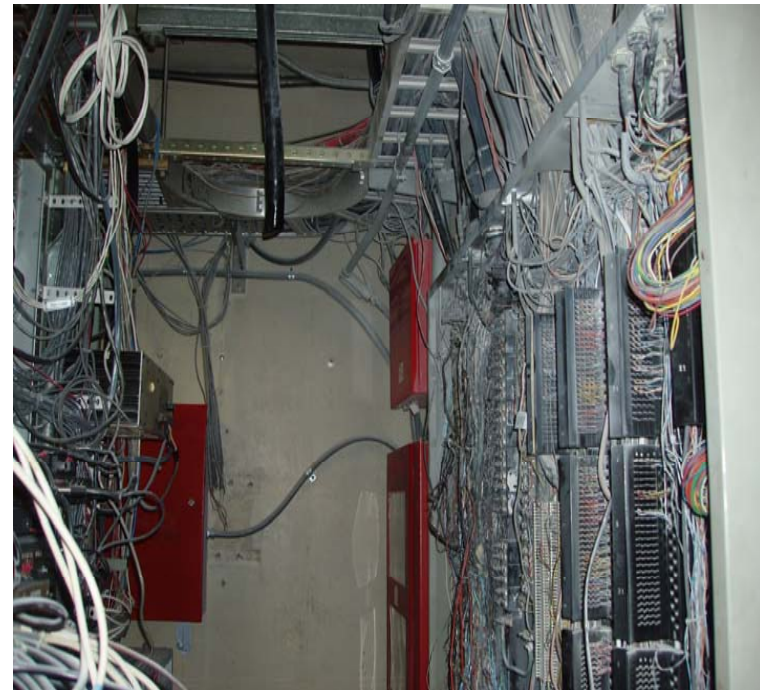
Corrective Actions:

Immediate:

- Connection of cable to common ground grid removed

In Progress:

- Analysis of grounding system configuration at other locations underway





Issue #4 - Pentagon City Operational Issues

Root Cause:

- Loss of Power to train due to internal rail car problem.
- Track Fire involving track fastener caused by stray current.
- Power removed but hot stick indicated presence of power caused by residual power in negative return system.

Corrective Actions:

Immediate:

- Rail car problem with train corrected
- Increased stray current testing to detect and replace track fasteners and stud bolts
- Revised procedure for testing to determine actual voltage if hot stick indicates power source implemented

In Progress:

- Replacement program for all old-style fasteners in stations and within 600 feet of stations in development
- New style hot stick with voltage indication in development



Issue #5 - Loss of Power to Multiple Trains

Root Cause:

- Available power limited due to failure at Potomac Yard substation, National Airport substation in configuration that did not allow power sharing and Braddock Road substation at 3MW versus 4MW during upgrade.
- With fire at Pentagon City multiple trains began to bunch from Crystal City to King Street.
- With overall power from Pentagon City to Braddock reduced sufficient power was not available and trains were unable to continue to operate.

Corrective Actions:

Immediate:

- Power system reconfigured at National Airport and Braddock
- Train operations revised between Braddock and Pentagon

In Progress:

- Complete upgrade of traction power equipment and develop future upgrade program for 50% eight car train operation
- Ensure train bunching is controlled especially when power is not at full capacity