

Washington Metropolitan Area Transit Authority
Board Action/Information Summary

Action Information

MEAD Number:
201774

Resolution:
 Yes No

TITLE:

Derailment near East Falls Church Metro Station

PRESENTATION SUMMARY:

WMATA Leadership will brief the Board on the interlocking derailment near East Falls Church Metro Station (K05) on July 29, 2016.

PURPOSE:

The Board will receive a briefing on the East Falls Church interlocking derailment that resulted in three non-life threatening injuries. The briefing will include a review of the incident and both current and pending safety actions, based on investigation and analysis conducted to date.

DESCRIPTION:

The WMATA investigation and follow up actions arising from the derailment continue on three paths. First, SAFE is conducting an investigation as to cause. Second, RAIL is cooperating with SAFE and implementing improvements based on what is learned so that there is no gap between investigation findings, and corrective actions. Third, MTPD opened an investigation into this matter based on information determined during administrative review process by SAFE and RAIL. The following summarizes the SAFE investigation highlights to date.

Key Highlights:

- Preliminary analysis indicates that one causal factor was the condition of the ties at the point of derailment, which were deteriorated to the point that they were no longer adequate to restrain the dynamic lateral forces transferred to the track by train 602.
- All passengers were safely evacuated; three reported injuries, one was transported for medical treatment with non-life threatening issues.
- The FTA and NTSB were notified consistent with our procedures. FTA and NTSB staff were on-scene working with WMATA staff to conduct preliminary investigation.
- Immediate safety actions were taken to ensure the reliability of the track and interlockings, which included a new requirement for supervisory pre-inspection of all interlockings that may be used during SafeTrack and special supervisory inspection of all interlockings, curves $\leq 1425'$ and defects rated as severe (P1).
- Investigation is ongoing; focusing on track maintenance and inspection processes and procedures.

Background and History:

On the morning of July 29, 2016, outbound Silver Line train 602 derailed within the confines of the East Falls Church interlocking (K05). At the time of the incident, the lead car of train 602 was traversing track switch 3B, which was laying in the reverse position and had previously received a proceed signal in approach to the switch. As the Operator was crossing from Track K1 to Track K2 in approach to East Falls Station, he said he felt a jolt and brought the train to a stop. The third rail power simultaneously de-energized due to an unrequested activation of the circuit breakers controlling this portion of track. This was the result of damage to the third rail components by the derailed trucks of the affected cars. The Operator identified that the train was not in proper alignment on the track and updated the Rail Operations Control Center (ROCC) of the incident.

Following this incident, sixty-three (63) passengers were evacuated from the lead car of the train to the roadbed and were escorted approximately 100' to the station platform by Metro Transit Police Department (MTPD) personnel. Three individuals reported injuries, one of which was transported to the hospital with non-life threatening injuries.

As part of post-incident investigative activities, it was observed that the affected trucks of car 3238 and 5134 had all four wheels of each truck derailed to the south. Track gauge measurements were taken beneath the stationary train at the Point of Derailment (POD), which identified a wide gauge track defect of 58". A measurement of 57 3/4" requires that portion of track be removed from service. This condition resulted in the #4 wheel of the trailing truck of car 3238 to drop into the gauge of the track. This action initiated the subsequent sequence of events that culminated in two derailed trucks. As train 602 continued its forward progress toward East Falls Church station, the derailed trucks were redirected back towards their intended route on Track K2 and damaged the track, third rail and vehicle components in its path. A full assessment of the damage is ongoing.

The commencement of repairs was purposely delayed to permit a detailed inspection of the incident site by internal track experts, external consultants, Department of Safety and Environmental Management (SAFE), National Transportation Safety Board (NTSB), and Federal Transit Administration (FTA) Safety Oversight personnel to ensure that this incident is given the appropriate level of scrutiny for the purpose of surfacing causal and contributing factors and developing strategies to address identified concerns in a permanent and effective manner. Track & Structures Department (TRST) personnel took appropriate action to bring the track to a state of good repair.

SAFE's preliminary assessment of this incident indicates that a causal factor was the condition of the ties at the point of derailment, which were deteriorated to the point where they were no longer effective in restraining the dynamic lateral forces transferred to the track by train 602. The investigation is ongoing and currently focused on the track maintenance and inspection areas, as well as seeking to determine other potential contributing factors may have influenced this event. The initial assessment is that WMATA's track inspection standards are adequate but WMATA was not in compliance with that standard.

As the investigation continues, WMATA took immediate safety actions to ensure the

reliability of the track and interlockings which included a new requirement for supervisory pre-inspection of all interlockings that may be used during SafeTrack, special supervisory inspection of curves $\leq 1425'$ and Priority 1 (P1) or potentially severe defects as well as follow-up quality assurance audits of the inspections. Meetings were conducted with the Track Inspectors to review their responsibilities in performing their assigned duties and to review a new track inspection form. New requirements have been put in place to ensure adequate follow through. WMATA has also engaged a team of expert track inspectors to validate our inspection schedule.

Longer term corrective actions include the development of a Track Inspection training and certification program that includes a formal testing program. WMATA has also contracted for a revision of the TRST 1000 Inspection manual which will be delivered in early 2017. WMATA will also institute a Track Quality Improvement Program.

Discussion:

WMATA has widened the scope to take a more holistic approach to this derailment, looking at similar incidents and other casual factors that may have contributed to the incident. This coupled with the FTA's safety blitz, in particular, the track integrity recommendations revealed deficiencies in track maintenance and inspection practices, procedures, responsibilities and quality of time allotted. The FTA has validated many of our own findings and has issued 12 recommendations requiring action in FTA Safety Directive 16-4. Many of those actions are currently underway or implemented and are detailed in the formal response expected to be distributed to the FTA in early September 2016.

FUNDING IMPACT:

Define current or potential funding impact, including source of reimbursable funds.	
Project Manager:	CSO - Pat Lavin
Project Department/Office:	SAFE No additional funding is necessary at this time. Staff may need to return when a comprehensive mitigation strategy is developed that includes all related expenditures.

TIMELINE:

Previous Actions	<ul style="list-style-type: none"> • None
Anticipated actions after presentation	<ul style="list-style-type: none"> • Completion of the investigation • Implement corrective actions

RECOMMENDATION:

To inform the Board of the status of the investigation and actions relative to the interlocking derailment near East Falls Church Metro Station.

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Washington Metropolitan Area Transit Authority

Interlocking Derailment Near East Falls Church Metro Station

Special Board Meeting
August 25, 2016



Details

- Occurred at 6:14am on Friday, July 29
- Outbound Silver Line train 602
 - Six car consist
 - Four 3000 series
 - Two 5000 series
- Derailed at East Falls Church interlocking

Details

- Sixty-three (63) passengers safely evacuated to the roadbed
- Three passengers reported injuries, one transported
- Damage cost pending





Preliminary Findings

- No defects found
 - Signaling systems
 - Rail Vehicles
 - Power distribution
- No operator concerns
- No ROCC concerns
- No fatigue or hours of service issues

Investigation Findings

- Wide Gauge track defect
- Track ties deteriorated and unable to restrain lateral forces
- Ongoing investigation is focusing on track maintenance and inspections



Causal Factors

- Failure to maintain the interlocking to Track and Structures standards.
- Failure to inspect track to internal standards
- Defects incorrectly classified





Track Inspections

- Track Geometry – February 2016
- Ultrasonic Testing (partial) – April 2016
- Walking Track Inspection
 - Track 1 - July 27, 2016
 - Track 2 – July 11, 2016
 - Riding inspections performed due to high rail temperatures
- Detailed Inspection – June 17, 2016



WMATA vs. FRA standards

- Standards are appropriate, must focus on front line training and enforcing compliance to standards

Standard	WMATA	FRA
Walking Inspection	✓	✓
Detailed Inspection	✓	✓
Ultrasonic Testing	✓	✓
Track Geometry	✓	✓
Tie Scanning	✓	
Lateral Load	✓	



Immediate Corrective Actions after East Falls Church Derailment

Internal Actions

- Special inspections of mainline interlockings performed by a multi-disciplinary team
 - 66 interlockings (271 switches) completed on August 18
 - 5 x Red Conditions (restricted speed) and 1 x Black Condition (Out of Service). All repairs scheduled for completion on August 26. Appropriate restrictions in place.
 - Drove immediate changes to SafeTrack Scope of Work to include weekend shutdowns to work in interlockings
- Track Supervisor verification of Priority 1 Defects (Red – may require a restriction)
 - completed
- Supervisory inspection of curves $\leq 1425'$
 - in progress



Immediate Corrective Actions after East Falls Church Derailment

Internal Actions

- Walking track inspection process review meeting held with all track inspectors - completed
 - new inspection form
 - reinforced the requirement to inspect interlockings on a two times weekly interval
- Reinstruction on monthly detailed interlocking inspections - completed



Immediate Corrective Actions after East Falls Church Derailment

- New track inspection requirements:
 - Track supervisors must inspect any new speed restrictions immediately
 - Assistant Superintendent inspect at least 30 top priority defects per month
 - Superintendent inspect 3 top priority locations per week



Immediate Corrective Actions after East Falls Church Derailment

Expert Process Review

- Six FRA trained track inspectors provided by an external consultant reported on August 22.
- Build high level inspection schedule to include walking and automated inspections.
- Document frequency and quality compliance as they walk with WMATA teams in the field.
- Provide weekly written reports to Executive Leadership
- Remain embedded with teams for at least four months.



Other Relevant Actions

- APTA Peer Review held at WMATA to assess Track Inspection Program based on recognized shortcomings – April 2016
- Track Inspection Training - University of Tennessee coming to WMATA for two weeks in September
- 10 month long contract for track walker training program rebuild scheduled for award by September 9
 - Pre-testing for position
 - Certification
 - Refresher training
 - Supervision and quality controls
 - Instructor certification
 - Auditing of First Training Course



Other Relevant Actions

- Contract awarded on August 5 to conduct system wide track asset condition survey, scheduled for completion in January 2017
 - FRA trained inspectors will inspect 100% of mainline track
 - Inspection results will be used to rebuild the track inspection database and drive future maintenance planning
- Contract awarded on July 21 to rewrite the WMATA track inspection manual, scheduled for completion in January 2017



Next Steps

- Complete safety investigation
- Implement all corrective actions
- Implement quality assurance program
- Pursue high definition video as a track inspection resource