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WMSC Commissioner Brief: W-0054 – Derailment in Greenbelt Yard – July 30, 2020

Prepared for Washington Metrorail Safety Commission meeting on January 26, 2021

Safety event summary:

A flatcar (F452) derailed at an inadequate hand-thrown switch in the storage tracks at the Greenbelt Yard on July 30, 2020 at 10:12 p.m.

An equipment operator and flag person were loading material on the flat car for radio work during an upcoming shutdown. The flag person left the flatcar and clamped the switch for a straight-through move.

After a prime mover (PM58) pulled F452 in a straight-through move through the switch, PM58 then pushed F452 back through the area about two minutes later. While the flat car was moving back through that area near Signal 182, the flat car derailed.

After the derailment, there were significant issues with communication about the event. An Infrastructure Renewal Program Group (IRPG) supervisor reported the derailment to the Maintenance Operations Center (MOC) in the ROCC approximately 20 minutes after the derailment occurred. The Interlocking Operator, who is responsible for yard operations, only learned of the derailment from a ROCC Assistant Superintendent approximately 26 minutes after the derailment occurred. The Interlocking Operator stated in an interview that they had to leave the tower to determine what had occurred, and that a Roadway Worker In Charge was also unaware of any derailment. The interlocking operator was eventually informed by the crew involved via radio 34 minutes after the derailment. The interlocking operator confirmed 47 minutes after the derailment occurred that there were no injuries.

Based on radio testing in the area after the derailment, there did not appear to be any radio connectivity issues.

This area of the yard is dark territory, with no automatic train control circuitry, so there is no additional recorded data beyond radio traffic and CCTV.

The hand-thrown switches in this area of the Greenbelt Yard were approximately four years old, and did not have appropriate switch stands. Metrorail had not identified this switch stand problem prior to this derailment. The involved switches had also not been included in regular preventive maintenance or inspections and were not shown on yard maps. These switches are used to create additional storage space for Roadway Maintenance Machines (RMM).

In addition to the broader required replacement, the area at issue was missing one housetop bolt, three bolts at the heel block and one pin. and had one loose joint bar. One tie that was one foot in front of the frog was deteriorated. The Office of Track and Structures concluded that these individual issues generally would not have triggered any urgent repairs.

Switch improvements and the flat car post-incident inspection cost approximately $6,000.

At the time of the derailment, lights had not been properly placed on the flat car.

The post-incident drug test for the flag person on the consist was positive, in violation of WMATA's Drug and Alcohol Policy. The WMSC reviewed the results of this drug test. Based on the totality of the evidence in this event, the derailment likely occurred due to the condition of the switch/frog.

Probable Cause:

Metrorail did not schedule or conduct any preventive maintenance or regular inspections of a number of hand-thrown switches and storage tracks, and did not identify prior to the event that the switch parts needed to be replaced with appropriate switch stands. The lack of lights on the flat car may also have contributed to the derailment by limiting the ability to see the tracks.

Corrective Actions:

For three switches identified in the Greenbelt Yard, Metrorail installed the appropriate switch stands.

Metrorail also added these switches to preventive maintenance and inspection schedules, and committed to including these switches on future yard maps. Metrorail also stated that all other similar switches are included in preventive maintenance and inspection activities

A lessons learned document was distributed to the Infrastructure Renewal Program Group informing them of the removal and replacement of inappropriate switch stands with proper switch stands and reminding them of the importance of visually checking that switch points are tucked prior to moving equipment. Changes are also required to reporting and notification rules related to yard moves and derailments.

WMSC staff observations:

Metrorail should track its assets to properly inspect and maintain them. This event demonstrates the potential outcomes if proper inspections and preventive maintenance work are not carried out.

The event also demonstrates the importance of clear communication and event reporting pathways, because the interlocking operator was only belatedly informed of a derailment in the yard.

Staff recommendation: Adopt final report.

Washington Metro Area Transit Authority

Department of Safety and Environmental Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E20280

Date of Event:	7/30/2020
Type of Event:	Derailment
Incident Time:	23:12 hrs.
Location:	Greenbelt Yard Storage Tracks, Switch 407
Time and How received by SAFE:	23:39 hrs., On-Call Phone
WMSC Notification Time:	01:14 hrs.
Rail Vehicle:	Flatcar (F) 452-Prime Mover (PM) 58
Injuries:	No
Damage:	No

Greenbelt Yard – Derailment
July 30, 2020

Table of Contents

Abbreviations and Acronyms

ARS	Audio Recording System
ATCM	Office of Automatic Train Control Maintenance
CTEM	Car Track Equipment Maintenance
CCTV	Closed Circuit Television
CMNT	Office of Car Maintenance
COMM	Office of Communications Maintenance
EAP	Employee Assistance Program
IRPG	Infrastructure Renewal Program Group
MSRPH	Metrorail Safety Rules and Procedures Handbook
MOC	Maintenance Operations Control
NOAA	National Oceanic Atmospheric Administration
PM	Prime Mover
POD	Point of Derailment
POR	Point of Rest
ROCC	Rail Operations Control Center
RTRA	Office of Rail Transportation
SAFE	Department of Safety and Environmental Management
SOP	Standard Operating Procedure
TRST	Office of Track and Structures
WMATA	Washington Metropolitan Area Transit Authority

Executive Summary

On Thursday, July 30, 2020, at 23:12 hrs., at 23:12 Flatcar (F) 452 derailed while Prime Mover (PM) 58 operated by an Infrastructure Renewal Program Group (IRPG) crew was pushing the consist through a manually aligned [hand-thrown] Switch 407 and a frog near 182 Signal at Greenbelt Yard. Based on Closed Circuit Television (CCTV), the Flagman disembarked F452 to crank and clamp Switch 407 for a straight-through move. After the Flagman cranked and clamped Switch 407, the Flagman re-boarded the consist. CCTV revealed that switch 407 was only aligned for a straight through move and was not thrown again. The sequence of events after the switch alignment were: PM58 Equipment Operator pulled F452 through Switch 407 at Greenbelt Yard without incident. Then PM58 Equipment Operator pushed F452 back through Switch 407. As the flat car of F452 went back through Switch 407 and the frog near 182 Signal, F452 made a harmonic motion and derailed.

Based on a review of the Audio Recording System (ARS), the consist was re-railed without further incident and removed from service for post-incident inspection. No damages or injuries were reported as a result of this incident. The Equipment Operator and Flagman were removed from service for post-incident toxicology testing. Automatic Train Control Maintenance (ATCM) conducted a visual inspection of the incident area determined that area of track does not have ATCM equipment or track circuitry; therefore, no vital or non-vital ATCM data could be recorded to aid with the investigation of this event. The derailment area has a manual hand-thrown switch, which is the responsibility of the Office of Track and Structures (TRST).

TRST personnel reported that the hand-thrown switches identified at Greenbelt Yard were installed by TRST approximately four years ago to provide additional storage for Class II vehicles. Per TRST, the need for an upgrade of the hand-thrown switches involved in the incident was identified after the derailment. Since the derailment incident, TRST has upgraded the switch stand in this location, which should mitigate this type of event from recurring. TRST identified two more switches in Greenbelt Yard that required the same upgrade. The new stands were procured and installed in Greenbelt Yard. The TRST investigation found the sequence of switches 401, 402, and 407 was not included in the preventive maintenance inspection cycle. These switches were not displayed on existing yard maps; as mitigation, the Greenbelt Division added these switches to the quarterly cycle, and the engineers will include these switches on future updated yard maps. TRST reported that all hand-thrown switches in the other rail yards were scheduled to be inspected quarterly, per TRST-1000 Vol. 1.

Car Track Equipment Maintenance's (CTEM) labor cost associated with testing and inspecting the unit to a state of good repair totaled $1,634.00. TRST's total cost for labor and the procured run through switch stands were $4,438.87.

The probable cause of the derailment in Greenbelt Yard on July 30, 2020, was the TRST Department not having Preventive Maintenance (PM) in place for the Greenbelt Yard storage tracks per TRST-1000 Vol. 1 Section 108.3 to ensure track assets are kept in a state of good repair. The Point of Derailment (POD) was identified near Switch 407, which was later identified as a switch that needed to be upgraded. Upon review of CCTV, prior to the derailment, PM58 was

pushing F452 without lights on the flat in dark conditions. The Equipment Operator and Flagman were not in compliance with Metrorail Safety Rules and Procedures Handbook (MSRPH) Standard Operating Procedures 23.5.4.2.1 “Place two white lights on the lead flat car and two red lights on the rear flat car, if it is being pulled.” Additionally, after reviewing the Flagman’s employee post-incident toxicology test results, it was determined, their specimen was positive for one or more drugs. As a result of the Flagman’s post-incident toxicology test results, the Flagman was removed from service due to non-compliance with WMATA’s Drug and Alcohol program.

During the investigation, SAFE identified the following issues:

There was no detailed inspection conducted by TRST in Greenbelt Yard’s storage tracks to ensure track assets are kept in a state of good repair per TRST-1000 Vol. 1 Section 108.3.

The Interlocking Operator was not informed of the derailment immediately by the Equipment Operator or the Flagmen.

The Equipment Operator and Flagman operated the Class II Vehicle without placing two white lights on the lead flat car and two red lights on the rear flat car, while it was being pulled per MSRPH 23.5.4.2.1.

The Flagman was not in compliance with WMATA’s Drug and Alcohol Policy and Testing Program 7.7. 3/5, while performing a safety-sensitive function.

Communication breakdowns, adherence to written procedures, and processes within the MSRPH and TRST-1000 Vol. 1 were identified as contributing factors in this event.

As a result of its investigation, SAFE makes the following safety recommendations:

TRST has included switches 401, 402, and 407 in the quarterly, preventative maintenance inspection cycle and will include them on future updated yard maps. TRST also reported that all hand-thrown switches in all other rail yards have been inspected quarterly and are part of the preventive maintenance schedule, per TRST-1000 Vol. 1. SAFE has requested TRST master periodic inspection spreadsheet via Excel or Word document tracker to verify that all other rail yards have been inspected quarterly.

IRPG has performed a safety stand-down to discuss the derailment, the associated hazards, the task of hand cranking and clamping in accordance with SOP 35, placing lights on the flatcars per MSRPH 23.5.4.2.1, and familiarization with the locations of new hand-thrown switch stands.

IRPG personnel shall report a derailment event in the yard to the Interlocking Operator as soon as possible.

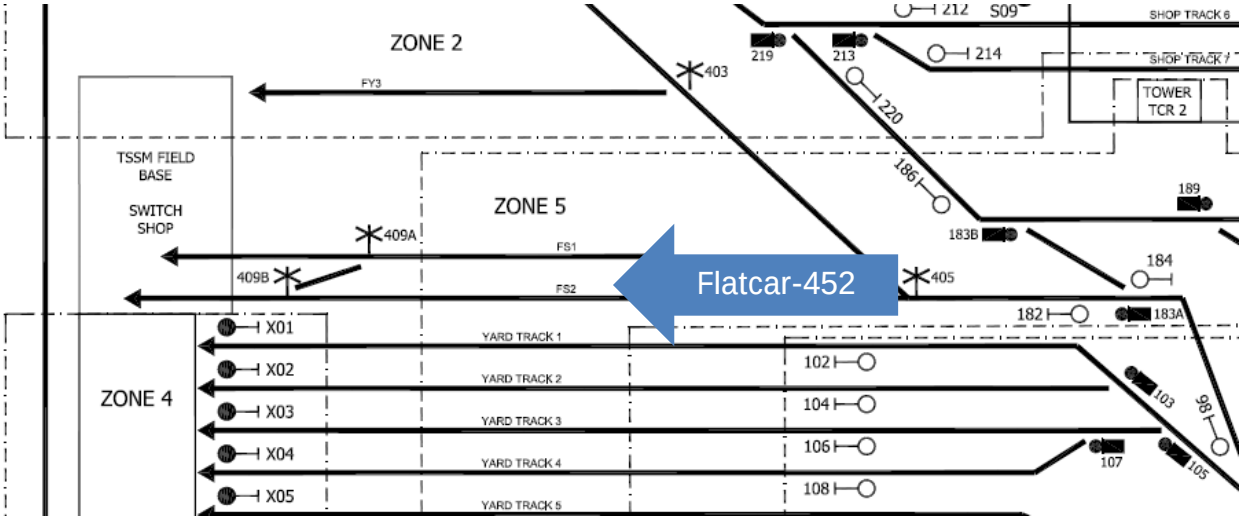
IRPG personnel shall notify the Interlocking Operator on all yard moves, even in sections of the yard where units are stored on non-electrified track. Yard moves in this section of track requires manual throw of switches (hand thrown non-powered switches).

IRPG shall require the Equipment Operator to undergo refresher Equipment Operator training.

Incident Site

The incident area was located at Greenbelt Yard, Switch 407 on a Ballast Track.

Field Sketch/Schematics



The above illustrates the area of the derailment.

Purpose and Scope

The purpose of this incident investigation and candid self-evaluation is to collect and analyze available facts, determine the probable cause(s) of the incident, identify contributing factors, and make recommendations to prevent a recurrence.

Investigative Methods

The investigative methodologies included the following:

- Physical Site Assessment
- Formal Interviews – Three (3) Individuals were interviewed as part of this investigation. Interviews included persons present at, during, and after the time of the incident, those directly involved in the response process, and managers responsible for the process. The following individuals were interviewed:
    - Equipment Operator
    - Flagman
    - Interlocking Operator
- Documentation Review – Collection of relevant work history information and process documentation contained in Metro systems of records. These records include:
    - Employee Training Procedures & Records
    - Certifications
    - 30-Day work history review
    - MSRPH
    - National Oceanic Atmospheric Administration (NOAA)
    - Interlocking Operator Yard Procedures Manual Review
    - Office of Car Maintenance (CMNT) inspection data review
    - ATCM inspection data review

- Office of Communications Maintenance (COMM) review of radio communication data
- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
  - ARS playback [Radio and Phone Communications]
  - CCTV playback

Investigation

Based on the investigation, the following sequence of events is what occurred during the derailment. On July 30, 2020, the Equipment Operator and Flagman were assigned with loading material on the flatcars for an upcoming shutdown. The Equipment Operator performed a ground walk around prior to moving PM58 and two flatcars from the storage area in the Greenbelt Yard. CCTV revealed that at approximately 23:07 hrs., the Flagman was cranking and clamping the switch at the incident site prior to the derailment. At approximately 23:10 hrs., PM58 was pulling F452 through the hand-thrown Switch 407 and a frog near 182 Signal at Greenbelt Yard without incident. At 22:12 hrs., F452 derailed going through the switch in Greenbelt Yard behind Signal 182 in the maintenance storage tracks. CTEM personnel used re-rail equipment to put F452 back on tracks at 03:40 hrs. without further incident and removed the unit from service for post-incident inspection. No damages were reported on the unit. No injuries were reported as a result of this incident. The Equipment Operator and Flagman were removed from service for post-incident testing and interviewed by SAFE. The hand-thrown switches identified are non-electrified and are only used on a limited basis when storing Class II vehicles. Since the derailment was in TRST's storage tracks area, this incident did not interfere with train movement in the yard, and there was no impact to revenue service. Additionally, during the investigation, TRST found switches 401, 402, and 407 were not included in the preventive maintenance inspection cycle due to them not being displayed on existing yard maps. The Greenbelt Division added these switches to their quarterly cycle, and the engineers will include them on future updated maps. TRST reported that all hand-thrown switches in the other rail yards were part of the preventive maintenance schedule and were inspected quarterly, per TRST-1000 Vol. 1.

Chronological Event Timeline

Time	Description
23:07:00 hrs.	Based on SAFE interviews, the Flagman stated they disembarked Flatcar (F) 452 to crank and clamp the switch for a straight-through move. CCTV footage revealed personnel cranking and clamping the switch at the incident site prior to the derailment.
23:10:30 hrs.	PM58 Equipment Operator operated [pulled] F452 through a hand-thrown switch and a frog near 182 Signal at Greenbelt Yard without incident (per CCTV).
23:11:54 hrs.	The consist was coming back through the area; this time, PM58 was pushing F452 (per CCTV).
23:12:19 hrs.	The consist operating [pushed] back through the hand-thrown switch and a frog near 182 Signal. The F452 made a harmonic motion and derailed (per CCTV).

23:32:40 hrs.	IRPG Supervisor notified Maintenance Operations Control (MOC) via phone and advised that the Equipment Operator operating PM58 reported that F452 derailed in Greenbelt Yard.
23:35:24 hrs.	MOC notified the ROCC Assistant Superintendent via phone of the derailment incident.
23:38:30 hrs.	The ROCC Assistant Superintendent contacted the Interlocking Operator via phone and reported the derailment in the Greenbelt Yard. The ROCC Assistant Superintendent instructed the Interlocking Operator to go over the air and contact PM58.
23:38:43 hrs.	The Interlocking Operator attempted to contact PM58 via radio and was unsuccessful.
23:39:38 hrs.	The Interlocking Operator made a second attempt to contact PM58 via radio and was unsuccessful.
23:46:45 hrs.	IRPG personnel notified the Greenbelt Yard Tower about the derailment and asked the Interlocking Operator to inform the ROCC that the F452 derailed in the storage tracks while PM58 was pushing F452.
23:59:04 hrs.	The Interlocking Operator asked the IRPG supervisor onsite if there are any injuries, and the supervisor responded no injuries to report. The Interlocking Operator acknowledged.
00:07:50 hrs.	SAFE conducted a radio check and Greenbelt Tower responded loud and clear.
00:20:22 hrs.	IRPG Management reported to the ROCC Assistant Superintendent via phone that there was no physical evidence or visible damage to any of the rail components at this time.
03:05:35 hrs.	IRPG Management contacted ROCC via phone and advised an attempt to re-rail the unit is about to take place.
04:06:13 hrs.	IRPG Supervisor reported to MOC that the Flatcar unit was re-railed by CTEM at 03:40 hrs. There were no injuries or further incidents reported. MOC reported this information to the ROCC Assistant Superintendent.
04:25:30 hrs.	F452 departed the incident site.

Office of Car Maintenance

- CTEM personnel performed a post-incident inspection of the affected Flatcar (F) 452 and found no anomalies.

Office of Automatic Train Control Maintenance

ATCM Supervisor responded to the reported derailment at Greenbelt Yard maintenance track. ATCM reported that the event occurred over a frog located within a yard maintenance track. The track does not have train control track circuitry or electrically controlled switch machines in the area. The area where the event took place does not have ATCM equipment or track circuitry; therefore, no vital or non-vital ATCM data could be recorded in reference to this event. The

derailment area has a hand-thrown switch in the area, which is the responsibility of Track and Structures. (TRST).

Based on the ATCM compliance review of the area and of the event, ATCM has determined there was no ATCM equipment in the area to be a contributing factor to the reported event.

Communication Maintenance (COMM)

COMM performed a comprehensive radio operational test at Greenbelt Yard. The test was found to be normal.

NOTE: After reviewing the Audio Recording System playback, there did not appear to be any communication deficiencies over the radio.

Office of Track and Structures

Track Data Collected from Derailment Site

A track inspection was performed July 31, 2020, at Greenbelt Yard Storage, which included the following:

- (1) Missing housetop bolt
  - Ideally, TRST prefers to have four bolts in, and by design, they should have all four bolts, but one of four bolts missing is not an immediate concern. If the report stated the housetop was loose or had damage caused by wheel strikes, it would move up the priority list.
- (1) Pin missing on the right side of the heel block.
  - This would not be considered a defect condition.
- (1) Deteriorated special tie 1 foot in front of the frog.
  - In this situation, TRST would pay attention to the gauge and also comments stating lateral movement (there are none), the current gauge is 56 ½" which is as built for a turnout within the yard or on the mainline. This condition would not be addressed until the ties surrounding fail. This would be subjective because, in this location, the ties are still performing their primary function; maintain gauge and distribute the load of vehicle movement.
- (3) Bolt missing at the heel block.
  - Not alarming and will be addressed by a maintenance team at a later date.
- (1) Loose joint bar bolt to the 6-hole joint at frog heel.
  - This item will be addressed by a maintenance team.

TRST department took measurements at the scene of the derailment and reported the track was within tolerance at the time of the event. Per TRST management, the above issues are not of any immediate concern and were not the cause of the work flat derailing and will be addressed. However, TRST personnel reported that the hand-thrown switches identified at the Greenbelt Yard incident site were installed by TRST approximately four years ago as additional storage was created for Class II vehicles. These hand-thrown switches identified needed to be upgraded. Per TRST, the need for an upgrade of the hand-thrown switches involved in the incident was identified after the derailment. Per TRST, since the derailment incident, TRST has placed the appropriate switch stand in this location, as a mitigation to this type of event from reoccurring. In addition, TRST has identified two more switches in Greenbelt Yard that required the same upgrade. The new stands have been procured and installed in Greenbelt Yard.

Photo 1 – PM58


Photo 2 – Flatcar 452

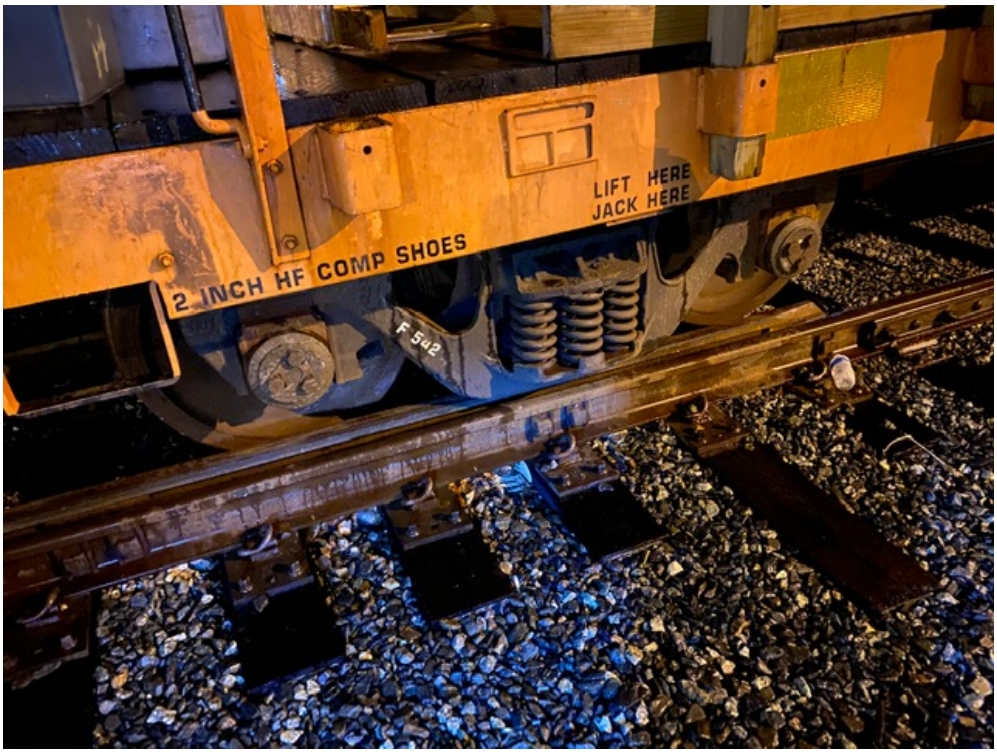


Photo 3 – The front truck of the Flatcar derailed


Photo 4 – The front truck of the Flatcar derailed. The Point of Rest (POR) was approximately 3-6 inches away from the derailment location.

Photo 5 - The Equipment Operator and Flagman were operating Class II Vehicle back and forth without placing two white lights on the lead Flatcar and two red lights on the rear Flatcar. This violates MSRPH 23.5.4.2.1.

Damage and Labor Costs

CTEM Cost:

No components were replaced on Flatcar (F) 452. Below is the CTEM labor cost associated with testing and inspecting the unit.

CMNT Labor Cost	$1,634.00
CMNT Parts Cost	$0
Total CMNT	$1,634.00

TRST Cost:

Various TRST components were replaced in order to restore Greenbelt Yard storage track to a state of good repair:

TRST Labor Cost	$1.912.91
TRST Parts Cost	$2,525.96
Total TRST	$4,438.87

Photo 6 – Old Hand-thrown Switch

Photo 7 – New Manual Hand-thrown Switch Replacement


Photo 8 – Photo of the frog where the derailment occurred.

Immediate Mitigation to Prevent Recurrence

- The Equipment Operator and Flagman were removed from service for post-incident testing and an interview by SAFE.
- The affected unit was removed from service for post-incident investigation processes.
- IRPG removed the Flagman from service due to non-compliance with WMATA's Drug and Alcohol Policy. This employee may be offered an opportunity to enroll in the Employee Assistance Program (EAP) or be referred to their department for administrative action, whichever is applicable.

Findings

- The hand-thrown switches identified needed to be upgraded after the derailment, which may have been a contributing factor for the derailment.
- Per the TRST's inspection form, the track was within tolerance at the time of the event, with no discrepancies found as a contributing factor to the derailment.
- There is no video monitoring system on board PM58.
- The area where the derailment occurred does not have ATCM equipment or track circuitry; therefore, no vital or non-vital ATCM data could be recorded in reference to this event.
- TRST does not have preventative maintenance in place for the Greenbelt Yard storage tracks to ensure satisfactory operating conditions, which may have corrected the incipient failures before the derailment occurred. No TRST records to review.
- The POD was identified near Switch 407, which was later identified as a switch that needed to be upgraded.
- The consist was traveling at approximately at 5 mph per CCTV.
- Laboratory results revealed that the Flagman was not in compliance with WMATA's Drug and Alcohol policy.
- The Interlocking Operator and the RWIC were not informed of the derailment immediately. However, the Equipment Operator did contact their IRPG Supervisor. Per MSRPH 9.5.8 Train Derailment Yard notification states when notified of a derailment in the Yard, the Interlocking Operator shall follow the procedures noted. The RWIC and Interlocking Operator being among the first notified is not mentioned.

Weather

At the time of the incident, the temperature was recorded at 56° F with mostly cloudy skies. SAFE has concluded that weather was not a contributing factor in this incident (Weather source: NOAA – Location: College Park, MD.)

Human Factors

Fatigue

Based on SAFE's interview question related to Fatigue Factors and review of all employees' 30-day work history, it was determined, employees' hours of service were in accordance with WMATA's *Fatigue Risk Management Policy 10.6* and *Hours of Service Limitations for Prevention of Fatigue Policy 10.7* and discounted Fatigue as a contributing factor for this event.

Post-Incident Toxicology Testing

Equipment Operator

After reviewing the Equipment Operator employee post-incident testing results, it was determined that the Equipment Operator involved was not in violation of the Drug and Alcohol Policy and Testing Program 7.7. 3/5, therefore, being under the influence of a controlled substance has been excluded as a contributing factor.

Flagman

After reviewing the Flagman employee post-incident toxicology testing results, it was determined that the Flagman was in violation of the Drug and Alcohol Policy and Testing Program 7.7. 3/5.

Probable Cause Statement

The probable cause of the derailment incident on July 30, 2020, was the TRST Department not having PM in place for the Greenbelt Yard storage tracks per TRST-1000 Vol. 1 Section 108.3 to ensure track assets are kept in a state of good repair. The POD was identified near Switch 407, which was later identified as a switch that needed to be upgraded. Upon review of CCTV, prior to the derailment, PM58 was pushing F452, and the environmental condition was dark. By not having any lights on the flat, the Equipment Operator and Flagman were not in compliance with Metrorail Safety Rules and Procedures Handbook (MSRPH) Standard Operating Procedures 23.5.4.2.1 *"Place two white lights on the lead flat car and two red lights on the rear flat car, if it is being pulled."* Additionally, after reviewing the Flagman's employee post-incident testing results, it was determined that the laboratory identified their specimen as positive for one or more drugs. As a result of the Flagman's post-incident test results, the Flagman was removed from service due to a non-compliance with WMATA's Drug and Alcohol program.

Recommendations

1. TRST has included switches 401, 402, and 407 in the quarterly, preventative maintenance inspection cycle and will include them on future updated yard maps. TRST also reported that all hand-thrown switches in all other rail yards have been inspected quarterly and are part of the preventive maintenance schedule, per TRST-1000 Vol. 1. SAFE has requested TRST master periodic inspection spreadsheet via Excel or Word document tracker to verify that all other rail yards have been inspected quarterly.

2. IRPG has performed a safety stand-down to discuss the derailment incident, the associated hazards, the task of hand cranking and clamping in accordance with SOP 35,

placing lights on the flatcars per MSRPH 23.5.4.2.1, and familiarization with the locations of new hand-thrown switch stands.

3. IRPG personnel shall report a derailment event in the yard to the Interlocking Operator as soon as possible.

4. IRPG personnel shall notify the Interlocking Operator on all yard moves, even in sections of the yard where units are stored and does not have 3rd rail power or powered signal apparatus. Yard moves in this section of track requires manual throw of switches (hand thrown non-powered switches).

5. IRPG shall require the Equipment Operator to undergo refresher Equipment Operator training.

Appendix A - Interview Summaries

Interview Details

IRPG

Based on interviews, the Equipment Operator and Flagman stated the following:

The Equipment Operator and Flagman both have been a WMATA employee for seven (7) years. There was no history of sleep issues to report.

- The Equipment Operator and Flagman were assigned with loading material on the flats for an upcoming shutdown event. The material was loaded in the middle of the flatcars with their weight properly distributed. The Equipment Operator performed a ground walk around prior to moving PM58 and the two flatcars from the storage area (farthest track near concrete for loading). The consist was heading toward the fuel pump track to store the flats in preparation for the summer shutdown radio project work on Sunday. Before moving, the Flagman disembarked the unit to crank and clamp the switch for a straight-through move. As the consist began to come back through the hand-thrown switch and a frog near 182 Signal. The F452 made a harmonic motion and derailed.
- The Flagman reported feeling a bump; thereafter, the left side of the flat lifted, they heard a loud sound, "the unit slid a bit" and came to the point of rest. The Equipment Operator and Flagman reported the unit speed was approximately 2-3 mph.
- The Equipment Operator and Flagman reported the unit was not equipped with a Jupiter system (black box data recorder). Both the Equipment Operator and Flagman were unable to ascertain why the unit derailed; they both speculated the frog.
- The signal associated with the area was E99-182.

Office of Rail Transportation

Interlocking Operator Interview Statement:

A WMATA employee with four (4) years of experience as an Interlocking Operator and ten (10) years of service in various roles including Bus Operator. The Interlocking Operator's last certification was in August 2019, and the Interlocking Operator has no history of sleep issues to report.

During post-incident interviews with SAFE, the Greenbelt Yard Interlocking Operator stated, they were contacted by the Rail Operation Control Center and they asked if a derailment happened. The Interlocking Operator indicated: "I haven't heard about a derailment because no one contacted me." The Interlocking Operator attempted to contact PM58 twice via radio and was unsuccessful. The Interlocking Operator then contacted the Rail Operation Control Center to advise the Interlocking Operator was leaving the Tower to figure out what was going on. The Interlocking Operator went to talk to the RWIC and was told by the RWIC that there were no incidents in the RWIC's section. The Interlocking Operator said that eventually, they received a radio call from PM58 that the unit derailed. The Interlocking Operator went to the incident site to see what was going on, then went back to the Tower to contact ROCC to report the details of the incident. The Interlocking Operator indicated the derailment happened in the storage track area, which will not interfere with train movement or the put-in/lay-up schedule in the yard. The Interlocking Operator advised that the units normally call before they start their work and provide the scope of work for the night. If there are no signals in their work zone, the Interlocking Operator mentioned TRST or IRPG would not contact the Tower.

The Interlocking Operator stated there were no radio issues on their shift. Also, IRPG personnel advised that they were making moves and the wheel just jumped over the frog. The Interlocking Operator indicated all the switches are behind Signal 182 are manual, so the Interlocking Operator does not have any control over any moves conducted in that area. The only time TRST or IRPG personnel would contact the Interlocking Operator is if they need to go beyond Signal 182. The Interlocking Operator indicated there had not been any major construction in the storage tracks, and even though this derailment did not impact revenue service, the Interlocking Operator still worked cooperatively with CMNT during the re-rail operation.

Appendix B – IRPG Lessons Learned Notice

August 17, 2020,

July 30th-July 31st, 2020 Derailment of back Flat of PM58 at Greenbelt Yard Lessons Learned

Overview:

On the night of July 30th into the morning of July 31st RADIO project crew members were loading material for an upcoming shutdown event. They loaded material onto PM58 on the loading track. Upon completion the crew moved PM58 from the loading track to the fuel track. In the process of pushing through a switch, the second set of trucks on the back flat of the Constance derailed. The flagman immediately notified the operator to stop. The operator and flagman both performed a ground inspection and realized the unit derailed.

Lessons Learned:

When moving a unit through a clamped switch, the operator or flagman approaching the switch point shall do the following in accordance with SOP 35 "Clamping and Blocking of Switches. "

-A visual check must be made that switch points are tucked under the running rail and that the rail is properly aligned for the required route.

TRST has since placed the appropriate switch stand in this location to eliminate this event from occurring again. Please become familiar with the location of these switch stands.

Washington Metropolitan Area Transit Authority

600 Fifth Street, NW
Washington, DC 20001
202/962-1234

wmata.com

A District of Columbia, Maryland and Virginia Transit Partnership

Attachment 1 - IRPG Lessons Learned Notice Page 1 of 2

E99 Derailment Lessons Learned Signature Sheet

Employee Name	Employee Id	Signature	Date
[redacted]			8-24-20
[redacted]			8-25-20
[redacted]			8-25-20
[redacted]			08/25/20
[redacted]			08/25/20
[redacted]			8/25/20
[redacted]			8/25/20
[redacted]			8/25/20
[redacted]			8-25-2020
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