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WMSC Commissioner Brief: W-0267 – Derailment – Greenbelt Station – August 11, 2023

Prepared for Washington Metrorail Safety Commission meeting on April 9, 2024

Safety event summary:

During an extended shutdown of the Green Line that included the closure of Greenbelt Station starting July 22, 2023, the crew of a roadway maintenance machine (RMM) consist operated over a switch that was not aligned for the intended direction of travel, resulting in a derailment of ballast car B406, which was at the leading end of the consist in the direction of travel. The derailment occurred at 12:30 a.m. August 11, 2023.

The consist was made up of Prime Mover 41 pushing ballast cars B406 and B409. A Track and Structures Equipment Operator on Prime Mover 41 was operating the consist with a Flag Person at the front of B409 properly positioned near the emergency brake. As the consist moved through the interlocking, it first travelled over a properly aligned switch, then reached the switch that was not aligned for this vehicle, resulting in the ballast car derailing. The derailment also caused significant wayside damage to the third rail, switch point, and automatic train control equipment such as a D-loop and cabling. Third rail power was already de-energized in the area due to the ongoing work.

This movement was one of several through this interlocking for this and other rail vehicles. The movement was being controlled and directed by a Track Supervisor who was serving as a Crew Leader, who was standing near Switch 1A at the Greenbelt Station interlocking. The Crew Leader was clamping switches to align with the various intended movements. In an interview, the Crew Leader stated that they assumed this duty due to not having dedicated personnel available. Equipment Operators or Flag Persons (depending on direction of travel) are also responsible for ensuring correct rail alignment for the intended move. This crew had safely crossed from Track 1 to Track 2 to allow another vehicle to pass, then returned to Track 1 to resume dropping ballast.

After the crew dropped the ballast[1], the Crew Leader instructed them to return to the Greenbelt Rail Yard to pick up more ballast for the work. The Equipment Operator and Flag Person communicated with each other on a “talk around” radio channel to avoid the radio traffic on the operations channel used for movement and emergency instructions. Metrorail does not record its talk around channels.

Switch 1A, the first switch the consist encountered, was clamped in the normal (straight through) position, which was the intended movement. Closed-circuit Television (CCTV) shows the Crew Leader had checked that switch for proper alignment. However, Switch 3A was clamped in the reverse (diverging) direction. The flat car derailed. In an investigative interview, the Flag Person said that they had been looking farther ahead on the roadway for the barriers marking the end of the work area that were several hundred feet beyond the switch location, and had not noticed the position of the switches or any clamps near switch 3A. The Flag Person stated they made a mistake by not stopping the vehicle to verify if the switch was aligned as intended.

The derailment was not reported to the Rail Operations Control Center (ROCC) until approximately 24 minutes after it occurred. Based on post-event statements, the Flag Person did not immediately inform the Equipment Operator of the derailment. The Equipment Operator secured the Prime Mover and walked to the front of the consist where they

[1] Ballast is the rocks that provide support and drainage for the rail ties, which in turn support the tie plates, fasteners, insulators, running rail, and third rail.

identified the derailment, and subsequently informed the Crew Leader. Approximately 10 minutes after the derailment occurred, the Crew Leader stated they contacted mobile command, which Metrorail assigns as the Roadway Worker In Charge for extended shutdown areas. Mobile Command reported the event to the ROCC at 12:54 a.m.

Probable Cause:

The probable cause of this event was the insufficient control of vehicle movement in work areas and the Flag Person not identifying that the switch was not aligned for this movement. Contributing to this event was the assignment of tasks without adequate personnel to support safety responsibilities.

Corrective Actions:

Metrorail distributed a safety bulletin related to this and other safety events.

Metrorail provided additional training to the Flag Person.

WMSC staff observations:

The WMSC is assessing Metrorail's Mobile Command procedures and practices in an Audit of Roadway/Wayside Worker Protection. This includes supervision, monitoring and continuous improvement opportunities. The draft report of this audit is being finalized.

Metrorail's investigation addressed required elements. The WMSC notes that there are references to left and right axles in the report that should refer to left and right wheels.

Washington Metropolitan Area Transit Authority
Department of Safety (SAFE)
Office of Safety Investigations (OSI)

FINAL REPORT OF INVESTIGATION A&I E23556

Date of Event:	08/11/2023
Type of Event:	A-5: Derailment
Incident Time:	00:30 hours
Location:	Greenbelt Station, Track 1, Chain Marker (CM) E1 661+37
Time and How received by SAFE:	00:57 hours via MAC
WMSC Notification Time:	02:09 hours
Responding Safety Officers:	Yes
Rail Vehicle:	Prime Mover (PM) 41, Ballast Cars B406, B409
Injuries:	None
Damage:	High current bond and D-Loop, Third rail, switch point
Emergency Responders:	None
SMS I/A Incident Number:	20230811#110583

Greenbelt Station – Derailment

August 11, 2023
Table of Contents

Abbreviations and Acronyms

ATCM	Automatic Train Control Maintenance
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CM	Chain Marker
CTEM	Car Track Equipment Maintenance
MAC	Mission Assurance Coordinator
MCC	Mobile Command Center
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
OSI	Office of Safety Investigations
PM	Prime Mover
RJSB	Roadway Job Safety Briefing
RMM	Roadway Maintenance Machine
ROCC	Rail Operations Control Center
RWIC	Roadway Worker In Charge
RWP	Roadway Worker Protection
SAFE	Department of Safety
SMS	Safety Measurement System
TRST	Office of Track and Structures
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

**Note that all times listed are approximate and may contain minor variations due to differences between systems of record. **

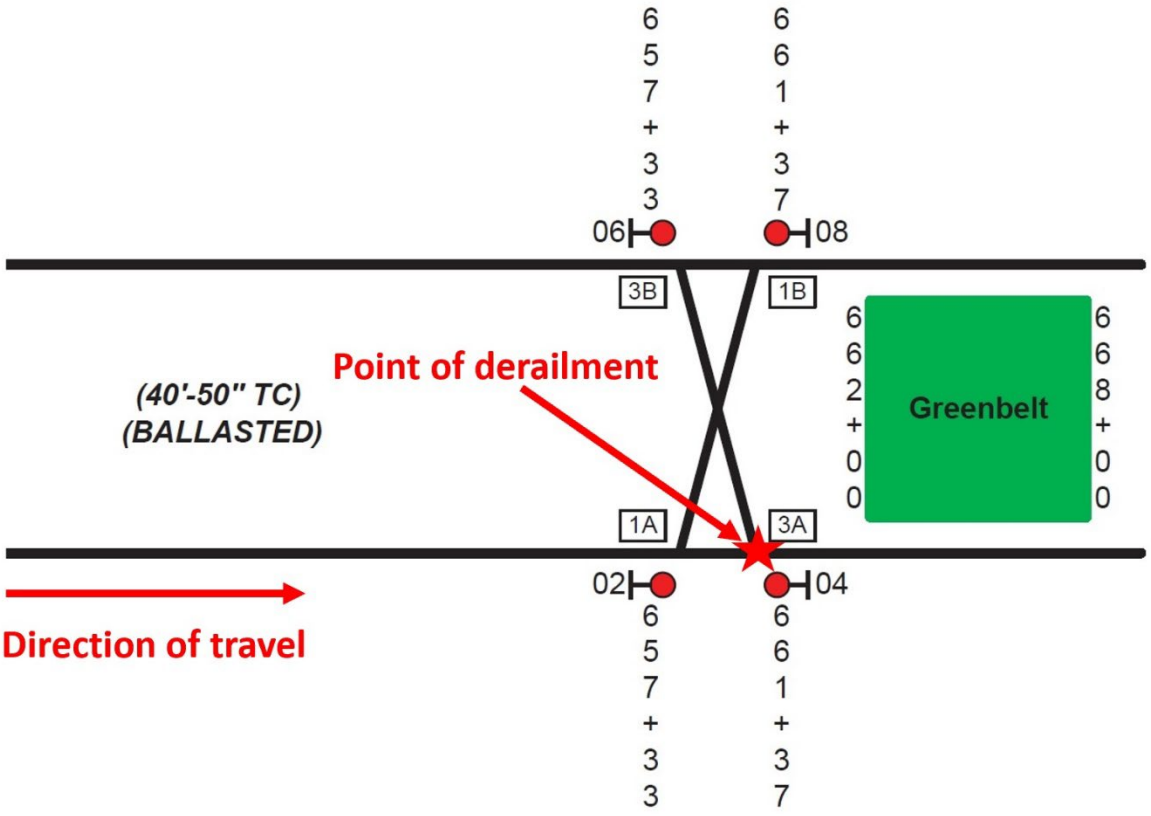
On Friday, August 11, 2023, at 00:30 hours, an Office of Track and Structures (TRST) employee working within the Greenline shutdown area was operating Roadway Maintenance Machine (RMM), Prime Mover (PM) 41, pushing Ballast Cars B406 and B409, when it derailed over switch 3A, track 1, which was misaligned and clamped against their intended direction of travel. The lead axle of B406 struck the misaligned switch and derailed to the wayside at CM E1-661+37. The move was performed by an Equipment Operator, operating the trailing vehicle (PM-41) and a Flag Person on the leading end (B406). The movement was instructed by the Roadway In Charge (RWIC), who was instructing movements and aligning routes in order to retrieve additional ballast near CM E1-669+00. The Flag Person immediately contacted the Equipment Operator and reported the incident. The Equipment Operator stopped PM-41 and reported the incident to the RWIC, and the RWIC reported the derailment to the Mobile Command Center (MCC). The MCC notified the Rail Operations Control Center (ROCC), Department of Safety (SAFE), Car Track Equipment Maintenance (CTEM), Automatic Train Control Maintenance (ATCM), and additional TRST personnel. The RWIC, Equipment Operator, and Flag Person were instructed to stand by while the preliminary investigation was conducted. TRST management removed the TRST employees from service for further investigation and post-incident testing. No injuries were reported as a result of this incident. Significant damage occurred to multiple track infrastructure components, including the third rail, the switch point, and two pieces of ATC equipment, including a 2-foot D-Loop and a cable attached to a high current bond. There were no reported injuries as a result of this incident.

The probable cause of the derailment was a failure to follow established procedures while operating an RMM. The Flag Person on the leading end of the movement is required to direct movement by radio and inform the Equipment Operator of the position of the switches, signal indications, and other conditions that may affect the movement prior to any movements. Contributing to the incident was inadequate personnel. The RWIC was performing work-related tasks (clamping switches) while simultaneously providing oversight for the work zone due to an inadequate number of personnel for the work assignment.

Incident Site

This is an above-ground station with split platforms. Greenbelt Station is a Direct Fixation Track governed by signals E10-06, 08 signals, and E10-02,04 signals. There is an interlocking at CM E1 & E2 657+33 – 661+37. This area is located within the construction zone, starting from Fort Totten Station and ending at the Greenbelt Yard.

Field Sketch/Schematics



The above depiction is not to scale.

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:

- Site Assessment
- Formal Interviews – SAFE interviewed three individuals as part of this investigation. Interviews included persons present at, during, and after the incident and those directly involved in the response process. Representatives from the Washington Metrorail Safety Commission (WMSC) were present during the interviews. SAFE interviewed the following individuals:
  - RWIC
  - Equipment Operator
  - Flag Person

- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
    - RWIC Incident Statement
    - RWIC 30-day Work History
    - RWIC Training Record
    - Equipment Operator Incident Statement
    - Equipment Operator 30-day Work History
    - Equipment Operator Training Record
    - Flag Person Incident Statement
    - Flag Person 30-day Work History
    - Flag Person Training Record
    - WMATA Roadway Job Safety Briefing (RJSB) Form
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)
    - Rail Operation Control Center (ROCC) Incident Report

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
    - ARS (Audio Recording System) playback [Radio and Landline Communications]
    - Closed-Circuit Television (CCTV)

Investigation

On Friday, August 11, 2023, at 00:30 hours, PM-41, pushing Ballast Cars B406 and B409 derailed at the switch point on Switch #3A, CM E1 661+37. The RWIC was directing a series of train moves within the Greenbelt Interlocking and was responsible for clamping the switches during the operations. The RWIC was located at Switch #1A clamping for a crossover move for PM-41. The Equipment Operator of PM-41 was initially on Track 1. The RWIC directed PM-41 to crossover onto Track 2 to allow another RMM behind it to move through towards College Park Station. PM-41 crossed over from Track 1 onto Track 2 in the direction of Greenbelt Station. Later, PM-41 returned to Track 1 to resume dropping ballast in the direction of College Park Station on Track 1. [1]

After the ballast was dropped, the RWIC instructed PM-41 to return to the yard for more ballast. Switch #1A was clamped in the normal position, while Switch #3A remained clamped in the reverse position, leading to the derailment. The Equipment Operator and the Flag person utilized the radio talk-around feature to communicate throughout the operations. (Radio transmissions conducted on the talk-around feature are not recorded).

After receiving their instructions, the PM-41 Equipment Operator began to push cars B409 and B406 with B406 as the lead car. The Flag Person was located on B406 and manning the brake dump valve on the flatcar. The consist traveled through Switch #1A and derailed at the switch point of Switch #3A. [2]PM-41 operator reported in their statement that they felt resistance in the movement of the unit, decreased the throttle to the stop position, and applied the service brake.

[1] The RWIC, at some point, clamped Switch #3A in the reverse position to allow units to crossover from track two to track one inversely.
[2] The RWIC more than likely clamped Switch #1A in the normal position before the PM-41 operator was sent to Greenbelt yard for more Ballast.

PM-41 Operator went to investigate and discovered both rear axles and the right front axle of flat car B-406 derailed. The Significant damage occurred to various components, including the third rail, ATC equipment, switch point, and two pieces of ATC equipment, including a 2-foot D-Loop and a cable attached to a high current bond. There were no reported injuries as a result of this incident.

Closed-Circuit Television (CCTV)

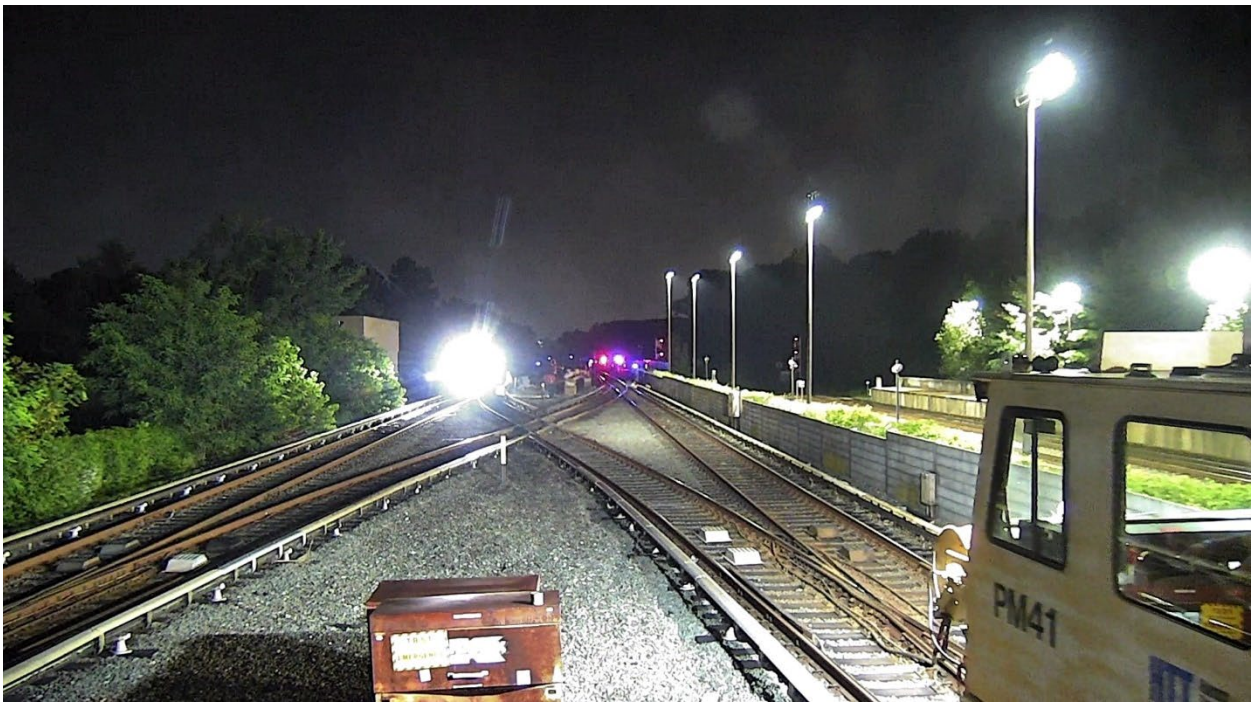


Figure 1 – Equipment Operator of PM-41 entering the Greenbelt interlocking from Track 2 at CM 661+37 at approximately 23:54 hours.

Figure 2 – Equipment Operator of PM-41 stopped momentarily as another RMM exits the interlocking on Track 1 in the direction of College Park Station at approximately 23:55 hours.

Figure 3 – Equipment Operator of PM-41 moved through Switch #1A on Track 1 in the direction of Greenbelt Station at approximately 00:30 hours.

Figure 4 – Flag Person on B406 approaching Switch #3A on Track 1 near CM 661+37 at approximately 00:30:34 hours.

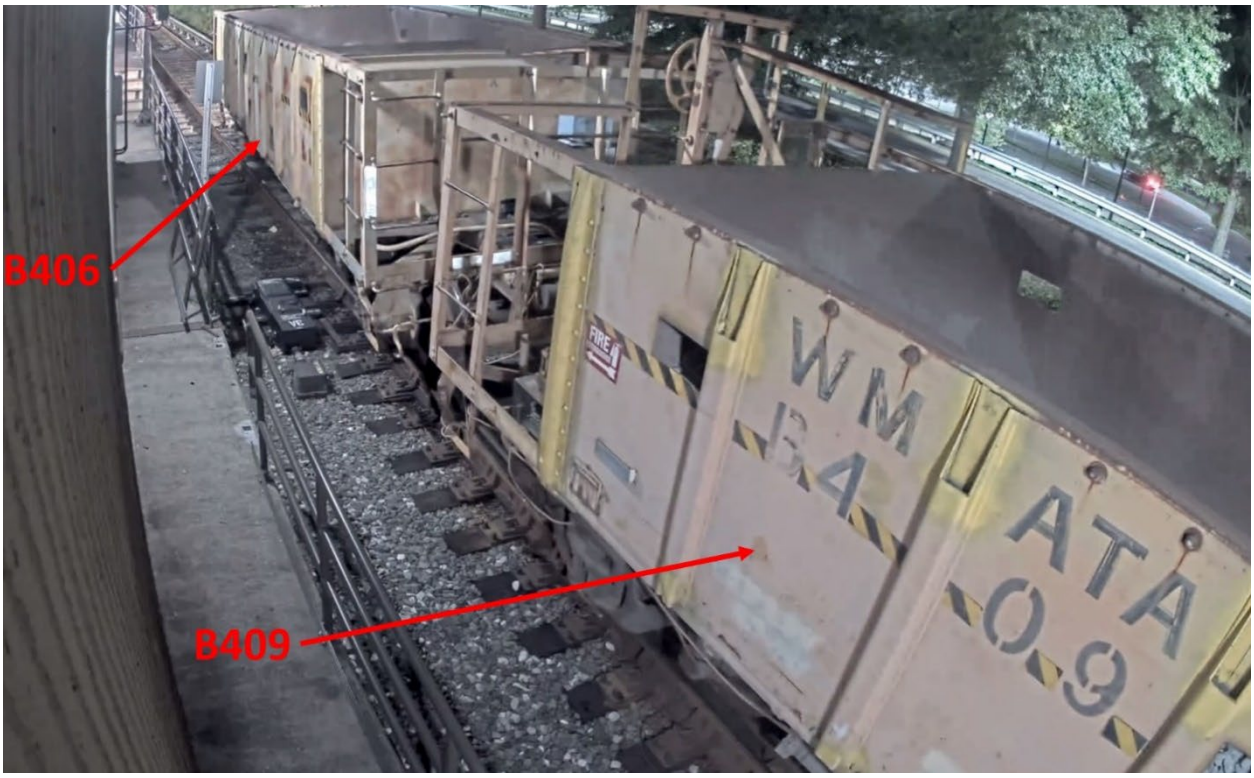


Figure 5 – Flatcar B406 with front and rear axles derailed at Switch #3A on Track 1 at approximately 00:30:39 hours.

Chronological Event Timeline

A review of ARS playback, i.e., phone and radio communications, revealed the following timeline:

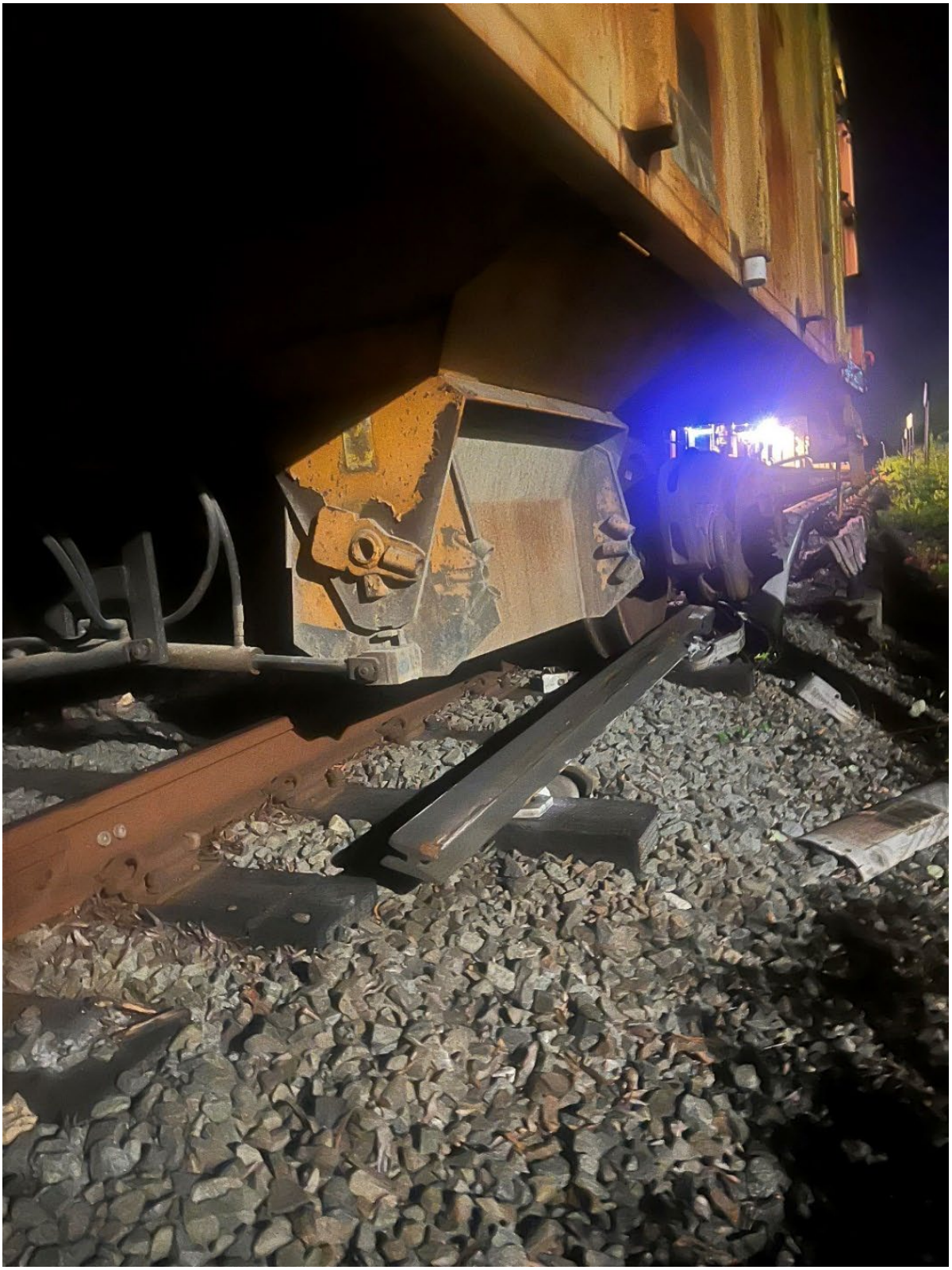
Time	Description
23:54:14 hours	Equipment Operator: The Equipment Operator operating PM-41 entered the Greenbelt Station interlocking, operating PM-41 from Track 2 at Switch #1B with two trailing cars. The Equipment Operator crossed over onto Track 1 via Switch #1A in the direction of College Park Station. [CCTV]
23:55:03 hours	Equipment Operator: The Equipment Operator operating PM-41 stopped the consist within the Greenbelt interlocking while the consist on Track 1 began to move. [CCTV]
23:55:37 hours	The vehicle consist occupying Track 1 moved towards College Park Station. [CCTV]
23:57:58 hours	Equipment Operator: The Equipment Operator operating PM-41 moved the consist onto Track 1 in the direction of College Park Station. [CCTV]
00:01:12 hours	Equipment Operator: The Equipment Operator operating PM-41 cleared the interlocking onto Track 1 via Switch #1A in the direction of College Park Station and resumed placing ballast on the roadway. [CCTV]
00:10:25 hours	RWIC: The RWIC checked Switch #1A for correct alignment. [CCTV]
00:10:58 hours	Equipment Operator: The Equipment Operator operating PM-41 began pushing the cars toward Signal E10-02 on Track 1 with the Flag Person on the leading vehicle. [CCTV]

Time	Description
00:28:48 hours	Equipment Operator: The Equipment Operator operating PM-41 proceeded on Track 1 past Signal E10-02 and Switch #1A on Track 1 in the direction of Greenbelt Station, with the Flag Person on the leading vehicle. [CCTV]
00:30:34 hours	Equipment Operator: The Equipment Operator operating PM-41 approached Switch #3A on Track 1 in the direction of Greenbelt Station, with the Flag Person on the leading vehicle. [CCTV]
00:30:39 hours	Equipment Operator: The front axle of B406 derailed on Track 1. [CCTV]
00:40:00 hours	RWIC: The RWIC contacted MCC and reported that Ballast Flat car B406 derailed in the interlocking at Switch #3A. No reported injuries. [Incident Statement]
00:54:42 hours	ROCC: ROCC received a report from MCC stating PM-41 derailed at Greenbelt Station on Track 1. [Ops 3 Landline]
01:15:00 hours	SAFE: SAFE personnel arrived on the scene and conducted preliminary investigative activities.
02:57:00 hours	MAC: MAC received the event scene release authorization from the WMSC.
04:15:00 hours	Re-railing process for B406 began.
06:50:00 hours	B406 was safely re-railed and removed from service for post-incident inspection.

Note: Times above may vary from other systems' timelines based on clock settings.

Derailment Photographs

Photograph 1 – Right axle of B406 came in contact and damaged the un-energized third rail. (Front view).



Photograph 2 – Right axle of B406 came in contact and damaged the un-energized third rail. (Rear view)

Photograph 3 – Right axle of B406 derailed near Switch #3. Switch Point Clamp Indicator was present.

Photograph 4 – Front left axle of B406 derailed past Switch #3.

Interview Findings

As part of the investigation launched into the derailment near Greenbelt Station, SAFE conducted three interviews. The interviews identified the following key findings associated with this event. Findings detailed below include reported information from involved personnel and may conflict with other data sources contained in the report.

RWIC

- Stated PM-41 was pushing flat car B-406 outboard towards the Greenbelt Station platform when the incident occurred.
- Reported they instructed PM-41 to return the CM 669+00 to retrieve more ballast.
- Reported they were clamping switches in the interlocking for vehicle movements due to not having dedicated personnel to perform those tasks.

Equipment Operator

- Stated they were instructed to retrieve more ballast near Greenbelt Yard when the derailment occurred.
- Reported they were pushing two cars on the consist with a Flag Person on the leading vehicle.
- Reported they relied on the Flag Person's directions during operation as they could not see from the rear.
- Stated they communicated with the Flag Person on the talk-around to avoid congestion on the main operations channel.

Flag Person

- Stated they were positioned on the lead flatcar when the derailment occurred.
- Reported they were not attentive to the position of the switches while moving and were focused on the roadway ahead.
- Reported they did not stop at the signals to verify if the switches were aligned correctly.

Weather

At the time of the incident, NOAA recorded the temperature at 64°F, clear, no wind, and 100% humidity. This is an above-ground station. Weather was not a contributing factor in this incident (Weather source: NOAA – Location: Greenbelt, MD).

Related Rules and Procedures

- MOR – RMMs & Hi-Rail Vehicles – 11.1 – Responsibilities.
- MOR – RMMs & Hi-Rail Vehicles – 11.5.2 – Protection on Controlled Track.
- MOR – RMMs & Hi-Rail Vehicles – 11.9 – Operating with Caution.
- MOR – RMMs & Hi-Rail Vehicles – 11.18.4.1 – Crew Member Required Communications.

Human Factors

RWIC

Evidence of Fatigue

The incident data were evaluated for evidence of fatigue that may have been present at the time of the incident. No signs or symptoms of fatigue were detected from the available data. Video of the incident was reviewed for signs of the RWIC's fatigue. No signs or symptoms of fatigue were evident from the video. The employee reported feeling fully alert at the time of the incident. The RWIC reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

The incident data were evaluated for fatigue risk factors. No significant risk was identified. The incident time of day did not suggest an increased risk of fatigue-related impairment. The RWIC reported keeping a regular sleep schedule in the days leading up to the incident. The RWIC performed night shift work in the days leading up to the incident. The employee was awake for 8.5 hours at the time of the incident. The RWIC reported 8 hours of sleep in the 24 hours preceding the incident. The off-duty period was 16 hours, which provides an opportunity for 7-9 hours of sleep. This was more than a comparable amount of sleep to the employee's regular workday sleep durations. The employee reported no issues with sleep.

Equipment Operator

Evidence of Fatigue

The incident data were evaluated for evidence of fatigue that may have been present at the time of the incident. No signs or symptoms of fatigue were detected from the available data. Video of the incident was reviewed for signs of the Equipment Operator's fatigue. No signs or symptoms of fatigue were evident from the video. The employee reported feeling fully alert at the time of the incident. The Equipment Operator reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

The incident data were evaluated for fatigue risk factors. No significant risk was identified. The incident time of day did not suggest an increased risk of fatigue-related impairment. The Equipment Operator reported keeping a regular sleep schedule in the days leading up to the incident. The Equipment Operator performed night shift work in the days leading up to the incident. The employee was awake for 8.25 hours at the time of the incident. The Equipment Operator reported 7.5 hours of sleep in the 24 hours preceding the incident. The off-duty period was 16 hours, which provides an opportunity for 7-9 hours of sleep. This was more than a comparable amount of sleep to the employee's regular workday sleep durations. The employee reported no issues with sleep.

Flag Person

Evidence of Fatigue

The incident data were evaluated for evidence of fatigue that may have been present at the time of the incident. No signs or symptoms of fatigue were detected from the available data. Video of the incident was reviewed for signs of the Flag Person's fatigue. No signs or symptoms of fatigue were evident from the video. The employee reported feeling fully alert at the time of the incident. The Flag Person reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

The incident data were evaluated for fatigue risk factors. No significant risk was identified. The incident time of day did not suggest an increased risk of fatigue-related impairment. The Flag Person reported keeping a regular sleep schedule in the days leading up to the incident. The Flag Person performed night shift work in the days leading up to the incident. The employee was awake for 8.5 hours at the time of the incident. The Equipment Operator reported 9.5 hours of sleep in the 24 hours preceding the incident. The off-duty period was 16 hours which provides an opportunity for 7-9 hours of sleep. This was more than a comparable amount of sleep to the employee's regular workday sleep durations. The employee reported no issues with sleep.

Post-Incident Toxicology Testing

WMATA's Drug and Alcohol Program determined that the RWIC, Equipment Operator, and Flag Person were not in violation of the Drug and Alcohol Policy and Testing Program 7.7.3/7.

Work History

The RWIC is a WMATA employee with over 11 years of total service: five years as a Track Supervisor and six years as a Track Repairman. The employee is certified to the Roadway Worker Protection (RWP) - 4 Level and expires in January 2024.

The Equipment Operator is a WMATA employee with over eight years of total service as an Equipment Operator. The Equipment Operator was last certified on April 17, 2023. This employee is certified to the RWP-2 Level and expires in January 2024.

The Flag Person is a WMATA employee with over 18 years of total service: seven years as a Track Repairer C and ten years as a Repairman. The employee is certified to the RWP-2 Level and expires in May 2024. This employee was last certified as a Flag Person on February 11, 2022.

Findings

- The Flag Person was on the leading end of the movement and failed to observe and inform the Equipment Operator of the position of switches before traversing the interlocking.
- Radio communications between the Equipment Operator and Flag Person were transmitted via the talk-around feature and not recorded.
- The Equipment Operator was pushing two cars and had zero visibility of the track ahead, which is standard practice and requires the use of a Flag Person.
- The RWIC was responsible for aligning and clamping switches for train moves while simultaneously overseeing the work area.

Immediate Mitigation to Prevent Recurrence

- Equipment Operator, Flag Person, and RWIC were removed from service.
- Flatcar B406 was rerailed.
- PM-41, Flatcar B406 was removed from service for post-incident inspection.

Probable Cause Statement

The probable cause of the derailment was a failure to follow established procedures while operating an RMM. The Flag Person on the leading end of the movement is required to direct movement by radio and inform the equipment operator of the position of the switches, signal indications, and other conditions that may affect the movement prior to any movements. Contributing to the incident was inadequate personnel. The RWIC was performing work-related tasks (clamping switches) while simultaneously providing oversight for the work zone due to inadequate personnel for the work assignment.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
110583_SAFECAPS_TRST_001	(RC-1) TRST Management will ensure the Flag Person is scheduled and completes refresher Flag Person Training.	TRST SRC	Completed
110583_SAFECAPS_TRST_002	(RC-1) TRST Management will develop and distribute a safety bulletin highlighting the findings and preventative measures of the incident.	TRST SRC	Completed

Appendices

Appendix A – Interview Summaries

The below narratives summarize the incident and represent the statements made by the involved individuals. As such, times and details may present a conflict with the data contained in systems of record.

RWIC

The RWIC is a WMATA employee with over 11 years of total service: five years as a Track Supervisor and six years as a Track Repairman. The employee is certified to the RWP-4 Level and expires in January 2024.

During the interview, the RWIC stated that the work crew was conducting repairs to the roadway in the Greenline shutdown area. The RWIC reported that the crew operating PM-41, B409, and B406 were out of ballast, and they instructed them to return to CM 669+00 to wait to be released from the work. The RWIC stated that throughout the evening, they were clamping switches within the interlocking near Greenbelt to permit vehicles to move between Tracks 1 and 2. They reported that there were no ATC personnel present to clamp the switches. The RWIC stated they did not verify if Switch #3A was clamped before they instructed PM-41 to return to CM 699+00. The RWIC reported that they were contacted by the Equipment Operator that the derailment occurred, and they responded to the scene to investigate. After the RWIC assessed the incident location, they reported the derailment to the MCC. They stated there was no action they could have taken that would have prevented this incident from occurring. The RWIC recommended having additional dedicated ATC personnel present when clamping switches and moving rail vehicles through interlockings.

Equipment Operator

The Equipment Operator is a WMATA employee with over eight years of total service as an Equipment Operator. The Equipment Operator was last certified on April 17, 2023. This employee is certified to the RWP-2 Level and expires in January 2024.

During the interview, they stated they were instructed to retrieve more ballast near Greenbelt Yard when the derailment occurred. The Equipment Operator stated they were operating an RMM consisting of PM-41, Ballast Flatcar B409 and Ballast Flatcar B406. The Equipment Operator reported they were pushing the two cars towards Greenbelt with the Flag Person on the leading vehicle (B406). They reported they relied on the Flag Person's directions during operation as they could not see the roadway ahead of them from the rear. The Equipment Operator stated they communicated with the Flag Person via the talk-around to avoid congestion on the main operations channel. They reported that they did not stop the vehicle before entering to verify the position of the switches. The Equipment Operator stated that the incident could have been prevented if the switches had been checked for proper alignment.

Flag Person

The Flag Person is a WMATA employee with over 18 years of total service: seven years as a Track Repairer C and ten years as a Repairman. The employee is certified to the RWP-2 Level and expires in May 2024. This employee was last certified as a Flag Person on February 11, 2022.

During the interview, the Flag Person stated that they were positioned on the lead flatcar when the derailment occurred. They reported they were not attentive to the position of the switches while moving towards Greenbelt Station and were only focused on the roadway ahead. The Flag Person stated they were knowledgeable of switch clamps but did not see any clamps near Switch #3A prior to the derailment. The Flag Person stated they made a mistake by not stopping the vehicle to verify if the switch was aligned.

Appendix B – RWIC, Equipment Operator and Flag Person Incident Statements

Witness or Employee Statement Form
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
USE SEPARATE FORM FOR EACH PERSON

TO BE COMPLETED AND DISTRIBUTED WITHIN 24 HOURS

Page of

PERSONNEL INVOLVED (Use This Block For WMATA Employees and Contractors)

Name	Age	Employee # or MTPD Badge #
[redacted]	[redacted]	[redacted]

Phone Number	Job Title	Department	Division/Section
[redacted]	Supervisor	TRST	TRG/E99 Yard

Last Day Worked (prior to)	Hours Worked (within last 24 hrs)	Overtime?
08/10/2023	12	Yes

INVOLVED PERSON OR WITNESS (Use This Block For Non-WMATA Involved Person or Witness)

Name	Phone Number	E-Mail
[redacted]	[redacted]	[redacted]

Address: [redacted]

INCIDENT

Date	Incident Time	Date/Time Reported	Location
08/11/2023	12:31AM	08/11/2023-12:38AM	E10/04 Signal (3A Switch)

Incident ID# (From ROCC, BOCC, etc.)	Worksafe Incident #

What happened prior to the incident?
Personnel was instructed to go to the Barrier at E1 669+00 after dropping Ballast, hold at the Barrier until I come and release them from the Work locaton. All in preparation to load Ballast at E99 Yard

Describe the incident
I received a call from the Equipment Operator, that the PM41 Derailed while they were pushing towards E10 Platform Track (1) traveling from E10/02 Signal.

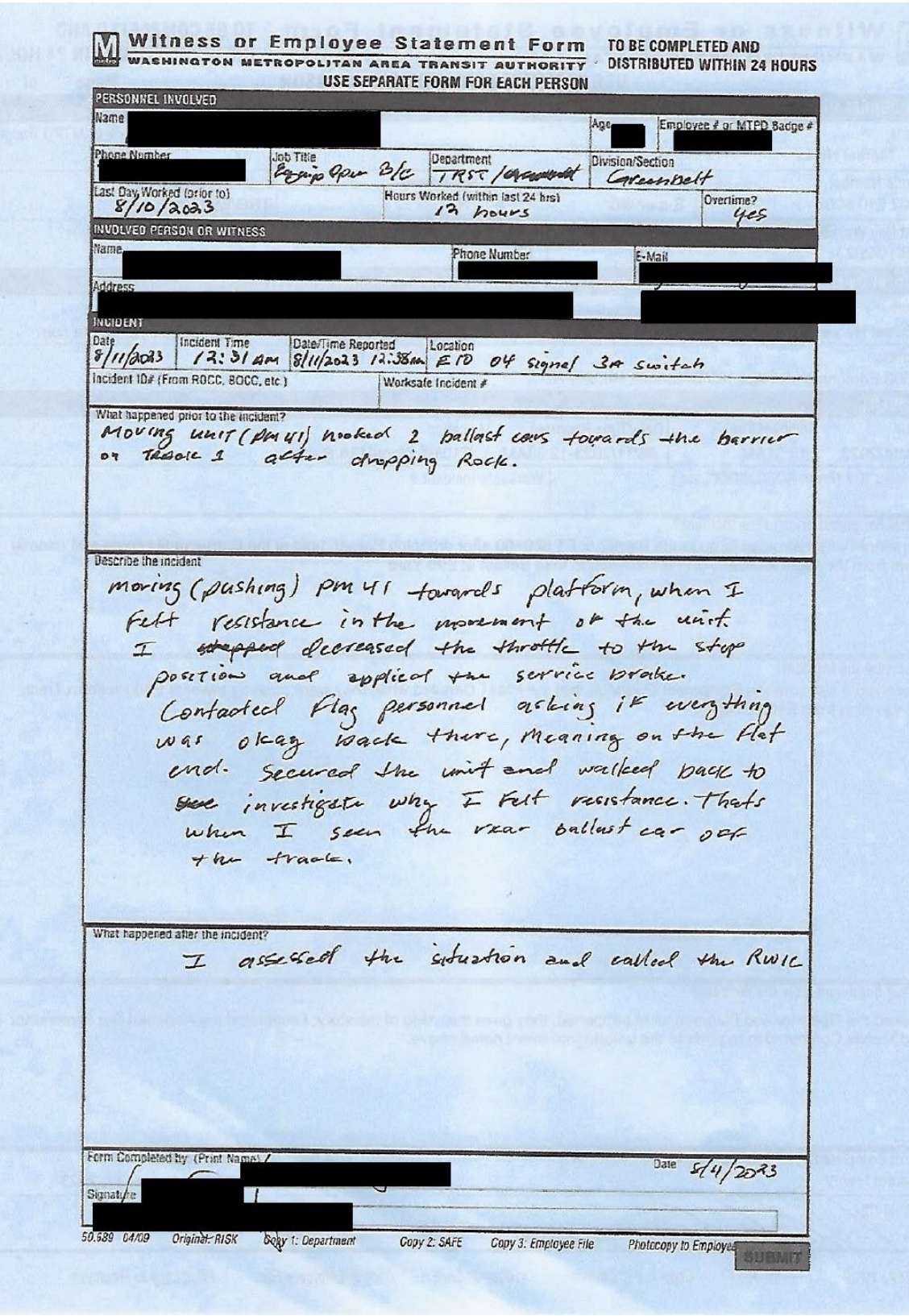
What happened after the incident?
I asked the Operator and Flagmen what happened, they gave their side of the story. i contacted my Assistant Superintendant and Mobile Command in regards to the unfortuante event noted above.

Form Completed by: (Print Name) [redacted] Date August 11, 2023

Signature [redacted]

50.689 10/09 Original: RISK Copy 1: Department Copy 2: SAFE Copy 3: Employee File Photocopy to Employee

Document 1 – RWIC Incident Statement.



Witness or Employee Statement Form
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
TO BE COMPLETED AND DISTRIBUTED WITHIN 24 HOURS
USE SEPARATE FORM FOR EACH PERSON

PERSONNEL INVOLVED

Name	Age	Employee # or MTPD Badge #
[redacted]	[redacted]	[redacted]

Phone Number	Job Title	Department	Division/Section
[redacted]	Equip Oper B/C	TRST / [illegible]	Greenbelt

Last Day Worked (prior to)	Hours Worked (within last 24 hrs)	Overtime?
8/10/2023	12 hours	yes

INVOLVED PERSON OR WITNESS

Name	Phone Number	E-Mail
[redacted]	[redacted]	[redacted]

Address: [redacted]

INCIDENT

Date	Incident Time	Date/Time Reported	Location
8/11/2023	12:31 am	8/11/2023 12:38am	E/O of signal 3A switch

Incident ID# (From ROCC, BOCC, etc.)	Worksafe Incident #

What happened prior to the incident?
Moving unit (PM 41) hooked 2 ballast cars towards the barrier on Track 1 after dropping Rock.

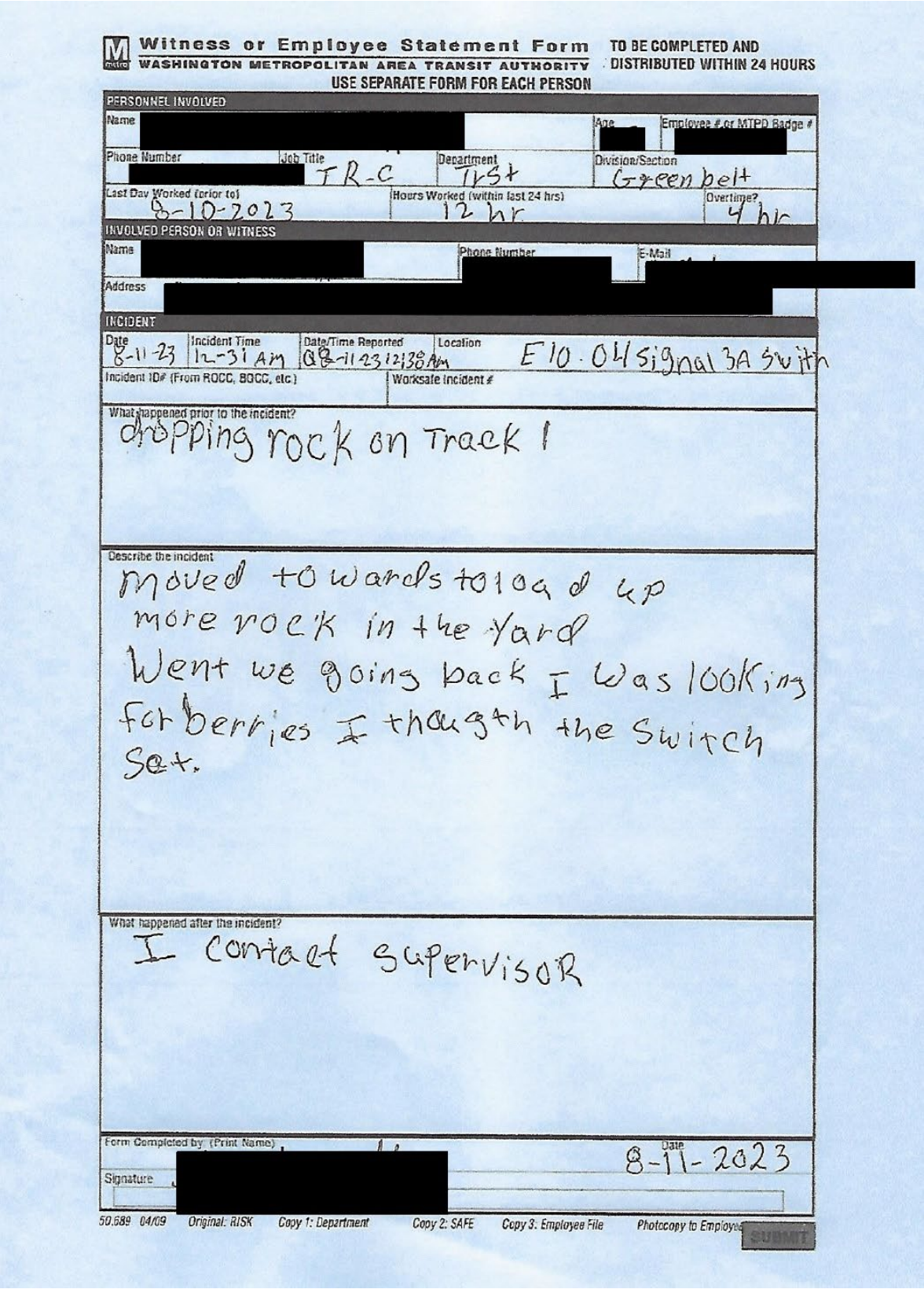
Describe the incident
moving (pushing) PM 41 towards platform, when I felt resistance in the movement of the unit. I ~~stopped~~ decreased the throttle to the stop position and applied the service brake. Contacted flag personnel asking if everything was okay back there, meaning on the flat end. Secured the unit and walked back to ~~see~~ investigate why I felt resistance. Thats when I seen the rear ballast car off the track.

What happened after the incident?
I assessed the situation and called the RWIC

Form Completed by (Print Name): [redacted] Date 8/11/2023
Signature: [redacted]

50.689 04/09 Original - RISK Copy 1: Department Copy 2: SAFE Copy 3: Employee File Photocopy to Employee SUBMIT

Document 2 – Equipment Operator Incident Statement.



Witness or Employee Statement Form
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
TO BE COMPLETED AND DISTRIBUTED WITHIN 24 HOURS
USE SEPARATE FORM FOR EACH PERSON

PERSONNEL INVOLVED

Name [redacted]		Age [redacted]	Employee # or MTPD Badge # [redacted]
Phone Number [redacted]	Job Title TR-C	Department Trst	Division/Section Green belt
Last Day Worked (prior to) 8-10-2023	Hours Worked (within last 24 hrs) 12 hr		Overtime? 4 hr

INVOLVED PERSON OR WITNESS

Name [redacted]	Phone Number [redacted]	E-Mail [redacted]
Address [redacted]		

INCIDENT

Date 8-11-23	Incident Time 12-31 AM	Date/Time Reported 08-11-23 12:38 AM	Location E10.04 signal 3A Switch
Incident ID# (From ROCC, BOCC, etc.)		Worksafe Incident #	

What happened prior to the incident?
dropping rock on Track 1

Describe the incident
moved towards to load up more rock in the yard Went we going back I was looking for berries I thought the switch set.

What happened after the incident?
I contact supervisor

Form Completed by: (Print Name) [redacted] Date 8-11-2023

Signature [redacted]

50.689 04/09 Original: RISK Copy 1: Department Copy 2: SAFE Copy 3: Employee File Photocopy to Employee SUBMIT

Document 3 – Flag Person Incident Statement.

Appendix C – Rail Operations Control Center (ROCC) Incident Report

View Approved Incident Report

INCIDENT ID: 2023223GREEN1

DATE	TIME	LINE	ITEM
2023-08-11	0057	Green	1

LOCATION (STATION/YARD)
Greenbelt (E10)

LOCATION/CHAIN MARKER (If Applicable)
CM E1 661+37

REPORTED BY
MCC [redacted]

TRAIN ID	DIRECTION	TRACK NUMBER	DEPTS NOTIFIED
0000	N/A	1	Everbridge Alert/Messaging

CAR NUMBERS (XXXX-XXXX)
Lead Car

-	-	-	-
Caused Issue ☐	Caused Issue ☐	Caused Issue ☐	Caused Issue ☐

TRBL CODE
DRAL-
DERAILMENT

RESP CODE
TRK

TYPE INCIDENT
PM-41, Flat B406 Derailment

ACTION PLAN
Remove Operator, Flagman, and Track Unit #641 from Service, Re-Rail Unit.

DELAYS IN MINUTES

LINE	INCIDENT	TRAIN	TOTAL DURATION
0	0	0	0

TRIPS MODIFIED

PARTIAL	GAP TRAIN	LATE DISPATCHES	REROUTED	NOT DISPATCHED	OFFLOADS
0	0	0	0	0	0

FIVE PRIMARY CONSOLE INDICATIONS

BCP	BRAKES ON ILLUMINATED	ALL DOORS CLOSED ILLUMINATED	AUTO\MANUAL ILLUMINATED	BPP
			MANUAL	

INCIDENT CHRONOLOGY

TIME	DESCRIPTION
0057	It was reported PM-41 derailed in the shutdown area at CM 661+37 Greenbelt on track number one at 00:31am. PM-41 was pushing a flat car B-406 when it derailed. Switch 1A was in the normal and switch 3A was in the reverse. No injuries were reported. Two pieces of ATC equipment, D 2 feet of D-Loop and a cable attached to a high current bond were all reported damaged. AOM, MTPD, ROIC, SAFE and all other concerned personnel were notified.

Document 4 – ROCC Incident Report. Page 1 of 2.

View Approved Incident Report

0000	PM-41 Operator [redacted] Flagman [redacted] and Track Unit #641 were all removed from service and transported for post incident. SAFE and ATC were on the scene to access damage.

MAXIMO TICKET#
8688280

REPORT PREPARED BY	NAME	CLICK TO SIGN
RADIO CONTROLLER 1	[redacted]	✓
BUTTON CONTROLLER 1		✓
RADIO CONTROLLER 2		
BUTTON CONTROLLER 2		

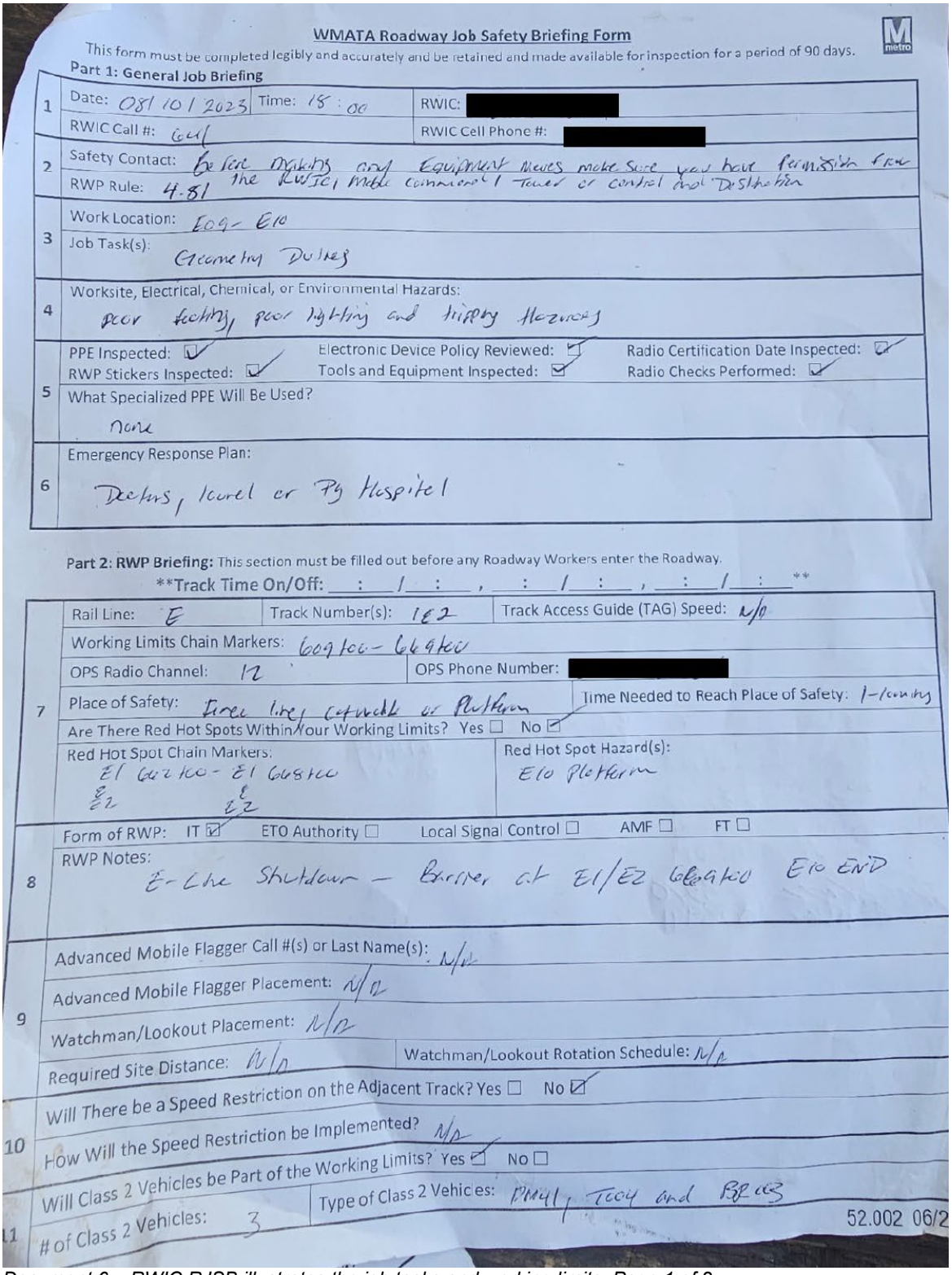
SUPERINTENDENTS OR ASSISTANTS SECTION

ADDITIONAL FOLLOW-UP CORRECTIVE ACTIONS OR REMARKS	
FOLLOW-UP INFORMATION OBTAINED FROM SUPPORT DEPARTMENTS	
NOTIFICATIONS/PAGE GROUPS	#1/CEO ☐ #2/DGM &BELOW ■
ADDITIONAL NOTIFICATIONS MADE BY PHONE	

APPROVED BY	NAME	CLICK TO SIGN
REPORT APPROVED BY SUPT. OR ASST SUPT.	[redacted]	✓

Document 5 – ROCC Incident Report. Page 2 of 2.

Appendix D – RWIC Roadway Job Safety Briefing (RJSB) Form



WMATA Roadway Job Safety Briefing Form

This form must be completed legibly and accurately and be retained and made available for inspection for a period of 90 days.

Part 1: General Job Briefing

1. Date: 08/10/2023 Time: 15:00 RWIC: [redacted]
   RWIC Call #: Cell RWIC Cell Phone #: [redacted]
2. Safety Contact: Before Working any Equipment moves make sure you have permission from the RWIC, Make communication Tower or control and Distribution
   RWP Rule: 4-81
3. Work Location: E09 - E10
   Job Task(s): Grooming Ducks
4. Worksite, Electrical, Chemical, or Environmental Hazards: poor footing, poor lighting and tripping Hazards
5. PPE Inspected: ☑ Electronic Device Policy Reviewed: ☐ Radio Certification Date Inspected: ☑
   RWP Stickers Inspected: ☑ Tools and Equipment Inspected: ☑ Radio Checks Performed: ☑
   What Specialized PPE Will Be Used? None
6. Emergency Response Plan: Dedhs, Laurel or Pg Hospital

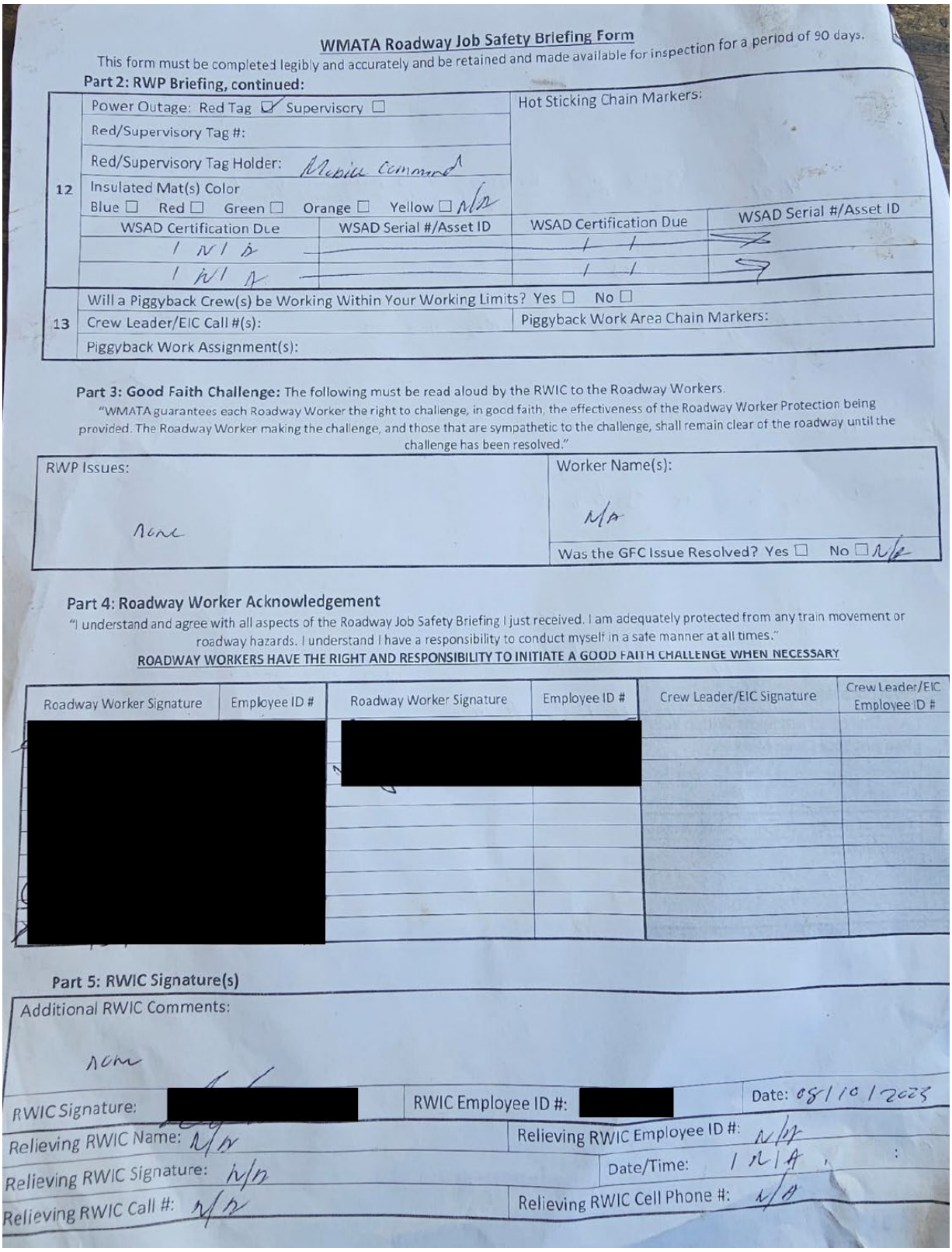
Part 2: RWP Briefing: This section must be filled out before any Roadway Workers enter the Roadway.

**Track Time On/Off: __:__ / __:__ , __:__ / __:__ , __:__ / __:__ **

7. Rail Line: E Track Number(s): 1&2 Track Access Guide (TAG) Speed: N/A
   Working Limits Chain Markers: 669+00 - 669+00
   OPS Radio Channel: 12 OPS Phone Number: [redacted]
   Place of Safety: Tower, Lift, Catwalk or Platform Time Needed to Reach Place of Safety: 1-2 minutes
   Are There Red Hot Spots Within Your Working Limits? Yes ☐ No ☑
   Red Hot Spot Chain Markers: E1 669+00 - E1 669+00 E2 E2
   Red Hot Spot Hazard(s): E10 Platform
8. Form of RWP: IT ☑ ETO Authority ☐ Local Signal Control ☐ AMF ☐ FT ☐
   RWP Notes: E-Line Shutdown – Barrier at E1/E2 669+00 E10 END
9. Advanced Mobile Flagger Call #(s) or Last Name(s): N/A
   Advanced Mobile Flagger Placement: N/A
   Watchman/Lookout Placement: N/A
   Required Site Distance: N/A Watchman/Lookout Rotation Schedule: N/A
10. Will There be a Speed Restriction on the Adjacent Track? Yes ☐ No ☑
    How Will the Speed Restriction be Implemented? N/A
11. Will Class 2 Vehicles be Part of the Working Limits? Yes ☑ No ☐
    # of Class 2 Vehicles: 3 Type of Class 2 Vehicles: Pickup, Truck and Buggy

52.002 06/2

Document 6 – RWIC RJSB illustrates the job tasks and working limits. Page 1 of 2.



WMATA Roadway Job Safety Briefing Form

This form must be completed legibly and accurately and be retained and made available for inspection for a period of 90 days.

Part 2: RWP Briefing, continued:

12	Power Outage: Red Tag ☑ Supervisory ☐		Hot Sticking Chain Markers:	
	Red/Supervisory Tag #:			
	Red/Supervisory Tag Holder: Metro Command			
	Insulated Mat(s) Color Blue ☐ Red ☐ Green ☐ Orange ☐ Yellow ☐ N/A			
	WSAD Certification Due	WSAD Serial #/Asset ID	WSAD Certification Due	WSAD Serial #/Asset ID
	N/A		/ /	
	N/A		/ /	
13	Will a Piggyback Crew(s) be Working Within Your Working Limits? Yes ☐ No ☐			
	Crew Leader/EIC Call #(s):		Piggyback Work Area Chain Markers:	
	Piggyback Work Assignment(s):			

Part 3: Good Faith Challenge: The following must be read aloud by the RWIC to the Roadway Workers.

"WMATA guarantees each Roadway Worker the right to challenge, in good faith, the effectiveness of the Roadway Worker Protection being provided. The Roadway Worker making the challenge, and those that are sympathetic to the challenge, shall remain clear of the roadway until the challenge has been resolved."

RWP Issues: None	Worker Name(s): N/A
	Was the GFC Issue Resolved? Yes ☐ No ☐ N/A

Part 4: Roadway Worker Acknowledgement

"I understand and agree with all aspects of the Roadway Job Safety Briefing I just received. I am adequately protected from any train movement or roadway hazards. I understand I have a responsibility to conduct myself in a safe manner at all times."

ROADWAY WORKERS HAVE THE RIGHT AND RESPONSIBILITY TO INITIATE A GOOD FAITH CHALLENGE WHEN NECESSARY

Roadway Worker Signature	Employee ID #	Roadway Worker Signature	Employee ID #	Crew Leader/EIC Signature	Crew Leader/EIC Employee ID #
[redacted]		[redacted]			

Part 5: RWIC Signature(s)

Additional RWIC Comments: None

RWIC Signature: [redacted]	RWIC Employee ID #: [redacted]		Date: 08/10/2023
Relieving RWIC Name: N/A	Relieving RWIC Employee ID #: N/A		
Relieving RWIC Signature: N/A		Date/Time: N/A :	
Relieving RWIC Call #: N/A	Relieving RWIC Cell Phone #: N/A		

Document 7 – RWIC RJSB illustrates the power outage type and attendees. Page 2 of 2.

Appendix E – CTEM Post-Derailment & Accident Damage Inspection Form

Print

CTEM Post-derailment & Accident Damage Inspection Form

(1 Form per Unit)

DATE:	Aug 15, 2023	**INSPECTOR:**	[redacted]	**UNIT #:**	B406
INCIDENT #:	8688280	**INCIDENT LOCATION:**	E10		

GUIDELINES:

- This form is to be used for all rail vehicles involved in derailments, accidents.
- This form is to function as a guide to assist in ensuring that all vehicles are inspected to ensure that they still meet standards for operation.
- Some reference to codes and standards may be required to complete this inspection form.
- All inspection items on this form are to be marked as:

✓ = Passed **X** = Failed **NA** = Not Applicable **UC** = Unable to Check

NOTE: Any items that have failed are to be documented in the "Inspection Fault Report" field included on this form.

Incident Information: *(NOTE: Use blank field under each question for additional information if answered Yes.)*		
Did the unit contact the 3rd rail? (If Yes, where was the contact on the unit?)	☒ Yes	☐ No
3RD Rail was de-energized. Truck assembly hit the 3rd rail		
Did the unit contact infrastructure such as a wall or platform? (If Yes, what was contacted?)	☐ Yes	☒ No
Did the unit contact another unit? (If Yes, what unit and where was the contact on the unit?)	☐ Yes	☒ No

Truck Inspection:	
Roller bearings - no visual damage and in accordance with Rule 36	√
Roller bearings - no unusual noises; hand spun or run-by test	√
Bearing Adapters - within wear limits and in accordance with Rule 37	√
Drive systems - no visual damage or leaks	NA
Side frames and bolsters - no visual damage and in accordance with Rule 47 & 48	√
Ride control - friction shoes & bearing adapters within limits and in accordance with Rule 46	√
Springs - no damage, correctly seated and in accordance with Rule 50	√
General - no visual damage, all components secured and in accordance with Rule 74	√
NOTES:	

Chassis Inspection:	
Chassis and sub-frames - no cracks, twists, other visual damage	√
Center plates and side bearing - no visual damage and in accordance with Rule 60, 61, and 62	√
Body & decking - no structural, cladding, or decking damage	√
Loading - load is balanced and secure	√
Coupler and draft arrangement - no visual damage and in accordance with Rule 16	√
General - no visual damage, all components secured and in accordance with Rule 74	√
NOTES:	
Ballast is loaded on one side	

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Document 8 – CTEM Accident Damage Inspection Form. Page 1 of 2.

CTEM Post-derailment & Accident Damage Inspection Form

Wheel Inspection:	
Wheels - Discoloration, cracks, spalling, and signs of movement	√
Gauging - Back to back measurement and in accordance with Rule 43	√
Gauging - Flanges & tread, and in accordance with Rule 41	√
General - no visual damage	√
NOTES:	

Brake Inspection:	
Brake rigging & cylinders - no visual damage or apparent leaks	√
Brake hoses & trunk lines - no visual damage or apparent leaks	√
Brake piping, valving and cocks - - no visual damage or apparent leaks	√
Brake operation - passes functional test	√
Friction shoes - greater than 3/8" and accordance with Rule 12	√
Rolling brake test - unit stop as designed without locking up wheels	√
Hand brake - - no visual damage and applies as designed	√
General - no visual damage, all components secured and in accordance with Rule 74	√
NOTES:	

Miscellaneous Equipment Inspection:	
Horn - operational	√
Lighting - operates as designed	√
Radio - perform radio check, operates as designed	NA
Propulsion and braking controls - all controls operate as designed	NA
Cameras - clear picture, operates as designed	NA
Emergency equipment - Interlocks emergency valves, E-stops, etc., operate as designed	√
Locks & restraints - mechanical locks and restraints are in place and operate as designed	√
NOTES:	

Inspection Fault Report:

Can unit be returned to service? ☒ Yes ☐ No

Inspector's Signature: [redacted]

CMNT Form 50.993, Rev. 0.0 **Page 2 of 2** **February 01, 2018**

Document 9 – CTEM Accident Damage Inspection Form. Page 2 of 2.

Appendix F – TRST Maintenance/Safety Bulletin

OFFICE OF TRACK AND STRUCTURES MAINTENANCE
MAINTENANCE BULLETIN/ SAFETY BULLETIN

MB#: 20230811-61
TITLE: Critical Reminder of Safety Rules/Procedures for RMM Movement
PURPOSE: To Remind Personnel of the Safety Rules for RMM Movement
APPLIES TO: All Track and Structures Maintenance Management, All Equipment Operators

This Safety Bulletin addresses recent incidents related to the movement of roadway repair and maintenance vehicles, including Red Signal Overruns. This bulletin serves as a reminder of specific safety rules concerning vehicle movements.

As a reminder: All personnel when working on the roadway are required to adhere to the rules, standard operation procedures and safety precautions documented in the WMATA Metrorail Safety Rules and Procedures Handbook (MSRPH). Due to the recent safety incidents, this Safety Bulletin serves as a critical reminder to adhere to the following specific mitigation actions, safety procedures and precautions.

The following rules must be adhered to at all times:

1) Anytime there is rail vehicle movement it is the responsibility of the operator and flag person to verify that there is proper rail alignment.
2) Anytime there is an RMM moving from the work location to the yard, the crew leader must make a request with Mobile Command to proceed into the yard. If Mobile Command is not active, then the crew leader must make the request to the tower.
3) Mobile Command will initiate the first request to the tower interlocking operator to move RMM's into the yard.
4) Mobile Command will then give the work crew permission to confirm movement into the yard with the tower interlocking operator.
5) Once the RMM receives permission to enter the yard, it is then the RMM operator's responsibility to make additional request through the tower.

No personnel shall direct equipment to move past a red signal without permission from tower operator.

Document 10 – TRST Maintenance/Safety Bulletin highlighting procedures for RMM movement.

Appendix G – Why-Tree Analysis

E23556 – Derailment – Greenbelt Station