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WMSC Commissioner Brief: W-0224 – Serious Injury – Medical Center Station – May 18, 2022

Prepared for Washington Metrorail Safety Commission meeting on May 16, 2023

Safety event summary:

A Metrorail employee broke their foot on May 18, 2022 when walking down stairs on the safety walk to reach a Traction Power Tie Breaker Room at Medical Center Station.

The Traction Power Maintenance Mechanic did not initially realize the severity of the injury. They later notified their supervisor from home after their shift. The investigation demonstrated that the tread on the worker's boots was significantly worn, the boots were beyond their useful life, and the boots did not provide the necessary traction or protection. The Mechanic stated that they mis-stepped, rolling their right ankle. In an investigative interview, they also reported that they were not using their flashlight as they moved from the brighter platform area down small steps into the darker tunnel.

After the supervisor learned of the injury, it was reported to Metrorail's Office of Risk Management, but Metrorail did not identify and report the injury to the WMSC as required. On May 30, 2022, the Mechanic sought medical treatment, and the fracture in their foot was identified.

Metrorail notified the WMSC once the event was determined to be a serious injury, which must be reported to both the WMSC and Federal Transit Administration.

Probable Cause:

The probable cause of this event was insufficient supervisory oversight to ensure that adequate personal protective equipment is worn. Contributing to this event was an insufficient focus on safe movement.

Corrective Actions:

Due to other corrective action plans, Metrorail improved lighting in the area of the stairs after this event. Metrorail is nearing completion of this system-wide lighting improvement.

WMSC staff observations:

The installation of improved lighting in the safety walk area after this event, as previously planned, has significantly improved safety for Metrorail personnel.

Different Metrorail departments have different policies related to safety footwear, and Roadway Workers In Charge are required to check for protective equipment at each job safety briefing. Given the consistent safety requirements of movement within the Metrorail system, and the importance of footwear to safety, Metrorail should consider a uniform policy and checks to ensure that all personnel have appropriate protection such as a defined heel and ankle support, in addition to composite toes.

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

FINAL REPORT OF INVESTIGATION A&I E22327

Date of Event:	May 18, 2022
Type of Event:	Serious Injury
Incident Time:	01:51 Hours
Location:	Medical Center Station
Time and How received by SAFE:	May 30, 2022, at 09:06 Hours – SAFE/MAC
WMSC Notification Time:	May 30, 2022 – 09:06 Hours
Responding Safety Officers:	WMATA: N/A WMSC: N/A Other: N/A
Rail Vehicle:	N/A
Injuries:	Sprained Right Ankle, Fractured foot
Damage:	None
Emergency Responders:	None
SMS I/A Incident Number:	20220518#100416

Medical Center Station – Serious Injury

May 18, 2022

Abbreviations and Acronyms

AOM	Assistant Operations Manager
ARS	Audio Recording System
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CTF	Carmen Turner Facility
FLO	Fire Liaison Officer
IMO	Incident Management Officer
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
OM	Operations Manager
RISK	Office of Risk Management
ROCC	Rail Operations Control Center
RTC	Rail Traffic Controller
SAFE	Department of Safety
SMS	Safety Measurement System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

On May 18, 2022, at approximately 05:13 hours, a Traction Power Maintenance (TRPM) High Voltage Mechanic reported an injury to their Supervisor after leaving the work site. The TRPM Mechanic stated that while they were walking beyond the end gate at Medical Center Station, track 1, descending the stairs to enter the Tie Breaker Room they mis-stepped, causing injury to their right ankle. The TRPM Mechanic did not immediately report their injury and continued to work. After completing their work duties, which was to switch down power for the third rail and restore power once the work on the wayside was completed, the TRPM Mechanic left the work site and went home for self-treatment.

The Audio Radio System (ARS) playback revealed that at approximately 00:16 hours, the TRPM Roadway Worker in Charge (RWIC) requested a Red Tag power outage at between Chain Markers (CM) A1 443+72 to 510+42 and A2 440+84 to 510+42 (Medical Center Station). At approximately 01:40 hours, the TRPM RWIC requested permission from the RTC for themself and a party of three to enter the roadway to set up a work zone under Exclusive Track Occupancy (ETO). At approximately 01:50 hours, the RTC granted permission to the TRPM RWIC. At approximately 02:13 hours, the RWIC was in possession of Red Tag (2022138556A) and confirmed with ROCC that third rail power was deenergized. At approximately 02:24 hours, the RTC granted permission to the RWIC to begin work. At approximately 04:02 hours, the RWIC contacted ROCC and advised that all personnel were clear of the roadway.

After reviewing the Closed-Circuit Television (CCTV), the TRPM Mechanic is observed arriving at the platform at Medical Center Station, track 1, alongside other WMATA personnel, one of which was the employee assigned to work with the TRPM Mechanic to switch A10TB. The TRPM Mechanic is observed walking beyond the end gate at approximately 01:51 hours and returning to the platform at approximately 01:54 hours. At the time they initially returned to the platform, they did not display any signs of injury, such as limping or walking slowly.

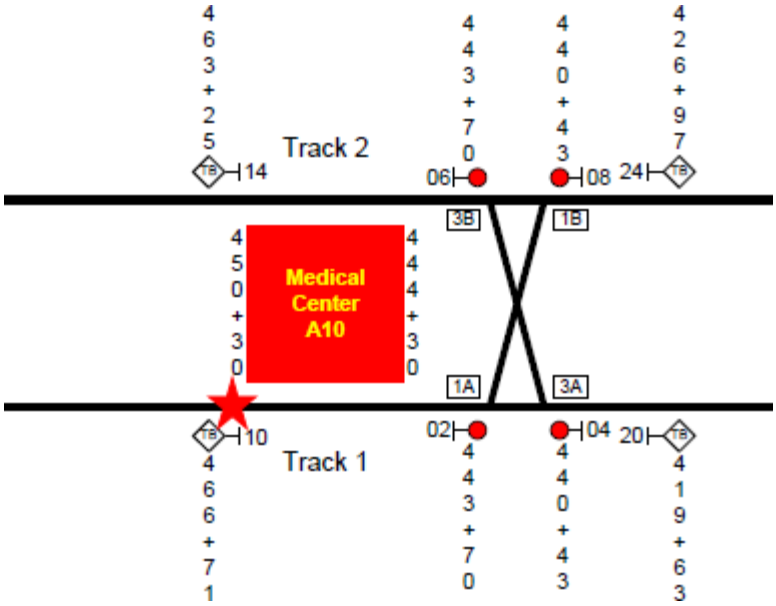
The TRPM Mechanic reported their injury to the Office of Risk Management and was held off from duty. On May 30, 2022, the injured employee reported that their injury was not healing and sought additional treatment, which is when the fracture in their foot was identified.

The probable cause of the Serious Injury event at the Medical Center Station on May 18, 2022, was a human factors error by the TRPM Mechanic when they did not properly secure their footing while descending the stairway.

Incident Site

Medical Center Station, track 1

Field Sketch/Schematics



**Locations are approximate. Not to scale.*

Purpose and Scope

The purpose of this accident 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

Upon receiving the notification of the Serious Injury that occurred on May 18, 2022, SAFE dispatched a cross-functional team to assess the scene and conduct the subsequent investigation. SAFE team members worked with relevant WMATA subject matter experts to review the incident's facts and data.

The investigative methodologies included the following:

- Site Assessment through document review
- Formal Interviews – SAFE interviewed one (1) individual as part of this investigation, including the:
  - High Voltage Mechanic
- Informal Interviews – Collected through conversations with individuals during the investigation to provide background and supporting information. Written statements were reviewed from personnel present during the event.
  - High Voltage Mechanic Helper
  - TRPM RWIC

- Documentation Review – A collection of relevant work history information and process documentation contained in Metro systems of record. These records include:
    - Employee Training Procedures & Records
    - Metro Safety Rules and Procedures handbook (MSRPH)
    - National Oceanic and Atmospheric Administration (NOAA) data
    - 30-Day Work History

- System Data Recording Review – A collection of information contained in Metro Data Recording Systems. This data includes:
    - Closed-Circuit Television (CCTV)

Investigation

The investigation of the incident on May 18, 2022, at approximately 05:13 hours was a result of an employee who sustained an injury to his right foot. Due to the delayed reporting of the event, the investigation was not initiated until several weeks afterwards. The incident site was inspected by a Safety Investigator. The stairs were found in good condition, with a handrail and non-slip material installed. Lighting conditions were adequate at the time of the inspection. In addition, personnel are required to carry a flashlight while entering the rail right-of-way, which would aid with lighting. Following the event, additional lighting was installed in the area of the stairs as part of SMNT's response to FTA Corrective Action Plan 15-130 (Tunnel Lighting Improvement).

During their interview, the employee confirmed that they did not inform their supervisor at the time of the event or prior to leaving the worksite for the day. They reported that their footwear was in good condition and appropriate for the worksite.

There were no direct witnesses to the event, however the employee's work crew partner stated that they did report an injury to them on the night of the event.

A review of CCTV did not identify an obvious injury to the employee, such as limping or walking with assistance. Video of the event was not available. There were no audio recordings of the event.

Image 1 – Image of incident location.

Chronological Event Timeline

Time	Description
12:15:52 hours	RTC contacts RWIC for their GOTRS request.
12:16:42 hours	RWIC: Red Tag power outage request, ETO protection CM A1 443+72 to 510+42 and A2 440+84 to 510+42. ROCC RTC: Acknowledged and repeated, time at 00:17 hours. Standby and stand clear. RWIC: Acknowledged and repeated.
01:11:58 hours	ROCC RTC: Red Tag 2022138556A, A11 to A10, Tracks 1 and 2 Tie breaker 1. PDC: Acknowledged and repeated.
01:19:27 hours	PDC: Unit ID, Permission for traction power number 2. Call MOC back with block tags. TRPM: call MOC with block tags.
01:37:27 hours	TRPM: A10 traction power #1 block tags. PDC: Alright go down the list. TRPM: 7011-1305-1284-482-2415-484-0571-494-811-1823-479-2177
01:40:41 hours	RWIC: [Unit ID] and party of 3 request permission to enter the roadway for hot sticking, foul time protection, foul time for the whole work area. Proper PPE, safety briefing conducted. ROCC RTC: Acknowledged and repeated. Giving foul time for the entire work location, standby and stand clear. RWIC: Acknowledged and repeated, standby.
01:50:32 hours	ROCC RTC: A10-08 red, A11-36 red, A11-44 red, all prohibits in place, blue block human form, you have permission under foul time at Medical Center tracks 1 and 2. Hold your foul time until you get your tag. RWIC: Acknowledged and repeated.
02:10:02 hours	ROCC RTC: [Unit ID], Landline the Power Desk for your Red Tag. RWIC: Acknowledged and repeated.
02:13:13 hours	ROCC RTC: Under the same foul time, give me your chain markers. RWIC: I'm in possession of Red Tag 2022138556A and with a working hot stick, third rail power is de-energized. ROCC RTC: Place your shunts in accordance with the SOP, Central will verify. RWIC: Acknowledged and repeated.
02:24:44 hours	ROCC RTC: I see four good shunts in your work location. Place the remainder of your safety equipment, you have permission to start your work, relinquishing your foul time, start work time 02:25 hours. RWIC: Relinquishing foul time, start work time 02:25 hours, clearing at 04:00 hours.
04:02:15 hours	RWIC: Turned in Red Tag to MOC, all personnel and equipment are clear of the roadway. Power can be re-energized at your discretion; tracks are revenue ready. ROCC RTC: Acknowledged and repeated. Clear at Medical Center time 04:03 hours. RWIC: Acknowledged and repeated.

***Note: Times above may vary from other system's timelines based on clock settings and reporting source.*

Interview Findings

As a result of the interview with the injured employee, it was discovered that the employee did not inform the direct supervisor of the injury as soon as it occurred. The employee departed the work location after assignment work was completed and waited for approximately three hours before calling the supervisor from home.

Weather

On May 18, 2022, at the time of the incident, NOAA recorded the temperature as 72 °F, with no rain. Medical Center Station is located within the tunnel portion of the rail system. Weather was not a contributing factor in this incident (Weather source: NOAA) – Location: Washington, DC.)

Human Factors

Fatigue

Signs and Symptoms of Fatigue

Evidence of Fatigue – Rail Traffic Controller

SAFE evaluated conditions at the time of the incident to distinguish whether evidence of fatigue was present. No video of the person involved was available. The TRPM Mechanic reported feeling fully alert at the time of the incident. The TRPM Mechanic reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

The incident data was evaluated for fatigue risk factors. Risk factors for fatigue were not present. Since fatigue evidence and risk factors were not present, the biomathematical fatigue modeling application (SAFTE-FAST Web SFC) was not applied.

Post-Incident Toxicology Testing

The TRPM Mechanic was not referred for Post-Incident Toxicology Testing. The TRPM Mechanic departed the work site prior to notifying their supervisor of the event and is being held off duty due to injury.

Findings

- The TRPM Mechanic did not report the injury immediately to their RWIC or Supervisor while on duty.
- The TRPM Mechanic left the work site and self-transported to their residence before the end of their shift.
- Lighting and stair conditions were found to be adequate and in good condition.

Immediate Mitigation to Prevent Recurrence

The TRPM Mechanic left the work site for self care after completing their work duties.

Probable Cause Statement

The probable cause of the Serious Injury event at the Medical Center Station on May 18, 2022, was a human factors error by the TRPM Mechanic when they did not properly secure their footing while descending the stairway.

SAFE Recommendations/Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
100416_SAFE CAPS_SMNT_ 001	Complete tunnel lighting installation project in compliance with FTA Corrective Action Plan 15-130. Status as of 3/13/2023 is 98% complete.	SMNT SRC	4/30/2023
100416_SAFE CAPS_SMNT_ 002	Install additional lighting at event site to bolster visibility at the stairs.	SMNT SRC	Completed

Appendices

Appendix A – Interview Summary

The TRPM High Voltage Mechanic is a WMATA employee with four years of service and experience as a High Voltage Mechanic. The High Voltage Mechanic holds a Roadway Worker Protection (RWP) Level 2 certification that expires March 2023.

The TRPM High Voltage Mechanic stated that they clocked in, then waited for about 20 minutes, until they got their work assignment for the day. The TRPM High Voltage Mechanic stated that they were assigned to switching, at the Tie Breaker Room at Medical Center Station. They were racking out breakers at the Traction Power Substation in order for the team to go on the track. The power has to be dead. Their job was to take power off the third rail.

The TRPM High Voltage Mechanic stated that they got to Medical Center Station at around 11:45pm, almost 12:00am, and ROCC didn't call them until about 1:30am. The TRPM High Voltage Mechanic stated that they were walking on the platform. At the end of the platform past the gates, there were two small steps. The TRPM High Voltage Mechanic stated that they were walking on those two small steps, when they rolled their ankle. The TRPM High Voltage Mechanic stated that the platform had very good lighting; however, at the safety gates where only WMATA personnel can enter, its dark leading towards the tunnel. The TRPM High Voltage Mechanic stated that they did not have their flashlight on. The TRPM High Voltage Mechanic stated that they were wearing composite toe boots and was not sure if they were wearing Red Wing or Walmart Brand. The TRPM High Voltage Mechanic stated that they purchased Red Wing Boots 2 months ago, and the Walmart Boots are 6 months old.

The TRPM High Voltage Mechanic stated that they it didn't bother them at first, they were fine. They went back upstairs and were sitting in their cars, waiting for ROCC to call to bring up the power around 3:00am - 4:00am. The TRPM High Voltage Mechanic stated that while they were sitting, they noticed their foot was throbbing and thought they had just twisted their ankle and it was fine, not a big deal.

The TRPM High Voltage Mechanic stated that ROCC called for switching around 4:30, and when they went to get out of the car, they noticed that they couldn't put any pressure on their foot. The TRPM High Voltage Mechanic stated that they completed their work, they went back to the car and took their shoe off. The TRPM High Voltage Mechanic stated that they noticed that their foot was extremely swollen, then tried to stand up and couldn't fully stand.

The TRPM High Voltage Mechanic stated that they sat back in the car and were in a lot of pain. They thought that they needed to go ice and wrap it, and take medication. The TRPM High Voltage Mechanic stated that they went home, then called their Supervisor and reported that they rolled their ankle, it was swollen, and they had put ice on it and wrapped it up.

The TRPM High Voltage Mechanic stated that they did not immediately notify their Supervisor because they did not think that they were injured, they thought that they had just twisted their ankle. They didn't realize the severity of the injury at the time. The TRPM High Voltage Mechanic stated that they were driving back to the office and it was extremely hard for them to drive with their foot and their house was a lot closer than the office, so they went home to wrap it. Then they contacted the Supervisor and informed them of what was going on.

Appendix B – Written Statements

TRPM High Voltage Mechanic

[redacted]

From: [redacted]
Sent: Wednesday, May 18, 2022 6:23 AM
To: [redacted]
Subject: twisted ankle statement [redacted]

Me and my partner walked through the station to switch at around 1:30 am and at the very end of the platform where the gate is there are two little steps as i was walking down those steps i rolled my ankle there was minor pain at first so i thought i was ok it wasn't until it was time to bring the power back up around 4:30 am that i noticed that my foot had became swollen it was almost impossible to put pressure on it so after switching i left went home to put ice on it and contacted my supervisor at around 5:13 am

TRPM High Voltage Mecchanic Helper

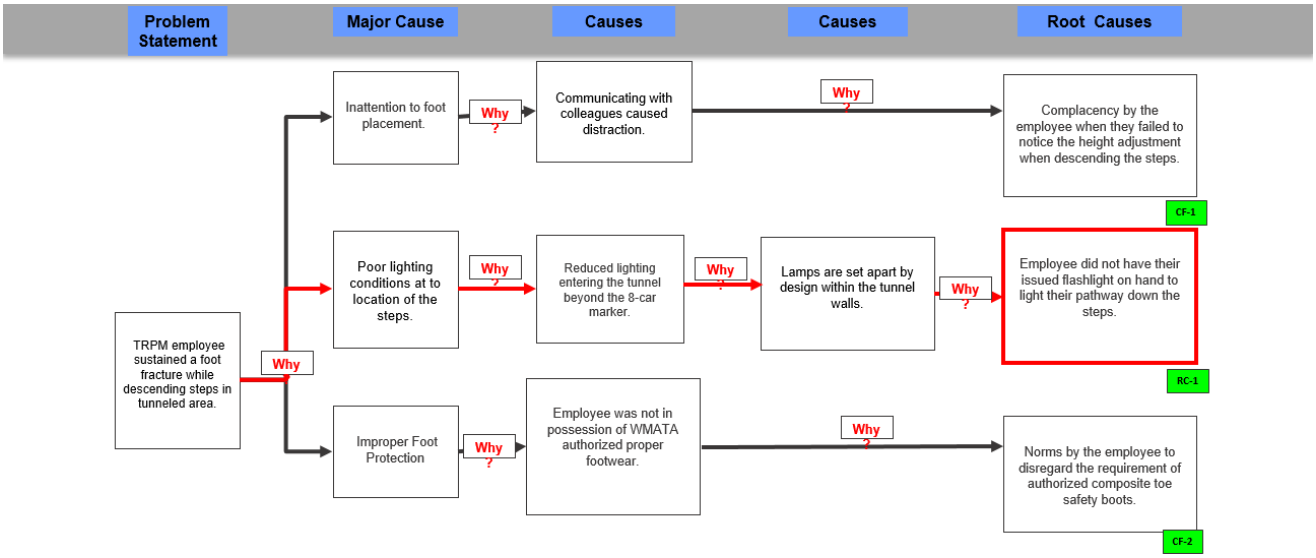
[redacted]

From: [redacted]
Sent: Saturday, May 28, 2022 8:50 AM
To: [redacted]
Subject: After we switcherd the breakers my partner told me he hurt his foot but I didn't see it happen, but he later told me he was in a lot of pain

Appendix C – Post-Event Lighting Installation

Figure 3 - New Lighting Installation at Medical Center Track 1

Appendix D – Root Cause Analysis



5 **Root Cause Analysis** WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

OSI Office of Safety Investigations