



WMSC Commissioner Brief: W-0122 – Improper Roadway Worker Protection – Near Grosvenor-Strathmore Station – June 23, 2021

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

Safety event summary:

A Plant Maintenance (PLNT) crew being dropped off to work on a drainage pumping station (DPS) in the Red Line tunnel south of Grosvenor-Strathmore Station could not establish radio communication with the Rail Operations Control Center (ROCC). One member of the crew exited the room without permission in an effort to contact the ROCC as required, which meant they entered the roadway without proper safety protections. A following train approached the location while the person was on the roadway.

That Train Operator reported the person on the roadway to the ROCC, however, this event was not formally identified and reported until nearly 10 hours after the event. This occurred only after WMSC notification to Metrorail's Safety Department (SAFE) of the radio communications related to this incident and after a public social media post based on those radio communications.

The PLNT crew's drop off took an extended amount of time due in part to radio transmission challenges and in part to a lack of response to communications to the ROCC from the first Train Operator. This extended drop off had led to train delays of a few minutes.

The PLNT crew could not successfully transmit on their radios from the DPS, but the ROCC and the PLNT crew allowed the work to go ahead based on a transmission from the first Train Operator that the crew had entered the room. This is contrary to requirements that the controller confirms with the crew. During this process, the ROCC controller also added additional information to repeat backs that was not provided by the Train Operator, including statements that the work crew was in a place of safety when they were still on the roadway.

When the following Train Operator approached and saw a person on the roadway, they stopped their train briefly near the DPS and stated that the person had returned to the room. The Train Operator reported this over the radio, then continued on.

Metrorail did not conduct post-incident drug and alcohol testing following this event as required by Metrorail policy.

Probable Cause:

The probable cause of this event was poor radio system functionality, and insufficient radio system maintenance, planning, testing and continuous improvement practices, along with Metrorail's lack of supervisory oversight, acceptance of deviations from procedures, and a lack of awareness to communicate via emergency trip station phones. Contributing to the near-miss aspect of the event was Metrorail's insufficient protections against the unauthorized movement of trains and inconsistent compliance with radio communications protocols.



750 First St. NE • Ste. 900 • Washington, D.C. 20002

Office: 202-384-1520 • Website: www.wmsc.gov

Corrective Actions:

Metrorail installed radio coverage improvements in this DPS room.

Metrorail identified four other DPS and maintenance rooms where radio improvements are required. Signage was placed allowing cell phone use inside the rooms to contact the ROCC to request a train pickup.

Metrorail re-trained personnel involved in this event.

WMSC staff observations:

“Modified Foul Time” does not exist in Metrorail’s Roadway Worker Protection (RWP) Program, however this is what personnel commonly use to refer to several situations, including the situation in this event where a work crew is being dropped off by a vehicle. Foul Time is intended to protect personnel from vehicle movement. In the case of a crew being dropped off by a train, Metrorail’s RWP Program states that the Train Operator is not permitted to move the train until this modified foul time is relinquished and the crew is in a place of safety. Metrorail has changed the name of this process in its rule book to call this pick up and drop off procedures, but the older terminology continues to be used in some cases.

This event demonstrates the importance of ongoing monitoring, inspections and maintenance of Metrorail’s radio systems. This includes regular reporting, responsiveness and appropriate investigation of any radio difficulties. The WMSC identified similar issues in a finding issued on April 30, 2021 that Metrorail is not maintaining a fully functioning radio communications system in all rail yards and shops. The Corrective Action Plan (CAP) has been approved for implementation. It remains open.

The student controller involved in this incident did not certify as a controller, and is no longer working in the ROCC.

Staff recommendation: Adopt final report.



Washington Metro Area Transit Authority
Department of Safety and Environmental
Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E21256

Date of Event:	06/23/2021
Type of Event:	Improper RWP
Incident Time:	12:23 hours
Location:	Drainage Pumping Station – CM A1 510+98
Time and How received by SAFE:	21:01 hours; Social Media Report
WMSC Notification Time:	22:07 hours
Responding Safety Officers:	WMATA: N/A WMSC: N/A Other: N/A
Rail Vehicle:	Train ID 120 L7302-03x7433-32x7398-99x7305-04T Train ID 121 L7404-05x7465-64x7446-47x7391-90T
Injuries:	None
Damage:	None
SMS I/A Incident Number:	20210707#94321

Grosvenor-Strathmore Station – Improper Roadway Worker Protection

June 23, 2021

Table of Contents

<i>Abbreviations and Acronyms</i>	3
<i>Executive Summary</i>	4
<i>Incident Site</i>	5
<i>Field Sketch/Schematics</i>	6
<i>Purpose and Scope</i>	6
<i>Investigative Methods</i>	6
<i>Investigation</i>	7
<i>Chronological Event Timeline</i>	8
<i>Advanced Information Management System (AIMS)</i>	10
<i>Closed-Circuit Television (CCTV)</i>	11
<i>Interview Findings</i>	12
<i>Findings</i>	15
<i>Weather</i>	15
<i>Human Factors</i>	15
<i>Fatigue</i>	15
Signs and Symptoms of Fatigue	15
Fatigue Risk	15
Post-Incident Toxicology Testing	16
<i>Mitigations Taken to Prevent Recurrence</i>	16
<i>Probable Cause Statement</i>	16
<i>SAFE Recommendations/Corrective Actions</i>	17
Office of System Maintenance Communication Section (COMM)	18
Office of Plant Maintenance (PLNT)	18
Office of Rail Transportation (RTRA)	18
Rail Operation Control Center (ROCC)	18
<i>Appendices</i>	19
Appendix A – Interview Summaries	19
Appendix B – Metrorail Safety Rules and Procedures Handbook (MSRPH), Section 5 RWP	
5.13.5 Foul Time Protection	23
Appendix C – ROCC Lessons Learned Document	25

Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CM	Chain Marker
COMM	Office of System Maintenance Communication Section
DPS	Drainage Pumping Station
ICT	Industrial Control Technician
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
PLNT	Office of Plant Maintenance
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
RWP	Roadway Worker Protection
SAFE	Department of Safety and Environmental Management
SMS	Safety Measurement System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

On Wednesday, June 23, 2021, at approximately 12:08 hours, personnel from the Office of Plant Maintenance (PLNT) contacted the Rail Operations Control Center (ROCC) on Red Line Ops 1 to request a train drop off at Chain Marker (CM) A1 510+98 to access a Drainage Pumping Station (DPS) at that location. At approximately 12:09 hours, the ROCC Radio Rail Traffic Controller (RTC) instructed the PLNT Units to make their request with the next Train Operator. The Train Operator of Train ID 120 contacted ROCC for permission to drop off the PLNT Units utilizing foul time procedures for train drop-off. The Radio RTC gave permission to the Train Operator of Train ID 120 to perform the train drop off. At approximately 12:22 hours, the PLNT Units exited the train, contacted the Radio RTC and reported that they were clear and in a place of safety inside of the DPS. At approximately 12:23 hours, the Train Operator of Train ID 121, contacted ROCC and reported seeing personnel on the roadway at CM A1 510+00. After confirming that the personnel returned to the DPS room, Train ID 121 continued in service towards Medical Center Station. This incident was not identified and reported as an Improper RWP event by the involved parties. SAFE became aware of the incident at approximately 21:01 hours through a posting on social media. There were no injuries or property damage associated with this incident.

Based on Audio Recording System (ARS) playback, the Train Operator of Train ID 120 made requests to the Radio RTC for permission to drop off the PLNT personnel. The Operator of Train ID 120 requests permission to drop off the PLNT personnel at approximately 12:14 hours and 12:16 hours. At approximately 12:14 hours, permission was granted from the Radio RTC. At approximately 12:17 hours, the Train Operator of Train ID 120 notified the Radio RTC that the train was keyed down, and performed a hand-held radio check. At approximately 12:17 hours, the Radio RTC gave permission to the PLNT Units to exit the train to a place of safety under Foul Time. At approximately 12:18 hours, the Train Operator of Train ID 121 contacted ROCC at Grosvenor-Strathmore Station, track 1 reporting no speed commands. The Radio RTC instructed the Train Operator of Train ID 121 to stand by, then attempted to contact the PLNT Units. At approximately 12:19 hours, The Train Operator of Train ID 120 informed ROCC of communication problems with the handheld radio. The Radio RTC then attempted to contact the PLNT Units.

At approximately 12:20 hours, PLNT Units reported to the Radio RTC that they were alighting the train. The Radio RTC instructed the Train Operator of Train ID 120 to verify that the PLNT Units were in a place of safety, then to key up and continue down the line. At approximately 12:21 hours, the Train Operator of Train ID 120 reported to the Radio RTC that the PLNT Units were in a place of safety. The Radio RTC then gave permission to the Train Operator of Train ID 120 to key up and continue.

At approximately 12:22 hours, the PLNT Roadway Worker In Charge (RWIC) contacted the Radio RTC to confirm that they were clear of the roadway and that they were experiencing low radio signal. Less than one minute later, the Train Operator of Train ID 121 reported to the Radio RTC that personnel were visible on the roadway. The ROCC RTC advised PLNT personnel to return to the room and advised the operator of ID 121 to continue.

Analysis of data collected from systems of record and the results of interviews with staff, indicate that human factors failures and radio communication issues occurred in this incident. Upon arriving to CM A1 510+00, the Student RTC was not able to engage communication with the PLNT Units alighting the train. Next, the Buttons RTC took over radio communications and

attempted to engage in communications with the PLNT Units, however, positive communications were not established. The intermittent communication led the Buttons RTC to engage with the Train Operator of Train ID 120 to verify that the PLNT Units were safely inside the DPS and clear of the roadway. This action was a deviation from established procedures detailed in MSRP Section 5 – RWP, 5.13.5 Foul Time Protection; *ROCC confirms over the radio to the Requestor that FT has been relinquished at their stated location and advises the Requestor to be on the lookout for rail vehicle movement.*

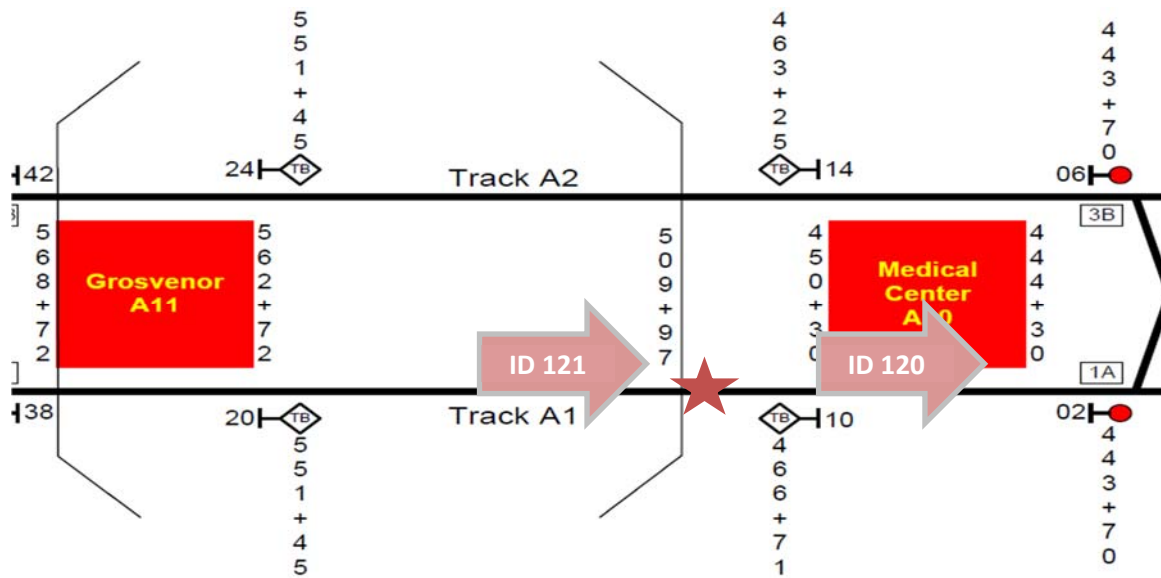
Further analysis of data collected revealed that Train ID 121 lost speed commands and the Train Operator was instructed by the Student RTC to, “stand-by” at Grosvenor-Strathmore Station, track 1 while attempting to communicate with the PLNT Units aboard Train ID 120, which was stopped ahead of their location. Following the departure of Train ID 120, Train ID 121 departed Grosvenor-Strathmore Station without receiving permission from the Radio RTC to continue towards Medical Center Station. This action was a deviation from procedures detailed in Metrorail Safety Rules and Procedures Handbook (MSRP) Section 3 – Operating Rules, 3.79.1; *Upon losing speed commands on the platform, the operator may NOT adjust the train in the same direction of traffic to service the station without contacting ROCC or Terminal Supervisor for permission. After servicing the station, the operator must keep their train doors open, until such time when the operator has received speed commands, a proper signal aspect (Lunar or Flashing Lunar), along with contacting ROCC or Terminal Supervisor for permission to leave and an absolute block for the move if speed commands do not return.* After leaving Grosvenor-Strathmore Station, the Train Operator of Train ID 121 reported observing the PLNT Units on the roadway, stopped the train near the door to the DPS, then reported that the PLNT Units were inside the DPS room.

The probable cause of the Improper Roadway Worker Protection (RWP) event was a decision-making error by the involved parties to alight the train despite poor radio communications. The RTC did not have to allow the PLNT Units drop off at the DPS once poor radio communications were observed but did so anyway. WMATA's contradicting procedure of “modified foul time” was a contributory factor that led to additional human factor procedural failures, including deviation from the established Foul Time procedures. A contributing factor was the length of time between when Train ID 120 stopped and the PLNT Units alighted the train. This window of time led to a buildup of trains in the area, resulting in the Button RTC rushing the process and taking over communications on the radio from the Radio RTC resulting in the use of poor judgement by not following the established procedures and training after being notified by the Train Operator of the communication issues at the drop-off location before the PLNT Units alighted into the DPS.

Incident Site

Rail Right-of-Way at Drainage Pumping Station located between Grosvenor-Strathmore Station and Medical Center Station. Approximate Chain Marker - A1 510+98.

Field Sketch/Schematics



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

Upon receiving notification of the Improper Roadway Worker Protection between Grosvenor-Strathmore and Medical Center Stations on June 23, 2021, 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 facts and data associated with the incident.

The investigative methodologies included the following:

- Site Assessment performed through Document Review
- Formal Interviews – Eight individuals were interviewed as part of this investigation. Interviews included persons directly involved in the event. The following individuals were interviewed:
 - (2) Train Operators
 - (3) PLNT Personnel
 - (3) ROCC RTCs
- Informal Interviews – Collected through conversations with individuals during the investigation to provide background and supporting information.
- 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)
 - Rail Operations Control Center (ROCC) Procedures Manual
 - 30-Day work history
 - Certifications
 - National Oceanic Atmospheric Administration (NOAA) data
 - Office of Systems Maintenance Communication Section (COMM)
- System Data Recording Review – A collection of information contained in Metro Data Recording Systems. This data includes:
 - Audio Recording System (ARS) playback include OPS 1 Radio
 - Advanced Information Management System (AIMS) playback

Investigation

On Wednesday, June 23, 2021, PLNT Units contacted ROCC from Grosvenor-Strathmore Station, track 1 at approximately 12:08 hours and requested a train drop off at CM A1 510+98 to perform work inside the DPS. The Ops 1 Console was staffed by a Student Radio RTC, along with a certified Radio RTC and a Button RTC. The Student Radio RTC instructed the PLNT Units to make their request with the next train. At 12:14 hours, the Train Operator of Train ID 120 contacted ROCC to request permission to drop off PLNT Units at CM A1 510+00, two times within one minute. At 12:16 hours, the Train Operator of Train ID 120 made a third request to drop off PLNT Units at CM A1 510+00. The Student Radio RTC granted permission to the Train Operator to drop off the PLNT Units, key down and perform a radio check. Upon arriving to the DPS at approximately 12:17 hours, the Train Operator notified ROCC that the train was keyed down and requested a radio check, two times within one minute. The Student Radio RTC acknowledged the radio check as loud and clear and gave permission to the PLNT Units to exit the train to a place of safety, and contact ROCC when the train leaves their location. At approximately 12:18 hours, the Train Operator of Train 120 reported to ROCC that the train was keyed down and requested a radio check. The Student Radio RTC replied, “good copy” and attempted to contact the PLNT Units. The Train Operator of Train ID 121 contacts ROCC from Grosvenor-Strathmore Station, track 1 and reported no speed readouts. The Student Radio RTC instructs the Train Operator of Train ID 121 to standby. The Train Operator of Train ID 121 responds copy standby. The Train Operator of Train 120 reported to ROCC that the train was keyed down and requested a radio check. The Student Radio RTC, attempted to contact the PLNT Units. At 12:19 hours, The Train Operator of Train 120 reports to ROCC that there is no radio communication.

At approximately 12:19 hours, the Button RTC attempted to contact the PLNT Units. The PLNT Units acknowledged the Button RTC. The Button RTC requested that the PLNT Units confirm if they were in a place of safety. The PLNT Units responded that they were at CM A1 510+98. The Button Radio RTC responded, “good copy you’re safely in the room in a place of safety so I can get the train moving.” At approximately 12:20 hours, the PLNT Units responded they are still aboard the train waiting for the drop off. The Button Radio RTC responded, Train ID 120 verify that personnel are in a place of safety, key up and continue. The Train Operator of Train ID 120 informed the Button RTC that the PLNT Units were exiting the train. The Button RTC responds, advise ROCC when they are in a place of safety. The Train Operator of Train ID 120 acknowledged to advise when the PLNT Units were clear, in a place of safety inside the room. At approximately 12:21 hours, the Train Operator of Train ID 120 notified ROCC that the PLNT Units were safely in the room. The Button RTC acknowledged and gave permission to key up and continue.

At 12:22 hours, the PLNT Units contacted ROCC. The Button RTC responds, standby. The PLNT Units reported that they were clear of the roadway and in the DPS, having communication issues and will contact ROCC for a train pick up. The Student Radio RTC responds, copy. The Train Operator of Train 121 contacted ROCC to report personnel visible on the roadway. At 12:23 hours, the Student Radio RTC attempted to contact the PLNT Units. The Train Operator of Train 121 reported that the personnel went back in the DPS and the personnel were on the roadway. The Button RTC responded that the PLNT Units cannot exit the room once they call clear of the roadway.

Chronological Event Timeline

A review of ARS playback, i.e., phone and Ops 1 radio communications, revealed the following timeline:

Time	Description
12:06:59 hours	<u>PLNT Unit #1</u> : Contacted ROCC.
12:07:12 hours	ROCC Radio RTC: Acknowledged the PLNT Unit. <u>PLNT Unit #1</u> : Requested a train drop off from Grosvenor Station to CM A1 510+98, to perform work in the DPS Room with Units #2 and #3.
12:07:58 hours	<u>ROCC Radio RTC</u> : Acknowledged and inquired what kind of work will be performed.
12:08:11 hours	<u>PLNT Unit #1</u> : Requested a train drop off from Grosvenor Station to CM A1 510+98, to perform work in the DPS Room. ROCC Radio RTC: Acknowledged the request for a train drop off from Grosvenor Station to CM A1 510+98, to perform work in the DPS Room with a party of 3.
12:09:09 hours	<u>PLNT Unit #1</u> : Acknowledged and confirmed the transmission from ROCC RTC.
12:09:29 hours	<u>ROCC Radio RTC</u> : Instructed PLNT Unit #1 to make the request with the next train.
12:09:36 hours	<u>PLNT Unit #1</u> : Acknowledged and confirmed to make a request with the next train.
12:14:23 hours	<u>Train ID 120 Train Operator</u> : Contacted ROCC for permission to drop off PLNT Units at CM A1 510+00.
12:14:55 hours	<u>Train ID 120 Train Operator</u> : Contacted ROCC for permission to drop off PLNT Units at CM A1 510+00.
12:16:07 hours	<u>Train ID 120 Train Operator</u> : Contacted ROCC for permission to drop off PLNT Units at CM A1 510+00.
12:16:07 hours	<u>ROCC Radio RTC</u> : Acknowledged, gave permission to Train ID 120 to drop off PLNT Units, key down and give a radio check. <u>Train ID 120 Train Operator</u> : Acknowledged.
12:17:10 hours	<u>Train ID 120 Train Operator</u> : Contacted ROCC, advised that the train was keyed down at A1 510+00 and radio check.

Time	Description
12:17:22 hours	<u>ROCC Radio RTC</u> : Acknowledged, radio check was loud and clear.
12:17:34 hours	<u>Train ID 120 Train Operator</u> : Contacted ROCC, advised that the train was keyed down at A1 510+00 and radio check.
12:17:48 hours	<u>ROCC Radio RTC</u> : Instructed Unit #1 to exit the train, verify clearance and when the train has cleared their area, contact ROCC.
12:18:02 hours	<u>ROCC Radio RTC</u> : Instructed Unit #1 and crew to be in a place of safety.
12:18:12 hours	<u>Train ID 120 Train Operator</u> : Contacted ROCC, advised that the train was keyed down at A1 510+00 and radio check. <u>ROCC Radio RTC</u> : Responded, good copy and request Unit #1 to contact ROCC. <u>Train ID 121 Train Operator</u> : Contacted ROCC, advised that they were located at Grosvenor Station, track 1 without speed readouts.
12:18:38 hours	<u>ROCC Radio RTC</u> : Instructed Train ID 121 to stand by. <u>Train ID 121 Train Operator</u> : Acknowledged.
12:18:49 hours	<u>Train ID 120 Train Operator</u> : Contacted ROCC, advised that the train was keyed down at A1 510+00 and radio check. <u>ROCC Radio RTC</u> : Responded, I copy you; I'm trying to contact the Unit aboard the train and request Unit #1 to contact ROCC.
12:19:04 hours	<u>Train ID 120 Train Operator</u> : Contacted ROCC and advised that there was not radio communication.
12:19:25 hours	<u>ROCC Radio RTC</u> : Requested, Unit #1 to contact ROCC.
12:19:39 hours	<u>PLNT Unit #1</u> : Contacted ROCC. <u>ROCC Radio RTC</u> : Responded, confirm you're in a place of safety.
12:19:54 hours	<u>PLNT Unit #1</u> : Responded, 510+98. <u>ROCC Radio RTC</u> : Responded, good copy; safely in the room in a place of safety so I can get the train moving.
12:20:05 hours	<u>PLNT Unit #1</u> : Responded, we are still aboard the train. <u>ROCC Radio RTC</u> : Responded, Train 120 verify personnel are in a place of safety; key up and continue.
12:20:19 hours	<u>Train ID 120 Train Operator</u> : Reported, the Units are exiting the train. <u>ROCC Radio RTC</u> : Responded, good copy; advise when the Units are in a place of safety. <u>Train ID 120 Train Operator</u> : Acknowledged.
12:21:14 hours	<u>Train ID 120 Train Operator</u> : Reported, Units are safely in the room. <u>ROCC Radio RTC</u> : Responded, Train ID 120 you have permission to key and continue.
12:21:31 hours	<u>Train ID 120 Train Operator</u> : Acknowledged, key up and continue.
12:22:08 hours	<u>PLNT Unit #1</u> : Contacted ROCC. <u>ROCC Radio RTC</u> : Instructed Unit #1 to standby. <u>PLNT Unit #1</u> : Responded, clear of the roadway, inside the DPS, poor communication and will contact ROCC at a later time for a train pick up. <u>ROCC Radio RTC</u> : Acknowledged.
12:22:52 hours	<u>PLNT Unit #1</u> : Responded, clear of the roadway, inside the DPS, poor communication and will contact ROCC at a later time for a train pick up. <u>ROCC Radio RTC</u> : Acknowledged.

Time	Description
	<u>Train ID 121 Train Operator</u> : Contacted ROCC and advised that there are personnel visible on the roadway.
12:23:28 hours	<u>ROCC Radio RTC</u> : Request Unit #1 to contact ROCC.
12:23:39 hours	<u>ROCC Radio RTC</u> : Contacted, Train ID 121 inquired if they saw personnel on the roadway. <u>Train ID 121 Train Operator</u> : Responded, they went back into the room; they were on the roadway when I came around the corner.
12:23:56 hours	<u>ROCC Radio RTC</u> : Request Unit #1 to contact ROCC.

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

Advanced Information Management System (AIMS)

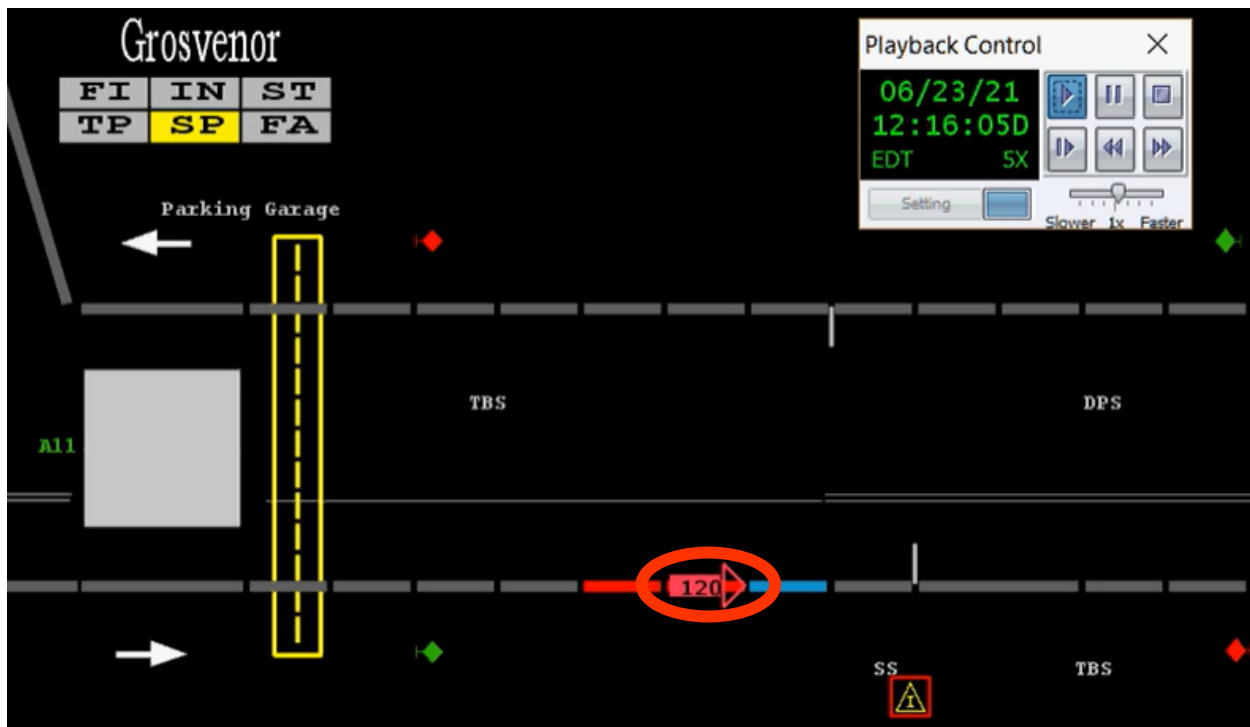


Figure 1 - Based on the AIMS, at 12:16:05 hours, Train ID 120 was stopped to align PLNT Units at DPS, CM A1 510+98.



Figure 2 - Based on the AIMS, at 12:23:00 hours, Train ID 121 was stopped at DPS, CM A1 510+98.

Closed-Circuit Television (CCTV)



Figure 3 - Based on the CCTV, Train ID 121 was stopped at DPS, CM A1 510+98.

Interview Findings

Based on the investigation launched into the Grosvenor-Strathmore Station Improper RWP event, SAFE conducted eight virtual interviews, including the investigation team and relevant Metro management and members of the WMSC. The following key findings associated with this event, as follows:

Train Operator of ID 120

The Train Operator of Train ID 120 stated that they heard the PLNT personnel contact ROCC and requested a train drop off. The Train Operator reported that the PLNT personnel boarded their train and requested to be dropped off at the DPS room. The Train Operator reported taking the PLNT personnel and the personnel exited the train. The Train Operation reported that the RTC asked if the PLNT personnel were in a place of safety and instructed the Train Operator to key up and continue on. The Train Operator reported that once they verified everything, they followed the instructions of the RTC. That was my only encounter with the personnel. I don't have anything else to do with the incident. The Train Operator reported observing the PLNT personnel trying to contact ROCC and that area was a bad radio communication spot. The Train Operator reported that the PLNT personnel were located behind them inside, but towards the rear of the rail car. The Train Operator reported they were located in the front of the train in the operator's cab and reported no radio communication issues with ROCC. The Train Operator reported that they observed the PLNT personnel exit the train, enter the DPS room and the personnel were clear of the roadway in a place of safety before moving the train.

Train Operator of ID 121

The Train Operator of Train ID 121 stated that they are currently working out of the Shady Grove Division. At the time of the incident, the Train Operator was monitoring the radio and heard that Train ID 120 was instructed to drop off PLNT Units. The Train Operator anticipated that it would take to some time to drop off the PLNT Units and they adjusted accordingly. The Train Operator of Train ID 121 heard the instructions that were given to Train ID 120 relating to Modified Foul Time. The Train Operator of Train ID 121 heard that there was not clear communication with the PLNT Units. The Train Operator of Train ID 121 heard ROCC communicating directly with the Train ID 120 to transmit communication to the PLNT Unit and to ensure that the PLNT Units were off of the roadway. The Train Operator of Train ID 121 heard that Train ID 120 reported that the PLNT Units were in the room, off of the roadway. The Train Operator of Train ID 121 heard ROCC give permission to Train ID 120 to key up and continue. After the Train Operator of Train ID 121 heard the communication that the PLNT Units were clear of the roadway, they continued to leave from Grosvenor-Strathmore Station. As the Train Operator of Train ID 121 traveled around a curve they could see a person outside of the opening of the DPS room door, the door was closed, and the person was standing on the catwalk. The Train Operator of Train ID 121 placed the train in a B5 breaking mode and stopped before reaching the DPS room. The Train Operator of Train ID 121 observed the person going back into the DPS room. The Train Operator of Train ID 121 immediately contacted ROCC and reported that person was visible on the roadway.

PLNT RWIC (Unit #1)

PLNT Unit #1 stated that the PLNT Units left from Carmen Turner Facility at 11:00 hours to go to Grosvenor-Strathmore Station. Once the PLNT Units arrived at Grosvenor-Strathmore Station they contacted ROCC to request a train drop off to CM 510+98, the location of the DPS. The PLNT Units received permission to request a drop off with next train operator. The PLNT Units

boarded the train and were dropped off at the requested location. Once the PLNT Units exited the train, they notified ROCC immediately by handheld radio, but there was bad radio reception. While trying to contact ROCC, the PLNT Unit took one step outside to the catwalk area of the DPS in an effort to gain better radio communication. After notifying ROCC that they were clear of the roadway, they immediately went back into the DPS to start work.

PLNT Unit #2

PLNT Unit #2 stated that he and his work crew were scheduled to perform work at the DPS and one of the crew members requested a train drop off at Grosvenor-Strathmore Station to the DPS room. The Train Operator stopped the train, they disembarked and entered the room. They were in the room when the train left. They began to perform their work. When the work crew was done, one of the crew members requested a train pick up. The work crew safely boarded the train and headed towards Medical Center Station.

PLNT Unit #3

PLNT Unit #3 stated that they were informed of the incident one day after to incident had taken place. The Industrial Control Technician exited the train and began to arrange their tools. The Industrial Control Technician remembered that one of the crew members was struggling with receiving a radio signal to communicate with ROCC.

RTC Radio Controller Trainer (RTC #1)

The RTC Radio Controller Trainer (RTC #1) stated they overheard PLNT maintenance request permission to access the DPS room at outside of Grosvenor-Strathmore Station. PLNT Units were instructed to make their request with Train ID 120. The Train Operator dropped off the PLNT Units at the chain marker. The RTC reported that they were not sure if the PLNT Units cleared before the Train Operator keyed up and the train continued on. The following Train ID 121 reported that personnel were still on the roadway and at the time that's when the person on the radio went back to Train ID 121, who stated that they did see the personnel standing by and that they continued on. The RTC confirmed that they were training a student during that time. The RTC stated, the student was communicating initially and then the other controller stepped in to take over on the radio. The RTC confirmed that they were assigned as the radio controller. The RTC stated that during the incident they were completing an evaluation of the student's performance and asked their partner to assist. The RTC stated that they are comfortable with training the new RTCs and feels that if the Controller feels comfortable and can multitask with completing paperwork while performing radio RTC duties they should.

RTC Radio Controller Student (RTC #2)

The RTC Student Controller (RTC #2) stated that they vaguely remembered the event. The Student RTC remembered calling a Unit that wouldn't answer and another RTC taking over the radio communications. The Student RTC was asked if they remembered Train ID 121 reporting personnel on the roadway? The Student RTC replied yes and vaguely. The Student RTC was asked if they thought this incident would be considered a major event? The Student RTC replied yes and the workers requested to be out there. The Student RTC continued that this is the first time that they were informed about the event and no one had questioned them about it before, they were unsure of what was going on and about what happened that day. The Student RTC questioned if anyone was hurt? The Student RTC was asked if they were familiar with accessing the roadway and the procedures used to access the roadway. The Student RTC confirmed that they were Train Operator in the past and would stop and contact ROCC to report that someone

unauthorized was on the roadway. The Student RTC was asked what actions should be taken as an RTC if you come across a situation with someone on the roadway. The Student RTC replied that the train operator would be instructed to stop the train and try to determine if there are unauthorized people on the roadway. The Student RTC explained that during a safety violation event they would go to the Superintendent or Assistant Superintendent. The Student RTC was not sure and could not remember if the proper procedures were followed to notify the proper Supervision of the event. The Student RTC mentioned that their training is going fine. The Student RTC was training in the control center for 10 weeks and has no issues with informing management of any issues. The Student RTC mentioned that the Buttons RTC took over because they wanted to be more assertive. The Student RTC was reminded that the interview was necessary to assist with the investigation. The Student RTC mentioned that the problem was likely caused by poor radio communication.

RTC Buttons Controller (RTC #3)

The RTC Buttons Controller (RTC #3) stated the PLNT Unit requested to be dropped off and was successfully in the room. The RTC stated that Train ID 121 contacted and reported personnel on the roadway. The RTC stated that we tried to reach the PLNT personnel and they did not respond. Train ID 121 reported the personnel went back into the room. The RTC stated that we continued to try to get communication and by the time they did Train ID 121 had continued on. The RTC stated that Train ID 123 went through area at restricted to see if anyone was on the roadway, nothing was reported. When questioned, the RTC was uncertain of the exact chain marker for the drop off. The RTC mentioned that the area was on the cusp of being in a foul time area, near the portal. The RTC reviewed the procedure for dropping off personnel. The RTC remembered radio communication issues and that the personnel were safely in the room even if all of the steps weren't followed properly. The RTC did not remember if the train moved before the personnel called clear in a place of safety. The RTC mentioned the trains were running on a 6-minute headway. The RTC described that the trains behind the drop off trains are usually spaced apart and if there becomes a time where the trains are too close, they would hold the trains, if necessary. The RTC did not remember if the trains were held in this incident. The RTC actions after the incident were to try and contact the Units. The RTC stated that Train ID 121 was stopped and was not given permission to continue, they continued on their own. Train ID 123 made sure the tracks were clear and did not report any personnel on the roadway. The RTC reiterated that Train ID 121 was not told to stop, they stopped on their own and reported personnel on the roadway. The RTC reached out the PLNT Unit and Train ID 121 reported seeing the personnel going back into the DPS room and they continued on; they were not given permission to continue on but the RTC did not tell them to stop. The RTC mentioned that if someone reports personnel on the roadway everyone should be on the same page to know what is going on, where the personnel are and if they are clear. The train operators have eyes in field, they felt it was safe to continue on with the personnel going back into the room. The RTC stated they would have made sure everything had been done properly, and some things are outside of their control. The RTC mentioned the Radio Controller was with a trainee and communication was "iffy" when getting the personnel inside the room. There was no reason why the event was not recorded, the Radio Controller called the PLNT desk due to the poor communication. When the PLNT Unit confirmed that they were in the room, the RTC considered the situation over with. The RTC confirmed that they were in contact with Train ID 121, 123 and the PLNT crew. The RTC mentioned that they stepped in from the Buttons Controller to cover for the Radio RTC because they were completing evaluations. The RTC confirmed that they did not review any information relating to this incident. The RTC was reminded of the order of train id's and reviewed the procedures for dropping off personnel on the roadway, hot spot locations and foul time requirements. The RTC explained that they were not able to get communication with the PLNT Unit and they received the

confirmation from the Train Operator. The RTC mentioned that they feel good about being a Controller.

Findings

- Multiple attempts were made by the Radio RTC to establish positive radio communication with the PLNT Units onboard Train ID 120.
- Train Operator of Train ID 120 reported poor radio communication prior to the PLNT personnel alighting the train.
- Established Foul Time Procedures were not followed related to a train drop-off. Radio RTC accepted the Train Operator's report of PLNT Units in a place of safety as being safe to move Train ID 120.
- PLNT Units exited the DPS to establish radio communications and confirm that they were relinquishing Foul Time.

Weather

At the time of the incident, NOAA recorded the temperature at 78° F. Based on findings, SAFE has concluded that weather was not a contributing factor in this incident (Weather source: NOAA – Location: Bethesda, MD.)

Human Factors

Fatigue

Based on SAFE's interview questions related to Fatigue Factors and a review of all employees' (*with the exception of Train Operator #2*) 7-day work history. SAFE determined, the employees' 7-day work schedule leading up to the incident was compliant with WMATA'S Policy/Instruction 10.6/1 Hours of Service Limitations for Prevention of Fatigue. It did not present a risk of impairment due to fatigue.

Signs and Symptoms of Fatigue

The incident data was evaluated, and no signs or symptoms of fatigue were detected from the available data. All employees (*with the exception of Train Operator #2*) reported feeling fully alert at the time of the incident. The employees' reported experiencing no symptoms of fatigue in the time leading up to the incident.

Radio RTC Student

We evaluated conditions at the time of the incident to distinguish whether evidence of fatigue was present. No evidence of fatigue was indicated by the available data. Video of the incident was reviewed for behaviors suggesting fatigue. No evidence of fatigue was evident from the video. The Controller reported feeling Fully Alert at the time of the incident. The Employee reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

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

Train Operator #2

Incident data was evaluated for fatigue risk factors. Although the employee reported a variable sleep schedule in the days leading up to the incident, all of the employee's shifts in the weeks leading up to the incident started in the daytime. No significant risk of fatigue was identified based on the available data. The incident time of day did not suggest an increased risk of fatigue-related impairment. The employee reported bed and wake times that indicated that they slept for 8 hours and were awake for 8.3 hours at the time of the incident. Based on the employee's work schedule, the off-duty period preceding the incident was 18.6 hours long, which provides an opportunity for 7-9 hours of sleep. The employee reported having no issues with sleep and usually getting about 8 hours of sleep on workdays.

Post-Incident Toxicology Testing

The Improper RWP event was discovered approximately 8.5 hours after the event time; post-incident testing was outside of the allowed window for employee alcohol testing. ROCC and TRST Management did not transport their personnel for post-incident drug testing after being informed of the event within the 32 hours of the testing window. Therefore, there were no Post-Incident Toxicology Testing completed for this event.

Mitigations Taken to Prevent Recurrence

- The Office of System Maintenance Communication Section (COMM) was dispatched to assess the radio communications deficiencies at the DPS located at CM A1 510+98. The responding crew identified solutions to address the deficiencies and completed work to correct the condition. Please refer to the COMM section of this report to review the assessment and corrective actions to prevent recurrence.
- ROCC management issued a Lessons Learned document that reviewed the incident and highlighted the importance of identifying Improper RWP events, establishing positive communications with roadway personnel, and immediately reporting incidents. Personnel completed electronic review and signature process. The Lessons Learned also encouraged personnel to use ROCC's Safety Management System reporting form to identify potential hazards, such as communications deficiencies, before incidents occur.
- Following the incident, PLNT personnel evaluated other DPS locations and maintenance rooms to verify communications. Four locations were identified that required support to correct insufficient radio coverage within the rooms, which was requested. As an interim mitigation, signage was placed indicating that personnel are permitted to use cellular phones to contact ROCC prior to leaving the room and to request train pickup.
- In late June, PLNT implemented a requirement for supervisors to perform two quality/compliance checks of work crews per week until further notice. One of the quality/compliance checks must include roadway-based work.
- On August 18, 2021, SAFE facilitated a Corrective Action Discussion meeting with leadership groups from the Offices involved in the incident, including PLNT, ROCC, RTRA, and COMM. This included a review of the incident, associated SAFE findings, and root causes identified. Representatives shared relevant internal findings and actions taken to date and an update on actions in progress.

Probable Cause Statement

The probable cause of the Improper Roadway Worker Protection (RWP) event was a decision-making error by the involved parties to alight the train despite poor radio communications. This

led to additional human factors failures, including deviation from established Foul Time procedures as noted above. A contributing factor was the length of time between when Train ID 120 stopped and the PLNT Units alighted the train. This window of time led to a buildup of trains in the area, resulting in the Radio RTC to use of poor judgement by not following the established procedures and training after being notified by the Train Operator of the communication issues at the drop-off location before the PLNT Units alighted into the DPS.

SAFE Recommendations/Corrective Actions

The following are the recommendations and corrective actions identified as a result of this investigation. These recommendations and corrective actions are tracked using WMATA's Safety Measurement System Incidents/Accidents (SMS I/A) Module and are verified by SAFE upon completion. The responsible department is identified in the corrective action code. Refer to the SMS I/A module for additional information.

Corrective Action Code	Description	Responsible Party
94321_SAFECAPS_COMM_001	Continue to work with PLNT to resolve identified communications issues at DPS and other identified locations within the WMATA Rail System. Provide documented evaluations and corrective maintenance work orders.	COMM
94321_SAFECAPS_COMM_002	Collaborate with PLNT to perform a larger assessment of the rail system roadway work rooms to identify rooms that do not have adequate radio communication.	COMM
94321_SAFECAPS_PLNT_001	Personnel shall undergo re-training with an emphasis on Radio Communication. Training should reinforce required procedures when unable to contact ROCC.	PLNT
94321_SAFECAPS_PLNT_002	Collaborate with COMM to perform a larger assessment of the rail system roadway work rooms to identify rooms that do not have adequate radio communication.	PLNT
94321_SAFECAPS_RTRA_001	Provide reinstruction to ID 121 Operator with an emphasis on Radio Communication. Training should reinforce ensuring that Train Operators contact ROCC before moving after losing speed commands within platform limits.	RTRA
94321_SAFECAPS_RTRA_002	RTRA employees shall participate in an RWP Stand Down to review recent events and to clarify any confusion on Modified Foul Time.	RTRA
94321_SAFECAPS_ROCC_001	RTC's shall undergo RWP re-training with emphasis on Foul Time procedures.	ROCC

Office of System Maintenance Communication Section (COMM)

The Office of System Maintenance Communication Section (COMM) assessed the site conditions and provided the following:

The DPS room located at CM A1 510+98 is accessed via track only. Upon making entry inside the room the door needs to be closed to be clear of the roadway. Once the door is closed there is no radio signal; personnel are unable to communicate with ROCC. To request to exit the room, personnel must open the door to the DPS room to gain radio reception.

On June 28, 2021 work crews drilled a hole in the wall of the DPS room and tapped the end of the RF cable located at the portal entrance with a tapper feed to install a permanent antenna into the DPS room allowing the use of portable handheld radios. Verified radio checks were conducted and reported as loud and clear inside the DPS room.

Office of Plant Maintenance (PLNT)

The Office of Plant Maintenance System (PLNT) reviewed this event along with assessing the process and procedures of personnel and has provided the following:

Supervisors are now required to perform two quality checks of work crews per week. One of the checks must be of roadway work.

PLNT is currently performing a larger assessment of the rail system roadway work rooms to identify rooms that do not have adequate radio communication. The findings will be provided to SAFE and COMM with suggested corrective actions.

Office of Rail Transportation (RTRA)

The Office of Rail Transportation (RTRA) reviewed this event and has provided the following:

The Train Operator identified in this event will complete the recommended reinstruction before returning to train operation.

Rail Operation Control Center (ROCC)

The Rail Operations Control Center (ROCC) reviewed this event and has provided the following:

The RTC's identified in this event have completed the recommended re-training and Lessons Learned were developed and distributed.

Appendices

Appendix A – Interview Summaries

RTRA

Train Operator #1

The Train Operator is a WMATA employee with 11 years of service and 2 total years of experience as a Train Operator. The Train Operator started as a Bus Operator. The Train Operator's last rail certification was October 2019, and their Roadway Worker Protection Level 2 certification expires April 2022.

The Train Operator of Train ID 120 stated that they heard the PLNT personnel contact ROCC and requested a train drop off. The Train Operator reported that the PLNT personnel boarded their train and requested to be dropped off at the DPS room. The Train Operator reported taking the PLNT personnel and the personnel exited the train. The Train Operator reported that the RTC asked if the PLNT personnel were in a place of safety and instructed the Train Operator to key up and continue on. The Train Operator reported that once they verified everything, they followed the instructions of the RTC. That was my only encounter with the personnel. I don't have anything else to do with the incident. The Train Operator reported observing the PLNT personnel trying to contact ROCC and that area was a bad radio communication spot. The Train Operator reported that the PLNT personnel were located behind them inside, but towards the rear of the rail car. The Train Operator reported they were located in the front of the train in the operator's cab and reported no radio communication issues with ROCC. The Train Operator reported that they observed the PLNT personnel exit the train, enter the DPS room and the personnel were clear of the roadway in a place of safety before moving the train.

RTRA

Train Operator #2

The Train Operator is a WMATA employee with 23 years of service and six total years of experience as a Train Operator. The Train Operator started as a Bus Operator. The Train Operator's last rail certification was December 2019, and their Roadway Worker Protection Level 2 certification expires November 2021.

The Train Operator of Train ID 121 stated that they are currently working out of the Shady Grove Division. At the time of the incident, the Train Operator was monitoring the radio and heard that Train ID 120 was instructed to drop off PLNT Units. The Train Operator anticipated that it would take to some time to drop off the PLNT Units and they adjusted accordingly. The Train Operator of Train ID 121 heard the instructions that were given to Train ID 120 relating to Modified Foul Time. The Train Operator of Train ID 121 heard that there was not clear communication with the PLNT Units. The Train Operator of Train ID 121 heard ROCC communicating directly with the Train ID 120 to transmit communication to the PLNT Unit and to ensure that the PLNT Units were off of the roadway. The Train Operator of Train ID 121 heard that Train ID 120 reported that the PLNT Units were in the room, off of the roadway. The Train Operator of Train ID 121 heard ROCC give permission to Train ID 120 to key up and continue. After the Train Operator of Train ID 121 heard the communication that the PLNT Units were clear of the roadway, they continued to leave from Grosvenor-Strathmore Station. As the Train Operator of Train ID 121 traveled around a curve they could see a person outside of the opening of the DPS room door, the door was closed, and the person was standing on the catwalk. The Train Operator of Train ID 121 placed the train in a B5 breaking mode and stopped before reaching the DPS room. The Train Operator of Train

ID 121 observed the person going back into the DPS room. The Train Operator of Train ID 121 immediately contacted ROCC and reported that person was visible on the roadway.

PLNT Industrial Control Technician #1

PLNT Industrial Control Technician (ICT) #1 is a WMATA employee with four years of service. They served one year as an Automatic Train Control Technician and three years as an Industrial Control Technician. The Industrial Control Technician holds a Roadway Worker Protection (RWP) Level 2 certification that expires in September 2021.

During the virtual interview, the PLNT Unit #1 stated that the PLNT Units left from Carmen Turner Facility at 11:00 hours to go to Grosvenor-Strathmore Station. Once the PLNT Units arrived at Grosvenor-Strathmore Station they contacted ROCC to request a train drop off to CM 510+98, the location of the DPS. The PLNT Units received permission to request a drop off with next train operator. The PLNT Units boarded the train and was dropped off at the requested location. Once the PLNT Units exited the train, they notified ROCC immediately by handheld radio, but there was bad radio reception. While trying to contact ROCC, the PLNT Unit took one step outside to the catwalk area of the DPS in an effort to gain better radio communication. After notifying ROCC that they were clear of the roadway, they immediately went back into the DPS to start work.

PLNT Industrial Control Technician #2

PLNT Unit #2 is a WMATA employee with 3 years of service. They served three years as a General Equipment Mechanic and three months as an Industrial Control Technician. The Industrial Control Technician holds a Roadway Worker Protection (RWP) Level 2 certification that expires in June 2022.

PLNT Unit #2 stated that he and his work crew were scheduled to perform work at the DPS and one of the crew members requested a train drop off at Grosvenor-Strathmore Station to the DPS room. The Train Operator stopped the train, they disembarked and entered the room. They were in the room when the train left. They began to perform their work. When the work crew was done, one of the crew members requested a train pick up. The work crew safely boarded the train and headed towards Medical Center Station.

PLNT Industrial Control Technician #3

PLNT Unit #3 is a WMATA employee with 7 years of service as an Industrial Control Technician. The Industrial Control Technician holds a Roadway Worker Protection (RWP) Level 2 certification that expires in February 2022.

PLNT Unit #3 stated that they were informed of the incident one day after to incident had taken place. The Industrial Control Technician exited the train and began to arrange their tools. The Industrial Control Technician remembered that one of the crew members was struggling with receiving a radio signal to communicate with ROCC.

RTC

Rail Traffic Controller #1

Rail Traffic Controller (RTC) #1 is a WMATA employee with nine years of service and 3.5 years as an RTC. The RTC holds a Roadway Worker Protection (RWP) Level 2 certification that expires in March 2022.

The RTC Radio Controller Trainer (RTC #1) stated they overheard PLNT maintenance request permission to access the DPS room at outside of Grosvenor-Strathmore Station. PLNT Units were instructed to make their request with Train ID 120. The Train Operator dropped off the PLNT Units at the chain marker. The RTC reported that they were not sure if the PLNT Units cleared before the Train Operator keyed up and the train continued on. The following Train ID 121 reported that personnel were still on the roadway and at the time that's when the person on the radio went back to Train ID 121, who stated that they did see the personnel standing by and that they continued on. The RTC confirmed that they were training a student during that time. The RTC stated, the student was communicating initially and then the other controller stepped in to take over on the radio. The RTC confirmed that they were assigned as the radio controller. The RTC stated that during the incident they were completing an evaluation of the student's performance and asked their partner to assist. The RTC stated that they are comfortable with training the new RTCs and feels that if the Controller feels comfortable and can multitask with completing paperwork while performing radio RTC duties they should.

RTC

Rail Traffic Controller (Student) #2

Rail Traffic Controller Student (RTC) #2 is a WMATA employee with seventeen years of service and is currently in training as an RTC.

The RTC Student Controller (RTC #2) stated that they vaguely remembered the event. The Student RTC remembered calling a Unit that wouldn't answer and another RTC taking over the radio communications. The Student RTC was asked if they remembered Train ID 121 reporting personnel on the roadway? The Student RTC replied yes and vaguely. The Student RTC was asked if they thought this incident would be considered a major event? The Student RTC replied yes and the workers requested to be out there. The Student RTC continued that this is the first time that they were informed about the event and no one had questioned them about it before, they were unsure of what was going on and about what happened that day. The Student RTC questioned if anyone was hurt? The Student RTC was asked if they were familiar with accessing the roadway and the procedures used to access the roadway. The Student RTC confirmed that they were Train Operator in the past and would stop and contact ROCC to report that someone unauthorized was on the roadway. The Student RTC was asked what actions should be taken as an RTC if you come across a situation with someone on the roadway. The Student RTC replied that the train operator would be instructed to stop the train and try to determine if there are unauthorized people on the roadway. The Student RTC explained that during a safety violation event they would go to the Superintendent or Assistant Superintendent. The Student RTC was not sure and could not remember if the proper procedures were followed to notify the proper Supervision of the event. The Student RTC mentioned that their training is going fine. The Student RTC was training in the control center for 10 weeks and has no issues with informing management of any issues. The Student RTC mentioned that the Buttons RTC took over because they wanted to be more assertive. The Student RTC was reminded that the interview was necessary to assist with the investigation. The Student RTC mentioned that the problem was likely caused by poor radio communication.

RTC

Rail Traffic Controller #3

Rail Traffic Controller (RTC) #3 is a WMATA employee with 1.5 years of service and experience as an RTC. The RTC holds a Roadway Worker Protection (RWP) Level 4 certification that expires in May 2022.

The RTC Buttons Controller (RTC #3) stated the PLNT Unit requested to be dropped off and was successfully in the room. The RTC stated that Train ID 121 contacted and reported personnel on the roadway. The RTC stated that we tried to reach the PLNT personnel and they did not respond. Train ID 121 reported the personnel went back into the room. The RTC stated that we continued to try to get communication and by the time they did Train ID 121 had continued on. The RTC stated that Train ID 123 went through area at restricted to see if anyone was on the roadway, nothing was reported. When questioned, the RTC was uncertain of the exact chain marker for the drop off. The RTC mentioned that the area was on the cusp of being in a foul time area, near the portal. The RTC reviewed the procedure for dropping off personnel. The RTC remembered radio communication issues and that the personnel were safely in the room even if all of the steps weren't followed properly. The RTC did not remember if the train moved before the personnel called clear in a place of safety. The RTC mentioned the trains were running on a 6-minute headway. The RTC described that the trains behind the drop off trains are usually spaced apart and if there becomes a time where the trains are too close, they would hold the trains, if necessary. The RTC did not remember if the trains were held in this incident. The RTC actions after the incident was to try and contact the Units, the RTC stated that Train ID 121 was stopped and was not given permission to continue, they continued on their own. Train ID 123 made sure the tracks were clear and did not report any personnel on the roadway. The RTC reiterated that Train ID 121 was not told to stop, they stopped on their own and reported personnel on the roadway. The RTC reached out the PLNT Unit and Train ID 121 reported seeing the personnel going back into the DPS room and they continued on; they were not given permission to continue on but the RTC did not tell them to stop. The RTC mentioned that if someone reports personnel on the roadway everyone should be on the same page to know what is going on, where the personnel are and if they are clear. The train operators have eyes in field, they felt it was safe to continue on with the personnel going back into the room. The RTC stated they would have made sure everything had been done properly, and some things are outside of their control. The RTC mentioned the Radio Controller was with a trainee and communication was "iffy" when getting the personnel inside the room. There was no reason why the event was not recorded, the Radio Controller called the PLNT desk due to the poor communication. When the PLNT Unit confirmed that they were in the room, the RTC considered the situation over with. The RTC confirmed that they were in contact with Train ID 121, 123 and the PLNT crew. The RTC mentioned that they stepped in from the Buttons Controller to cover for the Radio RTC because they were completing evaluations. The RTC confirmed that they did not review any information relating to this incident. The RTC was reminded of the order of train id's and reviewed the procedures for dropping off personnel on the roadway, hot spot locations and foul time requirements. The RTC explained that they were not able to get communication with the PLNT Unit and they received the confirmation from the Train Operator. The RTC mentioned that they feel good about being a Controller.

5.13.5 Foul Time Protection



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY METRORAIL SAFETY RULES AND PROCEDURES HANDBOOK

2. The RWIC shall always use FT or greater protection when traversing or working in the Hot Spot areas noted in the Track Access Guide.
3. RWICs shall review the Track Access Guide to determine all Hot Spots contained within their working limits and call out all **RED HOT SPOTS** during the RJSB.
4. When there are **RED HOT SPOTS**, FT protection from ROCC must be obtained prior to moving through the area.

5.13.4 Individual Train Detection (ITD)

A protective measure in which an individual detects approaching rail vehicles and moves to a place of safety before it arrives. All Roadway Workers must use ITD in conjunction with all other forms of RWP. On the Roadway, ITD is not acceptable for personnel as a sole form of RWP.

5.13.5 Foul Time Protection (FT)

A method of RWP in which a qualified Level 2 or Level 4 Roadway Worker requests that ROCC Stop all rail vehicle movement in a specific area for a limited amount of time. FT is used to safely clear a **RED HOT SPOT** area or when additional RWP is required. FT can only be requested by a qualified Level 2 or Level 4 Roadway Worker.



Important: When there are **RED HOT SPOTS**, FT protection from ROCC must be obtained prior to moving through the area.

Mobile Work Crews must use an AMF in conjunction with FT.

FT may be granted to individuals who are RWP level 2 or RWP Level 4 qualified that are accessing rooms along the Roadway, to include vent shafts, who are not engaged in work activities.

Procedures to initiate FT Protection:

1. From a place of safety, the requestor contacts ROCC and requests permission to initiate FT.
 - a. Provide ROCC the track number and location (chain markers or station) for the area requested.
 - b. Provide ROCC the reason for the FT Protection
2. Using the FT checklist, the ROCC controller will:
 - a. Repeat back, word for word, the FT request and advise the requestor and crew to standby and stand clear.
 - b. Cancel all approaching signals to ensure FT area is protected by **RED SIGNALS** (remove automatic signaling, if applicable).
 - c. Establish "Prohibit Exits" in FT area.
 - d. Inform Rail Vehicle Operators approaching the FT area that there is a **RED SIGNAL**. Confirm and acknowledge Train ID, if applicable.
 - e. Establish "Blue Block Traffic" in FT area.
 - f. Establish "Human Form" in FT area.
 - g. Confirm over the radio to the requestor that all protections have been established and which signals have been canceled.
 - h. Requestor must repeat back confirmation that they are aware of chain marker(s), track number, canceled signal(s), and Train ID contacted, if applicable.
 - i. Grant FT to Requestor.



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY METRORAIL SAFETY RULES AND PROCEDURES HANDBOOK

For personnel being dropped off or picked up on the Roadway, only the following FT checklist items shall be required:

1. Repeat the FT request and advise the Requestor and crew to standby and stand clear.
2. Grant FT to the Requestor.



Important: The Rail Vehicle will be held until the personnel are in a place of safety and FT is relinquished.

When the Requestor has determined that FT is no longer necessary, they shall relinquish it through the following process:

1. From a place of safety, the requestor contacts ROCC and states the following:
 - Radio ID
 - They are relinquishing FT at the granted FT location
 - Their current chain marker, station, and/or physical location
2. ROCC confirms over the radio to the Requestor that FT has been relinquished at their stated location and advises the Requestor to be on the lookout for rail vehicle movement.
3. ROCC must document the time that FT was relinquished.



Important: Although WMATA personnel may request FT any time they feel it is warranted to ensure their safety, FT is required for all **RED HOT SPOTS**.

5.13.6 Advanced Mobile Flagging (AMF) – Mobile Work Crew

AMF protection is the use of Watchman/Lookouts assigned to a Mobile Work Crew in conjunction with an additional flagger positioned at the station in advance of the Mobile Work Crews. A Watchman/Lookout must be a minimum of 50 feet in advance of the Mobile Work Crew. The Advance Mobile Flagger (AMF) is an assigned Roadway Worker positioned at the end of a platform (8 car marker or end gate) in the direction of normal travel for Class 1 or 2 Rail Vehicle. RWICs are to use the Need vs. Speed Chart to determine sight distance vs Rail Vehicle speeds to provide Ample Time/Warning. If proper sighting distance cannot be achieved for the work crew to reach a place of safety in Ample Time/Warning, then a higher form of protection (e.g. FT, ETO, or IT) must be used.

Advanced Mobile Flagging Procedures:

1. The RWIC will conduct a RJSB prior to entering the Roadway and assign the AMF(s) and Watchman/Lookout(s).
2. The RWIC will contact ROCC and perform a radio check establishing positive communication.
3. The AMF is required to follow PPE guidelines per the Minimum PPE Standard for On-Track Safety in the MSRPH Section 5 - RWP.
4. In addition to the PPE required, the following equipment is also required when performing the duties of an AMF (reference 5.12.2 of the MSRPH for designated safety equipment and devices for AMF):
 - WMATA Approved Flashing Amber Lantern/E-Flare and Orange Flag
 - WMATA Approved and Certified Working Radio
 - WMATA Approved Air Horn and Whistle
5. Under the direction of the RWIC, the AMF will position themselves at the next station ahead (in the direction the Mobile Crew will be walking). The AMF will take their position at the end of the platform (8 car marker or end gate) in the direction the train is traveling, and on the track the Mobile Work Crew is inspecting.

Section 5 – RWP Rules Ver.1.3

5-37

Approved 12/09/2020

Attachment 1 – Page 2 of 2.

Appendix C – ROCC Lessons Learned Document



Incident Date:
June 23, 2021 (2)

LESSONS LEARNED

Failure to Report and Document RWP Violation

BACKGROUND:

While investigating another incident, SAFE personnel discovered an unreported RWP violation involving personnel on the roadway without permission. The investigation showed that there was no report made of the RWP violation by the controllers to management, nor any documentation indicating that these personnel had been given permission to access the roadway.

On Wednesday, June 23, 2021 at 12:08 hours PLNT personnel standing by at Grosvenor Station requested a train drop-off, in accordance with MSRPH Section 5.19, at the DPS, chain marker (CM) A1 510+98. ROCC informed PLNT personnel to make the request with the next train, which was ID #120. Train #120 picked up the personnel, stopped at CM 510+00, keyed down and attempted to get permission to drop-off personnel at 12:14. Audio recordings indicate that multiple attempts were made by Train #120 to receive permission to drop-off personnel; however, due to communications issues, Train #120 was unable to hear ROCC giving permission for the drop off. Eventually, at 12:20, communication was established and Train #120 was able to confirm that PLNT personnel were safely in the room. Train #120 was then given permission to continue. Shortly thereafter at 12:22, Train #121 reported personnel visible on the roadway. ROCC confirmed the report with Train #121, which responded, "they went back into the room, they were on the roadway when I came around the corner".

APPLICABLE RULES AND PROCEDURES

ROCC PROCEDURES MANUAL:

6.3 Radio Console Supervisor:

- 6.3.7. Report all incidents and unusual occurrences to the on duty Assistant Superintendent, ROIC, MTPD, and MOC and to the Central Control Supervisor if their line is affected.
- 6.3.10. Maintain support personnel sheets for the field, making initial location announcements of personnel on the roadway and blanket announcements in 20 minute intervals.

6.4 Train Control Supervisor:

- 6.4.2. Inform the on duty Assistant Superintendent and other concerned departments of all incidents, delays, major service disruptions and unusual occurrences.

14.5 Letters for 10 Minute Delays or Unusual Incidents All Positions:

- 14.5.3. Here are a few examples of when a report must be written: 14.5.3.3. An unauthorized person on track bed - Yard or mainline

MSRPH 1.32 Employees involved in, witnessing, or informed of an accident or incident, to include near misses, on the Metrorail system shall inform their supervisor, Transit Police, ROCC and/or other appropriate authority as soon as possible, and shall file a written report.

MSRPH 1.79 Personnel shall not take any action until they are positive that all radio transmissions or receptions are heard, fully understood, and acknowledged.

MSRPH Section 5.19, The procedure for a Roadway Drop-off: 9. The requestor must immediately notify the ROCC that the work crew is standing clear in a place of safety and establish their Roadway Worker Protection with the ROCC.

INCIDENT ANALYSIS

Three areas of concern presented themselves during this incident:

- No notification by the controllers was given to management concerning PLNT personnel leaving the DPS room without permission after the incident was reported by Train #121.
ALL INCIDENTS MUST BE REPORTED, FOR EVERYONE'S SAFETY.
- Incomplete logs were kept by the controllers concerning personnel accessing the roadway, all personnel entering the roadway must be documented on the track access sheet.
ACCURATE DOCUMENTATION PROTECTS PERSONNEL ON THE ROADWAY AND MUST BE COMPLETED
- Roadway access was granted to PLNT personnel without confirmed positive communication.
NO PERSONNEL SHOULD BE ALLOWED TO ENTER THE ROADWAY WITHOUT PROPER COMMUNICATION

Risk analysis indicates that this event could have been avoided. While positive communication was established with PLNT personnel when on the platform at Grosvenor, positive communication was not established with the work crew at the actual drop off location. Train #120 should have been instructed to continue on to the next station and for PLNT personnel to contact ROCC at the station via landline. All areas experiencing radio communication issues must be reported.

USE ROCC'S NEW

SMS REPORTING

SYSTEM TO REPORT

RISKS, INCLUDING AREAS

OF POOR RADIO

COMMUNICATION

Attachment 1 – Page 1 of 1.