



**Improper Vehicle Movement
At or Near Dupont Circle and Pentagon stations
July 21, 2024, and August 17, 2024**

Document Purpose

This WMSC written report on WMATA Metrorail's safety event investigation and review of Metrorail's findings in accordance with the WMSC Program Standard, in conjunction with the attached Metrorail investigation reports that have undergone WMSC staff review, feedback, and Metrorail revision, describes the investigation activities, identifies factors causing or contributing to the accident, and sets forth ongoing, additional, or upcoming corrective actions and further oversight work (such as inspections and audits) as necessary or appropriate. The WMSC's ongoing oversight during the investigative process, including safety event reporting and verification, participation in investigative interviews, data review, consistent communication with the Metrorail investigations team, and feedback on Metrorail's reports leads to further improvements prior to consideration of the reports by WMSC Commissioners for adoption. The WMSC's safety event investigation oversight assures the sufficiency and thoroughness of Metrorail's investigations. The WMSC Commissioners are considering these documents (the WMSC review and Metrorail's investigation report) as a unified item for adoption at the Washington Metrorail Safety Commission meeting on April 8, 2025.

WMSC staff recommend adoption of these investigations.

The two improper vehicle movement safety events detailed below occurred in summer 2024 and were the result of failure to follow Metrorail Operating Rule 9.8.1, regarding train movement in the absence of speed commands. During both events, Train Operators moved their trains against the flow of train traffic, risking head on train collision.

The causes of and contributing factors to the events described in more detail below include:

- Failure to follow established written policies and procedures, including:
 - Metrorail Operating Rulebook Section 9.8.1: Rail Vehicle Operators shall not move trains with zero speed commands except after notifying the Rail Traffic Controller or Terminal Supervisor and being given permission to move with zero speed commands and either a permissive block going with traffic or an absolute block going against traffic.
- Inadequate rail traffic controller staffing levels

Investigations W-0369 and W-0370 being considered on April 8, 2025, led to specific corrective actions which have been fully implemented as this investigation report is being presented for WMSC adoption. These include:

- Metrorail issued a staff notice to all Rail MICC personnel instructing that when a train's operating end moves in the opposite direction of travel, the RTC must verify and confirm that the RVO is correctly positioned at the proper operating end for the intended direction before authorizing movement. Operating directions will be identified by terminals.
- Metrorail conducted a boot camp session with rail traffic controllers to review the 'Improper Rail Vehicle Movement' incident, similar events and to discuss new instructions



- Metrorail conducted a Safety Stand-Down with all rail vehicle operators to discuss and distribute “Safety Point to Adhere While Operating Rail Vehicles”
- Metrorail distributed a Personnel Directive, “Preventing Improper Direction of Travel After Offloads,” with required actions
- WMATA personnel received refresher training

Metrorail is in the process of implementing related corrective action plans (CAPs) including:

- C-0183 addresses the finding that Metrorail creates safety risks by not requiring and conducting territory familiarization and physical characteristics training and not assessing knowledge of physical characteristics prior to assigning operations personnel work on a line, in a terminal or in a yard (Extension request under review).
- C-0056 addresses the finding that Metrorail’s ROCC recruitment and retention approach is failing. Some controller trainees have left the ROCC immediately after or shortly after the training course, which is scheduled to last nine months.

Safety event summaries:

W-0366 – Dupont Circle Station – July 21, 2024 (E24568)

On Sunday, July 21, 2024, the Train Operator of Red Line Train 124 misunderstood instructions provided by a Rail Traffic Controller in the Control Center and moved their train against the normal flow of traffic toward a passenger-occupied train, causing a near-miss event that could have resulted in a head-on train collision.

At approximately 5:52 p.m., the Radio Rail Traffic Controller instructed Train 124’s Operator to offload riders at Dupont Circle Station and advised, “We’re turning you back.” At the time, trains were passing red signals with permission from the Control Center and single tracking due to a track circuit malfunction and disabled train at Friendship Heights Station. After offloading riders on the platform, the Train Operator walked through the train to the trailing car, keyed up the train and confirmed they were ready to move the train. At 5:57 p.m., the Train Operator was advised by the Rail Traffic Controller to “Clear the interlocking at Dupont Circle Station and reverse ends. Verify a lunar at A03-08. You have a block to the turn back; key down and reverse.” The Train Operator correctly repeated back the instructions; however, they understood the instructions to mean that they were reversing ends on the platform to then clear the outbound interlocking. There are two interlockings at Dupont Circle Station and the Rail Traffic Controller did not specify which interlocking the Train Operator would be clearing but provided the signal number that corresponds with the inbound interlocking.

As the Train Operator prepared to operate the train, the train had zero speed commands. Metrorail policy requires that operators notify the Rail Traffic controller in this instance and be given permission to move the train under a protective block. Instead, the Train Operator entered Stop and Proceed mode to move the train without notifying the Rail Traffic Controller. During an investigative interview after the event, the Train Operator stated they had speed commands, but



the data reviewed did not support their presence.

After the train had moved approximately 815 feet, and repeated failed attempts to contact the Train Operator, the Rail Traffic Controller instructed the Train Operator to stop their train and inquired if the Train Operator verified the lunar at A03-08 signal. Train 124's Operator stopped the train 420 feet in front of Train 126, which was berthed at Farragut North Station, narrowly avoiding a head on collision. The Train Operator stated, "I thought you wanted me to go in the opposite direction.," and the Rail Traffic Controller replied, "No, ma'am. I want you to go in the opposite direction." The Train Operator then stated, "I went to the rear car." During this exchange and the one that preceded, there was no clear mention of station names to specify direction of travel, until the Rail Traffic Controller stated, "Go back to the Shady Grove end." After confirming the Train Operator had moved to the operator's cab at the Shady Grove end of the train, the Rail Traffic Controller instructed the Train Operator to transport Train 124 non-revenue to Shady Grove Rail Yard.

The Train Operator of Train 124 was removed from service for post-event toxicology testing in accordance with Metrorail policy. The Train Operator has since been permanently disqualified from the Rail Vehicle Operator position.

W-0367 – Pentagon Station – August 17, 2024 (E24652)

On Saturday, August 17, 2024, a Train Operator took over operation of non-revenue Train 820, which was properly berthed on the Pentagon Station platform on track 2. Train Operator #1 boarded the operator's cab at the incorrect end of the train, and with no speed commands present, entered Stop and Proceed mode without the required permission. Train Operator #1 had not conducted the required visual and verbal change-off with Train Operator #2, who had been operating the train on the opposite end of the train. Conducting the proper change-off would have ensured Train Operator #1 was on the correct end of the train and prevented this error. Train Operator #1 began to operate the train against the normal direction of traffic, toward Arlington Cemetery Station, without protection against train collision. Train Operator #2, who had been waiting for the change-off with Train Operator #1, identified the improper movement and notified a Rail Traffic Controller in the Control Center that the train was moving in the opposite direction. The Rail Traffic Controller instructed Train Operator #1 to stop the train. The train came to a stop after traveling approximately 144 feet. At the beginning of the event, the Button Rail Traffic Controller was working alone, performing duties of both the Radio and Button Rail Traffic Controller, as the Radio Rail Traffic Controller had left the console for approximately 10 minutes on a personal break.

A Rail Supervisor took over operation of the train. The Train Operator and the Rail Traffic Controller were removed from service for post-event toxicology testing. Train 820 was removed from service for post-event inspection, which found no damage or defects.



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

FINAL REPORT OF INVESTIGATION A&I E24568

Date of Event:	July 21, 2024
Type of Event:	O-7, Improper Rail Vehicle Movement
Incident Time:	17:58 Hours
Location:	Dupont Circle Station, Track 2
Time and How received by SAFE:	20:00 Hours, Safety Information Officer (SIO)
WMSC Notification Time:	20:00: Hours
Responding Safety Officers:	None
Rail Vehicle:	Train ID 124 [L3226-27x3127-26x3244-45T]
Injuries:	None
Damage:	None
Emergency Responders:	None
SUDS I/A Incident Number:	20240722#118536

Dupont Circle Station, Track 2 – Improper Rail Vehicle Movement

July 21, 2024

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Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
CCTV	Closed-Circuit Television
CMOR	Office of Chief Mechanical Officer
ER	Event Recorder
IIT	Incident Investigation Team
MICC	Metro Integrated Command and Communications Center
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
OAP	Operations Administrative Policy
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
RVO	Rail Vehicle Operator
SAFE	Department of Safety
SIO	Safety Information Officer
SUDS	Safety Universal Data System
VMDS	Vehicle Monitoring and Diagnostic System
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 Sunday, July 21, 2024, at 17:58 hours, the Rail Vehicle Operator (RVO) of Train ID 124 [L3226-27x3127-26x3244-45T] proceeded to operate (against the flow of traffic) head-on towards a revenue train instead of clearing the interlocking at Dupont Circle after offloading passengers, resulting in an Improper Rail Vehicle Movement event.

Due to a train malfunctioning at Friendship Heights Station, track 2, several trains were held at various platforms. The Radio Rail Traffic Controller (RTC) instructed Train ID 124 to offload their passengers at Dupont Circle Station and that they were going to turn them back. They followed up with instructions that the RVO of Train ID 124 did not need to verify if the train was clear of passengers because they would be clearing the interlocking at Dupont Circle and reversing ends.

While on the platform at the Dupont Circle Station, the RVO of Train ID 124 offloaded their train, keyed up on the trailing end, and reported that they were ready to move. The Radio RTC gave the RVO of Train ID 124 a permissive block to the turnback, following them verifying a lunar signal at A03-08 signal, key down, and reverse operating ends.

RVO of Train ID 124 reported that it was ready to move. The Radio RTC instructed Train ID 124 to clear the interlocking at Dupont Circle Station, reverse ends, verify a lunar signal at A03-08, and then reverse. The RVO of Train ID 124 acknowledged the instructions. The Radio RTC reiterated the instructions, and Train ID 124 confirmed them. When the Radio RTC attempted to contact Train ID 124, there was no response initially. After multiple attempts, the RVO of Train ID 124 finally responded, indicating that the train was stopped. The Radio RTC inquired if the lunar signal at A03-08 had been verified, to which the RVO of Train ID 124 responded with a misunderstanding of the direction. The Radio RTC corrected this misunderstanding.

The RVO of Train ID 124 acknowledged the correction and said they had moved to the rear car. The Radio RTC then instructed the RVO of Train ID 124 to return to the Shady Grove end. The RVO of Train ID 124 confirmed this instruction and proceeded to the lead cab.

The Radio RTC asked if Train ID 124 was keyed up on the Shady Grove end, and Train ID 124 confirmed, stating they were heading to the lead cab. The RVO of Train ID 124 then confirmed that they were keyed up. The Radio RTC asked if the RVO of Train ID 124 was ready to move, and the RVO of Train ID 124 confirmed readiness on the Shady Grove end. The Radio RTC instructed Train ID 124 to proceed to Shady Grove.

In adherence to Standard Operating Procedure 102-01-02, which outlines the protocol for Removing an Employee from Service for involvement in an operational safety event, the Radio RTC dispatched a Rail Supervisor to relieve the RVO from duty for post-incident testing.

In accordance with the Office of the Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Operations Administrative Policy (OAP) 102.06, the Metro Integrated Command and Communications Center (MICC) promptly initiated the removal of Train ID 124 from revenue service for post-incident investigative measures. This action adhered to the Rail Vehicle Event Investigation Policy, ensuring a comprehensive incident examination.

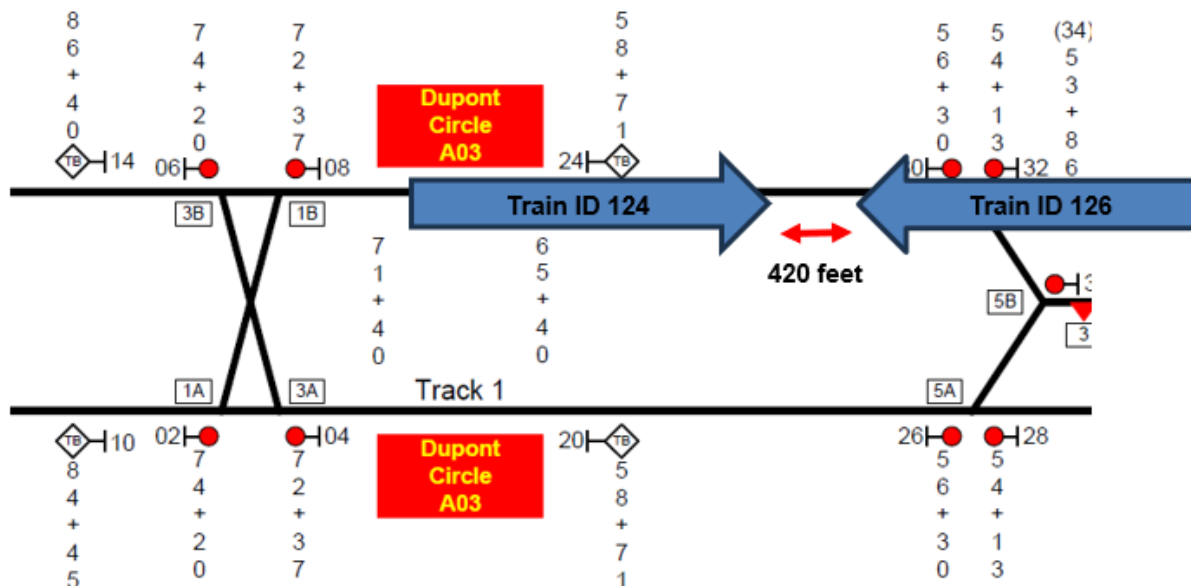
The probable cause of the Improper Rail Vehicle Movement event was the RVO of Train ID 124's misunderstanding of the directions provided by the Radio RTC. The RVO misinterpreted the

instruction to clear the interlocking at Dupont Circle and reverse ends, instead proceeding against the flow of traffic head-on towards a revenue train. This miscommunication led to the improper movement of Train ID 124.

Incident Site

Dupont Circle Station, Track 2

Field Sketch/Schematics



The above depiction is 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

The investigative methodologies included the following:

- Physical Site Assessment through document review.
- Formal Interviews – SAFE interviewed four individuals as part of this investigation. The interview included persons present at, during, and after the incident, those directly involved in the response process, and representatives from the Washington Metrorail Safety Commission (WMSC). SAFE interviewed the following individuals:
 - Rail Vehicle Operator Train ID 124
 - Rail Vehicle Operator Train ID 126
 - Radio Rail Traffic Controller
 - Button Rail Traffic Controller

- 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.
- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
 - Rail Vehicle Operator Training Records
 - Rail Vehicle Operator Certifications
 - Rail Vehicle Operator 30-day work history review
 - Metrorail Operating Rulebook (MOR)
 - National Oceanic and Atmospheric Administration (NOAA)
 - Metro Integrated Command and Control (MICC) Incident Report
- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
 - ARS (Audio Recording System) playback [Radio Ops 1 and Landline Communications]
 - The Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Vehicle Monitoring and Diagnostic System (VMDS)
 - Closed-Circuit Television (CCTV)

Investigation

According to the Audio Recording System (ARS), at 17:32 hours, Train ID 114 began experiencing mechanical failure at Friendship Heights Station, Track 2. A Rail Supervisor was dispatched from Grosvenor Station to assist. This incident caused trains to be held at various platforms by the Radio RTC.

At 17:52 hours, the Radio RTC instructed the RVO of Train ID 124 to offload their passengers at Dupont Circle Station and that they were going to turn them back. They followed up with instructions that the RVO of Train ID 124 did not need to verify if the train was clear of passengers because they would be clearing the interlocking at Dupont Circle and reversing ends.

At 17:57 hours, the RVO of Train ID 124 reported that it was ready to move. The Radio RTC instructed Train ID 124 to clear the interlocking at Dupont Circle Station, reverse ends, verify a lunar signal at A03-08, and then reverse. The RVO of Train ID 124 acknowledged the instructions. The Radio RTC reiterated the instructions, and Train ID 124 confirmed them.

According to the Advanced Information Management System (AIMS), at 17:58 hours, the RVO of Train ID 124 proceeded to operate (against the flow of traffic) head-on towards a revenue train instead of clearing the interlocking at Dupont Circle after offloading passengers.

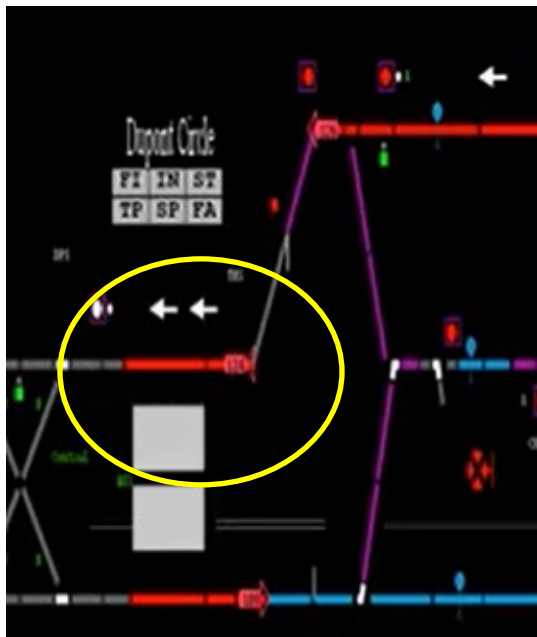


Figure 1 - The yellow circle depicts Train ID 124 at 17:58 hours, keyed up on the trailing end (the triangle is reversed).

According to the ARS, at 17:58 hours, the Radio RTC attempted to contact Train ID 124, but there was no response initially.

According to the data analysis from the Event Recorders on both trains, Train 124 stopped 420 feet away from the lead car of Train ID 126.



Figure 2 - (blue arrow) depicts Train ID 124 stopped with 420 feet of (blue arrow) Train ID 126.

According to the Vehicle Monitoring and Diagnostic System (VMDS) download, Train ID 124 the stop and proceed was initiated.

According to the ARS, at 17:59 hours, the Radio RTC attempted to contact the RVO of Train ID 124 and instructed them to stop. The RVO responded, indicating that the train was stopped. The Radio RTC inquired if the lunar signal at A03-08 had been verified, to which the RVO of Train ID

124 responded with a misunderstanding of the direction. The Radio RTC corrected this misunderstanding. The RVO of Train ID 124 acknowledged the correction and said they had moved to the rear car. The Radio RTC then instructed the RVO of Train ID 124 to return to the Shady Grove end. The RVO of Train ID 124 confirmed this instruction and proceeded to the lead cab.

According to the Managerial Report timeline of events stated by the RVO during a formal interview with Division Management, the RVO noted the train was clear of customers, and they were ready to move at 18:00 hours.

According to the ARS, at 18:02:14 hours, the Radio RTC asked if Train ID 124 was keyed up on the Shady Grove end, and Train ID 124 confirmed, stating they were heading to the lead cab. The RVO of Train ID 124 then confirmed that they were keyed up. At 18:02:56 hours, the Radio RTC asked if the RVO of Train ID 124 was ready to move, and the RVO of Train ID 124 confirmed readiness on the Shady Grove end.

According to the ARS, at 18:10 hours, the Radio RTC gave the RVO of Train ID 124 a permissive block to the turn back and permission to proceed towards Shady Grove Rail Yard with speed commands. Train ID 124 was re-blocked to Train ID 724, and the RVO continued operating non-revenue towards Shady Grove yard.

According to the Managerial Report, a Rail Supervisor took over the operations of Train ID 724 at Tenleytown Station and continued in non-revenue service to Shady Grove Yard.

According to the formal interview, Radio RTC reported that their regular shift began at 05:40 hour, and the Improper Rail Vehicle Movement incident occurred during the overtime shift.

Chronological Event Timeline

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

Time	Description
17:31:00 hours	Down track circuit at Friendship Heights Station. Trains were passing red signals. [Email]
17:32:51 hours	<u>Radio RTC</u> : Granted a permissive block and permission to pass signal A08-08 red Friendship Heights Station. <u>Train ID 114</u> : Acknowledged. [Radio Ops 1]
17:34 – 17:44 hours	Radio RTC was troubleshooting disabled Train ID 114 near Friendship Heights Station. [Radio Ops 1]
17:45:40 hours	<u>Radio RTC</u> : Announced that trains would begin single tracking between Van Ness and Medical Center Station, track 1. [Phone]
17:49:00 hours	<u>Radio RTC</u> : Instructed Train ID 124 to move to Dupont Circle Station. [Radio Ops 1]
17:51:24 hours	<u>Radio RTC</u> : Instructed Train ID 116 to use close-in procedures to Train ID 114. [Radio Ops 1]
17:52:05 hours	<u>Radio RTC</u> : Instructed Train ID 124 to offload. Advised, “We’re turning you back.” <u>Train ID 124</u> : Acknowledged and responded, “Offload.” <u>Radio RTC</u> : Instructed Train ID 124, “Do not verify clear of customers.” <u>Train ID 124</u> : Acknowledged and responded, “Do not verify clear.” [Radio Ops 1]

Time	Description
17:55:48 hours	<u>Radio RTC</u> : Instructed Train ID 124 to advise when the train was ready to move. <u>Train ID 124</u> : Responded, "Keyed up." [Radio Ops 1]
17:57:29 hours	<u>Train ID 124</u> : Advised, "Keyed up, ready to move." <u>Radio RTC</u> : Instructed Train ID 124, "Clear the interlocking at Dupont Circle Station and reverse ends. Verify a lunar at A03-08. "You have a block to the turn back; key down and reverse." <u>Train ID 124</u> : Acknowledged and responded, "Permissive block to the turnback, verifying A03-08 is lunar, key down and reverse." <u>Radio RTC</u> : Instructed Train ID 124, "You have a permissive block to the turnback, verifying A03-08 us lunar, key down, and reverse." <u>Train ID 124</u> : Acknowledged and responded, "Permissive block to the turnback, key down and reverse, verify a lunar at A03-08." [Radio Ops 1]
17:58:59 hours	<u>Radio RTC</u> : Attempted to contact Train ID 124. <u>Train ID 124</u> : No response. [Radio Ops 1]
17:59:09 hours	<u>Radio RTC</u> : Attempted to contact Train ID 124; Instructed to stop the train. <u>Train ID 124</u> : Responded, "I'm stopped." <u>Radio RTC</u> : Inquired, "Did you verify the lunar at A03-08 signal?" [Radio Ops 1]
17:59:26 hours	<u>Train ID 124</u> : Advised, "I thought you wanted me to go in the opposite direction." <u>Radio RTC</u> : Responded, "No, ma'am. I want you to go in the opposite direction." <u>Train ID 124</u> : Acknowledged and responded, "I went to the rear car." <u>Radio RTC</u> : Instructed, "Go back to the Shady Grove end." <u>Train ID 124</u> : Acknowledged. [Radio Ops 1]
18:02:14 hours	<u>Radio RTC</u> : Inquired, "Are you keyed up on the Shady Grove end?" <u>Train ID 124</u> : Responded, "Heading to the lead cab." [Radio Ops 1]
18:02:56 hours	<u>Train ID 124</u> : Advised, "Keyed up." <u>Radio RTC</u> : Responded, "Are you ready to move?" <u>Train ID 124</u> : Responded, "Ready to move on the Shady Grove end." <u>Radio RTC</u> : Instructed, "Lite ¹ to Shady Grove." <u>Train ID 124</u> : Acknowledged. [Radio Ops 1]
18:05:15 hours	<u>Radio RTC</u> : Requested confirmation if Train ID 126 could move to Dupont Circle Station. <u>Train ID 126</u> : Advised that they could move but did not have speed commands. <u>Radio RTC</u> : Requested confirmation if their train was past the A02-32 signal. <u>Train ID 126</u> : Advised that they were passed the A02-32 signal. <u>Radio RTC</u> : Granted Train ID 126, a permissive block to Dupont Circle Station, track 2. <u>Train ID 126</u> : Acknowledged, 100% repeat back. <u>Radio RTC</u> : Advised the RVO to hold on the platform and that signal A03-08 would be red. [Radio, OPS1]

¹ To operate in non-revenue service expressing the train to a specific destination.

Time	Description
18:10:09 hours	<u>Radio RTC:</u> Train 124, you have a permissive block to turn back and speed commands to lite Shady Grove. <u>Train ID 124:</u> Acknowledged, 100% repeat back. [Radio, OPS 1]
18:36:20 hours	<u>OM:</u> Notified the SIO of the Improper Rail Vehicle Movement incident. [Phone]
18:39:22 hours	<u>Button RTC:</u> Requested that the Rail Supervisor takeover operations of Train ID 124 due to the Improper Rail Vehicle Movement incident and removed the RVO from service. [Phone]

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

The Office of Chief Mechanical Officer (CMOR) / Vehicle Monitoring and Diagnostic System (VMDS)

Adopted from CMOR IIT report with minor formatting and grammatical edits:

The Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) completed an analysis of data from Train ID 124 [L3226-3227.3127-3126.3244-3245T], which was reported for an Improper Rail Vehicle Movement event.

Based on Event Recorder (ER) data, the trailing railcar 3245 was keyed up, stop and proceed was initiated, and the train moved in the opposite direction of normal traffic. The train stopped after moving 815 feet in the opposite direction of normal traffic. Then, the lead car 3226 was keyed up, and the train proceeded in the normal direction of traffic.

Time	Description of Events
17:54:59 hours	Train ID 124 lead car 3226 was stopped at Dupont.
17:55:04 hours	The train doors opened to service the station.
17:56:34 hours	The lead car 3226 was keyed up, and the doors remained open.
17:59:28 hours	The trailing car was keyed up.
18:00:07 hours	The train doors were closed.
18:01:51 hours	Stop and proceed was initiated.
18:01:58 hours	The Master Controller was placed in the "P5" power mode, and the train started moving in the opposite direction of traffic.
18:02:51 hours	The train stopped after traveling 815 feet in the opposite direction of traffic.
18:06:25 hours	The lead car 3226 was keyed up.

Time	Description of Events
18:06:25 hours	The lead car 3226 was keyed up. The Master Controller was placed in P5, and Train ID 124 started moving in the normal direction of traffic.

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

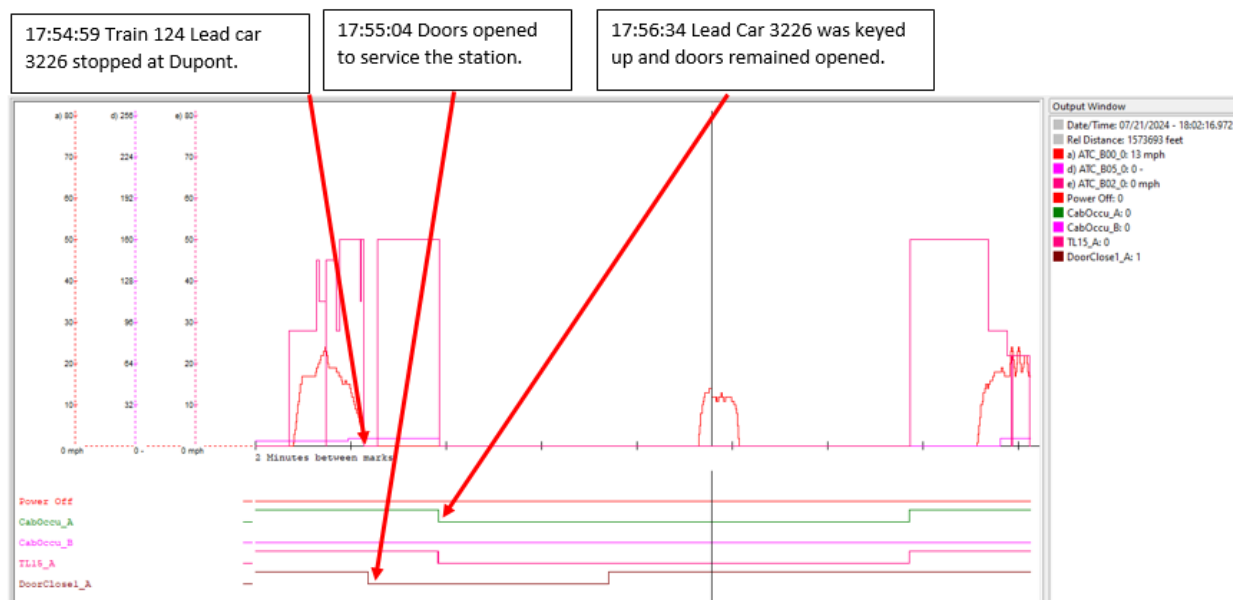


Figure 3 - Data analysis from Railcar 3226.

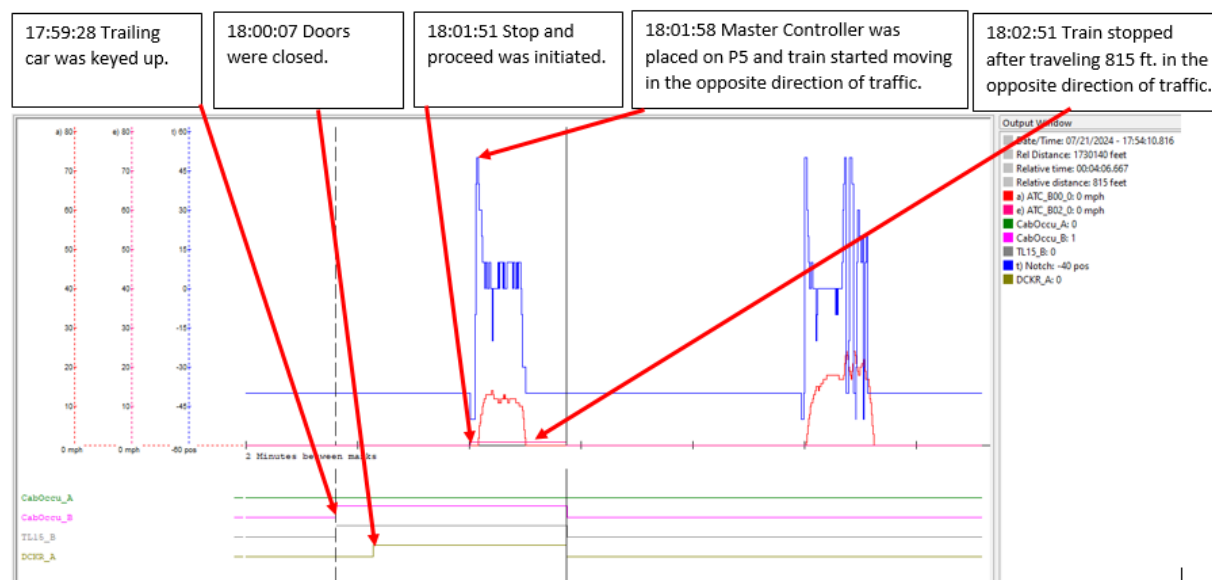


Figure 4 -Data analysis from Railcar 3245.

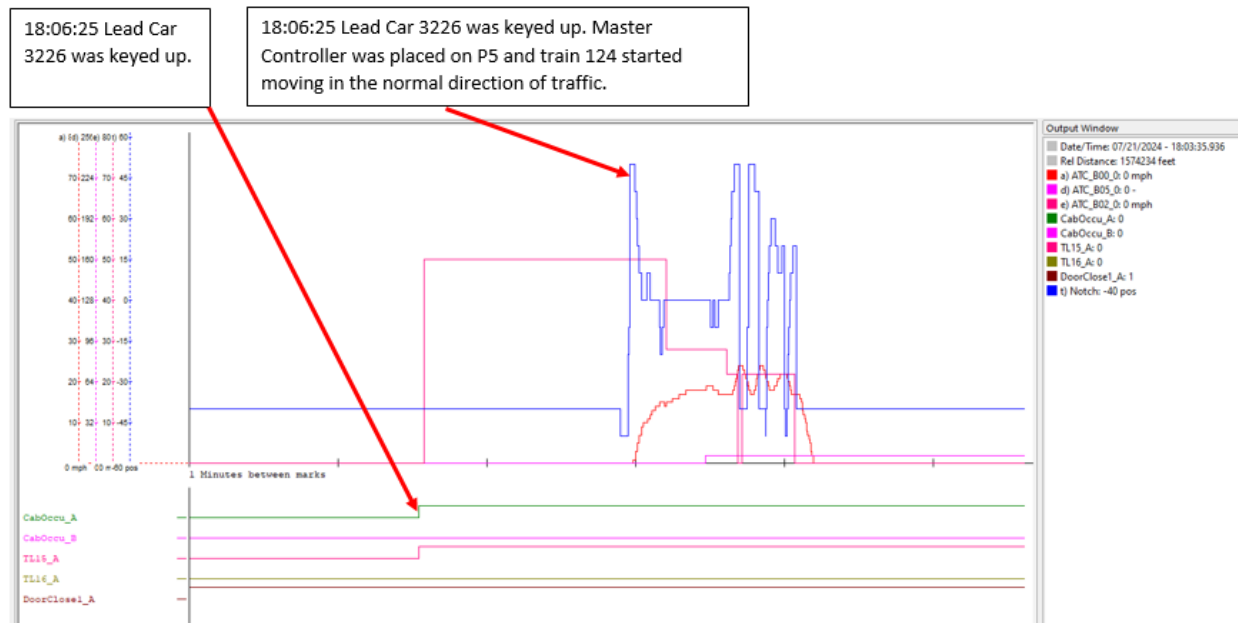


Figure 5 - Data analysis from Railcar 3226.

CMOR IIT performed additional data analysis. The data collected from train 126 revealed the following facts.

- Train 126 stopped 1232 feet from the end of train 124 and stood by.
- Train 126 remained stopped before, during, and after the incident.
- Train 124 moved 812 feet toward Train 126.
- Train 124 stopped 420 feet away from Train 126.
- Train 124 and Train 126 occupied adjacent ATC blocks (trains were never in the same block).

The data collected from train 126 were analyzed without observing any defects that could have contributed to this incident.

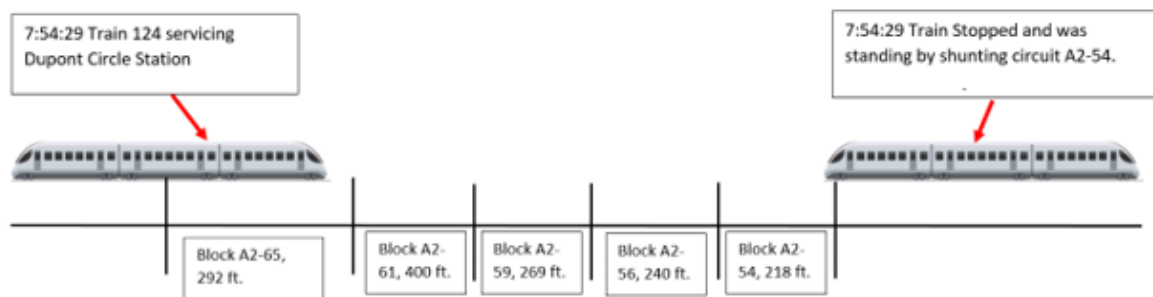


Figure 6 - Depicts Train 124 servicing Dupont and 126 standing shunting circuit A2-54 without speed commands, approximately 1232 feet away from the trailing end of Train 124.

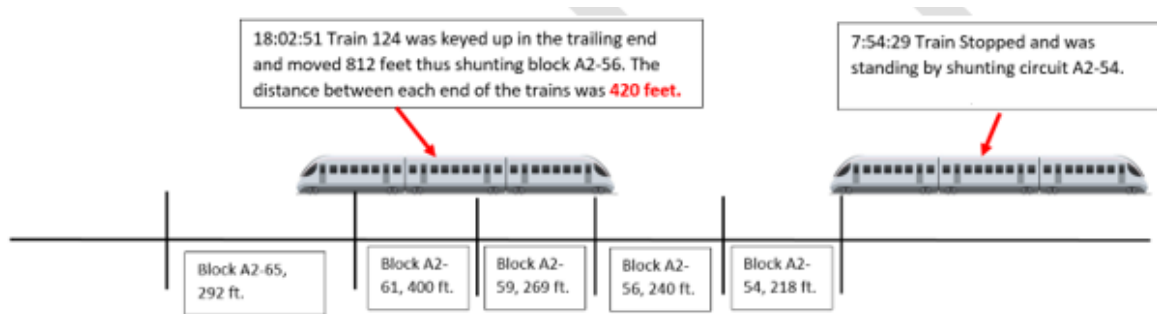


Figure 7 - Depicts Train 124 moved 812 feet in the towards Train 124. Train 124 shunted circuit A2-56 and was 420 feet away from train 126.

Office of Rail Transportation (RTRA)

Adopted from RTRA report:

The Office of Rail Transportation Shady Grove Division Management conducted a department investigation that stated the RVO lost situational awareness in that they keyed up on the opposite end of the train after walking through it. Upon keying up on the opposite end of the train, the RVO stated that they were ready to move. The RTC gave them a permissive block to the turnback, verifying a lunar signal at A03-08, which they at first misheard and was corrected. At that time, Train ID 124 began to move against traffic toward Train ID 126 and a potential collision. It is noted that no speed commands were present for this move since it was against the established flow or traffic. The VMDS data confirms that Stop and Proceed" mode was entered for the train to move.

The investigation further shows that the RVO made a false statement in their report when they stated that they had speed commands once keyed up on the incorrect end of the train. The VMDS data indicated that the RVO entered the Stop and Proceed mode to move the train without speed commands.

Shady Grove Management considered many factors in determining the appropriate disciplinary penalty for the RVOs' actions. A review of their record shows they have had no safety incidents or operational violations within the past two years. The nature of this violation is extremely serious and relates directly to their responsibilities as RVOs to always operate in a safe and responsible manner.

The RVO has been permanently disqualified from the position of RVO for the duration of their employment with the Washington Metropolitan Area Transit Authority (WMATA).

The RVO will be enrolled in the next available Station Manager class offered by WMATA.

Interview Findings

As part of the investigation into the event, SAFE interviewed four people. The interviews identified the following key findings associated with this event. The findings detailed below include reported information from involved personnel and may conflict with other data sources contained in the report.

Rail Vehicle Operator Train ID 124

- The RVO stated an interlocking on both ends of Dupont Circle Station.
- The RVO stated they understood the instructions that were given by the Radio RTC but misunderstood which interlocking they were supposed to be clearing.

Rail Vehicle Operator Train ID 126

- The RVO stated that after servicing Farragut North Station, the train lost speed commands when it passed the A02-32 signal.
- The RVO stated they heard the Radio RTC instructed the train ahead to clear the interlocking at Dupont Circle and return to Dupont Circle on track 1.
- The RVO stated they did not hear any train horn activity as Train ID 124 approached.

Radio RTC

- The Radio RTC began their shift at 05:40 hours, and the incident occurred during their overtime.
- Train ID 114 experienced a mechanical malfunction at Friendship Heights Station, track 2.
- Train ID 124, held on the platform at Dupont Circle Station, track 2, was instructed to offload, check for customers, and clear the interlocking.
- The RVO of Train ID 124 repeated the instructions.
- The Radio RTC instructed the RVO to verify the lunar signal at A03-08 and gave them a permissive block up to the turn back, key down, and reverse ends.
- The Radio RTC observed Train ID 124 moving against the flow of traffic on the AIMS screen and instructed them several times to stop the train.

Button RTC

- The Button RTC set a single route for the train to clear the interlocking on track 2, canceling the signals on track 1.
- The Button RTC observed on the AIMS that the train was operating in the wrong direction (towards Farragut North Station).
- The Button RTC heard the Radio RTC instruct the RVO to stop moving their train and ask what direction they were traveling in.

Weather

NOAA recorded the temperature at 88° F. at the time of the incident. Weather was not a contributing factor in this incident (Weather source: NOAA—Location: [Washington, D.C.]).

Related Rules and Procedures

Metrorail Operator Rulebook (MOR)

3.5 Turn Back

3.5.4 Rail Traffic Controllers shall give three (3) separate instructions to Rail Vehicle Operators when managing turn back moves. Rail Traffic Controllers shall instruct Rail Vehicle Operators to:

- a. Move the train to the turn back and reverse ends, then,
- b. Request the Rail Vehicle Operator to confirm the controlling/facing signal prior to keying up the train on the opposite end, then,

c. Provide the movement instructions or block after a route and lunar signal has been established.

8.1 General Rules

8.1.6 Rail Vehicles shall not be operated so as to collide with another vehicle, bumping post, or obstruction.

9.8 Speed Commands

9.8.1 Rail Vehicle Operators shall not move trains with zero speed commands except after notifying the Rail Traffic Controller or Terminal Supervisor and being given permission to move with zero speed commands and either a permissive block going with traffic or an absolute block going against traffic.

18.1 General Safety Rules

18.1.4 Employees shall always maintain situational awareness of their surroundings.

Human Factors

Fatigue

Signs and Symptoms of Fatigue

Rail Vehicle Operator Train ID 124

A Safety Investigator examined signs and symptoms of fatigue that may have been present at the time of the incident. No video of the involved person was available to ascertain whether signs of fatigue were present. The RVO reported feeling fully alert at the time of the incident and experiencing no symptoms of fatigue leading up to the incident.

Rail Vehicle Operator Train ID 126

A Safety Investigator examined signs and symptoms of fatigue that may have been present at the time of the incident. No video of the involved person was available to ascertain whether signs of fatigue were present. The RVO reported feeling fully alert at the time of the incident and experiencing no symptoms of fatigue leading up to the incident.

Radio Rail Traffic Controller

A Safety Investigator examined signs and symptoms of fatigue that may have been present at the time of the incident. No video of the involved person was available to ascertain whether signs of fatigue were present. The Radio RTC reported feeling fully alert at the time of the incident and experiencing no symptoms of fatigue leading up to the incident.

Button Rail Traffic Controller

A Safety Investigator examined signs and symptoms of fatigue that may have been present at the time of the incident. No video of the involved person was available to ascertain whether signs of fatigue were present. The Button RTC reported feeling fully alert at the time of the incident and experiencing no symptoms of fatigue leading up to the incident.

Fatigue Risk

Rail Vehicle Operator Train ID 124

A Safety Investigator evaluated incident data 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 RVO reported a regular sleep schedule in the days leading up to the incident. The RVO worked the evening shift in the days leading up to the incident. The RVO was awake for six hours and thirty-six minutes at the time of the incident. The RVO reported nine hours of sleep in the 24 hours preceding the incident. This was a comparable amount to the employee's usual workday sleep durations. The off-duty period is fifteen hours and twenty-five minutes, which provides an opportunity for 7-9 hours of sleep. The employee reported no issues with sleep.

Rail Vehicle Operator Train ID 126

A Safety Investigator evaluated incident data 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 RVO reported a regular sleep schedule in the days leading up to the incident. The employee worked the evening shift in the days leading up to the incident. The employee was awake for eight hours and forty-six minutes at the time of the incident. The employee reported eight hours of sleep in the 24 hours preceding the incident. This was a comparable amount to the employee's usual workday sleep durations. The off-duty period was thirteen hours and thirty-one minutes, which provided an opportunity for 7-9 hours of sleep. The employee reported no issues with sleep.

Radio Rail Traffic Controller

A Safety Investigator evaluated incident data 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 Radio RTC reported keeping a regular sleep schedule in the days leading up to the incident despite working an additional four hours of overtime. This includes working an additional four hours of overtime leading up to the incident. The Radio RTC worked the morning shift in the days leading up to the incident. The Radio RTC was awake for fifteen hours and forty-six minutes at the time of the incident. The Radio RTC reported eight hours of sleep in the 24 hours preceding the incident. This was a comparable amount to the employee's usual workday sleep durations. The off-duty period was forty hours and six minutes, which provided an opportunity for 7-9 hours of sleep. The employee reported no issues with sleep.

Button Rail Traffic Controller

A Safety Investigator evaluated incident data for fatigue risk factors. Risk factors for fatigue were present. The incident time of day did not suggest an increased risk of fatigue-related impairment. The Button RTC reported keeping a regular sleep schedule in the days leading up to the incident. The Button RTC performed day and night work in the days leading up to the incident. The Button RTC was awake for nine hours and forty-six minutes at the time of the incident. The employee reported nine hours of sleep in the 24 hours preceding the incident. This was more than the employee's usual workday sleep durations. The off-duty period was sixteen hours and eleven minutes, which provided an opportunity for 7-9 hours of sleep. The employee reported no issues with sleep.

Post-Incident Toxicology Testing

WMATA's Drug and Alcohol Program determined that the RVO of Train ID 124 complied with and was not in violation of the Drug and Alcohol Policy and Testing Program 7.7.3/6.

The RVO of Train ID 126, Button RTC, and Radio did not complete a Post-Incident Toxicology Testing.

Findings

Communication Breakdown

- The Radio RTC instructed the RVO of Train ID 124 to clear the interlocking at Dupont Circle Station and reverse ends.
- The RVO misunderstood these instructions, leading to an improper movement of the train.

Procedural Compliance

- The RVO confirmed understanding of the instructions and repeated them back to the Radio RTC.
- Despite the confirmation, the RVO did not follow the instructions correctly, indicating a possible issue with instruction clarity or the RVO's situational awareness.
- Dupont Circle Station has two interlocks on both ends of the station.

Operational Environment

- Train ID 124 was instructed to offload passengers at Dupont Circle Station due to a train malfunction (immobile) at Friendship Heights Station.
- There was an Immobile Train Between Stations incident at Friendship Heights, which led to Train 124 being instructed to turn back at Dupont Circle Station.
- The Radio RTC worked an overtime shift during the incident, which may have contributed to the communication issues.

Safety Measure

- No injuries or damages were reported as a result of the incident.
- Standard Operating Procedures were followed post-incident, including removing the RVO from service for post-incident testing.

Human Factors

- The RVO, Radio RTC, and other involved personnel reported no signs of fatigue.
- All individuals involved had regular sleep schedules and reported feeling fully alert at the time of the incident.

Equipment and Technology

- The AIMS data indicated that Train ID 124 moved against the normal traffic flow on a permissive block and stopped 420 feet from Train ID 126 after Radio RTC broadcasted Train ID 124 to stop.

Training Records

- The Job Task Proficiency Evaluation identifies that on May 19, 2024 the RVO, was trained on turnback operations² at E08 (Prince George's Plaza Station).

Immediate Mitigation to Prevent Recurrence

- The incident RVO was removed from service.

Probable Cause Statement

The probable cause of the Improper Rail Vehicle Movement event was the RVO of Train ID 124's misunderstanding of the directions provided by the Radio RTC. The RVO misinterpreted the instruction to clear the interlocking at Dupont Circle and reverse ends, instead proceeding against the flow of traffic head-on towards a revenue train. This miscommunication led to the improper movement of Train ID 124.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
118536_SAFE CAPS_MICC_001	Issue a staff notice to all Rail MICC personnel instructing that when a train's operating end moves in the opposite direction of travel, the RTC must verify and confirm that the RVO is correctly positioned at the proper operating end for the intended direction before authorizing movement. Operating directions will be identified by terminals (e.g., Largo direction).	MICC SRC	Completed
118536_SAFE CAPS_MICC_002	Conduct a boot camp session with RTCs to review the 'Improper Rail Vehicle Movement' incidents. Discuss new instructions, review similar cases, and encourage questions for better understanding.	MICC SRC	Completed
118536_SAFE CAPS_RTRA_001	Conduct a Safety Stand-Down with all RVOs to discuss and distribute "Safety Point to Adhere While Operating Rail Vehicles" (RTRA-101-01-00)	RTRA SRC	Completed
118536_SAFE CAPS_RTRA_002	A Personnel Directive, "Preventing Improper Direction of Travel After Offloads," with required actions, will be issued to RVOs. The directive will be explained to each RVO, and they will sign in acknowledgment upon receiving it.	RTRA SRC	Completed

² The train operation procedure of reversing ends immediately after exiting interlocking limits and accepting another route through the same interlocking.

Collaborative Corrections

Rail Transportation

- Developed an Operator Touchpoint Discussion schedule for all rail divisions for July 23, July 24, and July 25, 2024.
- The schedules were manned by Rail Transportation Management, Safety & Readiness personnel.
- Rail Transportation Terminal Supervisors made periodic announcements that mirrored the MICC announcement.
- Rail Operations Supervisors conducted procedure reviews using the script points during RSDAR spot checks for two (2) weeks.

MICC

- Over the span of three days, the MICC Communication Section posted messaging via Teams informing personnel that Rail Transportation and Safety and Readiness staff were in the field discussing with Train Operators the need to stop and ask for help if directions were unclear.
- MICC Rail broadcasted hourly announcements on each Ops channel: "ATTENTION ALL OPERATORS: When in doubt, don't struggle to figure it out. If you are unsure or unclear about instructions or operations, stop and ask for help before proceeding."

Safety & Readiness

- Deployed all available personnel to all rail divisions to assist with Operator Touchpoint Discussion.

Appendices

Appendix A – Interview Summaries

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

RTRA

Rail Vehicle Operator – Train ID 124

The RVO is a WMATA employee with six years of service and one year of experience as an RVO. The RVO holds a Roadway Worker Protection (RWP) Level 2 certification that expires in January 2025. This employee has no disciplinary history and no history of sleep issues to report.

During the interview, the RVO stated that the first train they operated in revenue service was picked up from the platform at Shady Grove Station and operated to Takoma Station. When they arrived at Takoma Station, nothing was out of the ordinary. The RVO stated that they first heard Train ID 114 having a malfunction when they were a few stops away from Dupont Circle Station.

The RVO stated that the Radio RTC began instructing them to hold for one or two minutes. Upon arriving at Dupont Circle Station, the Radio RTC told them that they would turn around and go back to Takoma Station. The Radio RTC then instructed them to make an announcement and offload the train.

The RVO stated they understood the instructions, as they would be reversing ends and heading back to Takoma Station. They had to go through an interlocking to be able to go back onto track 1. The RVO stated that when they arrived at Dupont Circle Station, they observed an interlocking in front of them, but there was also an interlocking behind them.

The RVO stated that the Radio RTC was talking to many people, and different things were going on. The RVO stated that they remembered the Radio RTC saying that they wanted them to turn around and go back to Takoma Station, that they wanted them to clear the train, verify clear of customers, and then they would verify a lunar to go through the interlocking.

The RVO stated that they keyed down and began to verify that the train was clear of customers; they left the doors open to give the customers time to get off as they walked through. The RVO stated that they had arrived at the trailing cab, and the Radio RTC asked if they had keyed up yet; they replied no. The RVO stated that they saw a train arrive on the platform on track one, and they were holding.

The RVO stated that they keyed up and shut the windows. The RVO stated that since the Radio RTC did not say that they were not keyed up on the wrong end of the train, they assumed that it was okay. They shut the doors and sat down, and then the Radio RTC asked if they were ready. The RVO stated that they responded that they were keyed up and ready.

The RVO stated that they thought they had speed commands and did not do anything to move the train. They saw the train on track one and thought that they were waiting for them to move through the interlocking ahead, so they proceeded to move the train. The RVO stated that they thought they had 28MPH speed readouts.

The RVO stated that next, they heard someone telling them to stop, and at that time, they stopped the train. The RVO stated that the Radio RTC told them they were supposed to be keyed up on

the other end, and they responded that they did not know that. They then keyed down the train and walked to the other end of the lead car. The RVO stated that they told the Radio RTC that they were keyed up and then told them that they would be going to Shady Grove Station.

When asked, the RVO stated that the process of offloading a train was to inform the passengers that they were no longer going to be heading towards Shady Grove Station and that they would have to disembark the train and close the doors. The RVO stated they did not remember reviewing offloading the trains during training.

After being advised of the procedure for offloading a train, the RVO stated that they did not know why they didn't close the doors at the time. They thought it was because they were trying to move and get to the other end, so they kept the doors open and remembered that a station manager was there. The RVO stated they knew they were supposed to close the doors because they offloaded the train at the end of the night before the train went into the yard. The RVO stated that they were trying to move as quickly as possible.

When asked, the RVO stated they did not remember which signal the Radio RTC was telling them to verify. They were uncertain if there was a signal ahead of them and did not recall looking at the signal, but the train did have speed commands, so the signal was lunar.

The RVO acknowledged needing an absolute block to move the train in the opposite direction of normal traffic but did not recall reviewing it in training. The operator also stated that they observed a train at Farragut North Station on track 1, but the train was not moving. The train that was directly ahead appeared to be at Farragut North Station. The RVO stated that they stopped the train with 1 or 2 cars remaining on the platform. The RVO stated that they did not see a turnback sign but were able to see a red signal. The RVO stated that the instructions from the Radio RTC were given like rapid fire, and a lot was going on. The RVO stated that they were not trying to do anything wrong.

The RVO stated that they work 40 hours each week without overtime.

The RVO stated that during certification they utilized the route selector box, there was a door problem, and they operated the train for a couple of stations. The RVO stated that they did not clear the interlocking and reverse ends³.

The RVO stated that they were given information to be certified rather than information for once they become operators and that it depends on the instructor.

The RVO stated that some instructors teach what you need to know because it will be on the certification; there were a lot of books.

The RVO stated that during OJT at Shady Grove Yard, they only had one LPI on the mainline. They were assigned to it with other classmates, and most of the time, they were in the yard.

Rail Vehicle Operator – Train ID 126

The RVO is a WMATA employee with one year of service and one year of experience as an RVO. The RVO holds an RWP Level 2 certification that expires in April 2025.

³ According to the Job Task Proficiency Evaluation on May 19, 2024 the RVO, was trained on turnback operations at E08 (Prince George's Plaza Station).

During the interview, the RVO stated that after they serviced Farragut North Station, they lost speed commands when the train passed the A02-32 signal. They contacted the Radio RTC, who informed them that a train was ahead of them.

The RVO stated that the Radio RTC instructed the train ahead of them to clear the interlocking at Dupont Circle and return to Dupont Circle on track 1. The stated Train ID 124 keyed up on the trailing end of the train and approached their train, stopping 600 feet from their train.

The RVO stated that a few trains were instructed to reverse operating ends due to a train experiencing a malfunction at Friendship Heights Station track 2.

The RVO stated they did not hear any train horn activity as Train ID 124 approached them, but they did hear the Radio RTC say, "Stop your train, stop your train" to Train ID 124.

MICC

Button Rail Traffic Controller

The Button RTC is a WMATA employee with 2 years of service and 1 month of experience as an RTC. The Button RTC holds a RWP Level 4 certification that expires in July 2025.

During the interview, the Button RTC stated they were turning trains back at various locations due to a train experiencing a malfunction on the redline. They stated that the Radio RTC instructed the train to offload their train, clear the interlocking at Dupont Circle Station, and reverse operating ends to head back towards Takoma Station. The Button RTC stated that the RVO repeated the instructions given by the Radio RTC.

The Button RTC stated they set a single route for the train to clear the interlocking on track 2. The signals on track 1 were canceled. The Radio RTC requested an update on the offload status when the RVO stated they were keyed up and ready to move.

The Button RTC stated that they observed on the Advanced Information Monitoring System that the train was operating in the wrong direction (towards Farragut North Station).

The Button RTC heard the Radio RTC instruct the RVO to stop moving their train and ask what direction they were traveling in.

Radio Rail Traffic Controller

The Radio RTC is a WMATA employee with 26 years of service and 9 years of experience as an RTC. The Radio RTC holds a RWP Level 4 certification that expires in August 2024.

During the interview, the Radio RTC stated they began their shift at 05:40 hours, and the incident occurred during their overtime. The Radio RTC stated Train ID 114 experienced a mechanical malfunction at Friendship Heights Station, track 2. They began to assist the RVO with troubleshooting the train and turned trains back at various locations.

The Radio RTC stated they instructed Train ID 124, which was held on the platform of Dupont Circle Station, track 2, to offload their train, check for customers, and clear the interlocking. The RVO repeated the instructions, and the Radio RTC continued to assist with troubleshooting Train ID 114.



The Radio RTC said they asked the RVO of Train ID 124 if they were ready to move, and the RVO confirmed they were ready to move. The Radio RTC said to the RVO, "Verify you have a

lunar signal at A03-08 signal, gave them a permissive block up to the turn back, key down, and reverse ends. The RVO repeated the instructions, and the Radio RTC said they returned to troubleshooting Train ID 114.

The Radio RTC stated they looked back at the AIMS screen and observed Train ID 124 moving against the flow of traffic. They instructed them several times to stop their train. When the RVO responded, they asked them which direction they were traveling in. The RVO reported they were traveling up to the lunar A03-08 signal. The Radio RTC stated they informed the RVO that they needed to reverse their direction and were supposed to be going towards Shady Grove Station.

The Radio RTC stated that the RVO keyed down and reversed operating ends. The RVO was then instructed to alight towards Shady Grove Station and pick up a Rail Supervisor along the way.

Appendix B – RVO's Job Task Proficiency Evaluation

	TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION	
Name: [REDACTED]	Emp.No: [REDACTED]	Division: Shady Grove Date: 05/19/2024
Reason for Certification: <i>Please place a check in an area below.</i>		
<input type="checkbox"/> Certification: Student <input type="checkbox"/> Pre-certification: Student <input type="checkbox"/> Division Request <input checked="" type="checkbox"/> Re-Certification <input type="checkbox"/> Return to Duty <input type="checkbox"/> Other _____		

Exam Administered	Score	Date Taken	Equipment (current/working condition)	Yes	No
MOR attempt #	NA	NA	MOR	✓	
TVOIM/TOIM attempt #	NA	NA	Perm/Temp/Special Orders	✓	
Supervisor Combination attempt #	NA	NA	Troubleshooting Guide	✓	
Practical attempt #: 2	QL- Pass	05/19/2024	Flashlight	✓	
			Safety Vest	✓	
			Footwear	✓	
			Identification (One Badge, RWP)	✓	

Comments:

Signatures:	Date:
Employee: [REDACTED]	5/19/24
Examiner: [REDACTED]	5.19.24

RTRA-906-01-00

TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION

Page 1

Figure 8 - RVO's recertification report (Job Task Proficiency Evaluation) page 1 of 2.

Incident Date: July 21, 2024 Time: 17:58 hours
 Final Report – Improper Rail Vehicle Movement
 E24568

Drafted By: SAFE 710 – 08/29/2024
 Reviewed By: SAFE 704 - 09/13/2024
 Approved By: SAFE 707 – 09/24/2024

Page 24

CATEGORIES / SUBCATEGORIES	QUALITY LEVEL	REMARKS (Remarks are required for a quality level score of 2 or 3) - ALL TIMES (are in minutes)
I. Preparation for Service	NA	Cars Used:
1. Exterior Inspection	NA	
2. Interior Inspection - Trailing Cab	NA	
3. Interior Inspection - Each Car	NA	
4. Interior Inspection - Oper. Cab	NA	
5. Rolling Test / Rolling Brake Test	NA	
	NA	Time Allotted: 35:00 / Actual Time: :
II. Mainline Operation	QL1	
6. Communications	1	
7. Door Oper. & Station Stopping	1	
8. Use of Horn	1	
9. Speed Adherence/Manual Oper.	1	
10. Turn Back Moves	1	Location: E08 Time Allotted: 02:00 / Actual Time: 00:51
11. Wrong Route Selection	1	Location: E10-08
12. EV Shutoff	1	Time Allotted: 00:30 (01:00) / Actual time: 00:08
III. Yard Operation	NA	
13. Communications	NA	
14. Yard Movements	NA	
15. Coupling	NA	Time Allotted: 08:00 (12:00) / Actual Time: : Cars Used: +
16. Uncoupling	NA	Time Allotted: 05:00 (07:30) / Actual Time: : Cars Used: < >
17. Isolation (Self-Recovery)	NA	Time Allotted: 15:00 (22:30) / Actual Time: : Cars Used:
18. Manual Switch Operation	NA	
IV. Miscellaneous	QL1	
19. Recovery Train Operation	NA	Time Allotted: 12:00 (18:00) / Actual Time: : Cars Used: +
20. Troubleshooting	1	7670-7671X 7333-7332X 7344-7345 X 7375-7374
#1 No All Doors Closed (EEDR Activated) Belly Car # 7333		Time: 4:14
#2 ATC Failure (ATC PS Tripped Lead Car reset) # 7670		Time: 1:29

Figure 9 - RVO's recertification report (Job Task Proficiency Evaluation) page 2 of 2. (Red Circle - #10 Turnback Moves training confirmation at Prince George's Plaza Station E08).

RAIL OPERATIONS PERSONNEL DIRECTIVE

RTRA-703-24-01

Wednesday, August 7, 2024

Preventing Improper Direction of Travel After Offloads

On Sunday, July 21, 2024, an incident occurred at Dupont Circle in which a Rail Vehicle Operator (RVO) improperly operated their train in the opposite direction of travel towards an incoming train. While this incident is still under investigation to determine the root cause and contributing factors, the Metro Integrated Command and Communications Center (MICC) is immediately implementing the following procedure as an interim mitigation.

As a reminder, if there are any uncertainties regarding directives given, Rail Vehicle Operators (RVOs) must contact Rail Traffic Controllers (RTCs) to seek clarification prior to moving their train. If a RVO feels directives given are unsafe, it is their responsibility to express their concerns and again seek clarification prior to moving their train. It is vitally important that all parties involved have a clear understanding of the actions to be taken.

RVO Actions Required:

RVOs who are in control of revenue and non-revenue trains who must leave the operating cab for any reason to attend an unscheduled incident, must contact the Rail Traffic Controller (RTC) upon returning to the cab and inform which end-of-line station they will proceed (ex. Red Line: Shady Grove or Glenmont). The RTC must confirm the direction of travel by acknowledging the end-of-line station.

Example:

The RVO servicing the Red Line is instructed by the RTC to offload their train at a mid-line station and reverse ends to proceed in the opposite direction to ease congestion on the system. After offloading their train and upon re-entering the operating cab, the RVO contacts the RTC via radio and informs the RTC that they are occupying the operating cab on the Glenmont end of the train.

The RTC will confirm with the operator that this is the proper end of the train based on the intended direction of movement. This confirmation must be received from the RTC prior to the RVO moving the train in either direction.

Print Name/Payroll#

Signature

Date Received

Supv. Print Name / Signature



To report a potential safety risk, please scan the QR code or use this link: tinyurl.com/ReportRisks
Note: Electrical devices shall only be used in designated areas and in accordance with the WMATA Electronic Device Policy

Figure 10 - Preventing Improper Direction of Travel After Offloads (RTRA-703-24-01).



RTRA OPERATIONS SAFETY STAND DOWN

Monday, July 22, 2024

RTRA-101-01-00

Safety Points to Adhere While Operating Rail Vehicles

As Rail Vehicle Operators, you are profoundly responsible for the safety of yourselves and our customers. Running a red signal is not just a violation but a potentially catastrophic risk that can lead to accidents, injuries, and loss of life.

A red signal means a stop. It indicates that crossing the signal could lead to a collision with another Rail Vehicle or pose a danger to co-workers and infrastructure. Ignoring a red signal compromises the entire signaling system's integrity and safety.

Remember that Stop and Proceed actions remove the automatic train protection mechanisms used to keep trains apart and prevent collisions. When you use Stop and Proceed, you're removing the system protections and must be vigilant of your surroundings. Most red signal overruns occur after an operator enters Stop and Proceed mode and forgets they're not protected.

Please be mindful and remember the following safety points:

- Always approach signals with caution and be prepared to stop.
- Obey the signal indication regardless of familiarity with the route or schedule.
- Maintain a safe distance from the signal to ensure a complete stop if required.
- Report any malfunctioning signals immediately to the MICC.
- Use Point and Call to verify a lunar signal, correct rail alignment, and speed commands before moving.
- Repeat-back must be fully understood and acknowledged.
- Contact the MICC to obtain a permissive or absolute block before initiating Stop and Proceed.
- Always maintain situational awareness; if something doesn't look right, report it to the MICC immediately. This includes objects in the roadway and adverse environmental conditions.
- Follow the MICC's instructions after reporting adverse conditions, including not operating your train through smoky conditions and turning off your train's EV system.

And as a reminder, MOR General Rule 1.1.2 states, "Customer safety is the responsibility of every WMATA employee; however, Rail Vehicle Operators have the ultimate and final responsibility for the safety of the customers on their trains. If any Rail Vehicle Operator is instructed by any person, regardless of rank, title, or position, to take any action which would adversely affect the safety of customers, the Rail Vehicle Operator shall stop the train, notify Rail Operations Control Center or the Interlocking Operator, and shall not continue until satisfied that it is safe to do so."

Operations managers, along with SAFE personnel, will be in the system to conduct increased discussions regarding this matter and to address any questions or concerns.

Thank you and please be safe.



Figure 11 -Safety Points to Adhere While Operating Rail Vehicles. (RTRA-101-01-00).

Appendix E – MICC Staff Notice

From: [REDACTED]
Subject: Instruction for Reversing Train Direction
Date: Monday, July 22, 2024 12:12:24 PM
Attachments: [image001.png](#)
Importance: High

All,

Effective immediately, please brief out in all Rail 1 briefings until further notice.

When instructing a Train Operator to clear an interlocking and reversing ends of the train to move in the opposite direction of travel, the Rail Traffic Controller **shall** verify and confirm that Train Operator is positioned in the correct operating end of the train for the planned/intended direction of travel before giving the train operator permission to move the train.

Ex:

RTC - Train 900, offload your train, verify clear of customers and notify when you are in the operating cab on the New Carrollton end of train, over

T/O – Copy, Train 900, offload the train, verify clear of customers and notify when in the operating cab on the New Carrollton end of the train, over

T/O - Train 900 is off-loaded and clear of customers, over

RTC – Train 900, verify that you are located in the operating cab on the New Carrollton end of train, over

T/O – Affirmative, I am located in the operators cab on the new Carrollton end of the train, over

RTC – Copy, you are located in the operators cab on the new Carrollton end of the train, verifying a lunar and speed commands at C04-02, you have permission to the Turnback and the reverse ends, notify when you are in the operating cab on the Vienna end of the train and ready to move

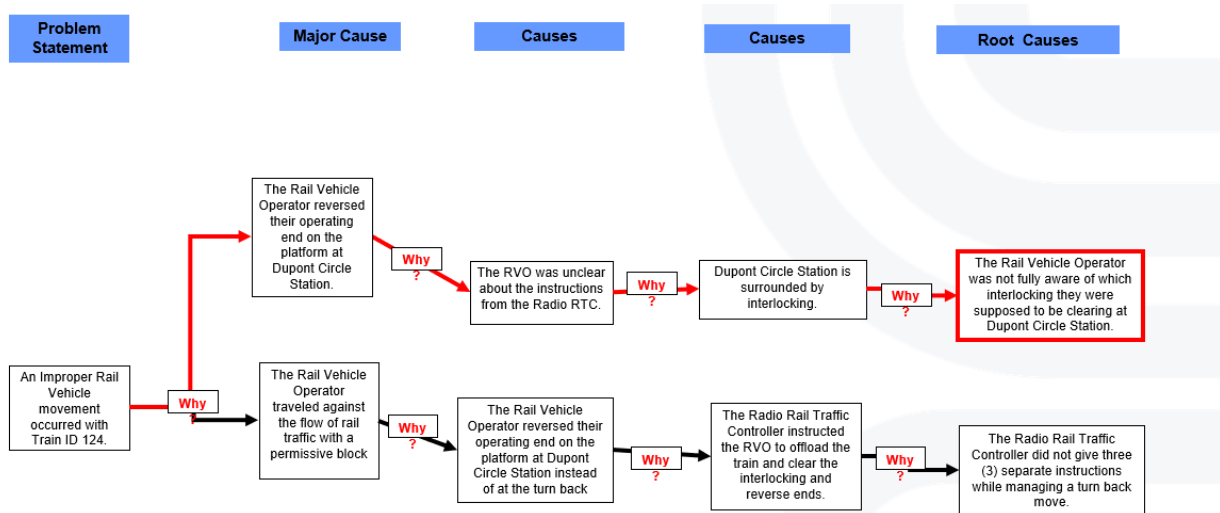
Please acknowledge receipt, understanding and compliance with the above.

[REDACTED]
Director, Metro Integrated Command & Communications Center
Office of Operations | 202.538.5936



Figure 12 - Staff notice to all Rail MICC personnel.

Appendix F – Why-Tree Analysis



Root Cause Analysis

Figure 13 - Why Tree (Root Cause Analysis).

9 
E24568 – Improper Rail Vehicle Movement – Dupont Circle



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

FINAL REPORT OF INVESTIGATION A&I E24652

Date of Event:	August 17, 2024
Type of Event:	O-7: Improper Rail Vehicle Movement
Incident Time:	10:35 hours
Location:	Pentagon Station (C07)
Time and How received by SAFE:	11:01 hours / MICC Notification
WMSC Notification Time:	11:32 hours
Responding Safety Officers:	None
Rail Vehicle:	Train ID 820 [L7154/55X7106/07X7181/80T]
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Incident Number:	20240820#119198

Pentagon Station – Improper Rail Vehicle Movement

August 17, 2024
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Abbreviations and Acronyms

ADU	Aspect Display Unit
AIMS	Advanced Information Management System
ARS	Audio Recording System
CCTV	Closed-Circuit Television
CM	Chain Marker
CMOR	Office of the Chief Mechanical Officer
COSI	Office of Signal Engineering
ER	Event Recorder
IIT	Incident Investigation Team
MICC	Metro Integrated Command and Communications Center
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
NVR	Network Video Recorder
OAP	Operations Administrative Policy
ROS	Rail Operations Supervisor
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
RVO	Rail Vehicle Operator
SAFE	Department of Safety
SMS	Safety Measurement System
SPOTS	System Performance On-Time Summary
TWC	Track to Wayside Communications
VMDS	Vehicle Monitoring and Diagnostic System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Washington Metropolitan Area Transit Authority
Department of Safety – Office of Safety Investigations

Executive Summary

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

On Saturday, August 17, 2024, at 10:35 hours, Train ID 820, a six-car, 7000 series consist [L7154/55X7106/07X7181/80T], was properly berthed at the 8-car marker, on track 2 at Pentagon Station. A replacement Rail Vehicle Operator (RVO #1) boarded the train from the trailing end of the consist, for a change off, and began moving the train in the opposite direction of rail traffic, towards the beginning of the platform, without permission or an absolute block. A Rail Operations Supervisor (ROS #1) located on the track 1 platform of Pentagon Station notified the Metro Integrated Command & Communications Center (MICC) OPS 3 Button Rail Traffic Controller (RTC). The Button RTC, instructed the RVO #1 operating Train ID 820 to stop the train. The train came to a complete stop at Chain Marker (CM) C2 258+33. The Button RTC was acting as both the Button and Radio RTC during this incident, while the Radio RTC was away from the console.

In adherence to Standard Operating Procedure 102-01-02, which outlines the protocol for Removing an Employee from Service for involvement in an operational safety event, the Button RTC, and RVO #1 were removed from duty for post-incident testing.

In accordance with the Office of the Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Operations Administrative Policy (OAP) 102.06, the Metro Integrated Command and Communications Center (MICC) promptly initiated the removal of Train ID 820 was promptly transported to the yard for post-incident investigative measures. This action adhered to the Rail Vehicle Event Investigation Policy, ensuring a comprehensive examination of the incident.

The probable cause of the Improper Rail Vehicle Movement at the Pentagon Station on August 17, 2024, was determined to be an improper handoff. The RVO #1 failed to conduct a visual and verbal change-off, thereby entering the incorrect railcar. Contributing to the incident was the procedure in place for moving a train without speed commands was not followed. Specifically, the RVO #1 failed to request permission from the Button RTC, before entering “Stop and Proceed” mode² and began moving the train in the opposite direction of rail traffic without permission or an absolute block.

Incident Site

Pentagon Station, Track 2

¹ The Metrorail Operating Rulebook (MOR) defines an Absolute Block as a section of track that shall not be occupied by more than one (1) train or track equipment.

² Stop and Proceed mode is a safety feature used to reduce the risk of accidental red signal overruns by requiring Rail Vehicle Operators to take steps to authorize a point of power in the absence of speed commands with the Automatic Train Protection (ATP) System enforcing a maximum speed of up to 15 MPH.

Field Sketch/Schematics

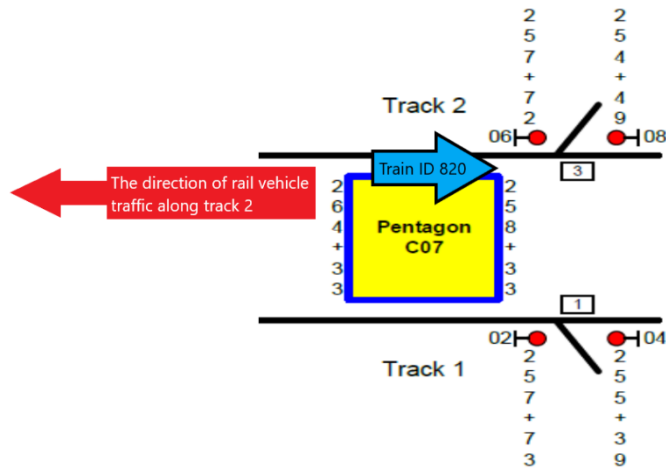


Figure 1 - depicts the direction Train ID 820 moved towards on track 2 at Pentagon Station.
The above depiction is not to scale.

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

The investigative methodologies included the following:

- Site Assessment through video and document review.
- Formal Interviews – SAFE interviewed two (2) individuals as part of this investigation. The interview included persons present at, during, and after the incident, those directly involved in the response process, and representatives from the Washington Metrorail Safety Commission (WMSC). SAFE interviewed the following individuals:
 - RVO #1
 - Button RTC
- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
 - RVO #1's Training Records
 - RVO #1's Certifications
 - RVO #1's 30-Day work history review
 - Metrorail Operating Rulebook (MOR)
 - National Oceanic and Atmospheric Administration (NOAA)
 - Metro Integrated Command and Communications Center (MICC) Incident Report
 - The Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Vehicle Monitoring and Diagnostic System (VMDS)
- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
 - Audio Recording System (ARS) playback

- Closed-Circuit Television (CCTV)
- System Performance On-Time Summary (SPOTS)
- Metro Rail Track Wayside Communications (TWC) Tool
- Advanced Information Management System (AIMS) Event Log

Investigation

On Saturday, August 17, 2024, the OPS 3 Button RTC orchestrated a rail vehicle change-off between Train ID 820, a six-car, 7000 series consist [L7154/55X7106/07X7181/80T] and Train ID 823 another six-car, 7000 series consist [L7290/91X7175/74X7461/60T] to occur at Pentagon Station. This location is a split platform station. Both trains were operating in non-revenue service.

At 10:23 hours the OPS 3 Radio RTC instructed ROS #1, located at Pentagon City Station, to board Train ID 823 once the train arrived on Track 2 at the station, double-end the train, and operate the train to Pentagon Station, Track 1 for the purpose of a change-off.

At 10:29 hours, RVO #1 arrived at Pentagon City Station, Track 2, and keyed down. ROS #1 boarded the trailing car and keyed up in the direction of the Pentagon City Station interlocking. Signal C08-06 displayed a flashing lunar signal and ROS #1 crossed Train ID 823 from Track 2 to Track 1 towards Pentagon Station.

At 10:32 hours, the Radio RTC stepped away from the console, and the Button RTC covered both the Button and Radio during the Improper Rail Vehicle Movement event. The Radio RTC was away from the console for 10 minutes when the incident took place.

At 10:33 hours, the Button RTC instructed ROS #1 to exit Train ID 823 at Pentagon Station, Track 1, walk over to Pentagon Station, Track 2, and double-end Train ID 820.



Figure 2 - Train ID 820 berthed at the 8-car marker at Pentagon Station on track 2.



Figure 3 - Trailing car 7180 exterior camera as Train ID 820 berthed at the 8-car marker.

At 10:35 hours, Train ID 820, was berthed at the 8-car marker, on track 2 at Pentagon Station, in the direction of Pentagon City Station. Train ID 823 was stopped mid-platform on track 1, in the direction of Arlington Cemetery Station. The RVO #1 exited Train ID 823, went to track 2 on the lower level, and boarded Train ID 820 from the trailing car, 7180. The RVO #2 waiting in the leading car, 7154, remained on the train. RVO #1, keyed up the train from the trailing car, entered stop and proceed mode, and began moving the train in the direction of Arlington Cemetery Station. ROS #1, waiting on track 1, for RVO #2 observed the train moving in the opposite direction of normal traffic and notified the Button RTC. At 10:37 hours, the Button RTC instructed RVO #1 to stop the train. The train came to a complete stop at the entrance side platform limit. RVO #1 then keyed down and walked towards the leading car, 7154.



Figure 4 - Depicts RVO #1 walking to Train ID 820 on track 2, lower level.

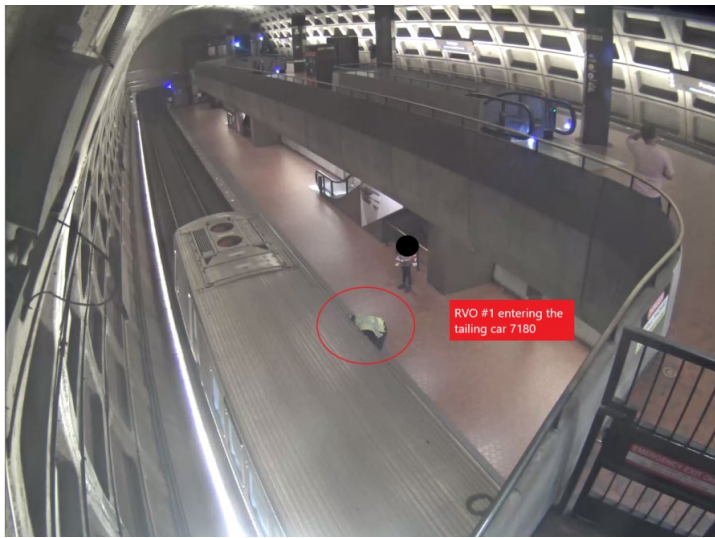


Figure 5 - RVO #1 entering the trailing car of Train ID 820.



Figure 6 - Depicts RVO #1 moving Train ID 820 in the opposite direction of rail vehicle traffic, on track 2 of Pentagon Station.

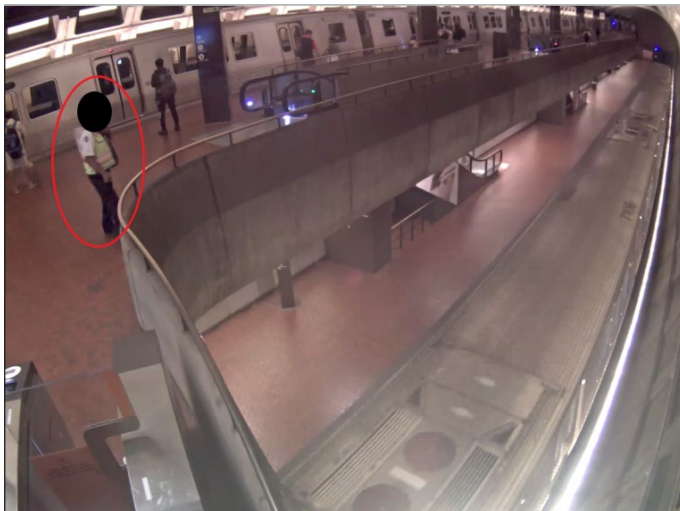


Figure 7 - Depicts ROS #1 informing the RTC of the train on track 2 moving in the opposite direction of normal rail traffic.



Figure 8 - Trailing car 7180 exterior camera as Train ID 820 stopped after moving in the opposite direction of rail traffic to the beginning of the platform.

RVO #2 exited Train ID 820, went to Train ID 823 on the upper level, track 1, and assumed command of the train. ROS #1 went to the lower level and boarded Train ID 820 at the trailing end, to assist expediting the train move once the train cleared the interlocking at Pentagon City Station enroute to Greenbelt Yard.

At 10:40 hours, RVO #2, entered the operating cab of Train ID 823, informed the Button RTC that they had a lunar aspect at signal C7-02, and that the visual/verbal change-off had been completed. At 10:40 hours, RVO #1 operating Train ID 820, departed Pentagon Station towards the interlocking at Pentagon City Station. At 10:41 hours, ROS #1 informed the Button RTC that Train ID 820 had cleared the interlocking at signal C08-06. RVO #1 keyed down and ROS #1 keyed up in car 7180. At 10:42 hours, the Radio RTC returned and resumed command of the OPS 3 Radio. The Radio RTC provided ROS #1 a lunar signal and permission to cross over from track 2 to track 1, towards Greenbelt Yard.

At 10:52 hours, ROS #2 boarded Train ID 820 at Galley Place Station and assumed command of the train towards Greenbelt Station and ROS #1 alighted the train. At 11:18 hours the train arrived at Greenbelt Station. The RVO #1 was removed from service and sent for post-incident testing.

Chronological Event Timeline

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

Time	Description
10:23:43 hours	<p><u>Radio RTC</u>: Asked if ROS #1 was at Pentagon City Station.</p> <p><u>ROS #1</u>: Asked if there was a change of plans.</p> <p><u>Radio RTC</u>: Replied, Negative, and informed ROS #1 that Train ID 823 was approaching Pentagon Station and would be the third train approaching Pentagon City Station.</p> <p><u>ROS #1</u>: Asked how many cars were in the consist.</p> <p><u>Radio RTC</u>: Asked RVO #1 operating Train ID 823 how many cars were in the consist.</p> <p><u>RVO #1</u>: Replied six (6) cars. [OPS 3 Radio]</p>
10:32:53 hours	<p><u>Radio RTC</u>: Stepped away from the console and called the Button RTC to inform them that ROS #1 was double-ending Train ID 823 at Pentagon City Station, Track 2.</p> <p><u>Button RTC</u>: Acknowledged and informed the Radio RTC they were going to have ROS #1 exit Train ID 823 and double end Train ID 820 on Track 2 at Pentagon Station. [ROCC Yellow/Green Phone]</p>
10:33:20 hours	<p><u>Button RTC</u>: Instructed ROS #1 to exit the train at Pentagon Station, walk over to track 2 to double end Train ID 820.</p> <p><u>Button RTC</u>: Instructed Train ID 820 (RVO #2) to hold their location at Pentagon Station.</p> <p><u>RVO #2</u>: Acknowledged message with 100% repeat back. [OPS 3 Radio]</p>
10:34:01 hours	<p><u>ROS #1</u>: Asked the Button RTC if they still wanted Train ID 823 and Train ID 820 to change off at Pentagon Station.</p> <p><u>Button RTC</u>: Acknowledged there was a change-off to be made and stated the train (ID 820) was on track 2. [OPS 3 Radio]</p>
10:34:22 hours	<p><u>ROS #1</u>: Asked the Button RTC to instruct RVO #2 to exit Train ID 820 and come to the upper level to take over operation of Train ID 823, ROS #1 also informed the Button RTC that they had lost speed commands.</p> <p><u>Button RTC</u>: Granted ROS #1 a permissive block to the 8-car marker, Pentagon Station Track 1, C07-02 displaying a red aspect. [OPS 3 Radio]</p>
10:34:58 hours	Train ID 820 arrived at the 8-car marker at Pentagon Station, track 2 platform, located on the lower level [CCTV][AIMS][SPOTS]
10:35:46 hours	<p><u>ROS #1</u>: Asked the Button RTC if RVO #2 on Train ID 820 was on their way to the upper level (to track 1)</p> <p><u>Button RTC</u>: Informed ROS #1 that it appears that Train ID 820 has been keyed down.</p> <p><u>ROS #1</u>: Acknowledged the message. [OPS 3 Radio]</p>
10:35:50 hours	Train ID 823 performed a short stop at Pentagon Station, track 1 platform, located on the upper level. [CCTV][AIMS][SPOTS]
10:35:59 hours	RVO #1 was observed exiting Train ID 823 and walking to the lower level to Train ID 820. [CCTV]
10:36:00 hours	<u>Train ID 432</u> : Informed the RTC that they did not have any speed commands and they were located at Arlington Cemetery Station. [OPS 3 Radio]
10:36:13 hours	RVO #1 arrived on the track 2 (lower level) and began walking towards the tail car 7180 [CCTV]
10:36:14 hours	<p><u>Train ID 432</u>: Repeated that they did not have any speed commands and they were located at Arlington Cemetery Station.</p> <p><u>Train ID 432</u>: Asked for a radio check</p> <p><u>RTC</u>: Instructed Train ID 432 to hold their location. [OPS 3 Radio]</p>

Time	Description
10:36:41 hours	RVO #1 opened the cab doors to car 7180. [CCTV]
10:36:56 hours	<u>ROS #1</u> : Informed the Buttons RTC that they were still waiting for RVO #2 to board the train. [OPS 3 Radio]
10:37:08 hours	<u>Buttons RTC</u> : Asked RVO #2 if they were enroute to track 1 [OPS 3 Radio]
10:37:20 hours	Train 820 began moving in the reverse direction towards Arlington Cemetery Station and came to a stop at the 8-car marker. [CCTV]
10:37:20 hours	<u>RVO #2</u> : Acknowledged the message from the RTC, informed them that the train was moving, and requested to have it stopped. [OPS 3 Radio]
10:37:34 hours	<u>ROS #1</u> : Informed the Button RTC that the train on track 2 was traveling in the wrong direction. [OPS 3 Radio]
10:37:45 hours	<u>Button RTC</u> : Replied, Right, we need that train double-ended so we can go towards, I think, Greenbelt (Yard) [OPS 3 Radio]
10:37:52 hours	<u>ROS #1</u> : Informed the Button RTC that the train (on track 2) was keyed up and moving towards Arlington Cemetery Station. [OPS 3 Radio]
10:37:53 hours	Train ID 820 came to a complete stop at the 8-car marker of Pentagon Station in the direction of Arlington Cemetery Station. [CCTV]
10:37:57 hours	<u>Button RTC</u> : Instructed RVO #1 to stop moving Train ID 820, stating no one had given them permission to move the train. <u>RVO #1</u> : Acknowledged the message and stated they were reversing ends. <u>Button RTC</u> : Instructed RVO #1 not to move the train. [OPS 3 Radio]
10:38:00 hours	RVO #2 exited Train ID 820 and walked to the upper level to Train ID 823 [CCTV]
10:38:57 hours	<u>ROS #1</u> : Instructed RVO #2 to come upstairs to track 1. [OPS 3 Radio]
10:39:19 hours	<u>ROS #1</u> : Informed the Button RTC that RVO #2 was aboard the train on track 1 (Train ID 823) [OPS 3 Radio]
10:39:20 hours	<u>ROS #1</u> walked from the upper level to Train ID 820 and boarded the train. [CCTV]
10:39:49 hours	<u>ROS #1</u> : Informed RVO #1 that they were onboard Train ID 820. [OPS 3 Radio]
10:40:04 hours	<u>ROS #1</u> : Instructed RVO #1 to continue operations and clear the interlocking at Pentagon City Station [OPS 3 Radio]
10:40:15 hours	<u>RVO #2</u> : Informed the RTC that they had a lunar aspect at signal C7-02 and that the visual/verbal change-off had been completed. [OPS 3 Radio]
10:40:32 hours	<u>Button RTC</u> : Asked ROS #1 which end of the consist were they located. <u>ROS #1</u> : Stated that once they clear the interlocking at Pentagon City Station, they will be at the end of the consist facing Pentagon Station. [OPS 3 Radio]
10:41:37 hours	<u>ROS #1</u> : Stated they were at signal C08-06. [OPS 3 Radio]
10:42:59 hours	<u>Radio RTC</u> : Returned to the OPS 3 console and resumed command of the Radio. They instructed ROS #1 to verify their lunar signal at C08-06, cross over from track 2 to track 1, and to give them a landline call once the RVO #1 resumes command of the consist. [OPS 3 Radio]
10:43:12 hours	<u>ROS #1</u> : Acknowledged the instructions. [OPS 3 Radio]
10:48:23 hours	<u>Radio RTC</u> : Radioed for ROS #2 to give them a landline call. [OPS 3 Radio]
10:49:25 hours	<u>Radio RTC</u> : Radioed for RVO #1 <u>RVO #1</u> : Replied, stating their location was L'Enfant Plaza Station. <u>Radio RTC</u> : Instructed RVO #1 to let Rail Supervisor #1 disembark at Gallery Place Station and they would be picking up ROS #2. ROS #2 would be taking over control of the train. <u>RVO #1</u> : Acknowledged the message. [OPS 3 Radio]

Time	Description
10:56:52 hours	<u>Radio RTC</u> : Informed ROS #2 that they were to operate the train to Greenbelt Station. <u>ROS #2</u> : Acknowledged the message and stated that they would call them once they arrived at Greenbelt Station. [OPS 3 Radio]

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

Advanced Information Management System (AIMS)

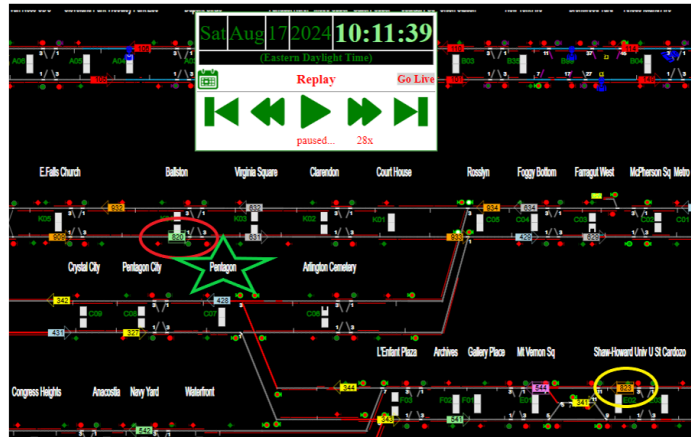


Figure 9 - Depicts Train ID 820 and Train ID 823 enroute to Pentagon Station.

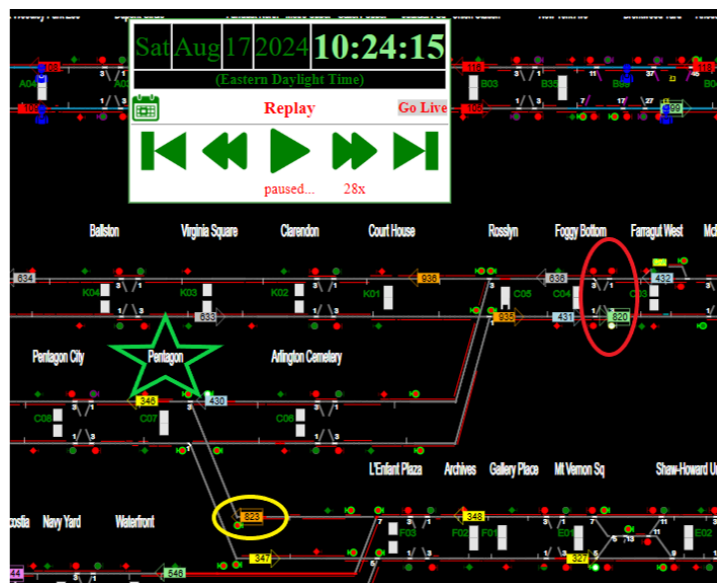


Figure 10 - Depicts Train ID 820 crossing over from track 1 to track 2 at Foggy Bottom-GWU Station.

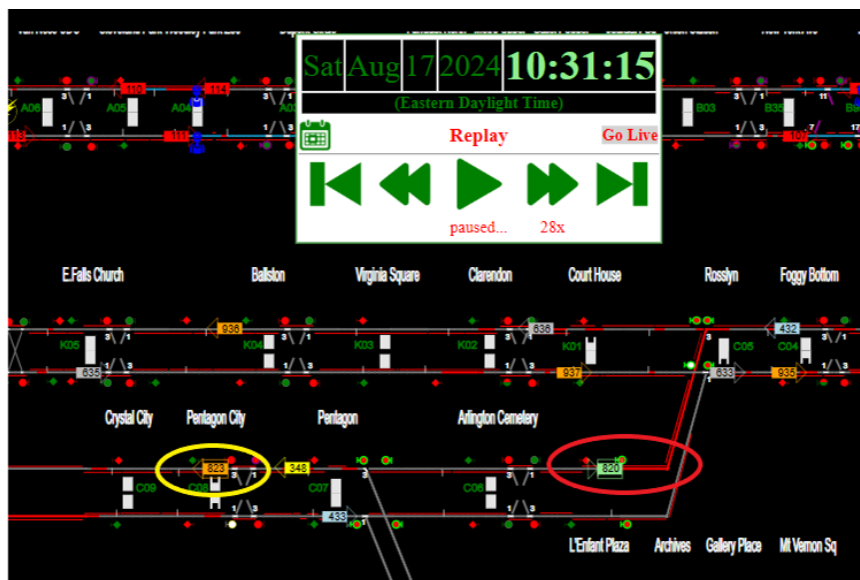


Figure 11 - Depicts Train ID 823 crossing over from track 2 to track 1 at Pentagon City Station.



Figure 12 - Depicts Train ID 820 and Train ID 823 enroute to Pentagon Station.

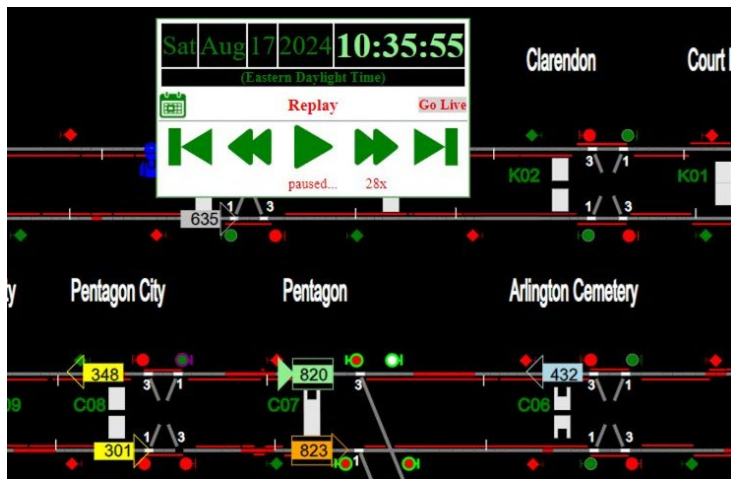


Figure 13 - Depicts Train ID 820 doors opening at 10:35:55 hours. RVO #1 boards the train at this time.

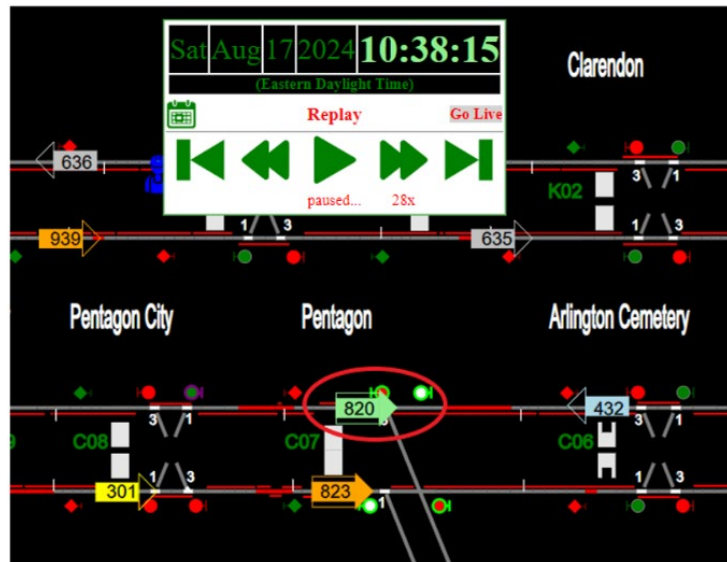


Figure 14 - Depicts Train ID 820 moving in the opposite direction of rail traffic.

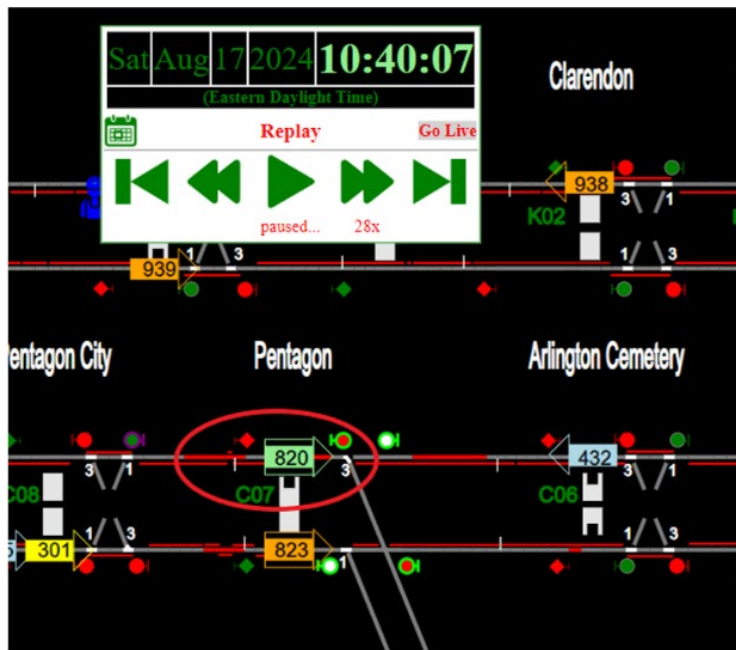


Figure 15 - Depicts the doors of Train ID 820 opening. RVO #2 exits the train at this time.

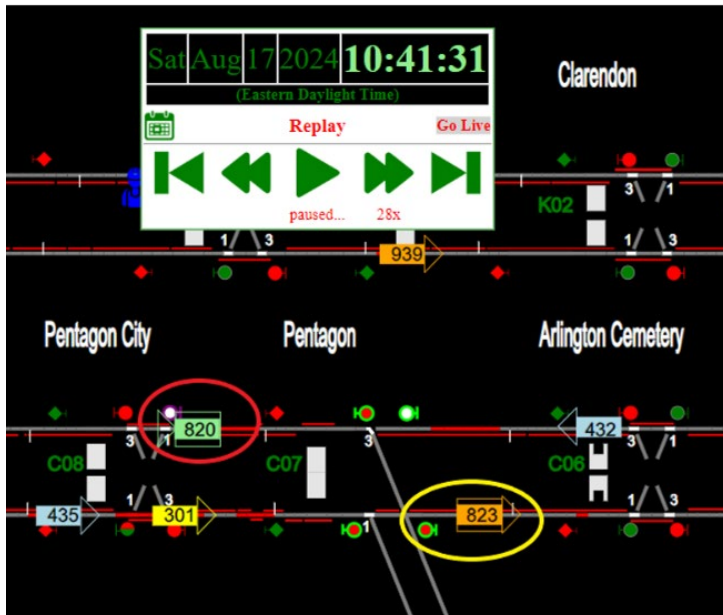


Figure 16 - Depicts Train ID 820 moving in the normal direction of rail vehicle traffic towards Pentagon City Station.

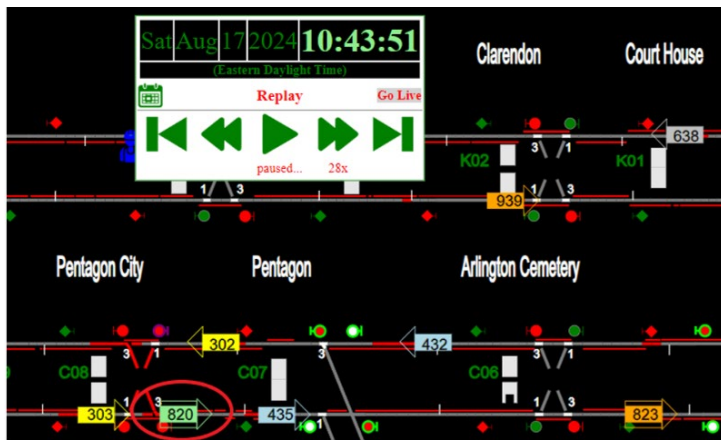


Figure 17 - Depicts Train ID 820 crossing over from track 2 to track 1 at 10:43:51 hours.

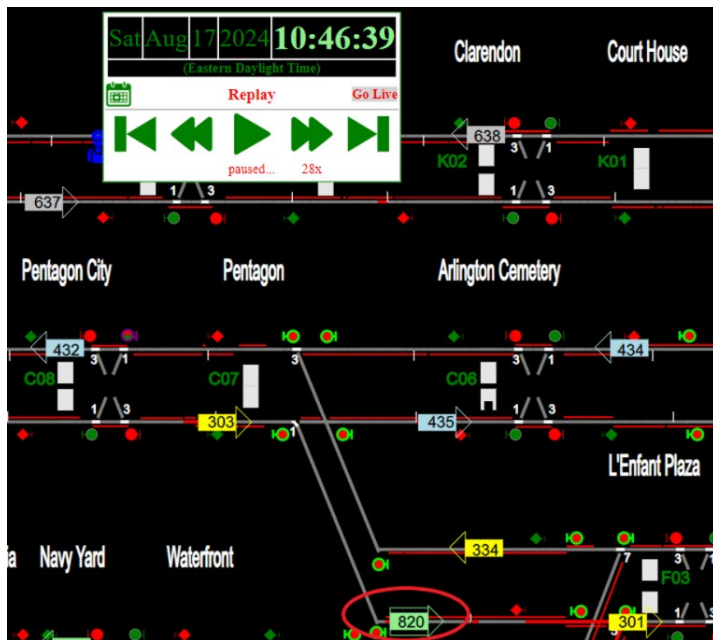


Figure 18 - Depicts Train ID 820 moving in the direction of Greenbelt Yard.

System Performance On-Time Summary (SPOTS) Repots

ROCS SPOTS REPORT

based on up-to-the-second operational performance data from the Rail Operations Control System

Current date/time: Tue Aug 20 12:57:43 2024

Select Platform: and/or Select ID: Leave blank to remove criteria
and/or Select 4-digit car number: 7154 Leave blank to remove criteria
Select Date: Aug 17 2024 Select Times (0-24HR): From 09:00 To 13:00

Generate Report													
ID	Platform	length	dcode	Right door open	Right door close	dwel	Left door open	Left door close	dwel	Head Arrived	Tail cleared	cars	Headway door open to door open
820	N09-1	6	92							09:38:07	09:38:35	7154-7155-7106-7107-7181-7180	-
820	N08-1	6	92							09:40:32	09:41:00	7154-7155-7106-7107-7181-7180	-
820	N07-1	6	92							09:42:40	09:43:07	7154-7155-7106-7107-7181-7180	-
820	N06-1	6	92							09:45:10	09:45:40	7154-7155-7106-7107-7181-7180	-
820	N04-1	6	92							09:53:43	09:54:30	7154-7155-7106-7107-7181-7180	-
820	N03-1	6	92							09:55:52	09:56:33	7154-7155-7106-7107-7181-7180	-
820	N02-1	6	92							09:58:12	09:59:31	7154-7155-7106-7107-7181-7180	-
820	N01-1	6	92							10:00:21	10:00:46	7154-7155-7106-7107-7181-7180	-
820	K05-1	6	92							10:07:04	10:07:29	7154-7155-7106-7107-7181-7180	-
820	K04-1	6	92							10:10:50	10:11:32	7154-7155-7106-7107-7181-7180	-
820	K03-1	6	92							10:12:25	10:13:23	7154-7155-7106-7107-7181-7180	-
820	K02-1	6	92							10:14:19	10:15:09	7154-7155-7106-7107-7181-7180	-
820	K01-1	6	92							10:16:41	10:17:34	7154-7155-7106-7107-7181-7180	-
820	C05-1	6	92							10:19:26	10:20:07	7154-7155-7106-7107-7181-7180	-
820	C04-1	6	92							10:21:58	10:22:48	7154-7155-7106-7107-7181-7180	-
820	C04-2	6	92							10:28:09	10:28:50	7180-7181-7107-7106-7155-7154	-
820	C05-2	6	92							10:30:14	10:30:49	7180-7181-7107-7106-7155-7154	-
820	C06-2	6	92							10:32:08	10:32:35	7180-7181-7107-7106-7155-7154	-
820	C07-2	6	92				10:35:03	10:39:45	282	10:34:12	10:40:40	7180-7181-7107-7106-7155-7154	-
820	C08-2	6	92							10:41:17	10:43:28	7180-7181-7107-7106-7155-7154	-
820	C07-1	6	92							10:45:29	10:46:01	7154-7155-7106-7107-7181-7180	-
820	F03-1	6	92							10:49:28	10:50:15	7154-7155-7106-7107-7181-7180	-
820	F02-1	6	92							10:50:54	10:51:19	7154-7155-7106-7107-7181-7180	-
820	F01-1	6	92				10:52:05	10:52:57	52	10:51:36	10:53:22	7154-7155-7106-7107-7181-7180	17:02
820	E01-1	6	92							10:54:03	10:54:30	7154-7155-7106-7107-7181-7180	-
820	E02-1	6	92							10:54:50	10:55:14	7154-7155-7106-7107-7181-7180	-
820	E03-1	6	92							10:55:42	10:56:09	7154-7155-7106-7107-7181-7180	-
820	E03-1	6	92							10:56:15	10:56:17	7154-7155-7106-7107-7181-7180	-
820	E04-1	6	92							10:57:12	10:57:39	7154-7155-7106-7107-7181-7180	-
820	E05-1	6	92							10:59:26	10:59:53	7154-7155-7106-7107-7181-7180	-
820	E06-1	6	92							11:01:48	11:02:20	7154-7155-7106-7107-7181-7180	-
820	E07-1	6	92							11:05:09	11:05:37	7154-7155-7106-7107-7181-7180	-
820	E08-1	6	92							11:07:16	11:07:41	7154-7155-7106-7107-7181-7180	-
820	E09-1	6	92							11:11:08	11:12:10	7154-7155-7106-7107-7181-7180	-
820	E10-1	6	92				11:18:18	11:18:23	5	11:17:49	11:19:25	7154-7155-7106-7107-7181-7180	26:13

Figure 19 - depicts Train ID 820 at Pentagon Station (C07), track 2.

The Office of Chief Mechanical Officer (CMOR) / Vehicle Monitoring and Diagnostic System (VMDS)

Adopted from CMOR IIT report with minor formatting and grammatical edits:

IIT completed an analysis of the data collected from Train ID 820, [L7154/55x7106/07x7181/80T], for a reported Improper Rail Vehicle Movement incident at Pentagon Station.

IIT has completed a download and analysis of data from the train in question. Based on Vehicle Monitoring and Diagnostic System (VMDS) data, Event Recorder (ER) data and Network Video Recorder (NVR) video, Train ID 820 entered Pentagon Station, coming to a complete stop at the 8-car marker on track 2.

The Left Open Door train lines energized and left side passenger doors opened. The lead car, Car 7154, was keyed down. Car 7154 was keyed up once more, the left doors of the consist were closed, and car 7154 was keyed back down.

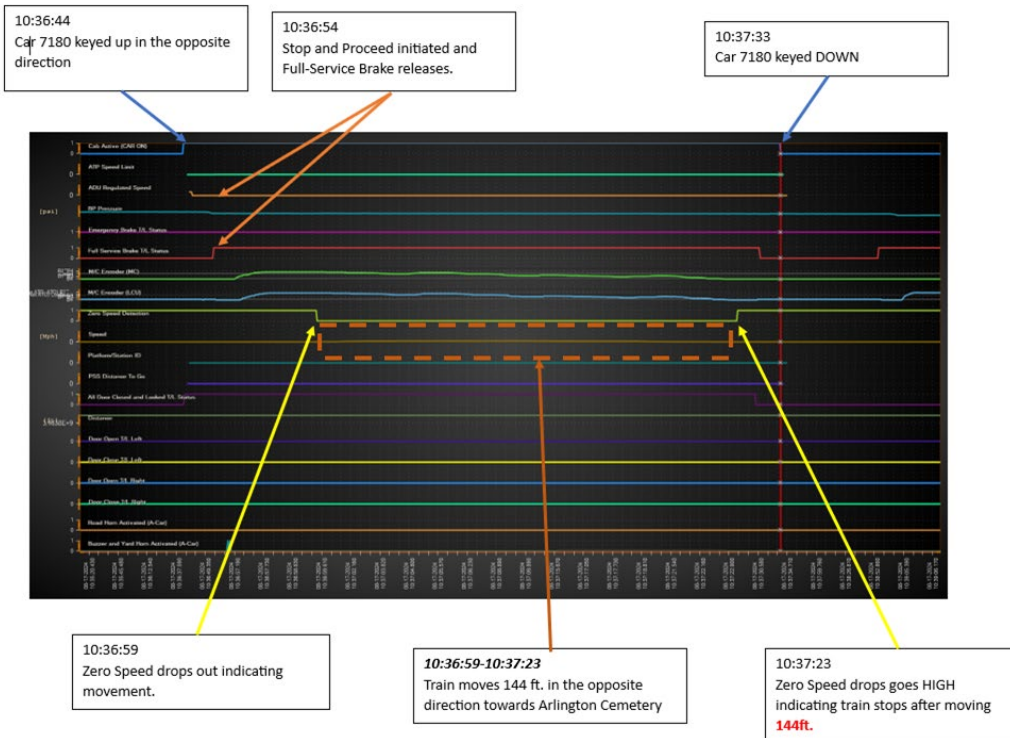
The train was then keyed up on the opposite end, on the trailing car 7180, facing Arlington Cemetery Station. With no speed readouts present, "Stop and Proceed" was initiated, releasing the Full-Service Brake. The Master Controller was moved to a "P1-P4" Power position and the train began to move in the opposite direction of normal traffic flow, towards Arlington Cemetery Station. The train moved 144 feet and came to a complete stop. Car 7180 was then keyed down.

The Initial lead car, car 7154, was keyed back up. With Speed readouts displayed, the Master Controller was moved to a "P1-P4" Power position, and the train began to move in the direction of Pentagon City Station.

There were no Emergency brake applications during the reported incident time. Based on VMDS data, ER data, and NVR video, there was no fault with the train that contributed to the cause of this incident. The train performed as commanded.

Time	Description of Events	Train Speed	Master Controller	ATP Speed Limit
10:34:36 hours	Train ID 820 came to a complete stop at the 8-car marker of Pentagon Station, Track 2. Car 7154 was the Lead Car.	0 MPH	B4	50 MPH
10:34:48 hours	Left Door Open Trainlines energize, opening Left side doors.	0 MPH	B5	50 MPH
10:34:51 hours	Car 7154 keyed down	0 MPH	B5	50 MPH
10:34:58 hours	Car 7154 Keyed Up	0 MPH	B5	50 MPH
10:35:16 hours	Left Door Close pushbutton was activated, closing the left side doors.	0 MPH	B5	50 MPH
10:35:31 hours	All Doors Closed goes HIGH and Car 7154 is keyed down.	0 MPH	B5	50 MPH
Trailing car 7180 keyed up				
10:36:44 hours	Trailing car 7180 keyed up on the opposite end facing Arlington Cemetery Station.	0 MPH	B5	0 MPH
10:36:54 hours	Stop and Proceed initiated on Car 7180.	0 MPH	B5	0 MPH
10:36:56 hours	Yard Buzzer activated.	0 MPH	B5	0 MPH
10:36:57 hours	Master Controller was placed in the "P1-P4" Power mode. The brakes were released and the train began to move in the direction of Arlington Cemetery Station.	<1 MPH	P1-P4	0 MPH
10:37:03 hours	Master Controller was placed in the Coast position. The train speed was 4.75 MPH, after travelling 21 feet	4.75 MPH	Coast	0 MPH
10:37:04 hours	Master Controller placed in "P1-P4" Power mode. The train speed was 5.49 MPH, after traveling 31 feet in the direction of Arlington Cemetery Station.	5.49 MPH	P1-P4	0 MPH
10:37:06 hours	Master Controller placed in Coast position. The train speed was 5.68 MPH, after travelling 31 feet in the direction of Arlington Cemetery Station.	5.68 MPH	Coast	0 MPH
10:37:08 hours	Master Controller was placed in the "B1-B3" Braking mode. The train speed was 6.42 MPH, after traveling 68 feet in the direction of Arlington Cemetery Station.	6.42 MPH	B1-B3	0 MPH
10:37:22 hours	Master Controller cycled to the "B4" Braking position, Train speed was 0.56 MPH, after traveling a total of 144 feet in the direction of Arlington Cemetery Station.	0.56 MPH	B4	0 MPH
10:37:23 hours	Zero Speed signal goes HIGH, indicating the train came to a complete stop after traveling a distance of 144 feet since being keyed up. The Master Controller was placed in the B5 braking position.	0 MPH	B5	0 MPH
10:37:33 hours	Car 7180 was keyed down.	0 MPH	B5	0 MPH
Original Lead Car keyed Back up				
10:39:00 hours	Car 7154 was keyed up. ATP Speed limit was 40 MPH	0 MPH	B5	40 MPH
10:39:10 hours	Yard Buzzer activated.	0 MPH	B5	40 MPH
10:39:11 hours	Road Horn Activated	0 MPH	B5	40 MPH
10:39:15 hours	Master Controller placed in "P1-P4" Power mode and the train began to move in the direction of Pentagon City Station	<1 MPH	P1-P4	40 MPH

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



Office of Signal Engineering (COSI)

Adopted from the Signal Engineering Investigation Report with minor edits and grammatical changes.

- I. Pentagon Station, track 2, was operating in Normal traffic with No prior issue or alarm.
- II. AIMS report indicates that the following Train ID 426, 428, 430 from Arlington Cemetery Station and 342 344, 346 from L'Enfant Plaza Station serviced Pentagon Station (C07) prior to Train ID 820 with no issue.
- III. AIMS report indicates that Train ID 820, with Destination Code "92" (Non-revenue Greenbelt Yard) and six (6) car consist traveled in the normal direction to Pentagon Station from Arlington Cemetery Station:
 - a) Signal 6 status is Stop.
 - b) At 10:34:32 hours, Track Circuit C2-257 was Vacant.
 - c) At 10:34:40 hours, Track Circuit C2-264 was Occupied (indicating the train was at the 8-car marker)
 - d) At 10:34:55 hours, Track 2 Train was Berthed (train stopped at the platform and received train berthed indication)
 - e) At 10:35:02 hours, Track 2 Door Close Right (indicates that door is closed on the right side)
 - f) At 10:35:32 hours, Track 2 Door Close Both Sides (indicates that door are closed)
- IV. However, AIMS reports that both C2-257 (inbound vacant) and C2-267(outbound occupied) of the platform change the state respectively at 10:37:43 hours (C2-257 to occupied) and 10:37:26 hours (C2-267 to Vacant) which indicates that train 820 moved against normal traffic.

Office of Automatic Train Control Maintenance (ATCM)

No signals or switches were overrun as a result of this incident.

Office of Rail Transportation (RTRA)

Adopted from RTRA Managerial Investigation report with minor edits and grammatical changes.

At approximately 10:30 hours, A Rail Operations Supervisor double-ended Train ID 823, from Pentagon City Station to Pentagon Station. Rail Vehicle Operator #1 exited Train ID 823 on track 1 and proceeded to the lower level to switch with Rail Vehicle Operator #2 operating Train ID 820 on track 2.

While waiting for Rail Vehicle Operator #2 to arrive on track 1, the Rail Operations Supervisor observed Train ID 820 moving in the wrong direction on track 2. The Rail Operations Supervisor immediately instructed the operator to stop the train, as it was traveling in the opposite direction. Rail Vehicle Operator #2 then came upstairs and took over the operation of Train ID 823 on track 1.

Once the Rail Operations Supervisor keyed into Train ID 820 on track 2 at Pentagon Station, Rail Vehicle Operator #1 cleared the interlocking at Pentagon City Station. The Rail Operations Supervisor emphasized to the operator that whenever a train moves in the opposite direction of normal traffic, an absolute block is required, and the tracks ahead must be clear. The Rail Operations Supervisor also stressed that the train should never be moved without speed readouts or permission from the MICC.

Rail Vehicle Operator #1 mentioned that they had received speed commands and that Train ID 820's lead car had extended past the platform on Track 2 towards Pentagon City Station.

Interview Findings and Written Statements

As part of the investigation launched into the event, SAFE interviewed two (2) people. The interviews identified the following key findings associated with this event. The findings detailed below include reported information from involved personnel and may conflict with other data sources contained in the report.

RVO #1

- Was performing a rail vehicle transport from Greenbelt Yard to Wet Falls Church
- ROS #1 boarded the train at Pentagon City Station to double end towards Pentagon Station for a change-off.
- Was told to board the train on track 2 by the ROS #1.
- Keyed up the train on the end facing Arlington Cemetery Station.
- Believed Train ID 820 was stopped mid-platform because some of the cars protruded into the tunnel towards Pentagon City Station.
- Believed the ROS #1 conducted the visual/verbal change-off with the RVO #2 on track 2 because they were operating the train entering Pentagon Station.

Button RTC

- The Radio RTC stepped away from the console while this incident took place.
- Was working as both the Button and Radio RTC during this incident.
- Was informed by the ROS #1 that Train ID 820 was moving in the opposite direction of rail traffic.
- Did not instruct RVO #1 to reverse ends or to key up on their downtown end.

Weather

On August 17, 2024, at the time of the incident, NOAA recorded the temperature as 78.8°F, with overcast skies, winds of 9 mph, and 74.02% humidity. [Arlington, VA]. Weather was not a contributing factor in this incident (Weather source: NOAA) – Location: [Arlington, VA].

Related Rules and Procedures

Metro Rail Operating Rulebook, effective September 1, 2023

2.4 Employee being relieved; Turn Over

2.4.1 When performing a change-off or relief at a station other than a staffed terminal station, Rail Vehicle Operators shall make face-to-face contact with their relief so the relief can acknowledge that they will be operating the train. Rail Vehicle Operators shall make announcements advising customers of the relief.

9.8 Speed Commands

9.8.1 Rail Vehicle Operators shall not move trains with zero speed commands except after notifying the Rail Traffic Controller or Terminal Supervisor and being given permission to move with zero speed commands and either a permissive block going with traffic or an absolute block going against traffic.

9.8.3 On 7000 Series Trains - If speed commands are lost on the mainline and the consist comes to a complete stop with the Aspect Display Unit (ADU) displaying the code number; the Operator must contact the Rail Traffic Controller or Terminal Supervisor to obtain either a permissive block or absolute block before entering the corresponding number on the Aspect Display Unit touchpad to enter Stop and Proceed Mode.

RTRA Operations Personnel Notice – Stop and Proceed Mode on 7000 Series Railcars, dated July 11, 2019

If speed commands are lost on the mainline and the consist comes to a stop with the ADU displaying the code number, the Operator must contact the Rail Operations Control Center (ROCC) to obtain either a Permissive or Absolute block before pressing the corresponding number on the ADU Touchpad to enter Stop and Proceed Mode.

Human Factors

RVO #1

Evidence of Fatigue

Safety evaluated signs and symptoms of fatigue that may have been present during the incident. No signs or symptoms of fatigue were detected from the available data. Video of the incident was reviewed for signs of the RVO'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 employee reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

Safety evaluated signs and symptoms of fatigue that may have been present during the incident. No significant risk was identified. The incident time of day did not suggest an increased risk of fatigue-related impairment. The employee reported keeping a regular sleep schedule in the days

leading up to the incident. The employee worked AM shifts in the days leading up to the incident. The employee was awake for 3.58 hours at the time of the incident. The employee reported 9 hours of sleep in the 24 hours preceding the incident. The off-duty period was 88.16 hours which provided an opportunity for 7-9 hours of sleep. This was more than the employee's usual workday sleep durations. The employee reported no issues with sleep. The employee worked AM shifts in the days leading up to the incident.

Button RTC

Evidence of Fatigue

Safety evaluated signs and symptoms of fatigue that may have been present during the incident. No signs or symptoms of fatigue were detected from the available data. Video of the incident was reviewed for signs of the RTC'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 employee reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

Safety evaluated signs and symptoms of fatigue that may have been present during the incident. The incident time of day did not suggest an increased risk of fatigue-related impairment. The employee reported some variation in the sleep schedule in the days leading up to the incident. The employee was on vacation in the days leading up to the incident. The employee was awake for 6.08 hours at the time of the incident. The employee reported 7.5 hours of sleep in the 24 hours preceding the incident. The off-duty period was more than 48 hours which provided an opportunity for 7-9 hours of sleep. This was more than the employee's usual workday sleep durations. The employee reported no issues with sleep. The employee reported that they care for their parents which may affect their sleep patterns.

Post-Incident Toxicology Testing

RVO #1

WMATA's Drug and Alcohol Program determined that the Rail Vehicle Operator complied with the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Button RTC

WMATA's Drug and Alcohol Program determined that the Rail Traffic Controller complied with the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Findings

- The OPS 3 Radio RTC was away from the console for 10 minutes while this incident took place.
- The Button RTC was operating as both the Button and the Radio RTC.
- RVO #1 failed to conduct a visual and verbal handoff before taking command of Train ID 820
- RVO #1 failed to notify the RTC before entering “Stop and Proceed” mode.
- RVO #1 moved Train ID 820 in the opposite direction of normal rail traffic without an absolute block.
- No signals or switches were overrun as a result of this incident.
- RVO #1 stated they believed Train ID 820 was stopped mid-platform because some of the cars protruded into the tunnel towards Pentagon City Station. Pentagon Station CCTV footage does not support the statement made.

Immediate Mitigation to Prevent Recurrence

- The RVO was removed from service for post-incident testing.
- Train ID 820 was removed from service for the Incident Investigation Team data download.

Probable Cause Statement

The probable cause of the improper rail vehicle movement at the Pentagon Station on August 17, 2024, was determined to be an improper handoff. The RVO failed to conduct a visual and verbal rail vehicle change-off, thereby entering the incorrect railcar. Contributing to the incident was the procedure in place for moving a train without speed commands was not followed. The RVO failed to contact the Button RTC, before entering “Stop and Proceed” mode and began moving the train in the opposite direction of rail traffic without permission or an absolute block.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
119198_SAFE CAPS_RTRA_001	RVO #1 to complete Fitness for Duty Testing. (CF-1)	RTRA SRC	Completed
119198_SAFE CAPS_RTRA_002	RVO #1 was issued discipline in accordance with the Disciplinary Administrative Program.	RTRA SRC	Completed
119198_SAFE CAPS_RTRA_003	RVO #1 to attend Rail Operator refresher training. (CF-3)	RTRA SRC	Completed

Appendices

Appendix A – Interview Summaries

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

Rail Vehicle Operator (RVO #1)

The Rail Vehicle Operator has been a WMATA employee with seven (7) years of service and 1.5 years of experience as an RVO. The RVO holds a Roadway Worker Protection (RWP) Level 2 certification that expires in August 2024. During the formal interview, the RVO stated that they were performing a rail vehicle transport from West Falls Church Yard. They were instructed to clear the interlocking at Pentagon City Station. After clearing the interlocking they keyed down and a Rail Supervisor located on the opposite end of the train keyed up and was given permission to cross over from track 2 to track 1 towards Pentagon Station. At Pentagon Station, ROS #1 instructed the RVO to board the train on track 2 for a change-off. The RVO stated when they arrived downstairs, they noticed that their train was stopped mid-platform and entered the trailing car assuming it was facing the direction of the L-line bridge to Greenbelt Yard. The RVO stated that they believed the train was stopped mid-platform because some of the cars protruded into the tunnel towards Pentagon City Station.

The RVO stated that they keyed up, checked their rail alignments³, moved the train to the 8-car marker, and brought the train to a complete stop. The RVO then heard the Rail Supervisor and the RTC instruct them to stop the train. The RVO then went to the opposite end of the consist and keyed up towards the direction of Pentagon City Station. After clearing the interlocking at Pentagon City Station the ROS #1 assumed command of the train to Gallery Place Station, where they exited the train and ROS #2 assumed command of the train to Greenbelt Station. When asked the RVO stated they did not receive any instructions from the RTC or the Rail Supervisor before boarding Train ID 820. They were also unaware that anyone was aboard the train before they began moving. The RVO also did not recall entering “Stop and Proceed” mode before moving the train, however, they do recall that they were not given a permissive block prior to moving the train. The RVO stated they were instructed to perform a visual/verbal change-off but they believed ROS #1 performed a visual/verbal change-off with the RVO #2 as the train was entering the station.

Button Rail Traffic Controller (RTC)

The Button RTC has been a WMATA employee with 10 years of service and 3 years of experience as an RTC. The Button RTC holds a RWP Level 4 certification that expires in January 2025. During the formal interview, The Button RTC stated the Radio RTC stepped away from the console and they were functioning as both the Button RTC and Radio RTC during this incident. The Button RTC stated they were informed of the train moving in the opposite direction of rail traffic at Pentagon Station by ROS #1, who was on track 1. The Button RTC then looked at their AIMS screen and observed the train was keyed up on the trailing end of the consist facing towards Arlington Cemetery Station.

³ A rail alignment is defines as a railroads horizontal location as described by tangents, curves and the position of switch points.

When asked, the Button RTC stated the procedure for a visual/verbal change-off are for the trains to be properly berthed and keyed down. The RVO walks to the train they are going to change off with, and an ROS is generally present to ensure the change-off occurs, and notifies the RTC once the visual/verbal change-off is completed. The Button RTC stated the only way that they are aware that a visual/verbal change-off was completed is to be informed by the employees conducting the change-off.

The Button RTC stated at no time did they instruct RVO #1 to reverse ends or to key up on their downtown facing end of the train.

Appendix B – Rail Transportation (RTRA) Operations Personnel Notice (ROPN) Stop and Proceed Mode on 7000 series Railcars



RTRA OPERATIONS PERSONNEL NOTICE

Thursday, July 11, 2019

Stop and Proceed Mode on 7000 Series Railcars

Stop and Proceed mode enables Train Operators to take a point of power in the absence of speed commands with the ATP System enforcing a maximum speed of up to 15 MPH. The procedure for entering Stop and Proceed mode has been modified on the 7000 Series railcars to reduce the risk of accidentally overrunning a red signal.

To enter Stop and Proceed mode:

- the train must be stopped,
- the master controller in B4 or B5, and
- no speed or door commands are being received.

This applies when Operators silence the overspeed alarm by placing the master controller in B4/B5. Once stopped, the Operator must use the ADU touchpad to enter the code number shown on the Regulated Speed display before the train can be moved in Stop and Proceed mode.

If speed commands are lost on the mainline and the consist comes to a stop with the ADU displaying the code number, the Operator must contact ROCC to obtain either a Permissive or Absolute block before pressing the corresponding number on the ADU Touchpad to enter Stop and Proceed Mode.

All operating personnel are required to complete the Stop and Proceed CBT via ELM using the following course code; **OPRCSAPM**. All employee training shall be completed by Friday, August 30, 2019.

Train Operators are also reminded to adhere to MSRP Operating Rule 3.79:

Train Operators shall not move trains with zero speed commands except after notifying ROCC and being given permission to move with zero speed commands and either a permissive block for the move going with traffic or an absolute block for the move going against traffic.

Upon losing speed commands on the platform, the operator may adjust the train in the same direction of traffic to service the station without contacting ROCC 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 for permission to leave and an absolute block for the move if speed readouts do not return.


Appendix C – RVO #1's Written Statement

WMATA/RTA Incident/Accident Report (Other than Motor Vehicle) Page <u>1</u> of <u>1</u>			
Incident Information: This page must be completed for all incidents			
Date: <u>8/17/24</u>	Incident Time: <u>10:35H</u>	Time Reported:	Reported by: <input type="checkbox"/> Customer <input type="checkbox"/> Employee <input type="checkbox"/> RROC <input type="checkbox"/> Other <input type="checkbox"/>
Location: <u>Pentagon</u>			
Station: <u>Pentagon</u>	Mezzanine #:	Track #/Destination: <u>2</u>	Chain Marker/Signal Number:
TYPE OF INCIDENT			
<input type="checkbox"/> Property Damage <input type="checkbox"/> Smoke <input type="checkbox"/> Fire <input type="checkbox"/> Customer Complaint <input type="checkbox"/> Customer Injury <input type="checkbox"/> Customer Illness <input type="checkbox"/> Employee Injury <input type="checkbox"/> Employee Illness <input type="checkbox"/> Criminal Activity <input type="checkbox"/> Elevator Entrapment <input type="checkbox"/> Rail Vehicle Incident <input checked="" type="checkbox"/> Other (Explain in description of incident)			
WEATHER		LIGHT CONDITIONS (natural lighting)	
<input type="checkbox"/> Clear <input type="checkbox"/> Rain <input type="checkbox"/> Snow <input type="checkbox"/> Sleet/Ice		<input type="checkbox"/> Down/Dusk <input type="checkbox"/> Daylight <input type="checkbox"/> Dark <input type="checkbox"/> Tunnel/Underground	
		LIGHTING (artificial lighting)	
		<input type="checkbox"/> Lights On <input type="checkbox"/> Lights Off <input type="checkbox"/> Lights Not Working	
STATION INCIDENTS: Always include equipment number you use for MOC/AFC/EOC			
Elevator/Escalator #:	AFC #:	Room Number/Location:	
Failure Number(s):			
Parking Lot <input type="checkbox"/> Paid Area <input type="checkbox"/> Free Area <input type="checkbox"/> Garage <input type="checkbox"/> Station Entrance <input type="checkbox"/> Stairway <input type="checkbox"/> Platform <input type="checkbox"/> Ancillary Room <input type="checkbox"/> Injury/Illness reported aboard Train <input type="checkbox"/> Other <input type="checkbox"/> Name of Responding Supervisor: _____ Name/Department of PLNT/AFC or other WMATA responder: _____			
TRAIN INCIDENTS			
Train ID: <u>820</u>	Destination: <u>West Kille Church</u>	Car Numbers (list all cars in consist):	Lead Car: <u>7154</u>
Name of Responding Supervisor: _____		Name/Department of CMNT/TRST or other WMATA responder: _____	
DESCRIBE THE INCIDENT: Include what you did to correct the problem and who you notified and when.			
Describe any property damage and the extent of any injuries.			
<p>I was doing a transport, I was clambled on the train, I was performing a verbal/visual and I got off at pentagon track 1 headed towards pentagon track 2. I walked toward the lead car on middle of platform when I was supposed to be headed to other direction. I keyed up and lined up to 8 car marker.</p>			
Employee Completing Report			
Employee Name (print):	Employee Signature (print):	Employee #:	Date: <u>8/17/24</u>
Division: <u>Greenbelt</u>	Run #: <u>803</u>	Assigned Days: <u>Thurs - Friday</u>	
To Be Completed By Reviewing Manager			
Supervisor Name (print):	Supervisor Signature:	Employee #:	Date: <u>8/19/24</u>
Action taken/needed: <u>PENDING INVESTIGATION</u>			
SMS Number:			
50.7534 0412 White Copy: Division or Supervisor Yellow Copy: For any incident involving escalators or elevators; remains in black for use of elevator/incident inspectors			

Incident Date: 08/17/2024 Time: 10:35 hours
 Final Report – Improper Rail Vehicle Movement Rev. 1
 E24652

Drafted By: SAFE 708 – 9/02/2024
 Reviewed By: SAFE 704 – 10/18/2024
 Approved By: SAFE 707 – 10/18/2024

Appendix D – COSI Signal Engineering Investigation Report

	Washington Metropolitan Area Transit Authority	
	INVESTIGATION REPORT	FORM: INFR-COSI-ATCE- IR 2024-08-17-C07

SIGNAL ENGINEERING INVESTIGATION REPORT

REQUEST NUMBER: 2024-08-17-C07

REQUESTER: [REDACTED]

DATE: 08/27


BY: [REDACTED]

COSI – SIGNAL ENGINEERING

Original
08/27/2024

INFR-COSI-ATC-TEMP-01-00 Signal Engineering Incident Analysis Template 1.0
Page 1 of 5
C07_2024_08_17_IR_82724

Figure 20 - COSI Signal Engineering Investigation Report, page 1 of 5.


	Washington Metropolitan Area Transit Authority	
	INVESTIGATION REPORT	FORM: INFR-COSI-ATCE- IR 2024-08-17-C07


Incident Title: Improper Rail Vehicle Movement - Pentagon
 Incident Date/Time:08/17/2024 at 10:35 AM
 Incident Location: Pentagon Metro Station (C07)

EXECUTIVE SUMMARY:

1. Pentagon Metro station track 2 was operating in Normal traffic with No prior issue or alarm.
2. AIM report indicates that the following Train ID 426, 428, 430 from Arlington Cemetery and 342 344, 346 from L'Enfant serve the station (C07) prior to Train ID820 with no issue.
3. AIMS report indicates that train ID 820, with destination 92 (Non-rev- Greenbelt Yard) and length 6 travel normal direction to C07 from Arlington Cemetery:
 - a. Signal 6 status is Stop.
 - b. 10:34:32 Track Circuit C2-257 Vacant.
 - c. 10:34:40 Track Circuit C2-264 Occupied (indicates the train is the 8-car marker)
 - d. 10:34:55 Track 2 Train Berthed Berthed (train stop at the platform and received train berthed indication)
 - e. 10:35:02 Track 2 Door Close Right (indicates that door is closed on the right side)
 - f. 10:35:32 Track 2 Door Close Both Sides (indicates that door are closed)
4. However, AIMS reports that both C2-257 (inbound vacant) and C2-267(outbound occupied) of the platform change the state respectively at 10:37:43 (C2-257 to occupied) and 10:37:26 (C2-267 to Vacant) which indicates that train 820 moved against normal traffic.

Figure 21 - COSI Signal Engineering Investigation Report, page 2 of 5.


	Washington Metropolitan Area Transit Authority	
	INVESTIGATION REPORT	FORM: INFR-COSI-ATCE- IR 2024-08-17-C07

COSI-SIGNAL ENGINEERING	 Washington Metropolitan Area Transit Authority		Detailed Incident Analysis					
			Report Num:		IR 2024-08-17-C07			
			Requester:		[REDACTED]			
			Date:		08/27/2024			
		From:		[REDACTED]				
		To:		[REDACTED]				
Reported Data:			Time:		Train ID:		Interlocking Control:	
Description: C07- Improper Rail Vehicle Movement			10:35 AM		820		Central	
Requested Analysis: Investigate Incident								
INITIAL STATE AS OF: 10:00:00 AM on 08/17/24								
Name	STATE	AUTO	NAME	STATE	AUTO	NAME	STATE	AUTO
Train Berthed	Not Berthed	N/A	C2-257	Vacant	N/A	C2-264	Occupied	N/A
Train Motion	Not Motion	N/A	C2-258	Occupied	N/A	C2-266	Occupied	N/A
Track Traffic Direction 2N	Normal	N/A	Track Traffic Direction 2R	Normal	N/A	Signal 6	Stop	no
RECORDED EVENT DATA								
TIME	LOCATION	STATUS/ CONTROL	AIMS DESCRIPTION			COMMENTS		
10:29:15	C07	Status	Track Circuit 3AAT Occupied			Train ID:348 with Destination 31 servicing Pentagon station(C07) track 2		
10:29:20	C07	Status	Track Circuit C2-257 Occupied					
10:29:21	C07	Status	Track Circuit C2-258 Occupied					
10:29:27	C07	Status	Train Number Input 2 348					
10:29:27	C07	Status	Train Destination Code Input 2 31					
10:29:27	C07	Status	Train Length Input 2 6					
10:29:27	C07	Status	Track 2 Door Close Both Sides					
10:29:27	C07	Status	Track 2 Train Motion Motion					
10:29:34	C07	Status	Track Circuit 3AAT Vacant					
10:29:36	C07	Status	Track Circuit C2-257 Vacant					
10:29:42	C07	Status	Track Circuit C2-264 Occupied			Train Stop Door opens on the left Door is manually open Train ID 348: Door closed and in motion to Destination 31		
10:29:46	C07	Status	Track 2 Train Berthed Berthed					
10:29:47	C07	Status	Track 2 Train Motion Not Motion					
10:29:55	C07	Status	Track 2 Door Close Right					
10:30:02	C07	Status	Door Opening Mode Manual					
10:30:09	C07	Status	Door Close Both Sides					
10:30:09	C07	Status	Train Motion Motion					

Original
08/27/2024

INFR-COSI-ATC-TEMP-01-00 Signal Engineering Incident Analysis Template 1.0
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Figure 22 - COSI Signal Engineering Investigation Report, page 3 of 5.

	Washington Metropolitan Area Transit Authority	
	INVESTIGATION REPORT	FORM: INFR-COSI-ATCE- IR 2024-08-17-C07

10:30:31	C07	Status	Track Circuit C2-258 Vacant	Pentagon Station platform track 2 is vacant (Not train)
10:30:32	C07	Status	Track Circuit C2-264 Vacant	
10:30:37	C07	Status	Track Circuit C2-266 Vacant	
10:33:25	C07	Status	Switch Call 3 Call Normal	
10:33:30	C07	Status	Switch Position 3 Normal	Track 2 traffic in Normal locked
10:33:31	C07	Status	Approach 8 Locked	
10:33:49	C07	Status	Track Traffic Direction L2R Normal	
10:33:51	C07	Status	Track Circuit C2-249 Occupied	
10:33:56	C07	Status	Track Circuit C2-251 Occupied	Train ID: 820 is crossing the interlocking
10:34:03	C07	Status	Track Circuit 3ABT Occupied	
10:34:05	C07	Status	Track Circuit 3AAT Occupied	
10:34:09	C07	Status	Track Circuit C2-257 Occupied	
10:34:10	C07	Status	Track Circuit C2-258 Occupied	Train ID:820 at the Platform
10:34:20	C07	Status	Train Number Input 2 820	
10:34:20	C07	Status	Train Destination Code Input 2 92	
10:34:20	C07	Status	Train Length Input 2 6	
10:34:20	C07	Status	Track 2 Door Close Both Sides	
10:34:20	C07	Status	Track 2 Train Motion Motion	
10:34:07	C07	Status	Track Circuit C2-249 Vacant	
10:34:20	C07	Status	Track Circuit 3ABT Vacant	
10:34:32	C07	Status	Track Circuit C2-257 Vacant	
10:34:40	C07	Status	Track Circuit C2-264 Occupied	
10:34:50	C07	Status	Track 2 Train Motion Not Motion	Train ID 820 at the servicing the Platform (Train Berthed) and Door opened
10:34:55	C07	Status	Track 2 Train Berthed Berthed	
10:35:08	C07	Status	Track 2 Door Close Right	
10:35:08	C07	Status	Track 2 ATP Cutout ATP Cutout	
10:35:08	C07	Status	Track 2 Door Close Both Open	Train ID 820: door closed
10:35:08	C07	Status	Track 2 Train Berthed Not Berthed	
10:35:12	C07	Status	Track 2 ATP Cutout ATP In Effect	
10:35:32	C07	Status	Track 2 Door Close Both Sides	
10:35:47	C07	Status	Track 2 ATP Cutout ATP Cutout	After 2 minutes Train ID 820 is move in the opposite direction with C2-264 vacant and C2-257 Occupied
10:35:47	C07	Status	Track 2 Door Close Both Open	
10:37:26	C07	Status	Track Circuit C2-264 Vacant	
10:37:43	C07	Status	Track Circuit C2-257 Occupied	
10:37:44	C07	Status	Signal Entrance 16 Received	

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Figure 23 - COSI Signal Engineering Investigation Report, page 4 of 5.



10:37:45	C07	Status	Switch Call 3 Call Reverse	MICC is setting up the route with signal 16 as the entrance which align the switch machine in the reverse position.
10:37:45	C07	Status	Switch Position 3 Out Of Corresp	
10:37:50	C07	Status	Route Lock Track 2 Locked	
10:37:50	C07	Status	Switch Position 3 Reverse	
10:37:50	C07	Status	Approach 16 Locked	
10:37:51	C07	Status	Signal State 16 Clear	Train ID 820 still occupying C2-257
10:39:20	C07	Status	Train Number Input 2 820	
10:39:20	C07	Status	Train Destination Code Input 2 92	
10:39:20	C07	Status	Track 2 ATP Cutout ATP In Effect	
10:39:20	C07	Status	Track 2 Door Close Both Sides	
10:39:20	C07	Status	Train Length Input 2 6	Door Opened
10:39:40	C07	Status	Track 2 Door Close Right	
10:39:45	C07	Status	Track 2 Door Close Both Sides	
10:39:54	C07	Status	Track Circuit C2-257 Vacant	
10:39:55	C07	Status	Track Circuit C2-257 Occupied	
10:40:16	C07	Status	Track 2 Train Motion Motion	Train ID 820 is motion in the direction to Pentagon City
10:40:16	C07	Status	Track Circuit C2-257 Vacant	
10:40:25	C07	Status	Track Circuit C2-264 Occupied	
10:40:27	C07	Status	Track Circuit C2-266 Occupied	

Circuit Power Failure: Yes ☐ No ☒ Processor Failure: Yes ☐ No ☒ Power Transfer: Yes ☐ No ☒

DISTRIBUTION LIST

- COSI Executive Leadership: [REDACTED]
- Signal Engineering Sr Director: [REDACTED]
- Signal Engineering Managers: [REDACTED]
- Signal Maintenance Personnel: [REDACTED]
- MICC Personnel: [REDACTED]
- SAFE Personnel: [REDACTED]

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Figure 24 - COSI Signal Engineering Investigation Report, page 5 of 5.

Appendix E – RTRA Managerial Investigation Report



Washington Metropolitan Area Transit Authority



Office of Rail Transportation: Managerial Incident Investigation Report

Incident Status: **PRELIMINARY**

GENERAL INCIDENT INFORMATION

Incident Type:	Improper Direction of Travel Movement	Delay (Minutes):	N/A
Incident Date:	Saturday, August 17, 2024	Vehicles Involved:	ID-820 L7180*7107*7155
Incident Time:	10:35am	First Reported By:	Supervisor [REDACTED]
Location:	Pentagon Track #2		

BRIEF DESCRIPTION:

At approximately 10:30 AM, Supervisor [REDACTED] double-ended train ID-823, from Pentagon City to Pentagon Station. Operator [REDACTED] exited train ID-823 on Track One and proceeded to the lower level to switch with Operator of train ID-820 on Track Two.

While waiting for the operator of ID-820, Supervisor [REDACTED] observed train ID-820 moving in the wrong direction on Track Two. Supervisor [REDACTED] immediately instructed the operator to stop the train, as it was traveling in the opposite direction. The operator of ID-820 then came upstairs and took over the operation of ID-823 on Track One.

Once Supervisor [REDACTED] keyed into train ID-820 on Track Two at Pentagon, Operator [REDACTED] cleared the interlocking at Pentagon City. Supervisor [REDACTED] emphasized to the operator that whenever a train is moving in the opposite direction of normal traffic, an absolute block is required, and the tracks ahead must be clear. [REDACTED] also stressed that the train should never be moved without speed readouts or permission from the MICC.

Operator [REDACTED] mentioned that [REDACTED] had received speed commands and that train ID-820's lead car had extended past the platform on Track Two towards Pentagon City.

Key Employees Involved & Employee Statements:

Train Operator [REDACTED] Incident report has not been received by Division Management yet. Operator was overheard over the phone while being interviewed by RTRA Supervisor [REDACTED] stating: "I can't remember if I had speed commands." "I can't remember if I used Stop and Proceed."

Figure 25 - RTRA Managerial Incident Investigation Report, page 1 of 3.



Washington Metropolitan Area Transit Authority



Office of Rail Transportation: Managerial Incident Investigation Report

Post Incident Testing & Employee History:

Train Operator [REDACTED] was removed from service and transported for Post Incident Testing.
Train Operator [REDACTED] has been a WMATA employee since Oct 16, 2016.
Train Operator [REDACTED] has been on the Rail since Feb 05, 2023.
Train Operator [REDACTED] last certified as a Train Operator on Feb 02, 2023 (QL-2).
Train Operator [REDACTED] has had one (1) Safety Violation in the last 365 days.
STOV- Jun 10, 2024, College Park Track #1, Fitness for Duty test was administered, Operator was found to be compliant.
QA Audit- Dec 06, 2023, Doors Closed without speed commands Navy Yard Track #2.
QA Audit- Mar 22, 2024, Repositioning train without making announcements Shaw & U St Track #1.

SIGNIFICANT INCIDENT TIMELINE:

10:30 – Supervisor [REDACTED] arrived at Pentagon Station to assist with an operator change off with non-revenue trains.
10:35 – Supervisor [REDACTED] arrived observed Train ID-820 moving in the wrong direction on Track Two Pentagon Station.
10:40 – Supervisor [REDACTED] took over operations of Train ID-820 and Train Operator [REDACTED] was removed from service and transported from post incident testing by RTRA Supervisor [REDACTED].

SIGNIFICANT FINDINGS & PENDING ISSUES:

- The Train Operator violation is pending for failing to follow MOR GR 8.10.3, 8.3.1, 8.1.6, 9.8.1, 9.8.3.

CORRECTIVE ACTIONS:

Train Operator [REDACTED] corrective action is pending. This incident is still under investigation.

Figure 26 - RTRA Managerial Incident Investigation Report, page 2 of 3.

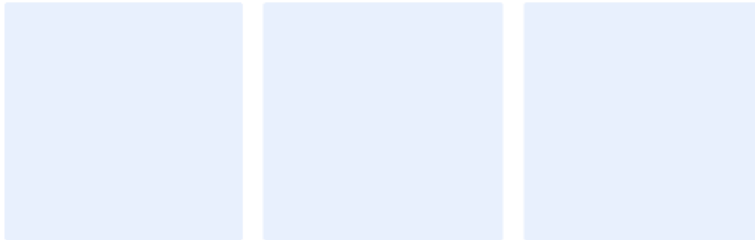


Washington Metropolitan Area Transit Authority

Office of Rail Transportation: Managerial Incident Investigation Report



INCIDENT PHOTOS: ATTACH ANY SIGNIFICANT PHOTOS BASED ON THE INITIAL INCIDENT INVESTIGATION.

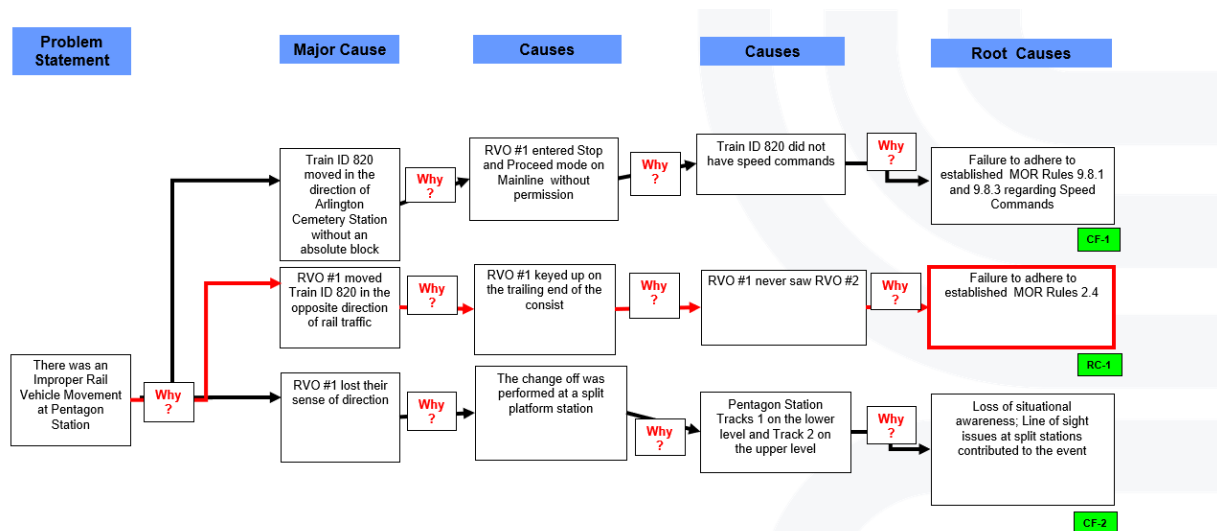


Report Prepared by: Assistant Superintendent [REDACTED]

Report Reviewed by: _____

Figure 27 - RTRA Managerial Incident Investigation Report, page 3 of 3.

Appendix F – Why-Tree Analysis



Root Cause Analysis

E24652 - Improper Rail Vehicle Movement – Pentagon Station

